IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC.
Petitioner

v.

ROVI GUIDES, INC.
Patent Owner

Patent No. 8,621,512
Filing Date: October 24, 2011
Issue Date: December 31, 2013

Title: INTERACTIVE TELEVISION PROGRAM GUIDE WITH SIMULTANEOUS WATCH AND RECORD CAPABILITIES

Inter Partes Review No.: Unassigned

DECLARATION OF VERNON THOMAS RHYNE, PH.D., P.E., R.P.A.

I, Vernon Thomas Rhyne, declare that I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. INTRODUCTION

1. I have been retained by Petitioner Comcast Cable Communications, LLC, ("Petitioner") to assess U.S. Patent No. 8,621,512 ("Ellis" hereafter) titled "Interactive Television Program Guide with Simultaneous Watch and Record Capabilities."

2. I reside in Austin, Texas.

3. I have also been asked to provide my opinions regarding non-interactive Electronic Program Guide Systems ("EPGs") and Interactive Program Guide Systems ("IPGs") and the resolution of programming content conflicts as related to Ellis, including providing an overview of the prosecution history of Ellis, the disclosure of Ellis, the broadest reasonable interpretation of terms in the claims of Ellis, and what constitutes a person of ordinary skill in the art with respect to Ellis. Specifically, this Declaration provides my opinions regarding the obviousness of Ellis over various combinations of the prior art. I am being compensated for my time at a rate of $695 USD per hour, plus actual expenses. My compensation is not dependent in any way upon the outcome of Petitioner's IPR petition.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

A. Education and Certifications

4. I received an undergraduate degree in Electrical Engineering from Mississippi State University in 1962. I received a Master's degree in Electrical Engineering from the University of Virginia in 1964. I received a Doctorate in Electrical Engineering from the Georgia Institute of Technology in 1967.

5. I am a registered professional engineer ("PE") in Texas, No. 28,728, and a registered patent agent, No. 45,041.

B. Career Synopsis

6. I am a retired Professor of Electrical/Computer Engineering at Texas A&M University and a part-time engineering consultant. From 1967 to 1983 I was a Professor of Electrical Engineering at Texas A&M University. From 1983 to 1995 I was employed at the Microelectronics and Computer Technology Corporation (MCC) in Austin TX. There, I was responsible for MCC's R&D programs in neural network applications, data mining, software interface standardization, and other advanced software development projects. From 1995 to 1997, I was employed at Motorola, Inc. in Austin, TX. I was the Manager of Strategic Programs, Strategic Asset Group, Semiconductor Products Sector.

C. Career Milestones

7. The following is a list of some of my awards and honors: IEEE Fellow (1990) for my "contributions to computer engineering and the computer engineering profession;" IEEE Millennium Award (2000); Golden Core Award, IEEE Computer Society (1996); and Fellow of the Accreditation Board for Engineering and Technology (1992). I am also a member of the following honorary societies: Upsilon Pi Epsilon (Computer Science), Eta Kappa Nu (Electrical Engineering), Tau Beta Pi (Engineering), Phi Kappa Phi (Scholarship), and Sigma Xi (Research). I have been a member of the Institute of Electrical and Electronics Engineers since 1963, rising to the level of Life Member as of 2003.

D. Detailed Research Activity

8. During my engineering career I have participated in a number of research programs which were directly related to the subject matter of the patent at issue in this IPR.

9. I have extensive experience with computer technology, including design and teaching experience with a variety of computer systems, microcomputer systems, and microcontrollers. I have participated in the design of several computer systems and microprocessors, and I have designed systems which made use of those devices as controllers. I am familiar with a variety of computer architectures, and I am an experienced programmer in a variety of programming

languages as well as assembly-level language on a number of different computers and microprocessors.

10. I have conducted research on topics such as CAD systems, neural network applications, data mining, software interface standardization, and other advanced software development projects. I have written papers and given lectures related to topics such as electronic design, digital systems design, communications concepts, graphic symbols for logic devices, *etc*., and have supervised Masters-level and Ph.D.-level engineering students, as well as postdoctoral associates. I have served as a consultant to several companies and law firms regarding intellectual property litigation from 1978 to the present. I have served as a Member of the Panel on Assessment, Electrical and Electronics Engineering Laboratory, U.S. National Institute for Standards and Technology, and as the Chair for nine U.S. engineering program accreditation teams, including accreditation teams for the University of California at Berkeley and the University of Illinois.

11. My detailed employment background, professional experience, and list of technical papers and books are contained in my CV, attached as Appendix A.

12. Prior to reviewing Ellis, I was well familiar with the type of subject matter described and claimed in it. Ellis relates to an interactive television program guide which allows a user to view program listings, to navigate through the

program listings, and to select a program to view or record from that listing. Ex. 1001, Abstract. In that regard, I have over ten years of experience with television transmission systems, including the early use of the blanking interval for transmitting data such as program descriptions, closed captions, parental-control information as part of the broadcast television signal, IPGs and EPGs. I also have had hands-on experience with a variety of set-top boxes including Scientific-Atlanta's Explorer® 2000 and 3000 and the 8600X set-top boxes (including visiting the Scientific-Atlanta R&D facilities to meet with their engineers), the Pioneer BD-V3000 set-top box, and the Cisco 8742HDC. I have also studied other manufacturers' set-top boxes and satellite receivers in the course of my consulting practice. I have owned or rented several other set-top boxes in my home, and have owned a Tivo digital video recorder since its introduction in 1999. I am also familiar with the AT&T U-verse system for delivery of television programming and electronic program guide.

13. I retired from full-time work as of 1997. In addition to the work described above and in my CV (*see* Appendix A), I have worked part-time as a consulting engineer for the past forty years doing computer systems design, application-specific system design, and expert witness work in intellectual property litigation.

14. I believe that my extensive academic and industrial experience well qualify me as an expert in the fields of communications, control, and advanced software applications of relevance to this Declaration, and particularly in IPGs, and the manner in which conflicts between viewing and recording programs can be resolved in a set-top box. I am knowledgeable of the relevant skill set that would have been possessed by a hypothetical person of ordinary skill in the art at the time of the invention of Ellis in 1999.

III. MATERIALS REVIEWED

15. The analysis that I provide in this Declaration is based on my education and experience in the fields of electrical and computer engineering, as well as the documents I have considered, including Ellis (Ex. 1001), which claims priority to Provisional Application No. 60/089,487 ("the '487 Provisional" and "Ex. 1002" herein) which was filed on June 16, 1998. I have also reviewed the file wrapper for Ellis (Ex. 1003).

16. I have also reviewed various relevant publications from the time of the alleged invention of Ellis. These publications are listed below:

Exhibit	Description
1001	U.S. Patent No. 8,621,512 ("Ellis")
1002	U.S. Prov. App. No. 60/089,487 ("the '487 Provisional")
1003	Prosecution History of U.S. Patent No. 8,621,512
1004	Not used
1005	Not used

Exhibit	Description
1006	Certified Translation of WO/1997/046013 ("Sano")[1]
1007	U.S. Patent No. 6,208,799 ("Marsh")
1008	U.S. Patent No. 5,850,218 ("LaJoie")
1009	Not used
1010	*Modern Cable Television Technology* (cover, chapters 1, 18, and 19)

IV. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS

17. The following subsections provide my understanding of the legal principles that I have relied upon in forming my opinions as set forth herein.

A. Person Having Ordinary Skill in the Art

18. It is my understanding that an assessment of the claims of Ellis must be undertaken from the perspective of what would have been known or understood by a person having ordinary skill in the art, upon reading Ellis on its relevant filing date and in light of the specification and file history of that Patent. I refer to such a person as a "PHOSITA" herein.

19. For the relevant priority date for Ellis, I have used June 11, 1999, based on the filing date of its Patent Application No, 09/329,850, now abandoned. Ex. 1001, 1:8-18.

20. In determining the appropriate level of ordinary skill in the art, I have considered the following factors: (a) the types of problems encountered by those

[1] Exhibit 1006 is a recent translation of the Japanese version of the Sano reference that was commissioned by Comcast.

working in the field and prior art solutions thereto; (b) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; and (c) the educational level of active workers in the field as of 1999.

21. I have been asked to provide my opinion as to the state of the art in the field of IPGs, television video signal processing and recording, graphical user interfaces, and related computer software around 1999, including the knowledge to be expected of a PHOSITA, the manner in which a PHOSITA would have understood the claims of Ellis, the manner in which a PHOSITA would have understood the prior art, or what a PHOSITA would have been led to do based on the prior art. Similarly, when discussing the disclosures of the prior art and/or the claims of Ellis, I address those topics as they would have been viewed by a PHOSITA in the 1999 timeframe.

22. Based on my consideration of the factors listed in ¶ 20 above, in my opinion a person of ordinary skill in the art related to Ellis in the 1999 timeframe would have had at least a bachelor's degree in computer science, electrical engineering, computer engineering, or a similar discipline, and two to three years' experience or familiarity with EPGs, television video signal processing, graphical user interfaces, and associated computer software, or would have had equivalent experience either in industry or research, such as designing, developing, evaluating, testing, or implementing the aforementioned technologies.

23. I also understand that U.S. law provides categories of information that constitute prior art that may be used to anticipate or render obvious patent claims. To be prior art to a particular patent claim under the relevant law, I understand that in general a reference must have been made, known, used, published, or patented, or be the subject of a patent application by another, before the priority date of the patent, and in this matter, must satisfy one of the standards of pre-AIA 35 U.S.C. § 102. I also understand that a PHOSITA is presumed to have full knowledge of the relevant prior art.

B. Obviousness

24. I also understand that a proper analysis of whether an invention is invalidated for obviousness includes a review of the scope and content of the prior art, the differences between the patent claims and the prior art, and the level of skill in the pertinent art at the time of the invention.

