

TUE (9)	8:30A	SESAME STREET	1:00
TUE	8:30A	SESAME STREET	1:30
TUE	8:30A	1 HR	2:00
TUE	8:30A	THE WIDE WORLD OF NUMBERS AND DECISIONS TO FIND OUT WHAT POLLY DARTON'S FAVORITE NUMBER IS: POLLY AND THE BAIT-ALONG-LITTLE-DOGGIES T SING.	2:30
TUE	8:30A	CHILDREN SHOW/CARTOON. CLOSED CAPTION.	3:00
TUE	8:30A	REPAIRING AUTO	3:30
TUE (6)	10:00A	SEWING CROCHET WIT	3:30
TUE	10:00A	3-42P	MON JAN 4

PENDING RECORDINGS

[5]	BATMAN: THE ANIMA	11/09	4:30P	:30
[SHOW]	ALICE	11/09	8:00P	2:00
[NICK]	GET SMART	11/09	8:00P	:30
[NICK]	DICK VAN DYKE	11/09	8:00P	:30
[5]	BATMAN: THE ANIMA	11/10	4:30P	:30
[USA]	MADGUYVER	11/10	8:00P	1:00
[5]	BATMAN: THE ANIMA	11/11	4:30P	:30
[5]	BATMAN: THE ANIMA	11/12	4:00P	:30
[5]	BATMAN: THE ANIMA	11/13	4:30P	:30

[5] KPIX-CBS CBL [5] 4:19P [MON NOV 9]

NOV	MON	TUE	WED	THU	FRI	SAT	SUN
9	4:00P		4:30P				5:00P
12	STEVEN SPIE	BATMAN: THE					FULL HOUSE
7	OPRAH WINFREY						NEWS
20	DARKWING DU	GOOF TROOP					TEENAGE MUT
SHOW	LAWRENCE OF ARABIA						
CNN	EARLYPRIME						
ESPN	GLOBAL SUPERCARD WRESTL						NTRA GRAND
MTV	PICK A FIGHT WITH MTV						TOTALLY DIF
NICK	UNDERDOG	MOST WANTED					NICK ARCADE
TNT	BEND OF THE RIVER						
HBO	THE PATLORDS AND EXPERIMENT						
MAX	THE	RECORD REQUEST ACCEPTED					
15	MPX CBS	CBL 5	4:16P				MON NOV 9

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LAWRENCE DE MORO

NEAR THE TURN OF THE CENTURY, YOUNG
ENGLISHMAN T.E. LAWRENCE INSPIRES ARAB
CHIEFTAINS TO REBEL AGAINST THEIR
TURKISH OVERLORDS. >> PETER O'TOOLE,
ALEC GUINNESS, ANTHONY QUINN

THU 12:00H FLYING LEATHERNECKS 1:45

SHUTTLE CBL  5:35P MON NOV 9

MOVIES	
ALL MOVIES	388
COMEDY	107
DRAMA	92
HORROR	38
ADVENTURE	31
WESTERN	26
MUSICAL	21
FANTASY	18
SCIENCE	17
ROMANCE	14
SUSPENSE	13
SHOWTIME CBL 	
5:34P  MON NOV 9	

MOVIES

ADVERTISING

MON	(SHOW)	2:00P	LAWRENCE OF ARABIA	4:00
MON	(TNT)	4:00P	BEND OF THE RIVER	2:00
MON	(HBO)	4:00P	THE PHILADELPHIA EXP	2:00
TUE	(MAX)	4:25A	GO TELL THE SPARTANS	2:05
TUE	(SHOW)	10:30A	THE HORSE SOLDIERS	2:00
TUE	(DISN)	1:00P	HERE COME THE LITTLE	1:30
WED	(5)	3:00A	THE DELPHI BUREAU	2:00
WED	(DISN)	1:00P	THE RESCUERS DOWN UN	1:30
WED	(TNT)	2:10P	RENEGADES	1:50
WED	(DISN)	6:00P	THE ROCKETEER	2:00
THU	(DISN)	12:00A	FLYING LEATHERNECKS	1:45

SCHEDULE

CBL



5:35P

MON NOV 9

THEMES

CHILDREN/EDUCATION/SCIENCE

DRAMA/ROMANCE

ENTERTAINMENT/VARIETY
MOVIES

NEWS/TALK/MAGAZINE

SPECIALS/MINI-SERIES

PRERECORDED SPORTS

LIVE SPORTS

ACTION/MYSTERY/HORROR

COMEDY

MISCELLANEOUS

SHOWTIME

CBL **ST**

5:32P

MON NOV 9

Finders.

Keepers.

INSIGHT

CH OF A SINGLE BUTTON.

Insight. It's revolutionary. It's easy to use. With the touch of a button, millions of TV viewers will change forever the way they select and record their favorite TV shows.

One remote does it all.



TV shows by theme

CHILDREN/EDUCATION/SCIENCE
ENTERTAINMENT/VARIETY
NEWS/TALK/ANGZINE
PRERECORDED SPORTS
ACTION/MYSTERY/HORROR
MISCELLANEOUS

TV shows by channel

10:00M MARIE ANTOINETTE
12:00M THE SPIRIT OF '76
2:00P THE RETURN OF JOE FORESTER
4:00P BREX RABBIT AND THE WONDERFUL
6:00P ADVENTURES OF HUCKLEBERRY
8:00P GIVE MY REGARDS TO BROAD STREET
10:00P THE SPIRIT OF '76
12:00P COMEDY OF THE MONTH
2:00P THE MARRYING MAN
4:00P 30-MINUTE MOVIE
6:00P THE GOODBYE MOTHER

OWS YOU WANT TO WATCH...

THE EASIEST WAY TO FIND THE SH

MON APR 20		
11:30A	12:00P	12:30P
(2) NOON RIVERS	ANDY GRIMPAY	ARZEP
(4) CLASSIC CONC NEWS	A DUCKER 100	
(9) BULLY/CHITUD NEWS	COSBY SHOW	
(10) MARIE ANTOINETTE	THE SPIRIT	
(11) AFTER 200	NEARSHOUR	
(12) AERO PENNEY	BOARD OF MAY	DAYTIME'S O
(13) RIDDONS	DARK BEARS	UNDER BOX
(14) REMAINS PIOT	ROULES IN NO	PRINCEHARIN
(15) RUDIS WANDIN	PIRATES OF TRIPOLIT	
(16) POLICE STORY: MONSTER MA	DEFENDING VO	
(17) SARIN BRYANT	THE HOUR RO	IN 1:30P
(18) DIVORCE COUR	THE JUDGE	
CBL 11:55A MON APR 20		

Complete up-to-the-minute TV show listings

Complete up-to-the-minute TV show listings. The only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area.

MON APR 20		
11:30A	12:00P	12:30P
(2) NOON RIVERS	ANDY GRIMPAY	ARZEP
(4) CLASSIC CONC NEWS	A DUCKER 100	
(9) BULLY/CHITUD NEWS	COSBY SHOW	
(10) MARIE ANTOINETTE	THE SPIRIT	
(11) AFTER 200	NEARSHOUR	
(12) AERO PENNEY	BOARD OF MAY	DAYTIME'S O
(13) RIDDONS	DARK BEARS	UNDER BOX
(14) REMAINS PIOT	ROULES IN NO	PRINCEHARIN
(15) RUDIS WANDIN	PIRATES OF TRIPOLIT	
(16) POLICE STORY: MONSTER MA	DEFENDING VO	
(17) SARIN BRYANT	THE HOUR RO	IN 1:30P
(18) DIVORCE COUR	THE JUDGE	
CBL 11:55A MON APR 20		

A brief show description

A brief show description. The only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area.

AND RECORD THEM WITH THE TO

THU APR 23		
7:00P	7:30P	8:00P
(2) ROCKY IV		
(4) COSBY SHOW	DIFFERENT HO CHEERS	
(9) COLUMBO AND THE MURDER OF A ROCK STAR		
(10) MUSIC BOX		
(11) RONEYVINE	CROSSFIRE	PRIME NEWS
(12) RICK ARCADE	LOONEY TUNES	PESTROOP
(13) ROBIN HOOD		TALL TALES A
(14) SPORTSCENTER	LPST#BOMUNDS FROM WINTER	
(15) BUGS BUNNY AND PALSY		NBA BASKETBA
(16) THE TOY	MR. BEAN	Q & A
(17) RALPH BURNETT	RECESSION	TAORHREN
(18) MACG RECORD REQUEST ACCEPTED	TERF-SHEA	
CBL 11:55A MON APR 20		

Record your favorite TV shows

Record your favorite TV shows. The only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area.

PENDING RECORDINGS		
(2) WILD AMERICA	4/20 12:30P	1:30P
(4) SHIRAZ SHOW	4/25 7:00P	ALSO
(9) NBA BASKETBALL PLAY	4/25 11:00A	
(10) SHIRAZ SHOW	4/25 7:00P	ALSO
CBL 11:55A MON APR 20		

Keep track of all shows

Keep track of all shows. The only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area. It's the only TV guide that gives you the complete TV schedule for your area.

T**V viewing was simple** before cable television and VCRs. There were just a few networks or stations to choose from.

Today, things aren't so easy. With an average of over thirty different stations and cable channels offering over 9,000 TV programs each week, it's often a challenge to:

- Quickly choose the show you want to watch
- Know immediately which channel number the show is on
- Or, easily record TV shows on your VCR.

InSight answers the constant question "What's on TV?" by providing you with easy access to television programming information. You can

choose by day, by channel or even by the type of show you enjoy watching right on your TV screen. And **InSight** provides one-button VCR recording so you can record and watch exactly what you want, when you want . . . a single show or even a series. Plus, if the schedule changes, **InSight** will automatically adjust your recording.

Everything that **InSight** has to offer is available by monthly subscription for less than the price of a single movie ticket.

	11:30A	12:00P	12:30P
2	JOHN RIVERS	ANDY COOPER	HAZEL
4	CLASSIC CONC	NEWS	A QUIET FOX
9	THE MYSTIC	NEWS	COSBY SHOW
	MARIE ANTOINETTE		THE SPIRIT
CNN	ORDER & CH	NEWSHOUR	
NBC	RED BANNER	ACQUA OF DAY	ADVENTURES O
DIS	ADDITIONS	PARE BEARS	WANDA FOX
ESP	SPENDING FOR	BOOMERS MING	BOONSHAPING
TNT	KNOWS HANDED	PIRATES OF TRIPOLI	PIRATES OF TRIPOLI
HBO	POLICE STORY	MONSTER MA	DEFENDING YO
MTV	KRISTY BRYANT	HAIR HOUR	THE 1341 M
USA	DIVORCE COUR	THE JUDGE	THE JUDGE
	CBU	MON APR 20	MON APR 20

InSight has joined its sophisticated, patented technology, a nation-wide distribution network, and experienced management team with successful corporate strategic partners that together, will change the way the world watches television.



Public Broadcasting Service (PBS) provides a simple method of delivering the InSight data signal to 92 million TV homes.



TV Host and its subsidiary TV Listing Inc. supply the rapidly changing and

essential information for InSight's up-to-the-minute TV show listings through its state-of-the-art, computerized database.



Viacom provides expertise in program and network development, and subscription TV service marketing.



Spelling Entertainment, developers of some of TV's most popular and enduring

shows, including "Beverly Hills 90210," provides valuable program development experience.



The Tribune Company, in addition to ownership of varied media properties, also syndicates information and entertainment services.



SUMITOMO

The Sumitomo Corporation provides a critical link with electronics manufacturers throughout the Far East.



Changing the way the world watches television.

InSight Telecast, Inc.
39650 Liberty Street, 3rd Floor
Fremont, CA 94538
(510) 657-9620
FAX (510) 657-5022

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For InSight Telecast
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Diana Soltesz
310-478-0995

VIACOM SELECTS JERROLD CONVERTERS, FEATURES INSIGHT TELECAST FOR CASTRO VALLEY 1 GHz PROGRAM

ANAHEIM, Ca. (December 2, 1992)...Viacom Cable will use state of the art 1 GHz Jerrold converters in its Castro Valley rebuild. Castro Valley will be the first cable system to feature InSight Telecast's electronic program guide and one-touch VCR recording system.

The converters were developed to meet specifications for what Viacom is designing as the "system of the future," including InSight's patented technology. Among the features of the 1GHz converters in Castro Valley will be two-way impulse ordering, near video-on-demand and multiple channels of pay-per-view.

"We are planning to offer 10 channels of near video-on-demand, 10 channels of continuous hits pay-per-view, several channels of scheduled pay-per-view and three tiers, including a very basic level, a satellite level and premium pay service level of programming," explained John Goddard, president of the Pleasanton, Calif.-based MSO.

Mike Faber, president of Fremont, Calif.-based InSight Telecast, said "The large number of channels and program options make the electronic program guide a major subscriber benefit. By teaming up with Viacom and Jerrold in Castro Valley, we can begin to bring about a change in the way subscribers use their cable service."

Goddard said Viacom will build 28 distinct fiber nodes for the 17,500 home system, with six of them being built to 1 GHz specifications and 22 stopping at 550 MHz. The company has already selected Jerrold's Cableoptics for the fiber electronics portion of the rebuild.

more, more

2-2-2-2

"We will be installing the converters and their electronic program guides in every one of the 12,500 subscriber homes and offering the multiple programming services to everyone," said Goddard. "The aim is to allow subscribers to pick programs ala mode or to select what we call 'interest clusters' of programming."

Viacom expects to have the first customers on line by June of next year, he said.

Since Castro Valley is close to the company's Pleasanton headquarters, this rebuild is being used as a showcase, Goddard said.

"We're building a new, modern headend to drive all these services and will rebuild the entire system from its present 200 MHz to at least 550 MHz," Goddard said. "In March we will begin installing 550 MHz addressable converters and in June we will put in the CFT-2900 1 GHz boxes. The entire system will be served by this single headend."

Goddard emphasized that the Castro Valley system is not serving as merely a technology test, although that is part of the rebuild.

"We are trying to test programming services and how to market them," he explained. "That's why the built-in electronic program guide is so important. That will give us the opportunity to show people what services are available and give them information on ordering. It would not be possible to show all the available options by simply using newspapers or print."

Goddard also pointed out that digital compression, when it becomes available, could also be part of the system.

"We will, of course, be looking at all new technologies and services as they become available," he said. "But right now we have no definite plans to add compression technology to Castro Valley."

The InSight Telecast service to be offered for the first time in Castro Valley provides cable television subscribers with a personalized on-screen program guide, continuously updated with seven days ahead of TV programming, movies and sporting events. In addition, once a program is selected by the subscriber from the TV screen, a simple touch of a button allows the selected program to be recorded in its entirety, even if the program is delayed or runs over.

more, more

3-3-3-3

InSight Telecast is a privately held company backed by strategic partners including VIACOM International, Inc., Tribune Company, Spelling Entertainment and the Public Broadcasting Service.

General Instrument Corporation, parent company of Jerrold Communications, is a world leader in broadband transmission, distribution and access control technologies for cable, satellite and terrestrial broadcasting applications, as well as in discrete power rectifying components.

GI's DigiCipher high definition television system was the first all-digital HDTV entrant in the competition for the US HDTV standard, and is the first all-digital HDTV system to have successfully completed testing by the Federal Communications Commission.

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ZENITH FORMS JOINT DEVELOPMENT EFFORT
WITH INSIGHT TELECAST FOR INTERACTIVE TV

Fremont, Cal., April 28, 1992 --- Zenith Electronics Corporation and InSight Telecast Inc. have signed a joint development agreement to incorporate InSight's on-screen television program guide into various Zenith products over the next five years.

Zenith and InSight plan to co-develop a new generation of electronics that would incorporate InSight's program guide technology into Zenith color TVs, VCRs and cable decoders.

The agreement calls for Zenith to be the exclusive manufacturer of television sets with InSight's program guide for one year after production begins. Zenith expects to introduce InSight-capable cable products later this year, followed by the color TVs with built-in InSight decoding in 1993.

The InSight system provides an on-screen television program guide that details program titles, start times and descriptions. The system also allows VCR taping of a program by pushing only one remote control button.

"As a leader in both consumer electronics and cable products, Zenith brings unique expertise and market strength to our partnership," said Michael W. Faber, InSight president and CEO.

(MORE)

39650 Liberty Street, 3rd Floor / Fremont, California 94538 / (510) 657-9620 / FAX (510) 657-5022

"As the first major manufacturer to join forces with InSight, Zenith will play a very important role in helping us bring this breakthrough service to consumers," he said.

Gerald M. McCarthy, president of the Zenith Sales Company division, called the collaborative effort with InSight "a step that will increase the entertainment value of today's sophisticated television products."

Television sets using InSight circuitry would display up-to-the-minute program guides on the TV screen. "This is a TV program guide that shows up in color on the screen and provides brief program content messages," said McCarthy. "It's unique, easy and fast."

Faber said InSight's electronic program guide system is more accurate than a printed guide because the program information is continually updated through the InSight network. InSight-equipped Zenith products would provide viewers with accurate TV schedules up to seven days in advance.

The Zenith Cable Products division is working with InSight on a long-term development program to provide enhanced electronic program guide services specifically tailored to individual operators, according to John W. Bowler, president of the Zenith Cable Products division.

"With digitally compressed standard TV on the horizon, and with the potential for greatly expanding cable channel capacity, InSight will be very important in enhancing the flexibility and subscriber-friendliness of cable TV," Bowler said.

(MORE)

-3-

InSight Telecast Inc., based in Fremont, Calif., first announced its patented electronic program guide technology in September 1990. InSight is privately held, and its corporate backers include Viacom International, Tribune Company, Spelling Entertainment and Sumitomo Corporation. The Public Broadcasting Service's National Datacast provides InSight with a nationwide network reaching 90 million households.

Zenith Electronics Corporation is a long-time leader in consumer electronics, cable products and electronic components. Based in Glenview, Ill., Zenith is the only U.S.-owned color television and picture tube manufacturer and a leader in high-definition display and transmission systems technologies.

-30-

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CableLabs

Cable Television Laboratories, Inc.

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Mike Faber
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FOR IMMEDIATE RELEASE

CableLabs and InSight Telecast To Develop Cable Electronic On-Screen Program Guide

Boulder, Co., March 25, 1991 -- Cable Television Laboratories, Inc. (CableLabs) and InSight Telecast have agreed to work toward delivering a revolutionary new electronic television program guide to cable television subscribers.

The product planned by CableLabs and InSight provides a cable customer with a colorful guide, broken into easy to read columns and grids, for all channels that are received on a cable system. The guide automatically provides descriptions of each program viewed, even during a commercial, and titles of the programs.

Cable customers will have the ability to change the channel by program title rather than by channel number, and to choose programming by selecting categories such as information or news, sports, and movies. Perhaps the most user friendly capability of the system is that it simplifies taping of programs and allows shows to be recorded by program title.

The InSight system was selected by CableLabs after the research and development consortium had conducted a national study of potential program guide systems last year. The plan is for CableLabs and InSight to jointly develop jointly a product in the near future.

CableLabs President and CEO Dr. Richard R. Green said, "Our objective is to deliver an easy-to-use on-screen program guide that assists cable subscribers in finding and taping their favorite programs. We see this type of endeavor as an example of the type of service that the cable industry anticipates developing in the near future."

InSight Telecast President and CEO Michael Faber added, "We've all felt the frustration of trying to find our favorite program among the many printed guides and available channels. In addition, for many of us who switch from channel to channel to see what's going on, it has always been hard to determine what it is we are watching."

InSight Telecast developed the basic patented electronic guide product that operates with cable decoders, televisions and VCRs. The InSight system, first unveiled in

September 1990, promises to revolutionize the way TV viewers find recorded and playback television programs.

InSight is backed by Spelling Entertainment and Sumitomo Corporation. InSight has a long-term agreement with the Public Broadcasting Service to deliver the InSight product over the PBS Vertical Blanking Interval. The InSight television schedule is provided under a long-term agreement with TV Host and TV Listing.

CableLabs is a research and development consortium of cable television system operators representing more than 85% of the cable subscribers in the United States and 20% of the subscribers in Canada. CableLabs plans and funds research and development projects that will help cable companies take advantage of future opportunities and meet future challenges in the television industry. It also transfers relevant technologies to member companies and to the industry. In addition, CableLabs acts as a clearinghouse to provide information on current and prospective technological developments that are of interest to the cable industry.

Tribune Company
435 North Michigan Avenue
Chicago, Illinois 60611

TRIBUNE

Corporate Relations Department
312/222-3238
FAX: 312/222-1573

Press Release

TRIBUNE COMPANY TO INVEST IN INSIGHT TELECAST, INC.

CHICAGO, Thursday, January 23, 1992 -- Tribune Company today announced that it has made a minority investment in InSight Telecast, Inc., developer of a unique, new interactive subscription television listing service that facilitates television program selection and simplifies home VCR-recording. Financial terms of the agreement were not disclosed.

The InSight system features an interactive, on-screen television guide that allows subscribers to access program schedule information from the current moment to seven days in the future. InSight provides program information by start time, by program title, by channel, or by genre (such as sports, movies, children's programming or news), enabling viewers to search for programming according to their own priorities. This system also offers detailed descriptions of individual programs. Other attributes of the system include offering the viewer the ability to tape on a VCR any of the programs listed — whether current or future — with the simple push of one button. The InSight system will be received by specially equipped television sets, cable converter boxes, VCRs, satellite disk decoders or stand-alone set-top boxes.

"We have a very high regard for InSight's management and look forward to participating in the company's growth," Scott C. Smith, senior vice president/development said. "This unique and exciting new service will become particularly valuable as the number of cable channels serving each home increases."

Tribune Company joins InSight's team of corporate partners involved in the product's development and launch: Viacom International, Spelling Entertainment, Public Broadcasting Service and Sumitomo.

Tribune Company is a leading information and entertainment company. It publishes seven daily newspapers; operates six television and four radio stations; produces and syndicates information and programming; and manufactures newsprint.

InSight Telecast expects to announce its launch plans in the near future. The company is based in Palo Alto, California. It was incorporated in 1986.

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NEWS
FROM

VIACOM

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VIACOM INTERNATIONAL INC. ACQUIRES INTEREST IN INSIGHT TELECAST

New York, New York, September 25, 1991 -- Viacom International Inc. has acquired a 9 percent stake in InSight Telecast, Inc., with the right to increase that position over time. InSight is the developer of a unique, new subscription television service that facilitates television program selection and simplifies home-VCR recording and playback. In addition, Viacom and InSight have agreed to mutually develop a marketing and distribution program for the InSight system.

The InSight system features a state-of-the-art, interactive, on-screen television guide which allows subscribers to access program schedule information from the current moment to seven days in the future, thereby replacing the need for cumbersome printed guides. InSight provides program information by start time, by program title, by channel, or by genre (such as sports, movies, children's programming or news), enabling viewers to search for programming according to their own priorities. This system also offers detailed descriptions of individual programs. Other powerful attributes of the system include offering the viewer the ability to tape on a VCR any of the programs listed -- whether current or future -- with the simple push of one button. The InSight system can be received by specially equipped television sets, cable converter boxes, VCRs, satellite disk decoders or stand-alone set-top boxes.

-more-

-2-

Neil S. Braun, Senior Vice President, Corporate Development and Administration, Viacom International Inc. and Chairman, Viacom Pictures, said, "We think InSight is revolutionary. It is a consumer-oriented product that will make a remarkable difference in the way people view television, especially as channel capacity expands. The InSight electronic guide is a perfect complement to the expanding universe of programming choices offered by the cable industry."

John W. Goddard, Senior Vice President, Viacom International Inc. and President and Chief Executive Officer, Viacom Cable, said, "Viacom Cable is looking forward to adding this exciting product to the wide array of value-added services at our cable systems. With expanded channel capacity and viewing options, this service will dramatically simplify program selection and taping. It will not only facilitate the use of cable, it will enhance its perceived value by our customers."

InSight Telecast President and Chief Executive Officer, Michael W. Faber added, "Viacom's contributions to the success of InSight will be significant. Viacom is exceptionally adept at marketing to consumers premium television and basic cable services, such as MTV, Nickelodeon, VH-1, Showtime and The Movie Channel. This strength, combined with the Company's expertise in the cable systems and home satellite dish businesses, will enable us to develop a solid marketing program."

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-3-

InSight's demonstration system, now being tested, is surprisingly simple in both concept and operation, as a result of the company's active market research work with consumers in eight U.S. cities, cable operators, and recently with Cable Television Laboratories, Inc. (CableLabs).

CableLabs recently announced that it is assisting InSight in developing the InSight product for cable. At the time of the announcement, CableLabs President and Chief Executive Officer, Dr. Richard R. Green, said, "Our objective is to deliver an easy-to-use, on-screen program guide that assists cable subscribers in finding and taping their favorite programs. We see this type of endeavor as an example of the type of services that the cable industry anticipates developing in the near future."

Viacom joins a growing list of corporations involved with InSight's development: Spelling Entertainment, Sumitomo, Public Broadcasting Service, and TV Host/TV Listing. Manufacturers of InSight products will be announced in the near future.

-more-

Insight Telecast, Inc., a privately held company based in Palo Alto, California, has been developing its patented technology for six years and first announced it publicly in 1990.

Viacom International Inc. is a diversified communications and entertainment company with headquarters in New York City.

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A Subsidiary of the
Public Broadcasting
Service

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Press Release

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PBS NATIONAL DATACAST TO DELIVER ON-SCREEN TV LISTINGS THROUGH INNOVATIVE DATA TRANSMISSION SYSTEM

NEW YORK, September 11, 1990 -- PBS NATIONAL DATACAST, a subsidiary of PBS Enterprises, and InSight Telecast today unveiled a revolutionary on-screen TV schedule/recording system that greatly simplifies VCR recording and playback. The innovative system combines NATIONAL DATACAST's vertical blanking interval (VBI) data delivery system with InSight's television schedule information subscription service.

The system, expected to be available nationally in the 1st quarter of 1992, will provide subscribers with detailed on-screen TV program schedule information listed by day, time, genre or topic; one-touch, automatic VCR programming; and an automated system for easy retrieval and playback of recorded programs.

Under a NATIONAL DATACAST-InSight Telecast agreement, InSight will send the program information, formatted for each television market by TV Listing, Inc., to PBS's Alexandria, Va., headquarters. DATACAST will encode the information and insert it into the VBI of PBS's national program schedule. The information will be uplinked to a PBS transponder on the WESTAR IV satellite, transmitted to local PBS member stations, where it will be extracted from the satellite signal and inserted into the VBI of the station's broadcast signal, and received at subscriber's home on a new generation of InSight equipped VCR's and TV sets.

NATIONAL DATACAST has been using the largely untapped vertical blanking interval -- the black bar seen when TV pictures roll -- for point-to-multipoint data communications since 1984. Among the other data delivery applications of DATACAST's VBI system are credit information, time-critical information such as stock quotes and news, private electronic mail services, computer software, graphics and high-resolution pictures, electronic billboards and signs, and electronic publications.

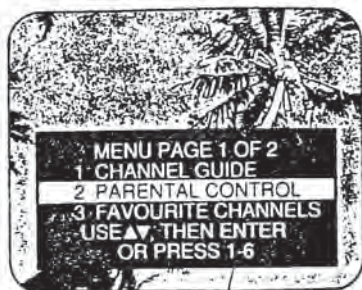
"We're very excited about providing the information highway linking InSight's ground-breaking television recording system and the 64 million homes with VCRs," said Neil B. Mahner, chief executive officer of PBS NATIONAL DATACAST. "This venture takes full advantage of the many benefits our VBI delivery system offers organizations needing a swift, easy and cost-effective means to distribute data to homes and businesses."

PBS Enterprises, the for-profit subsidiary of the Public Broadcasting Service (PBS), was established in 1985 to generate revenue for PBS and public television through the marketing of technical facilities and expertise, including NATIONAL DATACAST. PBS is the national membership organization for 338 of the nation's public television stations.

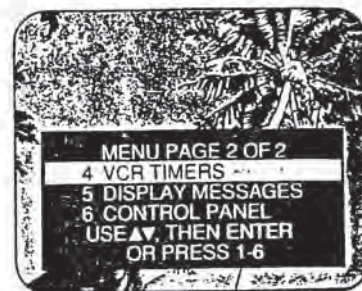
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Jerrold INTERCON® 700 Series **Model ICFT 2000**

Band Addressable Converter **With On-Screen Display**



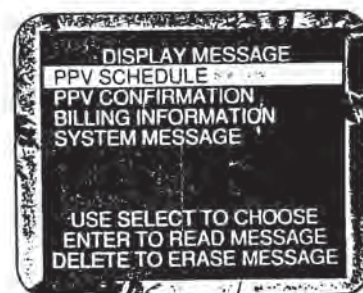
MAIN MENU



MAIN MENU



CHANNEL GUIDE



MESSAGE DISPLAY

IMPULSE, ENHANCED BASEBAND SCRAMBLING AND ON-SCREEN DISPLAY

FEATURES

- ON-SCREEN DISPLAY
- UNMATCHED BASEBAND SCRAMBLING
- DIN STEREO COMPATIBILITY
- ELECTRONIC PROGRAMME GUIDE CAPABILITY
- NICAM AND TELETEXT COMPATIBLE
- TWO-WAY UPGRADABLE

The Jerrold ICFT 2000 is a 550 MHz impulse-capable international baseband converter with consumer-friendly on-screen display programming capability and the unmatched scrambling security of baseband technology.

SUBSCRIBER FEATURES

The on-screen display feature is sophisticated, yet easy to use. Multi-coloured, simple-format menus and help message screens walk subscribers through even the more complicated converter functions, such as VCR timer programming and parental codes. It also includes purchasing PPV events and can even delete unwanted events.

Channel I.D. When a subscriber changes channels, the on-screen display shows the channel number and name. It also indicates whether or not the converter is locked, parentally controlled or tuned to a favourite channel.

Volume Control Bar. When a subscriber presses the volume up/down key, the volume control bar appears on the screen. The bar's movement visually shows whether the volume has increased or decreased. Subscribers with stereo televisions or VCRs receive and enjoy stereo programming because the ICFT 2000 passes NICAM stereo signals.

VCR Timers. Subscribers can programme up

to eight events over a 365-day period. The ICFT 2000 makes it possible to programme events on a once, daily, weekly, weekday or weekend basis. It is also easy to review an correct already-programmed events.

Parental Control. The on-screen menus make it easier to activate and deactivate parental controlled channels. The lock and key symbol and parental control barker messages remove any doubt whether the parental control feature is in use.

Subscriber Control Over Display Feature. Research has shown that subscribers have different preferences for either a clear or solid menu background. The ICFT 2000

Jerrold INTERCON® 7000 Series Model ICFT 2000

Baseband Addressable Converter With On-Screen Display

allows the subscriber to change the menu background to a clear, partial or solid screen, depending on personal preference. They can also adjust the centering of menus on their televisions.

Remote Controls. The ICFT 2000 comes with a choice of three special remote controls—the TVRC-IOSD, MRC-OSD and the IN-VIEW. The TVRC-IOSD and MRC-OSD are feature-rich. Special keys have been added to control the on-screen display. The TVRC-OSD keypad uses colours to facilitate use. The TVRC-OSD remote control allows subscribers to turn the television on and off and control the TV's volume in addition to controlling the converter. The IN-VIEW is a limited function remote control that uses only 10 keys to control the converter's volume, power, channels and most of the on-screen display functions. The IN-VIEW's yellow colour and green wrist strap make the remote control easier to keep track of.

• OPERATOR FEATURES

The ICFT 2000 provides multiple screens of message space that operators can use to notify customers of important information. These screens can be used to verify customer appointments, remind customers of service changes or disconnect dates, and explain service outages. Notifying subscribers of weather hazards in the area is another example of how the operator can use this feature.

In addition, the message screens can serve as promotional tools, advertising upcoming pay-per-view events and services and limited free pay TV viewing, as well as important community events. They offer the potential for other creative revenue generating ideas, such as targeted advertising. Using the ICFT 2000, operators can send messages to specific subscribers, to a group of selected subscribers or to the entire subscriber base. Messages can be customer-designed with Jerrold's unique message editor, allowing operators to tailor their messages to suit specific needs.

• BARKERS

The ICFT 2000 comes with two types of barkers—converter-activated and operator-activated—allowing flexibility for operators who wish to guide subscriber viewing. All barker messages can be edited by the operator.

Converter-Activated Barkers. Besides providing video off-tuning, the operator can choose a character-generated message explaining why a channel is off limits and what steps are necessary to change this (unlock the converter, order the PPV service, etc.).

The ICFT 2000 offers six converter-activated barkers, four standard barkers (parental control, impulse pay-per-view, unauthorised pay and disconnect) and two optional barkers (turn-on that appears each time the subscriber turns on the converter and out-of-credit). These barkers are found in the channel map.

YOU HAVE BEEN AUTHORISED
FOR THE FOLLOWING EVENTS

12/25 "IT'S A WONDERFUL LIFE"
20:00 CH08

01/06 HOLYFIELD VS FOREMAN
22:00 CH36

Operator-Activated Barkers. These appear only on scrambled channels that subscribers are authorised to view. The operator can use these to verify purchase of PPV events and services or to provide movie/event-specific information (moving running time or movie description). Operator-activated barkers can be programmed and sent on a specific scrambled channel to an individual subscriber, a group of subscribers or the entire subscriber base.

• DOWNLOADABLE SYSTEM PARAMETERS

Downloadability gives the cable operator greater control and ease of operation. Using the ACC-4000 or the AH-4/4E controller, the operator can download such features as subscriber address, system site code, geographic code, output channel, barker channel, timeout period, custom channel assignment and input channel frequencies.

This downloading capability provides operator benefits such as centralised control over system functions, simplification of the installation process and reduction of inventory requirements. The software-selectable output channel capability enables the operator

to easily switch between different converter output channels. The 3/4 output channel allows for compatibility with subscriber VCRs so subscribers need not tune to one channel to watch TV and another to use the VCR. The output channel range 46-60 (UHF) is also available for PAL-I. This helps reduce inventory requirements by allowing interchange of converters between systems.

• IMPROVED SIGNAL SECURITY

Model ICFT 2000 descrambles Jerrold's modes of dynamic video inversion coupled with dynamic sync suppression. It also offers audio privacy. Jerrold's baseband scrambling scheme offers the most secure signal in the cable industry today, protecting operator investments in expensive pay and special event programming.



• ELECTRONIC PROGRAMMING GUIDE (EPG)

The operator can use the ICFT 2000's in-band and out-of-band message capability to provide programme guide information to subscribers. The ways of presenting this type of information, and the type of information presented, are many. Examples of EPG information include move and/or programme-specific descriptions of current and/or future programmes or movies. Schedule information is another possibility. Events/programmes in a specific period could be organized by subject matter.

• TWO-WAY UPGRADABILITY

The ICFT 2000 is upgradable to two-way operation using Jerrold's STARVUE® internal module. The ICFT 2000 lets operators offer push-button impulse pay-per-view programming to subscribers without expensive rework.

Jerrold INTERCON® 700 Series **Model ICFT 2000**

Band Addressable Converter **With On-Screen Display**

SPECIFICATIONS

MODEL	ICFT 20★# ★ - 1 = 1 way; 2 = 2 way # - Output channel 3 = VHF Ch. 3/4 6 = UHF Ch. 46-60	Isolation (Input/Output)	70 dB min.
Input Frequency	46.75-552 MHz (excluding data carrier frequency)	Differential Gain	10% (max.)
HRC/IRC Frequency Assignments	Downloaded	Differential Phase	10 degrees (max.)
Number of Channels	62 PAL I - 8 MHz 72 PAL B - 7 MHz	Scrambling Method	Gated Sync Suppression or Dynamic Gated Sync Suppression, Video Inversion, Audio Privacy.
Dual A/B Cable Switching	Optional A/B switch (field upgradable)	On-Screen Display	Character Size: 12 x 18 pixels Screen Size: 12 rows x 24 columns Message/Barker Capacity: 14 pages Channel Descriptors: 4 characters, maximum
A/B Cable Indicator	LED in front display	Parental Control by Channel	100% user-controlled offering channel-by-channel selections
Input Video Level	0 dBmV to +15 dBmV	Mechanical Security	Std.: security screws; security pin; uni-chassis construction
Input Sound Level	10-14 dBc	Downloadable Parameters	Output Channel Initialization Command Terminal Logical Address System Site Code Time Out Period Terminal Configuration Authorisation Information Barker Channel(s) Consumer Feature Enable/Disable Subscriber Messaging Channel Descriptors Channel Cross Reference Map Decryption Key
Data Carrier Frequency	FSK Modulated FM Carrier 122.7 MHz	Two-way System Compatibility	Upgrade in field by addition of STARVUE™
Bandwidth Level	± 200 KHz standard FM -15 dBmV	Operating Temperature Range	15°C to 40°C
Video S/N	48 dB @ 0 dBmV input level	Operating Humidity Range	5% to 95% (non-condensing)
Output Frequency Accuracy	± 100 KHz	AC Voltage	216 VAC to 264 VAC, 50 Hz
Stability	± 20 KHz	Power Dissipation	20 Watts at 264 VAC
Return loss: Input	6 dB min.	Surge Protection	Surge protection provided on power supply and RF ports
Output	6 dB min.	Size	260.4 mm x 209.6 mm x 68.6 mm (LxWxH)
Spurious: Output	-57 dB max., in band	Weight	2.7 kg
Cross Modulation Distortion	-57 dB (PAL I-62 channels; PAL B-72 channels each @ +15 dBmV)		
Composite Second Order Distortion	-57 dB (PAL I-62 channels; PAL B-72 channels each @ +15 dBmV)		
Second Order Distortion	-64 dB (@ +15 dBmV input level)		
Composite Triple Beat Distortion	-57 dB (PAL I-62 channels; PAL B-72 channels each @ +15 dBmV)		
Converted Input Beats (With all Input Signals)	-25 dBc (PAL I-62 channels; PAL B-72 channels each @ +15 dBmV)		
Hum Modulation Distortion	AM - 60 dBc FM - 20 KHz		
Output Level	10-15 dBmV		

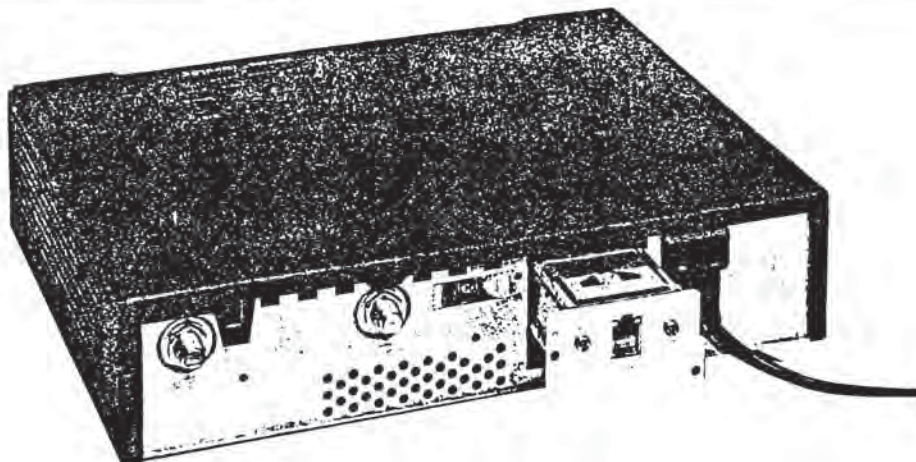
NOTE: Specifications subject to change without notice.

HANDHELD REMOTE CONTROL

MRC-QSO	Up to 7.6 metres in a direct line from the receiver/converter or up to 6.7 metres at an angle of ± 20 degrees from receiver center line	Power Requirements	Two 1.5 Volt IEC Type R03 batteries
Transmission Range		Weight	85 grams (with battery)
		Batteries	Included as standard

NOTE: Specifications subject to change without notice.

Jerrold Intercon Ltd. 1994



ECONOMICAL IMPULSE MODEM FOR ONE-WAY SYSTEMS

FEATURES

- IMPULSE ORDERING
- INCREASED REVENUE OPPORTUNITIES
- TELEPHONE NETWORK RETURN PATH
- SUBSCRIBER SELECTED ACCESS CODE
- PROGRAMMABLE CREDIT LIMIT
- FIELD UPGRADABLE

The Jerrold STARFONE unit allows one-way addressable systems to offer impulse pay-per-view events using IMPULSE 7000[™] Series addressable converters. STARFONE is the cost-effective way to expand from one-way addressability to a two-way communications network.

STARFONE is packaged as an internal module for IMPULSE 7000 Series converters.

The STARFONE IPPV system employs the cable system for downstream communications to subscribers' homes and a telephone return path for upstream communications. The store-and-forward technology used in the STARFONE system permits instant authorization of subscriber terminals while a programmable credit limit enables operators to restrict the maximum purchase limit for each subscriber.

After the subscriber has keyed in a purchase, the information associated with the event, including service code, date and time, is automatically stored in the tamper-resistant, non-volatile memory. A Jerrold addressable controller collects this data from the addressable terminals and periodically transfers the information to the billing computer.

STARFONE, with its impulse pay-per-view capability, offers a new source of revenue for one-way addressable operators without incurring the costs of installing a two-way distribution plant.

• IMPULSE PAY-PER-VIEW

Subscribers can choose programming before, during or even after an event has begun according to system operator wishes and without the direct intervention of the cable operator. This reduces system operating costs, while offering new ways to increase system revenues.

• INCREASED REVENUE OPPORTUNITIES

In addition to impulse pay-per-view, STARFONE allows one-way addressable system operators to offer other services such as shop-at-home.

• TELEPHONE NETWORK RETURN PATH

By employing the existing telephone return path for upstream communications, the STARFONE system reduces overall operating expenses. STARFONE helps an operator avoid the cost of return data electronics and is also less expensive to maintain than a two-way distribution plant.

• SUBSCRIBER SELECTED ACCESS CODE

A unique subscriber access code eliminates unintentional selection of events while the LED display tells the subscriber when an event is available for purchase.

• PROGRAMMABLE CREDIT LIMIT

A credit limit programmed into each subscriber's terminal helps control accounts receivable and protects system revenues by denying purchases to subscribers who have exceeded their credit limit.

• FIELD UPGRADABLE

An economical add-on unit, compatible with the IMPULSE 7000 Series, the STARFONE IPP system allows operators to upgrade one-way addressable systems to two-way capabilities without replacing existing equipment.

**Jerrold IMPULSE 7000 Series
Model CFT 2000**

**82-Channel Addressable
Baseband Converter
With On-Screen Display**

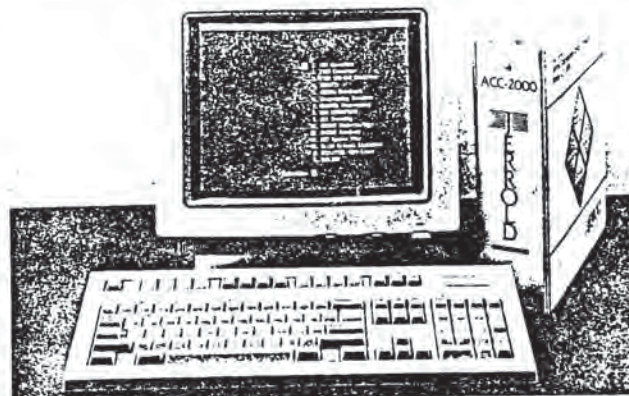
**SPECIFICATIONS (Continued)
JERROLD IMPULSE MODEL CFT 2000
HANDHELD REMOTE CONTROLS**

MPC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line	Power Requirements Weight Batteries	Two 1.5 volt AAA batteries 3 ounces (with battery) Included as standard
TVRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line	Power Requirements Weight Batteries	Four 1.5 volt AAA batteries 10 ounces (with battery) Included as standard

NOTE: Specifications subject to change without notice.

Jerrold STARCOM Model ACC-2000

Addressable Control System



ECONOMICAL ADDRESSABLE CONTROL SYSTEM

FEATURES

- CONTROLS UP TO 32,000 CONVERTERS
- MULTI-USER/MULTI-TASKING OPERATION
- AUTOMATED CHANNEL CONTROL
- STARFONE IMPULSE MODULE CONTROLLER

The Jerrold Addressable Control Computer (Model ACC-2000) provides central control of individual subscriber services. The ACC-2000 system includes the computer, associated peripherals and a state-of-the-art software package.

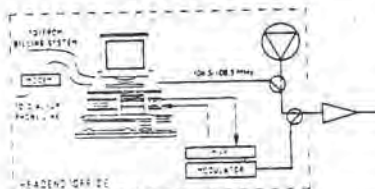
The ACC-2000 is the heart of the addressable system, whose components include the addressable converter, descramblers, data path equipment, scramblers and the addressable control computer. Located at either the office or the headend, the ACC-2000 can authorize specific program material or a group of programs for all one-way converters or for STARFONE-equipped converters installed within the cable system. Also, the ACC-2000 will support DCR tuners.

MODEL ACC-2000

The addressable system transmits two types of information to the converter.

- A unique identification code carried within each scrambled channel (service or tag) to identify specific programs or groups of programs. The scrambler encoder on each secured premium channel transmits this information.
- An authorization message for each converter installed in the system. This message lists service codes (tags) authorized for every individual converter. A separate RF carrier transmits the message for each address.

These two signals are compared by the converter. If there is a match between the two, then the converter's descrambler operates. Conversely, if a match is not received, the subscriber is not allowed to



receive the program. The ACC-2000 maintains the list of addresses and their individual authorizations.

ONE WAY CONTROL

The ACC-2000 provides an economical means to control one-way subscription services and impulse ordering data via the telephone return path. The standard configuration controls up to 32,000 addressable converters.

The enhanced 80X86 computer is the base for the ACC-2000. The standard configuration includes a 52 MB hard disk drive, 3.5-inch and 5.25 inch floppy disk drives and a 4 MB of internal RAM memory. The base 80X86 computer is a 16-bit machine operating at an internal clock speed of 20 MHz. The ACC-2000 includes a color VGA monitor, eight-port multiplexor, diagnostic modem, and a custom Jerrold Communications cable interface.

The system supports an interface to a billing computer or may be operated in a stand-alone mode. The billing interface, also known as the wirelink, uses the same format as the Jerrold AH-4E or AI-O controller. In a stand-alone mode, the subscriber data base may contain optional specific information on each subscriber, including account number, name, address and phone number. Any of these data base keys can be used to generate reports.

OPERATOR FRIENDLY

The user-friendly software requires no special computer knowledge. Subscriber information is entered or changed through one or more operator CRTs. Automatic default values for entries that

seldom change keep data entries minimal. A full converter data base includes authorized channel packaging, pay-per-view events, channel mapping, converter status, Barker channels, time-of-day broadcasts and converter feature enable/disable records.

Information contained within the ACC-2000's data base is continuously transmitted to converters by the cable interface board, which formats and transmits the addressable data stream. The cable interface contains an RF data modulator that can be switched to either 106.5 or 108.5 MHz. The ACC-2000's cable interface board also contains baseband data input and output ports for communicating to either remote headend locations or remotely controllable MVP scramblers.

ACC-2000 SOFTWARE

The ACC-2000 software is Xenix™-based, providing a multi-tasking multi-user control system. The password-controlled user software organizes into two operational modes on- or off-line. The on-line mode controls all converter addressing functions, initializations, access to converter and subscriber information, impulse pay-per-view event schedules and MVP channel programming functions. The off-line mode allows creation and restoration of data base files and definition/modification of system-wide configuration information.

IMPULSE ORDERING

The ACC-2000 provides an effective impulse ordering management system. Standard dial-up phone lines from Jerrold STARFONE-equipped converters collect store-and-forward impulse purchases. STARFONE data collection modems are optional with the ACC-2000. Purchase information is collected and stored in a batch file for transfer to the host billing computer over the wire link. The ACC-2000 allows schedules for multiple impulse pay-per-view channels to be entered via a modem.

JERROLD
COMMUNICATIONS



Animatrix, Inc. • 120 Hawthorne • Palo Alto, CA 94301 • 415 322-4101

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Marney Morris
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FOR IMMEDIATE RELEASE

Animatrix Commissioned for Gorbachev Gift

PALO ALTO, Ca. June 5, 1990 - Animatrix was commissioned by Apple Computer to create a computer based presentation for President and Mrs. Gorbachev during their visit to San Francisco this week. The color presentation, intended to provide the Gorbachevs with a special remembrance of their visit, was displayed on a Macintosh IIfx computer donated by Apple. The hardware and software were formally presented as a gift from San Francisco Mayor Art Agnos on Monday, June 4.

Music for the presentation was donated by jazz luminary, Herbie Hancock. Photos in the presentation included work by Barrie Rokeach from 'California from the Air-Timescapes', Charles O'Rear from 'High Tech', and images from Collins Publishing's 'A Day in the Life of California'.

The presentation references the Gorbachev's summit trip itinerary. An animated plane departs from Moscow and touches down in Ottawa, Washington D.C., Minneapolis, and San Francisco. The animation then zooms into the San Francisco Bay Area and displays images that capture the economic and cultural diversity of the area.

The Presentation, with the text in both Russian and English, ends with an animated earthrise and the words:

"From our people to your people. One World"



Animatrix's Marney Morris



Broderbund staff

on the desktop. The next step is to lower the learning curve and have more do-it-yourself tools to provide multimedia for the rest of us, that you can run on these new digital players. You can bet we're working on that."

Digital designers: new technology, new skills

Although the technology may make it possible for businesses to create their own digital information applications, many companies may not want to invest time or energy in the process. That has opened up new opportunities for digitally savvy graphics designers and video producers, who have expanded into multimedia design.

Animatrix of Palo Alto has been in business as an interactive design firm since 1984. The key to success in this new digital design services market is not so much mastering specific technology, says Marney Morris, Animatrix president. "We believe it's the fact that people can interact with the machine, and there is a whole design area associated with that."

Taking these design principles and turning them into successful applications is a job for which Animatrix' clients are willing to pay top dollar. The firm's clients include the Limited Express, Eastman Kodak Co., Apple and Domino's Pizza, for which it put together "a company-wide information system for computer-hostile people."

JOHN SCULLEY INTERVIEW

unique in the computer industry. I don't think you can find that with IBM, or AT&T or Hewlett-Packard or names that have been very successful for commercial products but aren't particularly looked at as consumer names.

CB: As former head of Pepsi, are you looking forward to returning to the consumer industry?

JS: When I was hired by Apple, the expectation was that the personal computer business would be a consumer business. It never turned out that way because there were actually billions of dollars lost with companies who tried to make it a consumer business. The technology wasn't ready.

Commodore was larger than Apple. Atari was larger than Apple. There were companies like Mattel that were going into the computer business. Texas Instruments was building consumer products. IBM tried with the PC Jr.

Even though I came from the consumer world, I said this was not the place for Apple to be in the 1980s. Many things have changed since then. The technology has become much more advanced and able to do things non-technical people are interested in, such as video and animation. The idea of miniaturized products was only a dream 10 years ago. Things that were technically impossible ten years ago are now possible today. It's an incredibly exciting time.

CB: Two years ago there were questions about your qualifications to lead Apple. Now you're back. What have you learned from the experience?

JS: Two years ago I took over product development myself. And people said, "What is this marketing guy doing taking over product development?"

What I learned is that I should have done it a lot sooner. In a computer company, the place you can have the greatest influence on the direction of the company is through the technology and the products. Even though I was a marketing person most of my life, I believe I can have far more influence on Apple's directions by leading its technology.

Morris, who employs six full-time designers and eight contractors on a regular basis, believes that anyone interested in starting a multimedia design firm must have a skill set that includes the ability to think a problem through to the end.

"Most people just think it through until it's not interesting anymore," he says. "They should also have real good visual skills, good understanding of typography and graphic design and be observant. They say the best horsemen are people who like to lean on a fence and look at the horses. If you can look at an interactive



Examples from
the Voyager Co.'s
interactive books

presentation and appreciate it for what it tries to do, then everything else will fall into place."--

Content providers: the South

For many consumers, the closest they may get to digital information applications in the near term are kiosks at the local mall. But several publishers are hoping that will change when portable PDA-like digital information players become the next great consumer gadget behind audio CD players. Apple's Sculley believes the consumer market will buy into PDA-like players in a big way "definitely by 1995."

Warner New Media of Burbank, The Voyager Company of Santa Monica, Broderbund Software of Novato, LucasArts of San Rafael and San Diego-based Verbum magazine are just a few of the new content-providers who are gambling along with Apple and Sony. These companies have already begun publishing interactive books, films, audio and educational information on CD-ROM and videodisc.

"I know these are the early days. We try hard. We endure pain. In the next couple of years, it's going to be quite possible to make a living doing this," says Stan Cornyn, president of Warner New Media. The division of media conglomerate Time-Warner produces CD audio titles with additional tracks of computer text and

JOHN SCULLEY INTERVIEW

CB: How do you feel about the phone companies getting into the information business?

JS: It's terrific. We are really excited about the fact that the phone companies will get into information services. It's extremely important. The phone companies today sell cellular telephones because they have a service business behind it. We see a similar thing for personal digital assistants. The phone companies are going to want to have devices they can deliver their information services over that will be far more capable than today's telephones, because you can't do video, animation, text or graphics over today's telephones.

CB: In some of your most recent speeches, it sounds as though you are offering a broader, almost political vision?

JS: I think the politicians are doing a pretty lousy job of running the country. Very few of them have recognized that it isn't about the end of the superpower era, but it's about the beginning of a new economy. But there is almost a complete lack of understanding by almost all the politicians on how much of today's problems could be addressed by paying attention to technology, which by the way other countries are paying a lot of attention to.

America is incredibly unprepared to compete in the new economy, which is global and it's dynamic and it's information intensive. We aren't building any of the underpinnings to succeed in this new economy as we did to succeed in the industrial economy. If the interstate highway system was key in the 1950's, if network television was key, if national newspaper and magazines were important, what's the equivalent for the 1990s. I think many things can be dramatically improved by better utilizing a technology infrastructure.

You could have schools without walls. You could have libraries connected to schools electronically. You could reach out to rural areas where it's not cost-effective to deliver language training or math training to students. You could reach into the inner city where kids are getting isolated, and give them an entirely different education than they have today.

graphics. Until it does turn profitable, Warner New Media, which has been in business since 1987, has been subsidized by its parent company, Cornyn says, because it knows the potential is there.

"People who have been exposed to it say it's a miracle. Their only experience with interactivity has been on a game level, and that's limited to the Nintendo crowd," says Cornyn. "We keep praying that the people will not have to boot disks, just put the disc in a computer or TV set and pick up the mouse or remote control."

He is convinced that "CD-ROM for the consumer will be an



A USER'S VIEW ■ BY JERRY POURNELLE

Easy-to-Use Systems Linked to Hosts the Key to Productivity

This was the most productive quarter of my life: I kept up with my columns, made four major speeches, attended the annual meetings of the American Association for the Advancement of Science, CASE World, and the National Engineering Consortium; Larry Niven and I turned in *Fallen Angels* (Baen Books in June); Steve Stirling and I finished *Go Tell the Spartans* (Baen Books in May); I've turned in *War World III*; and I've finished a major article about 2041 for *The World and I* magazine.

All of which is to my credit. But more to the point, it is physically possible only because of small computers. I hated carrying the 18-pound Zenith SupersPort SX on airplanes, but it sure is nice to have Q&A and databases, Grand View, Word Finder, InfoSelect, and the other tools I use all the time with Desqview.

I was recently in Phoenix, Arizona, as a keynote speaker for the National Engineering Consortium, which I confess I'd never heard of, but I should have.

The National Engineering Consortium (303 E. Wacker Drive, Suite 740, Chicago, IL 60601; [312] 938-3500) has been around since 1944, and it supports itself largely through putting on conferences such as the Future of Communications session I just attended in Phoenix.

Fellow speakers included the director of the Bureau of the Census, speaking on population trends; Air Force physiologists on effects of electronic fields on health; Bell Labs scientists on future chip technologies; and so forth.

Now it may be that everyone in Silicon Valley knows about the National Engineering Consortium and if so I apologize. But I suspect that most of the key players in the micro world don't know.

The Consortium has plenty of computer people, but they're mostly mainframe and big mini types, senior scientists, and "suits" who don't interact much with microcomputer people. All of which is a pity, because both groups have a lot to learn from each other.

What we can learn is some good forecasting techniques. What they can learn is that much of their future is here, in our business.

One of the most impressive — and best attended — talks was by Marjory Morris, president of Animatrix Inc. (120 Hawthorne, Suite C, Palo Alto, CA 94301; [415] 322-4101). Animatrix does custom work, including interfacing for micro computers. They did the Farallon advertisements, including the silent ones shown in Japan — a pantomime of what Farallon does (connecting two Macintosh computers) using Japanese symbolism.

Morris' people personalized the Macintosh presented to President Gorbachev during his trip to Silicon Valley.

Her most interesting project was the national database system for Domino's Pizza. Animatrix used Hypercard stacks to build a database on local Macs, then figured a way to link the local machines to the national mainframe. Now every night the national system updates the local Macintoshes; the data are stored locally

Jerry Pournelle is a noted science fiction writer and computer columnist. The views expressed are his own.

until the next update, and there's instant access through the Animatrix-designed interface.

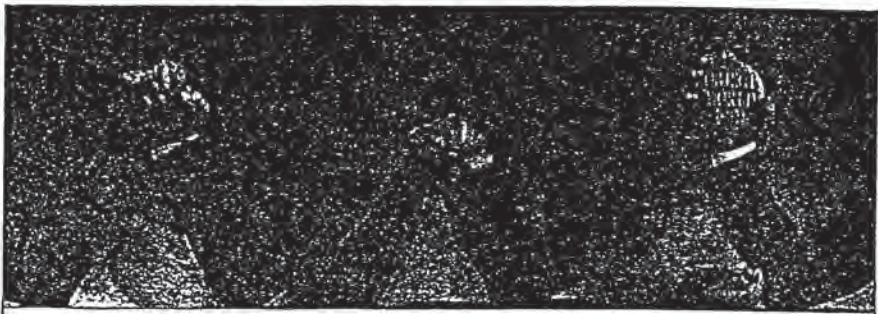
Using it is surprisingly simple, but the information can get quite complex. You can, for instance, get a "baseball card," complete with photograph, of every employee in the Domino System; figures

to compare how your pizzeria is doing compared to others in the region; and so forth.

At the moment, the best examples of easily built, easy-to-use systems that link images, databases, and spreadsheet capabilities are for the Mac; but that's changing. If you're interested in building

that kind of system for a PC, look at Mind's Eye (Mind's Eye Inc., 18 Shangri-La Drive, Lexington Park, MD 20653; [301] 862-1944, [800] 622-6746).

I came away from the National Engineering Consortium conference convinced that the future isn't what it used to be.



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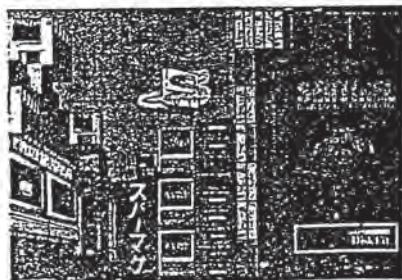
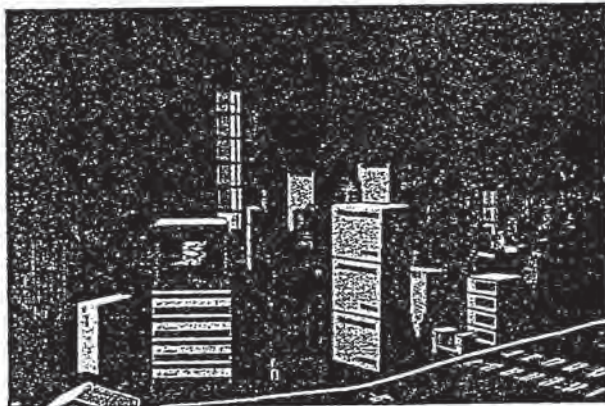
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The song-and-dance Mac

GA looks at four producers busily at work on interactive presentations.

DAVID HINGSTON/ALAMY



BY JAMIE KRUTZ

The song-and-dance man was one who caught our eye, made us feel good, made us notice him. These days in the business environment, that song-and-dance guy is going electronic. When it's time to put on a show, people are realizing that the Mac can sing and dance.

Video productions in the business community are commonplace and often elaborate; numerous Fortune 500 companies have their own closed-circuit TV stations and advanced video production facilities. Slide shows get expensive — and expensive — when 10 or 20 slide projectors produce a multi-image display. Now enter the computer as competition with these other media.

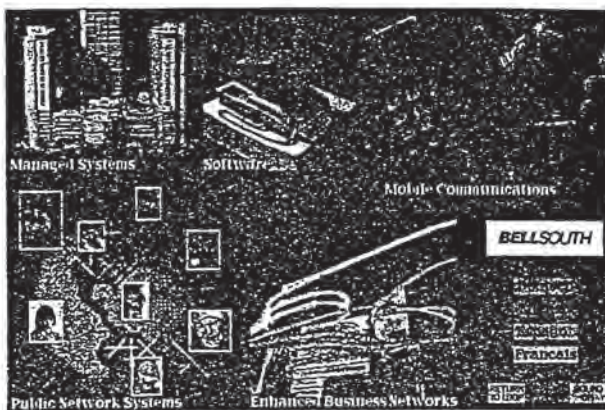
More and more video producers are turning to the computer, and computer producers are finding they can bring real-world video into their computer productions. In a variety of configurations producers are using pictures from optical disks; capturing videotape images; transferring tapes, videodisks, flat art and photographs; and combining them with CD-ROM sound samples, MIDI synthesizers and real-world noises recorded into the Mac. Many call this song-and-dance multimedia.

What's in a name. According to Jim Armstrong, Apple's Multimedia Evangelist, multimedia involves using "more than one medium" easily and interactively for the dissemination

In the SuperMac vision of New York City, circuit board buildings glimmer as floppy disks fling themselves into their drives. The antenna emits circles and the mouse cable pulses.

With a horizontal wipe up from the bottom, ordinary Tokyo buildings are transformed into SuperMac monitors, disks and Macintoshes.

Marney Morris, president of Animatrix, top.



Above, the BellSouth presentation was produced with VideoWorks Interactive. This is the interactive screen that follows a lively opening animation; you choose which areas of communications you wish to explore and in which language.

"BellSouth" opens with a hand holding an optical fiber. Light flickers to the end of the fiber, becomes a circle and then a rotating planet. Tiny pictures of communications hardware and text emanate from the planet in cascading patterns. The planet disappears and the elements coalesce into a box that rotates and becomes the BellSouth logo. A wipe effect is used to start the loop again; a mouse click brings you to the menu above.

Stuart Sharpe, producer of the BellSouth demo.

of ideas through "non-print publishing."

Some producers of multimedia productions, however, choose differing definitions. "I've never used [the term multimedia] for what I'm doing," said Josh Rosen of Meta Language of San Francisco. Rosen prefers to call himself a "hypermedia designer." "Multimedia reminds me of 10th-grade filmstrips."

"I think multimedia is a bad word to use," said Marney Morris, president of the Palo Alto, Calif.-based design firm Animatrix. "Interactive multimedia is a lot closer. As you look at the development of communications, the significant advance with computers is interactivity."

Marc Canter, company chairman and product visionary of MacroMind, said he likes to add "size" (as in sizzle) to presentations. "You have to have a good buzzword, and I don't think it's been answered yet." Canter also offered the terms "desktop video, interactive learning and business learning" when describing what can be done with VideoWorks II.

MacroMind not only makes VideoWorks II and other software for Macintosh animation, it is also a production company that creates interactive presentations for clients.

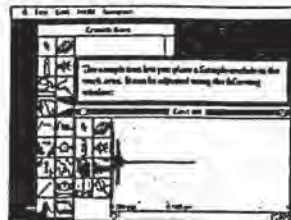
Let's dance. There are always those who are first on the dance floor. In the computer world. Continued on Page 24



Josh Rosen, producer of "TurboSynth" demo.

(Right, above) You click on representations of TurboSynth's icons to see what they do. In the sample icons, the demo opens a window that simulates the actual program. Text explains the icon's purpose.

(Right, below) TurboSynth lets you build sounds by connecting synthesizer modules graphically on screen. The demo includes digitized audio illustrating how modules affect the sound. By clicking on a module, you can hear what it does.



Continued from Page 22

their counterparts are the producers who for several years have been making presentations with existing elements of interactive multimedia, people eager to use new technologies.

Animatrix is "an interactive design house that does computer animation," said Morris. The company's client roster includes Aldus, Lotus, Microsoft and Apple. The familiar guided tours that come with the Mac SE and Mac II are Animatrix-born.

"We tend to leverage our jobs so that they are pushing the technology for us one way or another," Morris said. "We're not only getting paid, but we're learning something new we can apply to what we're doing."

One Animatrix project, shown here, was a trade show demo for SuperMac Technology, which wanted to highlight PixelPaint and big-screen color monitors. The company was willing to give Animatrix a lot of leeway: Morris and her crew flew with it. This production takes the viewer on a tour of international cities from a distinctly SuperMac perspective. Starting from the trade show site in San Francisco, you travel to New York; Sidney, Australia; Tokyo; Paris; and London. In each city, SuperMac products take over the landscape: In New York they become the skyscrapers, in London they turn into barges that float down the Thames. A section added for the Macworld Expo in Boston last August has astronauts carrying SuperMac products on space walks.

The demo runs on a Mac II with five Mbytes of RAM and a 19-inch monitor. Many images were scanned in with the Howtek Scanmaster 35 color scanner, and painting was done in PixelPaint. The astronauts were captured with the use of a Data Translation frame-grabber board from a videodisc of NASA footage. An original soundtrack by Greg Shaw runs on a separate audio tape. "We started the project two months before January 1988's Macworld and finished it one hour before the show opened," Morris said.

Morris works with clients and does the creative direction. Her team goes through a design phase, then "gets things on-screen as quickly as possible." They have more design meetings, creating alpha and beta versions before arriving at the final product. "You have to be compulsively busy to do a good job," she said.

While Animatrix uses VideoWorks Interactive and VideoWorks II for their animation, Morris said: "We see a conflict with Macromind being both a production house and a supplier of tools to other production houses."

The firm also uses HyperCard with its own external commands (XCMDs) and is developing proprietary in-house software. Animatrix is currently working on projects using the new possibilities of 24-bit color, including a demo with Digidesign.

"We're using sound and graphics together

to demonstrate state-of-the-art technology, their sound, our graphics and 24-bit imagery.

"Right now things move pretty slow with 24-bit animation. We're doing a lot of animation tests. When we figure out what's going to work the best we'll leave a lot back in the archives. It's going to be fun," Morris said.

European dance craze. BellSouth International had a challenge: to come up with an exciting multi-language presentation for a big European trade show.

"We looked at a lot of equipment and talked to a lot of people about developing software and what they could do with it," said Pat Hammerstrom, director of marketing communications for BellSouth International in Atlanta. "Finally we spoke with Apple and were looking at buying some Macintoshes. They told us about Stuart Sharpe."

Sharpe, a New York-based Sound Vision designer for Macromind, said: "[BellSouth was] going to use an IBM [PC]. I went down and showed them what we could do." His demo impressed BellSouth, and the company assigned him to the project. Within two months he completed the animated presentation, including the music that he composed. His primary software tool was VideoWorks Interactive, a version of VideoWorks II with a scripting language for programming interactive capabilities, available from Macromind in a pre-release version for \$500 plus licensing fees.

The demo, pictured here, opens with an



eye-catching animation loop: Colorful images of telecommunications hardware and text swirl by. Four Mac IIs were set up in the trade show booth where BellSouth walked attendees through the presentation. BellSouth selected the product line that the prospective customer was interested in, such as management systems or mobile communications and chose to see and hear it in German, English, Spanish or French.

"I call it an animated brochure," said Sharpe. "They have tons of literature and brochures, and I put that all on screen."

"It is so professional, and we have gotten so many compliments," Hammerstrom said. "I've kidded the people at Apple that we need to get some sort of fee. Every time I go to a trade show, people are asking about the software and the Macs. I think I'm selling more Macs than telephones."

"Interactive music." Meta Language's Rosen has turned his musical and visual interests into his current career as a hypermedia designer. With a 1-Mbyte Mac SE, HyperCard, VideoWorks II, Adobe Illustrator 88 and Aldus FreeHand, he creates demos for Mac software and hardware companies. "Once people see one of these working they really start realizing that this has an amazing potential," he said.

