

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC  
Petitioner

v.

PERSONALIZED MEDIA COMMUNICATIONS, LLC  
Patent Owner

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Case No. IPR2020-00723  
U.S. Patent No. 7,747,217

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**DECLARATION OF ALFRED C. WEAVER, PH.D.  
IN SUPPORT OF PATENT OWNER'S PRELIMINARY RESPONSE**

## **TABLE OF CONTENTS**

I.	INTRODUCTION .....	1
II.	QUALIFICATIONS .....	1
III.	MATERIALS REVIEWED AND RELIED UPON .....	7
IV.	SUMMARY OF OPINIONS .....	8
V.	LEGAL STANDARD .....	9
A.	Claim Construction.....	9
B.	Obviousness.....	9
C.	Conception.....	12
VI.	PERSON OF ORDINARY SKILL IN THE ART .....	13
VII.	BACKGROUND AND TECHNOLOGY OF THE '217 PATENT .....	14
VIII.	CONCEPTION OF THE '217 PATENT CLAIMS .....	18
IX.	OVERVIEW OF ALLEGED PRIOR ART .....	19
A.	<i>Campbell</i> .....	19
B.	<i>Millar</i> .....	24
C.	<i>Thonnart</i> .....	27
X.	OPINIONS REGARDING PRIOR ART AS APPLIED TO THE '217 PATENT CLAIMS BY GOOGLE AND ITS EXPERT .....	28
A.	<i>Campbell</i> in View of <i>Millar</i> Does Not Render Claims 1, 11, 16, and 20 Obvious.....	28
1.	<i>Campbell</i> in View of <i>Millar</i> Does Not Render Claims 1 Obvious .....	29
a.	The <i>Campbell-Millar</i> Combination Does Not Disclose Teach, or Suggest “determining content . . . of each medium received after said first medium” in element 1[d].....	29
b.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “. . . a medium comprising an identifier . . .” in element 1[e].....	32

c.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “coordinating . . . based on said step of determining content” in element 1[e].....	35
2.	<i>Campbell</i> in View of <i>Millar</i> Does Not Render Claim 11 Obvious .....	38
a.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “each signal of said subset of said plurality of signals including an identifier” in element 11[b] .....	38
b.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “identify content of said second medium” in element 11[f] .....	40
c.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “generate information based on said second medium based on identifying said content of said second medium” in element 11[g]..	44
3.	<i>Campbell</i> in View of <i>Millar</i> Does Not Render Claim 16 Obvious .....	49
a.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “each signal of said plurality of signals including an identifier” in element 16[c] .....	49
b.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “identifying content of said second medium” in element 16[f] .....	50
c.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “processing, based on said content of said second medium, said second medium to generate information based on said second medium” in element 16[g] .....	50
4.	<i>Campbell</i> in View of <i>Millar</i> Does Not Render Claims 20 Obvious .....	51
a.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “each of said plurality of signals including an identifier” in element 20[c] .....	51

b.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “processing a control signal at said receiver station that causes execution of processor instructions to process data received in a second medium” in element 20[e] .....	52
c.	The <i>Campbell-Millar</i> Combination Does Not Disclose, Teach, or Suggest “. . . to create a series of discrete video images” in element 20[e] .....	55
B.	<i>Campbell</i> in View of <i>Millar</i> in Further View of <i>Thonnart</i> Does Not Render Claims 11 and 16 Obvious.....	55

I, Alfred C. Weaver, Ph.D., do hereby declare:

## **I. INTRODUCTION**

1. I am a Professor of Computer Science Emeritus at the University of Virginia (“UVA”) in Charlottesville, VA. I have been a teacher and researcher at UVA in the fields of computer science and data communications networks for forty-three years. I am over eighteen years of age and would otherwise be competent to testify to the matters declared herein if I am called upon to do so.
2. I have been retained by Patent Owner, Personalized Media Communications, LLC (“PMC”), as a technical expert witness with respect to the proceedings currently before the Patent Trial and Appeal Board (“PTAB”) in the above-captioned matter.
3. For purposes of this Declaration, I have been asked to provide an expert technical analysis as to issues related to United States Patent 7,747,217 (“’217 Patent”).
4. I am being compensated for my review of materials in this case and the preparation of this Declaration at the rate of \$400 per hour (plus expenses). My compensation is not determined by, contingent on, or otherwise affected by the outcome of this case.