25. I also understand that in determining obviousness I should take into account the knowledge, experience, and creativity of a person of ordinary skill in the art at the time of the alleged invention, and whether such a skilled artisan would have found the challenged claims to be a "predictable use of prior-art elements according to their established functions," as described by the U.S. Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 401 (2007), and therefore obvious in view of the prior art.

26. I also understand that a claim may be invalidated for obviousness if there is a teaching or suggestion to combine prior art references in a manner that yields the claimed invention. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references. I understand that in consideration of this issue it is important to identify whether a reason existed at the time of the invention that would have led a person of ordinary skill in the pertinent art to combine elements of the references in a way that yields the claimed invention.

27. I also understand that various objective or "real world" factors may be indicative of non-obviousness. I understand that such factors include:

(A) The commercial success of the claimed invention;

(B) The existence of a long-felt, unresolved need for a solution to the problem solved by the claimed invention;

(C) Failed attempts to solve the problem solved by the claimed invention;

(D) Copying of the claimed invention;

(E) Unexpected results of the claimed invention;

(F) Praise for the claimed invention by others in the relevant field; and

(G) Willingness of others to accept a license under the patent because of the merits of the claimed invention.

C. Use of the Broadest Reasonable Interpretation

28. I also understand that, in an *inter partes* review proceeding, the patent claims at issue are given their broadest reasonable interpretation in light of the specification of the patent, unless otherwise noted. I also understand that claim terms which are not expressly defined in the patent are to be given their plain and ordinary meaning as would be understood by one of ordinary skill in the art in view of the patent specification, other intrinsic evidence, and extrinsic evidence. As explained below, I have followed these directions in forming the opinions set forth in this Declaration.

V. THE STATE OF THE ART RELATIVE TO ELLIS

A. The Prior Art of Program Guides

29. Ellis discloses and claims a conflict resolution system providing an IPG which a user can use to select a television program to watch while also selecting another program that can be recorded at the same time. Ex. 1001, Abstract; Claim 13. The Ellis Abstract also explains that such a system can be implemented by a set-top box with a single tuner or a set-top box having multiple tuners. The Ellis system allegedly determines that if a conflict exists for a recording, viewing, or other function, the system alerts the user and provides the user with the opportunity to cancel the conflict with the IPG. Ex. 1001, Claim 1.

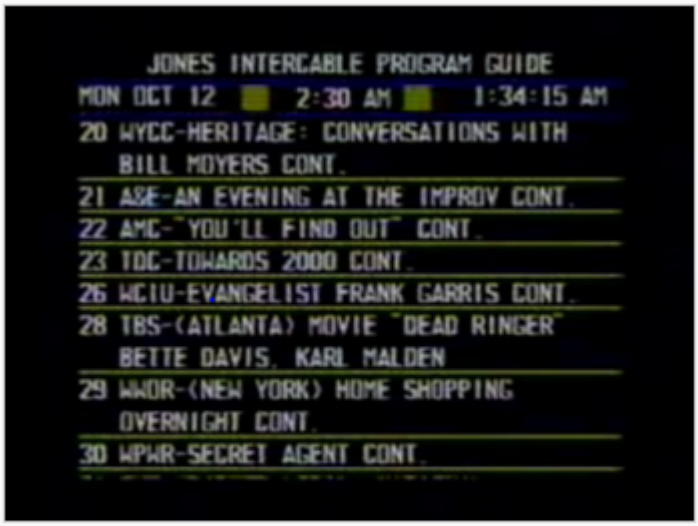
30. Of note here, however, is the fact that of the 1999 filing date of Ellis, there were a number of IPG-based systems which supported the simultaneous watching and recording of television programs, with a number of companies and individuals developing and publicizing approaches to creating such systems as a way for a television viewer to identify programs of interest for either (or both) viewing and recording. A significant contributor to these developments was the transition by many television viewers from broadcast television received with the then-familiar TV antennas, to the delivery of television programming and other services through coaxial cables, which were brought to the users' homes. Whereas over-the-air delivery of television programming was limited to a small number of channels in most markets, the transition to cable delivery provided an opportunity to deliver many more channels of general and special-interest programming.

31. As of the early-to-middle 1990s, cable television systems and their larger number of available channels were proliferating across the U.S. For example, a seminal book in the field—*Modern Cable Television Technology* by Walt Ciciora, James Farmer, and David Large[2]—on page 4 (Ex. 1010 at 3) notes that around this time:

[2] Morgan Kaufmann Publishers, Inc., San Francisco, CA, 1999. (Ex. 1010).

... cable television service is enjoyed by nearly 65 million U.S. households. This is a market penetration of nearly 67%. Cable service is available to 96.7 % of U.S. television households.

32. To inform users about the various television programs that were available from their cable service, early cable systems provided a dedicated channel showing a scrolling display of the names of those programs, a brief description of the program and what time the programs were going to be aired. Those data slowly displayed on a rolling basis, and the user could not increase the speed of the display. Those displays were the original EPGs; they were not interactive. An example of such a non-interactive EPG is shown below:



The EPG Channel, an electronic program guide (EPG) from 1987.

33. A more modern form of the EPG is the *interactive* [electronic] program guide (the "IPG," though often loosely referred to as an EPG). An IPG

allows television viewers to navigate scheduling menus interactively, selecting and discovering programming by time, title, channel or genre by using an input device such as a television remote control. The interactive menus are generated entirely within local receiving or display equipment using raw scheduling data sent by individual broadcast stations or centralized scheduling information providers. Today, a typical IPG provides user selectable information covering a span of one or two weeks.

34. On pages 9 and 10 (Ex. 1010 at 4-5), *Modern Cable Television Technology* also explains that with cable television, one of the major parts of that system is "the terminal equipment (set top terminals and consumer electronics hardware)." Ex. 1010 at 4-5. Given those terminals (also called "set-top boxes" or "STBs"), *Modern Cable Television Technology* goes on to explain that most set-top boxes available in the mid to late 1990s provided an on-screen display which allowed the user to select channels to watch and/or record through the use of an EPG. Ex. 1010 at 7.

35. That book also noted that EPGs were being built into television systems and STBs, and that some of the STBs also provided IR LEDs which could be used to control a separate video recorded. Ex. 1010 at 7. Relatedly, I note that an IPG can include an on-screen display that presents the user the channels and

programs for viewing or recording, and the screen is responsive to user input. Ex. 1001, 6:65-67 – 7:1-16; Fig. 4(a).

36. Further, Chapter 19 of *Modern Cable Television Technology* describes a number of different ways of connecting the coaxial cable supplying television programming to a home with TVs, VCRs, and STBs based on a 1987 report from the National Cable & Television Association's[3] Engineering Committee. One approach described in § 19.3.1 of *Modern Cable Television Technology* allows the user to "watch one unscrambled channel while recording a different unscrambled channel." Ex. 1010 at 9. An alternate approach described in § 19.3.3 of *Modern Cable Television Technology* uses two STBs, each with its own tuner, to supply programming to a VCR and a television set which allows a user to "watch any authorized scrambled or unscrambled program" and to "record any (other or the same) authorized scrambled or unscrambled program." Ex. 1010 at 11.

37. The original function of STBs, also referred to as "converter boxes" in the early 1990s,[4] was simply to select one of the many incoming channels so that it could be watched on a TV set. The incoming channel was tuned to and then

[3] Currently known as the Internet & Television Association.

[4] *See* the Cable Television Consumer Protection and Competition Act of 1992, Public Law 102-383-OCT. 5, 1992.

converted to a specific channel (often channel 3 or 4) for output to the associated television set or recorder, those end devices being tuned to receive programming on that fixed channel. This basic capability was soon enhanced, however, to allow the STB to be controlled using a hand-held infrared controller. Later, more sophisticated STBs were introduced by companies like Scientific-Atlanta and Cisco. Those STBs contained enough memory and graphics resources to allow them to accept downloaded features providing enhanced capabilities including an on-screen display, volume control, virtual text channels, a sleep timer, parental locks, reminder messages, and multi-lingual displays.[5]

38. As STB capabilities expanded, EPGs such as those described in the *Modern Cable Television Technology* became a common feature of those in-home devices. As an example, as early as 1997, Sano (Ex. 1006, discussed in detail below) described a multi-tuner system that uses an IPG that provides a listing of available programs and allows a user to select a program for viewing or recording from the IPG. Ex. 1006, 11:29-34. I note that Sano specifically describes the program guide as an "EPG," but in my opinion a PHOSITA would have understood that the "EPG" of Sano is, in fact, an interactive electronic program

[5] *See http://blogs.cisco.com/sp/a_brief_history_of_set-top_box_innovation* (last accessed on October 26, 2016).

guide since it provides an on-screen display that presents programming information to the user and is also interactively responsive to user inputs. I thus refer to the EPG of Sano as an IPG throughout this Declaration. Similarly, Marsh (also discussed below) describes an IPG received and stored by the STB. Ex. 1007, 1:20-24; 3:30-35. Additional system capabilities disclosed by LaJoie (Ex. 1008, discussed below), for example, included "music service." Ex. 1008; 5:39-40.

39. By 1997, therefore, in my opinion a PHOSITA would have known many of the features of the purported invention claimed by Ellis to be well known in the prior art.

B. Overview Of Ellis

40. As I noted above, Ellis relates to a conflict resolution system using an interactive program guide that allow a user to view program listings, to navigate through the program listings, to select a program to view or record, and to resolve any conflicts which may arise when they make a selection. Ex. 1001, Abstract; Claim 13. Ellis also discloses that the IPG can be implemented on a receiver with multiple tuners or on a VCR and television using an RF bypass switch. Ex. 1001, 1:42-47; 1:57-2:9; Fig. 12. Ellis explains that while providing "a full-featured interactive program guide, it is typically necessary to use several different screens, each screen being associated with one or more features of the system." Ex. 1001,

3:19-22; 5:49-51; FIGS. 3-10 (depicting "sample screen displays which illustrate the operation of the interactive program guide of the present invention").