One of his projects is an interactive demo of the program TurboSynth, for Digidesign. The graphically oriented TurboSynth turns the Mac into a point-and-click modular synthesizer. It generates sounds as digital files that professional sampling instruments can use. The sounds can also be played back internally in the Mac SE or II with 16-bit fidelity using Digidesign's \$1,295 Sound Accelerator card.



After a brief introductory VideoWorks animation, the demo lets you click on text describing areas you can learn about. One part lets you build patches of music. You choose a patch and watch the animated demo build it. Then by clicking on the icons representing the synthesizer components, you see and hear how the modular system creates the sound.

Initially, TurboSynth appears complicated, which makes it a perfect candidate for this type of demo. You can explore the program's features at your leisure, in the order you choose.

"Part of it is there's a one-shot cost to them, and they put it out on something like PAN [Performing Artist Network] or some other bulletin board," Rosen said. While it will take about 45 minutes to download, the information is highly accessible.

Laying down the beat. Rosen creates the music and sound effects for his Mac projects in his MIDI studio. He then records them into his Ensoniq EPS sampler which is connected to the Mac. The sounds are imported into the Mac using Blank Software's Alchemy program. Rosen has also used Farallon's MacRecorder, but prefers EPS because it does a better job of converting analog audio into the digital file.

Either method nets standard Mac eight-bit sound resolution, which falls short of good fidelity. But Rosen is also working on a HyperCard demo of Digidesign's Sound Accelerator card, and he's excited by what it will allow him to do. "They've been farsighted enough to make sure that it can play 16-bit sounds through HyperCard and through VideoWorks Pro [now Macromind Director]. That answers the sound question. We'll have no more complaints about sound," he said.

Interactive video. Bonnie MacBird, president of Los Angeles-based Creative License, a film and video production company, said: "What we are about as a company is a creative team that creates the most effective video and film messages and stories."

"One client is Apple. Last February MacBird wrote the script for 'HyperCard 1992,' a video simulation of Apple's vision of multimedia in 1992. It was produced by San Francisco-based Kenwood Group under the direction of Apple's Michael Markman, creative director for video production.

The simulation depicts a HyperCard stack with detailed Olympics data. What propels it to 1992 is the liberal use of real-time, full-color video: long clips of salomong skaters and thrilling scenes of Olympic skaters such as Debi Thomas, complete with orchestrated music. A semi-intelligent "agent" named Phil comes alive to guide users through the stack.

While the video shows the future, Creative License is creating multimedia presentations

Continued on next page

(Left, above) In Apple's HyperCard 1992, for which MacBird wrote the script, a stunning video clip of Olympic skater Debi Thomas teases us about future capabilities of multimedia productions.

(Left, below) Creative License produced a multimedia presentation demo of its own works to show clients. The company used HyperCard and videodisc clips.

Bonnie MacBird, president of Creative License.

Continued from previous page
 now. "We had a breakthrough with the ability to talk to a videodisc using HyperCard," said MacBird.

MacBird and her partner, director Jim Shasky, prepared a Creative License promotional demo to show prospective clients. They put clips from video productions done for Apple and other clients onto a videodisc.

Because of the flexibility of HyperCard and the random-access nature of videodiscs, they rearrange and change the presentation to fit different audiences. They use the Voy-

ager Video Stack to control the videodisc player.

"I'm not a hacker. I don't spend Friday night in front of a computer," MacBird said. "HyperCard has been my door into it. It's easy to use, and it's powerful."

Paying the piper. The cost of these productions varies. Rosen reported that for something that's "really small and quick" like the Digidesign demo, the cost is usually between \$1,700 and \$2,200. Morris said her company charges from \$10,000 to \$50,000, and Sharpe said projects the size of the BellSouth underbaking can cost in the \$50,000 range. It can cost from \$500 to \$1,000 to press a

videodisc, not including the cost of producing the actual video material. The cost to produce video for a disc can vary depending on the script and production circumstances, but a rule of thumb for industrial video costs is a rate of \$1,000 per finished minute.

Basec marathon. As a song-and-dance man, the Mac is just warming up. Necessities include erasable optical disk storage, better sound capabilities, 24-bit color, video support and software to take advantage of all of that is just starting to be glimpsed.

"I think the gap [between computers and film/video] will narrow over the next couple of years," Rosen said. "It's a question of how

realistic the laser media becomes and also how video compression goes. I wouldn't be that interested in it if I didn't think that, power-wise, it was going to broaden out."

It will, however, take more than improved equipment for the Mac to really kick up its heels. It will also take those creative partners to make the Mac sing and dance.

"1989 is going to be a great year for sound and graphics and animation," Morris said. "People who didn't have access to becoming creators of interactive media are going to get into it. That's the revolution." □

Jamie Krutz is a film and video composer, editor and director.

Tech limitations

The more colors you put on screen, up to 24-bits per pixel, the better your images can look and the more memory you'll need. Should you want 16-bit compact disc-quality sound and use, for example, Digidesign's Sound Accelerator card, you'll create huge sound files and need that much more memory as well.

As you try to play your animations and sound in real time, you'll notice that the Mac just isn't fast enough to move those animations smoothly.

You could improve the smoothness of your animations somewhat by using fewer colors, by animating fewer and smaller objects, and by using eight-bit sound or no sound at all. (But then is it multimedia?)

However, what's really needed are video and audio compression schemes and coprocessors that can generate sound and animation without depending much on the CPU. Remember as well that eventually there will be faster Macs.

MacroMind's Accelerator makes VideoWorks run faster. Its drawback, however, is that it makes small files huge. A 400-Kbyte file can become 6 Mbytes.

The way the Mac writes to its screen is a problem. Images can appear to break along horizontal lines as they move.

You need a storage medium that's as portable as floppies, can store hundreds of megabytes and is dependable and cheap. Read/write optical drives look promising.

Speaking of portable, the Mac II is not. What about a color Mac that's easy to take on the road?

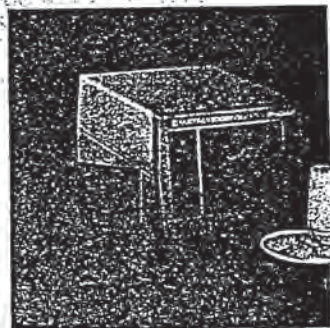
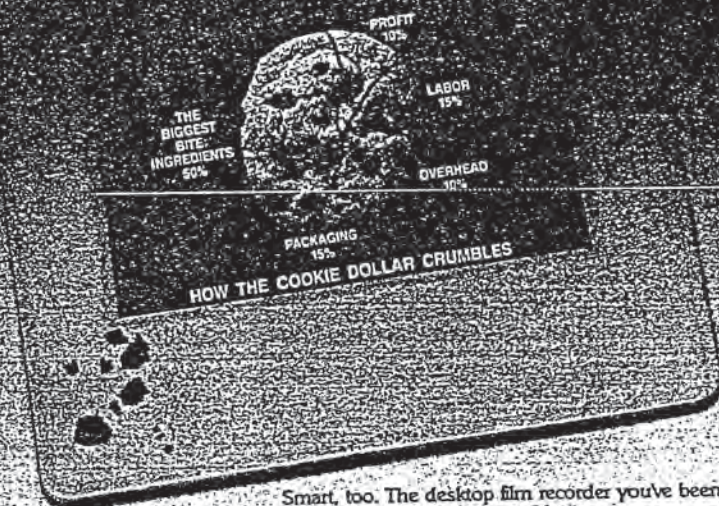
After you've transcended memory and speed problems and have a stunning production, you may want to show it on a big screen. Much needs to be done in that realm, and one promising development is the Kodak LCS90 LCD projector.

There's a lot of demand for video. The good news is that HyperCard control of videodisc players works well; the first efforts to play back video on the Mac screen were shown at November 1988's Comdex show. The ideal would be video in/out ports on the back of every Mac. Apple may be waiting for digital video to reach the mass market, but that won't happen this year.

We need more and better software as well. Right now there's a learning curve with animation software and a long way to go to make sound track production within the Mac easy and flexible. — By Jamie Krutz

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(2)

FLEXIBLE DATA STRUCTURES AND INTERFACE RITUALS FOR RAPID
DEVELOPMENT OF OSD APPLICATIONSCaitlin Bestler, Manager Control Systems Design
Zenith Cable Products, Division of Zenith Electronics Corporation.H04N7173
H04N7176

p223-236 Abstract

On Screen Display (OSD) used in CATV subscriber set-top decoders can be used for many different interactive viewer information services such as Schedule Guides and Sports Scores. Allowing for the required flexibility and functionality of Interactive Information Services, an OSD decoder system must use flexible redefinable data structures and interfacing rituals. This mandates downloadable behavior and data, not just downloadable screen images.

Decades of Information Systems (IS) software development on mainframe and personal computers have shown that mere reprogrammability is not enough. IS applications must evolve almost constantly. Staying responsive to user needs while avoiding development bottlenecks requires that IS systems be built from standard parts customized by parameterization and/or non-procedural specifications rather than custom hand-crafted code. Examples would include Relational Databases and Application Generators.

These IS productivity techniques can be applied directly in headend computers, and scaled to fit within the OSD decoder. Zenith's HT-2000 decoder system applies both techniques to rapidly develop and then deploy Interactive OSD Information applications.

SUPPORTING OSD INTERACTIVE
INFORMATION APPLICATIONS

A typical first exposure to On Screen Display capability is a VCR. Cryptic flashing lights on a control panel are replaced by cryptic text instructions displayed on the screen.

To be fair, the text messages aren't all that cryptic. They are just unfamiliar, and expert consumers had already learned how to do everything with the control panel.

For non-expert users, the VCR's features are more accessible. There just aren't any new features. Existing features just had a new, more "user friendly", front end.

While an OSD set-top decoder can certainly be made more user friendly, the real potential is in entirely new features such as Schedule Guides. These new Interactive Information Services can be standalone, or integrated with video programming.

An interactive OSD information application allows the viewer to obtain specific information when they want it. Selection and timing is under viewer control. The requested data is presented on screen, possibly on top of specific video programming.

When designing Zenith's HT-2000 decoder and its headend computer, the OSD Information Gateway, several requirements were identified. Each is discussed in one of the following sections: The Need For Flexibility, Downloaded Data, not Images, and Integrated Control.

These points led to the conclusion that a downloadable decoder was needed to allow easy development and evolution of new applications. It was also important to allow for easy deployment of new applications.

THE NEED FOR FLEXIBILITY

Correctly predicting exactly what information is required for Interactive Information services is next to impossible.

For example, a Schedule Guide application has far more open questions than you might expect:

- Will viewers want to find movies by theme and/or actor? Will the data be available?
- Should the schedule be presented in a two-dimensional grid, or a tabular listing?
- Will viewers want information on all channels, or only the movie channels, or only the PPV offerings?
- How much information do viewers want for each movie? The title, two lines, four pages, the actors, the director? Do they want to search by date, rating, price range, director, theme and/or copyright date?
- Would people prefer a long schedule with minimal detail, or a shorter one with more information? Which is worth more to them?
- Should PPV offerings be listed with Pay TV movies or separately? What about movies on non-pay channels?
- How would a staggered start Video on Demand channel be shown in the Schedule Guide? What about a pure Video on Demand service?
- Is the Schedule Guide a premium service, or a method of promoting PPV?

Moving past the schedule guide, what other services will be required: stock quotes, horoscopes, sport scores? Will Baseball fans want just the final score, or a complete box score?

Even more complex than identifying the information to be presented is deciding exactly how it will be presented and which keystrokes the viewers will use to access it.

A well defined user interface combines User Rituals with User Myths. The user rituals are patterns of input required to do certain things. Pressing backspace to erase the previously typed character is a common computer user ritual.

A user myth is an explanation, in user terms, of what each input key or sequence does. Clicking the left mouse button in a certain screen region is "pushing a toggle button".

Consistent user rituals and myths make an interface easy to work with and understand. An interface that requires raw memorization of arbitrary input and output sequences is very difficult to learn and user unfriendly.

Predicting in advance what rituals viewers will find difficult, and which they will find frustrating is even more difficult than knowing what information services they want.

It would be impossible to correctly define all of the information and interface rituals required for these various services. Even with something as 'obvious' as the schedule guide, the answers are just not reliably available.

You don't know. I don't know. That marketing consultant who wants to sell you the answers doesn't know either. None of us can know for the simple reason that the viewers themselves don't know.

Conducting a survey won't do any good, no matter how large your sample is. The viewers can only give you their guesses. The viewers themselves won't know until after they have started using these services.

A survey conducted before the introduction of the remote control might have projected little interest in remote controls, since people only change channels a few times an hour. "Zappers" did not exist.

We are attempting to provide tools for viewers. As with those who designed automotive or computer input devices, we can only propose options. We must wait to find out which options consumers will find useful and/or become accustomed to, and which they will find annoying.

Accommodating consumer interests requires flexibility, and constant adaptability. Would a supermarket manager buy a check-out system that dictated how merchandise be shelved for the next ten years? Why should a Cable Operator accept an OSD decoder that locks in the format of the Schedule Guide and other OSD services?

The nature of the information displayed, the format it is displayed in, and the interactions the viewer goes through to access them will all need to change during the lifetime of any OSD decoder.

To meet these needs we must be able to actually redefine the behavior of the decoder from the headend without modifying the decoder.

DOWNLOADED DATA, NOT IMAGES

How the OSD decoder receives and uses its information is critical to allowing flexible creation, and evolution, of these and other user-friendly features.

A Schedule Guide, for example, could be viewed as nothing more than many pages of schedule information. Rather than waiting for the information to scroll by, the viewer can now Page Up and Page Down on their own.

Doing so would sell the potential of an OSD decoder short. Separating data reception and storage from display allows flexible efficient implementation of many desirable features. Examples are given in the following sub-sections.

Tiering

Services such as Sports are likely to be tiered. Only subscribers to these services would be able to display this data.

Even within a given application, there could be levels of service offered by tiering. A "basic" Schedule Guide might only provide detailed movie descriptions for tonight's PPV offerings. A "premium" Schedule Guide tier would provide complete descriptions of all movies.

Since decoder RAM space will always be limited, it would be desirable to have the decoder only store data for which it was authorized. For a given RAM capacity the decoder would be limited in what tiers it could be authorized for, not in what tiers were available to it.

Conditional Display of Data / User Filtering

Unwanted information is clutter. It gets in the way of valuable information. The information displayed should adapt to individual viewer preferences. Insisting that every household receive detailed movie descriptions for an Adults Only service would probably not be desirable.

You may view a Schedule Guide as a value added service or as a promotional device. In either case information about channels a viewer will never want to watch is undesirable.

If the Schedule Guide is viewed as a premium service, an annoying one will not be worth as much. If the Schedule Guide is a promotional feature, you want the viewer to concentrate on promotions for things they are likely to buy.

Multiple Indexing of the Same Data

In many applications the same data could be found in different indexing orders or via alternate User Rituals.

The same movie may be found in a PPV index, in a Schedule Grid, a time-oriented listing, a channel-oriented listing, a theme index, an actor index, or even a Director index.

The box score for the Chicago White Sox vs. California Angels game could be reached via either "Chicago White Sox" or "California Angels".

Redundant Display for Convenience

Sometimes an application displays information it normally edits on another screen for the viewer's reference.

The fact that a channel is locked out via Parental Control should be displayed not only on the Parental Control screens, but on the Schedule Guide display as well.

Programs scheduled for automatic taping might be flagged in Schedule Guide grids and listings.

INTEGRATED CONTROL

Schedule Guide data should interact, not just be a passive display. The viewer should be able to do things with it. While browsing through a Schedule Guide the viewer should be able to select a given program and then do any of the following:

- Request a more detailed description.
- Tune to that channel immediately.
- Request an IPPV purchase of that program.
- Schedule an automatic taping of that program.

When tuning to a new channel, the decoder could display the channel number, name, and information about the current program.

Parental Control and Favorite Channel maps could reference channels by name. Parental Control could be extended to lock-out or exempt specific programs, rather than whole channels.

Opinion surveys and/or home shopping applications could use the two-way transmission capability to interact with the headend.

Application Co-existence

While working on each separate OSD Information Application it would be easy to forget that the Viewer is likely to view their set-top Decoder and television as one unit. And the primary purpose of that unit is to watch television, not check stock quotes.

One aspect of "integrated control" is the ability to toggle between the OSD Information Application and watching the viewer's program.

Remote control layout and software conventions should make it easy for the user to flip in and out without having to start over from scratch every time they re-enter an application.

Conditional Access

Any Schedule Guide application should be integrated with the decoder's Conditional Access system. It should be able to display IPPV ordering instructions, transmit two-way IPPV orders, and give viewer feedback on confirmed IPPV authorizations and authorized subscription channels.

Virtual Channels and Interactive Television

Many applications require "virtual channels". In these applications the decoder is tuned to an alternate channel without bothering the viewer with the details or changing the displayed channel number.

Examples would include Barkering, staggered start PPV Video "On Demand", interactive television, video back-drops for messaging systems, and targeted advertising. The ability to tune the decoder becomes just one part of the OSD applications "message".

DON'T RE-INVENT THE WHEEL

While the information, and viewer rituals for accessing it, are unstable, the possible sources of this information are even more varied and subject to change. A flexible OSD Decoder Information Service must display unknown data in unknown formats that is originally captured by Headend equipment from unknown sources.

Responding to rapidly changing highly flexible requirements is not an easy process. Making the OSD decoder downloadable allows new services to be developed after the decoder is already in the field. It does not make developing those services any easier.

We need a way of developing and evolving new decoder features. We have to be able to integrate the new features with existing features. Lastly, we have to be able to test and deploy the new features without constantly disrupting customer's use of the decoders and the features they already enjoy.

These are not new problems. They have plagued software development for several decades now. Methods of coping evolved to deal with these problems include Prototyping, Relational Database Management System (RDBMS), Report Generators GUI Screen Painters, and Revision Control.

Rather than re-invent the wheel, we should examine these solutions to see what lessons can be applied to the developing Interactive OSD Information Services.

Prototyping vs. Specification

As a rule, Software developers are much better at correctly implementing something than we are at knowing what it is we should be implementing.

The most serious "bugs" are not incorrect algorithms. They are incorrect features. The software functions "perfectly." It just doesn't do anything that is of any particular use to anyone.

The first attempt at solving this problem was The Specification. The Specification has taken many forms: long narrative descriptions ("Victorian Novels"), contract-like "rules," flowcharts, data-flow diagrams, structure charts, data structure diagrams, state transition diagrams and the latest fad: object oriented diagrams.

Software Developers can spend a great deal of time debating the relative merits of Methodologies. A Methodology specifies how The Specification is developed, what must be in it, and how it is translated into a working system.

Methodologies are most often compared and contrasted with a near religious fervor. However, they almost all make one critical assumption - the "User" already knows what is required.

Evaluating interfaces described on pieces of paper is a very difficult task. The format of the Specification, let alone which icons are used in what Diagramming conventions hardly matters if the user is only reporting their hunches.

When a user has never used a system exactly like this, there is really no alternative but to let the user actually test a prototype of the system. Nothing can match a 'hands-on' test drive of the actual interface for identifying problems with it.

Most interactive user interfaces are now prototyped and/or developed with tools that allow the displays and input rituals to be rapidly updated.

Prototyping and/or rapid deployment of modified interfaces is extremely vital to the development of Interactive OSD Information Services for several reasons:

- A screen that looks fine when sketched on a paper memo, or even drawn on a PC graphics program, may look terrible when shown a real television set.
- Viewers interact using a Remote Control and/or set-top keypad. These are very different from a PC keyboard.

Relational Database Management Systems

Relational Database Management Systems (RDBMS) manage data for IS applications. Professors build entire careers out of debating the fine points of Relational Database theory with each other, so I'm not certain how much can be explained in a page or so.

A RDBMS organizes data into Tables. Tables are said to have Rows and Columns.

Each Row is a record, or one instance of data. A "Programs" table would have one row for "The Empire Strikes Back".

Each Column represents one thing that is known about each instance. It is an attribute of each record. Columns for the "Programs" table could include "Title" or "MPAA Rating".

Tables do not include any "repeating" data. You cannot have a "Stars" column that lists up to six different stars. Instead a separate table lists each star for each movie.

Tables reference each other only by value. Some of the Columns in Table X can be used to search Table Y. Table X does not have anything like a pointer or Record Number for Table Y.

These conventions avoid data that is massively entangled both with code and itself. The dependencies have been limited and cataloged. This separation allows migration to new definitions of the systems data without having to rewrite every piece of code that uses that data.

An OSD decoder can benefit greatly from similarly standardized data structures. Headend computers supplying data to the OSD decoder, such as the HT-2000 system's OSD Information Gateway, can use an RDBMS to store the original data and to map its translation into the downloaded data.

Report Generators

Report Generators use an RDBMS standardization to allow reports to be specified in a non-procedural fashion.

A Non-procedural report specification states what information should be in the report, and how it should be formatted. It does not specify how the data should be retrieved, sorted and formatted.

When applicable, specifying something in non-procedural format has proven to be far faster and reliable than writing procedural specifications.

Non-procedural specifications also allow hardware upgrades. The same results can be achieved under new hardware. The same procedures may not translate as easily. Later OSD decoders are likely to have more RAM and higher resolution display devices. These decoders would co-exist with older models. Non-procedural specifications will be shared.

GUI Application Generators

GUI (Graphical User Interface) applications that run under such platforms as Windows and Presentation Manager can be very difficult to code. GUI Application Generators slash development time by allowing non-procedural specifications to combine standardized components for a new interface.

Use of common building blocks is not just a convenience. It is desired for its own sake. Conventions such as list boxes, drop-down combo boxes, checklists, pull-down menus and radio buttons are valuable not only because they reduce coding time but because they make it easier for the computer user to learn how to use the application.

Maintaining a common "Look and Feel" for OSD Information applications is even more important than for PC applications. Viewers have less motivation to work their way through a strange input ritual. While being flexible, the development system for OSD Information applications should encourage use of standard input and display mechanisms.

Revision Control

Even before software developers identified the need to prototype systems, they knew that systems already in use had to be modified.

Developing systems is hard enough. Modifying systems that are already in use is considerably harder. Many of these problems are still relevant to OSD information applications:

- Interfaces must evolve. Even new features should feel familiar to old users.
- User edited data should be maintained.

- For many systems operations must continue even while the system is upgraded.
- Many items may change for a new feature: the data sources, how data is stored, and the code to use the data. Changing all of them at the same instant is unrealistic.
- New code sometimes blows up, requiring an immediate rollback.

SCALING THE WHEEL TO FIT

RDBMSs and the other techniques described are all very powerful tools. Re-inventing the wheel is always a waste. But a set-top decoder with an 80386 is overkill, expensive overkill.

As currently defined and implemented, these tools would not fit in a set-top decoder. The wheel already exists, but it doesn't fit. However the approach does not have to be abandoned, just scaled to fit.

The HT-2000 decoder would need a processor capable of accessing considerably more than 64KB of RAM. No matter how you compress it, you can't fit much of a Schedule Guide in 64KB, let alone any other features.

Additionally this processor would have many other responsibilities:

- Accept input from keyboard.
- Accept input from IR remote.
- Control the OSD chip.
- Tune the decoder.
- Control other outputs: IR out, LEDs, Volume, video blanking, audio mute, any two-way transmitter and any expansion port.
- Manage a small amount of self-edited data. This data would include favorite channels and a user PIN for IPPV purchases and Parental Control.
- Interface with the Conditional Access system. To enhance security this was kept a separate module in the HT-2000 decoder.

The processor would not have to do anything that complex with the data. There are no square roots, or regression analysis to be performed. Fast processing speeds are not needed, just the ability to do simple things with vast amounts of data.

The most powerful affordable candidates were derivatives of 8-bit processors that could look at anywhere from 512KB to a few Megabytes. However it is typically only visible in 64KB chunks. This increases memory management complexity. Many had built-in help for IO interfacing, such as UARTs.

Downloading Safely

A downloadable OSD decoder's behavior is controlled by the data packets sent to it from the headend. The "code" it is executing is updated over the cable downstream, rather than by distributing new ROMs.

On the HT-2000 project the downloaded behavior is called the "Dialog". Once a Dialog has been written it would remain in use indefinitely. This might be a few days, a few weeks, or a few years.

The other data downloaded is the Dynamic Data. This data changes on a daily basis, or possibly more frequently. Schedule Guides, actual weather information and sports scores are all Dynamic Data.

By contrast, the Dialog is what knows how to use the Dynamic Data.

Downloading dynamic data is relatively simple and risk free. The worst that can happen is that the information is wrong. The information has a limited lifespan. It will be updated and/or deleted soon.

Errors are also relatively innocent. If a movie title is "Star Warx" a few viewers will notice and get a minor chuckle.

Downloading dialogs is considerably riskier. An undetected error might cause the decoder to do something various obnoxious such as jamming the volume to full or refusing to tune where the viewer want to tune.

It is imperative that Dialog downloads be as reliable and resilient as possible.

Downloading dialogs over a cable plant to thousands, or even hundreds of thousands, of decoders presents several problems.

In a one-way plant there is no way to acknowledge a successful download, or request a new download. Even in a two-way plant the upstream capacity might not allow each decoder to individually acknowledge the download.

Bad downloads are unavoidable. Whatever is downloaded can and eventually will be garbled at one or more points in the distribution chain:

- Error detection codes are very powerful, but only a partial solution. Fewer than 1 undetected error in 10,000,000 sounds very secure. But if you have 200,000 decoders talked to 1000 times a day it means 20 irate customer calls each and every day.
- Operational errors can occur. The dialog may have been restored onto the headend computer from a faulty tape or floppy disk.
- Software errors are inevitable.

If bad downloads are unavoidable the question becomes, can you fix it? The only way to guarantee that is to ensure that nothing you can download could prevent the decoder from accepting another download.

This requires that the OSD decoder essentially have "two minds". One accepts downloads. The other is downloaded. Nothing the second mind does can interfere with the first mind's ability to accept further downloads.

There are four valid approaches to this:

- Some processors allow two virtual programs in the same processors. Usually dubbed Supervisory and User mode, these processors ensure that User mode code cannot interfere with Supervisory code. This would be a perfect solution, except that this feature is generally not available in the processors affordable enough to place inside a set-top decoder.

- Two processors. This is essentially a hardware simulation of the above. It takes more power and is nearly as expensive.

- An External watchdog timer could force termination of RAM stored code and return to ROM based code. This is more feasible, but still costs money and takes up board space.

- Interpretive code. The downloaded behavior does not truly gain control of the processor. The ROM based code simulates a processor that executes the downloaded code.

Interpretive code was chosen for the HT-2000 decoder. In addition to its safety features, interpretive code offers other advantages:

- Processor independence. Later versions of the decoder can be implemented on a more powerful processor, possibly with extended instructions while maintaining full backwards compatibility at the binary level.
- More compact downloads. Because the "machine code" is designed for OSD applications it can be more compact than native machine code would have been.
- Interpretive code can be restricted from updating data under control of the headend computer. This would be more difficult under the other solutions.
- Interpretive code can have other safeguards, such as ensuring that it will listen for fresh user input regularly, in addition to being re-downloadable.
- Hardware dependent code, such as device drivers for handling input and output, can be placed in the interpreter. Essentially, the interpreter becomes the equivalent of a PC BIOS. Later revisions of the hardware can handle hardware interfacing differently without having to recode the downloaded applications.

State Driven Display Painting

The decoder's display painting primitives should support non-procedural generation of displays.

It should be optimized to allow static receptive elements to be specified easily and efficiently, while still allowing complex data dependent displays.

The HT-2000 decoder decides what to display by a current Dialog State. In a given state the decoder will have a recognizable display and respond to inputs in a specific way.

Making display logic state based helps reinforce an important principal of graphical user interfaces: if the program/system now acts differently it should look different.

Basically a state is what the viewer would think of as a given display. The data displayed there might change, but it is recognizable. One state can be "typical schedule guide page". All pages of the schedule guide act the same way, and display the same type of data in the same format. Only the specific data is different.

The viewer will recognize a Schedule Grid as a given display no matter which page they are on, or what day they tune to the Schedule Grid. It has a certain "look", and the viewers will know what they can do when the screen has this "look".

DATA MANAGEMENT PRIMITIVES

A full RDBMS is clearly beyond the horsepower of any 8-bit processor. A more realistic set of standard data management capabilities would have to be selected.

Many factors had to be considered:

- ROM space was even more tightly constrained. Device interfacing, such as IR input handling, would have first claim on ROM space. Standardized data primitives would have to be implemented in very compact simple code.
- There will always be more uses for RAM. Feature tiering will require different decoders to hold different data.

- The decoders were in a heavily distributed environment. Most customers would be running one-way Cable plants. This meant that updates would not be acknowledged.

Certain RDBMS features were too expensive to implement in the decoder. We found ways to do without those features, or to provide the same service in the OSD Information Gateway rather than the decoder itself.

An RDBMS allows the same data to be fetched in many different formats. While this allows portions of the application to view the data as appropriate to its needs and how the data was defined when it was coded it does carry a heavy run-time penalty.

This penalty is high enough that most RDBMSs allow the source code to be compiled to match the actual data format, rather than binding at run-time. There would certainly be no need for run-time binding within the OSD decoder.

RDBMSs also allow the data format to be redefined without losing existing data. You can add new columns to a table, or re-arrange existing columns, without losing any current data.

The code to support this in the decoder would simply be too complex. Instead we decided that the original data would always be stored in a RDBMS on the OSD Information Gateway. The new data would simply be re-downloaded in the new format.

Many applications have data that expires at a specified time. Schedule Guides are just the most obvious example.

When all the decoders are deleting the same records it actually makes more sense for the headend to tell them to delete those records.

In this way "garbage collection" code can execute in a more powerful headend computer, rather than in each and every separate processor.

Record Sets

An RDBMS minimizes inter-dependence of records by using "content" addressing. An employee record does not have a pointer to the physical location of their Department. Instead it has a key value that can be used to search for and find the Department record.

This sort of capability is crucial to a distributed database system. It was scaled down for the HT-2000 decoder by turning RDBMS tables into Record Sets.

Each Record Set contains many fixed length records. Each record is much like a record, or row, from a RDBMS table.

Each record would also contain many fields. These are essentially the same thing as a RDBMS column or attribute.

The downloaded dialog simply asks for a specific record from a specific record set. That record may be in different locations for different decoders. Indeed if memory capacities have been varied based on individual option tiering, they will be. The application code does not need to understand this.

The size of each record, and the number of records allowed is defined for each Record Set. Additionally the record set may have an optional key field used to sort all of its records with.

Sorted Record Sets are kept in sorted order. Updates are merged into the Record Set based on the key value at the beginning of the record. Old records, such as yesterday's schedule, are deleted by key range.

Sorted records sets are used to index with user meaningful data. Schedule records sorted by date, time and channel would be a prime example. The downloaded dialog looks for the Schedule Record for a specific channel and time, not a specific memory location.

Unsorted record sets are really just optimized sorted Record Sets. They have a one or two byte 'key value' that is not physically stored with the record. Instead it is implied by which slot of the record set the record is placed within.

Unsorted record sets are most useful when dealing with things that can be numbered in a tight range. Examples would include visible identifiers such as Channel numbers, and internal identifiers such as Program Numbers. Internal identifiers would be obtained from sorted Record Sets.

Splitting the schedule information like this into two separate Record Sets allows the same Program Information to be used for a single movie no matter how many times it is in the schedule.

Placing data in the database once, no matter how many places it is referenced from, is one of the most crucial aspects of Relational Database theory. It is critical to efficient data handling and standardized handling of distributed updates.

The Record Sets of the HT-2000 decoder maintain this essential simplification with only a handful of easily implemented data manipulation primitives: virtual memory, record sorting and direct indexing.

An Example Schedule Guide in Record Sets

Suppose that schedule information is available from an outside source. The records each describe all of the times a particular channel shows a given movie. A record might be formatted as follows:

- The Service Name.
- The Movie Title.
- A comma separated list of actors.
- The Movie Length.
- The dates and times it will be shown.

This data would be normalized into OSD Information Gateway RDBMS tables:

- Each Service row would specify an available service.

- Each Movie row would give information on one specific movie no matter how many times it was shown.
- A Showing row would specify that Movie X was being shown by Service Y at a specific time. If the same movie was shown seventeen times there would be seventeen Showing rows referencing it.
- A Starring row would specify that Actor R appeared in Movie X. If Movie X had five listed stars there would be five Starring rows referencing it.

During the final translation into Record Sets we would attempt to further compress the data. Long keys values used as foreign keys may be replaced by short keys that index into an unsorted Record Set, for example.

Referential Integrity

One of the key features of a RDBMS is Referential Integrity. This feature ensures that if a Pending Order record has a Customer Num and a Part Num that there are matching Customer and Part records identifying who that customer is and what the part is.

The OSD decoder's data primitives must ensure that a Schedule Record reference to a Program Num is not referencing a non-existent one.

The highly distributed nature of a one-way Cable system presents a major challenge here. Unlike an RDBMS, the OSD decoder cannot just reject a Schedule Record that references a bad Program Number.

In a one-way Cable plant the OSD decoder has no way to complain. Putting up an OSD error message to the effect of "Illegal foreign key in update at 13:47 on 4/21" would be extremely user unfriendly.

Instead, we have to ensure that the Program record is added before the Schedule record by controlling the order in which the OSD decoder will accept them.

INFORMATION DISTRIBUTION

The OSD Decoder is just the last step in a complete OSD Information Service. Many other components are involved in a complete system.

Zenith's HT-2000 system has the following components:

- The OSD Information Gateway is responsible for downloading the OSD decoders. This requires it to collect all of the data to be downloaded from various sources first.
- Various Data Providers supply data to the OSD Information Gateway. Many of them are supplying the data in a standard format, rather than talking specifically to the OSD Information Gateway.
- A separate Conditional Access Controller manages Pay TV security. It is likely to have associated equipment such as Encoders and Receivers. Because HT-2000 was built upon the existing Z-TAC system, the Controller had to remain separate to provide continued support for customers who had not yet fully converted to HT-2000 decoders.
- The Cable Operator presumably has some form of Management System which is typically a separate computer. Typically the Management Computer would be connected to either the OSD Information Gateway or the Conditional Access Controller, but not both. Commands would then be routed to the correct computer.

Data would first be captured or accepted from a Data Provider. Conceivably the Management System could also provide some data.

Some configuration data, such as Channel line-ups would be entered directly on the OSD Information Gateway using GUI front ends.

From either source the data would be placed into RDBMS tables.

Reports, developed using Report Generators, could be run on this data.

GUI front ends, developed using GUI Application Generators, allow review and correction of any errors in the data. While data would typically not be hand inspected, the Cable Operator should always retain the ability to review any information before it is sent out to their customers.

The data may then have to be prepared for download. This process may involve some compression of data. For example, the same phrases may be found in many different movie descriptions. In order to preserve decoder RAM space the OSD Information Gateway will attempt to minimize the number of separate times it downloads the text "thrilling adventure" or "heartwarming romance."

The data is then exported from the database. This involves final translation of the data into Record Sets and the required download packets.

The data is received by the decoder.

The viewer may then have the dialog display the desired data.

CREATING NEW SERVICES

Developing a new interactive application for an OSD Decoder would involve several steps. The exact ordering of these steps, and some of the boundaries between them could vary depending on the development tools and procedures adopted. The specific steps presented here are for Zenith's HT-2000 OSD Decoder and OSD Information Gateway.

Defining the Editable Data

All information downloaded is ultimately derived from the OSD Information Gateway's RDBMS tables. A new application will typically require the addition of new tables. Enhancements to existing applications may need no additional tables, or only additional columns for existing tables.

It may be desirable to allow high volume data with rapid turnover to bypass the Relational Database. Zenith's OSD Information Gateway allows this option, but still pretends the data came from the RDBMS.

This standardizes handling of the data, and allows the by-pass decision to be deferred until after the application has been developed and tested when solid performance data is available.

Defining the Downloadable Data

The data that will be available to the dialog must be designed. This requires deciding how the data will be formatted and sorted, and what Edited data it is derived from.

In addition to deciding what the data will look like, the Application Designer must decide which data will be available to which decoders.

In some cases the supporting data will already exist - it is just being indexed or ordered differently. In other cases new RDBMS tables and/or columns will have to be specified.

Each Record Set can have many Record Set Revisions. The first version of a Record Set may have been missing a field, or it may have included a field that turned out not to be required.

Both Record Set Revisions can co-exist in the same OSD Information Gateway. The "Data Design" details how each Record Set Revision is formed from RDBMS tables.

Record Sets changes may be related. Schedule records and Program Information records might both be changed at the same time. The old versions work together just fine; the new versions get along even better - but you can't mix the two.

The Data Design also specifies which Record Set Revisions can be used together. This specification is called a Record Set List.

The Data Design is itself stored in RDBMS tables.

Specifying the Downloaded Dialog

The Dialog Editor is a GUI Application Generator for HT-2000 dialogs. It allows a Dialog Author to develop an interactive application, dubbed a dialog, that works for a specific Record Set List.

The Dialog Editor allows screen images, called "Forms", to be organized in Sections and populated with input and output fields.

Each Form consists of a static screen image and dynamic displays associated with fields. Fields can display data from downloaded Record Sets and/or decoder variables.

These can be combined to form complex expressions. A field specification might be the equivalent of "The name of the Program shown on the Channel in variable X no earlier than then Time in variable Y."

The Dialog Editor also allows the Author to specify Transitions. Essentially each transition specifies what Response there is to each Input event when the dialog is 'focused' on each given input field.

A Dialog Editor 'input focus' matches the Decoder's concept of 'state'. A dialog is in a given 'state' when a given input field has focus. Some 'forms' have invisible 'input fields'. For example, we pretend there is an input field when the decoder is turned off.

Input events include IR Remote keypresses, keyboard input, Conditional Access status changes and time-outs.

A Response may invoke a routine that is allowed to modify decoder variables. It can also specify a new state/input focus.

The Dialog is then compiled. The compiled dialog can be distributed to many different OSD Information Gateways.

Dialog Preparation and Download

At each site the Dialog can be prepared for downloading. This step can allow optimization of downstream downloading capacity and decoder RAM to meet site priorities.

The prepared Dialog can then be downloaded to decoders. The new dialog "takes over" from the previous dialog in the decoder. It can then preserve as much of the old state as possible.

With minor dialog changes, there may be no disruption at all to the viewer. Even in more significant code changes the new dialog will be able to let the viewer keep watching and/or taping whatever they were watching.

A Complete Update Scenario

Suppose a new feature has been proposed. In order to explain it a Dialog using no new dynamic data is prototyped with the Dialog Editor.

This dialog could start with the current dialog as a base, or be nothing more than a stand-alone stub of this single proposed new feature for demonstration purposes.

Creating static forms and transitioning between them the Dialog Author "storyboards" the new application. No real data is displayed, but a user will be able to get the "look and feel" of the proposed feature.

The prototype dialog can be compiled, prepared and downloaded to a set of test decoders. Working with actual decoders the Dialog Author and/or his/her reviewers find changes they want to make to the dialog.

This process continues until the storyboarded version is considered polished enough for use.

The Dialog Author would then decide what downloaded data was required to support the application. In many cases the data will already be available in the pre-defined Record Sets.

In other cases new Record Set Revisions will have to be defined and placed in new Record Set Lists. This is when the development process shifts from Dialog Authoring to Data Designing.

As wonderful and powerful as RDBMS concepts are, they are still very tricky. A Data Designer will need far more training than a Dialog Author.

The Dialog Author would specify the new Record Set Revisions and how they are formed from existing edited tables.

Occasionally the required data will not already be part of a pre-existing edited data. In this case the new RDBMS tables and/or columns must be specified. Frequently the RDBMS can be used to fill in new columns with default values based on other columns.

Data capture routines must be developed and/or modified to capture the new data. This step can be very simple if the data source uses a standard interface. When capturing data from a pre-formatted source this step would take a bit longer.

GUI front-end programs that access the modified RDBMS tables will have to be modified to access the new data. However, because of the Client/Server architecture they can continue to use the data in the old format without modification.

Even after updating the format of the RDBMS tables, the current Record Set Revisions will still be supported. Their data will be downloaded without change; they simply ignore the new data.

Once the edited data is defined, the downloaded data can be defined and a new Record Set List exported to the Dialog Authoring system.

The Dialog Editor can now be used to refine the dialog to use the actual data rather than being a simple storyboard.

After extensive testing, the new feature would reach the point where a field trial can be attempted. If anything goes wrong with the field trial the system can be quickly rolled back to the prior dialog. The OSD Information gateway is still fully capable of downloading the old dialog and the data in the format that it requires. The system can be rolled back.

An Alternate Update Scenario

It would be just as valid to start with a new source of data that has become available.

After figuring out how to capture this data, the Data Designer would determine how to store this data in normalized RDBMS tables.

Data Designers could then enumerate useful Record Set Revisions using this data.

Dialog Authors would then attempt to write new Dialogs after selecting the Record Set List that seemed most useful to them.

SUMMARY

Development of Interactive Information Services for OSD Decoders will be an ongoing process as the market adjusts to what information consumers desire and how they wish to access it.

Staying responsive to these changing requirements mandates that the set-top OSD decoder be downloadable.

Downloadability alone merely allows new applications to be developed. More powerful features are required to support rapid development and non-intrusive deployment of new applications.

Zenith's HT-2000 decoder system is an example of a complete development system for Interactive OSD Applications.

The OSD Information Gateway is developed under a Client/Server architecture using GUI Application Generators and the OS/2 RDBMS.

Data is captured and normalized into RDBMS tables. Data can be merged from many sources and even operator edited. Other RDBMS tables control the translation of this data into downloadable Record Sets.

The HT-2000 decoder uses a state driven interpretive model with built-in primitives for screen painting and data manipulation. It accepts downloaded behavior without risk of becoming permanently frozen by a defective download or excessively disrupting viewers.

JERROL

COMMUNICATION



CABLE TELEVISION EQUIPMENT

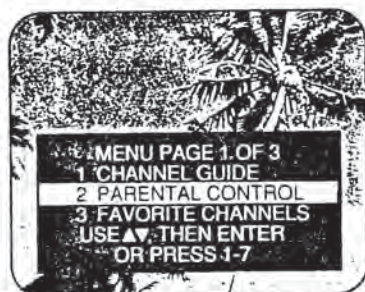
GENERAL
INSTRUMENTS

Jerrold IMPULSE 700 Series **Watch 'N' Record™**

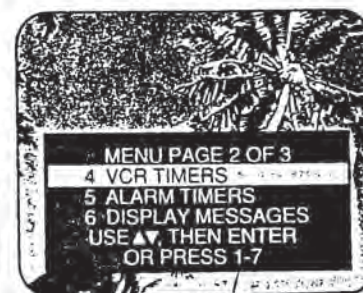
Baseband and Addressable Converter
With Dual Tuners and On-Screen Display



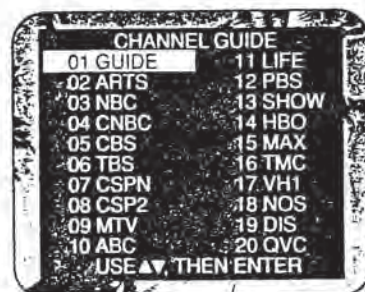
DATE/
CHANNEL
DISPLAY



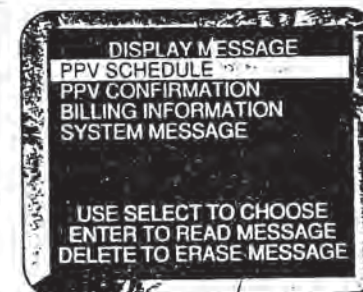
MAIN MENU



MAIN MENU



CHANNEL GUIDE



MESSAGE DISPLAY

DUAL TUNER, IMPULSE, BASEBAND SECURITY AND ON-SCREEN DISPLAY

FEATURES

- DUAL 550 MHz TUNERS
- ON-SCREEN DISPLAY
- UNMATCHED BASEBAND SCRAMBLING
- FULLY DOWNLOADABLE
- ELECTRONIC PROGRAM GUIDE CAPABILITY
- SUBSCRIBER MESSAGING

The Jerrold Watch 'N' Record is an impulse-capable baseband converter with dual 550 MHz tuners, consumer-friendly on-screen display programming capability and the unmatched scrambling security of baseband technology.

SUBSCRIBER FEATURES

The dual tuners allow subscribers to watch one channel while simultaneously recording another, including descrambled signals. This same dual tuner capability also restores picture-in-picture to subscribers. Jerrold's on-screen display feature is sophisticated, yet easy to use. It allows subscribers to view channel numbers, channel names, and program titles. It also displays the date and time, and the current channel number.

cated converter functions, such as VCR timer programming, sleep timers and parental codes, and make purchasing PPV events and services even more convenient.

Channel I.D. When a subscriber changes channels, the on-screen display identifies the channel number and channel name, as well as whether the converter is locked, parentally controlled and if it is tuned to a favorite channel.

Volume Control. To ensure optimum recording quality, the VCR tuner's volume level is factory set to unity gain. When a subscriber presses the volume up/down keys, a volume control bar appears on the screen. The bar's movement indicates the volume level. The volume can be increased or decreased.

The Watch 'N' Record passes BTSC stereo signals, allowing subscribers with stereo televisions or VCRs to receive and enjoy stereo programming. The volume control bar also indicates the best stereo point of optimal stereo sound.

VCR Timers. Subscribers can quickly program up to eight events over a 365-day period. The Watch 'N' Record makes it possible to program events on a one time, daily, weekly, weekend and weekend basis. It is as easy as re-view and correct already programmed events.

Parental Control. The on-screen menus make it easy to activate and deactivate parental control. It also allows subscribers to view the current channel number and program title.

Jerrold IMPULSE 7000™ Series Watch 'N' Record™

Baseband Addressable Converter With Dual Tuners and On-Screen Display

well as parental control barker messages, greatly simplify this frequently used feature.

Alarm Timers. The Watch 'N' Record converter comes with two alarm timers—the sleep timer and the on/off timer. The sleep timer allows the subscriber to program the converter to turn off after 30 minutes, one hour, two hours or three hours. With the on/off timer the subscriber can program the converter to turn on and off at the same time every day.

Subscriber Control Over Display Features. Research has shown that subscribers have different preferences for either a clear or solid menu background. The Watch 'N' Record allows the subscriber to change the menu background to clear screens, partial or solid, depending on personal preference. They can also adjust the centering of menus on their televisions.

Remote Control. The Watch 'N' Record is compatible with a choice of three special remote controls—the TVRC-OSD, the MRC-OSD and the IN-VIEW. All remotes are feature rich and have special keys for the on-screen display. The TVRC-OSD remote control allows the subscriber to turn the television on and off and controls the TV's volume, as well as operate all of the converter features. This reduces the number of remotes the subscriber needs to use. The MRC-OSD is Jerrold's standard remote control, with the capability of controlling all converter features, including on-screen display. The third available remote, the BUDDY IN-VIEW is a limited function unit, capable of controlling converter volume up/down/mute, converter on/off and on-screen display functions.

• OPERATOR FEATURES

The Watch 'N' Record provides multiple screens of message space that operators can use to notify customers of important information. These screens can be used to verify customer appointments, remind customers of service changes or disconnect dates, and explain service outages. Notifying subscribers of weather hazards in the area is another example of how operators may use this feature.

In addition, the message screens can serve as promotional tools, advertising upcoming pay-per-view events and services and limited free pay TV viewing, as well as important community events. They offer the potential for other creative revenue generating ideas, such as targeted local advertising.

Using the Watch 'N' Record, operators can send messages to specific subscribers, to a group of selected subscribers or to the entire subscriber base, if so desired. Messages can be custom-designed with Jerrold's unique message edi-

tor, allowing operators to tailor their messaging ability to suit specific needs.

• BARKERS

The Watch 'N' Record comes with two types of barkers—converter-activated and operator-activated—allowing flexibility for operators who wish to guide subscriber viewing. All barker messages can be edited by the operator.

Converter-Activated Barkers. In addition to providing video off-tuning, the operator can choose to display a character-generated message explaining why this channel is off limits and what steps are necessary to change this (unlock the box, order the PPV service, etc.).

The Watch 'N' Record offers a total of six converter-activated barkers: four standard barkers (parental control, impulse PPV, unauthorized pay and disconnect) and two optional barkers (turn-on, that appears each time the subscriber turns on the converter and out-of-credit). These barkers are found in the channel map.

**YOU HAVE BEEN AUTHORIZED
FOR THE FOLLOWING EVENTS**

**12/25 "IT'S A WONDERFUL LIFE"
8:00 CH15**

**01/06 HOLYFIELD VS FOREMAN
10:00 CH36**

Operator-Activated Barkers. These only appear on scrambled channels that the subscriber is authorized to view. The operator can use these to verify purchase of PPV events and services or to provide movie/event specific information (movie running time or movie description). Operator-activated barkers can be programmed and sent on a specific scrambled channel to an individual subscriber, a group of subscribers or the entire subscriber base.

• DOWNLOADABLE SYSTEM PARAMETERS

Downloadability gives the cable operator greater control and ease of operation. Using the AH-4E or ACC-4000 controller, the operator can download such features as subscriber address, system site code, geographic code, output channel, barker channel, time-out period and custom channel assignment.

This downloading capability provides operator benefits such as centralized control over sys-

tem functions, simplification of the installation process and reduction of inventory requirements. The software-selectable output channel capability allows the operator to easily switch between two different converter output channels (3/4). This helps reduce inventory requirements by allowing interchange of converters between systems.

The 3/4 output channel allows for compatibility with subscriber VCRs so subscribers need not tune to one channel to watch TV and another to use the VCR.

• IMPROVED SIGNAL SECURITY

The Watch 'N' Record descrambles Jerrold's modes of dynamic video inversion coupled with dynamic sync suppression. It also offers audio privacy. Jerrold's baseband scrambling scheme offers the most secure signal in the cable industry, protecting operator investments in expensive pay and special event programming.

DANCES WITH WOLVES(R)

**ACTION/ADVENTURE IN
POST-CIVIL WAR TIMES,
STARRING KEVIN COSTNER**

(RUN TIME 2 HOURS)

**WILL AIR AGAIN ON
TUES NOV 5th AT 10:00 PM**

• ELECTRONIC PROGRAMMING GUIDE (EPG)

The operator can use the Watch 'N' Record's in-band and out-of-band messaging capability to provide program guide information to subscribers. The ways of presenting this type of information—as well as the type of information presented—are numerous. Examples of EPG information include movie and/or program-specific descriptions of current and/or future programs or movies. Schedule information is another possibility. Events/programs in a specific time period could be organized by subject matter.

• TWO-WAY UPGRADABILITY

The Watch 'N' Record is upgradable to two-way operation using Jerrold's STARFONE® and STARVUE® internal modules. The Watch 'N' Record lets operators offer push-button impulse pay-per-view programming to subscribers without expensive rework.

Jerrold IMPULSE 700SM Series Watch 'N' RecordTM

Band Addressable Converter With Dual Tuners and On-Screen Display

SPECIFICATIONS

MODEL	WNR2-★4/# (★ = 1-one way/2-two way RF/3-two way telephone; 108.5 MHz data carrier standard — replace # if any of these options are preferred: S8 [106.5 MHz], S7 [97.5 MHz], T 1 [Tamper Switch], M1 [97.5 MHz] frequency shift audio privacy)	Output Level	7-14 dBmV
Input Frequency	54-550 MHz (excluding data carrier frequency)	Isolation (Input/Output)	70 dB min.
HRC/TRC Frequency Assignments	Downloaded	Differential Gain	10% (max.)
Number of Channels	82 channels per cable; one or two cables	Differential Phase	10 degrees (max.)
Dual A/B Cable Switching	Optional A/B switch (field upgradable)	Scrambling Method	Gated Sync Suppression or Dynamic Gated Sync Suppression, Video Inversion, Audio Privacy, Hamlin Compatibility.
Cable/VCR Indicator	Two LED's in front display. Green—Cable; Red—VCR	On-Screen Display	Character Size: 12 x 18 pixels Screen Size: 12 rows x 24 columns Message/Barker Capacity: 14 pages Channel Descriptors: 4 characters, maximum
Input Video Level	+4 dBmV to +15 dBmV	Parental Control by Channel	100% user-controlled offering channel-by-channel selections
Input Sound Level	-13 dBmV to +2 dBmV	Mechanical Security	Std.: security screws; security pin; uni-chassis construction
Data Carrier Frequency	FSK Modulated FM Carrier 106.5 or 108.5 MHz	Downloadable Parameters	Output Channel Initialization Command Terminal Logical Address System Site Code Time Out Period Terminal Configuration Authorization Information Barker Channel(s) Consumer Feature Enable/Disable Subscriber Messaging Channel Descriptors Channel Cross Reference Map Decryption Key
Bandwidth Level	± 200 KHz standard FM -15 dBmV		
Video S/N	49 dB @ +4 dBmV input level	Two-way System Compatibility	Upgrade in field by addition of STARVUE TM or STARFONE TM internal module
Fine Tuning	Automatic	Operating Temperature Range	59°F to 104°F (15°C to 40°C)
AFT Capture Range	± 300 KHz @ input level of 0 dBmV	Operating Humidity Range	5% to 95% (non-condensing)
Output Frequency Accuracy	± 150 KHz	AC Voltage	105 VAC to 125 VAC, 60 Hz
Return loss:		Power Dissipation	22 Watts at 120 VAC
Input	6 dB min.	Surge Protection	Surge protection provided on power supply and RF ports
Output	8 dB min.	Size	16.5" x 8.25" x 2.7" (LxWxH)
Spurious:		Weight	8.2 lbs.
Output	-57 dBc max., in band		
Cross Modulation Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Composite Second Order Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Second Order Distortion	-60 dB (@ +15 dBmV input level)		
Composite Triple Beat Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Converted Input Beats (With all Input Signals)	-25 dB (82 channels; each @ +15 dBmV)		
Hum Modulation Distortion	3 IRE		

*All specifications subject to change without notice.

Jerrold
Consumer Electronics

Jerrold IMPULSE 7000™ Series
Watch 'N' Record™

Baseband Addressable Converter
With Dual Tuners and On-Screen Display

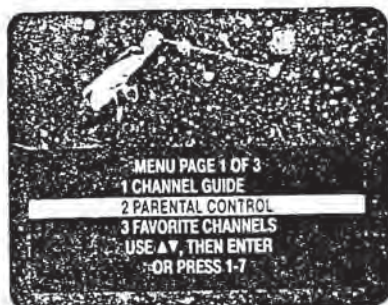
SPECIFICATIONS (Continued)
JERROLD IMPULSE MODEL WATCH 'N' RECORD
HANDHELD REMOTE CONTROL

MRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line.	Power Requirements	3 volts
		Weight	3 ounces (with battery)
		Batteries	Included as standard, Two 1.5 volt AAA
TVRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line.	Power Requirements	6 volts
		Weight	5 ounces (with battery)
		Batteries	Included as standard, Four 1.5 volt AAA
IN VIEW Transmission Range	Up to 30 feet in a direct line from the receiver/converter at 0 degrees and 22 feet at any angle of up to ± 20 degrees axial.	Power Requirements	3 volts
		Weight	4 ounces (with battery)
		Batteries	Included as standard, Two 1.5 volt AAA

NOTE: Specifications subject to change without notice

Jerrold IMPULSE 7000 Series Model CFT 2000

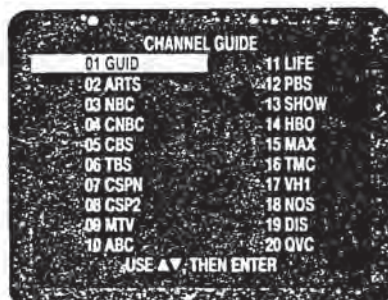
Baseband Addressable Converter With On-Screen Display



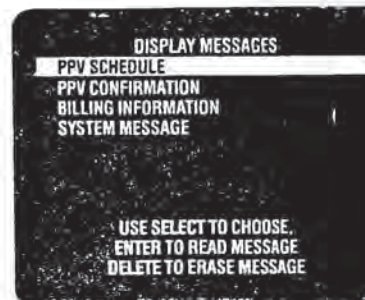
MAIN MENU



MAIN MENU



CHANNEL GUIDE



MESSAGE DISPLAY

IMPULSE, ENHANCED BASEBAND SECURITY AND ON-SCREEN DISPLAY

FEATURES

- ON-SCREEN DISPLAY
- UNMATCHED BASEBAND SCRAMBLING
- FULLY DOWNLOADABLE
- ELECTRONIC PROGRAM GUIDE CAPABILITY
- SUBSCRIBER MESSAGING

The Jerrold CFT-2000 is a 550 MHz impulse-capable baseband converter with consumer-friendly on-screen display programming capability and the unmatched scrambling security of baseband technology.

• SUBSCRIBER FEATURES

The on-screen display feature is sophisticated, yet easy to use. It includes preset, simple-format menus and help message screens with subscribers through the stereo red line for even the most complex baseband converter functions. It also includes a large, easy-to-read digital display.

parental codes, and it makes purchasing PPV events and services even more convenient.

Channel I.D. When a subscriber changes channels, the on-screen display identifies the channel number and channel name, as well as whether the converter is locked, parentally controlled, and if it is tuned to a favorite channel.

Volume Control Bar. When a subscriber presses the volume up/down key, the volume control bar appears on the screen. The bar's movement visually indicates whether the volume has increased or decreased. The CFT-2000 passes 5700 stereo channels and about 1000

stereo televisions or VCRs to receive and stereo programming. The volume control also indicates the best stereo point for optimum stereo sound.

VCR Timers. Subscribers can quickly program up to eight events over a 365-day period. CFT 2000 makes it possible to program even on a one-time, daily, weekly, weekday and weekend basis. It is also easy to review and edit a ready-programmed event.

Parental Control. The on-screen menus allow a subscriber to set appropriate parental controls. The on-screen key symbols

Jerrold IMPULSE 7000 Series Model CFT 2000

Baseband Accessable Converter With On-Screen Display

as well as parental control barker messages, remove any doubt whether the parental control feature is in use.

Alarm Timers. This feature makes it possible for subscriber to program the CFT 2000 to turn on or off at a specified time. This can be done once or on a daily basis. The sleep timer can be programmed to turn off the converter anywhere from 30 minutes to three hours.

Subscriber Control Over Display Features. Research has shown that subscribers have different preferences for either a clear or solid menu background. The CFT 2000 allows the subscriber to change the menu background to clear screens, partial or solid, depending on personal preference. They can also adjust the centering of the menus on their televisions.

Remote Controls. The CFT 2000 comes with a choice of two special remote controls—the TVRC-OSD and the MRC-OSD. Both remotes are feature-rich, but special keys have been added for the on-screen display. Colors have been added to the TVRC-OSD keypad to facilitate use. The TVRC-OSD remote control allows the subscriber to turn the television on and off, and control the TV's volume, thus reducing the number of remotes the subscriber needs to use.

• OPERATOR FEATURES

The CFT 2000 provides multiple screens of message space that operators can use to notify customers of important information. These screens can be used to verify customer appointments, remind customers of service changes or disconnect dates, and explain service outages. Notifying subscribers of weather hazards in the area is another example of how the operator can use this feature.

In addition, the message screens can serve as promotional tools, advertising upcoming pay-per-view events and services and limited free pay-TV viewing, as well as important community events. They offer the potential for other creative revenue generating ideas, such as targeted local advertising.

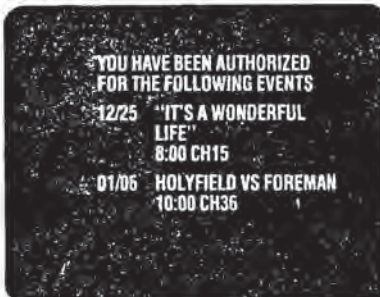
Using the CFT 2000, operators can send messages to specific subscribers, to a group of selected subscribers, or to the entire subscriber base, if so desired. Messages can be custom designed with Jerrold's unique message editor, allowing operators to tailor their messaging activity to suit specific needs.

• BARKERS

The CFT 2000 comes with two types of barkers—converter-activated and operator-activated—allowing flexibility for operators who wish to guide subscriber viewing. All barker messages can be edited by the operator.

Converter-Activated Barkers. In addition to providing video off-tuning, the operator can choose to display a character-generated message explaining why this channel is off limits and what steps are necessary to change this (unlock the box, order the PPV service, etc.)

The CFT 2000 offers a total of six converter-activated barkers: four standard barkers (parental control, impulse PPV, unauthorized pay and disconnect) and two optional barkers (turn-on that appears each time the subscriber turns on the converter, and out-of-credit). These barkers are found in the channel map.



Operator-Activated Barkers. These only appear on scrambled channels that the subscriber is authorized to view. The operator can use these to verify purchase of PPV events and services or to provide movie/event-specific information (movie running time or movie description). Operator-activated barkers can be programmed and sent on a specific scrambled channel to an individual subscriber, a group of subscribers or the entire subscriber base.

• DOWNLOADABLE SYSTEM PARAMETERS

Downloadability gives the cable operator greater control and ease of operation. Using the AH-4E or ACC-4000 controller the operator can download such features as subscriber address, system site code, geographic code, output channel, barker channel, timeout period, and custom channel assignment.

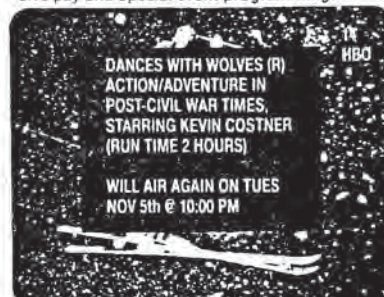
This downloading capability provides operator benefits such as centralized control over system

functions, simplification of the installation process and reduction of inventory requirements. The software-selectable output channel capability enables the operator to easily switch between two different converter output channels (3/4). This helps reduce inventory requirements by allowing interchange of converters between systems.

The 3/4 output channel allows for compatibility with subscriber VCRs so subscribers need not tune to one channel to watch TV and another to use the VCR.

• IMPROVED SIGNAL SECURITY

Model CFT-2000 descrambles Jerrold's modes of dynamic video inversion coupled with dynamic sync suppression. It also offers audio privacy. Jerrold's baseband scrambling scheme offers the most secure signal in the cable industry today, protecting operator investments in expensive pay and special event programming.



• ELECTRONIC PROGRAMMING GUIDE (EPG)

The operator can use the CFT 2000's in-band and out-of-band messaging capability to provide program guide information to subscribers. The ways of presenting this type of information—as well as the type of information presented—are numerous. Examples of EPG information include movie and/or program specific descriptions of current and/or future programs or movies. Schedule information is another possibility. Events/programs in a specific time period could be organized by subject matter.

• TWO-WAY UPGRADABILITY

The CFT-2000 is upgradable to two-way operation using Jerrold's STARFONE* and STARVUE* internal modules. The CFT-2000 lets operators offer push-button impulse pay-per-view programming to subscribers without expensive rework.

Jerrold IMPULSON 7000 Series **Model CFT 2000**

Baseband Converter
With On-Screen Display

SPECIFICATIONS

MODEL	CFT 20★# (★ = 1 way/2 way; # = output channel 3/4)	Differential Gain	10% (max.)
Input Frequency	54-550 MHz (excluding data carrier frequency)	Differential Phase	10 degrees (max.)
HRC/IRC Frequency Assignments	Downloaded	Scrambling Method	Gated Sync Suppression or Dynamic Gated Sync Suppression, Video Inversion, Audio Privacy, Hamlin Compatibility
Number of Channels	82 channels per cable; one or two cables	On-Screen Display	Character Size: 12 x 18 pixels Screen Size: 12 rows x 24 columns Message/Barker Capacity: 14 pages Channel Descriptors: 4 characters, maximum
Dual A/B Cable Switching	Optional A/B switch (field upgradable)	Parental Control by Channel	100% user-controlled offering channel-by-channel selections
A/B Cable Indicator	LED in front display	Mechanical Security	Std.: security screws; security pin; uni-chassis construction
Input Video Level	0 dBmV to +15 dBmV	Downloadable Parameters	Output Channel Initialization Command Terminal Logical Address System Site Code Time Out Period Terminal Configuration Authorization Information Barker Channel(s) Consumer Feature Enable/Disable Subscriber Messaging Channel Descriptors Channel Cross Reference Map Decryption Key
Input Sound Level	-17 dBmV to +2 dBmV	Two-way System Compatibility	Upgrade in field by addition of STARVUE™ or STARFONE™ internal module
Data Carrier Frequency	FSK Modulated FM Carrier 106.5 or 106.5 MHz	Operating Temperature Range	59°F to 104°F (15°C to 40°C)
Bandwidth Level	±200 KHz standard FM -15 dBmV	Operating Humidity Range	5% to 95% (non-condensing)
Video S/N	49 dB @ 0 dBmV input level	AC Voltage	105 VAC to 125 VAC, 60 Hz
Fine Tuning	Automatic	Power Dissipation	16 Watts at 120 VAC
AFT Capture Range	±300 KHz @ input level of 0 dBmV	Surge Protection	Surge protection provided on power supply and RF ports
Output Frequency Accuracy	±150 KHz	Size	10.25" x 8.25" x 2.7" (LxWxH) (260.4 mm x 209.6 mm x 68.6 mm)
Return Loss:		Weight	5.5 lbs.
Input	6 dB min.		
Output	8 dB min.		
Spurious:			
Output	-57 dBc max., in band		
Cross Modulation Distortion	-56 dB (82 channels, each @ +15 dBmV)		
Composite Second Order Distortion	-56 dB (82 channels, each @ +15 dBmV)		
Second Order Distortion	-60 dB (@ +15 dBmV input level)		
Composite Triple Beat Distortion	-56 dB (82 channels, each @ +15 dBmV)		
Converted Input Beats (With all Input Signals)	-25 dB (82 channels, each @ +15 dBmV)		
Hum Modulation Distortion	3 IRE		
Output Level	7-14 dBmV		
Isolation (Input/Output)	70 dB min.		

NOTE: Specifications subject to change without notice

JERROLD
COMMUNICATIONS

03 KMY Movie:Tremors
06 WPVI Movie:Last Wishes
10 WCAU Movie:Batlling for Baby
12 WHY Masterpiece Theatre:Parnell

TVG

A=TV

B=MORE

C=BACK

D=MENU

E=MARK

F=HELP

10 WCAU Movie: Battling for Baby
12 WHY? Masterpiece Theatre: Parnell
14 MTV Music Videos
17 WPHL Reel To Reel

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

12 WHYY Masterpiece Theatre:Parnell
14 MTV Music Videos
17 WPHL Reel To Reel
24 WWOR Lifestyles of the Rich and Famous

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Exhibit 3

03 KMY Movie:Tremors
06 WPVI Movie:Last Wishes
10 WCAU Movie:Batlling for Baby
12 WHYY Masterpiece Theatre:Parnell

TVG [A=TV] [B=MORE] [C=BACK] [D=MENU] [E=MARK] [F=HELP]

10 WCAU Movie: Battling for Baby
12 WHYY Masterpiece Theatre: Parnell
14 MTV Music Videos
17 WPHL Reel To Reel

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

12 WHY? Masterpiece Theatre: Parnell
14 MTV Music Videos
17 WPHL Reel To Reel
24 WWOR Lifestyles of the Rich and Famous

TVG

A=TV

B=MORE

C=BACK

D=MENU

E=MARK

F=HELP

Exhibit 4

**TV Guide
Prototype
X*PRESS
Version 1.10 Rel 4
11/09/92**

2:52 pm
Fri Nov 13

TV
GUIDE

2 KWGL

Tom and Jerry
(2:30p-3:00p)

TOUR GUIDES

What's on TV? StarSight and VideoGuide's
on-screen program guides compared

BY ROB SABIN

MAGNAVOX | 

26 DECEMBER 1994 VIDEO

VIDEOGUIDE, VIDEO ENTHUSIASTS, and just about anyone who enjoys watching TV like the futuristic idea of having the proverbial 500 channels of TV programming to choose from, but without a well-designed on-screen program guide all of those choices will simply numb the mind. Printed guides won't cut it in the future, because they don't cut it now. Listings are frequently inaccurate, incomplete, and skin-deep. And the scrolling channel guides provided by cable operators are an exercise in futility, listing little information and scrolling along happily whether or not you've seen everything you need to see. That's why StarSight launched its on-screen guide service (in 1994), and why VideoGuide—StarSight's first serious competitor—bit stores and the airwaves last summer. Both systems

claim to make TV viewing and VCR taping more convenient. To see exactly what they offer and how they differ we ran the two systems up against one another head to head.