41. Ellis also discloses that IPGs are typically implemented on STBs (Ex. 1001, 1:26-27), and that having a set-top box provide an IPG allows users to view a listing of viewable television programs, and in some cases, to select a program to be recorded. Ex. 1001, 1:27-30. Given those capabilities, Ellis identifies as a "significant disadvantage" the alleged fact that the available IPGs are provided by STBs that contain only one tuner, although STBs containing two tuners have been proposed. Ex. 1001, 1:35-38. Given a one-tuner STB, therefore, Ellis opines that if the user has assigned that tuner to a program being recorded, the user will be unable to watch a second program while that recording is taking place. Ex. 1001, 1:38-41. Accordingly, Ellis proposes to provide a "more sophisticated program guide" that operates with a multi-tuner STB Ex. 1001, 1:42-43.

42. To implement a conflict-free IPG system, Ellis discloses an STB having more than one tuner and states that the "arrangement of FIG. 2(b) allows the interactive television program guide to allocate whichever tuner is not currently busy for recording a selected program when that program is about to begin." Ex. 1001, 7:55-58; Fig. 2(b).

43. Having such a system, Ellis also discloses that even when a program is being recorded by using one tuner, a user can still use the IPG to select a

different program for viewing. In so doing, the IPG system uses one tuner to provide that second program to a television set. Ex. 1001, 8:19-21. Ellis also discloses a system that includes multiple tuners that are capable of various "secondary tuner functions" such as allowing the user to view a program, to record a program, or to utilize picture-in-picture ("PIP") functions. Ex. 1001, 1:55-2:5. Further, with regard to possible conflicts, Ellis discloses with respect to the flowchart of Figure 3(b) that a user may choose to cancel a tuner function currently in progress to switch the tuner to a different requested function, or the user may cancel the requested function, thereby continuing the current tuner function. Ex. 1001, Fig. 3(b). I also note that in the alternate embodiment shown in Fig. 12 of Ex. 1001, the end user may perform these functions by using a set-top box connected to a VCR, a television, and an RF bypass switch. As I explain below, however, the use of IPG systems to resolve such tuner conflicts was well known in the prior art as of 1999.

C. The Priority Date and Prosecution History of Ellis

44. I have reviewed the prosecution file history for Ellis. U.S. Application No. 13/280,215 was filed on October 24, 2011 (Ex. 1003). That application was the fifth of a series of applications claiming priority to the '487 Provisional (Ex. 1002). However, based on my study of it, it is my opinion that Ellis is not entitled to the filing date of the '487 Provisional. I base that opinion on my

understanding that in order to properly support a later-filed application, a provisional application must contain a written description of the claimed invention such that a PHOSITA would believe that, as of the priority date sought, the applicant was in possession of the invention that is later claimed, and that such a written description must actually or inherently disclose each and every element of the later-allowed claims. Clearly, that requirement is also not satisfied by the '487 Provisional.

45. For example, the '487 Provisional consisted of only a two-page write-up that lacked any drawings or flowcharts. Further, the '487 Provisional did not provide any implementation details, did not provide a complete written description of the various features set forth in the later-filed application for Ellis, and did not provide an enabling disclosure that would allow a PHOSITA to practice any of the alleged inventions set forth in those later claims. Ex. 1002 at 5 and 6. More specifically, the brief discussion found in the two-page '487 Provisional fails to disclose those skilled in the art how to make and use the full scope of the later-allowed Ellis claims without undue experimentation, and lacking that disclosure, those claims fail to bear a reasonable correlation to the limited disclosure found in that Provisional.

46. Due to the shortcomings discussed above, it is my opinion that Ellis is not entitled to the priority date of the '487 Provisional, but rather only the date of

the later-filed non-provisional U.S. Patent Application No. 09/329,850 ("the '850 Application"), now abandoned (June 11, 1999). Ellis is a continuation of the '850 Application. Ex. 1001, 1:8-18.

VI. SUMMARY OF THE PRIOR ART

A. The Combinations of Prior Art Addressed Herein

47. I understand that the Petitioner is requesting an *inter parte*s review of claims 1-24 of Ellis under the two grounds set forth in the following table.

Ground	Claims of Ellis	Basis for Unpatentability
1	1-4, 8, 12-16, 20, and 24	Obviousness under 35 U.S.C. 103(a) over Sano in view of Marsh.
2	5-7, 9-11, 17-19, and 21-23	Obviousness under 35 U.S.C. 103(a) over Sano in view of Marsh and further in view of LaJoie.

B. The Sano Patent

48. The Sano Publication (Ex. 1006) is directed toward a system with a plurality of tuner portions which thereby has the capability to record multiple programs at the same time. Ex. 1006, 8:36; 12:32-34. More specifically, Sano discloses a system that includes three tuners for receiving TV broadcast information and output channel information for viewing or recording. Ex. 1006, 5:45-6:8; Figs. 4 and 5. Notably, Sano discloses that those tuners include a secondary function of collecting the data defining the IPG that is "transmitted together with the picture information." Ex. 1006, 11:30-32.

49. Sano also discloses that a user can use an IPG displayed on the television viewer to select a program to be recorded by use of a cursor, where the IPG displays a weekly program schedule by channel or by category. Ex. 1006, 11:32-34. Accordingly, Sano's system has the ability to record up to three channels of programming at the same time.

50. A PHOSITA would therefore understand that when seeking use of the Sano system to record multiple programs at the same time, a conflict can arise if the user seeks to view or record an additional program at a time when all of the tuners are already in use. Such a conflict can also be created is the user wants to schedule a new recording of a program that is broadcast at the same time as the previously scheduled recordings. To handle such conflicts, Sano discloses that a "warning" is displayed when "it is impossible to record all of the channels that have been set," thereby allowing the user an opportunity to resolve the conflict. Ex. 1006, 12:33-37. Sano discloses that such a warning can be a beep tone or a warning display. Ex. 1006, 12:35-36.

C. The Marsh Patent

51. Marsh (Ex. 1007) discloses a system and method that includes an IPG, a VCR, a cable television system, and a STB that provides a user the ability to update conflicting recording timers automatically or by providing a user-alert message that allows user to resolve the conflict. Ex. 1007, Abstract. Marsh's

system also discloses that the system's VCR recording functions are automatically adjusted in a manner to accommodate the occurrence of a program-delay event or a program-cancel event by the TV cable system. Ex. 1007, Abstract. In that circumstance, a PHOSITA would understand that when Marsh's system updates scheduled program times, the possibility arises for conflict with other scheduled recordings.

52. When such a recording conflict happens, Marsh provides the user alert-message. Ex. 1007, Fig. 8. That message allows the user to interactively resolve the time-slot conflict as they wish. Ex. 1007, 12:5-9. Figs. 3 and 8 of Marsh are copied below, with the identification of a conflict and the corresponding user alert message step highlighted in yellow in Fig. 3.

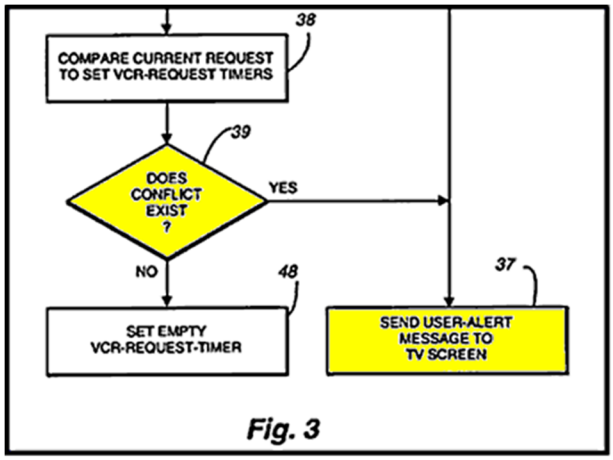


Fig. 3

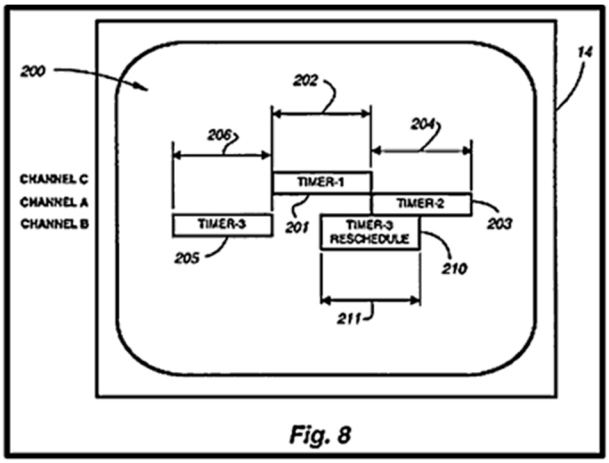


Fig. 8

53. As an example, if a user is watching a program and a conflict arises due to the scheduled recording of a different program, Marsh discloses that a "user-alert message" is displayed on the television set. Ex. 1007, 12:28-36. That

alert message allows the user to cancel the pending recording, or if the user desires a different choice, the program being viewed will be automatically changed. Ex. 1007, 7:29-33; 12:21-27; 12:43-49; Fig. 3.

54. In addition, Marsh's system uses an IPG displayed on the TV and a remote control so that the user can manually position a cursor or perform a similar operation in order to select a program. Ex. 1007, 2:1-3. Accordingly, Marsh discloses that the user can interactively reprogram or cancel any scheduled recording operation, and that an infra-red (IR) remote control can allow them to communicate with the STBs and that a program that the user wishes to view or record can be selected from the IPG data received by the STB. Ex. 1007, 12:24-26; 5:38-40; 7:11-16.