MEET THE CONTENDERS

Both StarSight and VideoGuide are intended to simplify three common tasks: finding out what's on now and in the immediate future, moving quickly from one channel to another, and recording a program without hassles. To accommodate these tasks, each system includes a special decoder that generates a grid-based guide and displays it on your TV screen.

Using a supplied remote control, you can scroll through the grids to see what's on and get content blurbs for each show. In normal use, both systems hold 7 days of programming informa-

tion in memory. The systems also offer customizing functions. And if a grid lists a show you want to record, both systems let you do so simply by pressing a remote control button or two.

To get constantly updated TV listings to the decoder, both StarSight and VideoGuide made deals with TV Data Technology (TVDT), a national organization that collects program data from local and network broadcasters for use in newspaper and magazine listings. Beyond this, however, the two systems differ dramatically in how they deliver program listings to your TV.

In StarSight's case, the information is first routed by a high-speed land-line from TVDT to StarSight's headquarters. Once there, StarSight technicians format data for every locale in the nation, encrypt it for security, and send it over another land-line to the Public

PHOTOGRAPH BY [illegible]

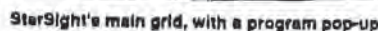


VIDEO GUIDE 27

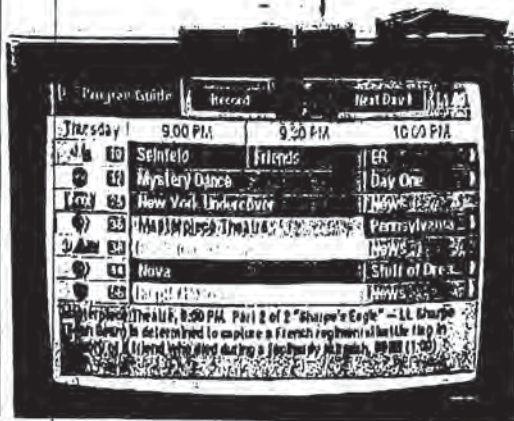
StarSight decoders are currently available in several makes of TVs, VideoGuide's basic "Program Guide"

The box has a smooth, convex Plexiglas face with no front-panel controls and only a single red LED indicator to prove that it's alive. At 1.5 x 1.4 x 10.5 inches (h/w/d), it's about the size of a typical VCR, though much shorter, of course. Factor in its gun-metal gray cabinet and it disappears easily above or below a VCR—precisely as its designers intended.

The supplied remote is a spacious and fairly straightforward affair. Though the remote has a 10-digit keypad at its bottom, the most distinctive features are its Star-Sight control keys, which are clustered in its middle. At the center of the cluster, in the spot where your thumb naturally



VideoGuide's decoder is available only as a black box (\$100). The unit is built by Sanyo, which has also invested \$6 million in the company, and is being sold in Radio Shack outlets. Like the Magnavox CB1500, the VideoGuide box comes with everything you need to get up and running: the compact receiver/decoder, an AC power adaptor, a small video switcher, two infrared emitters, and a simple and highly ergonomic universal remote. Free 30-day subscriptions to three different VideoGuide services—the basic listings



guide as well SportsGuide and NewsGuide—are part of the package. After the 30 days are up, a basic subscription costs \$50 annually; you can add one of the other guides for an extra \$25 annually or both of them for an extra \$50 annually.

The two sub-guides are pretty neat. SportsGuide is a graphic box-score service that's constantly updated by the same firm that TV and radio stations use for their minute-by-minute sports coverage. NewsGuide is an on-screen newspaper derived from ongoing AP and UPI wire stories.

The VideoGuide receiver, which measures about 4 x 8 x 5.25 inches (h/w/d), is gorgeous. Form follows function, however—the Plexiglas "beak" up front is really the infrared receiver/emitter that accepts commands from the remote and controls your TV; the box is designed so that the beak hangs over the lip of your set.

VideoGuide's remote is a looker, too. Its perfectly shaped handle flares as you move up, creating a fan-like effect, and its clever design uses only four buttons to control a wide number of VideoGuide and TV functions. When you hold the remote, your thumb naturally falls on a joystick that allows up/down or left/right movement. In TV mode, the left/right action lowers or raises volume; up/down changes channels. In GUIDE mode, the joystick is used just like cursor keys to move around the grids or listings.

The joystick is actually nestled into a large, concave rocker marked TV on top and GUIDE on the bottom; the rocker is used to turn the TV on or off and toggle back and forth between the two basic modes. Lastly, there are two "action" buttons, marked LAST and MUTE, to the left and right of the rocker, respectively. In TV mode, LAST is used to flick back and forth between your two most recently selected channels; MUTE does just what you'd expect it to. In GUIDE mode, however, the function of these buttons is determined by the selected guide screen.

THE SETUP

StarSight and VideoGuide may be designed to drop right into your system, but there are some fairly involved—if one-time-only—setup procedures to deal with once you've got the devices wired. Fortunately, both systems help you with on-screen prompts and excellent owner's manuals. If you run into

trouble, know that each company maintains an excellent customer-service operation via a toll-free phone number.

The first thing Magnavox's CB1500 does when you plug it in is scan for available channels; during this drill, you'll see white noise on your screen. When the scanning drill is complete (indicated by the steady picture on your screen and the steady glow of the red LED on the CB1500's front panel), you need to manually set your TV or cable box to your local PBS channel, MTV, or Nickelodeon. Then use the remote's TO DO button to access the "To Do" menu and activate the registration process.

From here, you're taken through a series of screens that ask you about your system (whether you're using cable or an antenna, for example). Then you're given an ID and "star number" that are specific to your unit. The next step is to call StarSight at their toll-free number (manned 7 days a week from 6 a.m. to 8 p.m. Pacific time) and register the unit. After that, you input the appropriate three-digit remote codes for your specific VCR and cable box. They can be found on a list in the owner's manual or via StarSight's phone rep; they allow the StarSight decoder to change channels and activate the recording functions on your VCR. You'll also need to program the universal remote with the codes for your VCR, TV, and, if you're using one, cable box.

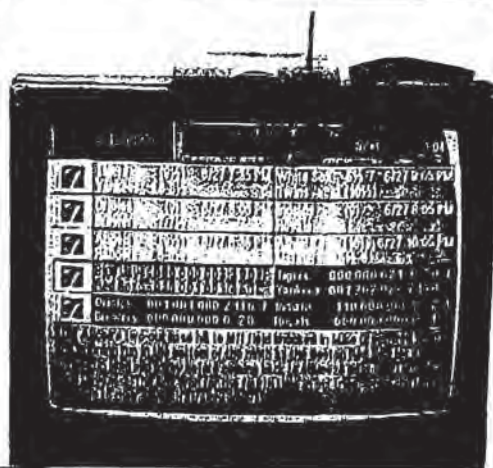
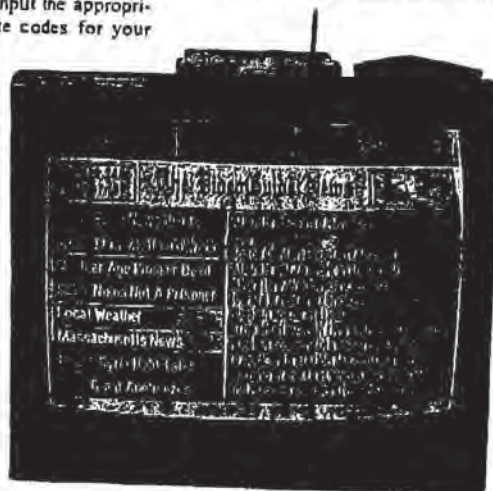
Once you're fully set up, it takes 4 to 12 hours for the system to accumulate all of the listings data that's required to create your local grid. One catch: Because StarSight listings are carried on the var of specific channels, you have to periodically tune to one of these stations in order to receive updated data. The loading/updat-

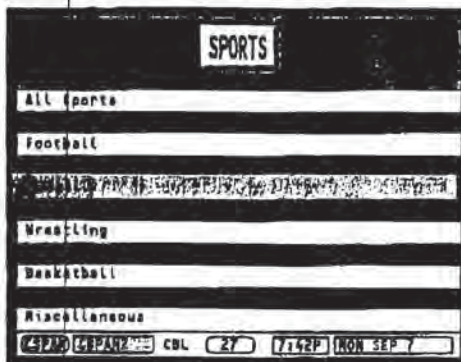
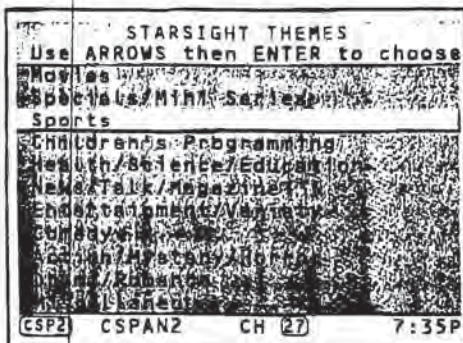
ing process takes an average of about 6 hours and, ideally, you should set it up to do this once a day (just after you go to sleep or go to work would be a good idea).

StarSight simplifies the updating process by allowing you to select—via the "To Do" menu—one of several 6-hour intervals, during which the decoder will automatically tune to an appropriate channel and collect the data. If you use a cable box, the need to constantly update means that you'll need to leave it powered during the selected interval.

While this may sound inconvenient, it turned out to be pretty painless. At the interval I selected, the decoder automatically commanded my cable box to switch to the local PBS station; when the update was completed, it commanded the cable box to return to the station it received last. Since the TV remains off, it's a silent and virtually invisible

VideoGuide's NewsGuide, SportsGuide





StarSight's "Theme Guide" (top), "Sports" sub-category

operation. If you don't use a cable box, the StarSight decoder will change its built-in tuner to PBS for data collection, so the operation will be completely automatic and undetectable.

Though VideoGuide's information is automatically updated and doesn't require any work on your part, setting it up it may require some special procedures, since the system might need to be trained with infrared commands from your TV and VCR remotes. The actual hookup is easy, however, and, unlike StarSight, there's no need to call an 800 number to initially register your unit. The entire process is simplified by a supplied (and well-produced) 12-minute videotape that explains the procedure and familiarizes neophytes with system features and operation.

The first thing you'll see when you access VideoGuide is a "Welcome to VideoGuide" screen. This is immediately followed by a series of tutorial screens intended to familiarize you with the system's basic features and operation (another nice touch). Once you've stepped through the tutorial, the decoder begins the setup process by asking for your zipcode; you use the re-

mo's joystick to select each number. As mentioned, your zipcode tells VideoGuide which subset of its program data you need.

After that, you run through a series of screens that tell the decoder whether you have a cable box and/or a VCR in your system and allow it to identify the infrared commands that are required to control your TV, VCR, and (if you're using one) cable box. Instead of using remote-control codes from a directory for specific makes of TVs, VCRs, and boxes, VideoGuide identifies which units you have by asking you to hold the remotes supplied with your other video gear up to VideoGuide's infrared beak and then hit a key or two on each; once you've done this, it searches its database to see if it recognizes the codes and, therefore,

your gear. If it can't find your models, you'll have to train the decoder by holding each remote's emitter-end directly against the decoder's beak and following the on-screen commands.

Once you're set up, all you have to do is wait 24 hours while the decoder collects the grid listings that are appropriate for your zipcode. After that, listings are constantly updated as long as the decoder remains powered up (as it always should be)—there's no need to leave the cable box on or to tune to any particular station to receive data. In this light, VideoGuide is more convenient than StarSight.

When your decoder starts getting data, it'll learn what day you turned it on and will automatically start counting down your 30-day free trial. When there are 10 days left to the trial, you'll see a reminder when you turn your TV on and first access the guide to call VideoGuide and subscribe or face the dreaded service interruptus. When you sign up, you'll supply your zipcode and the decoder's serial number, and VideoGuide will use this data to send your decoder its own authorization code. Pretty smart.

THE SYSTEMS IN ACTION

Channel-surfing with an on-screen guide is, to put it simply, a new way of watching television. What was once a passive exercise becomes an interactive game—an entertainment within entertainment. To maximize the experience, any on-screen guide needs to have several attributes.

First, it must provide a seamless gateway in and out of the programs or information services you choose to access; the ideal is instantaneous response. A good on-screen guide should also provide a degree of customization, enabling you to change the grids to suit your viewing preferences. Quality of information is another factor, of course; ultimately, a guide that provides more program information will be more valuable, as will one that offers special grids for different types of programs or services. Finally, a guide should look good on-screen and be easy to read.

StarSight and VideoGuide scored very differently in each of these areas. Neither system was perfect. But depending on what you watch and what's important to you, each has benefits and shortcomings.

Surfing on StarSight begins when you hit the remote's GUIDE button, which automatically brings up the main StarSight grid. The grid essentially obliterates all but a thin slice of the currently selected program, though the program's sound is audible. But the program is there, and that's key. With VideoGuide, the TV signal is switched off whenever you access the guide. Since StarSight is accompanied by some semblance of the currently tuned channel, you can monitor it and return to it immediately—when a commercial ends and the show returns, for example, or if wild applause and cheers alert you to the fact that a big play has just taken place in a football game. (Note, too, that this enables a new-and-improved version of StarSight, currently available only in new Zenith TVs, to offer a PIP-like window that displays the image of the currently tuned channel.)

The StarSight grid is organized with a grid date in the top-left corner, and, alongside, a horizontal bar that contains a highlighted day-of-the-week indicator. Directly below this bar is a time bar that covers 90 minutes of programming; it's broken up into half-hour increments, similar to the heading of the TV listings in your local newspaper. Channels run down the left side of the

grid and are indicated inside colored ovals that contain either a channel number or a network abbreviation, such as CNN or ESPN. A status bar running along the bottom of the grid contains, from left to right, the abbreviation for the currently tuned network, the network's full name, the channel number, the exact time of day, and the current day and date.

The program listings reside in the center of the grid. Moving the on-screen cursor to highlight a program and pressing the remote's star key causes a "pop-up" to appear—essentially a yellow box with black type that gives the full title of the highlighted program, its time and length, its type (educational, documentary, news, and so on), and a description—usually a single sentence providing a plot synopsis or, for news or talk shows, a list of scheduled guests or subjects. If the program is a movie, you'll see a short list of leading actors, the genre (comedy, drama, and so on), a star rating, the year the film was made, the MPAA rating (if the film has been rated), and any parental advisories (such as "violence" or "adult situations"). You'll also be told if the program is being broadcast with a stereo soundtrack or closed captioning.

Moving around the main grid is made easier by the remote's PAGE and DAY keys. Only 10 channels are displayed at any given time on the grid, so you might have up to five or six "pages" to cruise for any given time slot, depending on the total number of channels you receive. The PAGE button lets you quickly get to the channels not currently displayed on the grid, while the DAY key lets you go forward or back in time without having to sequentially move the cursor across several days of programming.

To speed things along, StarSight lets you customize the grid by removing channels you don't watch. You can also arrange the remaining channels in any order you choose. To do either task, you access the appropriate screen via the "To Do" menu and then use the cursor keys to remove or move channel selections. The process is tedious, but you only need to do it once.

Tuning to a show that's highlighted in the grid is as easy as hitting the remote's TUNE button. And here's a big bonus: Once you're tuned to any given channel (and the grid has disappeared), the status bar from the bottom of StarSight's grid remains at the bottom of

your screen; it tells you what network and channel number you've landed on, the time, and the date. Directly above it, you'll see another helpful pop-up, this one giving you the title of the program or movie you've just tuned to along with the time remaining. These incredibly helpful displays disappear about 3 seconds after you've tuned to the channel. Pressing the star button at any time—and on any program—brings them up again.

It gets better: If you use the plus/minus channel rocker on StarSight's remote to scan channels (which StarSight calls "channel-grazing"), the status bar and the pop-up with the show-title and time-remaining information are displayed for about 3 seconds whenever you change channels. And if you press the star button while the pop-up is displayed, you'll get a third box that contains the same program description you'd get if you were accessing information from the grid. This is a great mode to use when you've just turned the TV on and want to find out what show is on the current channel, how much of it you've missed, and what it's about. Note that the program-description pop-up remains on-screen and changes content to match the program as you change channels with the rocker key; to cancel it, you hit the star key to back your way out or simply hit EXIT to go back to full-screen viewing.

"Browsing" is another excellent way to find out what's on. Using the remote's up/down cursor keys while you are watching TV (as opposed to scanning the grid) puts you in the BROWSE mode. In it, the initial status bar and pop-up you get in GRAZING mode appear at the bottom of your screen for the selected channel. Hitting one of the cur-

rent of the pop-up as if you were changing channels, but the channel doesn't actually change—in other words, you can watch a show while using the pop-ups to see, in detail, what else is on. And hitting the star button in this mode accesses the secondary, program-description pop-up. Cool!

If you find a show that interests you in the pop-ups, you can tune to it by hitting the remote's TUNE key. The BROWSE mode is great for keeping an eye on the current program, since the displays consume very little of the TV picture (unlike the full-size grid, which blocks out most of the screen).

Finally, you can change channels by directly inputting the channel you want using the remote's 10-digit keypad. The number you punch in appears in a white box in the top-right corner of the screen, and the channel changes automatically without further keystrokes.

Along with its basic grid, StarSight provides two additional guides for finding shows. One is the "Channel Guide," which can be accessed whenever you're in the main grid. Say you like the Discovery channel and want to

Recording data from StarSight (top) and VideoGuide

RECORDINGS				
9	MON	10:00P	Northern Exposure	1:00
5	MON	9:00P	Larry King Live	1:00
NICK	MON	10:30P	World News	1:00
KNN	TUE	1:00P	Showbiz	:30
5	TUE	11:00P	I Love Lucy	:30
5	WED	11:00P	I Love Lucy	:30
5	THU	11:00P	I Love Lucy	:30
5	FRI	11:00P	I Love Lucy	:30
CBL 7:42P MON SEP 7				

To Do List			
2:00 PM	MON	Highly Rated	1:00
7:00 PM	MON	Baseball: Blue Jays at Red Sox	1:00
8:00 PM	MON	Masterpiece Theatre	1:00
9:00 PM	MON	Second Street	1:00
10:00 PM	MON	Full Moon	1:00
7:42 PM MON SEP 7			

know—quickly—what they're showing in the hours and days ahead. You could press the GUIDE button and then use the right cursor to scroll horizontally through the grid, or you could use the down cursor to move to The Discovery Channel (DISC) and press GUIDE a second time, which takes you into the "Channel Guide." Do that and you'll get a sequential listing of everything that's programmed for DISC for the next 7 days. Eleven shows appear on each page, and you can step through the pages using the PAGE button. If the program that's currently being broadcast on DISC looks interesting, you can jump to it by highlighting it and hitting TUNE; if it'll be broadcast in the future, you can easily tag it for recording by hitting the remote's RECORD button.

The last way to find programs with StarSight is through the "Theme Guide." Pressing the remote's THEME button brings up a menu of 11 themes, including MOVIES, SPORTS, and COMEDY. Using the cursor to highlight a theme and then pressing the star key brings up a list of sub-categories. Under MOVIES, for example, there are 11 separate genre selections. A sub-category can be highlighted using the cursor keys, and hitting the star key will access a sequential listing of its contents. Again, pressing TUNE or RECORD will initiate the appropriate action for a highlighted program.

As mentioned, recording with StarSight is a simple process. You can press the remote's RECORD button at any time to initiate recording of a show you're watching or to record any current or upcoming show in a grid or sub-screen. In each case, the decoder will ask if you want the selected show to be recorded once, daily (Monday through Friday), or weekly. If you're recording once (the default selection), you only need to press RECORD a second time to lock in the command. Otherwise, just move to the appropriate selection with the down cursor key and then press RECORD.

At this point, the program is automatically added to one of two running lists that the StarSight decoder keeps in memory—one for one-time recordings, the other for serial recordings. These lists can be viewed at any time simply by pressing the remote's TO DO button. Pressing TO DO once gets you to your one-time list, pressing it twice takes you to your serial-recordings list, and pressing it a third time takes you to the

TO DO menu for setup-type chores.

The recording lists include (from left to right) the channel, day, time, title, and length of the selected program. While in the list, you can use the cursor keys to highlight any program and then press the star key to get a program-information pop-up. You can also cancel any highlighted program on a recording list by hitting the remote's CANCEL key. Your VCR also has to be loaded with blank tape, of course, and it has to be turned off when it's expected to record.

StarSight's "Channel Guide" lets you scan 7 days of programming for any channel.

If you don't use a cable box, StarSight will record the shows you've selected by tuning your VCR's tuner to the appropriate channel before recording. Since the StarSight decoder still has its own built-in tuner, you can watch other shows while you're recording. To effect this, you simply hit your VCR's TV/VCR button after recording has begun to put it into TV mode. You can then use the StarSight remote's plus/minus channel rocker to select a channel for viewing.

StarSight uses different colors to segregate channels in the grid and set off the various indicator rows and columns from the actual listings; color is also used when a program is highlighted. The type is highly readable from normal viewing distances—provided your TV's screen is a 19-inch or larger. For the record, StarSight was superior to VideoGuide on the smaller sets I tried out, though neither was ideal.

I have two minor complaints about StarSight's graphics. First, they're seriously dated by today's standards; computer users familiar with a Macintosh or Windows environment will find them almost painfully simplistic. The plain type face is reminiscent of what's used today for closed captioning, which—while highly readable—is just plain old. The abbreviations for the different networks can also be arcane. (VideoGuide's use of network symbols is a far nicer way to go.) StarSight says its graphics were designed to maximize readability and minimize memory re-

quirements; I'm sure their simplicity does minimize memory needs, but aesthetically they're a yawn.

My other complaint is that the program-information pop-up changes size and moves around as you highlight different channels on the grid. Say you go to the main grid to see what's on: You position the cursor at the top of the screen, activate the info pop-up with the star key, and begin working your way down the current time column. The pop-up box for the first channel obliterates the middle and lower part of the grid. As you move down the column to different channels, the pop-up box changes to reflect the highlighted program—but it also repositions itself constantly to get out of the way of your walking cursor. This can be annoying and slows you down when you're trying to move quickly through the grid to select a program.

MONDO VIDEOGUIDE

VideoGuide again has a better solution—it uses a fixed box at the bottom of the screen, and your eye quickly learns where to go to get program information. This method has two trade-offs, though: slightly smaller type, and fewer channels displayed on any given page of the grid (seven or eight as opposed to StarSight's 10). I found these trade-offs to be acceptable, as long as you have an adequately sized screen.

As I've said, graphics are one of VideoGuide's best attributes. And that's not all: Unlike StarSight, VideoGuide offers a true one-touch recording option. Its additional SportsGuide and NewsGuide services are truly outstanding (though you do have to pay extra for them). And the system offers some unique and helpful listing formats that StarSight doesn't provide.

But VideoGuide isn't perfect. Where it comes up short, in fact, is in basic everyday operation. I simply found its interface more difficult to use, primarily because of VideoGuide's (oversimplified, four-button remote).

After turning your TV on (by pressing the TV button on the top of the VideoGuide remote's giant rocker, the first step in getting to the system's grids and services is to press the VIDEOGUIDE button at the bottom of the rocker. This brings you into the system's main menu. Recall that accessing VideoGuide shuts down the TV signal, so you'll have no way to monitor the status of the currently tuned channel,

What you'll see on the screen are full-screen VideoGuide graphics; whenever you press one of the remote's keys, you'll hear a reassuring "honk" (or other sound) that indicates your command has been received.

Enter the main menu and you'll see the "banner," a bar that runs across the top of every VideoGuide screen. The left of the banner displays a logo. In the main menu, it's VideoGuide's logo; as you access different services or grids, the logo changes to indicate where you are. To the right of the banner is a high-resolution graphic rendering of the center portion of the VideoGuide remote, showing the joystick and the two action buttons, which are represented by blue and green bars that match the actual buttons.

Inside these bars are labels that indicate the action taken when the keys are hit; these change depending on the screen or menu "tile" you're on. If you select the "Program Guide" in the main menu, the action keys are marked EARLIER and LATER; they're used to change the time and day where you'll enter the selected grids. At the far right of the banner is a time-of-day clock, which is also constant. When the batteries in your remote run low, this graphic will alternately flash the clock and a battery icon. Pretty neat.

Graphic symbols that indicate each available VideoGuide service or grid run down the left side of the main menu; each is labeled at right. As mentioned, the fixed information box appears at the bottom of the screen. This box displays program info when you're cruising the grid or game summaries when you're using SportsGuide.

From the main menu, you can use the joystick to scroll down to select one of several options, including the various services, a record list, and a couple of diagnostic and setup modes. The first grid listed is the "Program Guide," which will probably get the most use for scanning the guide, selecting channels, or setting up recordings.

Three options within "Program Guide" can be selected with the joystick. The "Standard" grid features seven channels running down the left side, each identified by its network logo or call letters, or, if they aren't used, by a channel number. Listings for 90 minutes, broken into 30-minute segments, are displayed. Above the channel and grid listings is a bar that indicates the day and time segments represented on

the grid. You use the joystick to highlight programs on the grid; as you do, the content of the information box changes accordingly.

The information provided is similar to that found in StarSight's pop-ups, though, again, VideoGuide's graphics are superior, with familiar newspaper-type symbols to indicate closed captioning and MPAA ratings. VideoGuide also provides more information than StarSight for some programs; along with the lead actors, for example, the

VideoGuide often provided a bit more info than StarSight, and its graphics are superior.

former listed the director for some movies and some summaries were more detailed. (Though both companies get their listings data from TVDT, they format the data according to their own formulas.) The differences in wording and content were usually minor on the programs I cross-checked, however.

To tune in a highlighted program on the VideoGuide grid, you hit the TV button on the remote's giant rocker switch—this will bring you back to the TV mode, and the channel will automatically change to the selected show.

You can also record directly from this or any other grid. In the "Standard" grid, the remote's blue action key activates recording, while the green key jumps you 24 hours ahead in the guide; these options are indicated clearly by the banner line's RECORD and NEXT DAY labels.

Pressing the RECORD key automatically activates a one-time recording of the highlighted program. If the program is currently playing, your VCR will begin recording; if it's a future recording, it'll be added to your "Record List." If you want to record regularly, you can press RECORD again; this takes you directly to the "Record List," where you can toggle to the selected program with the joystick and select serial recording. By setting up one-time recording as a default (rather than asking you to select it from a menu, as StarSight does), VideoGuide delivers true one-touch recording for most occasions. As with StarSight, you'll be able to record one

program while you watch another as long as your system doesn't require the services of a cable box; your VCR's and TV's tuners, respectively, handle the duties.

VideoGuide also excels with the layout of and information in its "Record List." Unlike StarSight, only one sequential list of selected recordings is kept, with an indicator to the right of each selection to show whether it's a one-time or serial recording. The ever-present info box at the bottom of the screen reminds you of the content of each program as you scroll down, and a terrific display that's located above the info box indicates the amount of blank tape your VCR will need over the next 24 hours to record the programs you've selected. This is extremely useful—StarSight asks you to read the duration of each show directly off of your record list and then tally the figures up to compute how much tape you need. It's a chore you shouldn't have to perform yourself—and you don't have to with VideoGuide.

Along with the standard VideoGuide program grid, you'll also find an expanded grid and an alphabetical listing under the main menu's "Program Guide" selection. The expanded grid is similar to the "Standard" guide, but it offers a wider 2-hour view (versus 90 minutes) and eight channels per page (versus seven). To squeeze in the extra info, the expanded grid uses letters and abbreviations instead of station logos as well as more abbreviated titles for the programs.

The alphabetical format—unique to VideoGuide—is yet another nice touch. Using the cursor keys, you can move to a segment of the alphabet, then scroll through an alphabetized listing to find out when a particular program is scheduled. During the course of testing VideoGuide, I had occasion to tune into the last few minutes of a PBS documentary on the flight of Apollo 13. Being the resident space-weenie in my house, and knowing that PBS tends to repeat programs, I was able to find the show by title on the alphabetized list, which also told me when it would be repeated over the next 7 days. Once I located it, I hit the blue action key to add it to the "Record List," slapped in a tape, and forgot about it. Three days later, the program was recorded exactly on schedule. If I'd been using StarSight, I would have had to call up the "Channel Guide" for my PBS station,

then slowly scroll through a sequential list of all upcoming shows to find my program.

Moving down the VideoGuide main menu past the "Program Guide" takes you to "Program Views," which calls up a sequential listing of movies or sports. It's convenient but far less comprehensive and flexible than StarSight's 11 theme menus and their various sub-menus. This is a big plus for StarSight.

SportsGuide and NewsGuide are a kick, though. SportsGuide provides a truly inspired selection of up-to-the minute game scores, along with pre-, post-, and in-game summaries and league standings. Virtually no professional or college sport is left out; coverage runs from the traditional to tennis, auto racing, and others. Each sport is grouped together in the listings and identified by its own graphic logo on the left side of the SportsGuide screen. Use the cursor to highlight a particular game, and you'll get the scoring (broken out by quarter, inning, and so on) in the highlighted box plus a current game summary in the info box. If the game's on, you can hit the remote's TV button to automatically tune to it; if you want to record a current or future game, highlight it and hit the blue RECORD key. Highlight the box for league standings in a particular sport and they'll appear in the info box. You can also customize the main menu to always bring you directly to the SportsGuide grid for the sport of your choice. If you like the idea of centralizing your access to daily sports data in one convenient place, SportsGuide is a winner.

Similarly, news hounds will love NewsGuide. Enter this area and a newspaper-like banner at the top proclaims this screen as "The VideoGuide News." As with many newspapers, boxes to either side of the title carry the weather and the Dow Jones Industrial Average—the cool part is that the information in these boxes is constantly updated. Below the banner, a series of headlines runs down the left side and a large window on the right displays the copy for the selected story. You can use the action buttons to walk through successive pages of copy for a selected story, and you can scroll through the stories or access a detailed local weather report or lottery results. NewsGuide's information may be easier than SportsGuide's to get from other sources—from CNN's Headline News, for example—but it's still nice to be

able to instantly access a specific piece of news when you want it.

As noted, I found VideoGuide to be clumsier to use than StarSight. This became apparent the first time I accessed the "Standard" grid. It requires two strokes of the GUIDE rocker just to get in—one to access the main menu, the other to access the "Program Guide" from its default location at the top of the main menu. This is a time-chewing nuisance; a better solution would have been to have the GUIDE rocker take you immediately into the "Program Guide"

SportsGuide provides a truly inspired mix of scores, summaries, and standings.

(the most frequently used feature) and then provide some kind of access from that grid to the main menu, for those times when you want to dabble with the other services. A customized default option that'd let you program the GUIDE rocker to access your most frequently used service first would be even better.

Getting around the grid once you're in can also get a little tiresome. The primary problem is that the remote lacks StarSight's PAGE key, which allows you to quickly access channels at the bottom of the listing. Without it, you're forced to sequentially walk through every channel with the joystick. As you go, the cursor kicks into high gear—but as it does, the data in the grid disappears. When you finally stop on or near the channel you want, you have to wait a moment while the grid and the information box replenishes itself. All of this takes time, making surfing awkward. We want to go, go, go, baby!

VideoGuide and StarSight also differ on grid customization. The former takes a unique approach: A feature called SmartSort actually analyzes the way you use the system and customizes the grid accordingly. When you first set the system up, the grids list available channels in order of national popularity. (I guess that puts CBS at the bottom.) As you use the system repeatedly, however, SmartSort shifts the channel order, moving the channels you select most often to the top of the grid. If you're always tuning in to ESPN, for

example, it'll eventually find its way to the top of your grid. And if your viewing habits change, the grid order will reflect them. Very clever.

Some people might prefer a stable grid they can learn and count on; others may like to organize their grids a certain way—say, premium movie channels grouped together at the top, and in a particular order. VideoGuide doesn't let you customize your grids, but StarSight does. As mentioned, StarSight also lets you remove channels you never watch from your grid; SmartSort merely moves these channels to the bottom.

A more troublesome difference lies in the remotes. Since VideoGuide's remote lacks the StarSight remote's 10-digit keypad, there's no way to go directly from, say, Channel 5 to Channel 32. You'll have to move through everything in between—either by walking through the guide or sequentially changing channels. Likewise, the only VCR function you can initiate from the VideoGuide remote is recording; there are no other transport keys for playback. The result is that you'll want to keep both your TV and VCR remotes close at hand at all times with VideoGuide. If you're using StarSight's universal remote, you can pretty much stow the other remotes away.

Clearly, StarSight and VideoGuide represent the first generation of a new type of product that's here to stay. Both show at least some evidence of their fledgling status, and there's no doubt that future generations will become even more user-friendly and more attractive. But there's no compelling reason to wait for second-generation versions; both of these systems deliver many useful benefits right now.

Deciding which one is right for you is a matter of personal taste, of course. If you like a simple, uncomplicated remote that's really fun to hold and operate, if you're a sports or news fanatic, and if you appreciate fine styling and state-of-the-art graphics, VideoGuide may be the best choice. If you prefer more flexibility and control while you're surfing, and you're not afraid of learning a few extra keystrokes, StarSight may be your ticket. If I had to choose one to suit my needs, I'd go with StarSight—it simply does more and asks you to do less. And you can be sure I'd delete the cable channel with that dumb scrolling program guide from the main grid.

Exhibit 5

XO PRESS
Information Services, Ltd.

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FLIESLER, DUBB,
MEYER & LOVEJOY

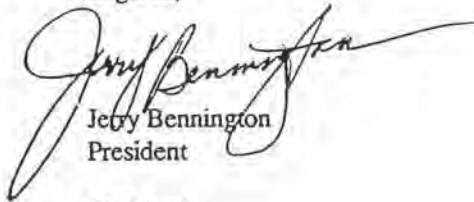
November 16, 1992

Mr. Martin C. Fliesler
Fliesler, Dubb, Meyer & Lovejoy
4 Embarcadero Center, Suite 400
San Francisco, CA 94111

Dear Martin:

Here is the software of our prototype demo along with the specs and installation instructions. If you require any assistance, please call Dave Spell, Programmer at (303) 267-4140.

Regards,



Jetry Bennington
President

GEB/kml

enc.

TV Guide Prototype

Specifications

The following is a list of the basic hardware and software requirements needed to run the TV Guide prototype:

1. AT Compatible w/2MB RAM, at least 3MB free harddisk space, and VGA graphics adapter and monitor
2. MS-DOS and MS-Windows 3.1 or greater

The following is a list of optional hardware and software used to enhance operation of the TV Guide prototype:

1. Silent Partner Universal PC Remote Keyboard
2. Jerrold converter with serial interface
3. Roctec/ICS VGA to NTSC video adapter
4. NTSC Monitor

This "readme" file will not explain how to connect or use any optional hardware. If more information is required, please call Dave Spell from X*Press @ (303)267-4140.

Instructions

Installation

To install this application, follow the two steps given below:

1. A special display driver must be installed in Windows before you can run the application.

Insert the floppy disk into drive A: and run "Setup" from the Windows directory.

Go to the screen that displays "System Information."

Highlight the choice of display driver and press <Enter>. A list of display drivers will appear.

Go to the end of the list and select "Other...". Press <Enter>.

You will be prompted for the location of the floppy disk. Enter "A:" (without the quotes).

A box will appear with several different display driver choices. Choose "VGA (640x480, paletized...)" and press <Enter>.

Accept the current configuration. The display driver will be updated and you will be returned to DOS.

2. To install the application, insert the floppy disk in drive A: and reboot your machine. Installation

will occur automatically.

Beginning the Prototype

The prototype requires Windows to run. If you are at the DOS prompt, you can begin the prototype by entering the following (only the uppercase text):

```
C:\> WIN C:\TVGUIDE\TVGUIDE
```

An alternative method is to highlight the "TV Guide" icon, found in the new "TV Guide" group in the "Program Manager," and double click or press <RETURN>.

Navigation

Once the application is running, use the following keys to navigate:

<Home>	-	Activates/Deactivates the guide
<PGUP>	-	Displays information wherever "i" is seen
<Enter>	-	Executes highlighted option
<E>	-	From the Blue screen, exits the guide
{Arrows}	-	Arrows advance/retreat through times/channels
{Numbers}	-	Used w/<Enter> to go to a channel

Important Note : This application is currently delivered with TV Guide data for Nov 13 and 14. Please set the "date" on your computer to the 13th before running the application.



NCTA Technical Papers

Papers from the 42nd Annual NCTA Convention and Exposition

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(30)

June 6 - 9, 1993



PROCEEDINGS FROM ELEVEN TECHNICAL SESSIONS

**42ND ANNUAL CONVENTION AND EXPOSITION OF THE
NATIONAL CABLE TELEVISION ASSOCIATION**

JUNE 6-9, 1993

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Compiled by Katherine Rutkowski, NCTA Director of Technical Services

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National Cable Television Center & Museum
The Pennsylvania State University
Lewis B. Sparks Bldg.
University Park, PA 16802

Addressable Decoder with Downloadable Operation
Mack Daily
Zenith Electronics Corporation

ABSTRACT

There was a time when a set top converter could take a non-remote TV and turn it into a wonder of convenience. Now the converter has turned that fancy, hi-tech, 32 function remote control TV into a color monitor.

There is a need to make the converter desirable again, to offer features that a TV set can't support, to make the decoder a convenience.

This paper follows the design of a new CATV converter from the initial marketing concept, to the design that is in production today. It tries to shed some light on the decisions which lead to that gap between what was asked for and what is finally produced.

INITIAL MARKETING CONCEPT

Here's the wish list:

- 1) Color On Screen Display (OSD).

A new color on screen display will be the user interface. A menu system will allow the user to select options. Instructions for using the converter will be spelled out in plain English (or Spanish) on the screen.

- 2) Electronic Program Guides.

An electronic program guide will be loaded and updated continuously. This guide will be used as one would use the guide in the Sunday paper. The user finds the day and time and the

converter shows what is on. Two weeks of information was deemed sufficient.

- 3) Messaging.

Messages to groups or individuals can be sent. Anything from "HAPPY BIRTHDAY" to "PAY YOUR BILL" to "DON'T FORGET! THE CONCERT YOU ORDERED IS ON TONIGHT".

- 4) Flexibility.

Think about the future. The system needs to be independent of the video scrambling system to allow migration from present to future systems.

HARDWARE

Hardware Part 1: Fulfill the List

Referring to Figure 1, a block diagram of a cable decoder is fairly generic if one is concerned only with the operation of the microcontroller.

The tuning microcontroller is the control center. It provides an interface with the user having IR and keyboard for input, LED and OSD for feedback. The tuning micro controls the tuner. Depending upon the complexity of the system, it may have input concerning descrambling. This implies the micro receives and interprets data. With or without the tuning micro's help, the descrambling portion decides authorization and manipulates the video for the desired output.

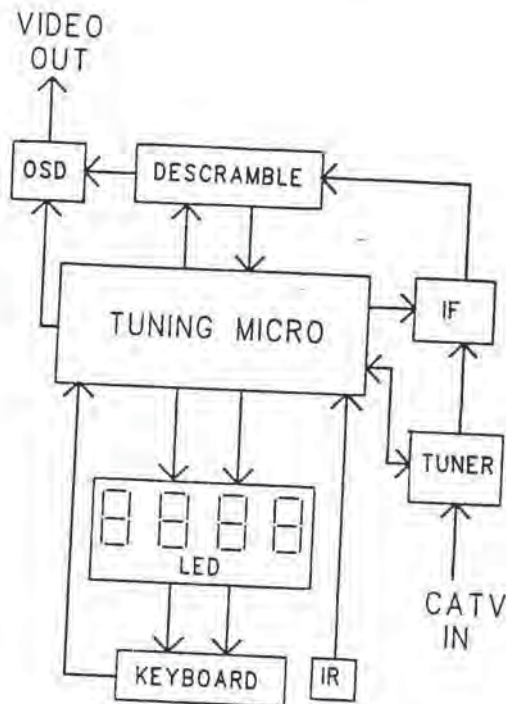


Figure 1
A Generic CATV Converter

Given our generic converter, how do we add the needed features? Easy, leave the present converter alone, it works! We still need all the tuning micro's tasks done, we're just throwing a couple of screens up now and then. An additional microcontroller is needed to control the new electronic program guide, and it needs a large memory in which to store the guide data. If the new micro reads the LED segment drivers of the existing tuning micro while an LED digit is being scanned, it can

tell what that digit is displaying. These LED's tell if the converter is authorized, or can buy a program, etc. Using this information, the new micro will be able to show an OSD with a more detailed explanation of the situation. The new micro will receive the IR input, and control the keyboard, as it will be deciding what actions user inputs are calling for. The original tuning micro can be controlled by synthesized IR commands applied to its IR input.

While awkward, this approach could fulfill the requirements. However, it had become apparent that simply switching between watching programs and showing screens wasn't enough. Entering favorite channels and parental control had to be made easier. No one likes current VCR timers. All those connections to the tuning micro drove the pin count of our new micro way up.

It was apparent this system could not have 2 micro-controllers, both programmed to be in control.

Hardware Part 2: A Division of Labor

1) The Conditional Access Microcontroller:

The tuning microcontroller was made a slave, and became the Conditional Access Microcontroller. The Conditional Access Micro controls the LED's, keyboard scanning, and contains whatever video descrambling capability the original tuning micro had. The descrambling duties of the micro vary from scrambling

system to system, therefore the Conditional Access Micro is hardware and firmware specific to a scrambling system. The Conditional Access Micro receives in-band data (data which is transmitted within the bandwidth of the tuned channel) as before, but except for program authorizations, the data is passed to a master microcontroller. In fact, the only independent function of the Conditional Access Micro is program authorizations. The decision making process as to whether to descramble is the same as in the original system.

2) The Dialog Processor Microcontroller:

The new master of the converter is called the Dialog Processor. Except for program authorizations, the Dialog Processor runs the show. It can access a large external RAM. This RAM, where program guides and more are stored, has battery back up. An EEPROM provides non-volatile storage of critical data. Parental control and channel tuning information are stored in the EEPROM. The new color on screen display is under the direct control of the Dialog Processor. The display can overlay characters on live video, or generate entire screens.

With a 2-way expansion bus, the Dialog Processor will be able to read and write future accessories. A special accessory now available is a plug-in IR transmitter. The Dialog Processor can transmit low power IR commands, controlling a VCR, TV or whatever.

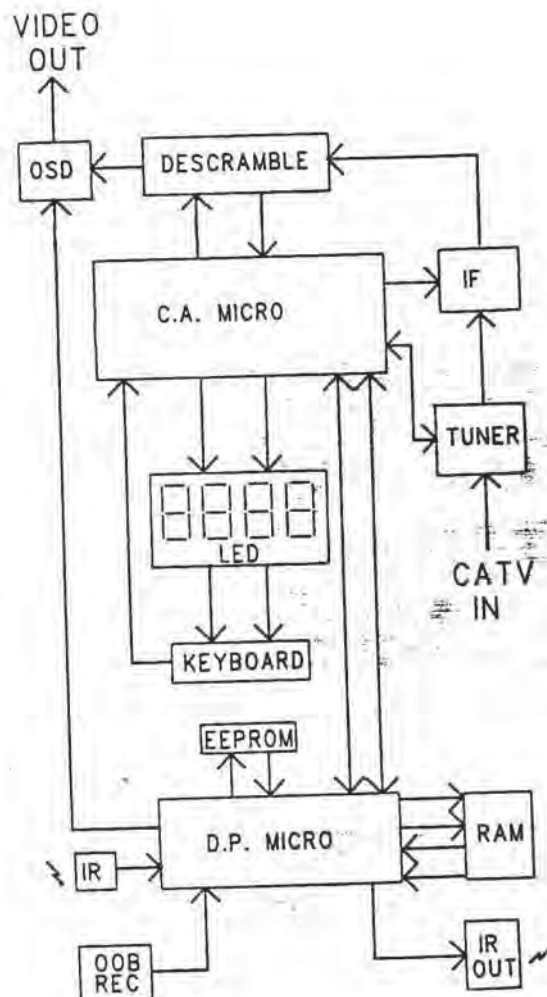


Figure 2
The New System

The Conditional Access Micro is considered just another peripheral by the Dialog Processor. The Conditional Access Micro and Dialog

Processor communicate over a custom 2-way serial bus. This bus allows each micro to determine at what speed it can comfortably send and receive data, but each micro is required to constantly send data, whether it really has anything new to say or not.

The commands passed back and forth were designed to be independent of any Conditional Access Micro hardware. The Conditional Access Micro also takes care of any timing involved with command execution. For example, the Dialog Processor provides the Conditional Access Micro with two displays for each LED digit. The Conditional Access Micro drives the LED, automatically alternating between the two displays.

Tuning information is communicated to the Conditional Access Micro in the form of PLL data. This allows the tuning of any combination of channels. The Conditional Access Micro indicates to the Dialog Processor any keyboard action, as well as any commands sent via the in-band data channel. The task of receiving IR, a function which the original tuning micro had performed, has not been given to the Conditional Access Micro, but rather is done by the Dialog Processor. This speeds IR response by eliminating the Conditional Access Micro to Dialog Processor bus delay.

The Dialog Processor also has an out-of-band data receiver. Out-of-band data is data transmitted independently of the bandwidth of the channel tuned. The format of the in-band data is a function of

the scrambling system. For previously existing systems, that format probably has no provision for loading a two week program guide. Even if the guide data can be fitted into the format, speed will be a problem. In the future, the in-band data rates capable with digital video may well overwhelm the Dialog Processor, but for the present even the "penny pinchers" in the marketing department agree that loading a 2 week guide using in-band data at 2 bytes per vertical is too slow.

SOFTWARE

The Need for Flexibility

At this point, we had a hardware system into which we could load and store a lot of data. The restriction was the framework hard wired into the Dialog Processor for displaying the data. Screen after screen could be displayed, but actions within a screen were not flexible. For example, consider the 2 screens shown in Figure 3.

The user hits "ENTER". Do we add channel 7 or 19 if we're highlighting the upper right corner of the screen? How did we get the upper right highlighted in the first place? To code the Dialog Processor to work with either screen is doable, but it has to be planned. Considering the amount of information to be made available, it was certain we would not cover all the options.

The solution is to load not only screens, but the behavior of the decoder with any given input. One option

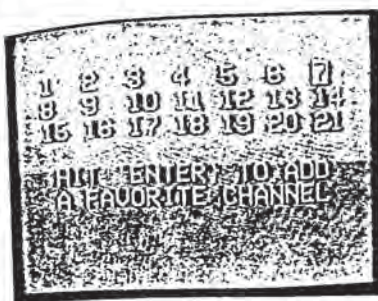


Figure 3
Two Screens for the Same Function

is to load the actual opcodes of the micro. This requires a micro which can run a program out of external memory. It also ties you to micros which will run that code. What about the possibility of loading the wrong code and locking the device in an endless loop? Lastly, who is going to support this code?

The Dialog

In order to avoid the mentioned pitfalls, but gain the needed flexibility, we developed our own "CATV decoder programming language". The Dialog Processor was programmed to interpret the language. The combination of on screen display data and behavior codes was called the Dialog, hence the name Dialog Processor. The interpreter is a firmware function of the Dialog Processor, the dialog to be interpreted is loaded via out-of-band data and stored in the external RAM.

It was necessary to develop an architecture, commands, and the associated tools for program development. There were also two programs to write, the interpreter and the dialog, neither of which

could be reliably developed independently.

Downloading a Dialog

Hardcoded into the Dialog Processor is the task of out-of-band data reception and the associated memory management of the external RAM. Before being transmitted, the data is sorted into records which consist of a variable number of like sized files. Depending on what is presently in the RAM, the actual addresses into which data is stored will vary from decoder to decoder. Therefore, a dialog will refer to the Nth entry of record X to recover data. In addition to keeping track of where all downloaded data resides, the memory manager coalesces current data to lower addresses. Thus, all available memory resides in a block above an address which the memory manager calculates.

Interfacing the Dialog to the User

The main program loop of the Dialog Processor handles the hardware specific portion of communicating with the OSD chip, the Conditional Access Micro, and other periphery.

While the IR input is sampled and decoded by firmware, a special downloaded record is predefined to contain two IR formats. By loading this record, the decoder may be made to respond to up to 3 IR transmitters. The main loop updates a real time clock and 2 timers which are set by interpretive commands. The inputs from the periphery, IR inputs, and the time-out of the timers, are presented to the interpreter as transitions.

Interpreting a Dialog

Actions taken due to the presented transitions are determined by the dialog loaded via out-of-band data. The Dialog Processor only interprets the dialog, which is changeable.

For a "slide show" type of application, the interpreter is used as a state driven machine. Given the current screen and the transition, the next screen is known. This allows the dialog to change screens by simply supplying a pointer to the new screen. Referring to Figure 4, the screens represent the states. The state number is given in the upper right of the square. An arrow points to the next state, given a transition corresponding to the arrow's label. Any transition without an associated arrow has no effect on the state. Transitions may also be defined to cause an action regardless of the current state. "POWER", for instance, could turn the box off from any state.

This efficient way of stepping allows development of tools with which a nontechni-

cal person may develop their own slide show. The new decoder has 32,512 states available for this type of application.

For any given input, a more complex action may be required. "CHANNEL UP", for instance, requires finding the next valid channel, and communicating to the Conditional Access micro new tuning and LED information. For these types of actions, interpretive commands were developed. The commands are an assembly language code which the interpreter runs.

The interpreter features a design to prevent a corrupted dialog from locking the micro. The dialog is also prevented from modifying itself.

From a dead start, at least minimal functionality was required from the decoder. This basic mode was written as a dialog and at start up it is loaded into the RAM. From that point it is executed as if it were a downloaded dialog. This was not necessarily the most efficient way to code the basic operation, but it allowed testing and enhancement of the interpreter using a real application.

In order to allow for personalized messaging, dialogs are sent with addressing information. A packet may be globally addressed, addressed to members of a specific group, or individually addressed. Each box has a unique address and can be a member of up to 8 groups. A packet may also be encoded and a decoder must be authorized to receive it. Packet trans-

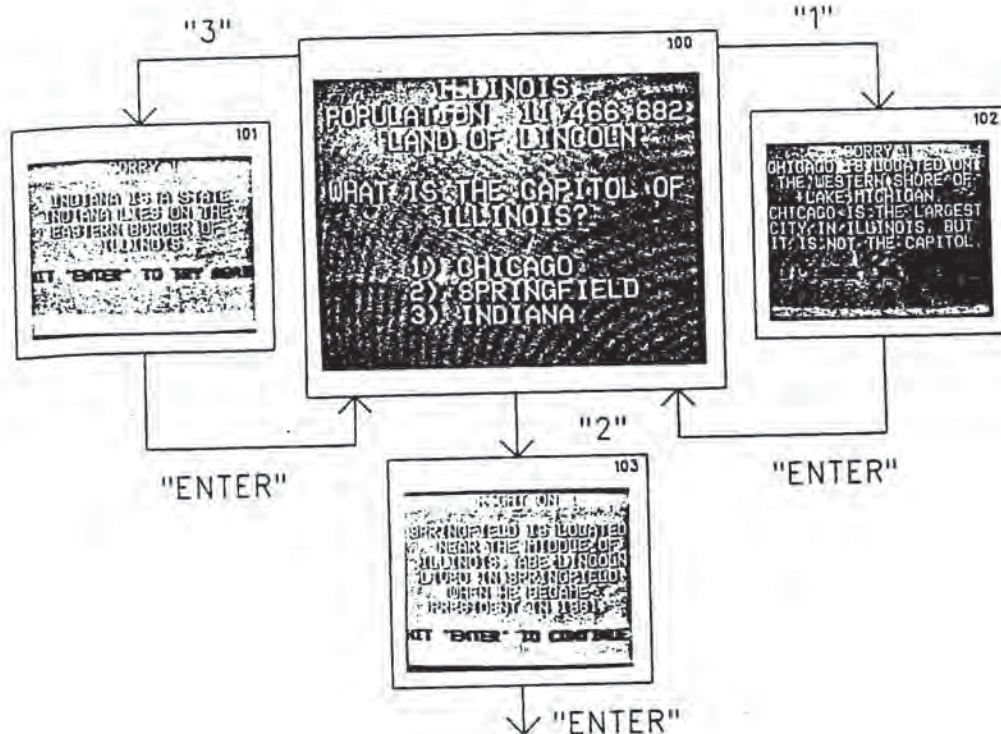


Figure 4
State Transition Diagram

mission includes a 16 bit CRC to prevent accepting bad data.

CONCLUSION

The end result is a field programmable cable box. The box contains 2 microcontrollers. One micro replaces the functions that a tuning micro traditionally performs, ie. tuner control, LED drive, keyboard scan, and any video descrambling control. The second micro has 3 main functions.

First, it manages a large external RAM into which data received from an out-of-band source is stored. This data is referred to as a dialog. Secondly, the micro performs

housekeeping tasks of time keeping, and communication with peripherals. Housekeeping also includes collection and indicating the presence of certain events called transitions which may require a response. Thirdly, an interpreter, given a transition and the state in which the box currently sits, performs a corresponding series of instructions indicated in the dialog.

By using state transitions to page through screens, tools have been developed which offer the service provider the chance to design his own dialog. State transitions make efficient use of the

available RAM, and require only that pointers from state to state be supplied.

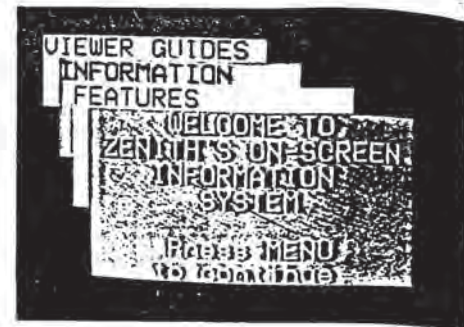
Though not something to be changed recklessly, the most basic operations of the box are downloadable.

The OSD displays a field of text 11 rows by 24 columns. By taking advantage of the colors and characters available, a fairly complex display may be generated. A bit mapped display of either 192 bits X 18, or 96 bits X 36 may also be displayed. A bit mapped display may be scaled horizontally to extend the display across the screen, but the vertical size may not be altered. Examples of a text and a bit mapped display are shown in Figure 5.

The box was designed for 2 weeks of program guides, but it can do more. Stock prices, scores, even download your own games.

A self diagnostic screen indicates both the presence and signal strength of in and out-of-band signals. ROM code revisions of the Conditional Access Micro and Dialog Processor, as well as the size of the external RAM are also displayed. The diagnostic screen is shown in Figure 6.

This design is the result of the work of the entire Zenith CATV department. I think we've designed what marketing really wanted, but were afraid to ask for. The content of the dialog will determine whether the decoder becomes a convenience for the user.



Text Field OSD



Bit Mapped OSD
Figure 5

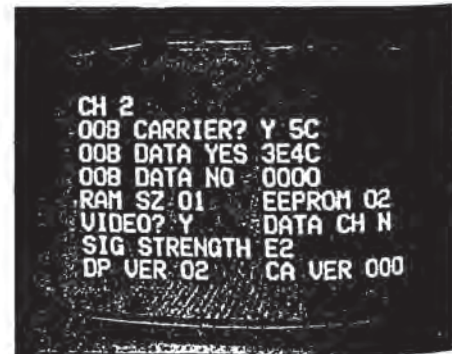


Figure 6
The Diagnostic Screen

have as their main resource voice, sound, animation or video. Note also that long time-driven segments may be embedded into document-like objects. Links may also exist between more complex objects (hypermedia links). How does one scan a voice message? How can one randomly access a brief section of animation? How do you know where you are, where you have been and where you can browse to in a complex time-driven multimedia document? It appears that the temporal aspect of these objects imposes a monotonic, linear structure upon the presentation possibilities of the object. Although the temporal aspect enhances the object's expressiveness, it unduly constrains the perceiver's ability to customise the presentation of the object. In this paper we present a design of a system for browsing within time-driven multimedia objects.

In section 2 of this paper we present a model for browsing in time-driven multimedia objects. Section 3 describes the components of the browser, how they are specified, and functions made available by the browser including other tools that assist the user to randomly access time-driven multimedia objects. Section 4 discusses hierarchical levels of browsing, including hypermedia browsing. An implementation overview then appears in section 5. Examples of applications are subsequently examined in section 6. The paper concludes with a summary as a brief outline of future research directions.

2 Time-Driven Object Browsing: A Model

Important classes of multimedia information system applications such as training systems, do-it-yourself manuals, consumer catalogues, medical applications etc. may be time-driven or they may have time-driven components. We say that an object or a component of an object is time-driven if the presentation of its components is done automatically without user intervention. The presentation of a voice segment or an animation sequence are obvious examples of time-driven objects. A traditional static document could be presented in a time-driven fashion if the system presents the pages of the document one after another without an explicit request by the user. This is not done because the variance in time needed to read a page is large. This variance depends on the user as well as the contents of a given page.

For the above classes of multimedia applications, information organization and access may be non-traditional. The following observations can be made. Information is organized into primitive concepts. In telephone training a primitive concept may be connecting multiple parties. In a cookbook a primitive concept may be cooking fried cod. In a pilot training system a primitive concept may be lifting the airplane higher or engine stop actions. In a reactor training system it may be temperature exception condition. In a medical application environment illness may be a primitive concept. We assume that the description of primitive concepts is self-contained. A direct analogue to the primitive concept in conventional, static documents would be a stand-alone, self-contained section of the document. A primitive concept may be described as a sequence of significant points or steps. The beginning and end of the description of a primitive concept are always clearly identified. We will come back to this point when we describe local browsing (section 3.2).

The presentation form of a primitive concept may vary. It may be a piece of text displayed automatically on the screen of a workstation, it might be a voice segment which is played when requested, it might be an image or a short piece of video or animation. It might also be a combination of the above. A typical example may be a graphics animation played while voice explains a process. Although we do not restrict ourselves on the presentation form of a primitive concept, it is true that images and animation combined with voice provide a much higher bandwidth of information transfer from the computer to a user than text presentation. In addition, voice narration leaves the eyes of the user free to look at other objects, possibly the equipment which is the object of training itself. We omit in this description the details of the model used for multimedia object presentation [8,9] because of space limitations.

Primitive concepts may be grouped together to form higher level concepts in much the same way that sections may be organized to form chapters in a document. Concepts are organized in a directed acyclic graph with a given source node. Primitive concepts are sink nodes. The reason for a graph rather than a tree is that information may be shared (this is particularly important for large objects such as images, video segments, voice segments etc. which are expensive to duplicate). This model is also used for structuring document-like objects in MINOS. Chapters for example, are higher level concepts which are composed of more elementary concepts such as sections. The graph that represents a document denotes not only the composition of higher level objects such as chapters from more elementary ones such as sections but it also denotes the order in which the more elementary concepts are organized within a higher level concept.

We want to support flexible information access in this environment. A straightforward way of accessing information in this environment is to access all information sequentially. We call this method sequential browsing. Sequential browsing starts from the source node of the graph and visits all other nodes in a preorder traversal.

This for example, simulates the act of a person who reads the contents of a cookbook from the beginning to the end, or the act of a medical student that reads all his textbooks sequentially from their beginning.

Some segments of information, however, may not be as important as some others. We call these segments *non-essential* and the corresponding graph nodes *non-essential nodes*. We call the node to which the non-essential segment refers an *originating node*. In document like objects, footnotes, annotations, versions and references to related documents are examples of non-essential segments. In time-driven documents, we want to avoid the automatic presentation of the non-essential segments during sequential browsing. The user is notified that non-essential segments of a particular type exist at a given point in the sequential browsing. The system displays the appropriate indicators on the screen of the workstation during the presentation of the originating node but the system does not interrupt the presentation. If the user wishes to do so, he can interrupt the presentation and select the appropriate indicators in order to hear (or view) the information rendered. After the presentation of a non-essential node, the presentation control has to return to the originating node. Presentation resumes from where it was interrupted. For example, in a narration, (accompanying a collection of video segments) describing the contents of a museum, annotation indicators may be displayed on the screen to inform the user that some related exhibit exists in another museum. This annotation is not played unless explicitly selected by the user.

Although pure sequential browsing is possible, it is not always very desirable (since it may take hours or days to read through a complete do-it-yourself manual or a cookbook). In a more typical scenario, a user starts from a certain point in a manual or cookbook and proceeds sequentially. This is especially true since after the first few times that he has looked at the document he may not want to go through *general instructions on how to use the manual*. We need to provide good *random access* capabilities to facilitate browsing. Browsing within time-driven documents then will be a combination of random probes followed by sequential browsing through selected segments¹.

One method to achieve fast random access to desired information is by utilizing text access. We associate with each node in the multimedia object graph a *hidden text* segment. The hidden text segment is a sequence of words describing the information content of the entire node and all its successors in the graph. The presentation form of the node remains unrestricted (it can be text, voice narration, animation, or various combinations). The hidden text only represents the contents of the node and it does not affect the presentation. It can be a single unique keyword, a sequence of keywords, an exact replica of a text part or a text representation of a voice narration. Note that we do not necessarily assume a voice recognition capability. Many of the applications of interest (such as training manuals) will be prepared off-line and the hidden text associated with a node will be inserted manually. However, if a good voice recognition device based on a keyword set existed, it could be used to create hidden text automatically from a voice segment associated with the concept.

Random access based on the hidden text of a segment is supported in the following way. The user specifies a text pattern. The system finds all nodes of the graph which have associated hidden text containing the specified text pattern. Note that if a node contains a text pattern all its predecessors in the graph contain the same pattern. Text searching is supported in our system using a signature technique based on superimposed coding [5].

A node of the graph that contains the text pattern and no successor of the node contains the text pattern is called an *anchor node* for the pattern. The set of paths that start from the source node and ends at a given anchor node is called the *path set* for the pattern. The set of all anchor nodes that contain the text portion is called the *anchor node set* for the pattern. The set of all paths which end at all anchor nodes is called the *text pattern path set*. The response to a random probe using a text pattern is the segments of the object that start at the nodes of the anchor node set. The system initiates a sequential browsing (preorder traversal) of the subgraph that has as source a node in the anchor set.

Random access, based on hidden text only, has a number of limitations. A first limitation is that it is not clear from which point the user would like to hear the presentation. Remember that not only an anchor node contains the text pattern specified but also all the nodes in the path set for the node. Although we could extend the query language to allow some sort of specification of the level of description that the user may want (depth within a path) this approach may make the language unfriendly for naive users. In addition, it is not clear that even an expert will be able to specify such information. We feel that a much better option is to allow simplicity in the language while at the same time providing the user with powerful navigation facilities around a given anchor node. Such facilities will allow interactive, selective browsing in order to view the contents of the nodes along a path set for a node, as well as the descendants of the node.

A second limitation of the hidden text based method for random probing within an object is that text based content addressability has several shortcomings. One shortcoming is the existence of synonyms. A second is that the user may not remember unique keywords such as the name of a disease in a medical book application for example. In this case he may attempt to specify the disease by defining some of its symptoms. As a result the

¹Browsing within the segment is possible as well.

response set of anchor points may be large. If the user wants to hear a large portion of a voice segment describing the symptoms of the disease in an organized fashion before he decides if this particular disease is the one that he is looking for, the whole process may take a long time. We need a fast way of browsing among options. Note that an icon or a small picture (miniature [7]) may provide a much faster indication of what the contents of the voice segment are going to be.

We address these limitations of the hidden-text random probe method by providing interactive navigation facilities for fast local browsing. Interactive arcs give the user the capability to select what he wants to see or hear next. This is a direct access capability from one node of the graph to another without viewing the intermediate nodes. Depending on what input the user gives, in the form of an answer to a question or a selection of an interactive arc indicator associated with a menu for example, one of the interactive arcs will be traversed and the system will resume presentation from this point in a normal preorder traversal fashion. Interactive arcs may also be used to represent hyperlink connections (connections with other multimedia objects).

To allow fast local browsing, we associate with each node in the graph an icon representing its contents. Significant points within a concept may also be associated with icons describing their meaning. The object then can be visualized as a graph of icons. Browsing within the object can be directly represented on top of the graph of icons. Not all of the graph has to be shown at any given point in time. A portion of the graph around the current node is shown in the right hand side of the screen of the workstation, outside the display window of the object. The system provides capabilities for tracing the nodes traversed so far, as well as previewing the nodes of the graph below the current node. Fast local access can be achieved by interactively selecting the appropriate icons. Facilities are also provided for local browsing at different levels of granularity within the graph as well as for hypermedia browsing.

The remainder of this paper describes in more detail the method and its implementation details.

3 A Browser for Time-driven Multimedia Object Presentations

In this section, the components of the browser are described. Then the process of incorporating the browser into a time-driven multimedia object presentation component of a multimedia data management system is outlined.

3.1 Components of the Browser

The browser displays on the screen a sequence or parade of icons in parallel with a time-driven multimedia object presentation. The browser appears on the screen as shown in figure 1. The parade of icons represents a sequential and less temporally transient representation of the corresponding time-driven multimedia object presentation. Because it is less temporally transient, the parade of icons gives the reader of a time-driven multimedia document the ability to browse or randomly access individual parts of the presentation.

3.1.1 Icons

The icon is designed to convey the essence of the presentation beginning at a significant point. It serves to remind the reader of a point in the time-driven multimedia object presentation that referred to a certain concept. If the icon is designed to intuitively convey the concept it is meant to represent, browsing will be easier.

The icon provides random or unstructured, nonsequential access to the time-driven multimedia object presentation. The reader can browse the parade of icons and select an icon that may interest him. By selecting an icon, the reader causes the presentation to be rendered beginning at the significant point which corresponds to the icon.

3.1.2 Parade of Icons

The parade of icons is the sequence of icons corresponding to the rendering of significant points in a time-driven multimedia object presentation. The system presents to the user a set of functions for browsing this sequence. The functions available are described in section 3.3.

The parade of icons appears on the right side of the screen. Figure 1 shows the location of the parade relative to other objects appearing on the screen. New icons appear at the top, and as time passes, proceed towards the bottom of the screen. The space between each icon has a scale dividing the inter-icon space. The quarter, half way and three-quarter points between the icons are ruled as shown in figure 1.

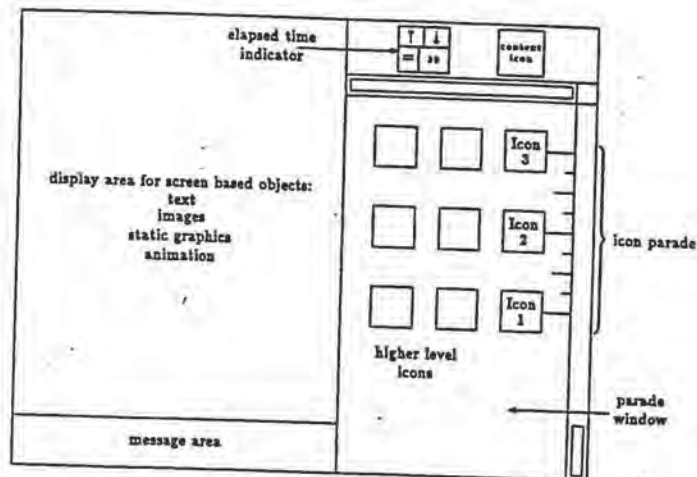


Figure 1: A portion of the screen is taken up by a parade window, whose contents are an icon parade, a context icon and an elapsed time indicator.

3.2 Creating a Time-driven Multimedia Presentation with an Icon Parade

Three things must be described in a time-driven multimedia presentation augmented with an icon parade:

1. the time-driven multimedia object segment itself
2. significant points within the segment
3. an icon for each significant point

This section briefly outlines how a designer would go about describing these things in this system.

3.2.1 Time-driven Multimedia Object Segment Creation

The process of creating an interactive time-driven multimedia object segment is outlined in [9]. It involves the creation of a temporal descriptor which describes the timing of individual time-driven multimedia object presentations. A temporal descriptor is shown in figure 2.

Each object is created and modified in media specific editors. Our system has media specific editors for text, images, voice and animation. The objects built using these editors are combined into a temporal descriptor. The synchronization and sequencing of individual object presentations are described therein. Once the time-driven multimedia object presentation has been created, the next two steps, specifying the icon parade annotation, may begin.

3.2.2 Identification of Significant Points

Significant points within a time-driven multimedia object presentation are distinguished by user specification. This specification can occur during creation or modification of the object. Significant points appear as vertical ticks on the object's duration indicator as shown in figure 2.

The voice editor provides a facility to specify significant points within a voice object. During creation or modification of the voice object, the designer can simply click a button when he desires to distinguish a point in the voice rendering as significant.

- stopping the presentation
- resuming the presentation
- selection of a point in the presentation from which to resume the presentation (browsing).
- fine grain random access of the presentation through manipulation of the elapsed time indicator
- reviewing the history of the parade of icons
- previewing the parade of icons that may yet appear.

These functions are accomplished using direct manipulation techniques on the display of the parade window, using the mouse as a locating device and mouse buttons for selection.

The stopping/resuming function is a toggling action performed by selecting the elapsed time indicator. This action causes the presentation and the advance of the icon parade to freeze. In this frozen state, all of the other functions can be performed.

The presentation is resumed by locating the elapsed time indicator and clicking the left mouse button. This action toggles the state of the presentation back into the active state. Point selection is the only function that may be performed in this state.

There are two types of things that can be selected in the icon parade: icons and points between icons. Icons represent significant points; if an icon is selected, the presentation will resume from the corresponding significant point. If one of the ticks between icons is selected, then the presentation begins at a point between significant points.

If the viewer wishes to access the presentation at a specific point in the presentation that is not represented by an icon annotated significant point, he may do so by manipulating the elapsed time indicator.

The idea is to manipulate the elapsed time indicator (by incrementing or decrementing it or by entering a specific time) so that it displays the time (in seconds) corresponding to the point in the presentation the viewer wishes to see. By freezing the presentation, resetting the time in the elapsed time indicator and restarting, the presentation is rendered beginning at the desired point.

The system keeps a history of the icons corresponding to significant points that have been rendered. This icon parade history can be browsed (using scrollbars on the parade) providing a facility to review portions of the presentation.

The system can also generate a view of the future. The parade of icons may be previewed (using the scrollbars) in order that upcoming significant points are highlighted.

Unless another point is selected, the display of the parade will (when the presentation is resumed) revert to the one representing the state in which the time-driven multimedia document was originally frozen.

4 Icon Hierarchies

The browsing facilities found in static text books (like table of contents and marginal notes) act as metaphors for the parade of icons browser. The table of contents is simply an abstract instance of marginal notes. The idea of icon hierarchies corresponds to concept hierarchies and is a generalization of this relationship used to randomly access time-driven multimedia documents at varying levels of detail.

As books can be browsed at varying levels of detail, so should time-driven multimedia documents. A leveled or hierarchical browsing facility can be generalized from the marginal notes metaphor. In a book, marginal notes may have different levels of importance or detail. This hierarchy can be indicated by different fonts or by a hierarchical numbering system (1, 1.1, 1.1.1, 1.1.2, etc.). With time-driven multimedia documents in our system, the context icon is responsible for describing where in the hierarchy the current parade window, and hence the icons therein displayed, correspond.

The hierarchy of an application can be browsed using the browsing window. The browsing window replaces the parade window when the context icon object is selected.

The browsing window displays a picture of the DAG representation of the application discussed in section 2. Each node in the DAG is represented by an icon. By selecting one of these icons, presentation resumes in the normal preorder traversal fashion starting from the chosen node.

4.1 Hypermedia Links

Hypertext systems have been long thought of for text based systems [1,12]. They all have in common a facility to provide the user the ability to create and traverse links between documents. Typically links are created to form document sets of related information on a particular topic. Links are also set up to provide background or additional information on a particular point raised within a document (much as references are useful in academic publications for example).

Time-driven multimedia documents in our system have the facility to traverse hypermedia links. Hypermedia links can be viewed as being part of the hierarchy being discussed. They represent non-essential segments in the presentation. A hypermedia link is traversed by selecting a hypermedia icon (designated as such by shading). Browsing within the hypermedia object is accomplished in the same way as any other object in our system. When viewing of the hypermedia object is finished, the link may be traversed back to the point in the presentation from which it was invoked.

5 Implementation Overview

The hierarchy browser and parade of icons browser were built using the Sunview user interface tools running on a Sun 3/ workstation.

Environments for creating voice objects and animation objects are under development. An integrated environment for creating temporal descriptors is also being designed.

Each time-driven multimedia object has the property that it can be rendered beginning with any point in its presentation. This property is crucial to support true random access of time-driven multimedia presentations.

The parade of icons is also regarded as a time-driven multimedia object. The display of the parade of icons is synchronised with the display of other time-driven multimedia objects by augmenting application temporal descriptors with a presentation descriptor indicating the synchronisation of significant points in the presentation with the appearance of icons in the parade.

6 Applications

Browsing within time-driven multimedia documents is now discussed in the context of an example application. The purpose of this examination is to demonstrate the usefulness of this facility with a concrete example.

There are several application areas of time-driven multimedia object presentations. These areas include home do-it-yourself training systems, technical training systems, medical information systems, time-driven, interactive marketing brochures. One application, technical training manuals will be examined in order that browsing techniques be highlighted. The particular technical training system chosen is one on Bell SL-1 link set operations [11].

Operating the Bell link SL-1 phone set is a practical skill that is better learned by observation and practice than by reading. Hence it is a good application area for time-driven multimedia object presentations. The application has a constrained set of concepts (each SL-1 function is a primitive concept) and these functions can be grouped into higher level concepts. This application presents a small example demonstrating the usefulness of the browsing techniques discussed in this paper.

The application is based on a single piece of equipment (the SL-1 Link set). Equipment types can be modelled using complex time-driven multimedia objects. These special objects model pieces of equipment well because they have an internal state machine (modelling the internal state of the equipment). Complex time-driven multimedia objects have time-driven multimedia object methods that simulate the functioning of the equipment at various states. The notion of complex time-driven multimedia objects is also extensible in that future enhancements (such as interactivity [6]) can be easily supported.

Applications like the SL-1 training system can be built in two stages. A person who is an expert in temporal descriptors and time-driven multimedia objects can build complex time-driven multimedia object(s) corresponding to equipment in the application. Methods of the complex time-driven multimedia object are implemented using temporal descriptors. Methods are usually units of animation combined with sound and sequenced with other such units. In the SL-1 complex time-driven multimedia object, methods include *phone ringing*, *buttons depressed*, and *handset lifting/descending*. The individual time-driven multimedia objects associated with the methods are created using the various media specific editors.

In the second stage of development, an expert in training uses temporal descriptors to build the DAG representing the training system as in the model presented in section 2. The set of methods associated with the piece of

equipment in the application become time-driven multimedia primitives in the training system. Other time-driven multimedia sequences may need to be designed using the various media specific editors available. Icons associated with DAG nodes can be build using an icon editor.

7 Conclusions

In this paper we have presented the design of the browsing component of a system that manages time-driven multimedia object applications. The browser allows capabilities for sequential and random browsing, fast local browsing, tracing and previewing within composite objects that have as their main presentation resource time-driven components such as voice and animation. Examples of such applications are training manuals, do-it-yourself manuals, advertising catalogues, etc. Such applications may be developed on CD ROMs [4,10] or videodisks and distributed inexpensively.

Interactive time-driven manuals are necessary components of training systems. Computer based, interactive training systems may be implemented in close association with their computerized manuals. We are currently studying the requirements and software components necessary for such systems.

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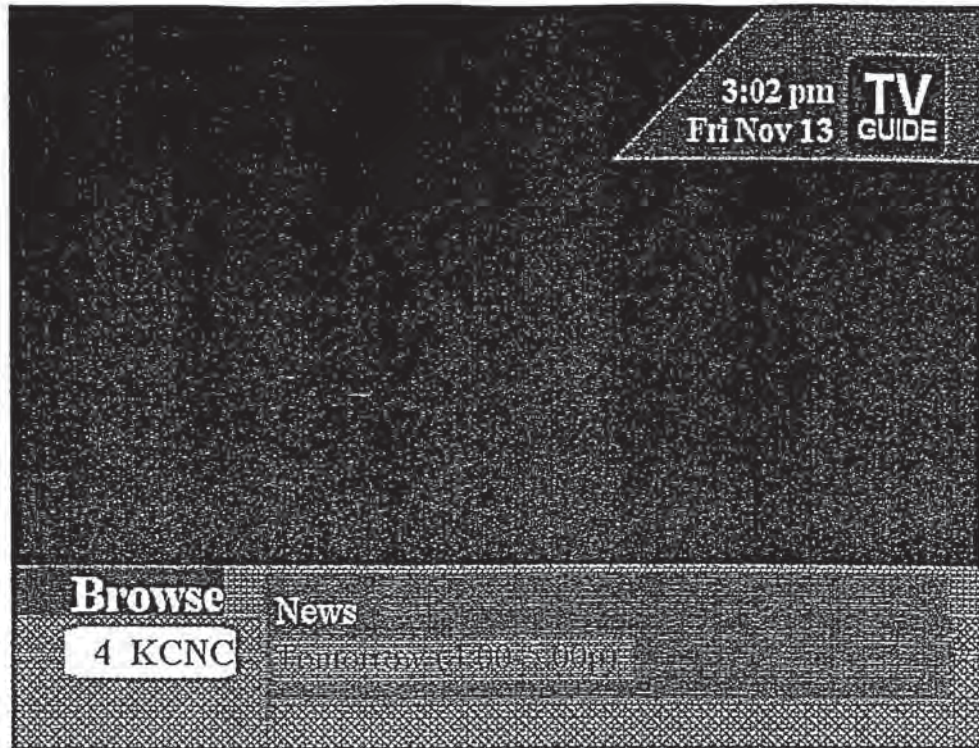
2:57 pm
Fri Nov 13

TV
GUIDE

Browse
4 KCNC

Days of Our Lives

Mon-Fri 7:00-8:00p



2:58 pm
Fri Nov 13

TV
GUIDE

Browse

5 A&E

Rockford Files

Monday, Nov 13, 2000 5:00pm

2:59 pm
Fri Nov 13

TV
GUIDE

Browse

5 A&E

Lorne Greene's New Wilderness

Tomorrow 8:00-8:30pm

Exhibit 11

Exhibit 7

Exhibit 8

Exhibit 9

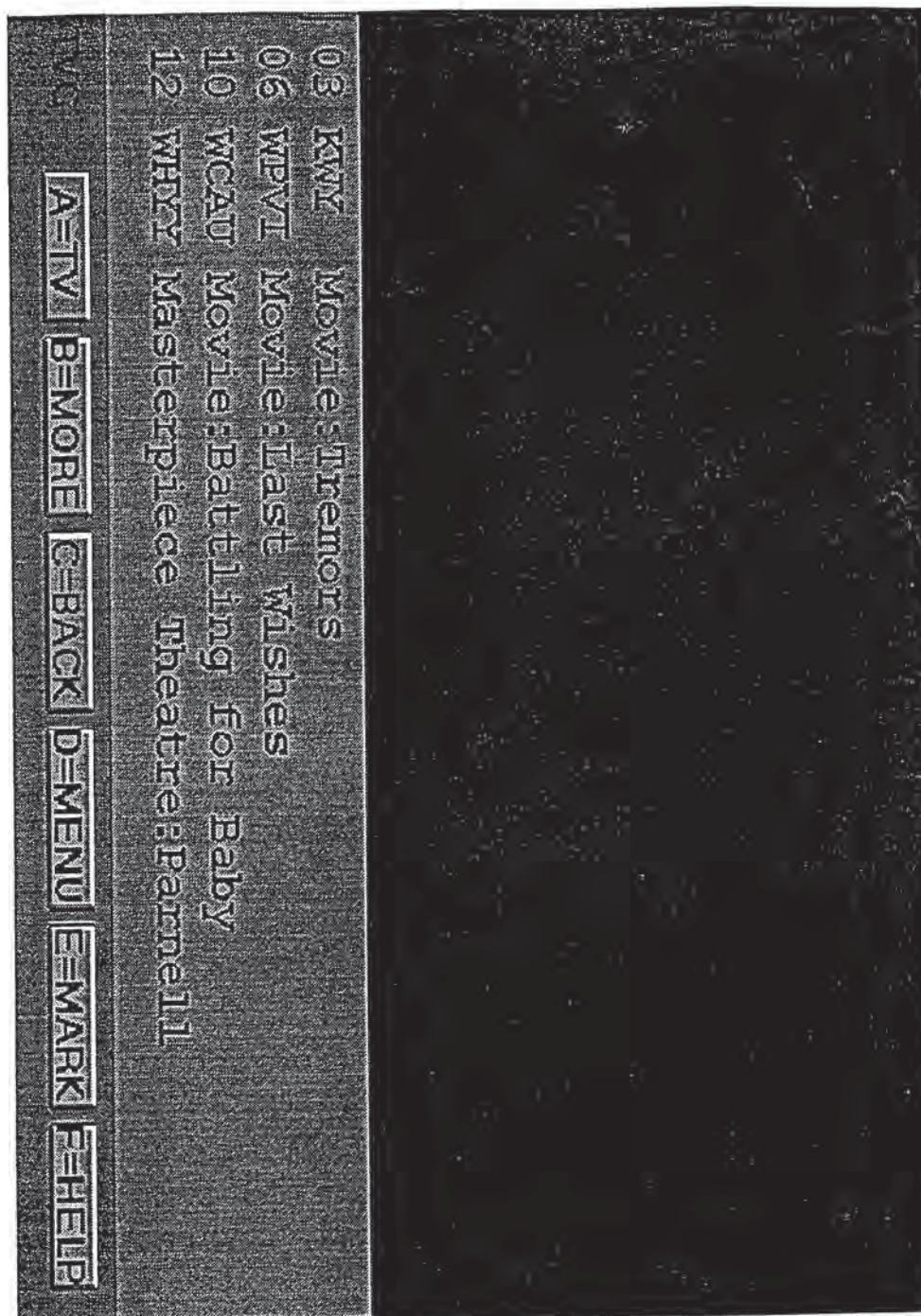


Exhibit 10

Exhibit 6

Exhibit 1

Exhibit 2

Exhibit 3

Exhibit 2

2:55 pm
Fri Nov 13

TV
GUIDE

Browse

2 KWGN

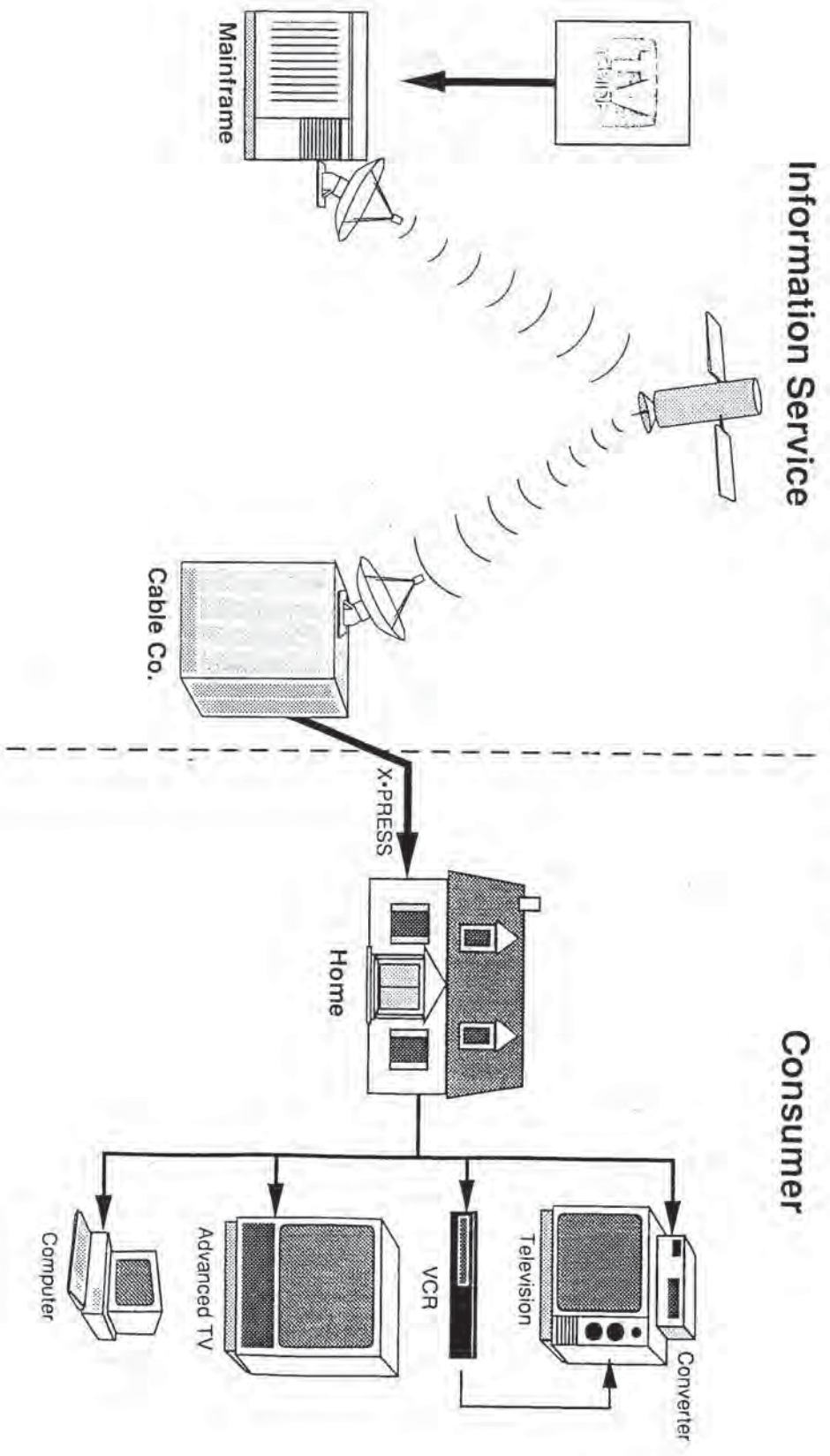
Chip 'n Dale's Rescue Rangers

Thursday, Nov 13, 2:55 PM

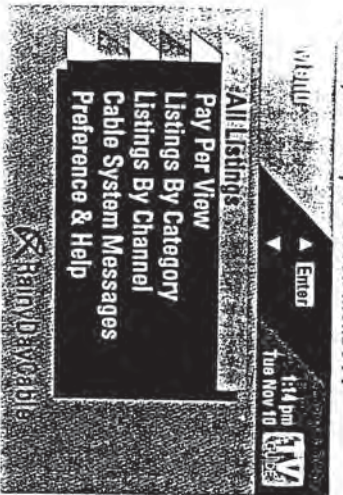
Exhibit 12

ON
SCREEN
Interactive Electronic Program Guide

TECHNOLOGY OVERVIEW for TV Guide On Screen



Select from the full-screen menu...



for complete program listings...



and Pay Per View choices.



Now that you've put so much time, energy and money into providing your customers with so many channels to choose from, give them a television information source that they know and trust.

TV Guide...now on TV.

For more information, contact

Brian Margolis

Electronic Program Guide Director

212.819.3712

TV Guide on Screen

Interactive

Electronic

Guide



More than a remote possibility

TV
GUIDE
SCREEN

More than
a remote possibility

Turn On TV Guide

In response to the needs of both the consumer and the cable industry, TV Guide and Liberty Media have joined forces to develop an interactive electronic television program guide designed to set the industry standard.

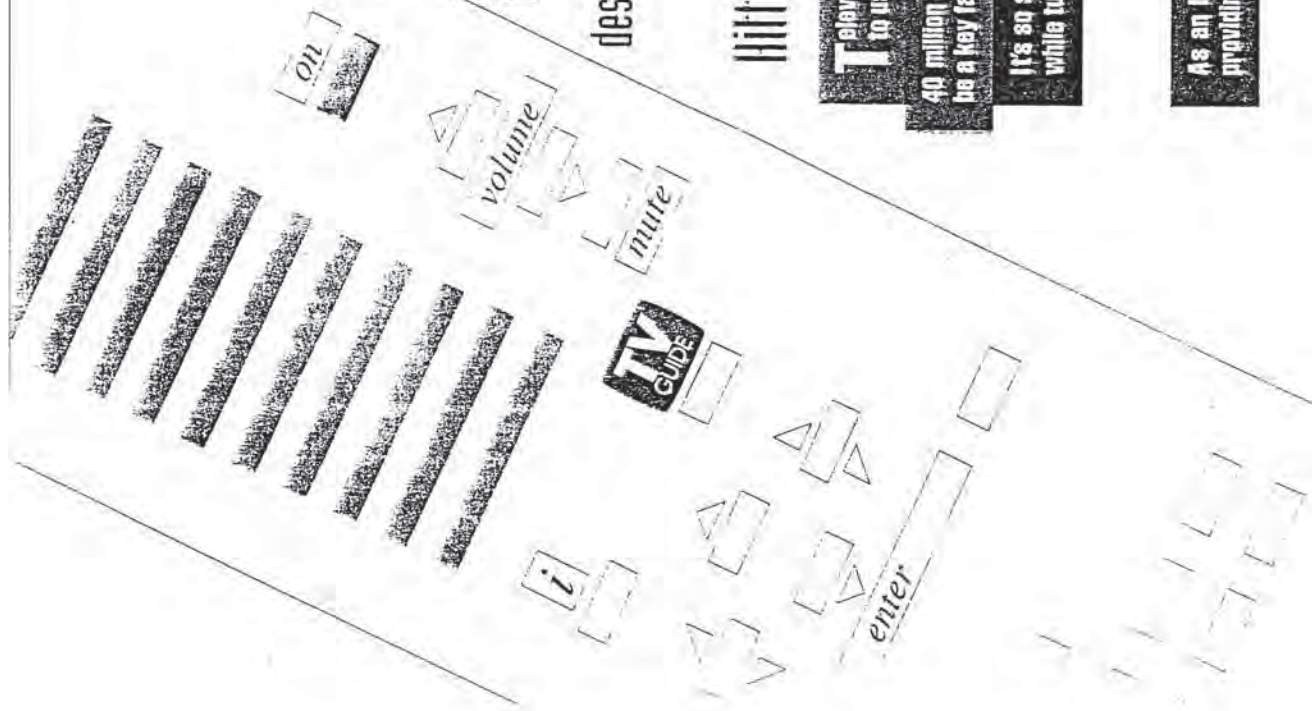
Hitting the Right Buttons

Television viewers love their remotes. TV Guide On Screen capitalizes on this fact by being as easy to use as flipping through channels on a remote.

40 million Americans trust TV Guide weekly as the authority on television, and this solid relationship will be a key factor in helping usher cable viewers into the world of interactivity.

It's so simple to use that TV Guide On Screen allows cable viewers to easily access program listings while tuned to any channel.

As an interactive system, TV Guide On Screen is a great marketing tool for cable operators by providing a new medium to promote Pay Per View and other services.



TV Guide On Screen

What is it?

TV Guide and Liberty Media, through its affiliates X*PRESS Information Services, Ltd. and StarNet, Inc., are proud to introduce a new venture combining the country's most credible program information database with the advanced technologies of a major information distributor in the cable industry.

Simply stated, TV Guide On Screen is an interactive, easy-to-use electronic program guide which *adds value to the viewer's current cable package.*

This entry-level service will effectively whet the viewer's appetite for, and acceptance of, new premium services which *provide additional revenue opportunities* to the cable operator.

With TV Guide On Screen, viewers will be able to access two days' worth of program information while tuned to *any* channel, 24 hours a day. Easily accessed through a hand-held remote and cable converter box, TV Guide On Screen offers a consumer-friendly way to keep viewers informed of not only what's on, but also what else is available, *enhancing both real and perceived values of the services offered.*

While TV Guide On Screen has been developed as an entry-level service, to be included as part of every cable operator's package of program offerings, TV Guide plans to expand this electronic guide by providing subscription-based services which will personalize the viewer's preferences. Features will include TV Guide's unrivaled collection of program descriptions, evaluations and reviews; plus, a variety of other enhancements, including simplified VCR programming.



TV Guide On Screen

How entry-level service works

Viewers access information in three ways

FLIPPING CHANNELS Viewer flips through channels by pressing directional arrows. Program overlay automatically appears on lower portion of screen displaying the channel number, program title, length of program, current time and date.



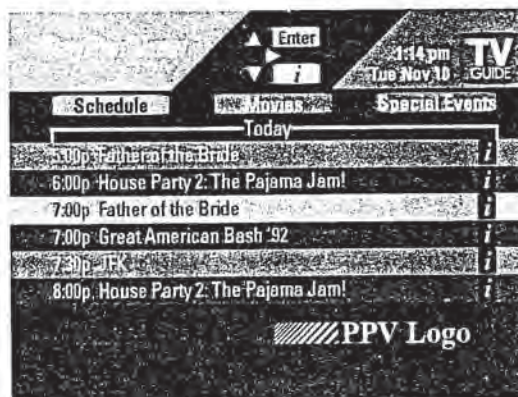
BROWSE Viewer can remain on one channel and "browse" through program listings of other channels and time periods by first pressing the TV Guide button then pressing the up/down arrows to scan through channels and the left/right arrows to scan through time slots.



SELECTING FROM THE MENU Pressing the TV Guide button a second time takes the viewer into the full-screen menu. Items on the menu are accessed by using the directional arrows and pressing the enter key in the highlighted section.

Menu Options

- Listings by Category: movies, sports, news-documentaries, childrens' shows
- Listings by Channel: full schedule of any selected channel over a two-day period
- Pay Per View Listings & Descriptions



TV Guide On Screen

Benefits to your system

ENHANCES REAL AND PERCEIVED VALUE OF CABLE Cable subscribers will have control of their viewing environment, and viewer-friendly cable enhances the value of cable.

ENHANCES CREDIBILITY OF SYSTEM After almost 40 years, TV Guide has established itself as *the* listings source among viewers in terms of comprehensiveness and accuracy. This overall perception of credibility will be naturally passed on to your system.

INCORPORATES LISTINGS SPECIFIC TO YOUR SYSTEM Includes Pay Per View channels.

PROVIDES TIMELY PROGRAMMING INFORMATION Lists programs every half hour, two days out allowing for more accurate, timely program information updated at least once a day.

REINFORCES PAY PER VIEW BUY Full-screen menu offers Pay Per View option where the viewer can get a description of specific programming on the detail screen followed by an ordering screen including dates, times and specific ordering instructions.

ALLOWS FOR MARKETING OF CABLE CHANNELS THAT OFTEN GO UNNOTICED

OFFERS FUTURE MARKETING POTENTIAL Once cable viewers have been conditioned to accept this relatively simple level of interactivity, a more advanced form of TV Guide On Screen will be made available on a premium basis.



TV Guide On Screen

Future opportunities as a premium service

Once cable subscribers have become comfortable using the interactive electronic medium, TV Guide will introduce an advanced premium service. Features under consideration include:

EXTENDED COVERAGE At least 7 days of listings information

FULL TV GUIDE LISTINGS INFORMATION Including plot descriptions, cast, credits, movie evaluations and ratings

ENHANCED SEARCHING CAPABILITY Viewer will be able to search by program titles and key words (i.e., program types, actors, directors, sports teams, etc.)

PERSONALIZATION Built-in viewer profiles of family members will enable them to get quick access to information about their favorite types of programs

VCR PROGRAMMING CAPABILITY Simplified recording

TV GUIDE SPECIAL FEATURES News, reviews, commentary, inside info, previews of coming attractions and viewing advice from the editors



TV Guide On Screen

Why TV Guide over others?

- Over 40 million readers trust TV Guide as their weekly listings source — 77% of whom are cable subscribers. This solid relationship will be instrumental in helping guide cable viewers into the world of interactivity.
- TV Guide has an unrivaled database of comprehensive listings information that is continually updated for accuracy.
- After almost 40 years, TV Guide has established one of the strongest consumer brand identities, giving it a large and loyal following.
- In print, TV Guide will actively support and help market its electronic program guide services.
- TV Guide understands the unique needs and interests of TV viewers. This knowledge will play a critical role in developing and refining electronic program guide services.
- Both TV Guide and Liberty Media are well-positioned to establish the TV Guide On Screen electronic program guide as the national standard — essential in enlisting the cooperation of the consumer electronics manufacturers — and are working closely with CableLabs to that end.



TV Guide OnScreen

Q & A

Q: How are you addressing the possible resistance this new interactive technology may encounter among viewers?

A: We've incorporated a consumer-friendly design using simple, colorful graphics to make the service non-threatening and non-technical to the user. More important, the steps the viewer needs to take in order to access and use this interactive service have been kept simple and intuitive. As most cable viewers are comfortable using their remotes, TV Guide On Screen design is ideal. Anyone watching cable will be able to access the electronic TV Guide without instructions.

Q: How will this technology affect Pay Per View?

A: In impulse systems, TV Guide On Screen can be set up to allow cable subscribers to order directly through the electronic guide, while cable operators using the ANI and ARU systems will benefit from specific ordering information which will follow the Pay Per View listings and descriptions. Thus, TV Guide On Screen promises to be a powerful Pay Per View marketing tool for all cable operators.

Q: Won't this conflict with your printed guide?

A: No, it will complement it. TV Guide On Screen will enhance TV Guide's reputation as the leader in providing the best programming information in the country and will be supported in print by TV Guide.

Q: How much control will we have over this service in the headend?

A: We're providing you with maximum control by using a methodology that utilizes parts of the cable spectrum that are easily managed by your headend, as opposed to trying to make our feed fit the inherent inadequacies of the VBI.

Q: How expensive is this system?

A: In determining the quantity of graphics and data to make available, we established a threshold which satisfies two aims:

1. A level of service which addresses viewer needs
2. A service inexpensive enough to be included in all future converter boxes

For more information, call Brian Margolis, Electronic Program Guide Director at 212.819.3712



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Bennington et al.

Serial No.: 08/119,367

Art Unit: 2714

Filed: September 9, 1993

OCT 05 1998

Examiner: Lee, M.

For: Electronic Television Program Schedule System and Method

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

DECLARATION OF ROGER YOUMAN UNDER 37 C.F.R. § 1.608

I, Roger Youman, declare as follows:

1. I make this declaration in connection with the above-captioned application. I am a graduate of Swarthmore College, having received a B.A. in English in 1953. I was employed by TV Guide from 1956 to 1996 holding several positions during that forty year period. During 1992, I was Editor, Local Sections. I am now retired. All documents that I will refer to in this declaration were maintained in my files at TV Guide in the ordinary course of business unless otherwise identified.

2. One of the matters I worked on while I was employed with TV Guide, was a project to develop an interactive electronic on-screen program guide (hereinafter, the "EPG") to display information concerning television programs and to permit the TV viewer to perform various actions and selections in connection with current or future TV program schedules (hereinafter, the "EPG Project"). I became involved with the EPG Project starting in January, 1992. On behalf of TV Guide, I was responsible for the editorial content and presentation of the EPG. Michael Morris, who reported to me at TV Guide during the relevant period, also worked on the EPG Project.

3. Among the features that came to be included in the EPG was one that permitted searching for program schedule information and sequentially displaying such schedule information on the lower portion of the television screen without interrupting the display of a currently appearing television program. The feature was initially referred to as the "instant rolling log" and later came to be known as the browse feature (hereinafter referred to as the "Browse Feature").

4. The first written record of which I am aware relating to the Browse Feature is attached hereto as Exhibit 1. Exhibit 1 includes a copy of a

memorandum dated 1/20/92 from the named inventor, Michael Morris, to Mr. Robinowitz with a copy to me, that refers to and encloses a revised report dated 1/19/92 entitled "Electronic TV Guide Project: Prototype (01-19-92)" (hereinafter the "1/19 Report"). The 1/19 Report describes the EPG as it stood at that time. The Browse Feature (referred to as "the instant rolling log") is discussed on page 3 of the 1/19 Report. The described embodiment of the Browse Feature at any one time displays information concerning three programs at the lower portion of the screen while the TV picture occupies the remainder of the screen. Although not explicitly stated in the 1/19 Report, the described embodiment of the Browse Feature contains an organized listing of many more than three programs. When scrolling through the log, the down and up arrow keys of a remote control allow one to scroll forwards or backwards through the programs in the log with three being displayed at one time. The viewer can activate the Browse Feature by pressing a special TV Guide Menu button on the remote control. Depressing an "A" button while the Browse Feature is activated turns off the Browse Feature and returns the display to full-screen live TV. The Browse Feature described in the 1/19 Report allows the user to interactively scan through program listings while continuing to view the current program.

5. Exhibit 2 is a memorandum I wrote and sent to Brian Margolis dated May 15, 1992. I therein explained the proposed basic and premium EPG services to be developed and marketed by TV Guide. Attached to this memo is a revised version of the 1/19 Report dated May 15, 1992 (the "5/15 Report") which I state was "done by Michael Morris". I describe therein the basic service that includes "The ability to find out what is being telecast on all other channels now." This is a reference to an aspect of the Browse Feature. The 5/15 Report contains a similar description of the Browse Feature to that appearing in the 1/19 Report.

6. In addition to forming an in-house staff to develop the EPG, TV Guide decided to involve outside companies to assist with the implementation of the EPG. X • PRESS Information Services, Ltd. (hereinafter "X • PRESS") worked on the development of the software for the EPG. Buddy Ray and his company, Intellimedia Corporation, advised on the development of software and hardware to implement a prototype of the EPG, including the Browse Feature.]

7. During the period of August to December 1992 there was ongoing work on the part of TV Guide, Animatrix, Inc. and X • PRESS to finish development of a version of the EPG suitable for demonstration at the Western Cable Show in early December 1992 in Anaheim, CA.

8. The EPG incorporating the Browse Feature was shown at the Western Cable Show in Anaheim, CA in December 2-4, 1992. Attached as Exhibit 3 is a copy of a brochure, copies of which were handed to attendees at the TV Guide booth. The Browse Feature as demonstrated at the Show is accurately described and illustrated on page 5 of the brochure. The EPG software was installed on a PC and the system was attached to a TV Monitor. The programs schedule database was installed on the PC memory. I attended the Show. By the time of the Show, I had successfully operated the EPG and Browse Feature installed on a personal computer attached to a TV Monitor.

Using a computer keyboard or a remote control, I was able to activate and deactivate the Browse Feature, and to navigate through the television channels and through time slots for a particular channel using the arrow keys on the keyboard or the remote.

9. All of the foregoing acts took place within the United States of America. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated:

Sept. 24, 1998


ROGER YONMAN

Exhibit 1



Inter-Office Memorandum

January 20, 1992

To: Brian Margolis
Buddy Ray

From: Joe Robinowitz *MR*

Re: First revise of TV GUIDE Electronic Programming Guide

Here's the latest version of our EPG from Morris. I'm sure more will follow as we continue to work on our product.

JRR:dh

Enclosure

Murdoch Magazines
TV GUIDE INTEROFFICE COMMUNICATION

FROM: Michael Morris
TO: Joe Robinowitz

OFFICE: Editorial

DATE: 01-20-92

Dear Joe:

Attached are the revised copies of the Electronic TV Guide prototype for you, Brian, Buddy, ~~and the vendor~~.

This revise:

1. Adds page numbers, an index and cover page showing the Main Menu.
2. Places the features (Views) in the sequence used on the Main Menu.
3. Changes all Main Menu "10s" to "0s."
4. Includes minor cosmetic adjustments.
5. Adds CONFIDENTIAL to page 1 (in case you can't find the stamp).

Please let us know if you need further changes.

Best regards,



cc: Tom Greendyk, Roger Youman

ELECTRONIC TV GUIDE: Prototype (01-19-92)

CONFIDENTIAL

TV GUIDE: MAIN MENU		SUN 01/12/92 6:27 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services

SELECTION BOX

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Feature	Page
BACK.....	8
Bottom-Line Menu.....	3
Browse Listings.....	5,6
Category Lists (Program Types).....	10,11
Channel Lineups.....	12
Documentary List (Program Types).....	11
Guidance (show evaluations).....	13
Home Video (TV Update).....	17
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	11
Late Changes.....	16
Main Menu.....	4
MARK.....	14
Movie List.....	10
900-Line Numbers (TV Update).....	18
Notebook.....	14
On-Screen Alerts.....	14,15,16
Program Listings (3 levels).....	7
Program Listings ("grid" style).....	6
Program Locator.....	9
Program Types (Category Lists).....	10,11
Set VCR Timer.....	15
Soap News (TV Update).....	17
Sports List (Program Types).....	11
TV Guide Services.....	18
TV Guide Subscriptions.....	18
TV Update (entertainment news).....	17
Video Games (TV Update).....	17
Zap Ident.....	2

ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 01: Instant Show Ident

Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

>> TVG logo

>> Current clock time

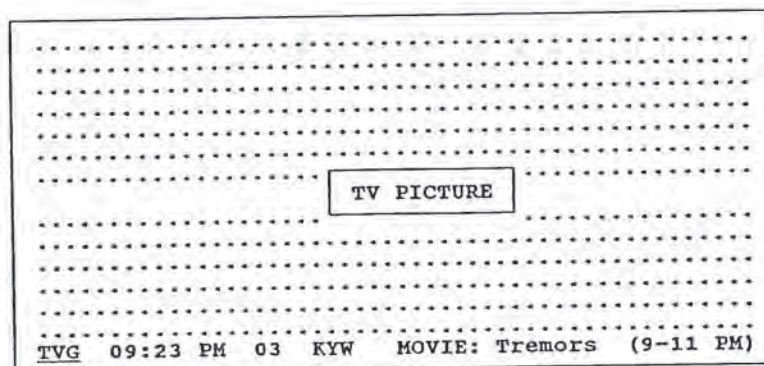
>> Cable company's system-specific channel number

>> Station's call letters

>> Name of show you're watching

>> Show's inclusive times

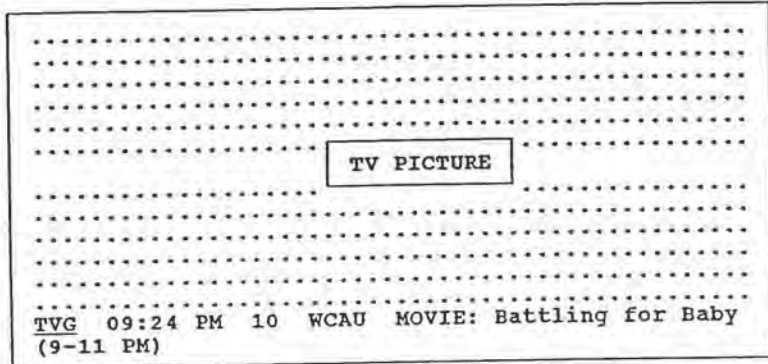
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 02: Zap Ident

VIEW 02: Zap Ident
You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 03: Instant Rolling Log

You want to see what's coming up, but don't want to stop watching the show that's on screen.

You press the special TV Guide Menu button on your remote control and --without having to go to the actual menu--you get three lines of low-level (titleline only) listings across the bottom of your screen.

Pushing the DOWN arrow, lets you scroll the entire rolling log. Use the UP arrow to move backwards.

```

.....
.....
.....
      TV PICTURE
.....
.....
.....
34  AMC   MOVIE: World in His Arms (9-10:45 PM)
35  BET   BOBBY JONES GOSPEL (9-10 PM)
36  CNN   IRAQ: ONE YEAR LATER (9-10 PM)
.....

```

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

$$A=TV$$

The "A" button send you immediately back to full-screen live TV.

B=MORE

The "B" button gives you expanded listings (Level 1 = titlelines only; Level 2 = brief storylines; Level 3 = everything on file).

C=BACK

Hit "C" and you're returned to the last screen. If I hit "C" when I'm on the screen shown above, I'd drop back to VIEW 02 (preceding page).

D=TVG MENU

The "D" button gets you to the TV Guide Main Menu.

E=MARK

The MARK feature allows the viewer to save shows for the notebook; it also marks shows for VCR programming.

F=HELP

"F" and you get a scrollable HELP screen.

Examples follow for the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 04: Main Menu

You need more information or want to access one of our special features. Hit the "D" button and the TV Guide Main Menu replaces the TV picture:

TV GUIDE: MAIN MENU		SUN 01/12/92 6:27 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services
SELECTION BOX		
TVG A-TV B-MORE C-BACK D-MENU E-MARK F-HELP		

- 1 Browse Listings: Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where various day & time ranges are presented.
- 2 Program Locator: This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Selection Box, where alpha combinations are available.
- 3 Program Types: This feature provides the special lists--Movies, Kids, Sports, News and the like. When this feature is selected, the cursor moves to the Selection Box where the available lists are shown.
- 4 Channel Lineups: The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Selection Box, where all services are shown.
- 5 Guidance: Guidelines and other program-evaluation information. Available info is shown in the Selection Box at bottom of screen.
- 6 Notebook: The list of shows you mark while using any of rolling-log listing features. Hit "6" and your list appears in the Selection Box.
- 7 Set VCR Timer: Lets you set your VCR for programming TV shows.
8. Late Changes: This gives us the ability to alert viewers to recent changes (and important additions), especially changes that impact VCR timers already set up.
- 9 TV Update: Late-breaking TV news via the Selection Box.
- 0 TV Guide Services: Info on TV Guide subscriptions, special items we want to sell (You on a TVG cover), 900-line numbers, etc.

Examples follow for each of the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 05: Browse Listings (#1 on Main Menu)

To browse through a portion (or all) of the rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

>>>		TV GUIDE: MAIN MENU		SUN 01/12/92		6:29 PM																										
		1	Browse Listings	6	Notebook																											
		2	Program Locator	7	Set VCR Timer																											
		3	Program Types	8	Late Changes																											
		4	Channel Lineups	9	TV Update																											
		5	Guidance	0	TV Guide Services																											
>>>		<table><tr><td><u>SA</u></td><td><u>SU</u></td><td><u>MO</u></td><td><u>TU</u></td><td><u>WE</u></td><td><u>TH</u></td><td><u>FR</u></td></tr><tr><td>01/11</td><td>01/12</td><td>01/13</td><td>01/14</td><td>01/15</td><td>01/16</td><td>01/17</td></tr><tr><td>01/18</td><td>01/19</td><td>01/20</td><td>01/21</td><td>01/22</td><td>01/23</td><td>01/24</td></tr></table>							<u>SA</u>	<u>SU</u>	<u>MO</u>	<u>TU</u>	<u>WE</u>	<u>TH</u>	<u>FR</u>	01/11	01/12	01/13	01/14	01/15	01/16	01/17	01/18	01/19	01/20	01/21	01/22	01/23	01/24			
<u>SA</u>	<u>SU</u>	<u>MO</u>	<u>TU</u>	<u>WE</u>	<u>TH</u>	<u>FR</u>																										
01/11	01/12	01/13	01/14	01/15	01/16	01/17																										
01/18	01/19	01/20	01/21	01/22	01/23	01/24																										
>>>		<table><tr><td>6AM</td><td>7AM</td><td>8AM</td><td>9AM</td><td>10AM</td><td>11AM</td><td>12N</td><td>1PM</td><td>2PM</td><td>3PM</td><td>4PM</td><td>5PM</td></tr><tr><td>6PM</td><td>7PM</td><td>8PM</td><td>9PM</td><td>10PM</td><td>11PM</td><td>12M</td><td>1AM</td><td>2AM</td><td>3AM</td><td>4AM</td><td>5AM</td></tr></table>							6AM	7AM	8AM	9AM	10AM	11AM	12N	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	12M	1AM	2AM	3AM	4AM	5AM
6AM	7AM	8AM	9AM	10AM	11AM	12N	1PM	2PM	3PM	4PM	5PM																					
6PM	7PM	8PM	9PM	10PM	11PM	12M	1AM	2AM	3AM	4AM	5AM																					
		TVG A-TV B-MORE C-BACK D-MENU E-MARK F-HELP																														

The RIGHT/LEFT/UP/DOWN arrows allow you to navigate; ENTER selects. The viewer selects SUN 01/12 and 9PM on the above screen and gets:

```
-->> TV GUIDE: BROWSE SUN 01/12/92 6:29 PM
SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
    (1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable bare-bones (Level 1) rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and brief supplementary info
- >> Running time

CONTINUED

CONTINUED: Browse Listings

A variation on the Browse Listings feature turns the rolling log into a vertical approximation of a grid.

Like the digest, the listings shown throughout this prototype list shows only at their start time. The "grid" view would list all programs on at any given time period.

Let's begin with the preceding screen:

```

-->> TV GUIDE: BROWSE                      SUN 01/12/92 6:29 PM
SUN 01-12-92 09:00 PM
03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC  MOVIE: World in His Arms (1952) ***
      (1 hr., 45 min.)
29 FOX  MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

```

If we show all programs actually on at 9 PM, the screen would change to:

```

> TV GUIDE: BROWSE                      SUN 01/12/92 6:29 PM
> SUN 01-12-92 09:00 PM
> 03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
> 04 USA  FAMILY FUN (08:30-10:30 PM)
> 05 HBO  MOVIE: Casablanca (08:00-10:15 PM)
> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
> 07 MAX  COMEDY SHOWCASE (08:00-09:30 PM)
> 08 TBS  MOVIE: Godfather II (08:05-11:00 PM)
> 09 CNN  GULF WAR DOCUMENTARY (08:30-09:30 PM)
> 10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
> 11 AMC  MOVIE: Day at the Races (08:15-09:30 PM)
12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

```

We'd use color to code the shows starting at this hour (green above) or the reverse (mark shows carrying through), depending on test results.

In the sample above, we show start-end times for carry-through shows. In a test, we may find that viewers prefer different information (only the start time, for example).

As for how a user initiates this feature, we suspect it could be done as part of Browse on the Main Menu, or on a system setup screen.

VIEW 06: Listing Levels (Bare Bones, Mid-Level, Full)
You're browsing Level 1, the bare-bones log (first example below), but you want more information.

Level 1: SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
(1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
>>> TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Hit the "B" (MORE) button and you get Level 2 of the rolling-log listing info. This level contains 2-3 lines of storyline info:

Level 2: SUN 01-12-92 09:00 PM
>>> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Hit "B" again and you get Level 3 (lengthiest available listing):

Level 3: SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Maureen Stapleton and Patty Duke star in this
fact-based drama that explores the right-to-die
issue with candor and compassion. "Last Wish" was
adapted from a book by TV newswoman Betty Rollin,
who fought and won her own battle with cancer,
dramatized in a 1978 TV-movie called "First You
Cry." But this 1992 TV-movie revolves around the
tortuous struggle of Rollin's septuagenarian moth-
er, Ida, who's suddenly stricken with a more viru-
lent form of the disease. Maureen Stapleton gives
a fine performance as Ida, a down-to-earth, cour-
ageous woman whose suffering tears at the heart of
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 07: BACK FEATURE (Bottom Menu Line)

You're finished reading the expanded listing (the scrolled second screen is still on your TV):

Level 3:

SUN 01-12-92 09:00 PM
her daughter Betty (Patty Duke), and culminates in
a wrenching decision. Adapted by Jerome Kass, who
wrote "Queen of the Stardust Ballroom" as a TV
vehicle for Stapleton in 1975; directed by Jeff
Bleckner ("Concealed Enemies")
Supporting Cast

Ed.....Dwight Schultz
Alvin.....Lee Wallace
Shany.....Tresa Hughes
Rose.....Patricia Englund
Dr. Burns.....Ian D. Clark
Maryanne.....Diane D'Aquila
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

>>>

At this point, you can scroll the entire rolling log at Level 3 (same for Levels 1 and 2), but you've got enough and you want to return to Level 2. Hit the "C" button (BACK) and you immediately go back one step, in this example returning to Level 2:

Level 2:

SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHY? MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

The BACK feature works in the same way throughout the system -- it takes you back one step, to the previous screen or menu.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 08: Program Locator (#2 on Main Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when--and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

```

>>> TV GUIDE: MAIN MENU          SUN 01/12/92   6:50 PM
      1 Browse Listings         6 Notebook
      2 Program Locator         7 Set VCR Timer
      3 Program Types           8 Late Changes
      4 Channel Lineups         9 TV Update
      5 Guidance                0 TV Guide Services

>>>  Aa-Am  Dn-Dz  H      Ma-Mm  Ra-Rm  U
      An-Az  Ea-Em  Ia-Im  Mn-Mz  Rn-Rz  V
      Ba-Bm  En-Ez  In-Iz  N      Sa-Sm  W
      Bn-Bz  Fa-Fm  J      O      Sn-Sz  X
      C      Fn-Fz  K      P      Ta-Tm  Y
      Da-Dm  G      L      Q      Tn-Tz  Z

      TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

```

>>> TV GUIDE: MAIN MENU          SUN 01/12/92   6:50 PM

      BAM-BAM CIRCUS
      BAT BOY
      BACK TO SCHOOL
      BACK TO BASICS
      BARNEY MILLER
      BARTER FOR FUN

      TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

I move my cursor to Barney Miller and hit enter: All of the Barney Miller listings appear (in day/time/channel order) in the scrollable Selection Box:

```

>>> MON 01-13 10:00 AM 09 WXYX BARNEY MILLER
      Barney strikes out with a rookie officer.
      MON 01-13 04:30 PM 11 WCDE BARNEY MILLER
      Barney gets conned into buying a used car.
      TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER
      John Amos guests as a scam artist.

      TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

I want to remember to watch or tape the WCDE show. I select "E" and the marked listing moves to my Notebook.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 09: Program Types/Category Lists (#3 on Main Menu)
The Main Menu gives you access to special lists--Movies, Sports, Kids, News, Opera, whatever. To access this feature, choose 3:

```

>>> TV GUIDE: MAIN MENU          SUN 01/12/92   6:55 PM
      1 Browse Listings          6 Notebook
      2 Program Locator          7 Set VCR Timer
      3 Program Types            8 Late Changes
      4 Channel Lineups          9 TV Update
      5 Guidance                 0 TV Guide Services

>>> SELECT THE PROGRAM TYPE YOU WANT:
      Movies      Talk
      Sports      Music
      Children    and so on . . .
      News
      Documentary

      TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
  
```

Move the cursor to Movies, hit ENTER and you get:

```

>>> TV GUIDE: Movie List      SUN 01/12/92   6:55 PM
      1 Today's Movies (all)
      2 Today's Movies (4 star)
      3 Today's Movies (pay cable)
      4 Today's Movies (PPV)
      5 All Movies
      6 All 4-Star Movies
      7 All Pay Cable Movies
      8 All PPV Movies
      9 Movies By Category
     10 Star Search
     11 Director Search
      TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
  
```

Select #1 -- Today's Movies (all) -- and you get:

```

TV GUIDE: Movie List          SUN 01/12/92   6:55 PM
SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
17 WPHL MOVIE: Untouchables (1988) (2 hrs) ****
Kevin Costner as the Eliot Ness.
44 WXYZ MOVIE: Wild Texas Wind (1991) (2 hrs) *
Dolly Parton as a down-on-her-luck CW singer.
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
  
```

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

CONTINUED: Program Types/Category Lists

The Intergraph system gives us the ability to provide just about whatever categorical lists viewer-testing proves worthwhile.

For example, a Sports list might include:

TV GUIDE: <u>Sports List</u>		SUN 01/12/92	7:01 PM
1	Today's Sports (all)		
2	Today's Live Sports		
3	Today's Football		
4	Today's Basketball		
5	Today's Boxing		
6	All Sports		
7	All Live Sports		
8	All Football		
9	All Basketball		
10	Team Search		
11	School Search		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of children's programs:

TV GUIDE: <u>Kids List</u>		SUN 01/12/92	7:11 PM
1	Today's Shows (all)		
2	Today's G-rated movies		
3	Today: ages 2-5		
4	Today: ages 6-9		
5	Today: ages 10-14		
6	All: ages 2-5		
7	All: ages 6-9		
8	All: ages 10-14		
9	All: G-rated movies		
10	All: Craft		
11	All: Science/Nature		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of documentary programs:

TV GUIDE: <u>Documentary</u>		SUN 01/12/92	7:18 PM
1	Today's Shows (all)		
2	Today: News & Public Affairs		
3	Today: Nature		
4	Today: Science		
5	Today: Warfare		
6	All: News & Public Affairs		
7	All: Nature		
8	All: Science		
9	All: Warfare		
10	All:		
11	All:		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 10: Channel Lineups (#4 on Main Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Main Menu, select 4 (Channel Lineups):

TV GUIDE: MAIN MENU		SUN 01/12/92 7:23 PM	
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
SORT LIST: PROGRAM NAME DAY/TIME CATEGORY			
SELECT CHANNEL:			
ABC	CNN	DSC	
A&E	CSP	ESN	
AMC	DIS	and so on	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

I want a list sorted in day and time order and I want A&E. I select via the cursor/ENTER. I get:

TV GUIDE: <u>A&E Schedule</u>		SUN 01/12/92 7:24 PM	
SUN 01/12/92			
06:30	AM	DANCE OF THE FAIRIES	
07:00	AM	CREATIVE KIDS	
07:30	AM	MOVIE: Gunga Din (1937) (2 hrs) ***	
10:30	AM	CHESS CHAMPIONSHIP (Live; 3 hrs)	
01:30	PM	JFK ASSASSINATION (60 min.)	
02:30	PM	PLAYWRIGHT'S THEATRE (90 min.)	
04:00	PM	MOVIE: Women in Love (1978) (2 hrs) ****	
06:00	PM	CONCERT: New York Philharmonic (2 hrs)	
08:00	PM	MOVIE: Gunga Din (1937) (2 hrs) ***	
10:00	PM	JOAN BAEZ (60 min.)	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

Now, I can:

- >> Scroll up and down
- >> Use B=MORE to get more info (Levels 2 and 3) .
- >> Use E=MARK to save shows for my Notebook (and VCR programming).

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 11: Guidance (#5 on Main Menu)

This is the viewer's entree to the features that evaluate shows: Guidelines and the like.

I haven't filled in the screens here because this area requires further discussion. Clearly the Electronic TV Guide will require something more creative than simply keyboarding in the magazine material.

TV GUIDE: MAIN MENU		SUN 01/12/92	6:32 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 12: NOTEBOOK (#6 on Main Menu) and MARK ("E" on bottom-line menu)
The MARK function lets you create a list at any of the three listing levels; lists that can be used in several ways, as shown on the next page.
You want to mark the ABC movie. Move the cursor to the movie and hit E:

```

>>> SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

```

When you're finished marking, select "D" (MENU). When the Menu appears, select #6 (Notebook), placing your list in the Selection Box:

```

TV GUIDE: MAIN MENU          SUN 01/12/92 6:40 PM
1 Browse Listings           6 Notebook
2 Program Locator           7 Set VCR Timer
3 Program Types             8 Late Changes
4 Channel Lineups           9 TV Update
5 Guidance                  0 TV Guide Services
<<<

NOTEBOOK (Marked Shows)
SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR
SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)
MO 01-13 08:00-08:30 PM CBS EVENING SHADE
MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE
MO 01-13 11:30-12:00 PM ABC NIGHTLINE
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

```

The ABC movie you just marked has been inserted--in day and time chronological order--within the scrollable list.

This feature provides several interesting viewer rewards:

- >> On-Screen Alert: When you turn on your TV, you get a beep and a brief reminder that you have a marked show that day.
- >> Review: You can use the Notebook to review choices.
- >> VCR Programming: The Notebook is the basis for VCR programming.
- >> Error Messages: I'm told if I choose (mark) a show for a service I'm not taking. Helps viewers; makes cable companies happy.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 13: Set VCR Timer (#7 on Main Menu)

Lots of technical issues here, but the viewer should be able to use his Notebook list to set his VCR timer. We begin with the preceding screen, but change the choice to #7 (Set VCR Timer):

```

TV GUIDE: MAIN MENU          SUN 01/12/92   6:43 PM
1 Browse Listings           6 Notebook
2 Program Locator           7 Set VCR Timer
3 Program Types             8 Late Changes
4 Channel Lineups           9 TV Update
5 Guidance                  0 TV Guide Services
<<<

NOTEBOOK (Marked Shows)
>>> SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR
    SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)
    MO 01-13 08:00-08:30 PM CBS EVENING SHADE
    MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE
    MO 01-13 11:30-12:00 PM ABC NIGHTLINE

TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

#7 brings up the VCR MENU:

```

TV GUIDE: VCR MENU          SUN 01/12/92   6:44 PM
>>> 1 Set VCR Timer
    2 Check to-tape list
    3 Delete a show
    4 OPEN

NOTEBOOK (Marked Shows)
>>> SU 01-12 08:00-08:30 PM IN LIVING COLOR
    SU 01-12 09:00-11:00 PM MOVIE (Last Wish)
    MO 01-13 08:00-08:30 PM EVENING SHADE
    MO 01-13 10:00-11:00 PM NORTHERN EXPOSURE
    MO 01-13 11:30-12:00 PM NIGHTLINE
    TU 01-14 08:30-09:00 PM HOME IMPROVEMENT

TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

Select #1 (Set VCR Timer) and the cursor drops to the Notebook's list of marked shows in the Selection Box. Use the UP/DOWN arrows to scroll your list, hit ENTER and the system automatically programs your VCR to tape a marked show. It will also provide an error message if you inadvertently choose two shows with overlapping times.

ICON NOTE: The Notebook has several uses (I won't want to tape all shows on my list), so here's a place where an icon or symbol should be used to pinpoint shows selected for taping.

And: When you first turn on your TV set, a "beep" an onscreen message will remind you if you have a show selected for taping:

BE SURE TO LOAD A FRESH TAPE IN YOUR VCR -- SHOW SELECTED FOR TAPING

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 14: Late Changes (#8 on Main Menu)

A significant competitive advantage: the daily (or more frequent) update gives us the ability to alert viewers to last-minute changes (and important additions), especially those changes that impact VCR tapes already set up. To access this feature, select #8 on the Main Menu:

TV GUIDE: MAIN MENU	SUN 01/12/92 6:28 PM	
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	<<<
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	
SELECTION BOX		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

In a flash, the picture switches to the Late Changes screen, where info can be scrolled:

TV GUIDE: <u>LATE CHANGES</u>	SUN 01/12/92 6:28 PM
<u>VCR ALERT:</u> Notebook shows you plan to tape the CBS movie on Tue. 1/14 at 9 PM. The movie has been changed to a news special.	
<u>LATE CHANGES/ADDITIONS:</u> WED 1/15: ABC has cancelled Civil Wars (10-11); replacement is a Peter Jennings report. ----- THU 1/16: President Bush will address the nation at 9 PM.	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP	

VCR Alert: All of our listing information will be in a database format, so we think it possible to develop a process that links the last-minute changes coming via the daily (or more frequent) download and shows that are already marked and placed in the Notebook.

Last Minute Changes/Additions: It's possible to handle this as a simple text file that identifies only major network changes . . . or develop a process linked to the database itself, allowing the system to note all changes, or only those at a given level.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 15: TV Update (#9 on Main Menu)

This is the viewer's entree to our entertainment-news information wire, our own Entertainment Tonight, offering attractive possibilities via the daily (or more frequent) updates.

TV GUIDE: MAIN MENU		SUN 01/12/92 7:44 PM
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	<<<
5 Guidance	0 TV Guide Services	

ALL	CABLE TV	CHILDREN
TV PROGRAMS	ACTORS/CASTING	VIDEO GAMES
SOAPS: Today	PAY-TV MOVIES	GOVERNMENT
SOAPS: All	UPCOMING SPECIALS	and so on...
HOME VIDEO	SPORTS	
TECHNOLOGY	MOVIES	

>>>

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

For example, select HOME VIDEO and you get:

TV GUIDE: Home Video	SUN 01/12/92 7:44 PM
NEW RELEASES (Week of 1/13-1/17):	
01/13: Kevin Costner in "Dances with Wolves," a	
**** action-drama (Vestron/G/\$29.95)	
01/15: Susan Sarandon and Geena Davis in "Twilly	
and Trudie," a * comedy (MGM/\$88.99)	
01/16: Pee Wee Herman in "Growing Up Late," a ****	
coming-of-age drama (FOX/\$18.95)	
01/18: Sean Penn and Madonna in "Let's Make Up,"	
a ** adventure (Warners/\$18.75)	
01/20: Michael Jackson's "Dangerous" video (FOX/	
\$15.95)	
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 16: TV Guide Services (#0 on Main Menu)

This is the viewer's entree to our catalog of services: subscriptions, 900 phone numbers, classified ads, product ads, books and the like.

TV GUIDE: MAIN MENU		SUN 01/12/92 7:52 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services
<<<		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

PART 04
SN 08/119,367

Exhibit 13



Inter-Office Memorandum

FROM: Roger Youman OFFICE: National Editorial DATE: 5/15/92

TO: Brian Margolis

Dear Brian:

I am glad I offered to give you something on paper for your MSO visits, because it has focused my mind and clarified my thinking on what belongs in the basic version of the electronic TV Guide and what should be reserved for the premium service.

The attached document, done by Michael Morris, walks you through the basic version, as we see it at this early juncture, and shows what the screens might contain and how the viewer might navigate through them. It is, in essence, a revision and reduction of the original document we produced. It illustrates what remains at the basic level after removing the enhancements that will take us to the higher level.

In outline, the basic service gives viewers:

- Bare-bones information about programs: the equivalent of the TV Guide boldface line: time, channel, show title and running time--plus, for movies, the title of the film, MPAA rating (when the movie is shown uncut), and the names of one or two stars; and, for live team-sports events, the names of the teams. The time span would be two days--programs scheduled today and tomorrow. And this information would cover all channels on the viewer's cable system (with the possible exception of channels for which program information is either not obtainable or unreliable: e.g., local access channels).
- On-screen identification of what they are watching now.
- The ability to find out what is being telecast on all other channels now.
- The ability to browse the two days' worth of listings.
- The ability to locate all plays of a specific program or series during those two days, by keying on the name of that program or series.
- The ability to call up chronological lists of the programs scheduled for those two days by four program types (movies, sports, news and documentaries, children's shows).

Advance

--The ability to call up the two-day schedule for any individual channel.

The premium service adds:

--Listings information for a longer period of time, perhaps two weeks (this is subject to further discussion).

--The ability to get expanded, detailed program information in addition to the basic log info, on two versions: a short version and a full version.

--The ability to get into these versions by way of the rolling log, searches for a particular program or series, searches by program type or by individual channel.

--The ability to go back and forth from one level of information detail to another.

--The ability to perform searches according to a variety of categories; e.g., movies alphabetically or by day, by type (comedy, Western, sci-fi, horror, etc.), by four-star ratings, by pay service, by actor's name, by director, and so on; sports by day, by type (baseball, football, etc.), by team name; children's shows by age; news and documentaries by genre (current affairs, nature, warfare); music shows by type (rock, country-western, classical); soap operas; religious programs; financial and business news; foreign-language programs; etc.

--Guidance information, such as Guidelines-type evaluations of selected noteworthy shows, commentary by TV Guide's critic; and star ratings on all movies.

--The ability to mark upcoming programs viewers are especially interested in and save them in a Notebook.

--An alert of some kind to call their attention to the programs they have marked and remind them to tune in or set the VCR.

--The ability to set their VCR timer through the Notebook.

--Possibly the ability for family members to customize the service according to their individual viewing preferences, narrowing it down to the channels and/or types of programming that they care about most.

--The ability to find out about late schedule or program-content changes.

--A TV Update-like service providing news and gossip about the television and entertainment industries, programs, movies and stars.

--Information about and access to other TV Guide services.

All of this has been discussed with Joe Cece, and he is in accord with this tentative definition of the two services.

As you know, all of this is abstract at this point, and much of it may change when we actually start dealing with the realities of creating this service within the limitations imposed by hardware, software, screen-design and marketing considerations. And it may change further once we show it to prospective users.

But this should get us started.

Best,

A handwritten signature in black ink, appearing to be 'J. Cece', written in a cursive style.

RY:lmb
Attachment

cc: J. Cece, A. Disney, B. Robbins, J. Robinowitz

ELECTRONIC TV GUIDE: Prototype (01-19-92)

CONFIDENTIAL

TV GUIDE: MAIN MENU		SUN 01/12/92 6:27 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services

SELECTION BOX	
---------------	--

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

INDEX	
Feature	Page
BACK.....	8
Bottom-Line Menu.....	3
Browse Listings.....	5,6
Category Lists (Program Types).....	10,11
Channel Lineups.....	12
Documentary List (Program Types).....	11
Guidance (show evaluations).....	13
Home Video (TV Update).....	17
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	11
Late Changes.....	16
Main Menu.....	4
MARK.....	14
Movie List.....	10
900-Line Numbers (TV Update).....	18
Notebook.....	14
On-Screen Alerts.....	14,15,16
Program Listings (3 levels).....	7
Program Listings ("grid" style).....	6
Program Locator.....	9
Program Types (Category Lists).....	10,11
Set VCR Timer.....	15
Soap News (TV Update).....	17
Sports List (Program Types).....	11
TV Guide Services.....	18
TV Guide Subscriptions.....	18
TV Update (entertainment news).....	17
Video Games (TV Update).....	17
Zap Ident.....	2

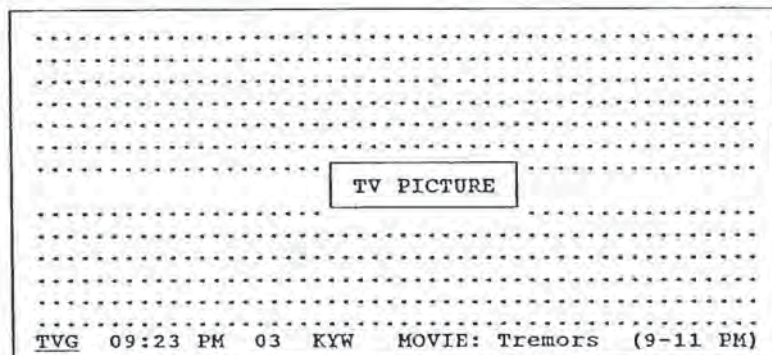
ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 01: Instant Show Ident

Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

- >> TVG logo
- >> Current clock time
- >> Cable company's system-specific channel number
- >> Station's call letters
- >> Name of show you're watching
- >> Show's inclusive times

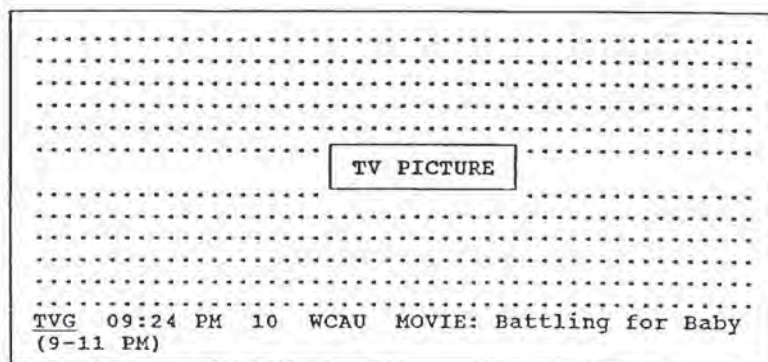
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 02: Zap Ident

You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



Pushing the DOWN arrow, lets you scroll the entire rolling log. Use the UP arrow to move backwards.

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

The "A" button send you immediately back to full-screen live TV.

The "B" button gives you expanded listings (Level 1 = titlelines only; Level 2 = brief storylines; Level 3 = everything on file).

Hit "C" and you're returned to the last screen. If I hit "C" when I'm on the screen shown above, I'd drop back to VIEW 02 (preceding page).

The "D" button gets you to the TV Guide Main Menu.

The MARK feature allows the viewer to save shows for the notebook; it also marks shows for VCR programming.

"F" and you get a scrollable HELP screen.

Examples follow for the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 04: Main Menu

You need more information or want to access one of our special features. Hit the "D" button and the TV Guide Main Menu replaces the TV picture:

TV GUIDE: MAIN MENU	SUN 01/12/92 6:27 PM
1 Browse Listings	6 Notebook
2 Program Locator	7 Set VCR Timer
3 Program Types	8 Late Changes
4 Channel Lineups	9 TV Update
5 Guidance	0 TV Guide Services
SELECTION BOX	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP	

- 1 Browse Listings: Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where various day & time ranges are presented.
- 2 Program Locator: This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Selection Box, where alpha combinations are available.
- 3 Program Types: This feature provides the special lists--Movies, Kids, Sports, News and the like. When this feature is selected, the cursor moves to the Selection Box where the available lists are shown.
- 4 Channel Lineups: The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Selection Box, where all services are shown.
- 5 Guidance: Guidelines and other program-evaluation information. Available info is shown in the Selection Box at bottom of screen.
- 6 Notebook: The list of shows you mark while using any of rolling-log listing features. Hit "6" and your list appears in the Selection Box.
- 7 Set VCR Timer: Lets you set your VCR for programming TV shows.
8. Late Changes: This gives us the ability to alert viewers to recent changes (and important additions), especially changes that impact VCR timers already set up.
- 9 TV Update: Late-breaking TV news via the Selection Box.
- 0 TV Guide Services: Info on TV Guide subscriptions, special items we want to sell (You on a TVG cover), 900-line numbers, etc.