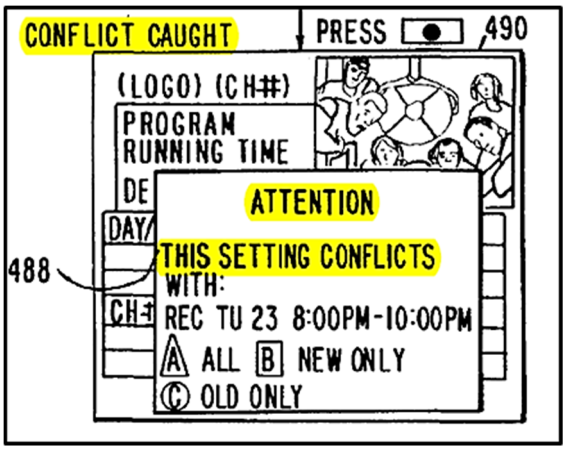
D. The LaJoie Patent

55. LaJoie (Ex. 1008) is directed to a system and method to provide both cable services and online services such as World Wide Web browsing, Internet E-Mail, and Home Shopping." Ex. 1008, Abstract.

56. LaJoie also discloses a STB that includes two tuners, as well as providing an IPG through which program summary information can be displayed. Ex. 1008, 13:14-15; 23:44-45; Fig. 16. LaJoie also discloses that "additional information can be displayed for a highlighted program if the user presses an

information key on the set-top terminal or on its remote control." Ex. 1008, 30:12-16.

57. LaJoie also discloses the provision of an IPG that provides a conflict resolution feature that provides a message to the user whenever a conflict is identified, thereby giving the user the ability to use the IPG to correct the conflicting event. Ex. 1008, 29:18-32; Fig. 24. LaJoie's Fig. 24 of is copied below with the conflict alerts highlighted in yellow.



58. LaJoie describes Fig. 24 as illustrating a One-Touch Recording (OTR) feature the LaJoie system provided. That feature involves a "recording key" within the IPG. Ex. 1008, 29:24-32. When that key is activated while with a program is highlighted on the IPG, a VCR timer will be set up for recording that program. Ex. 1008, 29:5-10. In addition, a "recorded indicator" will appear in a program summary window. Ex. 1008, 29:9-10.

VII. CLAIM CONSTRUCTION

59. In making this Declaration, I have been asked to review the terms found in the Ellis claims to determine what a PHOSITA would understand those terms to mean at the time of the alleged invention. As discussed above, Ellis describes and claims "[a]n interactive television program guide system is provided in which a user may use the program guide to watch one program while simultaneously recording another program without interrupting the recording or viewing process." Ex. 1001, Abstract. Thus, according to the alleged Ellis invention, a television screen is converted to a multi-channel display by using an existing PIP or multiscreen function, with the effect of improving the convenience and reliability of channel selection so that a user can easily select channels through a menu-based selection.

60. I understand that the validity of each claim of Ellis must be evaluated individually on its merits, and I have done so below in Sections VIII and IX.

61. I understand that in an *inter partes* review proceeding, claim terms are to be given their broadest reasonable interpretation consistent with the specification. In my analysis below, I have applied that standard to the words and phrases of the challenged claims unless otherwise noted.

62. I also note that independent claim 1 of Ellis is a method claim and that claims 2-12 depend from it. Further, independent claim 13 of Ellis is a system

claim and claims 14-24 depend from it. Aside from the fact that claim 1 is directed to a method and claim 13 is directed to a system, however, to my reading those two sets of claims (*i.e.*, claims 2-12 and claims 14-24) are essentially identical to one another. I note, however, that in contrast to independent claim 13, the receiving and determining steps of independent claim 1 are not required to be implemented by an IPG since the receiving and determining steps do not require an IPG. Accordingly, in my opinion the validity of claims 13-24 can be addressed together with the validity of claims 1-12.

VIII. GROUND 1 - SANO IN VIEW OF MARSH RENDER OBVIOUS CLAIMS 1-4, 8, 12-16, 20, AND 24 OF ELLIS

63. I have compared claims 1-4, 8, 12-16, 20, and 24 of Ellis to Sano and the Marsh. It is my opinion that Sano in view of Marsh discloses each and every limitation of claims 1-4, 8, 12-16, 20, and 24. I explain that opinion on a limitation-by-limitation basis below.

A. Claims 1 and 13

64. As I noted above, claim 1 of Ellis is a method claim, while claim 13 of Ellis is a system claim. As I explain below, in my opinion Sano in view of Marsh discloses a method and system having all of the recited steps and elements of claims 1 and 13 of Ellis.

65. The preambles of Claims 1 and 13 read as:

A method/system for resolving a conflict when multiple operations are performed using multiple tuners controlled by an interactive television program guide, the method/system comprising:

66. It is my opinion that under the broadest reasonable interpretation, these preambles are not construed to be limitations on claims 1 or 13 because the preambles do not provide an antecedent basis for any claim elements and the preambles are merely statements of intended use. It is also my opinion that the preambles of claims 1 and 13 are not limiting because the bodies of claims 1 and 13 each describe a structurally complete invention and deletion of the preambles would not affect the structure or steps of the claimed inventions. I note, however, that Sano (Ex. 1006) discloses "a digital broadcast recording and playing apparatus according to another aspect of the present invention comprises a plurality of tuner portions and recording channel selecting means." Ex. 1006, 4:13-15. Sano also discloses that the programs that a viewer would want to record or view are "selected using a cursor, etc. from a weekly program schedule, by channel or by category displayed on the display screen of the image receiver based on the EPG information." Ex. 1006, 11:32-34. It is also my opinion that a PHOSITA would understand that the IPG taught by Sano is used to control multiple tuners.

67. Claim 13 further requires:

a first tuner;

68. Here, I note that Sano discloses a multi-tuner system at Figures 4 and 5.

69. Claim 13 further requires:

a second tuner; and

70. Here I note that Sano discloses a multi-tuner system at Figures 4 and 5.

71. Claim 13 further requires:

an interactive television program guide implemented on the system, wherein the interactive television program guide is operative to:

72. Here I note that Sano discloses that "information on the weekly program schedule of each channel and the categories and the names of the programs, so-called electric program guide [ ] is transmitted together with the picture information." Ex. 1006, 11:29-32.

73. Claims 1 and 13 further require:

receiving a request to perform a tuning operation;

74. As I noted above, the preamble is not limiting and this element of claim 1 does not require an IPG. Here I note, however, that Sano discloses that in order to set up a recording, the viewer uses the IPG to select the desired program or

channel to record. Ex. 1006, 11:32-34. Further, in my opinion it would have been obvious to a PHOSITA that when a user would select a channel for viewing or recording using the IPG, that selection would necessarily result in the request for and completion of a tuning operation.

75. Claims 1 and 13 further require:

> *determining that neither a first tuner nor a second tuner are available to perform the requested tuning operation, wherein the first tuner and the second tuner are both capable of performing the tuning operation;*

76. Here I note that Sano discloses that "the number of channels that can be arbitrarily selected and simultaneously recorded is three. Given this, if the number of channels set is more than three in the same time band when setting the timer-recording, it is impossible to record all of the channels that have been set." Ex. 1006, 12:32-34. Further, when Sano's system determines that more than three channels are to be recorded at the same time, "it is impossible to record all of the channels that have been set." As a result, the user is provided with an "alarm" "or a warning display." Ex. 1006, 12:35-36. As I noted above, the preamble in claim 1 is not limiting and this claim limitation does not require an IPG. However, it is my opinion that a PHOSITA would understand that the IPG taught by Sano is used to determine if a tuner is available since the "program that is to be recorded is

selected [by] using a cursor, etc. from a weekly program schedule, by channel . . . displayed on the display screen of the image receiver based on the EPG information." Ex.-1006, 11:31-34.

77. I note that during prosecution, Ellis asserted that another reference, LaJoie, only disclosed "conflicts associated with timers for different programs." Ex. 1003 at 89. In so doing, Ellis argued that "checking for such timer related conflicts does not include determining that neither the first nor the second tuner are available to perform the requested tuning operation." Ex. 1003 at 90. While I do not agree with that assertion, that argument certainly does not apply to Sano. Sano expressly states that the alert is provided "when the number of channels which are set overlapping exceeds the maximum number of simultaneously recordable channels of the recording and playing means." Ex. 1006, Claim 11. (Emphasis added). The maximum number of channels of the recording and playing means is thus based upon the availability of enough tuners to meet the user's requests. Further, at Ex. 1006, 10:36-41 Sano states:

> The three tuner portions 22 a, 22 b and 22 c receive broadcasts of different frequencies and apply them to the recording channel selecting portions 41 a, 41 b and 41 c, respectively. The outputs of the recording channel selecting portions 41 a, 41 b and 41 c are inputted to the data stream compositing portion 51, which composites data into

a time series of data streams and outputs them to the 40 recording/playing portion 24.

In addition, Sano describes a tuner conflict which reasonably applies to the present or future, as Sano makes no distinction as to when a user can "set" a recording request. Ex. 1006, 12:32-36; Claim 11.

78. It is therefore my opinion that a PHOSITA would understand that the system and method taught by Sano includes three tuners that all have the same tuning capabilities, and that it is possible to simultaneously select tuning functions of each of those tuners.

79. Claims 1 and 13 further require:

and in response to the determination, displaying an alert that provides a user with an opportunity to direct the interactive television program guide to cancel a function of the second tuner to permit the second tuner to perform the requested tuning operation.

80. Here I note that when a user commands a tuning function using the Sano system, but no tuner is currently available to execute that command, Sano discloses the provision of "an alarm, such as a beep tone or a warning display, when the number of channels set exceeds the maximum number of channels that can be recorded simultaneously when setting up timer-recording." Ex. 1006, 12:35-

37. That warning then provides the user an opportunity to rectify the recording conflict. Sano, however, fails to explicitly disclose that a user can cancel the function of a tuner to permit the tuner to perform the requested tuning operation.