Examples follow for each of the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 05: Browse Listings (#1 on Main Menu)

To browse through a portion (or all) of the rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

	TV GUIDE: MAIN MENU				SUN 01/12/92 6:29 PM							
>>>	1	Browse Listings	6	Notebook								
	2	Program Locator	7	Set VCR Timer								
	3	Program Types	8	Late Changes								
	4	Channel Lineups	9	TV Update								
	5	Guidance	0	TV Guide Services								
>>>	<u>SA</u>	<u>SU</u>	<u>MO</u>	<u>TU</u>	<u>WE</u>	<u>TH</u>	<u>FR</u>					
	01/11	01/12	01/13	01/14	01/15	01/16	01/17					
	01/18	01/19	01/20	01/21	01/22	01/23	01/24					
>>>	6AM	7AM	8AM	9AM	10AM	11AM	12N	1PM	2PM	3PM	4PM	5PM
	6PM	7PM	8PM	<u>9PM</u>	10PM	11PM	12M	1AM	2AM	3AM	4AM	5AM
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP												

The RIGHT/LEFT/UP/DOWN arrows allow you to navigate; ENTER selects. The viewer selects SUN 01/12 and 9PM on the above screen and gets:

```

TV GUIDE: BROWSE                                SUN 01/12/92 6:29 PM
-->>
SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
    (1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP

```

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable bare-bones (Level 1) rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and brief supplementary info
- >> Running time

CONTINUED

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

CONTINUED: Browse Listings

A variation on the Browse Listings feature turns the rolling log into a vertical approximation of a grid.

Like the digest, the listings shown throughout this prototype list shows only at their start time. The "grid" view would list all programs on at any given time period.

Let's begin with the preceding screen:

```
-->> TV GUIDE: BROWSE                SUN 01/12/92 6:29 PM
SUN 01-12-92 09:00 PM
03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU-MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC  MOVIE: World in His Arms (1952) ***
      (1 hr., 45 min.)
29 FOX  MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

If we show all programs actually on at 9 PM, the screen would change to:

```
> TV GUIDE: BROWSE                SUN 01/12/92 6:29 PM
> SUN 01-12-92 09:00 PM
> 03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
> 04 USA  FAMILY FUN (08:30-10:30 PM)
> 05 HBO  MOVIE: Casablanca (08:00-10:15 PM)
> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
> 07 MAX  COMEDY SHOWCASE (08:00-09:30 PM)
> 08 TBS  MOVIE: Godfather II (08:05-11:00 PM)
> 09 CNN  GULF WAR DOCUMENTARY (08:30-09:30 PM)
> 10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
> 11 AMC  MOVIE: Day at the Races (08:15-09:30 PM)
12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

We'd use color to code the shows starting at this hour (green above) or the reverse (mark shows carrying through), depending on test results.

In the sample above, we show start-end times for carry-through shows. In a test, we may find that viewers prefer different information (only the start time, for example).

As for how a user initiates this feature, we suspect it could be done as part of Browse on the Main Menu, or on a system setup screen.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 06: Listing Levels (Bare Bones, Mid-Level, Full)
You're browsing Level 1, the bare-bones log (first example below), but
you want more information.

```
Level 1:  SUN  01-12-92  09:00 PM
          03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
          06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
          10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
          12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
          14 MTV MUSIC VIDEOS
          17 WPHL REEL TO REEL
          24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
          23 WNJS NATIONAL GEOGRAPHIC (60 min)
          25 AMC MOVIE: World in His Arms (1952) ***
              (1 hr., 45 min.)
          29 FOX MARRIED WITH CHILDREN
          57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
          >>> TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

Hit the "B" (MORE) button and you get Level 2 of the rolling-log listing
info. This level contains 2-3 lines of storyline info:

```
Level 2:  SUN  01-12-92  09:00 PM
          >>> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
              Patty Duke and Maureen Stapleton in a fact-based
              drama exploring the right-to-die issue.
          10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
              Debbie Reynolds and Suzanne Pleshette in a comedy-
              drama about battling grandmothers.
          29 FOX MARRIED WITH CHILDREN
              Jessica Hahn as Al's flirtatious "shoe groupie."
          03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
              Spoof of 1950s horror flicks, with Kevin Bacon and
              Fred Ward battling giant, carnivorous worms.
          12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
              Part 3: O'Shea files for divorce; a journalist is
              TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

Hit "B" again and you get Level 3 (lengthiest available listing):

```
Level 3:  SUN  01-12-92  09:00 PM
          06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
              Maureen Stapleton and Patty Duke star in this
              fact-based drama that explores the right-to-die
              issue with candor and compassion. "Last Wish" was
              adapted from a book by TV newswoman Betty Rollin,
              who fought and won her own battle with cancer,
              dramatized in a 1978 TV-movie called "First You
              Cry." But this 1992 TV-movie revolves around the
              tortuous struggle of Rollin's septuagenarian moth-
              er, Ida, who's suddenly stricken with a more viru-
              lent form of the disease. Maureen Stapleton gives
              a fine performance as Ida, a down-to-earth, cour-
              ageous woman whose suffering tears at the heart of
              TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```


ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 07: BACK FEATURE (Bottom Menu Line)

You're finished reading the expanded listing (the scrolled second screen is still on your TV):

Level 3: SUN 01-12-92 09:00 PM
her daughter Betty (Patty Duke), and culminates in a wrenching decision. Adapted by Jerome Kass, who wrote "Queen of the Stardust Ballroom" as a TV vehicle for Stapleton in 1975; directed by Jeff Bleckner ("Concealed Enemies")

Supporting Cast

Ed.....Dwight Schultz
Alvin.....Lee Wallace
Shany.....Tresa Hughes
Rose.....Patricia England
Dr. Burns.....Ian D. Clark
Maryanne.....Diane D'Aquila

>>> TVG A-TV B-MORE C=BACK D=MENU E=MARK F=HELP

At this point, you can scroll the entire rolling log at Level 3 (same for Levels 1 and 2), but you've got enough and you want to return to Level 2. Hit the "C" button (BACK) and you immediately go back one step, in this example returning to Level 2:

```

Level 2:  SUN    01-12-92    09:00 PM
          06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
          Patty Duke and Maureen Stapleton in a fact-based
          drama exploring the right-to-die issue.
          10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
          Debbie Reynolds and Suzanne Pleshette in a comedy-
          drama about battling grandmothers.
          29 FOX MARRIED WITH CHILDREN
          Jessica Hahn as Al's flirtatious "shoe groupie."
          03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
          Spoof of 1950s horror flicks, with Kevin Bacon and
          Fred Ward battling giant, carnivorous worms.
          12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
          Part 3: O'Shea files for divorce; a journalist is
          TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

```

The BACK feature works in the same way throughout the system -- it takes you back one step, to the previous screen or menu.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 08: Program Locator (#2 on Main Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when--and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

TV GUIDE: MAIN MENU		SUN 01/12/92	6:50 PM
>>>	1 Browse Listings	6 Notebook	
	2 Program Locator	7 Set VCR Timer	
	3 Program Types	8 Late Changes	
	4 Channel Lineups	9 TV Update	
	5 Guidance	0 TV Guide Services	
>>>	Aa-Am	Dn-Dz	H Ma-Mm Ra-Rm U
	An-Az	Ea-Em	Ia-Im Mn-Mz Rn-Rz V
	<u>Ba-Bm</u>	En-Ez	In-Iz N Sa-Sm W
	Bn-Bz	Fa-Fm	J O Sn-Sz X
	C	Fn-Fz	K P Ta-Tm Y
	Da-Dm	G	L Q Tn-Tz Z
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

>>>		TV GUIDE: MAIN MENU	SUN 01/12/92	6:50 PM
	BAM-BAM CIRCUS BAT BOY BACK TO SCHOOL BACK TO BASICS BARNEY MILLER BARTER FOR FUN			
		TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

I move my cursor to Barney Miller and hit enter: All of the Barney Miller listings appear (in day/time/channel order) in the scrollable Selection Box:

>>>		MON 01-13 10:00 AM 09 WXYX BARNEY MILLER Barney strikes out with a rookie officer. MON 01-13 04:30 PM 11 WCDE BARNEY MILLER Barney gets conned into buying a used car. TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER John Amos guests as a scam artist.
		TVG A=TV B=MORE C=BACK D=MENU <u>E=MARK</u> F=HELP

I want to remember to watch or tape the WCDE show. I select "E" and the marked listing moves to my Notebook.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 09: Program Types/Category Lists (#3 on Main Menu)
The Main Menu gives you access to special lists--Movies, Sports, Kids, News, Opera, whatever. To access this feature, choose 3:

```
>>> TV GUIDE: MAIN MENU          SUN 01/12/92   6:55 PM
      1 Browse Listings        6 Notebook
      2 Program Locator        7 Set VCR Timer
      3 Program Types          8 Late Changes
      4 Channel Lineups        9 TV Update
      5 Guidance               0 TV Guide Services

      SELECT THE PROGRAM TYPE YOU WANT:
      >>> Movies                Talk
           Sports              Music
           Children            and so on . . .
           News
           Documentary

      TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

Move the cursor to Movies, hit ENTER and you get:

```
>>> TV GUIDE: Movie List      SUN 01/12/92   6:55 PM
      1 Today's Movies (all)
      2 Today's Movies (4 star)
      3 Today's Movies (pay cable)
      4 Today's Movies (PPV)
      5 All Movies
      6 All 4-Star Movies
      7 All Pay Cable Movies
      8 All PPV Movies
      9 Movies By Category
     10 Star Search
     11 Director Search
      TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

Select #1 -- Today's Movies (all) -- and you get:

```
TV GUIDE: Movie List          SUN 01/12/92   6:55 PM
SUN   01-12-92   09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
17 WPHL MOVIE: Untouchables (1988) (2 hrs) ****
Kevin Costner as the Eliot Ness.
44 WXYZ MOVIE: Wild Texas Wind (1991) (2 hrs) *
Dolly Parton as a down-on-her-luck CW singer.
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

CONTINUED: Program Types/Category Lists

The Intergraph system gives us the ability to provide just about whatever categorical lists viewer-testing proves worthwhile.

For example, a Sports list might include:

```
TV GUIDE: Sports List      SUN 01/12/92   7:01 PM
1  Today's Sports (all)
2  Today's Live Sports
3  Today's Football
4  Today's Basketball
5  Today's Boxing
6  All Sports
7  All Live Sports
8  All Football
9  All Basketball
10 Team Search
11 School Search
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

A list of children's programs:

```
TV GUIDE: Kids List      SUN 01/12/92   7:11 PM
1  Today's Shows (all)
2  Today's G-rated movies
3  Today: ages 2-5
4  Today: ages 6-9
5  Today: ages 10-14
6  All: ages 2-5
7  All: ages 6-9
8  All: ages 10-14
9  All: G-rated movies
10 All: Craft
11 All: Science/Nature
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

A list of documentary programs:

```
TV GUIDE: Documentary    SUN 01/12/92   7:18 PM
1  Today's Shows (all)
2  Today: News & Public Affairs
3  Today: Nature
4  Today: Science
5  Today: Warfare
6  All: News & Public Affairs
7  All: Nature
8  All: Science
9  All: Warfare
10 All:
11 All:
TVG  A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```


ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 10: Channel Lineups (#4 on Main Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Main Menu, select 4 (Channel Lineups):

TV GUIDE: MAIN MENU		SUN 01/12/92 7:23 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
>>> 4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services
SORT LIST: PROGRAM NAME DAY/TIME CATEGORY		
SELECT CHANNEL:		
ABC	CNN	DSC
>>> A&E	CSP	ESN
AMC	DIS	and so on
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

I want a list sorted in day and time order and I want A&E. I select via the cursor/ENTER. I get:

TV GUIDE: <u>A&E Schedule</u>		SUN 01/12/92 7:24 PM
SUN 01/12/92		
06:30	AM DANCE OF THE FAIRIES	
07:00	AM CREATIVE KIDS	
07:30	AM MOVIE: Gunga Din (1937) (2 hrs) ***	
10:30	AM CHESS CHAMPIONSHIP (Live; 3 hrs)	
01:30	PM JFK ASSASSINATION (60 min.)	
02:30	PM PLAYWRIGHT'S THEATRE (90 min.)	
04:00	PM MOVIE: Women in Love (1978) (2 hrs) ****	
06:00	PM CONCERT: New York Philharmonic (2 hrs)	
08:00	PM MOVIE: Gunga Din (1937) (2 hrs) ***	
10:00	PM JOAN BAEZ (60 min.)	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

Now, I can:

- >> Scroll up and down
- >> Use B=MORE to get more info (Levels 2 and 3) .
- >> Use E=MARK to save shows for my Notebook (and VCR programming).

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 11: Guidance (#5 on Main Menu)

This is the viewer's entree to the features that evaluate shows: Guidelines and the like.

I haven't filled in the screens here because this area requires further discussion. Clearly the Electronic TV Guide will require something more creative than simply keyboarding in the magazine material.

TV GUIDE: MAIN MENU		SUN 01/12/92 6:32 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services
>>>		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 12: NOTEBOOK (#6 on Main Menu) and MARK ("E" on bottom-line menu)
The MARK function lets you create a list at any of the three listing levels; lists that can be used in several ways, as shown on the next page. You want to mark the ABC movie. Move the cursor to the movie and hit E:

```
>>> SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

When you're finished marking, select "D" (MENU). When the Menu appears, select #6 (Notebook), placing your list in the Selection Box:

```
TV GUIDE: MAIN MENU          SUN 01/12/92 6:40 PM
1 Browse Listings           6 Notebook
2 Program Locator           7 Set VCR Timer
3 Program Types             8 Late Changes
4 Channel Lineups           9 TV Update
5 Guidance                  0 TV Guide Services

NOTEBOOK (Marked Shows)
SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR
SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)
MO 01-13 08:00-08:30 PM CBS EVENING SHADE
MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE
MO 01-13 11:30-12:00 PM ABC NIGHTLINE

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

The ABC movie you just marked has been inserted--in day and time chronological order--within the scrollable list.

This feature provides several interesting viewer rewards:

- >> On-Screen Alert: When you turn on your TV, you get a beep and a brief reminder that you have a marked show that day.
- >> Review: You can use the Notebook to review choices.
- >> VCR Programming: The Notebook is the basis for VCR programming.
- >> Error Messages: I'm told if I choose (mark) a show for a service I'm not taking. Helps viewers; makes cable companies happy.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 13: Set VCR Timer (#7 on Main Menu)

Lots of technical issues here, but the viewer should be able to use his Notebook list to set his VCR timer. We begin with the preceding screen, but change the choice to #7 (Set VCR Timer):

```

    TV GUIDE: MAIN MENU          SUN 01/12/92   6:43 PM
    1 Browse Listings            6 Notebook
    2 Program Locator            7 Set VCR Timer
    3 Program Types              8 Late Changes
    4 Channel Lineups            9 TV Update
    5 Guidance                   0 TV Guide Services
                                     <<<

    >>> NOTEBOOK (Marked Shows)
    SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR
    SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)
    MO 01-13 08:00-08:30 PM CBS EVENING SHADE
    MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE
    MO 01-13 11:30-12:00 PM ABC NIGHTLINE

    TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

#7 brings up the VCR MENU:

```

    >>> TV GUIDE: VCR MENU          SUN 01/12/92   6:44 PM
    1 Set VCR Timer
    2 Check to-tape list
    3 Delete a show
    4 OPEN

    >>> NOTEBOOK (Marked Shows)
    SU 01-12 08:00-08:30 PM IN LIVING COLOR
    SU 01-12 09:00-11:00 PM MOVIE (Last Wish)
    MO 01-13 08:00-08:30 PM EVENING SHADE
    MO 01-13 10:00-11:00 PM NORTHERN EXPOSURE
    MO 01-13 11:30-12:00 PM NIGHTLINE
    TU 01-14 08:30-09:00 PM HOME IMPROVEMENT

    TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

Select #1 (Set VCR Timer) and the cursor drops to the Notebook's list of marked shows in the Selection Box. Use the UP/DOWN arrows to scroll your list, hit ENTER and the system automatically programs your VCR to tape a marked show. It will also provide an error message if you inadvertently choose two shows with overlapping times.

ICON NOTE: The Notebook has several uses (I won't want to tape all shows on my list), so here's a place where an icon or symbol should be used to pinpoint shows selected for taping.

And: When you first turn on your TV set, a "beep" an onscreen message will remind you if you have a show selected for taping:

BE SURE TO LOAD A FRESH TAPE IN YOUR VCR -- SHOW SELECTED FOR TAPING

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 14: Late Changes (#8 on Main Menu)

A significant competitive advantage: the daily (or more frequent) update gives us the ability to alert viewers to last-minute changes (and important additions), especially those changes that impact VCR tapes already set up. To access this feature, select #8 on the Main Menu:

TV GUIDE: MAIN MENU		SUN 01/12/92	6:28 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services

SELECTION BOX

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

In a flash, the picture switches to the Late Changes screen, where info can be scrolled:

TV GUIDE: LATE CHANGES SUN 01/12/92 6:28 PM

VCR ALERT:
Notebook shows you plan to tape the CBS movie on Tue. 1/14 at 9 PM. The movie has been changed to a news special.

LATE CHANGES/ADDITIONS:
WED 1/15: ABC has cancelled Civil Wars (10-11);
replacement is a Peter Jennings report.

THU 1/16: President Bush will address the nation
at 9 PM.

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

VCR Alert: All of our listing information will be in a database format, so we think it possible to develop a process that links the last-minute changes coming via the daily (or more frequent) download and shows that are already marked and placed in the Notebook.

Last Minute Changes/Additions: It's possible to handle this as a simple text file that identifies only major network changes . . . or develop a process linked to the database itself, allowing the system to note all changes, or only those at a given level.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 15: TV Update (#9 on Main Menu)
This is the viewer's entree to our entertainment-news information wire, our own Entertainment Tonight, offering attractive possibilities via the daily (or more frequent) updates.

TV GUIDE: MAIN MENU		SUN 01/12/92 7:44 PM
1 Browse Listings	6 Notebook	<<<
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	
ALL	CABLE TV	CHILDREN
TV PROGRAMS	ACTORS/CASTING	VIDEO GAMES
SOAPS: Today	PAY-TV MOVIES	GOVERNMENT
SOAPS: All	UPCOMING SPECIALS	and so on...
HOME VIDEO	SPORTS	
TECHNOLOGY	MOVIES	
>>>		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

For example, select HOME VIDEO and you get:

TV GUIDE: <u>Home Video</u>	SUN 01/12/92 7:44 PM
NEW RELEASES (Week of 1/13-1/17):	
01/13: Kevin Costner in "Dances with Wolves," a **** action-drama (Vestron/G/\$29.95)	
01/15: Susan Sarandon and Geena Davis in "Tilly and Trudie," a * comedy (MGM/\$88.99)	
01/16: Pee Wee Herman in "Growing Up Late," a **** coming-of-age drama (FOX/\$18.95)	
01/18: Sean Penn and Madonna in "Let's Make Up," a ** adventure (Warners/\$18.75)	
01/20: Michael Jackson's "Dangerous" video (FOX/\$15.95)	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP	

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 16: TV Guide Services (#0 on Main Menu)

This is the viewer's entree to our catalog of services: subscriptions, 900 phone numbers, classified ads, product ads, books and the like.

TV GUIDE: MAIN MENU	SUN 01/12/92 7:52 PM
1 Browse Listings	6 Notebook
2 Program Locator	7 Set VCR Timer
3 Program Types	8 Late Changes
4 Channel Lineups	9 TV Update
5 Guidance	0 TV Guide Services

<<<

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

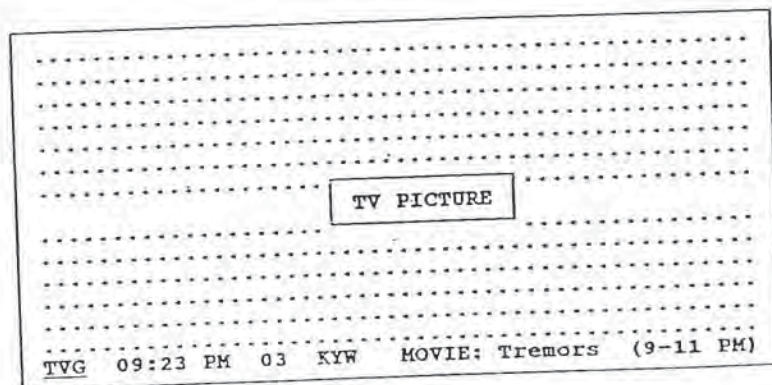
ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 01: Instant Show Ident

Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

- >> TVG logo
- >> Current clock time
- >> Cable company's system-specific channel number
- >> Station's call letters
- >> Name of show you're watching
- >> Show's inclusive times

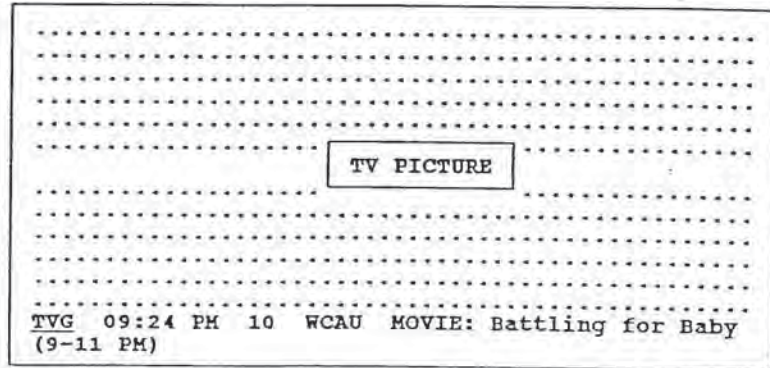
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 02: Zap Ident

You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



VIEW 03: Instant Rolling Log
You want to see what's coming up, but don't want to stop watching the show that's on screen.

Pushing the DOWN arrow, lets you scroll the entire two-day rolling log.
Use the UP arrow to move backwards.

1998

A=TV
The "A" button send you immediately back to full-screen live TV.

A=TV
The "A" button send you immediately back to full-screen live TV.

B=BACK
Hit "B" and you're returned to the last screen. If you hit "C" when you are on the screen shown above, you go back to VIEW 02 (preceding page).

C=MENU
The "C" button gets you to the TV Guide Menu.

D=HELP
"D" and you get a scrollable HELP screen.

Examples follow

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 04: Menu

You need more information or want to access one of our special features. Hit the "C" button and the TV Guide Menu replaces the TV picture:

TV GUIDE: MENU		SUN 01/12/92		6:27 PM
1	Browse Listings			
2	Program Locator			
3	Program Types			
4	Channel Lineups			

SELECTION BOX				
<u>TVG</u>	A-TV	B=BACK	C=MENU	D=HELP

- 1 Browse Listings: Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where day and time ranges are presented for selection.
- 2 Program Locator: This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Program Locator Selection Box.
- 3 Program Types: This feature provides the special lists--Movies, Kids, Sports, News and documentaries. When this feature is selected, the cursor moves to the Program Type Selection Box where the available lists are shown.
- 4 Channel Lineups: The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Channel Selection Box, where all services are shown.

Examples follow for each of the above features

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 05: Browse Listings (#1 on Menu)

To browse through a portion (or all) of the two-day rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

>>>	TV GUIDE: MENU	SUN 01/12/92	6:29 PM
	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SATURDAY 01/11 SUNDAY 01/12		
>>>	6AM 7AM 8AM 9AM 10AM 11AM 12N 1PM 2PM 3PM 4PM 5PM 6PM 7PM 8PM <u>9PM</u> 10PM 11PM 12M 1AM 2AM 3AM 4AM 5AM		
	TVG	A=TV	B=BACK C=MENU D=HELP

You're watching TV on Saturday, but you want to see what's on Sunday at 9 P.M. without having to scroll through the entire rolling log (available via the Instant Rolling Log (View 3, page 3)). To save time, you use go to the TV Guide Menu, then use the RIGHT/LEFT/UP/DOWN arrows to navigate and ENTER to select SUNDAY and 9PM. You get:

----	TV GUIDE: BROWSE	SUN 01/12/92	6:29 PM
	SUN 01-12-92 09:00 PM		
	03 KYW MOVIE: Tremors (2 hrs)		
	Kevin Bacon, Fred Ward		
	06 WPVI MOVIE: Last Wish (2 hrs)		
	Patty Duke, Maureen Stapleton		
	10 WCAU MOVIE: Battling for Baby (2 hrs)		
	Suzanne Pleshette, Debbie Reynolds		
	12 WHYY MASTERPIECE THEATRE (60 min.)		
	14 MTV MUSIC VIDEOS		
	25 AMC MOVIE: World in His Arms (2 hrs) (NR)		
	Gregory Peck, Ann Blyth		
	29 FOX MARRIED WITH CHILDREN		
	TVG	A=TV	B=BACK C=MENU D=HELP

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked ----). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and, for movies and sports, brief supplementary info
- >> Running time

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 06: Program Locator (#2 on Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when—and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM
      1 Browse Listings
      2 Program Locator
      3 Program Types
      4 Channel Lineups

      Aa-Am  Dn-Dz  H      Ma-Mm  Ra-Rm  U
      An-Az  Ea-Em  Ia-Im  Mn-Mz  Rn-Rz  V
      <>>> Ba-Bm  En-Ez  In-Iz  N      Sa-Sm  W
      Bn-Bz  Fa-Fm  J      O      Sn-Sz  X
      C      Fn-Fz  K      P      Ta-Tm  Y
      Da-Dm  G      L      Q      Tn-Tz  Z

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM

      BAM-BAM CIRCUS
      BAT BOY
      BACK TO SCHOOL
      BACK TO BASICS
      BARNEY MILLER
      BARTER FOR FUN

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to Barney Miller and hit ENTER. All of the Barney Miller listings for today and tomorrow appear (in day/time/channel order) in the scrollable Selection Box:

```
>>> MON 01-13 10:00 AM 09 WXYX BARNEY MILLER
      MON 01-13 04:30 PM 11 WCDE BARNEY MILLER
      TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 07: Program Types: Category Lists (#3 on Menu)

The Menu gives you access to four special lists--Movies, Sports, Kids, and News and Documentaries. To access this feature, choose 3:

	TV GUIDE: MENU	SUN 01/12/92	6:55 PM
>>>	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SELECT THE PROGRAM TYPE YOU WANT:		
	Movies		
	Sports		
	Children		
	News and Documentaries		
	TVG	A=TV	B=BACK C=MENU D=HELP

Move the cursor to Movies, hit ENTER and you get a chronological list of only movies, beginning at your time-period location in the rolling log. Use the UP/DOWN arrow keys to scroll forward or backward in time.

TV GUIDE: <u>Movie List</u>	SUN 01/12/92	6:55 PM
SUN 01-12-92 09:00 PM		
03 KYW MOVIE: Tremors (2 hrs)		
Kevin Bacon, Fred Ward		
06 WPVI MOVIE: Last Wish (2 hrs, 30 min)		
Patty Duke, Maureen Stapleton		
10 WCAU MOVIE: Battling for Baby (2 hrs)		
Suzanne Pleshette, Debbie Reynolds		
17 WPHL MOVIE: Untouchables (2 hrs)		
Kevin Costner, Sean Connery		
44 WXYZ MOVIE: Wild Texas Wind (2 hrs)		
Dolly Parton		
TVG	A=TV	B=BACK C=MENU D=HELP

NOTE: Process works the same for the three other categories. In each case, the system provides a subset of the entire database, excluding everything except the category chosen.

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 08: Channel Lineups (#4 on Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Menu, pick 4 (Channel Lineups):

TV GUIDE: MENU	SUN 01/12/92	7:23 PM
1 Browse Listings		
2 Program Locator		
3 Program Types		
4 Channel Lineups		

>>>

SORT LIST:	PROGRAM NAME	<u>DAY/TIME</u>	CATEGORY
SELECT CHANNEL:			
ABC	CNN	DSC	
A&E	CSP	ESN	
AMC	DIS	and so on	

>>>

TVG	A=TV	B=BACK	C=MENU	D=HELP
-----	------	--------	--------	--------

You want a list sorted in day and time order and I want A&E, both selected via the cursor and ENTER buttons. You get:

TV GUIDE: <u>A&E Schedule</u>	SUN 01/12/92	7:24 PM
SUN 01/12/92		
06:30 AM DANCE OF THE FAIRIES		
07:00 AM CREATIVE KIDS		
07:30 AM MOVIE: Gunga Din (2 hrs) (NR)		
10:30 AM CHESS CHAMPIONSHIP (Live; 3 hrs)		
01:30 PM JFK ASSASSINATION (60 min.)		
02:30 PM PLAYWRIGHT'S THEATRE (90 min.)		
04:00 PM MOVIE: Women in Love (2 hrs) (R)		
06:00 PM CONCERT: New York Philharmonic (2 hrs)		
08:00 PM MOVIE: Gunga Din (2 hrs) (NR)		
10:00 PM JOAN BAEZ (60 min.)		
TVG	A=TV	B=BACK C=MENU D=HELP

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

CONFIDENTIAL

TV GUIDE: MENU	SUN 01/12/92	6:27 PM
1 Browse Listings		
2 Program Locator		
3 Program Types		
4 Channel Lineups		
SELECTION BOX		
TVG	A-TV	B=BACK
C=MENU	D=HELP	

INDEX	
Feature	Page
BACK.....	3
Bottom-Line Menu.....	3
Browse Listings.....	5
Category Lists (Program Types).....	7
Channel Lineups.....	8
Documentary List (Program Types).....	7
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	7
Menu.....	4
Movie List.....	7
Program Locator.....	6
Program Types (Category Lists).....	7
Sports List (Program Types).....	7
Zap Ident.....	2

ELECTRONIC TV GUIDE: Prototype

CONFIDENTIAL

TV GUIDE: MAIN MENU	SUN :	6:27 PM
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	

SELECTION BOX

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

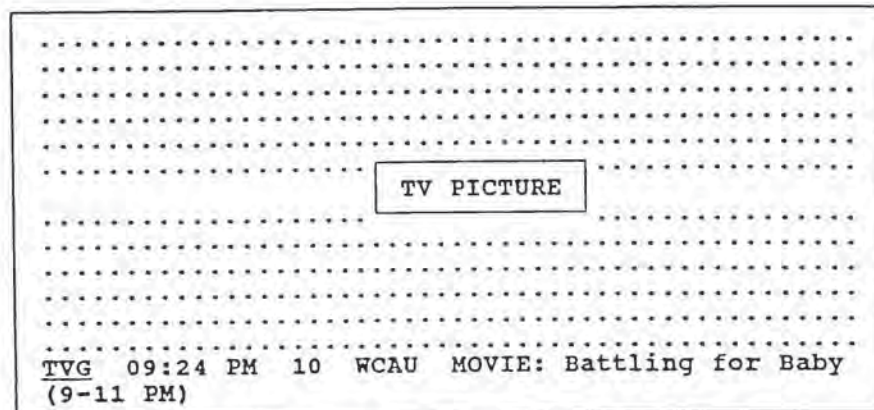
INDEX	
Feature	Page
BACK.....	8
Bottom-Line Menu.....	3
Browse Listings.....	5,6
Category Lists (Program Types).....	10,11
Channel Lineups.....	12
Documentary List (Program Types).....	11
Guidance (show evaluations).....	13
Home Video (TV Update).....	17
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	11
Late Changes.....	16
Main Menu.....	4
MARK.....	14
Movie List.....	10
900-Line Numbers (TV Update).....	18
Notebook.....	14
On-Screen Alerts.....	14,15,16
Program Listings (3 levels).....	7
Program Listings ("grid" style).....	6
Program Locator.....	9
Program Types (Category Lists).....	10,11
Set VCR Timer.....	15
Soap News (TV Update).....	17
Sports List (Program Types).....	11
TV Guide Services.....	18
TV Guide Subscriptions.....	18
TV Update (entertainment news).....	17
Video Games (TV Update).....	17
Zap Ident.....	2

VIEW 01: Instant Show Ident
Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

ELECTRONIC TV GUIDE: Prototype

VIEW 02: Zap Ident

VIEW 02: zap ident
You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 03: Instant Rolling Log

VIEW 03: Instant Rolling Log
You want to see what's coming up, but don't want to stop watching the show that's on screen.

You press the special TV Guide Menu button on your remote control and --without having to go to the actual menu--you get three lines of low-level (titleline only) listings across the bottom of your screen.

Pushing the DOWN arrow, lets you scroll the entire rolling log. Use the UP arrow to move backwards.

.

.

.

TV PICTURE

.

.

.

34 AMC MOVIE: World in His Arms (9-10:45 PM)

35 BET BOBBY JONES GOSPEL (9-10 PM)

36 CNN IRAQ: ONE YEAR LATER (9-10 PM)

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

$$A=TV$$

The "A" button send you immediately back to full-screen live TV.

B=MORE

The "B" button gives you expanded listings (Level 1 = titlelines only; Level 2 = brief storylines; Level 3 = everything on file).

C=BACK

Hit "C" and you're returned to the last screen. If I hit "C" when I'm on the screen shown above, I'd drop back to VIEW 02 (preceding page).

D=TVG MENU

The "D" button gets you to the TV Guide Main Menu.

E=MARK

The MARK feature allows the viewer to save shows for the notebook; it also marks shows for VCR programming.

F=HELP

"F" and you get a scrollable HELP screen.

Examples follow for the above features

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 04: Main Menu

You need more information or want to access one of our special features. Hit the "D" button and the TV Guide Main Menu replaces the TV picture:

TV GUIDE: MAIN MENU	SUN	6:27 PM
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	

SELECTION BOX

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

- 1 **Browse Listings:** Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where various day & time ranges are presented.
- 2 **Program Locator:** This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Selection Box, where alpha combinations are available.
- 3 **Program Types:** This feature provides the special lists--Movies, Kids, Sports, News and the like. When this feature is selected, the cursor moves to the Selection Box where the available lists are shown.
- 4 **Channel Lineups:** The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Selection Box, where all services are shown.
- 5 **Guidance:** Guidelines and other program-evaluation information. Available info is shown in the Selection Box at bottom of screen.
- 6 **Notebook:** The list of shows you mark while using any of rolling-log listing features. Hit "6" and your list appears in the Selection Box.
- 7 **Set VCR Timer:** Lets you set your VCR for programming TV shows.
8. **Late Changes:** This gives us the ability to alert viewers to recent changes (and important additions), especially changes that impact VCR timers already set up.
- 9 **TV Update:** Late-breaking TV news via the Selection Box.
- 0 **TV Guide Services:** Info on TV Guide subscriptions, special items we want to sell (You on a TVG cover), 900-line numbers, etc.

Examples follow for each of the above features

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 05: Browse Listings (#1 on Main Menu)

To browse through a portion (or all) of the rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

```
>>> TV GUIDE: MAIN MENU          SUN          6:29 PM
      1 Browse Listings         6 Notebook
      2 Program Locator         7 Set VCR Timer
      3 Program Types           8 Late Changes
      4 Channel Lineups         9 TV Update
      5 Guidance                0 TV Guide Services

      SA    SU    MO    TU    WE    TH    FR

      6AM 7AM 8AM 9AM 10AM 11AM 12N 1PM 2PM 3PM 4PM 5PM
      6PM 7PM 8PM 9PM 10PM 11PM 12M 1AM 2AM 3AM 4AM 5AM

      TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

The RIGHT/LEFT/UP/DOWN arrows allow you to navigate; ENTER selects. The viewer selects SUN and 9PM on the above screen and gets:

```
-->> TV GUIDE: BROWSE          SUN          6:29 PM
      SUN          09:00 PM
      03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
      06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
      10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
      12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
      14 MTV  MUSIC VIDEOS
      17 WPHL REEL TO REEL
      24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
      23 WNJS NATIONAL GEOGRAPHIC (60 min)
      25 AMC  MOVIE: World in His Arms (1952) ***
            (1 hr., 45 min.)
      29 FOX  MARRIED WITH CHILDREN
      57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
      TVG   A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable bare-bones (Level 1) rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and brief supplementary info
- >> Running time

CONTINUED

ELECTRONIC TV GUIDE PROJECT: Prototype

CONTINUED: Browse Listings

A variation on the Browse Listings feature turns the rolling log into a vertical approximation of a grid.

Like the digest, the listings shown throughout this prototype list shows only at their start time. The "grid" view would list all programs on at any given time period.

Let's begin with the preceding screen:

```
-->> TV GUIDE: BROWSE          SUN          6:29 PM
SUN          09:00 PM
03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC  MOVIE: World in His Arms (1952) ***
      (1 hr., 45 min.)
29 FOX  MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG    A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

If we show all programs actually on at 9 PM, the screen would change to:

```
> TV GUIDE: BROWSE          SUN          6:29 PM
SUN          09:00 PM
03 KYW  MOVIE: Tremors (1990) Thriller (2 hrs) **
> 04 USA  FAMILY FUN (08:30-10:30 PM)
> 05 HBO  MOVIE: Casablanca (08:00-10:15 PM)
> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
> 07 MAX  COMEDY SHOWCASE (08:00-09:30 PM)
> 08 TBS  MOVIE: Godfather II (08:05-11:00 PM)
> 09 CNN  GULF WAR DOCUMENTARY (08:30-09:30 PM)
> 10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
> 11 AMC  MOVIE: Day at the Races (08:15-09:30 PM)
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV  MUSIC VIDEOS
17 WPHL REEL TO REEL
TVG    A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

We'd use color to code the shows starting at this hour (green above) or the reverse (mark shows carrying through), depending on test results.

In the sample above, we show start-end times for carry-through shows. In a test, we may find that viewers prefer different information (only the start time, for example).

As for how a user initiates this feature, we suspect it could be done as part of Browse on the Main Menu, or on a system setup screen.

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 06: Listing Levels (Bare Bones, Mid-Level, Full)
You're browsing Level 1, the bare-bones log (first example below), but
you want more information.

```
Level 1:  SUN          09:00 PM
          03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
          06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
          10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
          12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
          14 MTV MUSIC VIDEOS
          17 WPHL REEL TO REEL
          24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
          23 WNJS NATIONAL GEOGRAPHIC (60 min)
          25 AMC MOVIE: World in His Arms (1952) ***
              (1 hr., 45 min.)
          29 FOX MARRIED WITH CHILDREN
          57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
>>>  TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

Hit the "B" (MORE) button and you get Level 2 of the rolling-log listing
info. This level contains 2-3 lines of storyline info:

```
Level 2:  SUN          09:00 PM
          >>>  06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
              Patty Duke and Maureen Stapleton in a fact-based
              drama exploring the right-to-die issue.
          10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
              Debbie Reynolds and Suzanne Pleshette in a comedy-
              drama about battling grandmothers.
          29 FOX MARRIED WITH CHILDREN
              Jessica Hahn as Al's flirtatious "shoe groupie."
          03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
              Spoof of 1950s horror flicks, with Kevin Bacon and
              Fred Ward battling giant, carnivorous worms.
          12 WHYH MASTERPIECE THEATRE: Parnell (60 min.)
              Part 3: O'Shea files for divorce; a journalist is
          TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

Hit "B" again and you get Level 3 (lengthiest available listing):

```
Level 3:  SUN          09:00 PM
          06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
              Maureen Stapleton and Patty Duke star in this
              fact-based drama that explores the right-to-die
              issue with candor and compassion. "Last Wish" was
              adapted from a book by TV newswoman Betty Rollin,
              who fought and won her own battle with cancer,
              dramatized in a 1978 TV-movie called "First You
              Cry." But this 1992 TV-movie revolves around the
              tortuous struggle of Rollin's septuagenarian moth-
              er, Ida, who's suddenly stricken with a more viru-
              lent form of the disease. Maureen Stapleton gives
              a fine performance as Ida, a down-to-earth, cour-
              ageous woman whose suffering tears at the heart of
          TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```


ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 07: BACK FEATURE (Bottom Menu Line)

You're finished reading the expanded listing (the scrolled second screen is still on your TV):

Level 3:

SUN 09:00 PM
her daughter Betty (Patty Duke), and culminates in a wrenching decision. Adapted by Jerome Kass, who wrote "Queen of the Stardust Ballroom" as a TV vehicle for Stapleton in 1975; directed by Jeff Bleckner ("Concealed Enemies")
Supporting Cast

Ed.....Dwight Schultz
Alvin.....Lee Wallace
Shany.....Tresa Hughes
Rose.....Patricia Englund
Dr. Burns.....Ian D. Clark
Maryanne.....Diane D'Aquila

>>>

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

At this point, you can scroll the entire rolling log at Level 3 (same for Levels 1 and 2), but you've got enough and you want to return to Level 2. Hit the "C" button (BACK) and you immediately go back one step, in this example returning to Level 2:

Level 2:

SUN 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

The BACK feature works in the same way throughout the system -- it takes you back one step, to the previous screen or menu.

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 09: Program Types/Category Lists (#3 on Main Menu)
The Main Menu gives you access to special lists--Movies, Sports, Kids, News, Opera, whatever. To access this feature, choose 3:

```

>>> TV GUIDE: MAIN MENU          SUN          6:55 PM
      1 Browse Listings          6 Notebook
      2 Program Locator          7 Set VCR Timer
      3 Program Types           8 Late Changes
      4 Channel Lineups          9 TV Update
      5 Guidance                 0 TV Guide Services

>>> SELECT THE PROGRAM TYPE YOU WANT:
      Movies      Talk
      Sports      Music
      Children    and so on . . .
      News
      Documentary

TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

Move the cursor to Movies, hit ENTER and you get:

```

>>> TV GUIDE: Movie List      SUN          6:55 PM
      1 Today's Movies (all)
      2 Today's Movies (4 star)
      3 Today's Movies (pay cable)
      4 Today's Movies (PPV)
      5 All Movies
      6 All 4-Star Movies
      7 All Pay Cable Movies
      8 All PPV Movies
      9 Movies By Category
     10 Star Search
     11 Director Search
TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

Select #1 -- Today's Movies (all) -- and you get:

```

TV GUIDE: Movie List      SUN          6:55 PM
SUN          09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
17 WPHL MOVIE: Untouchables (1988) (2 hrs) ****
Kevin Costner as the Eliot Ness.
44 WXYZ MOVIE: Wild Texas Wind (1991) (2 hrs) *
Dolly Parton as a down-on-her-luck CW singer.
TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

ELECTRONIC TV GUIDE PROJECT: Prototype

CONTINUED: Program Types/Category Lists

The Intergraph system gives us the ability to provide just about whatever categorical lists viewer-testing proves worthwhile.

For example, a Sports list might include:

TV GUIDE: <u>Sports List</u>		SUN	7:01 PM
1	Today's Sports (all)		
2	Today's Live Sports		
3	Today's Football		
4	Today's Basketball		
5	Today's Boxing		
6	All Sports		
7	All Live Sports		
8	All Football		
9	All Basketball		
10	Team Search		
11	School Search		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of children's programs:

TV GUIDE: <u>Kids List</u>		SUN	7:11 PM
1	Today's Shows (all)		
2	Today's G-rated movies		
3	Today: ages 2-5		
4	Today: ages 6-9		
5	Today: ages 10-14		
6	All: ages 2-5		
7	All: ages 6-9		
8	All: ages 10-14		
9	All: G-rated movies		
10	All: Craft		
11	All: Science/Nature		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of documentary programs:

TV GUIDE: <u>Documentary</u>		SUN	7:18 PM
1	Today's Shows (all)		
2	Today: News & Public Affairs		
3	Today: Nature		
4	Today: Science		
5	Today: Warfare		
6	All: News & Public Affairs		
7	All: Nature		
8	All: Science		
9	All: Warfare		
10	All:		
11	All:		
TVG	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 10: Channel Lineups (#4 on Main Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Main Menu, select 4 (Channel Lineups):

TV GUIDE: MAIN MENU		SUN	7:23 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
>>> 4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
SORT LIST: PROGRAM NAME DAY/TIME CATEGORY			
SELECT CHANNEL:			
ABC CNN DSC			
>>> A&E	CSP	ESN	
AMC DIS and so on			
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

I want a list sorted in day and time order and I want A&E. I select via the cursor/ENTER. I get:

TV GUIDE: <u>A&E Schedule</u>		SUN	7:24 PM
SUN			
06:30 AM DANCE OF THE FAIRIES			
07:00 AM CREATIVE KIDS			
07:30 AM MOVIE: Gunga Din (1937) (2 hrs) ***			
10:30 AM CHESS CHAMPIONSHIP (Live; 3 hrs)			
01:30 PM JFK ASSASSINATION (60 min.)			
02:30 PM PLAYWRIGHT'S THEATRE (90 min.)			
04:00 PM MOVIE: Women in Love (1978) (2 hrs) ****			
06:00 PM CONCERT: New York Philharmonic (2 hrs)			
08:00 PM MOVIE: Gunga Din (1937) (2 hrs) ***			
10:00 PM JOAN BAEZ (60 min.)			
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

Now, I can:

>> Scroll up and down

>> Use B=MORE to get more info (Levels 2 and 3) .

>> Use E=MARK to save shows for my Notebook (and VCR programming).

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 11: Guidance (#5 on Main Menu)

This is the viewer's entree to the features that evaluate shows: Guidelines and the like.

I haven't filled in the screens here because this area requires further discussion. Clearly the Electronic TV Guide will require something more creative than simply keyboarding in the magazine material.

>>>

TV GUIDE: MAIN MENU		SUN	6:32 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 12: NOTEBOOK (#6 on Main Menu) and MARK ("E" on bottom-line menu)
The MARK function lets you create a list at any of the three listing levels; lists that can be used in several ways, as shown on the next page. You want to mark the ABC movie. Move the cursor to the movie and hit E:

```
>>>  SUN                09:00 PM
      06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
      Patty Duke and Maureen Stapleton in a fact-based
      drama exploring the right-to-die issue.
      10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
      Debbie Reynolds and Suzanne Pleshette in a comedy-
      drama about battling grandmothers.
      29 FOX MARRIED WITH CHILDREN
      Jessica Hahn as Al's flirtatious "shoe groupie."
      03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
      Spoof of 1950s horror flicks, with Kevin Bacon and
      Fred Ward battling giant, carnivorous worms.
      12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
      Part 3: O'Shea files for divorce; a journalist is
      >>>  TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

When you're finished marking, select "D" (MENU). When the Menu appears, select #6 (Notebook), placing your list in the Selection Box:

```
TV GUIDE: MAIN MENU      SUN                6:40 PM
1 Browse Listings        6 Notebook      <<<
2 Program Locator        7 Set VCR Timer
3 Program Types          8 Late Changes
4 Channel Lineups        9 TV Update
5 Guidance               0 TV Guide Services

NOTEBOOK (Marked Shows)
SU      08:00-08:30 PM FOX IN LIVING COLOR
>>>  SU      09:00-11:00 PM ABC MOVIE (Last Wish)
MO      08:00-08:30 PM CBS EVENING SHADE
MO      10:00-11:00 PM CBS NORTHERN EXPOSURE
MO      11:30-12:00 PM ABC NIGHTLINE

TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
```

The ABC movie you just marked has been inserted--in day and time chronological order--within the scrollable list.

This feature provides several interesting viewer rewards:

- >> **On-Screen Alert:** When you turn on your TV, you get a beep and a brief reminder that you have a marked show that day.
- >> **Review:** You can use the Notebook to review choices.
- >> **VCR Programming:** The Notebook is the basis for VCR programming.
- >> **Error Messages:** I'm told if I choose (mark) a show for a service I'm not taking. Helps viewers; makes cable companies happy.

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 14: Late Changes (#8 on Main Menu)

A significant competitive advantage: the daily (or more frequent) update gives us the ability to alert viewers to last-minute changes (and important additions), especially those changes that impact VCR tapes already set up. To access this feature, select #8 on the Main Menu:

TV GUIDE: MAIN MENU		SUN	6:28 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
SELECTION BOX			
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

<<<

In a flash, the picture switches to the Late Changes screen, where info can be scrolled:

TV GUIDE: <u>LATE CHANGES</u>		SUN	6:28 PM
<u>VCR ALERT:</u>			
Notebook shows you plan to tape the CBS movie on Tue. at 9 PM. The movie has been changed to a news special.			
<u>LATE CHANGES/ADDITIONS:</u>			
WED	ABC has cancelled Civil Wars (10-11); replacement is a Peter Jennings report.		

THU	President Bush will address the nation at 9 PM.		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

VCR Alert: All of our listing information will be in a database format, so we think it possible to develop a process that links the last-minute changes coming via the daily (or more frequent) download and shows that are already marked and placed in the Notebook.

Last Minute Changes/Additions: It's possible to handle this as a simple text file that identifies only major network changes . . . or develop a process linked to the database itself, allowing the system to note all changes, or only those at a given level.

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 15: TV Update (#9 on Main Menu)

This is the viewer's entree to our entertainment-news information wire, our own Entertainment Tonight, offering attractive possibilities via the daily (or more frequent) updates.

TV GUIDE: MAIN MENU		SUN	7:44 PM
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services

<<<

ALL	CABLE TV	CHILDREN
TV PROGRAMS	ACTORS/CASTING	VIDEO GAMES
SOAPS: Today	PAY-TV MOVIES	GOVERNMENT
SOAPS: All	UPCOMING SPECIALS	and so on...
HOME VIDEO	SPORTS	
TECHNOLOGY	MOVIES	

>>>

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

For example, select HOME VIDEO and you get:

TV GUIDE: Home Video	SUN	7:44 PM
NEW RELEASES (Week of):		
: Kevin Costner in "Dances with Wolves," a **** action-drama (Vestron/G/\$29.95)		
: Susan Sarandon and Geena Davis in "Twilly and Trudie," a * comedy (MGM/\$88.99)		
: Pee Wee Herman in "Growing Up Late," a **** coming-of-age drama (FOX/\$18.95)		
: Sean Penn and Madonna in "Let's Make Up," a ** adventure (Warners/\$18.75)		
: Michael Jackson's "Dangerous" video (FOX/\$15.95)		
TVG	A=TV	B=MORE C=BACK D=MENU E=MARK F=HELP

ELECTRONIC TV GUIDE PROJECT: Prototype

VIEW 16: TV Guide Services (#0 on Main Menu)

This is the viewer's entree to our catalog of services: subscriptions, 900 phone numbers, classified ads, product ads, books and the like.

TV GUIDE: MAIN MENU	SUN	7:52 PM
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

<<<

**FEDERAL
EXPRESS**

QUESTIONS? CALL 1-800-238-5555 TOLL FREE

21337

254305066J

**AIRBILL
PACKAGE
NUMBER**

254305066J

RECIPIENT'S COPY

From (Your Name) Please Print
Terry Bennington
Company
X-238-5555 INFORMATION
Street Address
4700 S. SUBACUSE ST.
City
DENVER
State
CO
ZIP Required
80237

Date
11/16/92

Your Phone Number (Very Important)
303-736-1362

To (Recipient's Name) Please Print
Martin Flesler
Company
Flesler, Dubb, Meyer & Lovejoy
Exact Street Address (For Carrier Delivery to P.O. Boxes or P.O. Zip Codes)
Embarcadero Center, Suite 400
City
San Francisco
State
CA
ZIP Required
94111

Recipient's Phone Number (Very Important)

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

PAYMENT 1 ☐ Bill Street 2 ☐ Bill Recipient's Fedex Acct. No. 3 ☐ Bill Did Party Fedex Acct. No. 4 ☐ Bill Credit Card

☐ Cash ☐ Check

SERVICES
(Check only one box)

DELIVERY AND SPECIAL HANDLING
(Check services required)

WEIGHT
in Pounds
in Kilograms

EMP. NO.

DATE

ZIP REQUIRED

FEDERAL EXPRESS USE

Priority Overnight
(Delivery by next business morning)
11 ☐ PRIORITY MAIL
12 ☐ PRIORITY MAIL
13 ☐ PRIORITY MAIL

Standard Overnight
(Delivery by next business afternoon)
14 ☐ PRIORITY MAIL
15 ☐ PRIORITY MAIL
16 ☐ PRIORITY MAIL

2 DAY DELIVERY
(Delivery by second business morning)
17 ☐ PRIORITY MAIL
18 ☐ PRIORITY MAIL
19 ☐ PRIORITY MAIL

3 DAY DELIVERY
(Delivery by third business morning)
20 ☐ PRIORITY MAIL
21 ☐ PRIORITY MAIL
22 ☐ PRIORITY MAIL

4 DAY DELIVERY
(Delivery by fourth business morning)
23 ☐ PRIORITY MAIL
24 ☐ PRIORITY MAIL
25 ☐ PRIORITY MAIL

2 DAY DELIVERY
(Delivery by second business morning)
26 ☐ PRIORITY MAIL
27 ☐ PRIORITY MAIL
28 ☐ PRIORITY MAIL

3 DAY DELIVERY
(Delivery by third business morning)
29 ☐ PRIORITY MAIL
30 ☐ PRIORITY MAIL
31 ☐ PRIORITY MAIL

4 DAY DELIVERY
(Delivery by fourth business morning)
32 ☐ PRIORITY MAIL
33 ☐ PRIORITY MAIL
34 ☐ PRIORITY MAIL

5 DAY DELIVERY
(Delivery by fifth business morning)
35 ☐ PRIORITY MAIL
36 ☐ PRIORITY MAIL
37 ☐ PRIORITY MAIL

6 DAY DELIVERY
(Delivery by sixth business morning)
38 ☐ PRIORITY MAIL
39 ☐ PRIORITY MAIL
40 ☐ PRIORITY MAIL

7 DAY DELIVERY
(Delivery by seventh business morning)
41 ☐ PRIORITY MAIL
42 ☐ PRIORITY MAIL
43 ☐ PRIORITY MAIL

8 DAY DELIVERY
(Delivery by eighth business morning)
44 ☐ PRIORITY MAIL
45 ☐ PRIORITY MAIL
46 ☐ PRIORITY MAIL

9 DAY DELIVERY
(Delivery by ninth business morning)
47 ☐ PRIORITY MAIL
48 ☐ PRIORITY MAIL
49 ☐ PRIORITY MAIL

10 DAY DELIVERY
(Delivery by tenth business morning)
50 ☐ PRIORITY MAIL
51 ☐ PRIORITY MAIL
52 ☐ PRIORITY MAIL

11 DAY DELIVERY
(Delivery by eleventh business morning)
53 ☐ PRIORITY MAIL
54 ☐ PRIORITY MAIL
55 ☐ PRIORITY MAIL

12 DAY DELIVERY
(Delivery by twelfth business morning)
56 ☐ PRIORITY MAIL
57 ☐ PRIORITY MAIL
58 ☐ PRIORITY MAIL

13 DAY DELIVERY
(Delivery by thirteenth business morning)
59 ☐ PRIORITY MAIL
60 ☐ PRIORITY MAIL
61 ☐ PRIORITY MAIL

14 DAY DELIVERY
(Delivery by fourteenth business morning)
62 ☐ PRIORITY MAIL
63 ☐ PRIORITY MAIL
64 ☐ PRIORITY MAIL

15 DAY DELIVERY
(Delivery by fifteenth business morning)
65 ☐ PRIORITY MAIL
66 ☐ PRIORITY MAIL
67 ☐ PRIORITY MAIL

16 DAY DELIVERY
(Delivery by sixteenth business morning)
68 ☐ PRIORITY MAIL
69 ☐ PRIORITY MAIL
70 ☐ PRIORITY MAIL

17 DAY DELIVERY
(Delivery by seventeenth business morning)
71 ☐ PRIORITY MAIL
72 ☐ PRIORITY MAIL
73 ☐ PRIORITY MAIL

18 DAY DELIVERY
(Delivery by eighteenth business morning)
74 ☐ PRIORITY MAIL
75 ☐ PRIORITY MAIL
76 ☐ PRIORITY MAIL

19 DAY DELIVERY
(Delivery by nineteenth business morning)
77 ☐ PRIORITY MAIL
78 ☐ PRIORITY MAIL
79 ☐ PRIORITY MAIL

20 DAY DELIVERY
(Delivery by twentieth business morning)
80 ☐ PRIORITY MAIL
81 ☐ PRIORITY MAIL
82 ☐ PRIORITY MAIL

21 DAY DELIVERY
(Delivery by twenty-first business morning)
83 ☐ PRIORITY MAIL
84 ☐ PRIORITY MAIL
85 ☐ PRIORITY MAIL

22 DAY DELIVERY
(Delivery by twenty-second business morning)
86 ☐ PRIORITY MAIL
87 ☐ PRIORITY MAIL
88 ☐ PRIORITY MAIL

23 DAY DELIVERY
(Delivery by twenty-third business morning)
89 ☐ PRIORITY MAIL
90 ☐ PRIORITY MAIL
91 ☐ PRIORITY MAIL

24 DAY DELIVERY
(Delivery by twenty-fourth business morning)
92 ☐ PRIORITY MAIL
93 ☐ PRIORITY MAIL
94 ☐ PRIORITY MAIL

25 DAY DELIVERY
(Delivery by twenty-fifth business morning)
95 ☐ PRIORITY MAIL
96 ☐ PRIORITY MAIL
97 ☐ PRIORITY MAIL

26 DAY DELIVERY
(Delivery by twenty-sixth business morning)
98 ☐ PRIORITY MAIL
99 ☐ PRIORITY MAIL
100 ☐ PRIORITY MAIL

27 DAY DELIVERY
(Delivery by twenty-seventh business morning)
101 ☐ PRIORITY MAIL
102 ☐ PRIORITY MAIL
103 ☐ PRIORITY MAIL

28 DAY DELIVERY
(Delivery by twenty-eighth business morning)
104 ☐ PRIORITY MAIL
105 ☐ PRIORITY MAIL
106 ☐ PRIORITY MAIL

29 DAY DELIVERY
(Delivery by twenty-ninth business morning)
107 ☐ PRIORITY MAIL
108 ☐ PRIORITY MAIL
109 ☐ PRIORITY MAIL

30 DAY DELIVERY
(Delivery by thirtieth business morning)
110 ☐ PRIORITY MAIL
111 ☐ PRIORITY MAIL
112 ☐ PRIORITY MAIL

31 DAY DELIVERY
(Delivery by thirty-first business morning)
113 ☐ PRIORITY MAIL
114 ☐ PRIORITY MAIL
115 ☐ PRIORITY MAIL

32 DAY DELIVERY
(Delivery by thirty-second business morning)
116 ☐ PRIORITY MAIL
117 ☐ PRIORITY MAIL
118 ☐ PRIORITY MAIL

33 DAY DELIVERY
(Delivery by thirty-third business morning)
119 ☐ PRIORITY MAIL
120 ☐ PRIORITY MAIL
121 ☐ PRIORITY MAIL

34 DAY DELIVERY
(Delivery by thirty-fourth business morning)
122 ☐ PRIORITY MAIL
123 ☐ PRIORITY MAIL
124 ☐ PRIORITY MAIL

35 DAY DELIVERY
(Delivery by thirty-fifth business morning)
125 ☐ PRIORITY MAIL
126 ☐ PRIORITY MAIL
127 ☐ PRIORITY MAIL

36 DAY DELIVERY
(Delivery by thirty-sixth business morning)
128 ☐ PRIORITY MAIL
129 ☐ PRIORITY MAIL
130 ☐ PRIORITY MAIL

37 DAY DELIVERY
(Delivery by thirty-seventh business morning)
131 ☐ PRIORITY MAIL
132 ☐ PRIORITY MAIL
133 ☐ PRIORITY MAIL

38 DAY DELIVERY
(Delivery by thirty-eighth business morning)
134 ☐ PRIORITY MAIL
135 ☐ PRIORITY MAIL
136 ☐ PRIORITY MAIL

39 DAY DELIVERY
(Delivery by thirty-ninth business morning)
137 ☐ PRIORITY MAIL
138 ☐ PRIORITY MAIL
139 ☐ PRIORITY MAIL

40 DAY DELIVERY
(Delivery by fortieth business morning)
140 ☐ PRIORITY MAIL
141 ☐ PRIORITY MAIL
142 ☐ PRIORITY MAIL

41 DAY DELIVERY
(Delivery by forty-first business morning)
143 ☐ PRIORITY MAIL
144 ☐ PRIORITY MAIL
145 ☐ PRIORITY MAIL

42 DAY DELIVERY
(Delivery by forty-second business morning)
146 ☐ PRIORITY MAIL
147 ☐ PRIORITY MAIL
148 ☐ PRIORITY MAIL

43 DAY DELIVERY
(Delivery by forty-third business morning)
149 ☐ PRIORITY MAIL
150 ☐ PRIORITY MAIL
151 ☐ PRIORITY MAIL

44 DAY DELIVERY
(Delivery by forty-fourth business morning)
152 ☐ PRIORITY MAIL
153 ☐ PRIORITY MAIL
154 ☐ PRIORITY MAIL

45 DAY DELIVERY
(Delivery by forty-fifth business morning)
155 ☐ PRIORITY MAIL
156 ☐ PRIORITY MAIL
157 ☐ PRIORITY MAIL

46 DAY DELIVERY
(Delivery by forty-sixth business morning)
158 ☐ PRIORITY MAIL
159 ☐ PRIORITY MAIL
160 ☐ PRIORITY MAIL

47 DAY DELIVERY
(Delivery by forty-seventh business morning)
161 ☐ PRIORITY MAIL
162 ☐ PRIORITY MAIL
163 ☐ PRIORITY MAIL

48 DAY DELIVERY
(Delivery by forty-eighth business morning)
164 ☐ PRIORITY MAIL
165 ☐ PRIORITY MAIL
166 ☐ PRIORITY MAIL

49 DAY DELIVERY
(Delivery by forty-ninth business morning)
167 ☐ PRIORITY MAIL
168 ☐ PRIORITY MAIL
169 ☐ PRIORITY MAIL

50 DAY DELIVERY
(Delivery by fiftieth business morning)
170 ☐ PRIORITY MAIL
171 ☐ PRIORITY MAIL
172 ☐ PRIORITY MAIL

51 DAY DELIVERY
(Delivery by fifty-first business morning)
173 ☐ PRIORITY MAIL
174 ☐ PRIORITY MAIL
175 ☐ PRIORITY MAIL



Exhibit 2

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

CONFIDENTIAL

TV GUIDE: MENU	SUN 01/12/92	6:27 PM
1 Browse Listings		
2 Program Locator		
3 Program Types		
4 Channel Lineups		
SELECTION BOX		
<u>TVG</u>	A=TV	B=BACK
	C=MENU	D=HELP

INDEX	
Feature	Page
BACK.....	3
Bottom-Line Menu.....	3
Browse Listings.....	5
Category Lists (Program Types).....	7
Channel Lineups.....	8
Documentary List (Program Types).....	7
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	7
Menu.....	4
Movie List.....	7
Program Locator.....	6
Program Types (Category Lists).....	7
Sports List (Program Types).....	7
Zap Ident.....	2

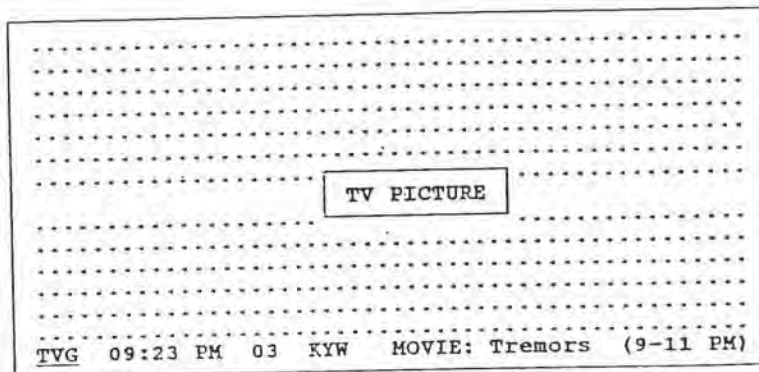
ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 01: Instant Show Ident

Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

- >> TVG logo
- >> Current clock time
- >> Cable company's system-specific channel number
- >> Station's call letters
- >> Name of show you're watching
- >> Show's inclusive times

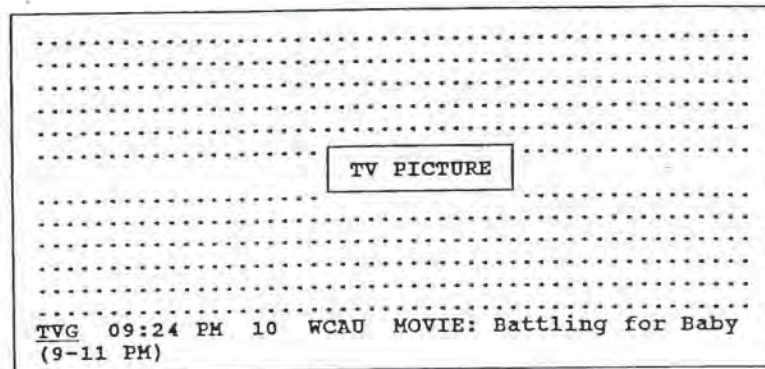
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 02: Zap Ident

You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 03: Instant Rolling Log

VIEW 03: Instant Rolling 259
You want to see what's coming up, but don't want to stop watching the show that's on screen.

You press the special TV Guide Menu button on your remote control and --without having to go to the actual menu--you get three lines of listings across the bottom of your screen.

Pushing the DOWN arrow, lets you scroll the entire two-day rolling log.
Use the UP arrow to move backwards.

TV PICTURE	
34	AMC MOVIE: World in His Arms (9-10:45 PM)
35	BET BOBBY JONES GOSPEL (9-10 PM)
36	CNN IRAQ: ONE YEAR LATER (9-10 PM)
TVG	A=TV B=BACK C=MENU D=HELP

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

$$A=TV$$

A=TV
The "A" button send you immediately back to full-screen live TV.

B=BACK

Hit "B" and you're returned to the last screen. If you hit "C" when you are on the screen shown above, you go back to VIEW 02 (preceding page).

C=MENU

The "C" button gets you to the TV Guide Menu.

D=HELP

"D" and you get a scrollable HELP screen.

Examples follow

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 04: Menu

You need more information or want to access one of our special features. Hit the "C" button and the TV Guide Menu replaces the TV picture:

TV GUIDE: MENU	SUN 01/12/92	6:27 PM
1 Browse Listings		
2 Program Locator		
3 Program Types		
4 Channel Lineups		
SELECTION BOX		
TVG	A=TV	B=BACK
C=MENU	D=HELP	

- 1 Browse Listings: Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where day and time ranges are presented for selection.
- 2 Program Locator: This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Program Locator Selection Box.
- 3 Program Types: This feature provides the special lists--Movies, Kids, Sports, News and documentaries. When this feature is selected, the cursor moves to the Program Type Selection Box where the available lists are shown.
- 4 Channel Lineups: The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Channel Selection Box, where all services are shown.

Examples follow for each of the above features

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 05: Browse Listings (#1 on Menu)

To browse through a portion (or all) of the two-day rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

>>>	TV GUIDE: MENU	SUN 01/12/92	6:29 PM
	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SATURDAY_01/11		
	SUNDAY 01/12		
>>>	6AM 7AM 8AM 9AM 10AM 11AM 12N 1PM 2PM 3PM 4PM 5PM		
	6PM 7PM 8PM <u>9PM</u> 10PM 11PM 12M 1AM 2AM 3AM 4AM 5AM		
	TVG	A=TV	B=BACK C=MENU D=HELP

You're watching TV on Saturday, but you want to see what's on Sunday at 9 P.M. without having to scroll through the entire rolling log (available via the Instant Rolling Log (View 3, page 3). To save time, you use go to the TV Guide Menu, then use the RIGHT/LEFT/UP/DOWN arrows to navigate and ENTER to select SUNDAY and 9PM. You get:

-->>	TV GUIDE: BROWSE	SUN 01/12/92	6:29 PM
	SUN 01-12-92 09:00 PM		
	03 KYW MOVIE: Tremors (2 hrs)		
	Kevin Bacon, Fred Ward		
	06 WPVI MOVIE: Last Wish (2 hrs)		
	Patty Duke, Maureen Stapleton		
	10 WCAU MOVIE: Battling for Baby (2 hrs)		
	Suzanne Pleshette, Debbie Reynolds		
	12 WHYY MASTERPIECE THEATRE (60 min.)		
	14 MTV MUSIC VIDEOS		
	25 AMC MOVIE: World in His Arms (2 hrs) (NR)		
	Gregory Peck, Ann Blyth		
	29 FOX MARRIED WITH CHILDREN		
	TVG	A=TV	B=BACK C=MENU D=HELP

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and, for movies and sports, brief supplementary info
- >> Running time

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 06: Program Locator (#2 on Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when--and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM
      1 Browse Listings
      2 Program Locator
      3 Program Types
      4 Channel Lineups

      Aa-Am   Dn-Dz   H       Ma-Mm   Ra-Rm   U
      An-Az   Ea-Em   Ia-Im   Mn-Mz   Rn-Rz   V
>>>  Ba-Bm   En-Ez   In-Iz   N       Sa-Sm   W
      Bn-Bz   Fa-Fm   J       O       Sn-Sz   X
      C       Fn-Fz   K       P       Ta-Tm   Y
      Da-Dm   G       L       Q       Tn-Tz   Z

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM
      BAM-BAM CIRCUS
      BAT BOY
      BACK TO SCHOOL
      BACK TO BASICS
      BARNEY MILLER
      BARTER FOR FUN

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to Barney Miller and hit ENTER. All of the Barney Miller listings for today and tomorrow appear (in day/time/channel order) in the scrollable Selection Box:

```
>>> MON 01-13 10:00 AM 09 WXYX BARNEY MILLER
      MON 01-13 04:30 PM 11 WCDE BARNEY MILLER
      TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```


ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 07: Program Types: Category Lists (#3 on Menu)

The Menu gives you access to four special lists--Movies, Sports, Kids, and News and Documentaries. To access this feature, choose 3:

	TV GUIDE: MENU	SUN 01/12/92	6:55 PM
>>>	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SELECT THE PROGRAM TYPE YOU WANT:		
	Movies		
	Sports		
	Children		
	News and Documentaries		
	TVG	A-TV	B=BACK C=MENU D=HELP

Move the cursor to Movies, hit ENTER and you get a chronological list of only movies, beginning at your time-period location in the rolling log. Use the UP/DOWN arrow keys to scroll forward or backward in time.

TV GUIDE: <u>Movie List</u>	SUN 01/12/92	6:55 PM
SUN 01-12-92 09:00 PM		
03 KYW MOVIE: Tremors (2 hrs)		
Kevin Bacon, Fred Ward		
06 WPVI MOVIE: Last Wish (2 hrs, 30 min)		
Patty Duke, Maureen Stapleton		
10 WCAU MOVIE: Battling for Baby (2 hrs)		
Suzanne Pleshette, Debbie Reynolds		
17 WPHL MOVIE: Untouchables (2 hrs)		
Kevin Costner, Sean Connery		
44 WXYZ MOVIE: Wild Texas Wind (2 hrs)		
Dolly Parton		
TVG	A-TV	B=BACK C=MENU D=HELP

NOTE: Process works the same for the three other categories. In each case, the system provides a subset of the entire database, excluding everything except the category chosen.

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 08: Channel Lineups (#4 on Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Menu, pick 4 (Channel Lineups):

TV GUIDE: MENU	SUN 01/12/92	7:23 PM
1 Browse Listings		
2 Program Locator		
3 Program Types		
4 Channel Lineups		

>>>

SORT LIST: PROGRAM NAME DAY/TIME CATEGORY			
SELECT CHANNEL:			
ABC	CNN	DSC	
A&E	CSP	ESN	
AMC	DIS	and so on	

>>>

TVG	A-TV	B=BACK	C=MENU	D=HELP
-----	------	--------	--------	--------

You want a list sorted in day and time order and I want A&E, both selected via the cursor and ENTER buttons. You get:

TV GUIDE: <u>A&E Schedule</u>	SUN 01/12/92	7:24 PM
SUN 01/12/92		
06:30 AM DANCE OF THE FAIRIES		
07:00 AM CREATIVE KIDS		
07:30 AM MOVIE: Gunga Din (2 hrs) (NR)		
10:30 AM CHESS CHAMPIONSHIP (Live; 3 hrs)		
01:30 PM JFK ASSASSINATION (60 min.)		
02:30 PM PLAYWRIGHT'S THEATRE (90 min.)		
04:00 PM MOVIE: Women in Love (2 hrs) (R)		
06:00 PM CONCERT: New York Philharmonic (2 hrs)		
08:00 PM MOVIE: Gunga Din (2 hrs) (NR)		
10:00 PM JOAN BAEZ (60 min.)		
TVG	A-TV	B=BACK C=MENU D=HELP



Exhibit 3

**TV Guide
Prototype
X*PRESS
Version 1.10 Rel 4
11/09/92**

2:52 pm
Fri Nov 13

TV
GUIDE

2 KWGI

Tom and Jerry
(2:30p-3:00p)

2:57 pm
Fri Nov 13

TV
GUIDE

Browse

4 KCNC

Days of Our Lives

Tomorrow (7:00-8:00pm)

3:02 pm
Fri Nov 13

TV
GUIDE

Browse
4 KCNC

News

Homecoming (400-800p)

2:58 pm
Fri Nov 13

TV
GUIDE

Browse

5 A&E

Rockford Files

Reunion (Nov 14:00-5:00pm)

2:59 pm
Fri Nov 13

TV
GUIDE

Browse

5 A&E

Lorne Greene's New Wilderness

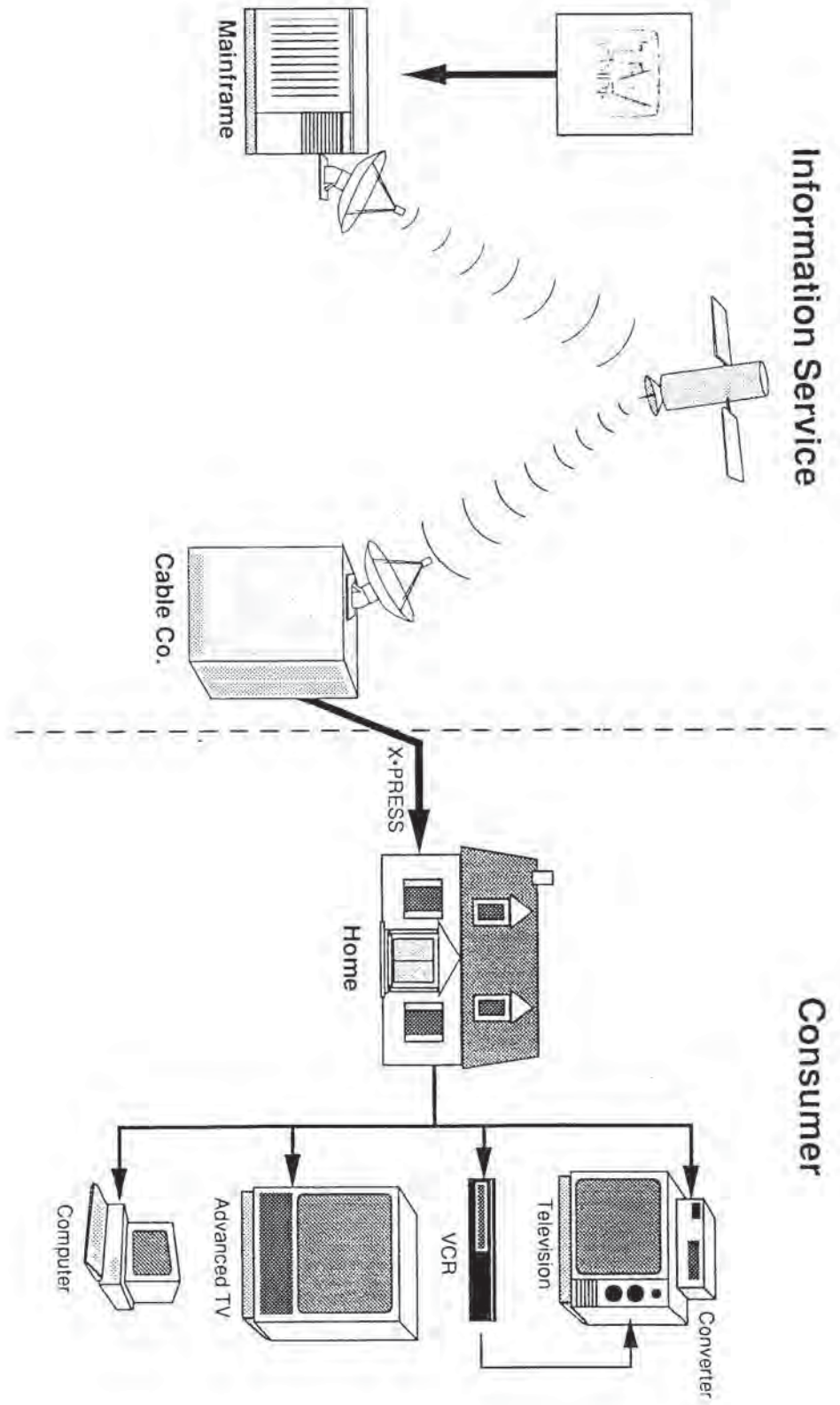
Monday Nov 13 (8:00-8:30pm)



Exhibit 4

ON
SCREEN
Interactive Electronic Program Guide

TECHNOLOGY OVERVIEW for TV Guide On Screen



Select from the full-screen menu....



for complete program listings...



and Pay Per View choices.



Now that you've put so much time, energy and money into providing your customers with so many channels to choose from, give them a television information source that they know and trust.

TV Guide...now on TV.

For more information, contact

Brian Margolis

Electronic Program Guide Director

212.819.3712

TV GUIDE ON SCREEN

Interactive

Electronic

Guide



TV GUIDE
ON SCREEN
More than a remote possibility

More than
a remote possibility

Turn On TV Guide

In response to the needs of both the consumer and the cable industry, TV Guide and Liberty Media have joined forces to develop an interactive electronic television program guide designed to set the industry standard.

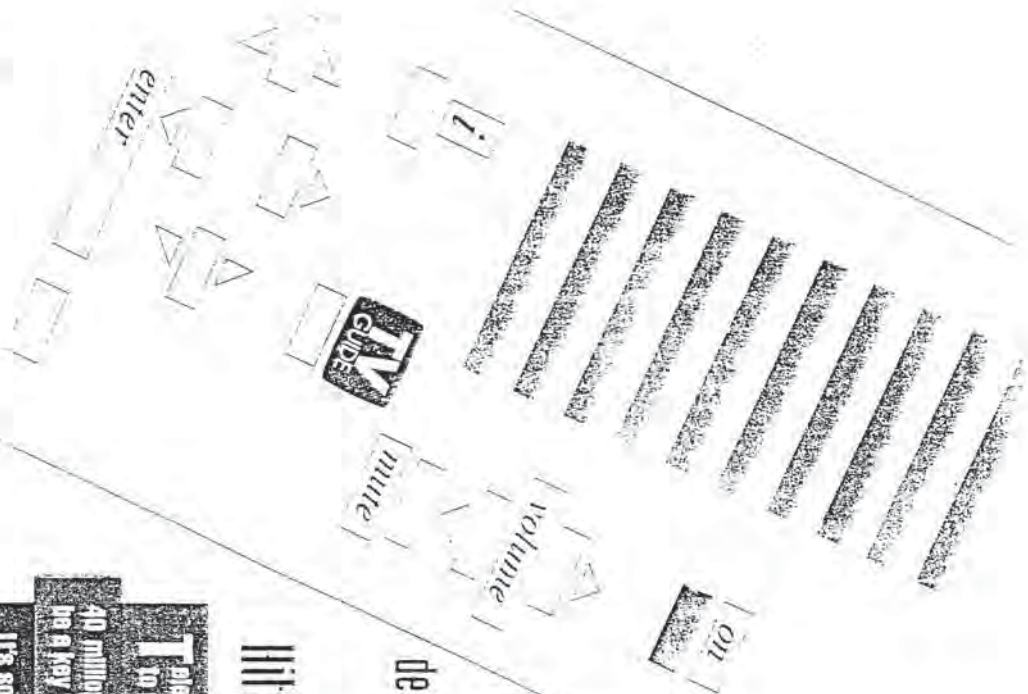
Hitting the Right Buttons

Television viewers love their remotes. TV Guide On Screen capitalizes on this fact by being as easy to use as flipping through channels on a remote.

40 million Americans trust TV Guide weekly as the authority on television, and this solid relationship will be a key factor in helping usher cable viewers into the world of interactivity.

It's so simple to use that TV Guide On Screen allows cable viewers to easily access program listings while tuned to any channel.

As an interactive system, TV Guide On Screen is a great marketing tool for cable operators by providing a new medium to promote Pay Per View and other services.



TV Guide On Screen

What is it?

TV Guide and Liberty Media, through its affiliates X*PRESS Information Services, Ltd. and StarNet, Inc., are proud to introduce a new venture combining the country's most credible program information database with the advanced technologies of a major information distributor in the cable industry.

Simply stated, TV Guide On Screen is an interactive, easy-to-use electronic program guide which *adds value to the viewer's current cable package.*

This entry-level service will effectively whet the viewer's appetite for, and acceptance of, new premium services which *provide additional revenue opportunities* to the cable operator.

With TV Guide On Screen, viewers will be able to access two days' worth of program information while tuned to *any* channel, 24 hours a day. Easily accessed through a hand-held remote and cable converter box, TV Guide On Screen offers a consumer-friendly way to keep viewers informed of not only what's on, but also what else is available, *enhancing both real and perceived values of the services offered.*

While TV Guide On Screen has been developed as an entry-level service, to be included as part of every cable operator's package of program offerings, TV Guide plans to expand this electronic guide by providing subscription-based services which will personalize the viewer's preferences. Features will include TV Guide's unrivaled collection of program descriptions, evaluations and reviews; plus, a variety of other enhancements, including simplified VCR programming.



TV Guide On Screen

How entry-level service works

Viewers access information in three ways

FLIPPING CHANNELS Viewer flips through channels by pressing directional arrows. Program overlay automatically appears on lower portion of screen displaying the channel number, program title, length of program, current time and date.



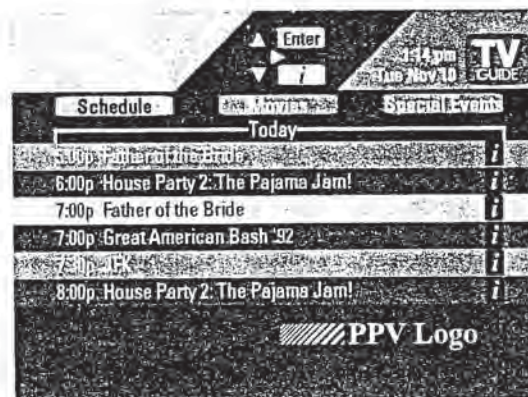
PROGRAMS Viewer can remain on one channel and "browse" through program listings of other channels and time periods by first pressing the TV Guide button then pressing the up/down arrows to scan through channels and the left/right arrows to scan through time slots.



SELECTING FROM THE MENU Pressing the TV Guide button a second time takes the viewer into the full-screen menu. Items on the menu are accessed by using the directional arrows and pressing the enter key in the highlighted section.

Menu Options

- Listings by Category: movies, sports, news-documentaries, childrens shows
- Listings by Channel/ full schedule of any selected channel over a two-day period
- Pay Per View Listings & Descriptions



TV Guide On Screen

Benefits to your system

ENHANCES REAL AND PERCEIVED VALUE OF CABLE Cable subscribers will have control of their viewing environment, and viewer-friendly cable enhances the value of cable.

ENHANCES CREDIBILITY OF SYSTEM After almost 40 years, TV Guide has established itself as *the* listings source among viewers in terms of comprehensiveness and accuracy. This overall perception of credibility will be naturally passed on to your system.

INCORPORATES LISTINGS SPECIFIC TO YOUR SYSTEM Includes Pay Per View channels.

PROVIDES TIMELY PROGRAMMING INFORMATION Lists programs every half hour, two days out allowing for more accurate, timely program information updated at least once a day.

REINFORCES PAY PER VIEW BUY Full-screen menu offers Pay Per View option where the viewer can get a description of specific programming on the detail screen followed by an ordering screen including dates, times and specific ordering instructions.

ALLOWS FOR MARKETING OF CABLE CHANNELS THAT OFTEN GO UNNOTICED

OFFERS FUTURE MARKETING POTENTIAL Once cable viewers have been conditioned to accept this relatively simple level of interactivity, a more advanced form of TV Guide On Screen will be made available on a premium basis.



TV Guide On Screen

Future opportunities as a premium service

Once cable subscribers have become comfortable using the interactive electronic medium, TV Guide will introduce an advanced premium service. Features under consideration include:

EXTENDED COVERAGE At least 7 days of listings information

FULL TV GUIDE LISTINGS INFORMATION Including plot descriptions, cast, credits, movie evaluations and ratings

ENHANCED SEARCHING CAPABILITY Viewer will be able to search by program titles and key words (i.e., program types, actors, directors, sports teams, etc.)

PERSONALIZATION Built-in viewer profiles of family members will enable them to get quick access to information about their favorite types of programs

VCR PROGRAMMING CAPABILITY Simplified recording

TV GUIDE SPECIAL FEATURES News, reviews, commentary, inside info, previews of coming attractions and viewing advice from the editors.



TV Guide On Screen

Why TV Guide over others?

- Over 40 million readers trust TV Guide as their weekly listings source — 77% of whom are cable subscribers. This solid relationship will be instrumental in helping guide cable viewers into the world of interactivity.
- TV Guide has an unrivaled database of comprehensive listings information that is continually updated for accuracy.
- After almost 40 years, TV Guide has established one of the strongest consumer brand identities, giving it a large and loyal following.
- In print, TV Guide will actively support and help market its electronic program guide services.
- TV Guide understands the unique needs and interests of TV viewers. This knowledge will play a critical role in developing and refining electronic program guide services.
- Both TV Guide and Liberty Media are well-positioned to establish the TV Guide On Screen electronic program guide as the national standard — essential in enlisting the cooperation of the consumer electronics manufacturers — and are working closely with CableLabs to that end.



TV Guide On Screen

Q & A

Q: How are you addressing the possible resistance this new interactive technology may encounter among viewers?

A: We've incorporated a consumer-friendly design using simple, colorful graphics to make the service non-threatening and non-technical to the user. More important, the steps the viewer needs to take in order to access and use this interactive service have been kept simple and intuitive. As most cable viewers are comfortable using their remotes, TV Guide On Screen design is ideal. Anyone watching cable will be able to access the electronic TV Guide without instructions.

Q: How will this technology affect Pay Per View?

A: In impulse systems, TV Guide On Screen can be set up to allow cable subscribers to order directly through the electronic guide, while cable operators using the ANI and ARU systems will benefit from specific ordering information which will follow the Pay Per View listings and descriptions. Thus, TV Guide On Screen promises to be a powerful Pay Per View marketing tool for all cable operators.

Q: Won't this conflict with your printed guide?

A: No, it will complement it. TV Guide On Screen will enhance TV Guide's reputation as the leader in providing the best programming information in the country and will be supported in print by TV Guide.

Q: How much control will we have over this service in the headend?

A: We're providing you with maximum control by using a methodology that utilizes parts of the cable spectrum that are easily managed by your headend, as opposed to trying to make our feed fit the inherent inadequacies of the VBI.

Q: How expensive is this system?

A: In determining the quantity of graphics and data to make available, we established a threshold which satisfies two aims:

1. A level of service which addresses viewer needs
2. A service inexpensive enough to be included in all future converter boxes

For more information, call Brian Margolis, Electronic Program Guide Director at 212.819.3712



Exhibit 5



IW 7572045



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

March 11, 2016

THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE
RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS
OF:

APPLICATION NUMBER: 08/119,367

FILING DATE: September 09, 1993

PATENT NUMBER: 6,418,556

ISSUE DATE: July 09, 2002

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office



P. R. GRANT
Certifying Officer

PART (7) OF (7) PART(S)



Inter-Office Memorandum

January 20, 1992

To: Brian Margolis
Buddy Ray

From: Joe Robinowitz

Re: First revise of TV GUIDE Electronic Programming Guide

Here's the latest version of our EPG from Morris. I'm sure more will follow as we continue to work on our product.

JRR:dh

Enclosure

Murdoch Magazines
TV GUIDE INTEROFFICE COMMUNICATION

FROM: Michael Morris

OFFICE: Editorial

DATE: 01-20-92

TO: Joe Robinowitz

Dear Joe:

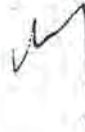
Attached are the revised copies of the Electronic TV Guide prototype for you, Brian, Buddy, ~~and the vendor.~~

This revise:

1. Adds page numbers, an index and cover page showing the Main Menu.
2. Places the features (Views) in the sequence used on the Main Menu.
3. Changes all Main Menu "10s" to "0s."
4. Includes minor cosmetic adjustments.
5. Adds CONFIDENTIAL to page 1 (in case you can't find the stamp).

Please let us know if you need further changes.

Best regards,

A handwritten signature, possibly 'M', with a checkmark-like flourish at the top left and a vertical line extending downwards.

cc: Tom Greendyk, Roger Youman

ELECTRONIC TV GUIDE: Prototype (01-19-92)

CONFIDENTIAL

TV GUIDE: MAIN MENU	SUN 01/12/92 6:27 PM
1 Browse Listings	6 Notebook
2 Program Locator	7 Set VCR Timer
3 Program Types	8 Late Changes
4 Channel Lineups	9 TV Update
5 Guidance	0 TV Guide Services

SELECTION BOX

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

INDEX

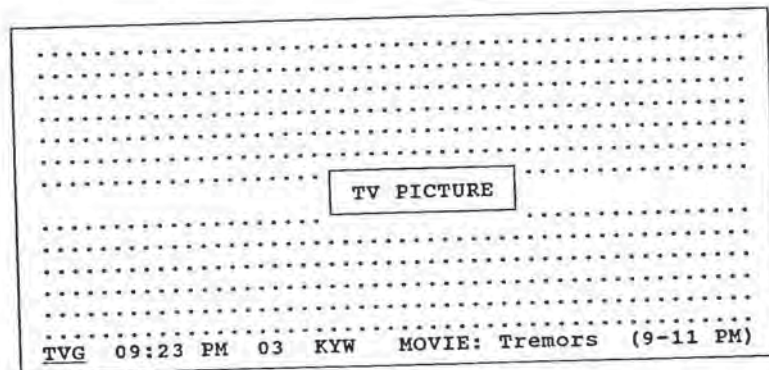
Feature	Page
BACK.....	8
Bottom-Line Menu.....	3
Browse Listings.....	5,6
Category Lists (Program Types).....	10,11
Channel Lineups.....	12
Documentary List (Program Types).....	11
Guidance (show evaluations).....	13
Home Video (TV Update).....	17
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	11
Late Changes.....	16
Main Menu.....	4
MARK.....	14
Movie List.....	10
900-Line Numbers (TV Update).....	18
Notebook.....	14
On-Screen Alerts.....	14,15,16
Program Listings (3 levels).....	7
Program Listings ("grid" style).....	6
Program Locator.....	9
Program Types (Category Lists).....	10,11
Set VCR Timer.....	15
Soap News (TV Update).....	17
Sports List (Program Types).....	11
TV Guide Services.....	18
TV Guide Subscriptions.....	18
TV Update (entertainment news).....	17
Video Games (TV Update).....	17
Zap Ident.....	2

ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 01: Instant Show Ident
Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

- >> TVG logo
- >> Current clock time
- >> Cable company's system-specific channel number
- >> Station's call letters
- >> Name of show you're watching
- >> Show's inclusive times

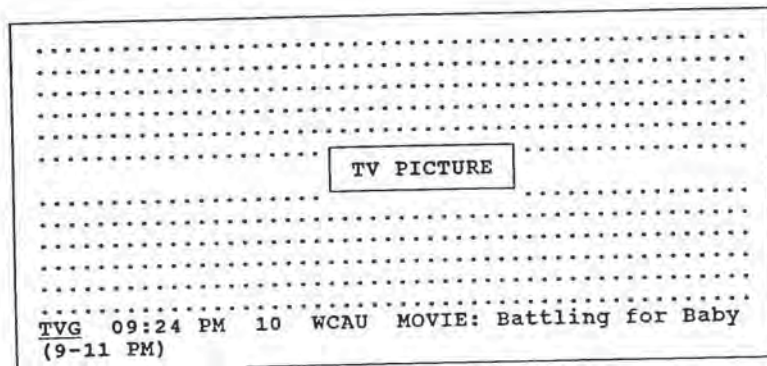
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Prototype (01-19-92)

VIEW 02: Zap Ident

You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 03: Instant Rolling Log

VIEW 03: Instant Rolling Log
You want to see what's coming up, but don't want to stop watching the
show that's on screen.

You press the special TV Guide Menu button on your remote control and --without having to go to the actual menu--you get three lines of low-level (titleline only) listings across the bottom of your screen.

Pushing the DOWN arrow, lets you scroll the entire rolling log. Use the UP arrow to move backwards.

TV PICTURE

34 AMC MOVIE: World in His Arms (9-10:45 PM)
35 BET BOBBY JONES GOSPEL (9-10 PM)
36 CNN IRAQ: ONE YEAR LATER (9-10 PM)

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

$$\mathbf{A} = \mathbf{T}\mathbf{V}$$

A=TV
The "A" button send you immediately back to full-screen live TV.

B=MORE

E=MORE
The "B" button gives you expanded listings (Level 1 = titlelines only;
Level 2 = brief storylines; Level 3 = everything on file).

C=BACK

C=BACK
Hit "C" and you're returned to the last screen. If I hit "C" when I'm on the screen shown above, I'd drop back to VIEW 02 (preceding page).

D=TVG MENU

D=TVG MENU
The "D" button gets you to the TV Guide Main Menu.

E=MARK

E=MARK
The MARK feature allows the viewer to save shows for the notebook; it also marks shows for VCR programming.

F=HELP

"F" and you get a scrollable HELP screen.

Examples follow for the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 04: Main Menu

You need more information or want to access one of our special features. Hit the "D" button and the TV Guide Main Menu replaces the TV picture:

TV GUIDE: MAIN MENU		SUN 01/12/92 6:27 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services
SELECTION BOX		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

- 1 **Browse Listings:** Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where various day & time ranges are presented.
- 2 **Program Locator:** This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Selection Box, where alpha combinations are available.
- 3 **Program Types:** This feature provides the special lists--Movies, Kids, Sports, News and the like. When this feature is selected, the cursor moves to the Selection Box where the available lists are shown.
- 4 **Channel Lineups:** The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Selection Box, where all services are shown.
- 5 **Guidance:** Guidelines and other program-evaluation information. Available info is shown in the Selection Box at bottom of screen.
- 6 **Notebook:** The list of shows you mark while using any of rolling-log listing features. Hit "6" and your list appears in the Selection Box.
- 7 **Set VCR Timer:** Lets you set your VCR for programming TV shows.
8. **Late Changes:** This gives us the ability to alert viewers to recent changes (and important additions), especially changes that impact VCR timers already set up.
- 9 **TV Update:** Late-breaking TV news via the Selection Box.
- 0 **TV Guide Services:** Info on TV Guide subscriptions, special items we want to sell (You on a TVG cover), 900-line numbers, etc.

Examples follow for each of the above features

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 05: Browse Listings (#1 on Main Menu)
To browse through a portion (or all) of the rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

>>>		TV GUIDE: MAIN MENU	SUN 01/12/92	6:29 PM
	1	Browse Listings	6	Notebook
	2	Program Locator	7	Set VCR Timer
	3	Program Types	8	Late Changes
	4	Channel Lineups	9	TV Update
	5	Guidance	0	TV Guide Services

>>>		SA	SU	MO	TU	WE	TH	FR
	01/11	01/12	01/13	01/14	01/15	01/16	01/17	
	01/18	01/19	01/20	01/21	01/22	01/23	01/24	

>>>		6AM	7AM	8AM	9AM	10AM	11AM	12N	1PM	2PM	3PM	4PM	5PM
	6PM	7PM	8PM	9PM	10PM	11PM	12M	1AM	2AM	3AM	4AM	5AM	

TVG	A=TV	B=MORE	C=BACK	D=MENU	E=MARK	F=HELP
-----	------	--------	--------	--------	--------	--------

The RIGHT/LEFT/UP/DOWN arrows allow you to navigate; ENTER selects. The viewer selects SUN 01/12 and 9PM on the above screen and gets:

```

-->>>
TV GUIDE: BROWSE                                SUN 01/12/92 6:29 PM
SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
    (1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG    A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP

```

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable bare-bones (Level 1) rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and brief supplementary info
- >> Running time

CONTINUED

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

CONTINUED: Browse Listings

A variation on the Browse Listings feature turns the rolling log into a vertical approximation of a grid.

Like the digest, the listings shown throughout this prototype list shows only at their start time. The "grid" view would list all programs on at any given time period.

Let's begin with the preceding screen:

```
-->> TV GUIDE: BROWSE SUN 01/12/92 6:29 PM
SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
    (1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

If we show all programs actually on at 9 PM, the screen would change to:

```
> TV GUIDE: BROWSE SUN 01/12/92 6:29 PM
> SUN 01-12-92 09:00 PM
> 03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
> 04 USA FAMILY FUN (08:30-10:30 PM)
> 05 HBO MOVIE: Casablanca (08:00-10:15 PM)
> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
> 07 MAX COMEDY SHOWCASE (08:00-09:30 PM)
> 08 TBS MOVIE: Godfather II (08:05-11:00 PM)
> 09 CNN GULF WAR DOCUMENTARY (08:30-09:30 PM)
> 10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
> 11 AMC MOVIE: Day at the Races (08:15-09:30 PM)
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

We'd use color to code the shows starting at this hour (green above) or the reverse (mark shows carrying through), depending on test results.

In the sample above, we show start-end times for carry-through shows. In a test, we may find that viewers prefer different information (only the start time, for example).

As for how a user initiates this feature, we suspect it could be done as part of Browse on the Main Menu, or on a system setup screen.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 06: Listing Levels (Bare Bones, Mid-Level, Full)
You're browsing Level 1, the bare-bones log (first example below), but
you want more information.

Level 1: SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
14 MTV MUSIC VIDEOS
17 WPHL REEL TO REEL
24 WWOR LIFESTYLES OF THE RICH AND FAMOUS (60 min.)
23 WNJS NATIONAL GEOGRAPHIC (60 min)
25 AMC MOVIE: World in His Arms (1952) ***
(1 hr., 45 min.)
29 FOX MARRIED WITH CHILDREN
57 WGBS RUNAWAY WITH THE RICH AND FAMOUS
>>> TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Hit the "B" (MORE) button and you get Level 2 of the rolling-log listing
info. This level contains 2-3 lines of storyline info:

Level 2: SUN 01-12-92 09:00 PM
>>> 06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

Hit "B" again and you get Level 3 (lengthiest available listing):

Level 3: SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Maureen Stapleton and Patty Duke star in this
fact-based drama that explores the right-to-die
issue with candor and compassion. "Last Wish" was
adapted from a book by TV newswoman Betty Rollin,
who fought and won her own battle with cancer,
dramatized in a 1978 TV-movie called "First You
Cry." But this 1992 TV-movie revolves around the
tortuous struggle of Rollin's septuagenarian moth-
er, Ida, who's suddenly stricken with a more viru-
lent form of the disease. Maureen Stapleton gives
a fine performance as Ida, a down-to-earth, cour-
ageous woman whose suffering tears at the heart of
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 07: BACK FEATURE (Bottom Menu Line)
You're finished reading the expanded listing (the scrolled second screen is still on your TV):

Level 3: SUN 01-12-92 09:00 PM
her daughter Betty (Patty Duke), and culminates in a wrenching decision. Adapted by Jerome Kass, who wrote "Queen of the Stardust Ballroom" as a TV vehicle for Stapleton in 1975; directed by Jeff Bleckner ("Concealed Enemies")
Supporting Cast
Ed.....Dwight Schultz
Alvin.....Lee Wallace
Shany.....Tresa Hughes
Rose.....Patricia Englund
Dr. Burns.....Ian D. Clark
Maryanne.....Diane D'Aquila
>>> TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

At this point, you can scroll the entire rolling log at Level 3 (same for Levels 1 and 2), but you've got enough and you want to return to Level 2. Hit the "C" button (BACK) and you immediately go back one step, in this example returning to Level 2:

Level 2: SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

The BACK feature works in the same way throughout the system -- it takes you back one step, to the previous screen or menu.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 08: Program Locator (#2 on Main Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when--and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

		TV GUIDE: MAIN MENU		SUN 01/12/92 6:50 PM	
>>>	1	Browse Listings	6	Notebook	
	2	Program Locator	7	Set VCR Timer	
	3	Program Types	8	Late Changes	
	4	Channel Lineups	9	TV Update	
	5	Guidance	0	TV Guide Services	
>>>	Aa-Am	Dn-Dz	H	Ma-Mm	Ra-Rm U
	An-Az	Ea-Em	Ia-Im	Mn-Mz	Rn-Rz V
	<u>Ba-Bm</u>	En-Ez	In-Iz	N	Sa-Sm W
	Bn-Bz	Fa-Fm	J	O	Sn-Sz X
	C	Fn-Fz	K	P	Ta-Tm Y
	Da-Dm	G	L	Q	Tn-Tz Z
	TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP				

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

TV GUIDE: MAIN MENU		SUN 01/12/92		6:50 PM			
>>>	BAM-BAM CIRCUS						
	BAT BOY						
	BACK TO SCHOOL						
	BACK TO BASICS						
	BARNEY MILLER						
	BARTER FOR FUN						
TVG		A=TV	B=MORE	C=BACK	D=MENU	E=MARK	F=HELP

I move my cursor to Barney Miller and hit enter: All of the Barney Miller listings appear (in day/time/channel order) in the scrollable Selection Box:

>>>	MON 01-13 10:00 AM 09 WXYX BARNEY MILLER Barney strikes out with a rookie officer.									
	MON 01-13 04:30 PM 11 WCDE BARNEY MILLER Barney gets conned into buying a used car.									
	TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER John Amos guests as a scam artist.									
TVG A=TV B=MORE C=BACK D=MENU <u>E=MARK</u> F=HELP										

I want to remember to watch or tape the WCDE show. I select "E" and the marked listing moves to my Notebook.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 09: Program Types/Category Lists (#3 on Main Menu)
The Main Menu gives you access to special lists--Movies, Sports, Kids, News, Opera, whatever. To access this feature, choose 3:

```

>>> TV GUIDE: MAIN MENU          SUN 01/12/92   6:55 PM
      1 Browse Listings          6 Notebook
      2 Program Locator          7 Set VCR Timer
      3 Program Types            8 Late Changes
      4 Channel Lineups          9 TV Update
      5 Guidance                 0 TV Guide Services

>>> SELECT THE PROGRAM TYPE YOU WANT:
      Movies      Talk
      Sports      Music
      Children    and so on . . .
      News
      Documentary

TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

Move the cursor to Movies, hit ENTER and you get:

```

>>> TV GUIDE: Movie List      SUN 01/12/92   6:55 PM
      1 Today's Movies (all)
      2 Today's Movies (4 star)
      3 Today's Movies (pay cable)
      4 Today's Movies (PPV)
      5 All Movies
      6 All 4-Star Movies
      7 All Pay Cable Movies
      8 All PPV Movies
      9 Movies By Category
     10 Star Search
     11 Director Search
TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```

Select #1 -- Today's Movies (all) -- and you get:

```

TV GUIDE: Movie List      SUN 01/12/92   6:55 PM
SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
17 WPHL MOVIE: Untouchables (1988) (2 hrs) ****
Kevin Costner as the Eliot Ness.
44 WXYZ MOVIE: Wild Texas Wind (1991) (2 hrs) *
Dolly Parton as a down-on-her-luck CW singer.
TVG  A=TV  B=MORE  C=BACK  D=MENU  E=MARK  F=HELP
  
```


ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

CONTINUED: Program Types/Category Lists

The Intergraph system gives us the ability to provide just about whatever categorical lists viewer-testing proves worthwhile.

For example, a Sports list might include:

TV GUIDE: <u>Sports List</u>	SUN 01/12/92	7:01 PM
1 Today's Sports (all)		
2 Today's Live Sports		
3 Today's Football		
4 Today's Basketball		
5 Today's Boxing		
6 All Sports		
7 All Live Sports		
8 All Football		
9 All Basketball		
10 Team Search		
11 School Search		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of children's programs:

TV GUIDE: <u>Kids List</u>	SUN 01/12/92	7:11 PM
1 Today's Shows (all)		
2 Today's G-rated movies		
3 Today: ages 2-5		
4 Today: ages 6-9		
5 Today: ages 10-14		
6 All: ages 2-5		
7 All: ages 6-9		
8 All: ages 10-14		
9 All: G-rated movies		
10 All: Craft		
11 All: Science/Nature		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

A list of documentary programs:

TV GUIDE: <u>Documentary</u>	SUN 01/12/92	7:18 PM
1 Today's Shows (all)		
2 Today: News & Public Affairs		
3 Today: Nature		
4 Today: Science		
5 Today: Warfare		
6 All: News & Public Affairs		
7 All: Nature		
8 All: Science		
9 All: Warfare		
10 All:		
11 All:		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP		

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 10: Channel Lineups (#4 on Main Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Main Menu, select 4 (Channel Lineups):

TV GUIDE: MAIN MENU		SUN 01/12/92 7:23 PM	
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
SORT LIST: PROGRAM NAME DAY/TIME CATEGORY			
SELECT CHANNEL:			
ABC	CNN	DSC	
A&E	CSP	ESN	
AMC	DIS	and so on	
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

I want a list sorted in day and time order and I want A&E. I select via the cursor/ENTER. I get:

TV GUIDE: <u>A&E Schedule</u>		SUN 01/12/92 7:24 PM	
SUN 01/12/92			
06:30 AM DANCE OF THE FAIRIES			
07:00 AM CREATIVE KIDS			
07:30 AM MOVIE: Gunga Din (1937) (2 hrs) ***			
10:30 AM CHESS CHAMPIONSHIP (Live; 3 hrs)			
01:30 PM JFK ASSASSINATION (60 min.)			
02:30 PM PLAYWRIGHT'S THEATRE (90 min.)			
04:00 PM MOVIE: Women in Love (1978) (2 hrs) ****			
06:00 PM CONCERT: New York Philharmonic (2 hrs)			
08:00 PM MOVIE: Gunga Din (1937) (2 hrs) ***			
10:00 PM JOAN BAEZ (60 min.)			
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

Now, I can:

- >> Scroll up and down
- >> Use B=MORE to get more info (Levels 2 and 3) .
- >> Use E=MARK to save shows for my Notebook (and VCR programming).

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 11: Guidance (#5 on Main Menu)

This is the viewer's entree to the features that evaluate shows: Guidelines and the like.

I haven't filled in the screens here because this area requires further discussion. Clearly the Electronic TV Guide will require something more creative than simply keyboarding in the magazine material.

TV GUIDE: MAIN MENU		SUN 01/12/92 6:32 PM
1	Browse Listings	6 Notebook
2	Program Locator	7 Set VCR Timer
3	Program Types	8 Late Changes
4	Channel Lineups	9 TV Update
5	Guidance	0 TV Guide Services

>>>

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 12: NOTEBOOK (#6 on Main Menu) and MARK ("E" on bottom-line menu)
The MARK function lets you create a list at any of the three listing levels; lists that can be used in several ways, as shown on the next page. You want to mark the ABC movie. Move the cursor to the movie and hit E:

```
>>> SUN 01-12-92 09:00 PM
06 WPVI MOVIE: Last Wish (1991) Drama (2 hrs) ****
Patty Duke and Maureen Stapleton in a fact-based
drama exploring the right-to-die issue.
10 WCAU MOVIE: Battling for Baby (1991) (2 hrs) **
Debbie Reynolds and Suzanne Pleshette in a comedy-
drama about battling grandmothers.
29 FOX MARRIED WITH CHILDREN
Jessica Hahn as Al's flirtatious "shoe groupie."
03 KYW MOVIE: Tremors (1990) Thriller (2 hrs) **
Spoof of 1950s horror flicks, with Kevin Bacon and
Fred Ward battling giant, carnivorous worms.
12 WHYY MASTERPIECE THEATRE: Parnell (60 min.)
Part 3: O'Shea files for divorce; a journalist is
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP
```

When you're finished marking, select "D" (MENU). When the Menu appears, select #6 (Notebook), placing your list in the Selection Box:

```
TV GUIDE: MAIN MENU          SUN 01/12/92 6:40 PM
1 Browse Listings           6 Notebook
2 Program Locator           7 Set VCR Timer
3 Program Types             8 Late Changes
4 Channel Lineups           9 TV Update
5 Guidance                  0 TV Guide Services

NOTEBOOK (Marked Shows)
SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR
SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)
MO 01-13 08:00-08:30 PM CBS EVENING SHADE
MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE
MO 01-13 11:30-12:00 PM ABC NIGHTLINE

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP <<<
```

The ABC movie you just marked has been inserted--in day and time chronological order--within the scrollable list.

This feature provides several interesting viewer rewards:

- >> On-Screen Alert: When you turn on your TV, you get a beep and a brief reminder that you have a marked show that day.
- >> Review: You can use the Notebook to review choices.
- >> VCR Programming: The Notebook is the basis for VCR programming.
- >> Error Messages: I'm told if I choose (mark) a show for a service I'm not taking. Helps viewers; makes cable companies happy.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 13: Set VCR Timer (#7 on Main Menu)

Lots of technical issues here, but the viewer should be able to use his Notebook list to set his VCR timer. We begin with the preceding screen, but change the choice to #7 (Set VCR Timer):

TV GUIDE: MAIN MENU		SUN 01/12/92	6:43 PM	
1	Browse Listings	6	Notebook	
2	Program Locator	7	Set VCR Timer	<<<
3	Program Types	8	Late Changes	
4	Channel Lineups	9	TV Update	
5	Guidance	0	TV Guide Services	
NOTEBOOK (Marked Shows)				
>>> SU 01-12 08:00-08:30 PM FOX IN LIVING COLOR				
SU 01-12 09:00-11:00 PM ABC MOVIE (Last Wish)				
MO 01-13 08:00-08:30 PM CBS EVENING SHADE				
MO 01-13 10:00-11:00 PM CBS NORTHERN EXPOSURE				
MO 01-13 11:30-12:00 PM ABC NIGHTLINE				
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP				

#7 brings up the VCR MENU:

TV GUIDE: VCR MENU		SUN 01/12/92	6:44 PM	
1	Set VCR Timer			
2	Check to-tape list			
3	Delete a show			
4	OPEN			
NOTEBOOK (Marked Shows)				
>>> SU 01-12 08:00-08:30 PM IN LIVING COLOR				
SU 01-12 09:00-11:00 PM MOVIE (Last Wish)				
MO 01-13 08:00-08:30 PM EVENING SHADE				
MO 01-13 10:00-11:00 PM NORTHERN EXPOSURE				
MO 01-13 11:30-12:00 PM NIGHTLINE				
TU 01-14 08:30-09:00 PM HOME IMPROVEMENT				
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP				

Select #1 (Set VCR Timer) and the cursor drops to the Notebook's list of marked shows in the Selection Box. Use the UP/DOWN arrows to scroll your list, hit ENTER and the system automatically programs your VCR to tape a marked show. It will also provide an error message if you inadvertently choose two shows with overlapping times.

ICON NOTE: The Notebook has several uses (I won't want to tape all shows on my list), so here's a place where an icon or symbol should be used to pinpoint shows selected for taping.

And: When you first turn on your TV set, a "beep" an onscreen message will remind you if you have a show selected for taping:

BE SURE TO LOAD A FRESH TAPE IN YOUR VCR -- SHOW SELECTED FOR TAPING

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 14: Late Changes (#8 on Main Menu)

A significant competitive advantage: the daily (or more frequent) update gives us the ability to alert viewers to last-minute changes (and important additions), especially those changes that impact VCR tapes already set up. To access this feature, select #8 on the Main Menu:

TV GUIDE: MAIN MENU	SUN 01/12/92 6:28 PM	
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	<<<
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	

SELECTION BOX

TVG	A=TV	B=MORE	C=BACK	D=MENU	E=MARK	F=HELP
-----	------	--------	--------	--------	--------	--------

In a flash, the picture switches to the Late Changes screen, where info can be scrolled:

TV GUIDE: <u>LATE CHANGES</u>	SUN 01/12/92 6:28 PM
-------------------------------	----------------------

VCR ALERT:
Notebook shows you plan to tape the CBS movie on Tue. 1/14 at 9 PM. The movie has been changed to a news special.

LATE CHANGES/ADDITIONS:
WED 1/15: ABC has cancelled Civil Wars (10-11); replacement is a Peter Jennings report.

THU 1/16: President Bush will address the nation at 9 PM.

TVG	A=TV	B=MORE	C=BACK	D=MENU	E=MARK	F=HELP
-----	------	--------	--------	--------	--------	--------

VCR Alert: All of our listing information will be in a database format, so we think it possible to develop a process that links the last-minute changes coming via the daily (or more frequent) download and shows that are already marked and placed in the Notebook.

Last Minute Changes/Additions: It's possible to handle this as a simple text file that identifies only major network changes . . . or develop a process linked to the database itself, allowing the system to note all changes, or only those at a given level.

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 15: TV Update (#9 on Main Menu)

This is the viewer's entree to our entertainment-news information wire, our own Entertainment Tonight, offering attractive possibilities via the daily (or more frequent) updates.

TV GUIDE: MAIN MENU		SUN 01/12/92 7:44 PM	
1	Browse Listings	6	Notebook
2	Program Locator	7	Set VCR Timer
3	Program Types	8	Late Changes
4	Channel Lineups	9	TV Update
5	Guidance	0	TV Guide Services
<<<			
>>>			
ALL	CABLE TV	CHILDREN	
TV PROGRAMS	ACTORS/CASTING	VIDEO GAMES	
SOAPS: Today	PAY-TV MOVIES	GOVERNMENT	
SOAPS: All	UPCOMING SPECIALS	and so on...	
HOME VIDEO	SPORTS		
TECHNOLOGY	MOVIES		
TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP			

For example, select HOME VIDEO and you get:

TV GUIDE: <u>Home Video</u>		SUN 01/12/92 7:44 PM
NEW RELEASES (Week of 1/13-1/17):		
01/13:	Kevin Costner in "Dances with Wolves," a **** action-drama (Vestron/G/\$29.95)	
01/15:	Susan Sarandon and Geena Davis in "Twilly and Trudie," a * comedy (MGM/\$88.99)	
01/16:	Pee Wee Herman in "Growing Up Late," a **** coming-of-age drama (FOX/\$18.95)	
01/18:	Sean Penn and Madonna in "Let's Make Up," a ** adventure (Warners/\$18.75)	
01/20:	Michael Jackson's "Dangerous" video (FOX/ \$15.95)	
<u>TVG</u>	A=TV B=MORE C=BACK D=MENU E=MARK F=HELP	

ELECTRONIC TV GUIDE PROJECT: Prototype (01-19-92)

VIEW 16: TV Guide Services (#0 on Main Menu)

This is the viewer's entree to our catalog of services: subscriptions, 900 phone numbers, classified ads, product ads, books and the like.

TV GUIDE: MAIN MENU	SUN 01/12/92	7:52 PM
1 Browse Listings	6 Notebook	
2 Program Locator	7 Set VCR Timer	
3 Program Types	8 Late Changes	
4 Channel Lineups	9 TV Update	
5 Guidance	0 TV Guide Services	<<<

TVG A=TV B=MORE C=BACK D=MENU E=MARK F=HELP

INTELLIMEDIA FAX

TO: George Backer
CC: Brian Margolis
FROM: Buddy Ray, Intellimedia Corporation
FAX NUMBER: (404) 872-8343
RE: Equipment
DATE: May 14, 1992

Number of Pages: 1

I have only had a few hours to think about and research this today, and I am flying out of town in a few minutes. When I get back in the office on Monday, I will dig a little deeper. However, at present I would recommend the following hardware platform for prototyping:

- Any good 386 ISA bus PC.
- New Media Graphics SuperTV-Video Windows
- New Media Graphics VGA Daughter Board (if the PC does not have a slot on motherboard)
- New Media Graphics Software Developers Kit

New Media can be reached at 505-663-0556. If you call them they will fax you a whole bunch of lit.

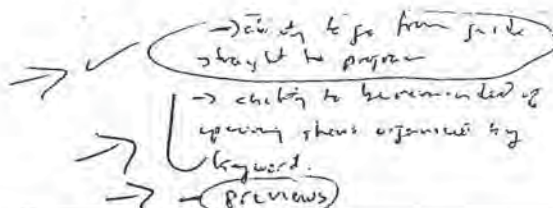
On software, I am leaning towards SuperBase IV, but I need to do some additional research. SuperBase supports the above cards, will do almost any type display we want, reads databases and provides multimedia support. It is basically a BASIC language. The only problems, I can't see a way to get rid of the Windows "Frame" on the screen.

Other software choices are:

- Plus from Spinaker, this is basically a hyper card clone which you may be more comfortable.
- Grasp, from Paul Mace Software - a good non Windows choice.
- Asymetrics Toolbook, but this has a large learning curve and also may not get rid of the frame.

The remote is still under research, but the one I have worked with in the past is from General Parametrics. I found listings for six products and have requested data to study which should be here by Fax when I return on Monday.

More next week.



Inter-Office Memorandum

FROM: Roger Youman OFFICE: National Editorial DATE: 5/15/92

TO: Brian Margolis

Dear Brian:

I am glad I offered to give you something on paper for your MSO visits, because it has focused my mind and clarified my thinking on what belongs in the basic version of the electronic TV Guide and what should be reserved for the premium service.

The attached document, done by Michael Morris, walks you through the basic version, as we see it at this early juncture, and shows what the screens might contain and how the viewer might navigate through them. It is, in essence, a revision and reduction of the original document we produced. It illustrates what remains at the basic level after removing the enhancements that will take us to the higher level.

In outline, the basic service gives viewers:

① --Bare-bones information about programs: the equivalent of the TV Guide boldface line: time, channel, show title and running time--plus, for movies, the title of the film, MPAA rating (when the movie is shown uncut), and the names of one or two stars; and, for live team-sports events, the names of the teams. The time span would be two days--programs scheduled today and tomorrow. And this information would cover all channels on the viewer's cable system (with the possible exception of channels for which program information is either not obtainable or unreliable; e.g., local access channels).

② --On-screen identification of what they are watching now.

③ --The ability to find out what is being telecast on all other channels now.

④ --The ability to browse the two days' worth of listings.

*→ --The ability to locate all plays of a specific program or series during those two days, by keying on the name of that program or series.

→ --The ability to call up chronological lists of the programs scheduled for those two days by four program types (movies, sports, news and documentaries, children's shows).

Doesn't know
what it wants?

For all -
or just
- and
- and
- and

To be saved
by time or
channel

- ⑦--The ability to call up the two-day schedule for any individual channel.

The premium service adds:

- Listings information for a longer period of time, perhaps two weeks (this is subject to further discussion).
- The ability to get expanded, detailed program information in addition to the basic log info, on two versions: a short version and a full version.
- The ability to get into these versions by way of the rolling log, searches for a particular program or series, searches by program type or by individual channel.
- The ability to go back and forth from one level of information detail to another.
- The ability to perform searches according to a variety of categories; e.g., movies alphabetically or by day, by type (comedy, Western, sci-fi, horror, etc.), by four-star ratings, by pay service, by actor's name, by director, and so on; sports by day, by type (baseball, football, etc.), by team name; children's shows by age; news and documentaries by genre (current affairs, nature, warfare); music shows by type (rock, country-western, classical); soap operas; religious programs; financial and business news; foreign-language programs; etc.
- Guidance information, such as Guidelines-type evaluations of selected noteworthy shows, commentary by TV Guide's critic; and star ratings on all movies.
- The ability to mark upcoming programs viewers are especially interested in and save them in a Notebook.
- An alert of some kind to call their attention to the programs they have marked and remind them to tune in or set the VCR.
- The ability to set their VCR timer through the Notebook.
- Possibly the ability for family members to customize the service according to their individual viewing preferences, narrowing it down to the channels and/or types of programming that they care about most.
- The ability to find out about late schedule or program-content changes.

--A TV Update-like service providing news and gossip about the television and entertainment industries, programs, movies and stars.

--Information about and access to other TV Guide services.

All of this has been discussed with Joe Cece, and he is in accord with this tentative definition of the two services.

As you know, all of this is abstract at this point, and much of it may change when we actually start dealing with the realities of creating this service within the limitations imposed by hardware, software, screen-design and marketing considerations. And it may change further once we show it to prospective users.

But this should get us started.

Best,

A handwritten signature in black ink, appearing to be 'J. Cece', written in a cursive style.

RY:lmb
Attachment

cc: J. Cece, A. Disney, B. Robbins, J. Robinowitz

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

CONFIDENTIAL

TV GUIDE: MENU		SUN 01/12/92		6:27 PM
1	Browse Listings			
2	Program Locator			
3	Program Types			
4	Channel Lineups			
SELECTION BOX				
<u>TVG</u>	A=TV	B=BACK	C=MENU	D=HELP

INDEX	
Feature	Page
BACK.....	3
Bottom-Line Menu.....	3
Browse Listings.....	5
Category Lists (Program Types).....	7
Channel Lineups.....	8
Documentary List (Program Types).....	7
Instant Show Identification.....	1
Instant Rolling Log.....	3
Kids List (Program Types).....	7
Menu.....	4
Movie List.....	7
Program Locator.....	6
Program Types (Category Lists).....	7
Sports List (Program Types).....	7
Zap Ident.....	2

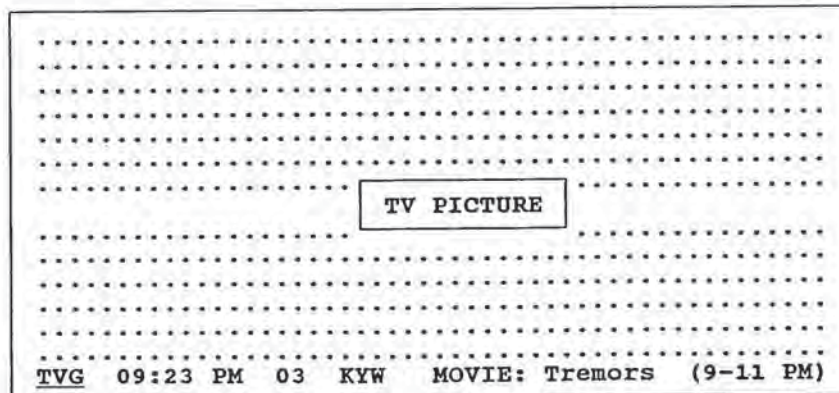
ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 01: Instant Show Ident

Turn on your TV. The TV picture appears with a listing across the bottom of the screen that gives you:

- >> TVG logo
- >> Current clock time
- >> Cable company's system-specific channel number
- >> Station's call letters
- >> Name of show you're watching
- >> Show's inclusive times

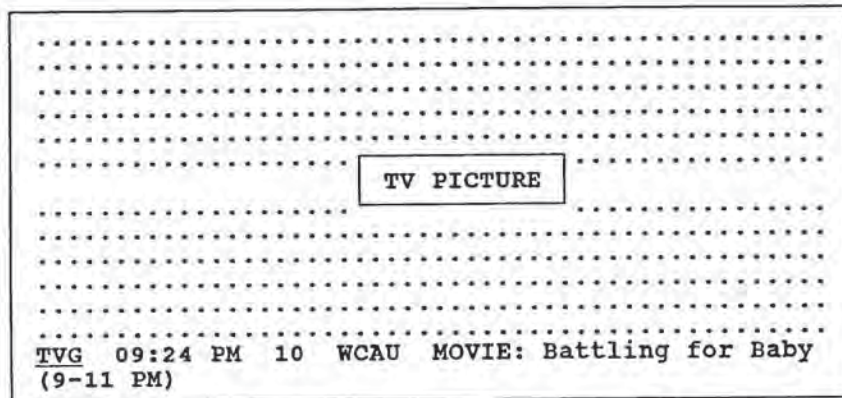
If you stay on the channel, the line vanishes in a few seconds.



ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 02: Zap Ident

You begin zapping. Each time you switch channels, the system gives you the clock time/channel/show/inclusive time listing at the bottom of your TV screen, which disappears after a few seconds.



ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 03: Instant Rolling Log

You want to see what's coming up, but don't want to stop watching the show that's on screen.

You press the special 'TV Guide Menu' button on your remote control and --without having to go to the actual menu--you get three lines of listings across the bottom of your screen.

Pushing the DOWN arrow, lets you scroll the entire two-day rolling log. Use the UP arrow to move backwards.

.....
.....
.....
.....
.....
.....

TV PICTURE

.....
.....
.....
.....
.....
.....
34 AMC MOVIE: World in His Arms (9-10:45 PM)
35 BET BOBBY JONES GOSPEL (9-10 PM)
36 CNN IRAQ: ONE YEAR LATER (9-10 PM)

You also get the TV Guide mini-menu screen across the bottom, enabling you to begin operating the TV Guide system. The line across the bottom gives you these features:

$$A=TV$$

The "A" button send you immediately back to full-screen live TV.

B=BACK

Hit "B" and you're returned to the last screen. If you hit "C" when you are on the screen shown above, you go back to VIEW 02 (preceding page).

C=MENU

The "C" button gets you to the TV Guide Menu.

D=HELP

"D" and you get a scrollable HELP screen.

Examples follow

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 04: Menu

You need more information or want to access one of our special features. Hit the "C" button and the TV Guide Menu replaces the TV picture:

TV GUIDE: MENU		SUN 01/12/92		6:27 PM
1	Browse Listings			
2	Program Locator			
3	Program Types			
4	Channel Lineups			
SELECTION BOX				
<u>TVG</u>	A=TV	B=BACK	C=MENU	D=HELP

- 1 **Browse Listings:** Lets viewer browse through all of the rolling log, or any portion. When this feature is selected, the cursor moves to the Selection Box at the bottom of the screen, where day and time ranges are presented for selection.
- 2 **Program Locator:** This is the alphabetical list of all programs within the rolling log. When selected, the cursor moves to the Program Locator Selection Box.
- 3 **Program Types:** This feature provides the special lists--Movies, Kids, Sports, News and documentaries. When this feature is selected, the cursor moves to the Program Type Selection Box where the available lists are shown.
- 4 **Channel Lineups:** The viewer wants to see only the shows that will be shown on a specific network, local station or cable service. When you select this feature, the cursor moves to the Channel Selection Box, where all services are shown.

Examples follow for each of the above features

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 05: Browse Listings (#1 on Menu)

To browse through a portion (or all) of the two-day rolling log, you select #1 and the cursor drops down to the Selection Box, where you pick a date and time (in one-hour increments):

>>>	TV GUIDE: MENU	SUN 01/12/92	6:29 PM
	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SATURDAY_01/11		
	SUNDAY 01/12		
>>>	6AM 7AM 8AM 9AM 10AM 11AM 12N 1PM 2PM 3PM 4PM 5PM		
	6PM 7PM 8PM <u>9PM</u> 10PM 11PM 12M 1AM 2AM 3AM 4AM 5AM		
	TVG	A=TV	B=BACK C=MENU D=HELP

You're watching TV on Saturday, but you want to see what's on Sunday at 9 P.M. without having to scroll through the entire rolling log (available via the Instant Rolling Log (View 3, page 3)). To save time, you use go to the TV Guide Menu, then use the RIGHT/LEFT/UP/DOWN arrows to navigate and ENTER to select SUNDAY and 9PM. You get:

-->>	TV GUIDE: <u>BROWSE</u>	SUN 01/12/92	6:29 PM
	SUN 01-12-92 09:00 PM		
	03 KYW MOVIE: Tremors (2 hrs)		
	Kevin Bacon, Fred Ward		
	06 WPVI MOVIE: Last Wish (2 hrs)		
	Patty Duke, Maureen Stapleton		
	10 WCAU MOVIE: Battling for Baby (2 hrs)		
	Suzanne Pleshette, Debbie Reynolds		
	12 WHYY MASTERPIECE THEATRE (60 min.)		
	14 MTV MUSIC VIDEOS		
	25 AMC MOVIE: World in His Arms (2 hrs) (NR)		
	Gregory Peck, Ann Blyth		
	29 FOX MARRIED WITH CHILDREN		
	TVG	A=TV	B=BACK C=MENU D=HELP

As the log scrolls, the time of the on-screen section is always at the top (line 2 marked -->>). When a new time segment scrolls on screen, it appears at the bottom and scrolls up until it replaces the top time bar.