81. However, Marsh discloses that a user may use the IPG to cancel a function of the second tuner. Ex. 1007, 12:24-26. Marsh discloses that if all of the VCR record-timers are in use, the user is given an alert message that allows the user to cancel a previously set timer so as to allow their new selection to be scheduled for recording. Ex. 1007, 7:38-43.

82. A PHOSITA would therefore understand from Marsh that after commanding a new tuning operation, such as selecting a program to view or record, the viewer would have an opportunity to cancel a previously selected tuning operation after receiving an alarm or warning, in favor of the newer user-commanded tuning function. It would have been obvious to combine Sano's multiple tuner system with Marsh's recording cancellation feature to improve a user's control over programming content. A PHOSITA would have found claims 1 and 13 a predictable use of prior art elements according to their established functions.

83. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 1 and 13 of Ellis through obviousness.

B. Claims 2 and 14

84. I explained above my opinion that Sano in view of Marsh discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh also discloses a method and system having all of the limitations of claims 2 and 14 of Ellis.

85. Claims 2 and 14 depend from claims 1 and 13 and further recite:

> *receiving a user selection to not cancel the function of the second tuner; and in response to the user selection to not cancel the function of the second tuner, continuing to perform the function of the second tuner.*

86. Here I note that Sano fails to explicitly disclose that a user can choose not to cancel the function of a second tuner. Marsh, however, discloses that the user can choose not to actually perform a newly selected tuning operation, thereby allowing the second tuner to continue to perform the current function. More specifically, Marsh discloses that "in accordance with IPG data . . . the user is enabled to interactively use a TV screen cursor to change the conflicting VCR-record-requests as desired." Ex. 1007, 12:14-18.

87. Marsh also discloses that rather than enforcing automatic cancellation, the provision of the user alert-message allows the user to interactively resolve the

visually displayed time-slot conflict in accordance with their viewing priorities. Ex. 1007, 12:4-18.

88. Marsh also discloses that if a user is watching a program when a scheduled recording operation needs to commence. The user can be given an early warning of that possible conflict in the form of an alert message. The provision of that message allows the user to cancel their new request, if they want to do so. Ex. 1007, 12:28-46.

89. It is my opinion, therefore, that it would have been obvious to a PHOSITA at the time of the alleged invention to combine the multiple tuner system and method taught by Sano with the conflict resolution invention taught by Marsh to allow a user the capability to resolve content programming conflicts when multiple channels are viewed and/or recorded by the user, across multiple tuners, as taught by Sano. The user can then cancel the requested tuning operation as taught by Marsh, thereby continuing the function of the second tuner. A PHOSITA would have found claims 2 and 14 a predictable use of prior art elements according to their established functions.

90. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 2 and 14 of Ellis through obviousness.

C. Claims 3 and 15

91. I explained above my opinion that Sano in view of Marsh discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion, Sano in view of Marsh also discloses a method and system having all of the limitations of claims 3 and 15 of Ellis.

92. Claims 3 and 15 depend from claims 1 and 13 and further require:

> *receiving a user selection to cancel the function of the second tuner; and in response to the user selection to cancel the function of the second tuner, canceling the function of the second tuner and performing the requested tuning operation.*

93. Here I note that Sano fails to disclose that a user may cancel a tuning operation, but that Marsh discloses that limitation. Marsh discloses that an "alert message enables the user to cancel a new request." Ex. 1007, 12:43-44. Marsh also discloses that the provision of the alert message enables the user to interactively resolve the visually displayed time-slot conflict in accordance with the user's viewing priorities. Ex. 1007, 12:4-18.

94. I also note, again, that Marsh discloses that if a user is watching a program when a scheduled recording operation needs to commence the user can be given an early warning of that possible conflict in the form of an alert message. The provision of that message allows the user to cancel their new request, if they want to do so. Ex. 1007, 12:28-46.

95. It is my opinion, therefore, that it would have been obvious to a PHOSITA at the time of the alleged invention to combine the multiple tuner system and method taught by Sano with the conflict resolution invention taught by Marsh to allow a user the capability to resolve content programming conflicts when multiple channels are viewed and/or recorded by the user. The user can choose to cancel the function of the second tuner to allow it to perform the requested tuning operation thereby improving the user's control over programming content. A PHOSITA would have found claims 3 and 15 a predictable use of prior art elements according to their established functions.

96. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 3 and 15 of Ellis through obviousness.

D. Claims 4 and 16

97. I explained above my opinion that Sano in view of Marsh discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion, Sano in view of Marsh, discloses a method and system having all of the limitations of claims 4 and 16 of Ellis.

98. Claims 4 and 16 depend from claims 1 and 13 and further require:

> *wherein the requested tuning operation, the function of the second tuner, and a function of the first tuner each comprises a tuning function selected from the group consisting of viewing television*

programming, recording television programming, and performing a secondary tuner function.

99. As shown above, claims 4 and 16 are written in a form such that the requirements for a "tuning function" are met by having the first and second tuners being used to perform either a viewing operation, a recording operation, or to perform a secondary tuner function. A secondary tuner function can include a process other than television program viewing or recording that requires allocation of the first or second tuner to perform, such as collecting IPG data, enabling Internet browsing, playing a music channel, or providing a PIP signal. *See* Ex. 1001, Fig 3(c) below.

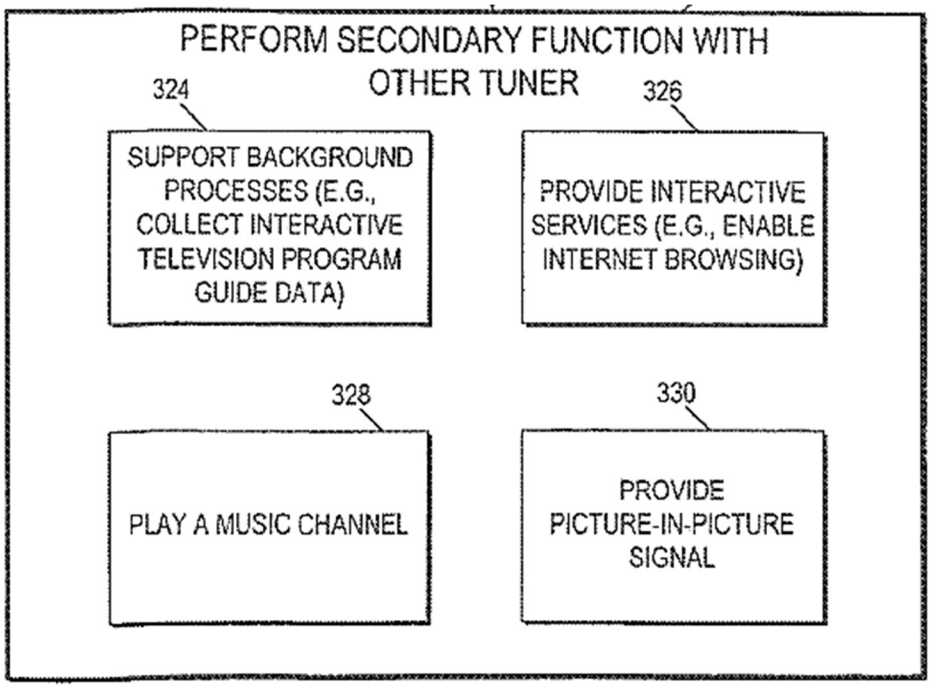


FIG. 3(c)

100. Here I also note that Sano discloses that tuning operations include both viewing or recording programs, thereby twice meeting the "tuning function" limitation of claims 4 and 16. Ex. 1006, 10:36-41. It would have been obvious to one of ordinary skill in the art to combine Sano's system, that teaches that a requested tuner function includes the option to view or record a television program, with the conflict resolution system taught by Marsh to provide a user with increased access to programming content.

101. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 4 and 16 of Ellis through obviousness.

E. Claims 8 and 20

102. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano discloses a method and system having all of the limitations of claims 8 and 20 of Ellis.

103. Claims 8 and 20 depend from claims 1 and 13 and further recite:

> *wherein a function of the first tuner is viewing a first television program, the function of the second tuner is recording a second television program, and the requested tuning operation is viewing a third television program.*

104. The added limitation of claims 8 and 20 requires that the claimed method or system with two tuners, with one tuner being used to select a television program for viewing and the other tuner is being used to select a different television program so that it can be recorded, and that a user of that method or system wants to change the viewing operation to allow viewing a television program different from the programs currently being viewed and recorded.

105. Here I note that Sano discloses that "the number of channels that can be arbitrarily selected and simultaneously recorded is three. Given this, if the number of channels set is more than three in the same time band when setting the timer-recording, it is impossible to record all of the channels that have been set." Ex. 1006, 12:32-34.

106. Sano also discloses that tuning operations include viewing or recording programs. Ex. 1006, 10:36-41.

107. In my opinion, since there are only a limited number of tuner functions, such as viewing or recording, a PHOSITA would have found it obvious to combine the multi-tuner viewing/recording system of Sano with the conflict resolution taught by Marsh so that the user has the option to view a program with one tuner, record another program with another tuner, and request that a tuner be made available to view a third television program. A PHOSITA would have found claims 8 and 20 a predictable use of prior art elements according to their

established functions and would provide the user with increased access and control of programming content. Further, persons of ordinary skill would choose among a limited number of known and obvious approaches, such as viewing and recording as disclosed by Sano.

108. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 8 and 20 of Ellis through obviousness.

F. Claims 12 and 24

109. I explained above my opinion that Sano in view of Marsh discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh discloses a method and system having all of the limitations of claims 12 and 24 of Ellis.

110. Claims 12 and 24 depend from claims 1 and 13 and further require:

> *wherein the first tuner and the second tuner are included in a single device.*

111. Here I note that Sano discloses a single device that contains both a first and a second tuner. Ex. 1006, 10:25-26; Figs. 4 and 5.

112. In my opinion, therefore, a PHOSITA would have found it obvious to combine the multi-tuner viewing/recording system of Sano with the conflict resolution taught by Marsh so that the tuners could be located in a single device as, taught by Sano, resulting in increased user convenience of one device rather than

multiple components. A PHOSITA would have found claims 12 and 24 a predictable use of prior art elements according to their established functions.

113. Given the disclosures identified above, it is my opinion that Sano in view of Marsh invalidates claims 12 and 24 of Ellis through obviousness.

IX. GROUND 2 - SANO IN VIEW OF MARSH AND LAJOIE RENDER OBVIOUS CLAIMS 5-7, 9-11, 17-19, AND 21-23 OF ELLIS

114. I have also compared claims 5-7, 9-11, 17-19, and 21-23 of Ellis to the Sano, Marsh, and LaJoie Patents. Based on that comparison, it is my opinion that Sano in combination with Marsh and LaJoie discloses each and every limitation of claims 5-7, 9-11, 17-19, and 21-23 of Ellis. I explain that opinion on a limitation-by-limitation below.

A. Claims 5 and 17

115. I explained above my opinion that Sano in view of Marsh discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie disclose a method and system of all of the limitations of claims 5 and 17 of Ellis.

116. Claims 5 and 17 depend from claims 4 and 16 and further require:

> *wherein the secondary tuner function comprises a tuning function selected from the group consisting of providing a picture-in-picture signal, collecting program guide data, browsing the Internet, and playing a music channel.*

117. The added limitation of claims 5 and 17 requires that at least one of the tuners of the claimed method or system must be selectively able to provide at least one of (a) providing a program from a tuner in a PIP window, (b) to tune to a channel to collect program guide data, (c) to allow browsing the Internet, or (d) to select a channel for playing music.

118. As discussed above, Sano discloses a system with multiple tuners and Marsh discloses a system and method for conflict resolution. Sano and Marsh, however, fail to explicitly recite a secondary tuner function that includes a PIP signal, collecting program guide data, browsing the Internet, or playing a music channel.

119. LaJoie discloses a multiple tuner system wherein the tuning functions include receiving programs, receiving IPG data, and providing service such as music, Internet browsing and email services. Ex. 1008, 2:10-11; 5:39-40; 5:45-50.

120. In my opinion, therefore, a PHOSITA would have found it obvious to combine the systems of Sano and Marsh with the system of LaJoie to improve a user's viewing experience with a music feature as taught by LaJoie. A PHOSITA would have found claims 5 and 17 a predictable use of prior art elements according to their established functions.

121. Given the disclosures identified above, it is my opinion that Sano in view of Marsh and LaJoie invalidates claims 5 and 17 of Ellis through obviousness.

C. Claims 6 and 18

122. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie disclose a method and system having all recited steps of claims 6 and 18 of Ellis.

123. Claims 6 and 18 depend from claims 1 and 13 and further require:

> *wherein a function of the first tuner is viewing a first television program, the function of the second tuner is performing a secondary tuner function, and the requested tuning operation is recording a second television program.*

124. As discussed above, a secondary tuner function can include a process other than viewing or recording that requires allocation of the first or second tuner to perform it, such as collecting interactive program guide data, enabling Internet browsing, playing a music channel, or providing a PIP signal. Ex. 1001, Fig 3(c).

125. Here I note that Sano describes a multi-tuner system wherein the tuners allow viewing a program and recording a program, while Marsh discloses a method of conflict resolution. Sano and Marsh, however, fail to explicitly recite a

secondary tuner function that includes a PIP signal, collecting program guide data, browsing the Internet, or playing a music channel. However, LaJoie discloses providing service such as music. Ex. 1008, 5:39-40.

126. In my opinion, therefore, it would have been obvious to a PHOSITA at the time to combine the systems suggested by the combination of Sano and Marsh to further include the music service of LaJoie for the purpose of maximizing a user's access to additional programming content. A PHOSITA would have found claims 6 and 18 a predictable use of prior art elements according to their established functions.

127. Given the disclosures identified above, it is my opinion that Sano in view of Marsh and LaJoie invalidates claims 6 and 18 of Ellis through obviousness.

D. Claims 7 and 19

128. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie disclose a method and system having all of the limitations of claims 7 and 19 of Ellis.

129. Claims 7 and 19 depend from claims 1 and 13 and further require:

wherein a function of the first tuner is viewing a first television program, the function of the second tuner is recording a second television program, and the requested tuning operation is performing a secondary tuner function.

130. A secondary tuner function can include a process other than television program viewing or recording that requires allocation of the first or second tuner to perform, such as collecting IPG data, enabling Internet browsing, playing a music channel, or providing a PIP signal. *See* Ex. 1001, Fig 3(c). In my opinion, therefore, it would have been obvious to a PHOSITA at the time of the alleged invention to combine the systems described by Sano and Marsh with the multiple tuner system and secondary tuner function (music channel) described by LaJoie to enhance a user's access to additional programming content.

131. In my further opinion, due to the limited number of possible tuner functions, a PHOSITA would have found it obvious to provide the capability for a user to view a first program with one tuner while using a second tuner to record a different program, and as that was taking place, the user attempted to perform a secondary tuner function on the tuner recording the second television program. Having that capability would allow a user to maximize enjoyment of increased programming content since they would be free to activate a PIP feature (or music service as disclosed by LaJoie) while viewing the first program, as an example. A

PHOSITA would have found claims 7 and 19 a predictable use of prior art elements according to their established functions.

132. Given the disclosures identified above, it is my opinion that Sano in view of Marsh and LaJoie invalidates claims 7 and 19 of Ellis through obviousness.

E. Claims 9 and 21

133. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie disclose a method and system having all of the limitations of claims 9 and 21 of Ellis.

134. Claims 9 and 21 depend from claims 1 and 13 and further require:

> *wherein the alert provides the user with the opportunity to direct the interactive television program guide to cancel the function of the second tuner when the function of the second tuner is viewing a television program, and provides the user with the opportunity to direct the interactive television program guide to cancel a function of the first tuner when the function of the first tuner is viewing the television program.*

135. After a careful review of the specification, claims, and file history of the ’512 patent, I have found no support for the cancellation of a tuner that is being used to view a television program. Rather, the specification and drawings of that patent disclose only cancelling the use of a tuner that is being used to provide a recording or a secondary function. The idea of cancelling a tuner (either the first or second one) is only disclosed in claims 9 and 21 themselves.

136. However, in my opinion, given the type of alert that is disclosed in the ’512 specification, I believe that a PHOSITA would readily be able to extend the disclosure found in Ellis for an alert for cancelling the use of a tuner to stop a recording or a secondary function (*see*, for example, Ex. 1001, Fig. 3(b), Fig. 4(b), and 8:55-10:67), to using that same alert to offer the user the opportunity to cancel the use of a tuner (either the first tuner or the second tuner) for viewing a program as required by claims 9 and 21. Adding that feature to the alerting system of the ’512 patent would not, in my opinion, be difficult to implement, and would give the system’s user the option called for in claims 9 and 21. That same addition would also be easily implemented as an extension of the prior art addressed herein.

137. For example, Sano discloses a digital broadcast recording and playing apparatus which includes a plurality of tuners and a channel selection means for recordings. Ex. 1006, 4:13-15. Sano also discloses that programs for both viewing and recording can be selected using a cursor from a displayed program schedule

that is arranged by channel or by category displayed on the display screen as an IPG. Ex. 1006, 11:32-34. Sano also discloses that a viewing/recording conflict can be prevented by providing an alarm, such as a beep tone or a warning display, when the number of channels needed to perform those operations exceeds the number of channels that can be recorded simultaneously. Ex. 1006, 12:35-37. That same tone or display could easily be extended to alert the user when the use of a tuner for viewing a program may be cancelled in order to allow simultaneous recording.

138. Further, Marsh discloses that an alert provides the user an opportunity to cancel the use of a tuner for recording with the IPG by enabling the user to cancel a conflicting record-request. Ex. 1007, 12:28-46. To show that, Figs. 3 and 8 of Marsh are depicted below with the identification of a conflict and the corresponding user alert message step highlighted in yellow.

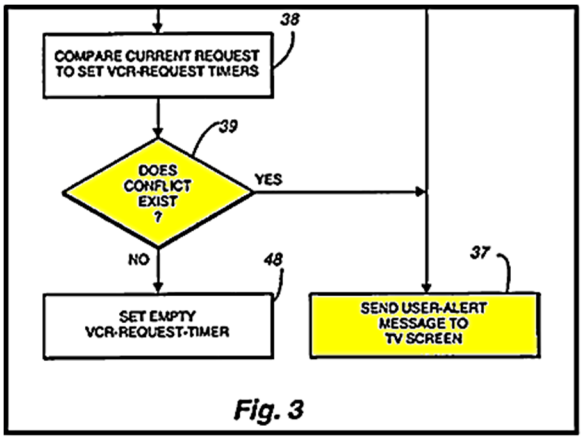


Fig. 3

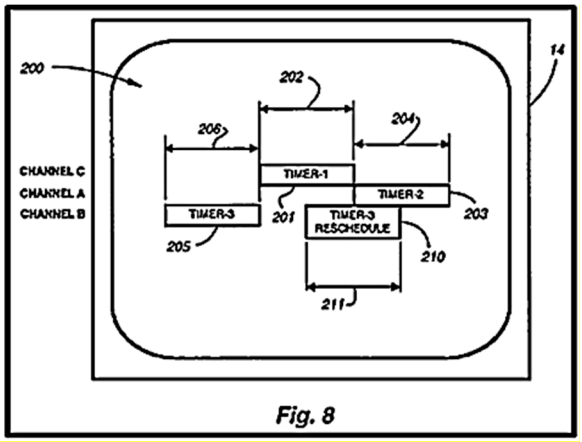


Fig. 8

139. Given the LaJoie disclosures identified above in ¶¶57-58, it is also my opinion that LaJoie's conflict resolution messaging could have easily been extended to alert the user when the use of a tuner for viewing a program may be cancelled in order to allow simultaneous recording.