The object at this level is to give you as much tune-in info as possible on a single screen. This scrollable rolling log has the following information:

- >> System's channel number
- >> Station's call letters
- >> Show title and, for movies and sports, brief supplementary info
- >> Running time

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 06: Program Locator (#2 on Menu)

I know Barney Miller is on several times (and channels) each week, but I can't remember where and when--and I don't want to have to read through the entire rolling log to find the shows. At the Main Menu, I select 2:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM
      1 Browse Listings
      2 Program Locator
      3 Program Types
      4 Channel Lineups

      Aa-Am  Dn-Dz  H      Ma-Mm  Ra-Rm  U
      An-Az  Ea-Em  Ia-Im  Mn-Mz  Rn-Rz  V
      >>> Ba-Bm En-Ez  In-Iz  N      Sa-Sm  W
      Bn-Bz  Fa-Fm  J      O      Sn-Sz  X
      C      Fn-Fz  K      P      Ta-Tm  Y
      Da-Dm  G      L      Q      Tn-Tz  Z

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to the Ba-Bm line and hit ENTER. I get an alphabetical list of all shows between ba and bm:

```
>>> TV GUIDE: MENU                SUN 01/12/92   6:50 PM

      BAM-BAM CIRCUS
      BAT BOY
      BACK TO SCHOOL
      BACK TO BASICS
      >>> BARNEY MILLER
      BARTER FOR FUN

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

I move my cursor to Barney Miller and hit ENTER. All of the Barney Miller listings for today and tomorrow appear (in day/time/channel order) in the scrollable Selection Box:

```
>>> MON 01-13 10:00 AM 09 WXYX BARNEY MILLER
      MON 01-13 04:30 PM 11 WCDE BARNEY MILLER
      TUE 01-14 10:00 AM 17 WXYZ BARNEY MILLER

      TVG    A=TV    B=BACK    C=MENU    D=HELP
```

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 07: Program Types: Category Lists (#3 on Menu)
The Menu gives you access to four special lists--Movies, Sports, Kids, and News and Documentaries. To access this feature, choose 3:

```
>>> TV GUIDE: MENU                      SUN 01/12/92   6:55 PM
      1 Browse Listings
      2 Program Locator
      3 Program Types
      4 Channel Lineups

>>> SELECT THE PROGRAM TYPE YOU WANT:
      Movies
      Sports
      Children
      News and Documentaries

      TVG      A=TV      B=BACK      C=MENU      D=HELP
```

Move the cursor to Movies, hit ENTER and you get a chronological list of only movies, beginning at your time-period-location in the rolling log. Use the UP/DOWN arrow keys to scroll forward or backward in time. *city first*