140. Due to a limited number of known and obvious approaches and design options, such as providing users the capability to continue or cancel a conflicting tuner function on either a first or second tuner, in my opinion it would have been obvious to a PHOSITA at the time to combine multi-tuner system suggested by Sano to include the conflict alert and resolution system features of Marsh, and the conflict alert and IPG cancellation functions taught by LaJoie. One skilled in the art would therefore have found it obvious to extend the use of a multi-tuner system with IPG alert and cancellation systems to allow a user to cancel a viewing tuner function on a first or second tuner to simplify and improve the user's viewing experience. Such a capability would clearly simplify and improve the user's viewing experience. A PHOSITA would have found claims 9 and 21 a predictable use of prior art elements according to their established functions.

F. Claims 10 and 22

141. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie

disclose a method and system having all of the limitations of claims 10 and 22 of the Ellis ’512 Patent.

142. Claims 10 and 22 depend from claims 1 and 13 and require:

wherein the displaying the alert comprises displaying a display screen using the interactive television program guide that provides the user with a first option to continue to perform the function of the second tuner, and with a second option to cancel the function of the second tuner to perform the requested tuning operation.

143. Here I note that Sano discloses a digital recording and viewing apparatus that included a plurality of tuners and recording selecting means. Ex. 1006, 4:13-15. Sano also discloses that programs for viewing and recording can be selected using a cursor from a displayed weekly program schedule arranged by channel based on the IPG information, and that scheduling conflicts can be avoided by providing an alarm such as a beep tone or a warning display, when the number of channels needed to satisfy a user’s requests the maximum number of channels that can be recorded simultaneously. Ex. 1006, 11:32-34; 12:33-37. Sano, however, fails to explicitly state that the user can “cancel” or “continue to perform” a requested function of a tuner.

144. Marsh discloses that an alert provides the user an opportunity to cancel or continue the use of a tuner for recording with the IPG by enabling the user to cancel or continue a conflicting record-request. Ex. 1007, 12:28-46.

145. Further, I note that LaJoie also discloses a conflict-checking feature that is activated when the STB detects a scheduling conflict. Ex. 1008, 21:30-35. LaJoie also discloses a OTR feature that causes a VCR timer to be set up for the highlighted program and a to-be-recorded indicator to appear in a program summary window. Ex. 1008, 29:5-10; Fig. 24,

146. In my opinion, therefore, it would have been obvious to a PHOSITA at the time to combine the systems described by Sano and Marsh with the conflict alert and IPG cancellation functions described by LaJoie. A PHOSITA would have found it obvious to use LaJoie's IPG alert and cancellation system with the multiple tuner system of Sano, to allow a user to: 1) continue a tuner function as taught by Marsh or 2) canceling a requested tuner function such as a recording and thereby continuing the current function of the tuner as taught by Marsh and the OTR feature of LaJoie. Such a capability would have simplified the user's viewing experience and control. A PHOSITA would have found claims 10 and 22 a predictable use of prior art elements according to their established functions.

147. Given the disclosures identified above, it is my opinion that Sano in view of Marsh and LaJoie invalidates claims 10 and 22 of Ellis through obviousness.

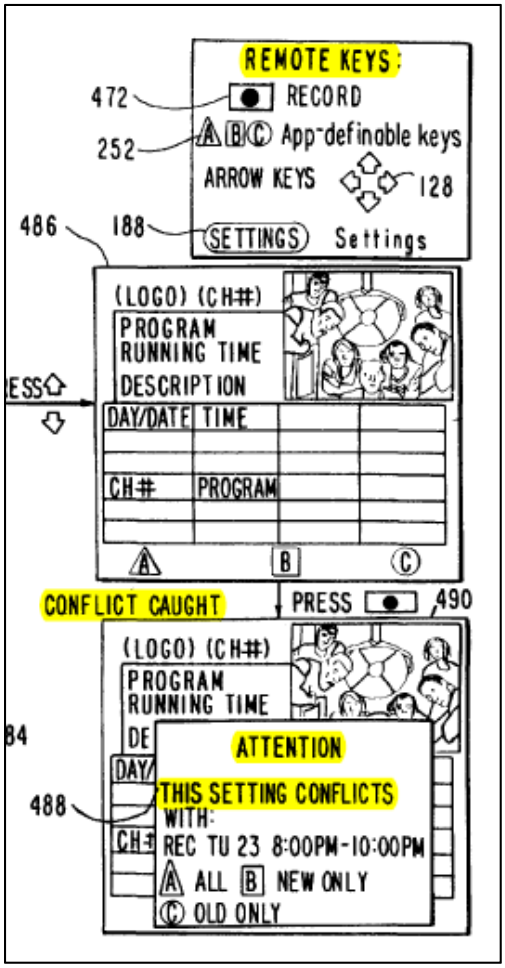
G. Claims 11 and 23

148. I explained above my opinion that Sano in view of Marsh alone discloses all of the limitations of independent claims 1 and 13 of Ellis. Further, as I explain below, in my opinion Sano in view of Marsh and further in view of LaJoie disclose a method and system having all of the limitations of claims 11 and 23 of the Ellis '512 Patent.

149. Claims 11 and 23 depend from claims 1 and 13 and require:

> *wherein the user selects to cancel the function of the second tuner to permit the second tuner to perform the requested tuning operation using a remote control.*

150. I note that LaJoie also discloses a conflict-checking feature that is activated when the set-top terminal detects a scheduling conflict. Ex. 1008, 21:30-35. LaJoie also discloses a OTR feature that causes a VCR timer to be set up for the highlighted program and a to-be-recorded indicator to appear in a program summary window. Ex. 1008, 29:5-10; Fig. 12; Fig. 24 (copied below with the conflict alert and remote keys highlighted in yellow).



151. Further, Marsh discloses a numerical approach to specifying the programs to be recorded, where that numerical code is entered by use of the remote control. Ex. 1007, 2:49-51.

152. In my opinion, therefore, it would have been obvious to a PHOSITA to modify the multiple tuner system taught by Sano to include the remote control devices taught by Marsh and LaJoie. Such a feature would have provided a user with increased personal convenience and control over programming content. A

PHOSITA would have found claims 11 and 23 a predictable use of prior art elements according to their established functions.

153. Given the disclosures identified above, it is my opinion that Sano in view of Marsh and LaJoie invalidates claims 11 and 23 of Ellis through obviousness.

X. CONCLUSION

154. After reviewing the prior art discussed herein and the claims of Ellis, it is my opinion that a PHOSITA would understand that the prior art renders claims 1-24 obvious by the combinations of references identified above.

XI. SIGNATURE

155. I hereby declare under penalty of perjury that all statements made in this Declaration of my own personal knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the U.S. Code.

Executed on January 30, 2017

By:

V. Thomas Rhyne, Ph.D., P.E., R.P.A.

Appendix A

Curriculum Vitae and Publications

VERNON THOMAS (TOM) RHYNE, III
8407 Horse Mountain Cove
Austin, TX 78759-6828
Phone and FAX: (512) 219-0849
E-Mail: trhyne@texas.net or t.rhyne@ieee.org

BIOGRAPHICAL DATA

Birthdate: February 18, 1942

Citizenship: USA

Married: Glenda Pevey Rhyne

Children: Amber Rhyne Compton and Vernon Thomas Rhyne, IV

Grandchildren: Truett Rhyne Compton and Tate James Compton

Security Clearance: Department of Defense Secret (Inactive)

PROFESSIONAL INTERESTS

- Microprocessor/Microcomputer Design and Application
- Computer-Aided Design
- Computer Architecture
- Digital Systems Design and Synthesis
- Digital Communications
- Electronic Circuit Design
- Semiconductor Manufacture
- Technology Maturation and Commercialization
- Intellectual Property Litigation

EDUCATION

- Ph.D. (Electrical Engineering) — Georgia Institute of Technology, 1967.
- M.E.E. — University of Virginia, 1964.
- B.S.E.E. (Special Honors) — Mississippi State University, 1962.

- Japanese Language Instruction, 1988-89, 1996, 1997.
- Modern Semiconductor Manufacturing, Motorola University, 1996.

WORK EXPERIENCE

Industrial and Research:

1997-Present: Retired from Texas A&M University; part-time engineering consultant.

1995-1997: Manager of Strategic Programs, Strategic Asset Group, Semiconductor Products Sector, Motorola, Inc., Austin, TX. Responsible for technology transfer negotiations and management of joint ventures with strategic partners.

1994-1995: Vice President, Research and Development, Information Systems Division, Microelectronics and Computer Technology Corporation (MCC). Responsible for MCC R&D in neural network applications, data mining, software interface standardization, and other advanced software development projects.

1991-1994: Director, MCC ATLAS Standards Laboratories. Responsible for definition and testing of CAD framework and interfaces in support of the CAD Framework Initiative, Inc.

1989-1991: Manager, CAD Framework Laboratory, MCC CAD Program. Responsible for definition and testing of CAD framework and interfaces.

1988-1989: Manager, Systems Engineering Group, MCC CAD Program, 1988. Responsible for alpha testing of MCC CAD System.

1986-1989: Deputy Director, MCC CAD Program. Responsible for general program administration.

1983-1986: Director, Systems Technology Laboratory, MCC CAD Program, Austin, TX. Responsible for development of supporting technologies for MCC CAD System including distributed databases, natural-language interface, and rule-based design management.

1962-1965: Aerospace Technologist, Analysis and Computer Technology Division, NASA Langley Research Center, VA

1965-1967: System Engineer (Part-Time), Lockheed-Georgia Research Center, Marietta, GA.

1961: Summer Intern, Union Carbide Corporation, Texas City, TX.

Academic:

- Senior Lecturer in Electrical/Computer Engineering, University of Texas at Austin, 1984-1994.
- Adjunct Faculty Member, Department of Electrical and Computer Engineering, Carnegie-Mellon University, 1986-1992.
- University/SRC Coordinator, MCC CAD Program, 1988-1990; SRC Design Sciences Advisory Committee, 1989-1990.
- Professor, Electrical Engineering, Texas A&M University 1974-1986 (on leave to MCC during 1983-86).
- Coordinator of Computing, Texas AM University, 1982-1983.
- Director, Digital Systems Laboratory, Department of Electrical Engineering, Texas A&M University, 1978-1983.
- Associate Professor, Electrical Engineering, Texas A&M University, 1969-1974.
- Assistant Professor, Electrical Engineering, Texas A&M University, 1967-1969.
- Instructor, Electrical Engineering, Georgia Institute of Technology, 1965-1967.
- Lecturer, Computer Systems, George Washington University Extension, 1964.

Consulting:

- Consultant to a number of companies and law firms re intellectual property litigation, 1978-present (part-time).
- Consultant to the Electric Power Research Institute, including serving as technical project manager on the EPRI/DOE Distribution Automation Project, 1979-1983.
- Consulting engineer to a variety of national and international industries dealing with microelectronics and computer design. Clients have included Texas Instruments, Control Data Corporation, AMD, ETA, and Signetics.
- Consulting engineer to a variety of clients dealing with computer systems for satellite navigation. Clients have included Texas Instruments, Gould, Matsushita, ITE-Europe, and the Federal Republic of Germany.
- Invited member of NASA Shuttle-GPS Advisory Panel and EPRI/DOE Distribution Automation Research Review Panel, 1979-1981.

- Consultant to U.S. Coast Guard, developing on-line data acquisition system for shipboard navigation data and off-line data processing/analysis systems, 1979-1982.
- Principal investigator on research projects dealing with automated Boolean minimization, high-speed computer arithmetic, bit-serial processing, special-purpose VLSI architectures, marine navigation systems, and computer-aided design of digital systems, 1967-83.

OTHER PROFESSIONAL ACTIVITIES

- Member, Panel on Assessment, Electrical and Electronics Engineering Laboratory, U.S. National Institute for Standards and Technology, 1993 to 1999; Panel Chair, 1996-99. (Appointed by National Research Council)
- Planning Committee, 1997 Workshop for National Technology Roadmap for Semiconductors, SIA.
- Member, Technical Working Group (TWIG) on Semiconductor Manufacture, SIA, 1995-97.
- Secretary, Board of Directors of White Oak Semiconductor, Inc., Richmond, VA, 1996-97.
- Executive Secretary, Board of Directors of the Tohoku Semiconductor Corporation, Sendai, Japan, 1996-97.
- Board of Directors Alternate, Semiconductor Research Corporation, representing Motorola, 1995-96.
- Roadmap Coordinating Committee, Semiconductor Industries Association, 1995.
- Book reviewer, *American Scientist*, 1993.
- Reviewer for State-funded research proposals in microelectronics, computer science, and computer engineering, Texas Higher Education Coordinating Board, 1993.
- Visitor for Accreditation Board for Engineering and Technology, accrediting undergraduate programs in Computer Science, Computer Engineering and Electrical Engineering, 1981-1983, 1991-92, 1997-present.
- Chair for nine U.S. engineering program accreditation teams, 1984-90, including the accreditation teams for the University of California at Berkeley (1988) and the University of Illinois (1989).

- Advisor, Texas State Board of Education (1985), Texas State Coordinating Board for Higher Education (1987).
- Consultant on international engineering accreditation, Kuwait University College of Engineering and Petroleum (1990 and 1992), Korean Institute for Advanced Science and Technology (1993), Bilkent University, Ankara, Turkey (1995), University of the United Arab Emirates (1998), ITESM, Querétaro, Mexico (1999), Kyoto University, Japan (2000), Ritsumeikan University, Japan (2000), Mapua Institute of Technology, Manila (2004).
- Consultant on engineering accreditation to the Japan Accreditation Board for Engineering Accreditation, 2000-2004.
- Advisor to the Washington Accord on International Engineering Accreditation, 2003-04.
- Consultant on engineering education and long-range planning, George Washington School of Engineering and Applied Science, 1990 and 1993-94.

PROFESSIONAL LICENSES

- Registered Professional Engineer, Texas, No. 28,728.
- Registered Patent Agent, No. 45,041.
- Pilot (Single-Engine Land).

PROFESSIONAL AND HONORARY SOCIETY MEMBERSHIPS

Professional Societies:

- Member, Institute of Electrical and Electronics Engineers, 1963-present.
- IEEE Treasurer, 1994 and 1995.
- IEEE Board of Directors, 1991-1995.
- IEEE Executive Committee, 1993-1995.
- IEEE Board of Directors, Division VIII Director, 1993, Division VI Director, 1991-1992.
- IEEE Technical Activities Board, 1991-93.
- IEEE Employee Benefits Committee, Member, 1991 to 1999, Chair, 1997, 1998.
- IEEE Computer Society, 1964 to present.
- IEEE Computer Society Board of Governors, 1985.

- IEEE Computer Society Executive Committee, 1993.
- Accreditation Board for Engineering and Technology, 1994 to 1999, representing IEEE.

Honorary Societies:

- Upsilon Pi Epsilon (Computer Science).
- Eta Kappa Nu (Electrical Engineering).
- Tau Beta Pi (Engineering).
- Phi Kappa Phi (Scholarship).
- Sigma Xi (Research).

Other Honors:

- The Contemporary Who's Who, 2003.
- Strathmore's Who's Who, 2000-present.
- IEEE Millennium Award, 2000.
- Golden Core Award, IEEE Computer Society, 1996.
- Fellow of the Accreditation Board for Engineering and Technology, 1992.
- Outstanding Engineering Graduate, Mississippi State University, 1992.
- IEEE Educational Activities Board Award for Meritorious Achievement in Accreditation Activities, 1991.
- Who's Who in America, 1991-present.
- Who's Who in Engineering, 1991-present.
- Elected as an IEEE Fellow for "contributions to computer engineering and the computer engineering profession," 1990.
- F. E. Terman Award (Outstanding Young Electrical Engineering Educator in U.S.), American Society for Engineering Education, 1980.
- Outstanding Young Engineer (Honorable Mention), National Society of Professional Engineers, 1974.
- Young Engineer of the Year, State of Texas, Texas Society of Professional Engineers, 1973.
- Outstanding Faculty Member, Texas A&M University Student Engineers Council Award, 1973.

- General Dynamics Award for Excellence in Engineering Discloseing, 1972.
- American Men and Women of Science.

COMMITTEE MEMBERSHIPS

Professional:

- Technical Program Chair for 1992 IFIPS Workshop on Electronic CAD Design Environments, March 23-25, 1992, Paderborn, Germany.
- Chair, ISO TC184/SC4-IEC TC3 Joint Working Group (JWG9) for Electrical/Electronic Product Data Exchange, 1991-1993.
- DARPA Principal Investigators Advisory Panel, Information Systems Technology, 1990-1994
- Review team member for academic and research programs in microelectronics at the Microelectronics Research Center, Iowa State University, 1989.
- CAD Framework Initiative: Interim Steering Committee, 1988-1989; Board of Directors, 1989-1992; Treasurer, 1989-1992; Chair, Technical Coordinating Committee, 1989-1990.
- Member, IEC TC3, WG11, 1990-1991.
- Member, Working Group 2, IEC Technical Committee TC3, and IEEE SCC 11.9, developing IEEE Standard 91-1984, "Explanation of Logic Symbols," 1982-1985.

Civic:

- Elected to Eanes Independent School District Board of Trustees, 1986-1997; President, 1987-1990, 1996-97.
- Texas Association of School Boards Finance Committee, 1989-1994; Tax Restructuring Committee, 1990.
- Citizens Advisory Committee, *Westlake Picayune*, 1988-90.
- Advisory Committee for Electric Power Distribution, City of West Lake Hills, 1987-1990.
- Capital Area Easter Seal Rehabilitation Center Advisory Board, 1985-1986, Telethon Committee, 1986.

Publications

Books, Contributions to Books, Published Notes, and Standards:

- *Electronic Design Automation Frameworks—When Will the Promise Be Realized?*, North-Holland, Amsterdam, 1992 (editor and contributor).
- ISO 10303 Standard for Product Data Exchange, Parts 103 (Electrical Interconnectivity), 212 (Electrotechnical Plants), 210 (Printed Circuit Assembly Design and Manufacture), and 211 (PCA Test and Logistics); editor and technical contributor, 1991-1993.
- "An Introduction to CAD Framework Technology," Published notes for DAC Tutorial, 1991 Design Automation Conference, June 21, 1991.
- "NAVSTAR Global Position System, A User's Approach to Understanding," published notes for IEEE Continuing Education Course No. 1125 (1982), with P. S. Noe and J. H. Painter.
- *Traffic Control Systems Handbook*, Chapter 8, "Communications Concepts," Federal Highway Administration, 1976.
- *Fundamentals of Digital Systems Design*, Prentice-Hall, 1973.
- "Supplementary Information for Computer Engineering Program Evaluators," IEEE Manual for Program Evaluators on EAC Accreditation Teams, IEEE Educational Activities Board, May 1987.
- "ABET/EAC Program Criteria for Computer Engineering and Similarly Named Engineering Programs," contributor, 1985-87.
- "Graphic Symbols for Logic Devices," ANSI/IEEE Standard 91-1982, (co-author), IEEE Standards Office, New York, March 1982.
- "The NAVSTAR Global Positioning System, A User's Approach to Understanding." Produced by ALTAIR Corp., College Station, Texas. With P.S. Noe and John H. Painter. 1979 to 1985.