```
TV GUIDE: Movie List                SUN 01/12/92   6:55 PM
SUN 01-12-92 09:00 PM
03 KYW MOVIE: Tremors (2 hrs)
      Kevin Bacon, Fred Ward
06 WPVI MOVIE: Last Wish (2 hrs, 30 min)
      Patty Duke, Maureen Stapleton
10 WCAU MOVIE: Battling for Baby (2 hrs)
      Suzanne Pleshette, Debbie Reynolds
17 WPHL MOVIE: Untouchables (2 hrs)
      Kevin Costner, Sean Connery
44 WXYZ MOVIE: Wild Texas Wind (2 hrs)
      Dolly Parton
      TVG      A=TV      B=BACK      C=MENU      D=HELP
```

NOTE: Process works the same for the three other categories. In each case, the system provides a subset of the entire database, excluding everything except the category chosen.

ELECTRONIC TV GUIDE: Basic Prototype (05-15-92)

VIEW 08: Channel Lineups (#4 on Menu)

For a variety of reasons, you might want to check the listings for only one channel (network, local station, cable). At the Menu, pick 4 (Channel Lineups):

>>>	TV GUIDE: MENU	SUN 01/12/92	7:23 PM
	1 Browse Listings		
	2 Program Locator		
	3 Program Types		
	4 Channel Lineups		
>>>	SORT LIST: PROGRAM NAME DAY/TIME CATEGORY		
>>>	SELECT CHANNEL:		
	ABC	CNN	DSC
	<u>A&E</u>	CSP	ESN
	AMC	DIS	and so on
	TVG	A=TV	B=BACK C=MENU D=HELP

You want a list sorted in day and time order and I want A&E, both selected via the cursor and ENTER buttons. You get:

TV GUIDE: <u>A&E</u> Schedule	SUN 01/12/92	7:24 PM
SUN 01/12/92		
06:30 AM DANCE OF THE FAIRIES		
07:00 AM CREATIVE KIDS		
07:30 AM MOVIE: Gunga Din (2 hrs) (NR)		
10:30 AM CHESS CHAMPIONSHIP (Live; 3 hrs)		
01:30 PM JFK ASSASSINATION (60 min.)		
02:30 PM PLAYWRIGHT'S THEATRE (90 min.)		
04:00 PM MOVIE: Women in Love (2 hrs) (R)		
06:00 PM CONCERT: New York Philharmonic (2 hrs)		
08:00 PM MOVIE: Gunga Din (2 hrs) (NR)		
10:00 PM JOAN BAEZ (60 min.)		
TVG	A=TV	B=BACK C=MENU D=HELP

INTELLIMEDIA FAX

TO: George Backer
CC: Brian Margolis
FROM: Buddy Ray, Intellimedia Corporation
FAX NUMBER: (404) 872-8343
RE: Remote Controls
DATE: May 20, 1992

Number of Pages: 1

I jumped on ZiffNet and researched Remote Controls. Found three likely candidates and requested information via FAX. Only two sent information. Based on price, features and appearance, one of these. Remote Keyboard, looks very good. It's only drawback is the use of serial interface with keyboard emulation software which could be a problems with other software.

Remote Keyboard

Forte Communications - (800) 331-3903

The unit is 7" X 2 1/4". It is IR with 40 Keys. This is a lot of keys, but should give us enough to simulate any type of interface we wish. We can always ignore or mask off some keys. The unit has a receiver that attaches to a serial port and software that allows the keys on the unit to be mapped to any PC keyboard key. It will also generate an optional on screen pointer to simulate mouse type point and click operation if we wish to experiment with this type interface. A Windows driver is available if we use Windows based software.

Cost is \$195 per unit. Windows drivers are \$15 extra.

Keyboard Commander ✓

AMX Corporation - (800) 222-0193

This unit is 4.25 X 3.25. It is radio Frequency and comes in various models from 2 to 32 keys. They will custom engrave the remote with key labels if we wish. This unit looks less like a TV Remote that the unit above, but plugs in-line with the pc keyboard so it does not require any software drivers. The unit may be programmed to emulate any combination of keystrokes.

Cost is: Keyboard Commander \$300
16 button transmitter \$90
32 button transmitter \$750

News America 900

FACSIMILE TRANSMISSION SHEET

Date

3 June 92 SEL

TO:

Mike Morris

FAX:

2934849

FROM:

Brian Margolis

FAX:

(212) 819-3757

For problem with this transmission

CONTACT: Jacqueline Johnson

TELEPHONE: (212) 819-3718

Number of pages (including this page)

2

REMARKS

212 725 3465
JUN 08 '92 09:31 NEWS AMERICA 900

P.4/6

TO: LH, JC, JR, RY, MM, BR, TG, BR, PB, JB, GB

FROM: MARGOLIS

6/1/92

INTERACTIVE TV GUIDE SCHEDULE JUN 92 - OCT 92

DEVELOPMENT OF PROTOTYPE

BY 6/8 COMPLETION OF LEVEL I PC MOCK-UP OF APPROX 12 SCREENS
BY 6/12 PURCHASE OF 2 SETS OF PROTOTYPE COMPUTER EQUIPMENT FOR TV DISPLAY
BY 6/26 COMPLETION OF LEVEL I TV MOCK-UP
.....
7/1. **TV GUIDE MEETING FOR LEVEL I TV DEMO
.....
7/1 CONSUMER INTERFACE CONSULTANT BEGINS WORK
BY 7/1 COMPLETION OF FIRST PROTOCOL DOCUMENT FOR MFRS
BY 7/15 RECREATION OF TVG DATABASE AT IPRESS
BY 7/15 REFINEMENT/REVISION OF LEVEL II PRINT OUTLINE
.....
BY 8/4 **COMPLETION OF FIRST DRAFT OF LEVEL I PROTOTYPE
.....
BY 8/4 MODIFICATION OF DATA FEED
BY 8/11 COMPLETION OF SECOND PROTOCOL DOCUMENT FOR MFRS
BY 8/11 ESTABLISHMENT OF SOFTWARE RECEIVER/REAL-TIME APPLICATION
.....
BY 8/29 **COMPLETION OF SECOND DRAFT OF LEVEL I PROTOTYPE
.....
BY 9/1. COMPLETION OF LEVEL II TV MOCK-UP

MSO MARKETING

BY 6/18 COMPLETION OF FIRST ROUND OF MSO MEETINGS
BY 6/18 COMPLETION OF DRAFT STATEMENT OF SUMMARY FINDINGS FOR MSOs
BY 7/1 DISTRIBUTION OF SUMMARY FINDINGS
BY 7/10 DRAFT OF PROPOSED BUSINESS ARRANGEMENTS/AFFILIATE CONTRACTS
BY 8/1 COMPLETION OF SECOND ROUND OF MSO MEETINGS
.....
BY 9/1 **FOCUS GROUP TESTING BEGINS
.....
BY 10/1 **HOME TESTING BEGINS
.....

OTHER

BY 6/15 LAWYERS SELECTED TO REVIEW PATENTS
BY 7/1 LEGAL REVIEW OF PATENTS READY

ONGOING TALKS WITH BOX MFRS, CONSUMER ELECTRONICS COS

RESPONSIBLE

IPRESS/RAY

IPRESS/RAY

IPRESS/RAY

ALL

ROBINO

IPRESS

IPRESS/RAY/TG

YOUNG/MORRIS

ALL

IPRESS

IPRESS

IPRESS

ALL

IPRESS/RAY

JB/MARGOLIS

MARGOLIS

MARGOLIS

JB/MARGOLIS

JB/MARGOLIS

ROBINO

ROBINO

MARGOLIS

MARGOLIS

JB/MARGOLIS

REVISED

TO: HINTON, CECE, ROBINOWITZ, YOUNAN, MORRIS, ROBBINS, GREENDYKE,
 RAY, BENNINGTON, BACKER, MCGLADE, MONOICS

FROM: MARGOLIS

INTERACTIVE TV GUIDE SCHEDULE II JUL 92 - NOV 92

7/29/92

DEVELOPMENT OF PROTOTYPE

RESPONSIBLE

BY 7/31 OUTLINE OF TVG EPG SYSTEM ISSUES, DEVELOPMENT SCHEDULE

ROBBINS/GREENDYKE

BY 8/4 MODIFICATION OF DATA FEED

XPRESS

8/6 STORYBOARD SCREENS DELIVERED

ANIMATRIX

8/10 COMMENTS DUE ON STORYBOARDS

TVG/XPRESS

BY 8/11 COMPLETION OF FIRST PROTOCOL DOCUMENT FOR MFRS

XPRESS

BY 8/11 ESTABLISHMENT OF SOFTWARE RECEIVER/REAL-TIME APPLICATION

XPRESS

8/21 MEETING IN NYC TO REVIEW ALPHA PROTOTYPE

ANIMATRIX

8/24 COMMENTS DUE ON ALPHA

TVG/XPRESS

9/4 MEETING IN RADNOR TO REVIEW BETA PROTOTYPE

ANIMATRIX

9/8 COMMENTS DUE ON BETA

TVG/XPRESS

9/11 MEETING IN NYC/RADNOR TO REVIEW FINAL PROTOTYPE

ANIMATRIX

BY 9/11 COMPLETION OF SECOND PROTOCOL DOCUMENT FOR MFRS

XPRESS

BY 9/18 COMPLETION OF LEVEL II TV MOCK-UP

XPRESS

MSO MARKETING

BY 7/28 DISTRIBUTION OF CABLE AFFILIATE COMMENTS

MARGOLIS

BY 7/30 DRAFT OF PROPOSED BUSINESS ARRANGEMENTS/AFFILIATE CONTRACTS

JB/MARGOLIS

BY 8/15 LAUNCH OF AFFILIATE MARKETING

JB/MARGOLIS

BY 10/1 IN-HOUSE "ALPHA" TESTING BEGINS

TVG/XPRESS

BY 11/1 HOME "BETA" TESTING BEGINS

TVG/XPRESS

OTHER

8/7 INITIAL MEETING WITH PATENT LAWYERS

JB/MARGOLIS

Bill Cooper
X*PRESS Information Services, Ltd.
4700 South Syracuse Parkway Suite 1050
Denver, CO 80237
(303) 267-4112

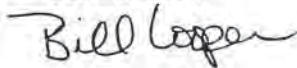
July 14, 1992

Mr. Brian Margolis
News America 900
1211 Avenue of the Americas
New York, NY 10036

Dear Brian,

The diskette that has been sent to you contains the Tvguide application and supporting files. To start the application simply copy the files onto your PC and read the readme file. This version contains the Primetime listings in as grid format as requested. To access the listings simply start the application and go to the TV Guide Main Menu, at the menu press 5 or arrow to that location and press enter. If you have any questions give me a call at 303-267-4112.

Sincerely,



Bill Cooper
Programmer/Analyst

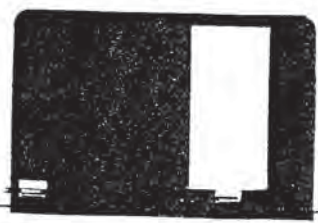


TV Guide Demo

7-17-92



DATA ul30144





1211 Avenue of the Americas • New York, NY 10036 • 212-819-3712 • FAX: 212-819-3757

Brian A. Margolis
Electronic Program Guide Project Director

To: Joe Cece
Re: Letter to Cable Ops
Date: 4 Aug 92

Attached is draft letter to Ritter. I would like also to send same letter to:

1. Wangberg
2. Goddard
3. Ballick, Jones
4. Brookstein
5. Dalvi - with addtl note about his visit to TVG.

Others:

1. Newhouse - Mondics met them on his own. I will suggest he use version of this letter.
2. TCI. We met Sparkman. See attached letter.
3. ATC - Rosenblum. I am sending a personal thank-you.

Once you OK, I will get your stationery from Meg and send mail out. It's late so please look at ASAP. Thanks.

Can you let Meg know how to address each of these people - first names, nick names, etc.

File OPS NOTE 792

Mr. Mike Ritter
Continental Cable

12
3 August 1992

Dear Mike *Ritter*

We have recently completed our first round of visits to the leading cable operators regarding the interactive program guide and I wanted to thank you and your colleagues for kindly spending time with us.

It was our intention to understand your views and concerns as part of our design process. While we have our own thoughts as to how a guide service should be shaped, we realize that as partners with cable we need to work together from the outset. In view of what we learned from you and the other cable operators, I feel that we are now all the better prepared to produce a truly useful and attractive service.

There is virtual unanimous consent about the need for an electronic guide. It is necessary as a way to enhance the value of cable programming as well as a solution to the consumer frustration and confusion about the growing number of programming selections. Additionally, an electronic guide is seen as important to the success of such emerging activities as pay per view and multiplexing where the guide can help to market and in turn simplify what is available.

TV Guide is wholly committed to producing the best interactive electronic guide for both consumers and cable operators. We are excited about the opportunities that an electronic guide offers: up to the minute program updates, the ability to search by a variety of categories, the instant availability of complete detailed information about a particular show - capabilities that will complement the features of our current print guide. As we do in print, we plan to offer consumers the most compelling way to make viewing decisions.

As we all know from experience, "interactivity" sounds great in theory, but is a great challenge in practice. It is our belief that TV Guide with its close to a 40 year relationship with 40 million readers, which it renews every week, is in a unique position to usher in this ~~radical~~ new way of relating to television. There is an undeniable trust between the magazine and its readers which explains its continued prosperity and leads us to believe that we are best placed to coax the consumer into this bold future of interactivity. We plan to dedicate all the needed resources to assure that we develop a product that leverages off the strengths of the current relationship with ~~our~~ readers.

our *TV* *the magazine's*

File: OPSNOTE 792

①

Mr. Mike Ritter
Continental Cable

12 August 1992

Dear Mike,

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A prototype will be ready in early fall. At that time, we would like to visit again and discuss our plans for testing and for proposed business arrangements. We would be delighted if we could find a mutually satisfactory basis for working together. Brian Margolis, who you met, will be leading the TV Guide effort.

Once again, thanks for sharing your thoughts with us. I apologize that I could not be at the meeting which I very much wanted to attend, but I was unavoidably detained. I am glad, however, that we have started the dialogue and I look forward to catching up with you in the fall.

Yours sincerely,

Joe Cece



1211 Avenue of the Americas • New York, NY 10036 • 212-819-3712 • FAX: 212-819-3757

Brian A. Margolis
Electronic Program Guide Project Director

13 August 1992

Barry Rosenblum
Time Warner Cable
Brooklyn/Queens Division
41-61 Kissena Blvd.
Flushing, NY 11355

Dear Barry,

Thanks very much for making time on such short notice to meet with Jerry Bennington and me. As anticipated, it was fascinating to see what you have both developed and made work.

Jerry Bennington has since had discussions with Jim Chiddix and Walt Ciciora. And as a result we are now readying a TV Guide electronic guide proposal.

I hope all continues well for you. Please keep me on your distribution list for any and all announcements regarding developments.

Thanks again.



Radnor, Pennsylvania 19088 • 215-293-8500

Joseph W. Cece
President/Publisher

13 August 1992

J.C. Sparkman
Telecommunications, Inc.
5619 DTC Parkway
Englewood, CO 80111

Dear J.C.,

We have recently completed our first round of visits to the leading cable operators regarding the interactive program guide and I wanted to thank you for kindly spending time at the end of May with the Liberty/TV Guide joint venture representatives. I apologize that I could not be at the meeting which I very much wanted to attend, but I was unavoidably detained.

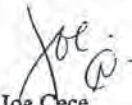
Your comments have been truly helpful in our evolving effort to put together a game plan - particularly, your thoughts on the need to have our product work with the installed base of converters and the importance of exploring ways to sell PPV/merchandise through the guide.

Peter Barton or Jerry Bennington may already have mentioned that we are in the midst of designing a prototype which should be ready for testing in the fall. I was delighted to be told that TCI is willing to help test the service.

TV Guide is fully committed to developing the best interactive program guide and with the assistance of Liberty and Xpress, I am confident that we can develop an exciting business.

Once again, thanks for sharing your thoughts.

Yours sincerely,


Joe Cece

Notes on Animatrix Prototype
September 4, 1992

Light comments are Buddy Kay's comments after reviewing the prototype on 9/1. Bold comments are from the meeting on 9/2.

General Screen Design and look - I like having command prompts on top of screen and program information always on bottom. There is good consistency in the overall design. Only suggestion I would make on screen consistency is in the listing screen. All other screens list the function of the screen first (i.e. Categories) and then other information.

The listing screen says "6:00 pm Listings".

I would say "Listings 6:00 pm". Marney agreed.

I would also like to see how it looks if we only show keys that are functional. For example, if we are at the top of a list, only show the down arrow. This could probably use some testing to see if consumers understand what is going on if we do this. However I don't like having a button on a prompt line that is not functional. There was some discussion on this and no general agreement. Roger is keeping a list of items that we should discuss with users during a field test, and this is an item for that list.

Title Display - Does the title display time out after a time or must it be removed. It does not time out. Marney does not like having things happen that may surprise the user. Roger also thinks that the user may take a phone call, etc. and would not want the screen to change before he/she got back to it. I agree as long as we have enough buttons on the remote (see comments on reducing keys below).

Browse - Does changing the channel also bring up this display, or is it only brought up by pressing the Browse button. At present, only by pressing the browse button. I think we need more discussion on bringing up a display when the channel changes. It didn't appear that Marney had considered this.

Minor annoyance category - If you press browse, then press title, the browse command bar goes away, but the browse information stays. I would take away all displays any time the title button is pressed if the title is already on screen.

Guide - Minor annoyance - Start screen with something highlighted. Agreed.

Menu -

Listings - Consider title line of "Listings 6:00". Agreed.

I prefer one time period per screen and longer titles to the two column approach. Agreed.

Consider putting both start and end times in the parenthesis after title.

I think we agreed to experiment with this, but Mike and Roger appear to like the display the way it is.

Consider using a left arrow to the left of title lines where the show has already started. This would match the right arrow to the right of shows that continue into another time period. After discussion, it was agreed that this would probably be confusing to the user and take up a column of text.

Are the use of arrows here obvious and intuitive to users. We may want to test other icons such as "...". Decided that we would stick with arrow, but change the appearance to look less like the arrows on the prompt line.

Can you select DETAIL from this screen after highlighting a line. If so, do we:

Show which items have more detail with an icon or color. Only movies and sports have detail in base system.

Do nothing if they press detail on a line with no more detail.

Design a nice "No Information Available" screen.

You can press detail, and Marney plans a "No information" screen which she will add to the prototype.

Pay Per View -

Can we select DETAIL from this screen. Yes.

There was considerable discussion about the order information screen, what it contains, how it is used, how we return from it.

Basically, we decided that this screen would be so specific to cable operators that we can't decide how it will work at present.

Do we need a wider bar between the categories and the actual listings? Is there any way we can prevent the categories from looking like headings for the listings? Marney agreed to look at this problem and try some ideas for differentiating the categories. We also agreed to change the title of the categories so that they did not appear to be headings. For example, "Schedule" might change to "All Programs". We agreed to move the "Schedule/All Programs" item to the first (default) position, since the MSOs will want this display to default to all their PPV items, not just movies.

Categories -

Can we fit more categories on the top line? More categories were not envisioned. If more categories were needed, Marney initially suggested another layer of menu.

What do we do if we have more categories? I would suggest the following scheme:

Place the categories across the line with the most frequently used categories in the middle. Place the initial highlight in the middle. When the user presses the right and left buttons, move the categories, and leave the highlight area in a fixed place. When approaching the end of the list to the right or left, move blank locations onto the screen. This same technique could be used for all similar selections at the top of a screen (see channel selection). After considerable discussion it was decided that this approach would be confusing. What we will do is page the list right and left. When the user presses the right (or left) button such that it will take a list off the screen, the entire list will page to the left, placing the item that was on the right of the screen on the left edge, and highlighting the next item to the right.

Channel -

Consider right and left scrolling of channel numbers similar to the scheme suggested for Categories above. We agreed on the paging scheme described in Categories above.

Does DETAIL and SELECT work here. Yes.

Find -

Need to be able to scroll the list once we "find" a list. Also need to be able to get DETAIL and SELECT (especially if SELECT can lead to a select for record function). I don't think we came to a resolution on this.

What does the Sun icon mean? It denoted AM. This has already been changed to a P or A after the time.

We could expand this find function to find shows by actor, director, and title if we put a select bar across the top of the screen to select types of finds, just as the other functions above. To use this and provide an ability to scroll the list we could provide the following progression:

Enter this function with the ability to use right and left keys to move between types of finds. Enter key would move to the Alpha entry phase.

Alpha phase would use right, left, up and down keys just as presently designed to select letters and present a list. Enter key would move to scrolling a list.

In scrolling phase, up, down keys would scroll list and DETAIL and perhaps SELECT would work.

Pressing Guide, Title, etc. at any time would bail out of this process where you could enter it again from the top, there is not a key to "back up" one step in the progression (A problem with this scheme I admit).

This whole process may be too complex for joe-six-pack to figure out. Not a function for the basic system. Perhaps this should be in an advanced system. Marney thinks we could better expand this function with menus.

Guide > -

Should we come up with a new button name? Yes, buttons have now been renamed to "MENU" and "CHOICE".

I would suggest that we use line by line scrolling when we scroll off the bottom or top of a page, not page scrolling. If we decide to use page scrolling, I would suggest we leave the last line from the previous page at the top (bottom) of the newly displayed page. e would then place the highlight bar on the second line of the new page. Second suggestion, paging, was adopted.

Bug or Design question? Is it intended that pressing the GUIDE > button repeatedly will take you through the various types of searches from the GUIDE menu? This is an intentional feature. Marney likes it, I don't think Roger and Mike do, but it was discussed when Marney was out of the room.

I explained that you had asked me to think about reducing the number of buttons. Marney said she had designed this remote after looking at the unit being used in the Queens system which has "lots of buttons". After discussion, it was restated that we are designing an "ideal" system to take to the MSO and Manufacturers. We want this many buttons, if the manufacturers can't meet this need, then we will compromise later. The ideas that I came up with will be considered for such compromise. We didn't really discuss the specifics at this meeting.

Remote Control - I doubt that we can get the manufacturers to dedicate this many buttons to our remote control. We could reduce the number of buttons with a following scheme:

Remove the Browse function as it is now defined. User gets a title display any time he changes channel that will stay on screen for n seconds. He can see what is presently on by changing channel quickly up then down.

Press GUIDE to get the grid. Always put the highlight bar on the current show and time in the grid. If the user wants to get back to the show, he presses enter. If he moves away in the grid, he must move back to his showtime in the grid to get back to his show (I don't really like this part of my idea, but its a starting point for discussion).

Press the GUIDE button again (while the grid is being displayed) to get what is now the GUIDE> menu.

Use the zero (0) key for the detail key. This presumes that the set top controller does not require the entry of 07 for channel 7. If it does not then any time we see a 0 not preceded by a number, we treat it like a detail key. The remote should have the key labeled both ways.

Likewise we may be able to use the nine (9) key as a BACK or ESC type key, since few cable system have over 80 channels and those new systems with 150 channels only use the upper channels for PPV. The user NEVER selects a channel 90 or above. Therefore, any time a 9 is entered and not preceded by another digit, we can assume they mean ESC. Is the 8 key available? I think there are some 81 channel systems but this bears discussing with manufacturers.

With a scheme similar to above, we could do with a single GUIDE button. I think this may be critical to manufacturers who will want the remote to be as simple as possible.

VCR - Making for Record or Liner viewing. Did TVG ask for these functions to be included in the prototype? No. They are considered Advanced features.

Colors -

We spent a good bit of time looking at various color tests and creating new ones. Steve said that he would try to create a program that will allow Roger and Mike to play with colors on a sample screen themselves. I think we settled on Black top and Bottom, Dark Blue and Dark Red lines with white text and a yellow highlight bar.

List Displays

We discussed going to multiple lines if the show title took too much space. It was agreed that we needed to force the title into one line.

We discussed the use of network call letters, vs broadcast call letters, vs. cable channels, vs. broadcast channels on the display. We decided to leave the display as it is for now.



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TV Guide Scenario

Press the 'Display' button.
Display Bar appears.

The Display Bar displays information about the program on the currently displayed channel.

As the user "surfs" through channels, i.e. changes the station using the remote control device, the Display Bar changes the display information to reflect the program that is currently displayed onscreen.

The Display Bar changes whether the user changes the channel using the up/down arrow buttons or the number buttons. — ?

To remove the Display Bar from the screen, the user presses the 'Display' button again.

The 'Display' button's sole function is to serve as a toggle between the 'Display Bar' and normal viewing mode. The Display button can be activated at any time. (That is, if the viewer is watching normal television or the viewer is on any screen within Interactive TV Guide, when they press display, the Display Bar will appear.

Key: The Display Bar changes, the displayed program changes also.

Press the 'Enter' button.

Guide Bar appears. In appearance, the Guide Bar is similar to the Display Bar except that it has a "menu" button in the right corner which allows the user to display a full screen 'TV Guide Menu'.

When the user presses the up/down buttons, The Guide Bar displays information about the previous(up button) or subsequent(down button) channel.

The current program remains on the Screen as the Guide Bar changes.

The Guide Bar changes whether the user changes the channel using the up/down arrow buttons or the number buttons.

To remove the Guide Bar from the screen, press the 'Enter' button again.

Key: The Guide Bar changes, the displayed program does not.

Press the '1' Button.

'Menu' appears.

Menu is a full screen display.

Pressing the '1' button only takes the user to the 'Menu' if the user is already viewing the Guide Bar. (i.e. the user has pressed the 'Enter' button). The Guide Bar is the viewer's entrance into full screen TV Guide.

If the user presses the '1' Button when the Guide Bar is not displayed on the screen, the display changes to Channel 1, i.e. the user's television behaves normally. If the Guide Bar is not displayed, the user's television is not under the influence of Interactive TV Guide.

Menu

The menu items are grouped into two units of five.

The menu unit on the left is composed of Listings, Channels, Find by Category, Find by Name and Pay-Per-View. All of these items have to do with locating a program.

The menu unit on the right is composed of "TV Guide Editorial", "TV Guide Services", Updates, Remind/Record List, Guide Bar. All of these items have to do with things other than locating a program.

The two menu listings in quotes-"TV Guide Editorial" and "TV Guide Services" need discussion about alternative names.

Press the Up/Down Buttons

Pressing the up/down buttons causes a highlight to move up or down among the 10 menu items displayed.

Press the 'Enter' Button

When the appropriate selection is highlighted, the User presses the 'Enter' button.

When the 'Enter' button is pressed, the user sees a new screen display corresponding to the menu item that was highlighted.

Currently, the only way the user can leave the menu screen is by Pressing the 'Enter' button to go to the item highlighted in the menu, or by pressing the 'Display' button on the remote control.

A topic for discussion: An additional menu choice: "I'm through" (something to indicate that the user wants to leave Interactive TV Guide and return to the normal programming display)?

The Ten Menu Choice Screens

The menu choices correspond to three types of screens: List screens, Sub Menu Screens, and Text Display Screen.

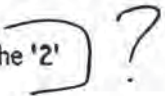
There is one other menu choice type: 'Navigational'. If the user clicks on the last menu choice, Guide Bar, the user returns to regular programming with the Guide Bar displayed.

List Screens

The List Screens are: Listings, Channels, Find by Name, Pay-Per-View, Updates, and Remind/Record List.

List screens display programming in a series of striped color regions.

To see more information about a particular listing on the listing screen, the user can press the '2' button, the 'Info' button.

To "put away" additional information about a listing, the user presses the '2' button, the 'Info' button, again. 

To return to the menu from a list screen, the user presses the '1' button, the 'menu' button.

Sub Menu Screens

The sub menu screens are: Find by Category and TV Guide Services.

Sub menu screens behave exactly like menu screens.

The choices for the Category screen is a topic for discussion.

To return to the menu from a sub menu screen, the user presses the '1' button, the 'menu' button.

Text Display Screens

The only text display screen is the "TV Guide Editorial" screen.

Text Display screens only display static text. Currently, the TV Guide Editorial Screen does not have selections or 'Info'. This is a topic for discussion.

To return to the menu from a text display screen, the user presses the '1' button, the 'menu' button.



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Interactive TV Guide

Font

Helvetica Condensed 18 Pt

To make text prominent, display it as bold, not as caps or underline.

TV Guide Logo

Field - Dk. Red

Text - White

Logo is in 2 sizes:

Large logo	Size: 118 x 97 Registration: 46, 20
Small logo:	Size: 62 x 52 Registration: 11, 356

Full Screen Layout

Design for safe region-85% reduction.

Size: 544 x 408 (Includes 2 pixel black border).

Lines

Avoid horizontal pixel lines.

If we have to use horizontal lines they must be at least 3 Pixels high. Under no circumstances should a horizontal line be less than 3 pixels high. Note: The storyboards might have some two pixel horizontal lines; they'll be corrected in the Alpha deliverable.

Icons

The only icon currently defined is the Movie icon. Should other icons be created? For example, a sports icon?

Colors

Text is always black.

Highlights are always red.

Channel call letters are black.

Channel IDs are white numbers on a black button.

On a Listing Screen, Text is displayed on alternating color fields of gray and white.

Every odd numbered text line is on a background of gray.

Every even numbered text line is on a background of white.

Striped Color Regions

For readability of text grids, alternate color regions rather than using lines.

Colors Notes

Design for 16 default colors (Windows):

White-White isn't 'video safe'. Substitute Lt. Gray whenever possible.

Lt. Gray

Dk. Gray

Black

Lt. Blue

Med Blue

Teal

Dk. Blue

Green

Dark Green

Yellow

Dark Yellow

Red-Avoid Red. It bleeds.

Dark Red-Take care with Dark Red. This color can bleed also.

Magenta-Avoid Magenta. It's tacky.

Purple

Find-Letter Search

The Letters for a 'Find' are displayed in a single field. The up/down buttons cause the displayed letter to change.

Highlights

The current selection is always highlighted. The highlight is always red.

Repage

The last listing on the previous page moves to the top of the page of the next page.

The highlight always moves to the top of the screen.

Display Defaults

Always default to the listing display that matches real time.

Remote Control Buttons

The Remote Control buttons are used by the Interactive TV Guide: 1, 2, Display, Enter

Issues:

1- If you subscribe to Cable, is there any possibility that you would have a black and white TV? *yes.*

If we have to design for black and white, we'll have to change the highlight color from Red. We'd rather stick with the red highlight because it reinforces Brand Identity by tying in with the red TV Guide logo. *?*

2- Should we use the number buttons on the Remote Control?
2=Up, 4=Left, 6=Right, 8=Down. *NO*

3- Should both call letters and channel IDs be displayed? We think so, if the system can personalize the display for each user. (The storyboards reflect the display in TV Guide today- Call Letters OR Channel ID). *?*

4- The remote control device selected MUST have auto repeat keys. For example, when you hold the 'Down Arrow' key down, the Highlight continues to scroll down a list. The user is not going to want to Click-click-click- to move through a choice list.

5- Remote control device has something else-what is it?

6- To be developed- find program types-which types? how breakdown sports?

Design Guidelines:

Interface issues that might hinder acceptance of Interactive TV Guide.





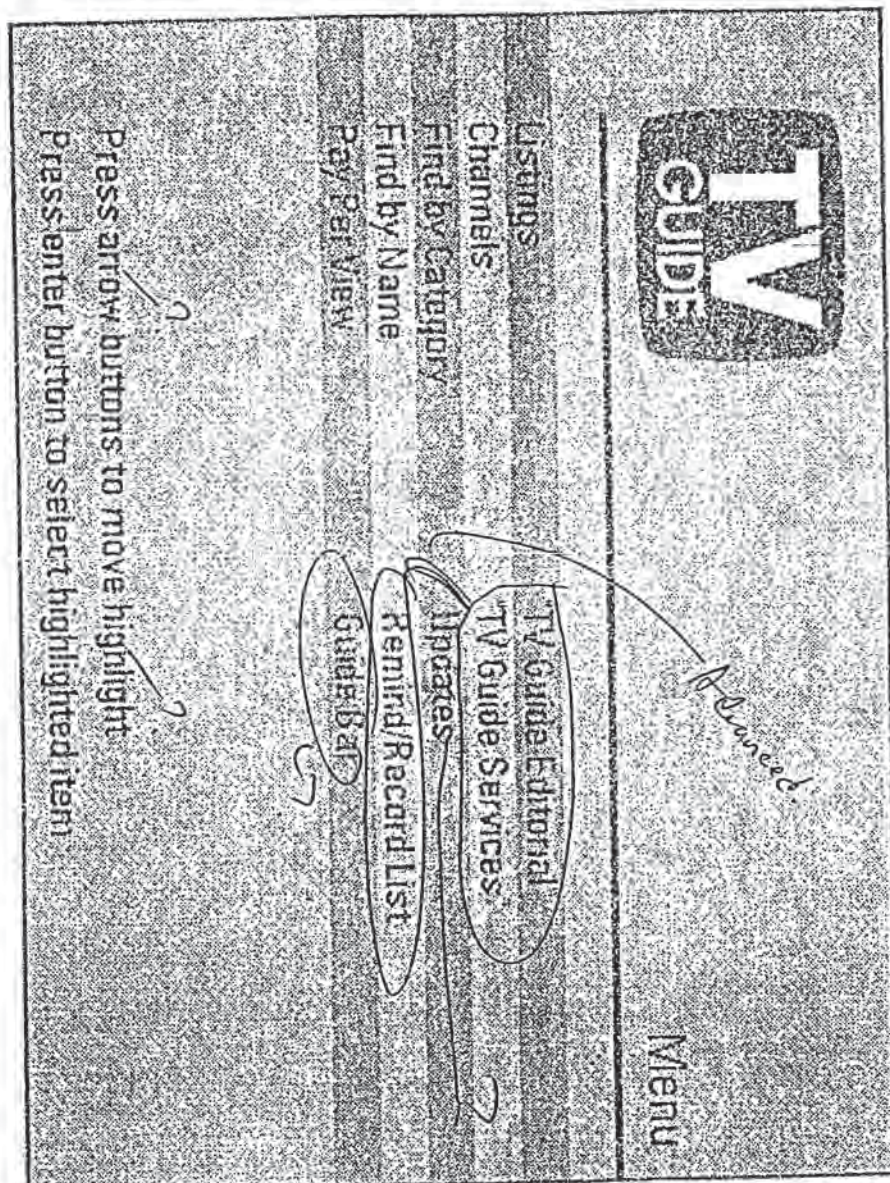
TV
GUIDE

Tues Sept 25
11:35 AM

KRON
44

Wimbledon Tennis
Men's Quarter Finals

 Menu





Menu

Listings

TV Guide Editorial

Channels

TV Guide Services

Find by Category

Updates

Find by Name

Remind/Record List

Pay Per View

Guide Bar

Press arrow buttons to move highlight

Press enter button to select highlighted item

7:00	7:30
2 News	Live Connection
3 News	XXV Summer Olympic Games
4 Tonight Tonight	XXV Summer Olympic Games
5 Baseball cont. Athletics at Twins (5:00)	
6 MacNeil/Lehrer cont. (5:00)	Frugal Gourmet
7 Jeopardy!	Wheel of Fortune
8 Jeopardy!	XXV Summer Olympic Games
9 Business Report	Being Served
10 Jeopardy!	Can Be Told
11 Inside Edition	Current Affair
12 Inside Edition	Current Affair
13 Muchachitas	
14 Papa Mason	
22 Listening to America	
26 News	Chinese Television

TV

Tues Sept. 25

GUIDE

11:35 AM 1:00

☐ Menu

☒ Info

7:00	7:30
2 Cheers	Love Connection
3 News	XXV Summer Olympic Games ▶
4 Entertainment Tonight	XXV Summer Olympic Games ▶
5 Baseball cont. Athletics at Twins (5:00)	▶
6 MacNeil/Lehrer cont. (5:00)	Frugal Gourmet
7 Jeopardy!	Wheel of Fortune
8 Jeopardy!	XXV Summer Olympic Games ▶
FOUR TIME 4 hrs., 30 min. Among the events available for coverage are women's gymnastics (team final), men's diving, boxing, and swimming (finals in women's 400m freestyle, 100m backstroke and 4x100m freestyle relay, men's 100m freestyle and 200m backstroke)	
22a News	Japanese television
TV Tues Sept. 25 GUIDE 11:35 AM	
Remind Record Nevermind Menu Info	

7:00		7:30
A&E	Sail by the Sea	
AMC	Alice Adams	
BRV	Rope	
CNN	News	
COM	Short Attention Span Theater	
DSC	Search for Adventure	
ESN	Baseball Tonight	Baseball
FAW	Waltons	
LIF	China Beach	
MTV	Half Hour Comedy	U2
NIK	Looney Tunes	Bullwinkle
SC	Giants Pregame	Baseball, Dodgers at Giants
TBS	Baseball cont. Astros at Braves	Baseball, A Fistful of Dollars
TNN	Nashville Now	On Stage
TNT	cont. The China Syndrome	Outer Limits
TV Tues Sept. 25 11:35 AM CLOS		☐ Menu ☒ 100

7:00		7:30	
A&E	Soul by the Sea		
AMC	Alice Adams		
BRV	Rope		
CNN News			
COM	Short Attention Span Theater		
NSC	Search for Adventure		
Western 2hrs. ★ ★ (Italian, 1964) Clint Eastwood became an international star as the enigmatic hero of this tough-tongue-in-cheek yarn about family feuds in old Mexico. Gian Maria Volonte, Marianne Koch.			
Remix Record Movement			
TBS	Baseball cont. Astros at Braves	On Stage	
TNN	Nashville Now		
TNT	cont. The China Syndrome	Outer Limits	
TV Tues Sept 25 GUIDE 11:35 AM		Menu	Info

2	4:30	Tiny Toons	2
3	5:00	Saved by the Bell	
4	5:30	Three's Company	
5	6:00	Who's the Boss?	
6	6:30	Married with Children	
7	7:00	Cheers	
8	7:30	Love Connection	
9	8:00	Spaceballs (2 hrs)	
10	8:30		
11	9:00		
13	9:30		
14	10:00	News	
20	10:30		
22	11:00	Cheers	
26	11:30	Married with Children	

TV
GUIDE

Tues Sept. 25
11:35 AM

☐ Menu
☒ Info



Find by Category

Ffllape ksuikj akhsja	Ffllape ksuikj akhsja
Dkllor jddpk	Dkllor jddpk
Ffllape ksuikj akhsja	Ffllape ksuikj akhsja
Dkllor jddpk	Dkllor jddpk
Ffllape ksuikj akhsja	

Press arrow buttons to move highlight
Press enter button to select highlighted item

↔

A

Select 3 letters to begin a search.
Press 'Arrow' buttons to find a letter.
Press 'Enter' button to select that letter

TV

GUIDE

Tues Sept 25

11:35 AM

1 Menu

2 Info

B

M A B

Select 3 letters to begin a search

Press 'Arrow' buttons to find a letter

Press 'Enter' button to select that letter

54	11:00 AM	Tues	Marcia Adams: Heartland Cooking
46	5:00 PM	Tues	Married... With Children
2	6:30 PM	Tues	Married... With Children
40	7:00 PM	Tues	Married... With Children
46	10:30 PM	Tues	Married... With Children
40	11:00 PM	Tues	Married... With Children
5	3:00 PM	Tues	The Marian Chronicles
AMC	10:30 PM	Tues	Mary of Scotland
TV	3:00 PM	Wed	Marie
46	5:00 PM	Wed	Married... With Children
2	6:30 PM	Wed	Married... With Children
40	7:00 PM	Wed	Married... With Children
46	10:30 PM	Wed	Married... With Children

TV Tues Sept 25

GUIDE 11:35 AM

1 Menu

2 Info

7:00	7:30		
RO1 and cont. 16. GR1			
RO2 cont. Olympic Triplecast			
VO1 and Father of the Bride			
TV GUIDE Tues Sept. 25 11:35 AM 1 Menu 2 Info			



"TV Guide Editorial"

Dkllai jddpk Ffiope ksuij akh	Dkllai jddpk Ffiope ksuij akh
Ffiope ksuij akhsja Dkllai	Ffiope ksuij akhsja Dkllai jddp
Dkllai jddpk Ffiope ksuij akhs	Dkllai jddpk Ffiope ksuij
Ffiope ksuij akhsja Dkllai j	Ffiope ksuij akhsja Dkllai jdd
Dkllai jddpk Ffiope ksuij akhs	Dkllai jddpk Ffiope ksuij akhsj
Ffiope ksuij akhsja Dkllai jdd	Ffiope ksuij akhsja Dkllai
Dkllai jddpk Ffiope ksuij akhs	Dkllai jddpk Ffiope ksuij akhsj
Ffiope ksuij akhsja	Ffiope ddpk



"TV Guide Services"

Diñlon jaddak	Diñlon jaddak
Fifiope ksuiki akhsja	Fifiope ksuiki akhsja
Diñlon jaddak	Diñlon jaddak
Fifiope ksuiki akhsja	Fifiope ksuiki akhsja
Diñlon jaddak	

Press arrow buttons to move highlight

Press enter button to select highlighted item

12. WPDARES

2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
13			
14			
20			
22			
26			
TV Tues. Sept. 25 GUIDE 11:35 AM			
21			



1211 Avenue of the Americas • New York, NY 10036 • 212-819-3700

To: Carolyn Franz
From: Brian Margolis
Date: 15 Sep 92
Re: Prototype changes

Following is a list of points to address which come from my notes of the last meeting. I want to stress that these are my notes and that Marney should simply use them to supplement what she noted.

1. We are to have three versions of the present prototype: version1 - structured as it now is; version2 - version1 minus the Category Search menu option; version 3 - version2 minus the "Program Name" menu option.
2. Nomenclature of channels. Do we use numbers or names to identify? What was decided? If Marney is unsure, would she please check with Mike Morris.
3. Defaults. Make sure that there are no unsatisfactory "dead ends" for the user. For example, where we are offering no underlying information in a follow-up "Detail" screen (which will hold true for the majority of cases), there should be a clear message.
4. ~~We decided against using icons for networks.~~
5. Improve the time browsing feature and identification of channels (this latter point is now unclear from my notes - hopefully Marney understands).
6. PPV. 1) Include prompt to get "Detail" information on PPV offerings; 2) provide feature offering user choice of a) a countdown clock b) force tuning c) no alert at all; 3) copy protect feature; 4) indication that a user has already ordered something.
- 7) PPV. Cable system logo at bottom right of Menu screen. Cable system PPV logo on all PPV screens. Do you need logo art from me? If so, what exactly?
- 8) Roger said he thought in general the graphics on the screens could be better

As we discussed, beyond these specific points, there were some general issues raised. As Marney knows, Jerry is still unconvinced about her navigational and interface schemes. More specifically, Jerry (as well as Roger) wondered if the navigation scheme could work in the 150 channel universe. And can the remote work with fewer buttons.

On these general issues, it was my understanding that Marney would offer us some alternatives.

BM

#34

A

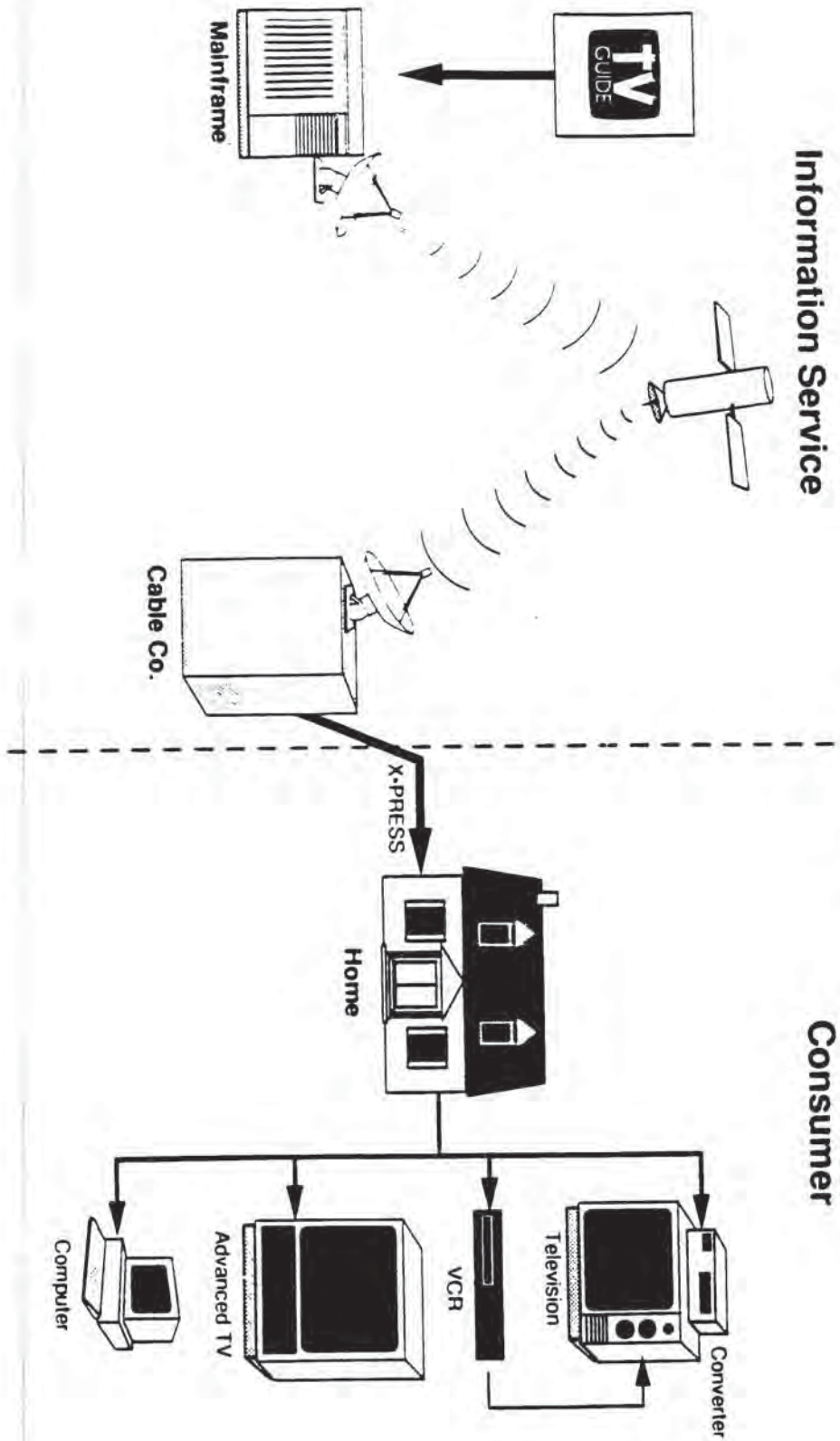
The logo features the word "ON" in a large, bold, sans-serif font. The letter "O" is filled with a dense pattern of horizontal lines. Inside the "O", there is a smaller black square containing the words "TV" and "GUIDE" in white, stacked vertically. To the right of the "O" is the letter "N", also in a bold, sans-serif font. Below "ON" is the word "SCREEN" in a very large, bold, sans-serif font. Underneath "SCREEN" is the phrase "Interactive Electronic Program Guide" in a smaller, sans-serif font.

ON
SCREEN
Interactive Electronic Program Guide

TV
GUIDE
ON
SCREEN



TECHNOLOGY OVERVIEW for TV Guide On Screen



Select from the full-screen menu...



...or complete program listings...



...and Pay Per View choices.



TV GUIDE UN SCREEN

**Interactive
Electronic
Program
Guide**



**TV
ON
SCREEN**
More than a remote possibility

**More than
a remote possibility**



Turn On TV Guide

In response to the needs of both the consumer and the cable industry, TV Guide and Liberty Media have joined forces to develop an interactive electronic television program guide designed to set the industry standard.

Hitting the Right Buttons

Television viewers love their remotes. TV Guide On Screen capitalizes on this fact by being as easy to use as flipping through channels on a remote.

40 million Americans trust TV Guide weekly as the authority on television, and this solid relationship will be a key factor in helping usher cable viewers into the world of interactivity.

It's so simple to use that TV Guide On Screen allows cable viewers to easily access program listings while tuned to any channel.

TV Guide On Screen enhances both real and perceived value of cable by offering a consumer-friendly entry-level service that tells them what's available on their system.

As an interactive system, TV Guide On Screen is a great marketing tool for cable operators by providing a new medium to promote Pay Per View and other services.

TV Guide On Screen

What is it?

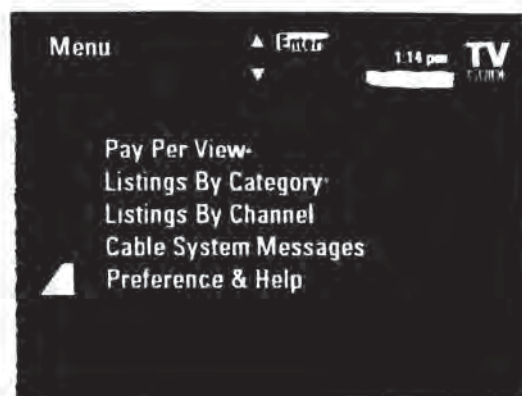
TV Guide and Liberty Media, through its affiliates X-PRESS Information Services Ltd. and StarNet, Inc., are proud to introduce a new venture combining the country's most credible program information database with the advanced technologies of a major information distributor in the cable industry.

Simply stated, TV Guide On Screen is an interactive, easy-to-use electronic program guide which *adds value to the viewer's current cable package.*

This entry-level service will effectively whet the viewer's appetite for, and acceptance of, new premium services which *provide additional revenue opportunities* to the cable operator.

With TV Guide On Screen, viewers will be able to access two days' worth of program information while tuned to any channel, 24 hours a day. Easily accessed through a hand-held remote and cable converter box, TV Guide On Screen offers a consumer-friendly way to keep viewers informed of not only what's on, but also what else is available, *enhancing both real and perceived values of the services offered.*

While TV Guide On Screen has been developed as an entry-level service, to be included as part of every cable operator's package of program offerings, TV Guide plans to expand this electronic guide by providing subscription-based services which will personalize the viewer's preferences. Features will include TV Guide's unrivaled collection of program descriptions, evaluations and reviews, plus a variety of other enhancements, including simplified VCR programming.



ON
SCREEN
More than a remote possibility

TV Guide On Screen

How entry-level service works

Viewers access information in three ways

FLIPPING CHANNELS Viewer flips through channels by pressing directional arrows. Program overlay automatically appears on lower portion of screen displaying the channel number, program title, length of program, current time and date.



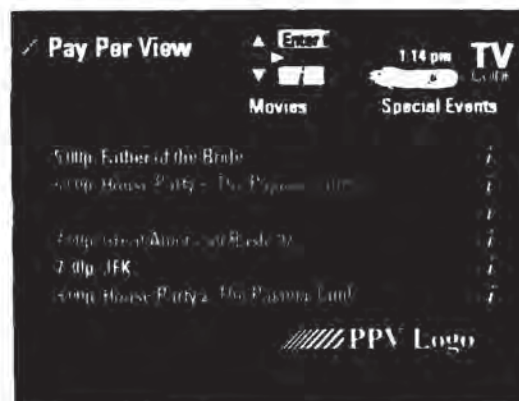
BROWSING Viewer can remain on one channel and 'browse' through program listings of other channels and time periods by first pressing the TV Guide button then pressing the up/down arrows to scan through channels and the left/right arrows to scan through time slots.



SELECTING FROM THE MENU Pressing the TV Guide button a second time takes the viewer into the full-screen menu. Items on the menu are accessed by using the directional arrows and pressing the enter key in the highlighted section.

Menu Options

- Listings by Category: movies, sports, news, documentaries, childrens, shows
- Listings by Channel: full schedule of any selected channel over a two-day period
- Pay Per View Listings & Descriptions



TV Guide On Screen

Benefits to your system

ENHANCES REAL AND PERCEIVED VALUE OF CABLE Cable subscribers will have control of their viewing environment and viewer-friendly cable enhances the value of cable.

ENHANCES CREDIBILITY OF SYSTEM After almost 40 years, TV Guide has established itself as *the* listings source among viewers in terms of comprehensiveness and accuracy. This overall perception of credibility will be naturally passed on to your system.

INCORPORATES LISTINGS SPECIFIC TO YOUR SYSTEM Includes Pay Per View channels.

PROVIDES TIMELY PROGRAMMING INFORMATION Lists programs every half hour, two days out allowing for more accurate, timely program information updated at least once a day.

REINFORCES PAY PER VIEW BUY Full-screen menu offers Pay Per View option where the viewer can get a description of specific programming on the detail screen followed by an ordering screen including dates, times and specific ordering instructions.

ALLOWS FOR MARKETING OF CABLE CHANNELS THAT OFTEN GO UNNOTICED

OFFERS FUTURE MARKETING POTENTIAL Once cable viewers have been conditioned to accept this relatively simple level of interactivity, a more advanced form of TV Guide On Screen will be made available on a premium basis.



TV Guide On Screen

Future opportunities as a premium service

Once cable subscribers have become comfortable using the interactive electronic medium, TV Guide will introduce an advanced premium service. Features under consideration include:

EXTENDED COVERAGE At least 7 days of listings information

FULL TV GUIDE LISTINGS INFORMATION Including plot descriptions, cast, credits, movie evaluations and ratings

ENHANCED SEARCHING CAPABILITY Viewer will be able to search by program titles and key words (i.e., program types, actors, directors, sports teams, etc.)

PERSONALIZATION Built-in viewer profiles of family members will enable them to get quick access to information about their favorite types of programs

VCR PROGRAMMING CAPABILITY Simplified recording

TV GUIDE SPECIAL FEATURES News, reviews, commentary, inside info, previews of coming attractions and viewing advice from the editors



TV Guide On Screen

Why TV Guide over others?

- Over 40 million readers trust TV Guide as their weekly listings source — 77% of whom are cable subscribers. This solid relationship will be instrumental in helping guide cable viewers into the world of interactivity.
- TV Guide has an unrivaled database of comprehensive listings information that is continually updated for accuracy.
- After almost 40 years, TV Guide has established one of the strongest consumer brand identities, giving it a large and loyal following.
- In print, TV Guide will actively support and help market its electronic program guide services.
- TV Guide understands the unique needs and interests of TV viewers. This knowledge will play a critical role in developing and refining electronic program guide services.
- Both TV Guide and Liberty Media are well-positioned to establish the TV Guide On Screen electronic program guide as the national standard — essential in enlisting the cooperation of the consumer electronics manufacturers — and are working closely with CableLabs to that end.



TV Guide On Screen

Q & A

Q How are you addressing the possible resistance this new interactive technology may encounter among viewers?

A We've incorporated a consumer-friendly design using simple, colorful graphics to make the service non-threatening and non-technical to the user. More important, the steps the viewer needs to take in order to access and use this interactive service have been kept simple and intuitive. As most cable viewers are comfortable using their remotes, TV Guide On Screen design is ideal. Anyone watching cable will be able to access the electronic TV Guide without instructions.

Q How will this technology affect Pay Per View?

A In impulse systems, TV Guide On Screen can be set up to allow cable subscribers to order directly through the electronic guide, while cable operators using the ANI and ARU systems will benefit from specific ordering information which will follow the Pay Per View listings and descriptions. Thus, TV Guide On Screen promises to be a powerful Pay Per View marketing tool for all cable operators.

Q Won't this conflict with your printed guide?

A No, it will complement it. TV Guide On Screen will enhance TV Guide's reputation as the leader in providing the best programming information in the country and will be supported in print by TV Guide.

Q How much control will we have over this service in the headend?

A We're providing you with maximum control by using a methodology that utilizes parts of the cable spectrum that are easily managed by your headend, as opposed to trying to make our feed fit the inherent inadequacies of the VBI.

Q How expensive is this system?

A In determining the quantity of graphics and data to make available, we established a threshold which satisfies two aims:

1. A level of service which addresses viewer needs
2. A service inexpensive enough to be included in all future converter boxes

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SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20540

FORM 10-K

- ☒ Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1995 or
- ☐ Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Commission file number: 0-21902

STARSIGHT TELECAST, INC.

(Exact name of registrant as specified in its charter)

California
(State or other jurisdiction
of incorporation or organization)

94-3883250
(I.R.S. Employer
Identification Number)

39650 Liberty Street, Fremont, CA 94538
(Address of principal executive office)

94538
(Zip Code)

Registrant's telephone number, including area code: (510) 657-9900

Securities registered pursuant to Section 12(b) of the Act:

Title of each class
None

Name of each exchange
on which registered
None

Securities registered pursuant to Section 12(g) of the Act:

Common Stock, no par value
(Title of Class)

PROCESSED BY

APR 02 1996
DISCLOSURE INC.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

The aggregate market value of the voting stock held by non-affiliates of the registrant, based upon the closing sale price of the Common Stock on March 22, 1996 as reported on the Nasdaq National Market System, was approximately \$90,668,000. Shares of Common Stock held by each officer and director and by each person who owns 5% or more of the outstanding Common Stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of March 22, 1996, registrant had outstanding 25,335,969 shares of Common Stock.

DOCUMENTS INCORPORATED BY REFERENCE

Parts of the following documents are incorporated by reference to Part III of this Form 10-K Report: Proxy Statement for registrant's Annual Meeting of Shareholders to be held May 16, 1996.

December 31, 1994 and the twelve months ended June 30, 1994 was \$27,608,000, \$17,092,000 and \$19,717,000, respectively. At December 31, 1995, the Company had an accumulated deficit of \$90,686,000. At December 31, 1995, the Company had cash and cash equivalents of \$8,787,000.

In the third quarter of 1995, the Company took steps to reduce operating expenses by concentrating on business development efforts which are believed to be most cost effective. Such expense reductions were a result of on-going efforts to determine which programs in each functional area are most productive. There can be no assurance that the Company will ever be able to achieve revenues in excess of expenses. The Company expects to incur substantial losses and substantial negative cash flow from operating activities in the foreseeable future. The Company is dependent on sales of StarSight products and services in order to minimize negative cash flow from operations. Management believes that the availability in the market place of StarSight capable televisions, VCRs, TVCRs, satellite receivers and stand-alone StarSight receivers, combined with a focused marketing program, is essential to the Company's 1996 cash flow. However, because of its limited commercial operating history, the Company is subject to all of the risks and expenses inherent in the establishment of a new business enterprise. To address these risks and expenses, the Company must, among other things, respond to competitive developments, attract, retain and motivate qualified personnel and support the expense of marketing a new service based upon innovative technology. In addition, the Company must successfully launch the commercial distribution of its products and services, obtain adequate financing to fulfill its marketing plan and successfully market its products and services to potential subscribers.

On March 8, 1996, pursuant to a series of strategic and financial agreements with THOMSON (see Note 18), the Company sold 3,333,333 shares of the Company's Common Stock to THOMSON for approximately \$25,000,000 (\$7.50 per share). The net proceeds to the Company, after deducting placement fees, were \$24,625,000. Such placement fees of \$375,000 were paid to a shareholder pursuant to an investment advisor agreement with the shareholder.

The Company believes that its existing cash and cash equivalents, combined with the recent sale of the Company's Common Stock to THOMSON as discussed above, will be sufficient to sustain the Company's current level of operations and meet its financial obligations through the end of 1996.

3. ACCOUNTING CHANGE

Effective July 1, 1994, the Company changed its method of accounting to expense legal costs incurred in connection with patent infringement litigation. Previously all such legal costs were capitalized and amortized over the remaining useful lives of the related patents. The Company believes that this change in accounting method is preferable because it conforms to the predominant industry practice. The cumulative effect at July 1, 1994 of adopting this accounting change was an increase in the Company's net loss by \$1,172,000 (\$0.06 per share). The effect of this accounting change for the six months ended December 31, 1994, in addition to the cumulative effect noted above, was an increase in the Company's net loss of \$1,644,000 (\$0.08 per share) (See Note 4).

4. PATENTS AND LICENSES AND PATENT INFRINGEMENT LITIGATION

Patents and Licenses

The Company holds several U.S. and foreign patents, encompassing processes as well as systems of electronically delivering television program schedule information to a storage device for the control of television tuners, recording devices and the use of on-screen menus for program guides and control of cable decoding devices by recording devices. The Company has filed a series of other patents covering additional product features, various interfaces, and new products which are directed toward the area of electronic program guide and recording device products. The costs incurred in connection with securing these patents are capitalized and amortized over their estimated useful lives of 13 to 17 years.

In February 1994, the Company paid \$2,500,000 in cash consideration for an amendment to a licensing assignment agreement. The original assignment agreement assigned to the Company all right, title and interest in two patents, the TV Schedule patent and the VCR Scheduling patent, in exchange for certain royalty payments. The amendment eliminated these royalty payments in exchange for the cash consideration. The \$2,500,000 was capitalized as patents and licenses and is being amortized over the average remaining useful lives of the two applicable patents.

In March 1994, the Company entered into an exclusive patent license agreement with another company for five previously issued patents and several related pending patents. In consideration for the license agreement, the Company paid a license fee consisting of a one-time payment of \$500,000 and monthly installments of \$25,000 over a three-year period thereafter. The Company expensed the total license fee of \$1,322,000 in the twelve months ended June 30, 1994 as additional development will be required to achieve product feasibility.

Patent Infringement Litigation

The Company is a defendant in several lawsuits alleging infringement of certain patent rights by the Company, as described below.

In October 1993, the Company filed suit in the District Court for the Northern District of California, San Jose Division, against Gemstar and Michael R. Levine ("Levine") seeking: (1) a preliminary and permanent injunction and treble damages for Gemstar's willful infringement of one of the Company's patents (United States Patent No. 5,151,789, the "789 patent"); (2) a declaration that the Company does not infringe any claims of United States Patent No. 4,908,713 (the "713 patent") and/or that any such claim is invalid and/or unenforceable; (3) a preliminary and permanent injunction and treble damages for Gemstar's violation of certain antitrust laws; and (4) monetary and exemplary damages for Gemstar's tortious business activities. Gemstar and Levine counterclaimed on January 4, 1994 for a preliminary and permanent injunction and treble damages for the Company's alleged infringement of the '713 patent claims and for a declaration of noninfringement, invalidity, and/or unenforceability of the claims of the Company's '789 patent. In addition, on December 8, 1993 Gemstar and Levine moved to dismiss the Company's antitrust claim and the Company's declaratory relief claim to the extent it sought a declaration of the unenforceability of the '713 patent due to Levine's alleged inequitable conduct during the prosecution of the '713 patent. Pursuant to a court order, the Company's antitrust claim was dismissed with prejudice. In addition, the case has been placed to permit resolution of validity and infringement issues, in August 1996, prior to resolving all other disputed issues.

In November 1993, Gemstar filed an action against the Company in the District Court for the Central District of California seeking: (1) a preliminary and permanent injunction and treble damages for the Company's alleged violation of certain federal and state antitrust laws; (2) for monetary and exemplary damages for the Company's allegedly tortious business activities; and (3) for a declaration of the noninfringement, invalidity, and/or unenforceability of the claims of three of the Company's patents (United States Patent Nos. 5,151,789, 4,706,121, and 4,977,455). In May, 1994, the Central District action was ordered to be transferred to the Northern District of California, San Jose Division, to be consolidated with the above mentioned litigation for discovery and pre-trial purposes. In addition, pursuant to a court order, Gemstar's declaratory relief claims against the Company's United States Patent Nos. 4,706,121 (the "121 patent") and 4,977,455 (the "455 patent") were dismissed. Discovery is proceeding in this case and trial date has not yet been set.

In October 1994, SuperGuide Corporation ("SuperGuide") and Gemstar filed a further lawsuit against the Company in the District Court for the Northern District of California, San Jose Division. In this action, SuperGuide and Gemstar are seeking, among other things, preliminary and permanent injunctions and treble damages for the alleged willful infringement by the Company of one or more claims of United States Patent Nos. 4,751,578 (the "578 patent") and 5,038,211 (the "211 patent"). On December 8, 1994, the Company filed counterclaims seeking, among other things, a declaration that the Company does not infringe any such claims of the '578 and '211 patents, and/or that such claims are invalid and/or unenforceable. On May 5, 1995, SuperGuide amended its complaint to add a count asserting that the Company's '121 patent is invalid and/or unenforceable and is not infringed upon by SuperGuide. The Company filed a motion to dismiss SuperGuide's causes of action with respect to the '121 patent for lack of subject matter jurisdiction (based on no case or controversy); on August 8, 1995, the Company's motion was granted. This lawsuit also has been consolidated with the above mentioned cases for discovery and pre-trial purposes. Discovery is proceeding in this case and a trial date has not yet been set.

In October 1993, United Video and its Trakker, Inc. subsidiary brought suit against the Company in the United States District Court for the Northern District of Oklahoma, seeking a declaratory judgment that its interactive program guide products do not infringe any of the Company's '121, '455 or '789 patents. The Company counterclaimed based on United Video's infringement of the '121 patent, and requested damages for past infringement, for declaratory and injunctive relief to halt future infringement, for exemplary damages based on the willful nature of United Video's infringement, and reimbursement of its attorney fees. United Video subsequently expanded the litigation by requesting similar declarations with respect to all of the Company's pending patent applications and its later-acquired PMC patents, but subsequently amended its complaint to limit the patents in suit to just the three patents identified above plus five PMC patents which are licensed to the Company. See "Patents, Trademarks, Copyrights and Proprietary Information." The Company moved to defer consideration of all non-'121 patent issues pending resolution of the parties' dispute concerning the '121 patent, and the court granted this motion. During 1994, the parties began discovery and United Video brought a series of eight summary judgment motions, all of which were denied. It also amended its complaint to add various additional defense theories and federal antitrust claims; similar to the non-'121 patent issues, litigation of the antitrust claims has been deferred pending resolution of the '121 patent infringement claims. Discovery as to the '121 patent claims is complete and the '121 infringement trial, previously set for November 6, 1995, was re-set for January 29, 1996. In December 1995, the Company moved to include its recently issued United States Patent No. 5,479,266 (the "266 patent") and 5,479,268 (the "268 patent"), and asked the court to postpone the January 29, 1996 trial date for a limited period of time so as to hear the '121, '266 and '268 infringement issues at the same time. United Video opposed the Company's motion for a continuance, but did not object to the addition of the '266 and '268 patents but argued that they should not be heard with the '121 patent issues. Pursuant to a court order, the January 29, 1996 trial date has

been postponed to May 8, 1996, and is expected to cover the '121 patent issues only. It has recently come to the Company's attention that the United Video product "Prevue Express Plus," which United Video had been demonstrating at various trade shows, was actually a computer simulation and not an actual product ready for delivery to customers. To date, it is unclear as to whether or not United Video has a completed product available for sale. Hence, the Company recently filed a motion to dismiss United Video's declaratory judgment action. The court is expected to rule on the Company's motion some time before the court trial date.

In October 1992, the Company and Scientific Atlanta entered into a license agreement under which Scientific Atlanta received, among other things, the rights to the '121, '455 and '789 patents for the purpose of developing converters that would accommodate the Company's electronic program guide system. On April 13, 1995, the Company served an arbitration demand on Scientific Atlanta alleging breach of the license agreement, unfair competition, breach of the covenant of good faith and fair dealing, intentional misrepresentation and interference with prospective economic advantage. The arbitration hearing is set for April 8, 1996. In February 1996, Scientific Atlanta filed a complaint against the Company and Philips Electronics North America Corporation ("Philips") for patent infringement. The lawsuit alleges that the manufacture, sale and use of the Company's CB 1500 receiver infringes Scientific Atlanta's U.S. Patent Numbers 4,991,011, 5,477,263 and 5,247,364, and seeks damages in an unspecified amount, injunctive relief and recovery of costs and attorneys fees. The Company has certain indemnification obligations under an Agreement dated October 27, 1994 between the Company and Philips, including defending Philips in this case.

The Company intends to respond and vigorously defend the allegations against it and to actively pursue its claims against each party. Through December 31, 1995, the Company expensed approximately \$5,700,000 in legal and other costs in connection with the litigation described above, of which approximately \$2,900,000 was included in general and administrative expenses in the twelve months ended December 31, 1995 (see Note 3). The Company expects to incur additional legal costs in future periods related to the enforcement of the Company's patents involved in the current and potential future suits. No estimate of the total amount of such additional legal costs can be made at this time. The outcome of these lawsuits cannot presently be determined. The Company believes, based upon the advice of counsel, that the ultimate resolution of these matters will not have a material adverse effect on the Company's financial statements taken as a whole.

5. INVESTMENTS

Short-term and long-term investments are summarized as follows (in thousands):

	December 31, 1994		
	Amortized Cost	Gross Unrealized Losses	Fair Value
Short-term investments held to maturity - debt instruments issued by Federal Agency	\$16,940	\$(121)	\$16,819
Long-term investments held to maturity - debt instruments issued by Federal Agency	\$ 5,004	\$(290)	\$ 4,714

The above securities had contractual maturities ranging from 1995 to 1996. In September 1995, the Company sold the remaining long-term investments held to maturity to provide cash for operating requirements.

6. INVENTORIES

Inventories are summarized as follows (in thousands):

	December 31, 1995	December 31, 1994
Raw materials	\$ 441	\$ 1,348
Work-in-process	-	1,873
Finished products	<u>5,099</u>	<u>482</u>
Total	5,540	3,703
Less lower of cost-or-market valuation allowance	<u>(5,099)</u>	<u>(1,450)</u>
Inventory, net	<u>\$ 441</u>	<u>\$ 1,253</u>

The Company has entered into an agreement with a third party manufacturer (the "Manufacturer") for the manufacture of as many as 100,000 stand alone StarSight receivers ("Receivers") on a subcontract basis. In connection with this agreement, the Company will provide the Manufacturer certain raw materials to complete the manufacture of the Receivers. At December 31, 1994, the Company had recorded an inventory valuation allowance of \$1,450,000 related to this agreement covering approximately 25,000 Receivers which the Company had committed to purchase. Such inventory valuation allowance represented the Company's estimate of the excess of cost over net realizable value on work-in-process and finished products inventories to reflect the anticipated sales price of the Company's stand alone StarSight receiver at the time.

During the first quarter of 1995, the Company committed to purchase another 10,000 Receivers and recorded an additional inventory valuation allowance of \$930,000. In September 1995 the Company canceled its commitment to purchase the remaining 65,000 Receivers from the Manufacturer. Such cancellation did not result in any additional cost or liability to the Company. However, in September 1995, as a result of the completion of this agreement with the Manufacturer and a significant reduction in the anticipated sales price of the Receivers, the Company recorded an additional lower of cost or market inventory valuation allowance of \$2,340,000. In addition, the Company expensed \$960,000 of excess work-in-process inventories originally acquired for use in the manufacture of the remaining 65,000 receivers. In the fourth quarter of 1995, the Company recorded an additional lower of cost or market inventory valuation allowance of \$701,000. As a result, the total 1995 inventory reserve and write-off was \$4,931,000.

In addition to the agreement, the Company has a standby letter of credit (the "L/C") with the Manufacturer for \$480,000 which expired on February 25, 1996. The L/C was secured against the Company's cash and investment accounts with the issuing bank.

7. FURNITURE, FIXTURES AND EQUIPMENT

Furniture, fixtures and equipment consist of the following (in thousands):

	December 31, 1995	December 31, 1994
Computer equipment and software	\$ 1,994	\$ 1,797
Furniture and fixtures	629	560
Machines and equipment	<u>2,677</u>	<u>2,358</u>
Total	5,300	4,715
Less accumulated depreciation	<u>(3,663)</u>	<u>(2,094)</u>
Furniture, fixtures and equipment, net	<u>\$ 1,637</u>	<u>\$ 2,621</u>

8. THOMSON LICENSING AGREEMENT

During the fourth quarter of 1995, the Company entered into a licensing agreement with Thomson Consumer Electronics for use of the Company's intellectual property in certain Digital Satellite System ("DSS") equipment manufactured by Thomson Consumer Electronics. In connection with this agreement, the Company received a prepayment of \$2,000,000 for license fees in October 1995 which was recorded as deferred revenues. Revenues will not be recorded until actual shipments of DSS equipment with the Company's intellectual property occur. No revenues were recorded under this agreement for the twelve months ended December 31, 1995.

9. COMMITMENTS AND CONTINGENCIES

The Company has entered into a long-term joint development and network service agreement for the transmission of television program schedule data expiring on June 30, 1996. Management expects the Company to be able to renew this agreement on substantially similar terms. Under this agreement, the Company is committed to pay a monthly fee based on the number of designated market areas. If services are provided nationwide and subscriptions exceed a certain level, these fees may increase to a maximum of \$7,000,000 per year prior to adjustments for inflation. Future minimum payments under this agreement in 1996 are \$504,000.

Fees under this agreement were \$1,170,722, \$1,245,000, \$1,008,000 and \$750,000 for the twelve months ended December 31, 1995, the six months ended December 31, 1994 and the twelve months ended June 30, 1994 and 1993, respectively.

The Company has entered into a data delivery agreement for television programming schedule data and computer services. Fees under this agreement begin with the achievement of an agreed-upon subscriber base and are limited to a maximum of \$1,155,000 per year for five years. Fees under this agreement were \$653,960, \$415,000 and \$413,000 for the twelve months ended December 31, 1995, the six months ended December 31, 1994 and the twelve months ended June 30, 1994, respectively.

The Company has entered into a product development and manufacturing agreement for televisions that utilize the Company's television program subscription services. Under this agreement, the Company

will reimburse certain design and engineering costs incurred by the manufacturer and will also pay certain incremental manufacturing costs and royalties based upon units produced. For the six months ended December 31, 1994 and the twelve months ended June 30, 1994 and 1993, the Company incurred expenses of \$3,117,000, \$997,000, and \$38,000, respectively, under this agreement subsequent to December 31, 1994. Subsequent to December 31, 1994, the Company fulfilled its obligations to reimburse the manufacturer resulting in no further payments by the Company.

10. INCOME TAXES

Deferred income taxes reflect the net tax effects of (a) temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, and (b) operating loss and tax credit carryforwards. The deferred tax balances consisted of the following (in thousands):

	December 31, 1995	December 31, 1994
Deferred tax assets:		
Federal and state net operating loss carryforwards	\$ 29,257	\$ 19,709
Patent litigation costs	2,629	1,546
Inventory reserves	1,765	582
Excess book over tax depreciation and amortization	341	224
Unearned compensation	42	160
Other	<u>1,470</u>	<u>538</u>
Total	35,504	22,759
Valuation allowance	<u>(35,504)</u>	<u>(22,759)</u>
Net deferred tax assets	<u>\$ -</u>	<u>\$ -</u>

A valuation allowance is provided when it is more likely than not that some portion of the deferred tax asset will not be realized. The Company has established a valuation allowance of \$35,504,000 and \$22,759,000 as of December 31, 1995 and 1994, respectively, due to the uncertainty of realizing future tax benefits from its net operating loss carryforwards and other deferred tax assets.

As of December 31, 1995, the Company had net operating loss carryforwards for federal income tax purposes of approximately \$80,000,000, and net operating loss carryforwards for state tax purposes of approximately \$37,000,000, which expire at various dates from 2000 to 2007. The difference between the net operating loss carryforwards for federal income tax purposes and for California income tax purposes results primarily from the capitalization of research and development costs and the 50% limitation on the California loss carryforwards.

Internal Revenue Code Section 382 places a limitation (the "Section 382 Limitation") on the amount of taxable income which can be offset by net operation loss ("NOL") carryforwards after a change in control (generally greater than 50% change in ownership) of a loss corporation. California has similar rules. Generally, after a control change, a loss corporation cannot deduct NOL carryforwards in excess of the Section 382 Limitation. As a result of recent equity investments, the Company has not yet determined the amount, if any, of limitations of NOL carryforwards as of December 31, 1995. Future ownership changes could limit the Company's use of its remaining NOL carryforwards.

11. ISSUANCE OF COMMON STOCK IN 1995

On November 20, 1995, the Company completed a private placement with certain existing shareholders for 666,668 shares of the Company's Common Stock at a price of \$7.50 per share or total net proceeds of \$5,000,000. There were no underwriting commissions or placement fees associated with the transaction.

12. INITIAL PUBLIC OFFERING OF COMMON STOCK IN 1993

In July 1993, the Company completed an underwritten initial public offering ("IPO") of 3,105,000 shares of Common Stock, at an initial price to the public of \$15.00 per share. The net proceeds to the Company, after deducting underwriting commissions and discounts and other offering costs, was \$42,334,000. At the time of the IPO, all of the Convertible Preferred Stock was automatically converted into Common Stock on a one for one basis. The Series A, B, C, D, E, F, G, H, and I Convertible Preferred Stock had been convertible at any time into the same number of fully paid and nonassessable shares of Common Stock.

The Series A, B, C, D, E, F, G, H, and I Convertible Preferred Stock had cumulative dividend preferences of \$.15, \$.188, \$.375, \$.450, \$.563, \$.750, \$1.125, \$1.50 and \$2.10 per share per annum, respectively, when and as declared. Until declared by the Company's Board of Directors, no rights to dividends accrued to the holders of the Convertible Preferred Stock. These dividends had priority as to payment of any dividend of the Company's Common Stock. The Company has never declared or paid cash dividends on its capital stock and does not expect to pay cash dividends in the foreseeable future.

All Convertible Preferred Stock voted equally with Common Stock on an "if converted" basis. The Series A, B, C, D, E, F, G, H, and I had liquidation preferences of \$1.50, \$1.88, \$3.75, \$4.50, \$5.63, \$7.50, \$11.25, \$15.00 and \$21.00 per share, respectively, plus all declared but unpaid dividends. At June 30, 1993, the liquidation preferences for Series A, B, C, D and F were \$2,000,006, \$1,296,527, \$5,000,010, \$3,000,002, and \$30,004,995, respectively. The Series A, B, C, D, E, F, G, H, and I were subject to redemption at the option of the Company, at the original issue price, plus all accrued but unpaid dividends.

13. STOCK WARRANTS

As a result of the IPO, the Series C, D, E, F, G, H and I Warrants became exercisable for shares of Common Stock. In September 1993, a Warrant Holder exercised its Warrant to purchase 833,333 shares of the Company's Common Stock for \$4,687,498 (\$5.63 per share). In September 1994, a Warrant Holder exercised its Warrant to purchase 229,624 shares of the Company's Common Stock for \$1,722,180 (\$7.50 per share).

On September 18, 1991, in connection with the sale of Series C Convertible Preferred Stock, the Company granted a Warrant exercisable for the number of Convertible Preferred Shares that will increase the Warrant Holder's (the "holder") equity in the Company to 35% on an as-defined fully diluted basis (35% Variable Warrant). At the election of the holder, the holder may purchase the Company's Common Stock at an exercise price of 85% of the fair market value of the shares as determined by the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise, and the holder may exercise the Warrant at any time after September 18, 1994 but prior to September 18, 1996. Additionally, in the event the Company or any shareholder of the Company engages or proposes to engage in a transaction that would result in a new shareholder of the Company holding greater than 25% of the Company's outstanding capital stock,

on an as-defined fully diluted basis ("25% Shareholder"), the holder has the right to purchase, at the fair market value of the Common Stock as determined by the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise, additional shares of Preferred Stock to enable it to maintain up to a 1.4:1 ratio between its percentage ownership of the Company, on an as-defined fully diluted basis, and that of the new 25% Shareholder, provided that the holder may not, pursuant to this right, increase its percentage ownership to greater than 51% of the Company's outstanding capital stock on an as-defined fully diluted basis (the "Top Up Right"). In connection with the THOMSON investment of approximately \$25,000,000 (see Note 18), the holder agreed that THOMSON could acquire greater than 25% of the Company's outstanding capital stock without initiating the holder's Top Up Right. The holder at its option may elect to purchase a like number of shares of Common Stock at the same price if Preferred Stock is not available.

In January 1992, in connection with the sale of Series D Convertible Preferred Stock, the Company granted a Warrant exercisable for the number of Convertible Preferred Shares that will increase the Warrant Holder's equity in the Company to 10% on an as-defined fully diluted basis (10% Variable Warrant). At the election of the Warrant Holder, the holder may purchase Convertible Preferred Stock at an exercise price of 85% of the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise, and may exercise the Warrant at any time prior to September 18, 1996.

In connection with the sale of Series F Convertible Preferred Stock in February 1993, the Company granted two Warrants exercisable for up to 289,334 shares of the Company's Convertible Preferred Stock. At the election of the Warrant Holder, the holder may purchase 144,667 shares of Series H or I Convertible Preferred Stock at an exercise price of \$21.00 per share prior to the expiration date of June 1, 1996. Prior to June 1, 1996, the Warrant Holder may purchase the remaining Warrant of 144,667 shares upon completion of the public offering at 85% of the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise.

In connection with the sale of Series F Convertible Preferred Stock in March 1993, the Company subsequently granted two Warrants in May 1993 exercisable for up to 289,334 shares of the Company's Convertible Preferred Stock. At the election of the Warrant Holder, the holder may purchase 144,667 shares of Series H or I Convertible Preferred Stock at an exercise price of \$21.00 per share on or prior to the date of June 1, 1996. Prior to June 1, 1996, the Warrant Holder may purchase the remaining Warrant of 144,667 shares upon completion of the public offering at 85% of the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise.

In connection with the sale of Series F Convertible Preferred Stock in May 1993, the Company granted two Warrants exercisable for up to 289,334 shares of the Company's Convertible Preferred Stock. At the election of the Warrant Holder, the holder may purchase 144,667 shares of Series H or I Preferred Stock at an exercise price of \$21.00 per share on or prior to the date of June 1, 1996. Prior to June 1, 1996, the Warrant Holder may purchase the remaining Warrant of 144,667 shares upon completion of the public offering at 85% of the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise.

In connection with the sale of Series F Convertible Preferred Stock in June 1993, the Company granted two Warrants exercisable for up to 667,000 shares of the Company's Convertible Preferred Stock. At the election of the Warrant Holder, the holder may purchase 333,500 shares of Series H or I Preferred Stock at an exercise price of \$21.00 per share on or prior to the date of June 1, 1996. Prior to June 1,

1996, the Warrant Holder may purchase the remaining Warrant of 333,500 shares upon completion of the public offering at 85% of the average of the closing prices for a share of Common Stock of the Company on the ten consecutive trading days preceding the date of exercise.

In connection with a strategic and affiliation agreement with Bell Atlantic Video Services Company ("BVS") dated October 28, 1994, the Company granted BVS two Warrants to purchase an aggregate of 1,000,000 shares of the Company's common stock. One warrant to purchase 500,000 shares can be exercised at predetermined prices increasing from \$15 to \$35 over the four-year warrant term. The remaining warrant to purchase 500,000 shares can be exercised at 85% of market price at the time of exercise. Exercise of the Warrants is conditioned upon the receipt by BVS of relief from the manufacturing restrictions imposed by the AT&T Consent Decree and upon the Company not being engaged in activities prohibited by the Decree. Such relief had not been received by BVS at December 31, 1995.

At December 31, 1995, excluding the 35% Variable Warrant and 10% Variable Warrant and the Warrants granted to BVS, Warrants to purchase approximately 1,535,002 shares of Series E, F, G, H, or I Convertible Preferred Stock were outstanding and exercisable.

14. STOCK OPTIONS

In November 1994, the Company amended the 1989 Stock Incentive Program to increase the number of shares reserved for stock options from 2,666,667 shares to 3,866,667 shares. In May 1995, the Company amended the 1989 Stock Incentive Program to increase the number of shares reserved for stock options from 3,866,667 shares to 4,766,667 shares. The 1989 Stock Incentive Program provides for two forms of option agreements:

- The incentive stock option plan is intended to qualify as an "incentive stock option" plan as defined in Section 422(A) of the Internal Revenue Code of 1986 and provides for the granting of options to purchase shares of the Company's Common Stock to key officers and employees.
- The nonstatutory stock plan is not intended to be a qualified option plan and provides for the granting of options to purchase shares of the Company's Common Stock to employees and consultants.

Stock options become exercisable pursuant to individual written agreements between the Company and participants in the plans. The exercise price is the estimated fair market value at the date of the grant. Generally, employee stock options vest ratably over 48 months from the date of grant. Unexercised options expire five to ten years from the date of the grant.

A summary of the activity in the Company's stock option plans follows:

	Shares			Option Price Per Share	
	Incentive	Nonstatutory	Total	Incentive	Nonstatutory
Balance at June 30, 1993	1,284,335	502,732	1,787,067	\$15-6.75	\$15-6.75
Granted	364,668	200,000	564,668	\$11.25-25.25	\$12.25-22.25
Exercised	(459,827)	(129,334)	(589,161)	\$15-13.00	\$15-3.75
Cancelled	(4,860)	(5,833)	(10,693)	\$7.50-25.00	22.25
Balance at June 30, 1994	1,184,316	567,565	1,751,881	\$15-25.25	\$15-22.25
Granted	232,533	200,000	432,533	\$10.00-15.25	\$11.50-12.50
Exercised	(192,038)	(73,000)	(265,038)	\$15-3.75	\$15-3.75
Cancelled	(193,231)	(47,489)	(240,720)	\$7.50-25.25	\$15-22.25
Balance at December 31, 1994	1,029,580	647,066	1,676,646	\$15-25.25	\$15-22.25
Granted	1,169,783	90,000	1,259,783	\$2.75-9.25	\$5.00
Exercised	(177,929)	(41,000)	(218,929)	\$1.50-3.75	\$19-1.50
Cancelled	(170,711)	(116,733)	(287,444)	\$3.75-25.00	\$3.75-22.25
Balance at December 31, 1995	1,850,723	579,333	2,430,056	\$15-25.25	\$15-25.00

In January 1996, the Company repriced the exercise price of 299,201 options (originally granted from \$15.00 to \$ 5.00) to \$3.50. The Company expects to incur approximately \$1,000,000 in additional compensation expense over the remaining vesting period of the repriced options.

December 31, 1995, there were 1,061,392 shares exercisable and 1,218,457 shares were available for the granting of additional options.

15. EMPLOYEE STOCK PURCHASE PLAN

In May 1993 the Company's Employee Stock Purchase Plan (the "Purchase Plan") was adopted by the Board of Directors and approved by the Company's shareholders. The Purchase Plan is intended to qualify under Section 423 of the Internal Revenue Code of 1986, as amended. The Purchase Plan allows eligible employees to purchase Common Stock at not less than 85% of fair market value through payroll deductions not to exceed 15% of an employee's compensation and not to exceed \$25,000 of stock in any calendar year. A total of 100,000 shares of Common Stock are reserved for issuance under the Purchase Plan. During the twelve months ended December 31, 1995, the six months ended December 31, 1994 and the twelve months ended June 30, 1994, employees of the Company purchased 20,635 shares of Common Stock for \$88,000, 17,250 shares of Common Stock for \$114,000 and 15,219 shares of Common Stock for \$183,000, respectively, under the Purchase Plan.

16. 401(k) PLAN

The Company maintains a salary deferral 401(k) plan (the "Plan") covering all employees who have met certain eligibility requirements. Employees may elect to contribute up to 20% of their eligible

compensation to the Plan, not to exceed the dollar limit set by law. Under the Plan, the Company may, at its discretion, make matching contributions to the Plan. The Company has not made any contributions to the Plan through December 31, 1995.

17. LEASES

The Company leases office space under operating leases which are subject to certain rent escalations and include renewal provisions at the option of the Company.

Future minimum payments under operating leases as of December 31, 1995 were as follows:

Years ended December 31 (in thousands):	
1996	\$ 767
1997	812
1998	815
1999	815
2000	570
Thereafter	<u>611</u>
Total	<u>\$4,390</u>

Rental expense was \$643,736, \$330,000, \$486,000 and \$198,000, for the twelve months ended December 31, 1995, the six months ended December 31, 1994 and the twelve months ended June 30, 1994 and 1993, respectively.

18. MARCH 1996 AGREEMENTS WITH THOMSON

On March 8, 1996, the Company and THOMSON finalized agreements to form a long-term strategic relationship to aggressively incorporate and promote StarSight technology and related services in selected THOMSON product lines. The key terms and conditions of these agreements follow:

- The Company sold 3,333,333 shares of its Common Stock to THOMSON at \$7.50 per share or approximately \$25,000,000 in total.
- The Company granted THOMSON a warrant to purchase 2,000,000 shares of the Company's Common Stock as follows: up to 1,000,000 shares at \$7.50 per share on or prior to February 1, 1998 and up to the balance of the shares at \$10.00 per share on or prior to February 1, 1999. In addition, THOMSON has the right to purchase on or prior to September 18, 1996 any additional shares at 85% of market value, as defined in the warrant, which will increase THOMSON's aggregate percentage ownership of the Company to 16.5% of the Company's issued and outstanding Common Stock. The total number of shares purchasable by THOMSON under the warrant is limited to 19.6% of the Company's issued and outstanding Common Stock.
- THOMSON will put StarSight capability into a significant portion of THOMSON's suitable consumer electronic products over the life of the 10 year agreement.
- The Company will pay THOMSON a per subscriber fee for new subscribers using a THOMSON StarSight capable product. Fees under this agreement are limited to certain annual maximums through the year 2000.

- The Company will pay THOMSON a percentage of all subscription fees derived from THOMSON StarSight capable products. Fees under this agreement begin after the achievement of an agreed-upon minimum of THOMSON StarSight capable products manufactured or procured by THOMSON. In addition, the Company will pay THOMSON a percentage of all revenues related to consumer electronics products whether or not the subscriber is using a THOMSON StarSight capable product. Such fees under this agreement begin after the achievement of an agreed-upon minimum of THOMSON StarSight capable products manufactured or procured by THOMSON. This agreement expires in 2010.
- The Company and THOMSON each agree to contribute significant specific dollar advertising commitments in each year 1997 and 1998 for advertising and promotion of THOMSON StarSight capable products.

C



IN THE UNITED STATES PATENT AND TRADEMARK
OFFICE

In re application of: Bennington et al.

Serial No. 08/119,367

Art Unit: 2714

Filed: September 9, 1993

Examiner: Lee, M.

For: Electronic TV Program Schedule System and Method

Hon. Commissioner of Patent and Trademarks
Washington, D.C. 20231

EXPLANATION PURSUANT TO 37 C.F.R. § 1.608(b)

Sir:

The following explanation, together with the supporting Declarations of named co-inventors, Michael Morris and Gerald E. Bennington, and of corroborating witnesses, Brian Margolis and Roger Youman, along with the documentary evidence attached as Exhibits to such Declarations, is submitted to clearly establish that the present applicants are *prima facie* entitled to a judgment relative to U.S. Patent No. 5,532,754 to Young, et al. based on priority of invention by the applicants.

Young, et al. contains seven claims directed to a background schedule system in which background schedule information selected by user is displayed on a portion of a television screen overlaid on another signal, e.g. a television program, displayed on the screen. The disclosure on which the claims of Young, et al. are based first appeared in the chain of applications on which Young, et al. claims priority in

Application Serial No. 33,773, filed March 19, 1993. Such disclosure appears at col. 21, line 60 through col. 26, line 55 of Young, et al.

As described in Paragraph 2 of the Declaration of Michael Morris under 37 C.F.R. §1.608 (Morris Decl. ¶2), and corroborated in Paragraph 2 of the Declaration of Brian Margolis under 37 C.F.R. §1.608 (Margolis Decl. ¶ 2) and Paragraph 2 of the Declaration of Roger Youman under 37 C.F.R. §1.608 (Youman Decl. ¶ 2), TV Guide, in late 1991, initiated a project to develop an interactive electronic on-screen program guide to display schedule information concerning television programs and to permit the television viewer to perform various functions and selections in connection with current or future television program schedules (the "EPG"). A TV Guide employee, Michael Morris, prepared a first draft of a report on the EPG in about November or December 1991 (Morris Decl. ¶ 2), which he believes included a description of a feature that permitted the viewer to interactively search for program schedule information and to sequentially display such information on a portion of the television screen without interrupting the display of a currently appearing television program. This feature was initially referred to as the "instant rolling log" and later came to be known as the browse feature (hereinafter referred to as the "Browse Feature"). (Morris Decl. ¶3).

The first written record of the browse feature that applicants have been able to locate is a revised version of Morris's initial report that Morris prepared and completed by January 19, 1992 (the "1/19 Report"). (Morris Decl. ¶ 4; Margolis Decl. ¶ 4; Youman Decl. ¶ 4). The Browse Feature (referred to as "the instant rolling log") is discussed on page 3 of the 1/19 Report. The embodiment of the Browse Feature there described displayed schedule information, at any one time, concerning three television

programs on the lower portion of the screen, while the television picture occupied the remainder of the screen. Although not explicitly stated in the 1/19 Report, the described embodiment of the Browse Feature contained an organized listing of many more than three programs. When scrolling through the log, the down and up arrow keys on a remote control would allow the user to scroll forwards or backwards through programs in the log, with three being displayed at any one time. The viewer could activate the Browse Feature by pressing a special TV Guide menu button on the remote control. Depressing an "A" button while the Browse Feature was activated, would turn off the Browse Feature and return the display to full-screen television. The Browse Feature described in the 1/19 Report would allow the user to interactively scan through program listing while continuing to view the current program. (Morris Decl. ¶ 4, Margolis Decl. ¶ 4, Youman Decl. ¶ 4).

It was contemplated by Morris and others at TV Guide that the implementation of the Browse Feature would also involve the use of a memory for storing the program schedule information, and a microprocessor coupled to the memory and the television that was responsive to a remote control device for turning the Browse Feature on and off, and for permitting the user to display desired portions of the schedule information on the screen. (Morris Decl. ¶ 5; Margolis Decl. ¶ 5). Thus the evidence clearly establishes that a conception by named inventors of the present application of the Browse Feature invention claimed in the present application and in Young, et al., as well as a written record of such conception, existed at least as early as January 19, 1992.

Morris prepared a further revised version, dated May 15, 1992, of the 1/19 Report, (the "5/15 Report"). Page 3 of the 5/15 Report contains a similar description of

the Browse Feature to that appearing in the 1/19 Report. (Youman Decl. ¶ 5; Margolis Decl. ¶ 7; Morris Decl. ¶ 7).

By the Spring of 1992, a joint venture had been set up between TV Guide and Liberty Media to develop the EPG (the “Joint Venture”). At that time X • PRESS Information Services, Ltd., a subsidiary of Liberty Media, (hereinafter “X • PRESS”) began to develop software for the EPG on behalf of the Joint Venture. See Paragraph 2 of Declaration of Gerald E. Bennington Under 37 C.F.R. § 1.608 (Bennington Decl. ¶ 2; Morris Decl. ¶ 8; Margolis Decl. ¶ 9; Youman Decl. ¶ 6).

An operative prototype of the EPG software developed by X • PRESS, that included the Browse Feature, was delivered to TV Guide in July 1992. The Browse Feature, as implemented in the prototype, allowed a user to interactively navigate through program schedule information overlaid on the lower portion of a program display. The prototype software was designed to be run on a personal computer that included a memory storing the database files containing the program schedule listings. The prototype software allowed the user to turn the Browse Feature display on and off from the keyboard. Such software further included facilities that permitted the user to select various TV program listing arrangements, including a full screen program guide and the Browse Feature, and when the Browse Feature was activated, to use it to display portions of the TV program listings that were selected by the user from the keyboard. Screen displays generated by such application program contained a listing of program schedule information on the lower portion of the screen, as well as a TV Guide mini-menu screen that allowed a user to select various features of the EPG. This prototype constituted a reduction to practice of the Browse Feature invention as claimed in the present

application and in Young, et al. (Morris Decl. ¶ 10; Margolis Decl. ¶ 12; Bennington Decl. ¶ 3).

A decision was made in about May 1992 to hire an outside company to assist in development of display formats for the EPG, including the Browse Feature. Subsequently, Animatrix, Inc. was retained by the Joint Venture in about July 1992 to work on the aesthetic design of the EPG. The services of Animatrix included the creation of art, animation and code in order to improve the look and feel of the screen displays for the EPG that had been developed by TV Guide and X • PRESS. Ms. Marney Morris acted as the Senior Designer for the aesthetic enhancement to the EPG. During the summer of 1992, Animatrix completed a first version of the screen design with command prompts for the interactive EPG. (Morris Decl. ¶ ¶ 9,11; Margolis Decl. ¶ ¶ 11,13,15).

By November 1992, the Animatrix screen displays had been incorporated into the EPG prototype. A diskette containing such prototype software was sent by X • PRESS to its patent attorney, Martin C. Fliesler, Esq., along with materials setting out required and optional hardware, and instructions on how to operate the EPG software. Such prototype software was designed to be run on a personal computer that included a memory storing the database files containing the program schedule information. Among the optional hardware and software listed was that needed to use the EPG to control a television. By this time TV Guide and X • PRESS personnel had connected the computer containing the EPG to a television monitor, and had used the computer to implement the Browse Feature on such monitor, partially overlaying a television program. The EPG software enabled the user to turn the Browse Feature display on and

off from the personal computer keyboard, and incorporated facilities that permitted the user to select various television program listing arrangements, including a full screen program guide and the Browse Feature, and when the Browse Feature was activated, to use it to display portions of the television program listings that were selected by the user from the keyboard. Pressing the up and down arrow keys allowed the user to scroll forwards and backwards by channel through the program listings. The left and right arrow keys scrolled the display to earlier or subsequent time periods, respectively, for a particular channel. Displays produced by such prototype contained a listing of program schedule information for a selected program on the lower portion of the screen. (Bennington Decl. ¶ 4; Morris Decl. ¶ 12). The evidence presented concerning the prototype sent to Mr. Fliesler constitutes a second proof of a reduction to practice of the applicants' claimed invention before the priority date of Young, et al.

During the period of August to December 1992 there was ongoing work on the part of TV Guide, Animatrix and X • PRESS to prepare a version of the EPG for demonstration at the Western Cable Show on December 2-4, 1992, in Anaheim, CA (the "Show"). (Morris Decl. ¶ 13; Margolis Decl. ¶ 16; Youman Decl. ¶ 7; Bennington Decl. ¶ 5). The EPG incorporating the Browse Feature was demonstrated at the Show. Brochures describing the EPG, including the Browse Feature, were distributed to attendees at the TV Guide booth at the Show. The Browse Feature, as demonstrated at the Show, is accurately described and illustrated on page 5 of the brochure. The demonstrated EPG software was installed on a PC and the system was attached to a television that was tuned to a cable channel available in Anaheim. The EPG software demonstrated at the Show enabled the user to turn the Browse Feature display on and off

using a remote control, and incorporated facilities that permitted the user to select various television program listing arrangements, including a full screen program guide and the Browse Feature, and when the Browse Feature was activated, to use it to display portions of the television program listings that were selected by the user using arrow keys on the remote. The database containing the program schedule information was stored on the PC memory. Messrs. Bennington, Margolis and Youman attended the Show. Morris assisted with the Show by editing and producing the live daily feeds of TV Guide data that were transmitted to the EPG at the Show. (Morris Decl. ¶ 14; Margolis Decl. ¶ 17; Youman Decl. ¶ 8; Bennington Decl. ¶ 6). Thus, the evidence presented concerning the prototype EPG demonstrated at the Western Cable Show establishes a third instance of the reduction to practice of the claimed Browse Feature before the priority date of Young, et al.

Work by X • PRESS and TV Guide continued during 1993 to develop a commercial version of the EPG. (Bennington Decl. ¶ 7).

Respectfully submitted,



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767 Fifth Avenue
New York, N.Y. 10153
(212) 310-8448

D

USER and Installation Guide



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EVEN BETTER, LIMITED WARRANTY!

INSTEAD OF THE REGULAR 1 YEAR ON PARTS AND 90 DAYS
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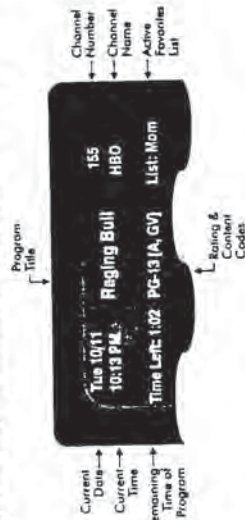
199775010 AA

DISH NETWORK™ SYSTEM FEATURES

Following are the features that you will likely use most often.

PROGRAM BANNER

The **Program Banner** is displayed for a few seconds at the top of the TV screen every time the channel is changed, or the View button is pressed on the remote. The **Program Banner** provides information about the program that is now being viewed. The information will vary, depending on the specific program, but may include any of the following items:



BROWSE BANNER

You can see the banners for programs on other channels without removing the current program from view (this is called "browsing"). These banners are called **Browse Banners**. To open the **Browse Banner**, do the following:

1. Press the right arrow while viewing a program.
2. Press the up or down arrows to view the **Browse Banner** for programs on other channels.
3. Press the Select button to change to the program in the **Browse Banner**.

Remote Buttons Receiver Buttons

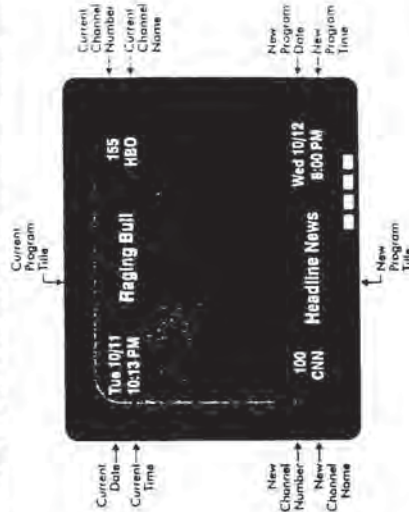


The difference between browsing and channeling up or down (see page 3-3) is that when you browse, the current program does not change until you press the Select button. When you channel up or down, the program changes as you press the arrow buttons.

How the DISH Network™ Works DISH Network™ System Features (2)

The **Browse Banner** provides information about programs that are on other channels, in addition to the program on the current channel. The information for the current channel is displayed at the top of your TV screen. The information for the program on the other channel is displayed at the bottom of your TV screen.

The **Browse Banner** information will include the following items:



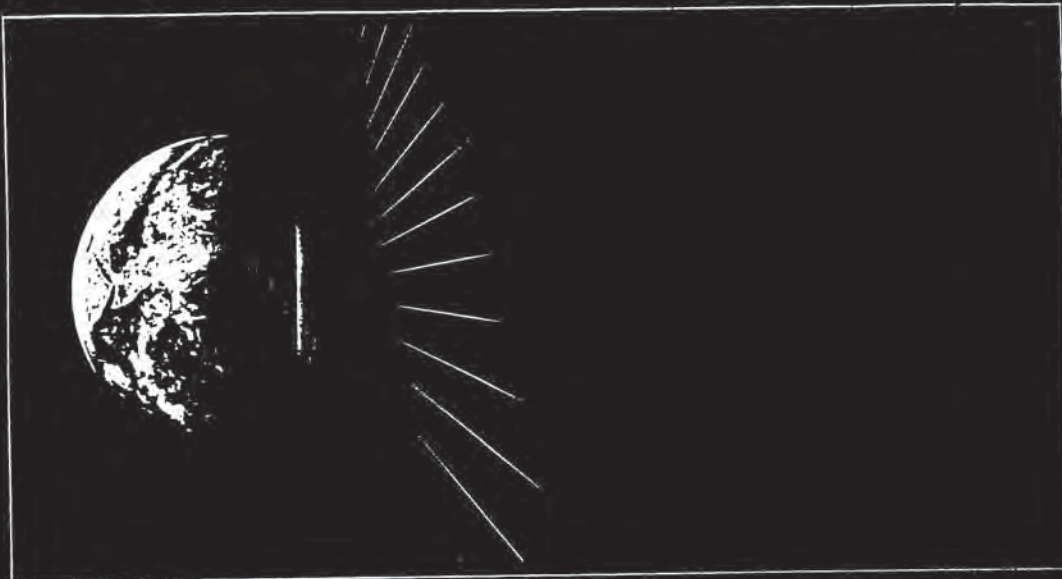
PROGRAM GUIDE SCREEN

The **Program Guide** provides a complete listing of the available channels and programs. Within the **Program Guide**, you can perform many of the features of the DISH Network™ System, including selecting a program for immediate viewing and purchasing services.

- The **Program Guide** listing may include channels to which you have not subscribed if the Favorites List named "ALL CHAN" is active. These channels have a red background behind the channel name and number. If you attempt to change to one of these channels, the receiver displays an error message. See **Available Services** on page 1-5 for more information about subscription channels and adding channels.
- The listing includes only programs that are being shown now and that are scheduled for a limited time beyond the present. The listing does not include programs that have ended.

E

It turns a
television into a
video store,
shopping mall,
library,
brokerage house
and more.



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the
CFT 2200
from
General Instrument.

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cable TV receiver

CFT 2200

broaden

scope of

active TV.

The CFT 2200 terminal offers a number of standard and optional features that make it more attractive to your subscribers... and more profitable for you.

Enhanced messaging. The CFT 2200 allows you to target specific subscribers or groups of subscribers with messages about bills, program services, pay-per-view (PPV) authorizations and other items. You can store up to 40 pages of messages.

Multilingual displays. Now you can communicate with subscribers in multiple languages. This CFT terminal can be initialized so all on-screen displays are in the language of your choice. The system transmits the correct language format to each terminal based on the destination of the message.

Enhanced graphics. Enjoy an unparalleled choice of graphics. Select from two font sizes and 112 colors. A simulated bit-mapped mode enables you to customize characters using a message editor tool. Combine those characters to form a graphic (like a logo) that's displayed on the home terminal as part of a message, on-screen display, and more.

Configurable user interface. With the CFT 2200, you can change the menu to enhance marketing efforts. Change the menu order, titles assigned to each item, or delete the items altogether. You can even download a company logo in the corner of each screen.

Downloadability. Designed to accept downloaded commands and subscriber features, the CFT 2200 terminal can support a continuing evolution of the user interface and the addition of new applications, including third-party electronic program guides.

Interactive program guide. CFT 2200 terminals feature an interactive program guide (IPG) that provides seven days of program titles and details in a grid format. Multiple foreground and background colors give the grid a 3D look. The IPG package uses color, title bars, highlighting and function keys to help make all the information easy to understand and use.

Using cursor keys, subscribers can navigate through rows of program channels and columns, representing half-hour time increments. If the user selects a program that's currently airing, the terminal automatically tunes the appropriate channel. And with an optional infrared blaster,

the subscriber can select programs for recording and automatically program the VCR.

The IPG also enables viewers to get information about what's on other channels while watching a current program. While in this browse mode, the viewer can display more information about a program or tune to another program.

Near-video-on-demand. With GI's INVOO, you can provide PPV movies with up to 12 start times per hour per title. Subscribers can access movie titles, descriptions and start times via any IPG screen that lists programming.

Once the requested video is on the air, viewers can use the IR remote to pause, fast forward or rewind the movies, so they don't miss any of the action.

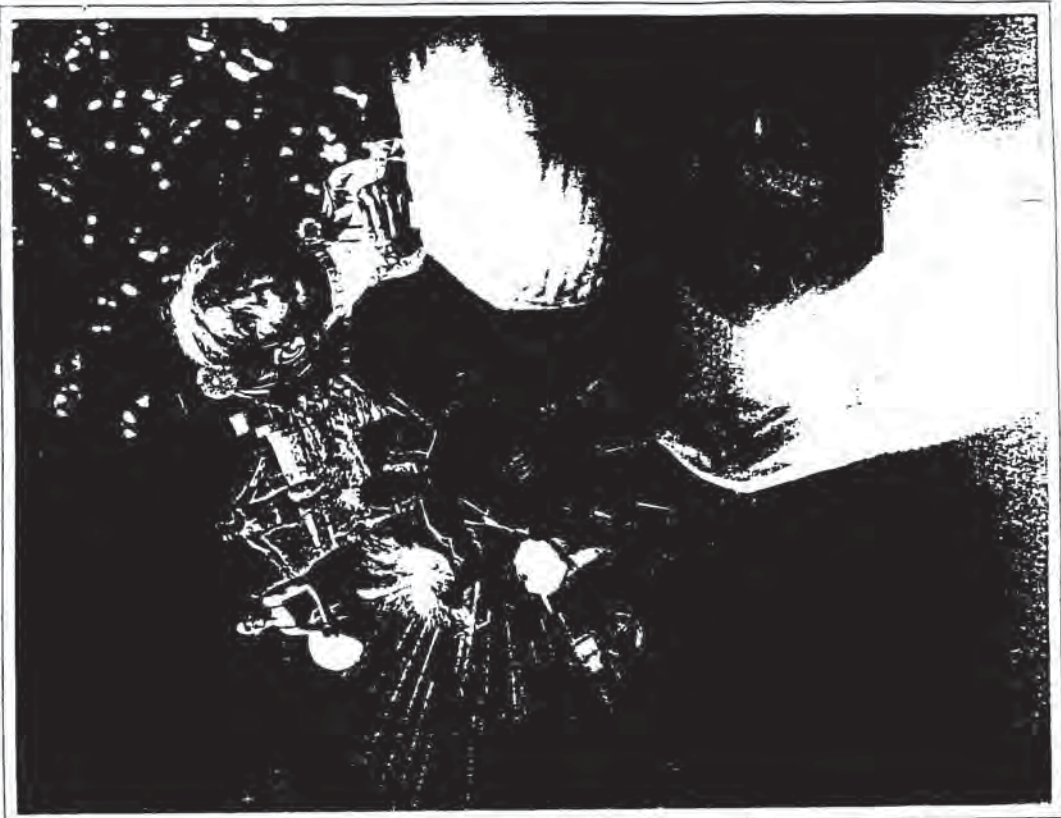
Virtual channels. Virtual channels enable text-based screens that convey information such as sports statistics, stock quotes or weather information. Using virtual channels, you can expand the number of services you offer without having to expand the plant's bandwidth. The data is transported in the VBI (Vertical Blanking Interval) of a video program.

Special upgrade. Thanks to an exclusive feature, the CFT 2200 can deliver data and interactive entertainment (like no other terminal) can.

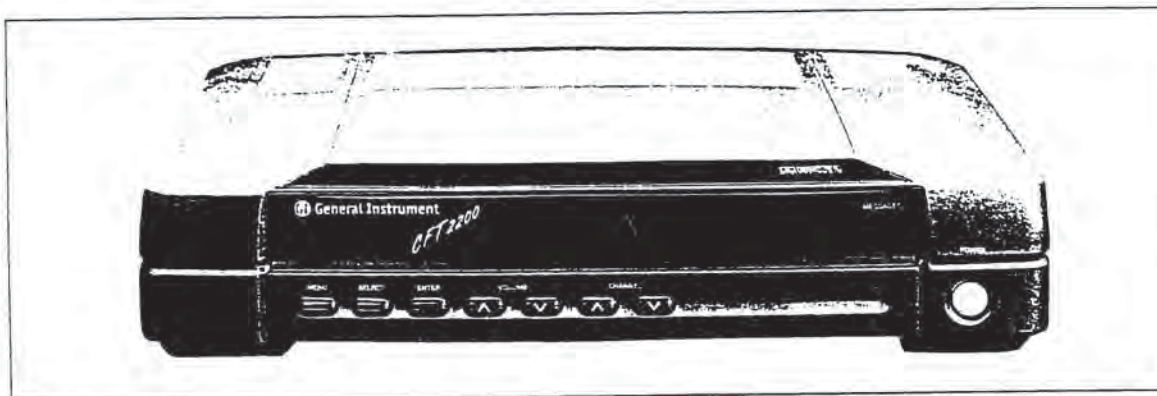
That feature is TV Link™, a module developed by GI in partnership with leaders in the computer industry. Whether it's fitted internally or connected as a separate external device, TV Link™ significantly expands the CFT 2200's interactive capabilities.

TV Link™ allows subscribers to enjoy a number of revenue-generating interactive services. They can select from a menu of video games to play. Shop via video catalogs and virtual reality stores. Call up Yellow Pages directories. Pay bills, transfer funds and perform other banking services. Answer classified ads. And do much more.

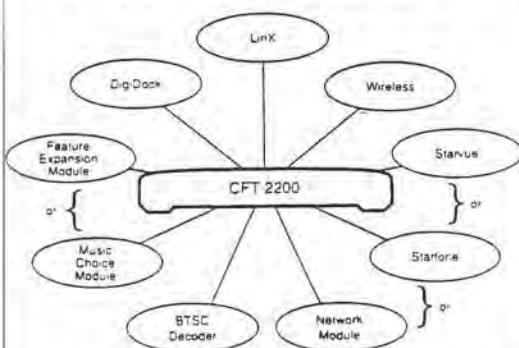
And since TV Link™ is scalable, you can tailor the platform to meet your needs.



CFT 2200: The Base Unit



The base terminal will offer a single, secure processor with all the features of the popular CFT 2000 terminal, including on-screen display, subscriber messaging, electronic parental control by channel, favorite and last-channel recall, downloaded channel cross-reference map, barker channels, diagnostics, converter error display, audio privacy, and baseband audio and video outputs. In addition, it will offer enhanced messaging, dual language on-screen display, renewable security via a "smart card", an expanded 860 MHz tuner, and modular upgradability.



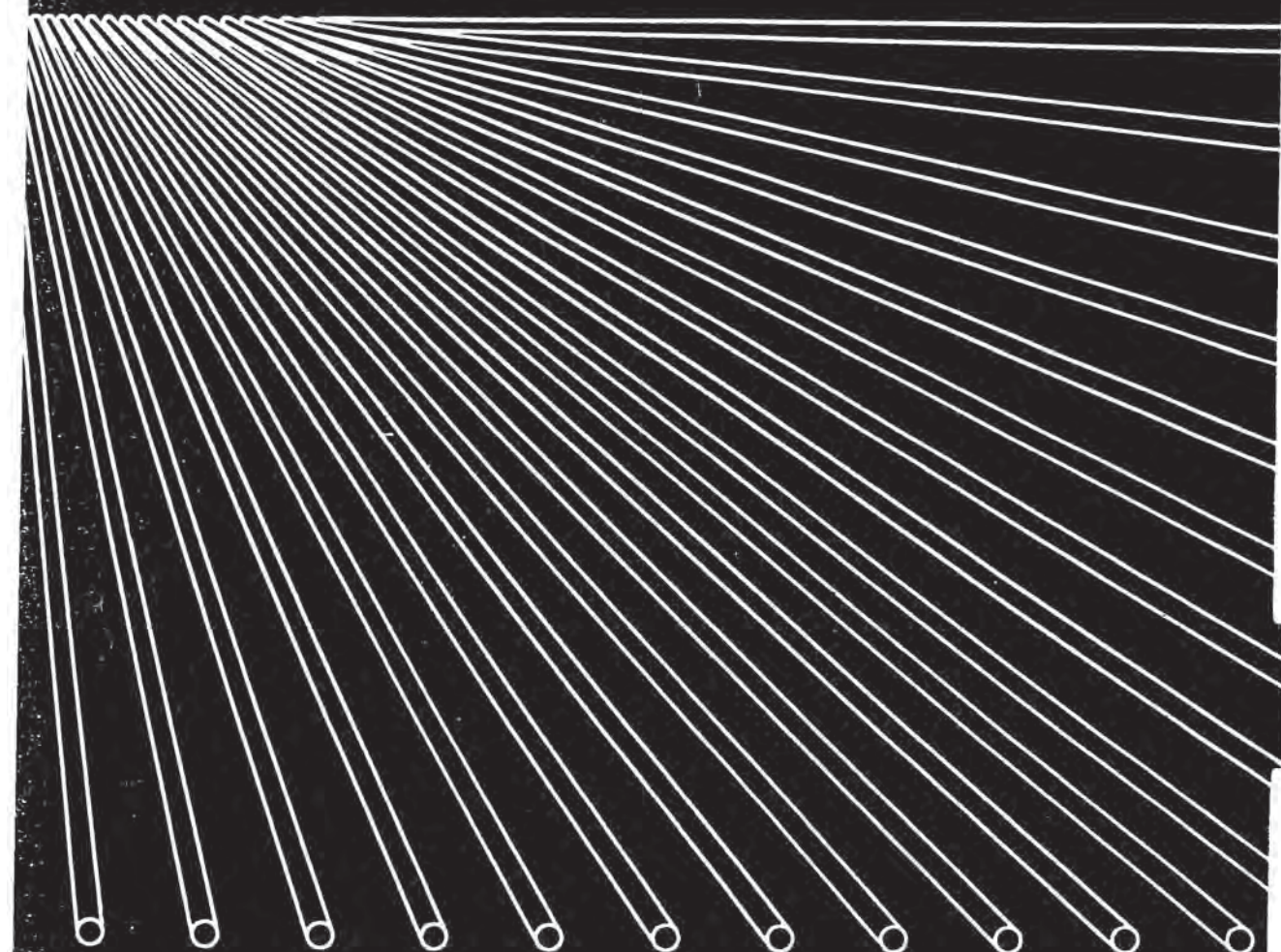
Input Frequency	54 - 860 MHz
Number of Channels	134 Channels
On-Screen Display	Character Size: 18x12 pixels Screen Size: 12 rows x 24 columns Colors: 16 colors per screen out of a pallet of 112 colors Message/Barker Capacity: 40 pages
Scrambling Method	Gated Sync Suppression or Dynamic Gated Sync Suppression, Video Inversion and Audio Privacy
Compatibility. Renewable Security	"Smart card" renewable security system, socket on the bottom of the converter, cards will contain a microprocessor and associated circuitry that would enable the decryption algorithm of the access control system to be changed should a breach occur
Size-CFT 2200	13" x 8 1/2" x 2 1/2"
Options	• Feature Expansion Module • Music Choice Module • LinX™ Internal Module • LinX™ External Module • Starvue (two-way RF store and forward module) or • Starfone (two-way telephone store and forward module) or • Network Module (real-time two-way RF module) • VCR control (Universal Electronics' Database) • BTSC stereo decoder (audio left and right outputs) • Wireless • Tocom/Zenith Compatibility • Digital Compression Sidecar

GI General Instrument

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F

JERROL COMMUNICATION



A B L E T E L E V I S I O N E Q U I P M E

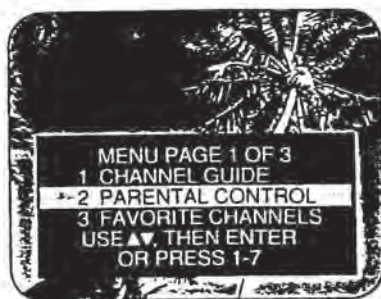
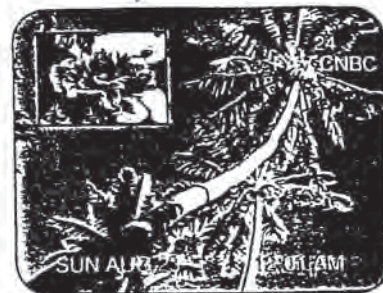
GENE
INSTRUM

Jerrold IMPULSE 7000™ Series Watch 'N' Record™

Baseband Addressable Converter With Dual Tuners and On-Screen Display

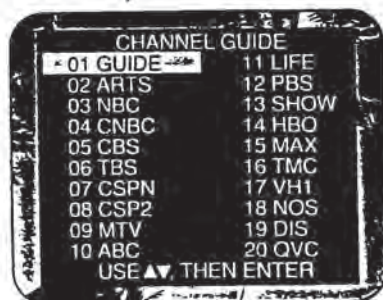
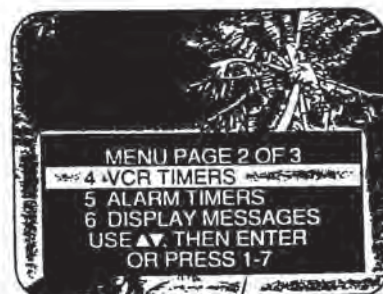


DATE/
CHANNEL
DISPLAY



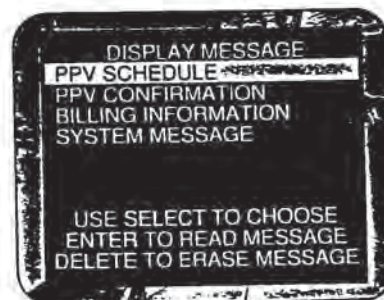
MAIN MENU

MAIN MENU



CHANNEL GUIDE

MESSAGE DISPLAY



DUAL TUNER, IMPULSE, BASEBAND SECURITY AND ON-SCREEN DISPLAY

FEATURES

- DUAL 550 MHz TUNERS
- ON-SCREEN DISPLAY
- UNMATCHED BASEBAND SCRAMBLING

- FULLY DOWNLOADABLE
- ELECTRONIC PROGRAM GUIDE CAPABILITY
- SUBSCRIBER MESSAGING

The Jerrold Watch 'N' Record is an impulse-capable baseband converter with dual 550 MHz tuners, consumer-friendly on-screen display programming capability and the unmatched scrambling security of baseband technology.

• SUBSCRIBER FEATURES

The dual tuners allow subscribers to watch one channel while simultaneously recording another, including descrambled signals. This same dual tuner capability also restores picture-in-picture to subscriber televisions. The on-screen display feature is sophisticated, yet easy to use. Multi-colored, simple-format menus and help message screens walk subscribers through the steps required for even the more compli-

cated converter functions, such as VCR timer programming, sleep timers and parental codes and make purchasing PPV events and services even more convenient.

Channel I.D. When a subscriber changes channels, the on-screen display identifies the channel number and channel name, as well as whether the converter is locked, parentally controlled and if it is tuned to a favorite channel.

Volume Control. To ensure optimum recording quality, the VCR tuner's volume level is factory set to unity gain. When a subscriber presses the volume up/down key, a volume control bar appears on the screen. The bar's movement visually indicates whether the volume has in-

creased or decreased. The Watch 'N' Record passes BTSC stereo signals, allowing subscribers with stereo televisions or VCRs to receive and enjoy stereo programming. The volume control bar also indicates the best stereo point for optimal stereo sound.

VCR Timers. Subscribers can quickly program up to eight events over a 365-day period. The Watch 'N' Record makes it possible to program events on a one time, daily, weekly, weekend and weekend basis. It is also easier to review and correct already-programmed events.

Parental Control. The on-screen menus make it easy to activate and deactivate parentally controlled channels. The lock and key symbols,

well as parental control barker messages, greatly simplify this frequently used feature.

Alarm Timers. The Watch 'N' Record converter comes with two alarm timers—the sleep timer and the on/off timer. The sleep timer allows the subscriber to program the converter to turn off after 30 minutes, one hour, two hours or three hours. With the on/off timer the subscriber can program the converter to turn on and off at the same time every day.

Subscriber Control Over Display Features. Research has shown that subscribers have different preferences for either a clear or solid menu background. The Watch 'N' Record allows the subscriber to change the menu background to clear screens, partial or solid, depending on personal preference. They can also adjust the centering of menus on their televisions.

Remote Control. The Watch 'N' Record is compatible with a choice of three special remote controls—the TVRC-OSD, the MRC-OSD and the IN-VIEW. All remotes are feature rich and have special keys for the on-screen display. The TVRC-OSD remote control allows the subscriber to turn the television on and off and controls the TV's volume, as well as operate all of the converter features. This reduces the number of remotes the subscriber needs to use. The MRC-OSD is Jerrold's standard remote control, with the capability of controlling all converter features, including on-screen display. The third available remote, the BUDDY IN-VIEW is a limited function unit, capable of controlling converter volume up/down/mute, converter on/off and on-screen display functions.

• OPERATOR FEATURES

The Watch 'N' Record provides multiple screens of message space that operators can use to notify customers of important information. These screens can be used to verify customer appointments, remind customers of service changes or disconnect dates, and explain service outages. Notifying subscribers of weather hazards in the area is another example of how operators may use this feature.

In addition, the message screens can serve as promotional tools, advertising upcoming pay-per-view events and services and limited free pay TV viewing, as well as important community events. They offer the potential for other creative revenue generating ideas, such as targeted local advertising.

Using the Watch 'N' Record, operators can send messages to specific subscribers, to a group of selected subscribers or to the entire subscriber base, if so desired. Messages can be custom-designed with Jerrold's unique message edi-

tor, allowing operators to tailor their messaging ability to suit specific needs.

• BARKERS

The Watch 'N' Record comes with two types of barkers—converter-activated and operator-activated—allowing flexibility for operators who wish to guide subscriber viewing. All barker messages can be edited by the operator.

Converter-Activated Barkers. In addition to providing video off-tuning, the operator can choose to display a character-generated message explaining why this channel is off limits and what steps are necessary to change this (unlock the box, order the PPV service, etc.).

The Watch 'N' Record offers a total of six converter-activated barkers: four standard barkers (parental control, impulse PPV, unauthorized pay and disconnect) and two optional barkers (turn-on, that appears each time the subscriber turns on the converter and out-of-credit). These barkers are found in the channel map.

YOU HAVE BEEN AUTHORIZED
FOR THE FOLLOWING EVENTS

12/25 "IT'S A WONDERFUL LIFE"
8:00 CH15

01/06 HOLYFIELD VS FOREMAN
10:00 CH36

Operator-Activated Barkers. These only appear on scrambled channels that the subscriber is authorized to view. The operator can use these to verify purchase of PPV events and services or to provide movie/event specific information (movie running time or movie description). Operator-activated barkers can be programmed and sent on a specific scrambled channel to an individual subscriber, a group of subscribers or the entire subscriber base.

• DOWNLOADABLE SYSTEM PARAMETERS

Downloadability gives the cable operator greater control and ease of operation. Using the AH-4E or ACC-4000 controller, the operator can download such features as subscriber address, system site code, geographic code, output channel, barker channel, time-out period and custom channel assignment.

This downloading capability provides operator benefits such as centralized control over sys-

tem functions, simplification of the installation process and reduction of inventory requirements. The software-selectable output channel capability allows the operator to easily switch between two different converter output channels (3/4). This helps reduce inventory requirements by allowing interchange of converters between systems.

The 3/4 output channel allows for compatibility with subscriber VCRs so subscribers need not tune to one channel to watch TV and another to use the VCR.

• IMPROVED SIGNAL SECURITY

The Watch 'N' Record descrambles Jerrold's modes of dynamic video inversion coupled with dynamic sync suppression. It also offers audio privacy. Jerrold's baseband scrambling scheme offers the most secure signal in the cable industry, protecting operator investments in expensive pay and special event programming.

DANCES WITH WOLVES(R)

ACTION/ADVENTURE IN
POST-CIVIL WAR TIMES,
STARRING KEVIN COSTNER

(RUN TIME 2 HOURS)

WILL AIR AGAIN ON
TUES NOV 5th AT 10:00 PM

• ELECTRONIC PROGRAMMING GUIDE (EPG)

The operator can use the Watch 'N' Record's in-band and out-of-band messaging capability to provide program guide information to subscribers. The ways of presenting this type of information—as well as the type of information presented—are numerous. Examples of EPG information include movie and/or program-specific descriptions of current and/or future programs or movies. Schedule information is another possibility. Events/programs in a specific time period could be organized by subject matter.

• TWO-WAY UPGRADABILITY

The Watch 'N' Record is upgradable to two-way operation using Jerrold's STARFONE® and STARVUE® internal modules. The Watch 'N' Record lets operators offer push-button impulse pay-per-view programming to subscribers without expensive rework.

Jerrold IMPULSE 7000™ Series Watch 'N' Record™

Baseband Addressable Converter With Dual Tuners and On-Screen Display

SPECIFICATIONS

MODEL	WNR2-★4/# (★ = 1-one way/2-two way RF/3-two way telephone; 108.5 MHz data carrier standard — replace # if any of these options are preferred: S8 [106.5 MHz], S7 [97.5 MHz], T1 [Tamper Switch], M1 [97.5 MHz] frequency shift audio privacy)	Output Level	7-14 dBmV
Input Frequency	54-550 MHz (excluding data carrier frequency)	Isolation (Input/Output)	70 dB min.
HRC/IRC Frequency Assignments	Downloaded	Differential Gain	10% (max.)
Number of Channels	82 channels per cable; one or two cables	Differential Phase	10 degrees (max.)
Dual A/B Cable Switching	Optional A/B switch (field upgradable)	Scrambling Method	Gated Sync Suppression or Dynamic Gated Sync Suppression, Video Inversion, Audio Privacy, Hamlin Compatibility.
Cable/VCR Indicator	Two LED's in front display. Green—Cable; Red—VCR	On-Screen Display	Character Size: 12 x 18 pixels Screen Size: 12 rows x 24 columns Message/Barker Capacity: 14 pages Channel Descriptors: 4 characters, maximum
Input Video Level	+4 dBmV to +15 dBmV	Parental Control by Channel	100% user-controlled offering channel-by-channel selections
Input Sound Level	-13 dBmV to +2 dBmV	Mechanical Security	Std.: security screws; security pin; uni-chassis construction
Data Carrier Frequency	FSK Modulated FM Carrier 106.5 or 108.5 MHz	Downloadable Parameters	Output Channel Initialization Command Terminal Logical Address System Site Code Time Out Period Terminal Configuration Authorization Information Barker Channel(s) Consumer Feature Enable/Disable Subscriber Messaging Channel Descriptors Channel Cross Reference Map Decryption Key
Bandwidth Level	± 200 KHz standard FM -15 dBmV	Two-way System Compatibility	Upgrade in field by addition of STARVUE™ or STARFONE™ internal module
Video S/N	49 dB @ +4 dBmV input level	Operating Temperature Range	59°F to 104°F (15°C to 40°C)
Fine Tuning	Automatic	Operating Humidity Range	5% to 95% (non-condensing)
AFT Capture Range	± 300 KHz @ input level of 0 dBmV	AC Voltage	105 VAC to 125 VAC, 60 Hz
Output Frequency Accuracy	± 150 KHz	Power Dissipation	22 Watts at 120 VAC
Return loss:		Surge Protection	Surge protection provided on power supply and RF ports
Input	6 dB min.	Size	16.5" x 8.25" x 2.7" (LxWxH)
Output	8 dB min.	Weight	8.2 lbs.
Spurious:			
Output	-57 dBc max., in band		
Cross Modulation Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Composite Second Order Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Second Order Distortion	-60 dB (@ +15 dBmV input level)		
Composite Triple Beat Distortion	-56 dB (82 channels; each @ +15 dBmV)		
Converted Input Beats (With all Input Signals)	-25 dB (82 channels; each @ +15 dBmV)		
Hum Modulation Distortion	3 IRE		

NOTE: Specifications subject to change without notice.

Jerrold IMPULSE 7000™ Series
Watch 'N' Record™

Baseband Addressable Converter
With Dual Tuners and On-Screen Display

SPECIFICATIONS (Continued)
JERROLD IMPULSE MODEL WATCH 'N' RECORD
HANDHELD REMOTE CONTROL

WRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line.	Power Requirements Weight Batteries	3 volts 3 ounces (with battery) Included as standard, Two 1.5 volt AAA
VRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line.	Power Requirements Weight Batteries	6 volts 5 ounces (with battery) Included as standard, Four 1.5 volt AAA
IN VIEW Transmission Range	Up to 30 feet in a direct line from the receiver/converter at 0 degrees and 22 feet at any angle of up to ± 20 degrees axial.	Power Requirements Weight Batteries	3 volts 4 ounces (with battery) Included as standard, Two 1.5 volt AAA

Specifications subject to change without notice.

Jerrold IMPULSE 7000 Series Model CFT 2000

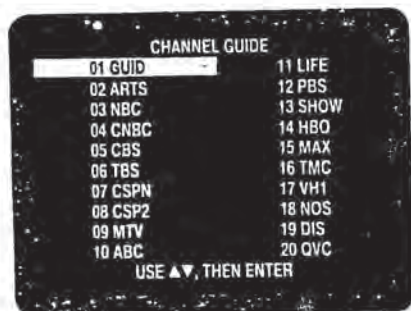
Baseband Addressable Converter With On-Screen Display



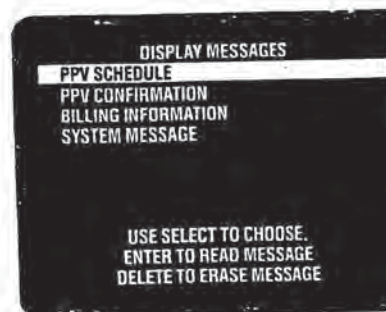
MAIN MENU



MAIN MENU



CHANNEL GUIDE



MESSAGE DISPLAY

IMPULSE, ENHANCED BASEBAND SECURITY AND ON-SCREEN DISPLAY

FEATURES

- ON-SCREEN DISPLAY
- UNMATCHED BASEBAND SCRAMBLING
- FULLY DOWNLOADABLE
- ELECTRONIC PROGRAM GUIDE CAPABILITY
- SUBSCRIBER MESSAGING

The Jerrold CFT-2000 is a 550 MHz impulse-capable baseband converter with consumer-friendly on-screen display programming capability and the unmatched scrambling security of baseband technology.

• SUBSCRIBER FEATURES

The on-screen display feature is sophisticated, yet easy to use. Multi-colored, simple-format menus and help message screens walk subscribers through the steps required for even the more complicated converter functions, such as VCR timer programming, sleep timers and

parental codes, and it makes purchasing PPV events and services even more convenient.

Channel I.D. When a subscriber changes channels, the on-screen display identifies the channel number and channel name, as well as whether the converter is locked, parentally controlled, and if it is tuned to a favorite channel.

Volume Control Bar. When a subscriber presses the volume up/down key, the volume control bar appears on the screen. The bar's movement visually indicates whether the volume has increased or decreased. The CFT 2000 passes BTSC stereo signals, allowing subscribers with

stereo televisions or VCRs to receive and enjoy stereo programming. The volume control also indicates the best stereo point for optimum stereo sound.

VCR Timers. Subscribers can quickly program up to eight events over a 365-day period. CFT 2000 makes it possible to program events on a one-time, daily, weekly, weekday and weekend basis. It is also easier to review and delete already-programmed events.

Parental Control. The on-screen menus make it easier to activate and deactivate parentally controlled channels. The lock and key symbols

Jerrold IMPULSE 7000 Series Model CFT 2000

Baseband Addressable Converter With On-Screen Display

well as parental control barker messages, move any doubt whether the parental control feature is in use.

Arm Timers. This feature makes it possible for subscriber to program the CFT 2000 to turn on or off at a specified time. This can be done on a daily basis. The sleep timer can be programmed to turn off the converter anywhere from 30 minutes to three hours.

Subscriber Control Over Display Features. Research has shown that subscribers have different preferences for either a clear or solid menu background. The CFT 2000 allows the subscriber to change the menu background to clear screens, partial or solid, depending on personal preference. They can also adjust the ordering of the menus on their televisions.

Remote Controls. The CFT 2000 comes with a choice of two special remote controls—the TVRC-OSD and the MRC-OSD. Both remotes are feature-rich, but special keys have been added to the on-screen display. Colors have been added to the TVRC-OSD keypad to facilitate use. The TVRC-OSD remote control allows the subscriber to turn the television on and off, and control the TV's volume, thus reducing the number of remotes the subscriber needs to use.

OPERATOR FEATURES

The CFT 2000 provides multiple screens of message space that operators can use to notify customers of important information. These screens can be used to verify customer appointments, remind customers of service changes or reconnect dates, and explain service outages. Notifying subscribers of weather hazards in the area is another example of how the operator can use this feature.

In addition, the message screens can serve as promotional tools, advertising upcoming pay-per-view events and services and limited free pay TV viewing, as well as important community events. They offer the potential for other creative revenue generating ideas, such as targeted local advertising.

Using the CFT 2000, operators can send messages to specific subscribers, to a group of selected subscribers, or to the entire subscriber base, if so desired. Messages can be custom designed with Jerrold's unique message editor, allowing operators to tailor their messaging capability to suit specific needs.

• BARKERS

The CFT 2000 comes with two types of barkers—converter-activated and operator-activated—allowing flexibility for operators who wish to guide subscriber viewing. All barker messages can be edited by the operator.

Converter-Activated Barkers. In addition to providing video off-tuning, the operator can choose to display a character-generated message explaining why this channel is off limits and what steps are necessary to change this (unlock the box, order the PPV service, etc.)

The CFT 2000 offers a total of six converter-activated barkers: four standard barkers (parental control, impulse PPV, unauthorized pay and disconnect) and two optional barkers (turn-on that appears each time the subscriber turns on the converter, and out-of-credit). These barkers are found in the channel map.

YOU HAVE BEEN AUTHORIZED
FOR THE FOLLOWING EVENTS

12/25 "IT'S A WONDERFUL
LIFE"
8:00 CH15

01/06 HOLYFIELD VS FOREMAN
10:00 CH36

Operator-Activated Barkers. These only appear on scrambled channels that the subscriber is authorized to view. The operator can use these to verify purchase of PPV events and services or to provide movie/event-specific information (movie running time or movie description). Operator-activated barkers can be programmed and sent on a specific scrambled channel to an individual subscriber, a group of subscribers or the entire subscriber base.

• DOWNLOADABLE SYSTEM PARAMETERS

Downloadability gives the cable operator greater control and ease of operation. Using the AH-4E or ACC-4000 controller the operator can download such features as subscriber address, system site code, geographic code, output channel, barker channel, timeout period and custom channel assignment.

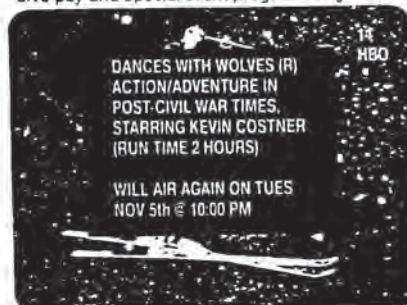
This downloading capability provides operator benefits such as centralized control over system

functions, simplification of the installation process and reduction of inventory requirements. The software-selectable output channel capability enables the operator to easily switch between two different converter output channels (3/4). This helps reduce inventory requirements by allowing interchange of converters between systems.

The 3/4 output channel allows for compatibility with subscriber VCRs so subscribers need not tune to one channel to watch TV and another to use the VCR.

• IMPROVED SIGNAL SECURITY

Model CFT-2000 descrambles Jerrold's modes of dynamic video inversion coupled with dynamic sync suppression. It also offers audio privacy. Jerrold's baseband scrambling scheme offers the most secure signal in the cable industry today, protecting operator investments in expensive pay and special event programming.



• ELECTRONIC PROGRAMMING GUIDE (EPG)

The operator can use the CFT 2000's in-band and out-of-band messaging capability to provide program guide information to subscribers. The ways of presenting this type of information—as well as the type of information presented—are numerous. Examples of EPG information include movie and/or program specific descriptions of current and/or future programs or movies. Schedule information is another possibility. Events/programs in a specific time period could be organized by subject matter.

• TWO-WAY UPGRADABILITY

The CFT-2000 is upgradable to two-way operation using Jerrold's STARFONE® and STARVUE® internal modules. The CFT-2000 lets operators offer push-button impulse pay-per-view programming to subscribers without expensive rework.

Jerrold IMPULSE 7000 Series Model CFT 2000

Baseband Converter With On-Screen Display

SPECIFICATIONS

MODEL	CFT 20★# (★ = 1 way/2 way; # = output channel 3/4)	Differential Gain	10% (max.)
Input Frequency	54-550 MHz (excluding data carrier frequency)	Differential Phase	10 degrees (max.)
HRC/IRC Frequency Assignments	Downloaded	Scrambling Method	Gated Sync Suppression or Dynamic-Gated Sync Suppression, Video Inversion, Audio Privacy, Hamlin Compatibility.
Number of Channels	82 channels per cable; one or two cables	On-Screen Display	Character Size: 12 x 18 pixels Screen Size: 12 rows x 24 columns Message/Barker Capacity: 14 pages Channel Descriptors: 4 characters, maximum
Dual A/B Cable Switching	Optional A/B switch (field upgradable)	Parental Control by Channel	100% user-controlled offering channel-by-channel selections
A/B Cable Indicator	LED in front display	Mechanical Security	Std.: security screws; security pin; uni-chassis construction
Input Video Level	0 dBmV to +15 dBmV	Downloadable Parameters	Output Channel Initialization Command Terminal Logical Address System Site Code Time Out Period Terminal Configuration Authorization Information Barker Channel(s) Consumer Feature Enable/Disable Subscriber Messaging Channel Descriptors Channel Cross Reference Map Decryption Key
Input Sound Level	-17 dBmV to +2 dBmV	Two-way System Compatibility	Upgrade in field by addition of STARVUE™ or STARFONE™ internal module
Data Carrier Frequency	FSK Modulated FM Carrier 106.5 or 108.5 MHz	Operating Temperature Range	59°F to 104°F (15°C to 40°C)
Bandwidth Level	±200 KHz standard FM -15 dBmV	Operating Humidity Range	5% to 95% (non-condensing)
Video S/N	49 dB @ 0 dBmV input level	AC Voltage	105 VAC to 125 VAC, 60 Hz
Fine Tuning	Automatic	Power Dissipation	16 Watts at 120 VAC
AFT Capture Range	±300 KHz @ input level of 0 dBmV	Surge Protection	Surge protection provided on power supply and RF ports
Output Frequency Accuracy	±150 KHz	Size	10.25" x 8.25" x 2.7" (LxWxH) (260.4 mm x 209.6 mm x 68.6 mm)
Return Loss:		Weight	5.5 lbs.
Input	6 dB min.		
Output	8 dB min.		
Spurious:			
Output	-57 dBc max., in band		
Cross Modulation Distortion	-56 dB (82 channels, each @ +15 dBmV)		
Composite Second Order Distortion	-56 dB (82 channels each @ +15 dBmV)		
Second Order Distortion	-60 dB (@ +15 dBmV input level)		
Composite Triple Beat Distortion	-56 dB (82 channels each @ +15 dBmV)		
Converted Input Beats (With all Input Signals)	-25 dB (82 channels, each @ +15 dBmV)		
Hum Modulation Distortion	3 IRE		
Output Level	7-14 dBmV		
Isolation (Input/Output)	70 dB min.		

NOTE: Specifications subject to change without notice.

**Jerrold IMPULSE 7000 Series
Model CFT 2000**

**82-Channel Addressable
Baseband Converter
With On-Screen Display**

**SPECIFICATIONS (Continued)
JERROLD IMPULSE MODEL CFT 2000
HANDHELD REMOTE CONTROLS**

MRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line	Power Requirements	Two 1.5 volt AAA batteries
		Weight	3 ounces (with battery)
		Batteries	Included as standard
TVRC-OSD Transmission Range	Up to 25 feet in a direct line from the receiver/converter or up to 22 feet at an angle of ± 20 degrees from receiver center line	Power Requirements	Four 1.5 volt AAA batteries
		Weight	10 ounces (with battery)
		Batteries	Included as standard

NOTE: Specifications subject to change without notice.