## **II. QUALIFICATIONS**

5. My qualifications for forming the opinions set forth in this declaration are

summarized here and further detailed in my curriculum vitae, which is attached hereto as Exhibit 2014. Also included in Exhibit 2014 is a list of my 276 publications.

6. I earned a Bachelor of Science in Engineering Science in 1971 from the University of Tennessee, where I took as many computer-related courses as were then available.

7. I then earned a Master of Science in Computer Science from the University of Illinois at Urbana-Champaign ("UIUC") in 1973. My master's thesis was related to the design and implementation of a novel programming language (VIPtran) with which a user could express (i.e., could program) industrial control logic. The output of my compiler was executable code for the then-newest class of computers, namely microcomputers, that first became commercially available in the early 1970s.

8. Thereafter, I earned a Ph.D. in Computer Science at the University of Illinois at Urbana-Champaign in 1976. My Ph.D. dissertation was related to the design and implementation of a graphical programming language by which a human user could draw a relay ladder diagram (the then most common method of expressing industrial control logic) on a computer display. My software system parsed the relay ladder diagram and emitted executable code for a microprocessor. I am the co-inventor on a patent related to my dissertation: U.S. Patent No. 4,217,658,

entitled “Process Control System that Controls Its Outputs According to the Results of Successive Analysis of the Vertical Columns of a Hypothetical Ladder Diagram.”

9. After receiving my Ph.D. I taught Computer Science for one year at UIUC as a Visiting Assistant Professor of Computer Science. I joined the faculty of the Department of Applied Mathematics and Computer Science at the University of Virginia in 1977. I designed and implemented UVA's first microcomputer laboratory, teaching various microprocessor technologies (hardware, software, communications) in a hands-on setting. Thus, I was teaching microprocessor programming even before IBM introduced the personal computer in 1980.

10. I designed and implemented UVA's first course on Computer Networks in 1980. Over the course of many years I taught both the theoretical and practical aspects of computer networking technology, with subjects ranging from Local Area Networks (e.g., Ethernet, token bus, token ring) to Wireless Networks (e.g., from the original ALOHAnet to today's various IEEE 802.11 wireless standards).

11. The UVA Computer Science faculty separated from Applied Mathematics and formed an independent Department of Computer Science in 1984. I served as the first Chair of the new Computer Science Department. I rose from Assistant Professor to Associate Professor in 1983 and to full Professor in 1992. Before my retirement in May 2020, I was the Associate Chair of the UVA Computer Science

Department, Director of the Computer Science Graduate Program (all master's and PhD degrees), Chair of the CS Graduate Program Committee, and I was the CS representative on the School of Engineering and Applied Science's Graduate Studies Committee.

12. I have been a consultant for a number of networking projects, including the development of SHIPnet by Sperry Marine, the tram control systems at DFW airport, communications technology for E-Systems (now Raytheon), the computer network aboard the International Space Station, and I was a co-developer of the transport protocol (i.e., the reliable communications algorithms) underlying SAFENET (Survivable Adaptable Fiber Optic Embedded Network) for the U.S. Navy, now Military Standard MIL-STD-2204.

13. As a researcher, I have been funded by federal and state government and by commercial companies to undertake 134 separate research projects worth more than \$22 million. I have authored or co-authored 16 books and book chapters, 182 refereed journal and conference papers, and 80 technical reports.

14. In addition to my technical publications, I have given 93 tutorials, colloquia, and keynote talks in North and South America, Europe, and Asia. For example, I delivered keynote speeches entitled "Providing Privacy and Security for Mobile Devices" in Hawaii, "Achieving Data Privacy and Security Using Web Services" in Hong Kong, "A Security Architecture for Distributed Data Security" in Italy,

“Industrial Informatics” in Virginia, and “Electronic Commerce on the Internet” in Hawaii.

15. I was the Founding Director of the Internet Technology Innovation Center (a collaboration among Virginia-based universities that helped brick-and-mortar companies adapt to eCommerce), and also the Founding Director of the UVA Applied Research Institute (a group of UVA faculty dedicated to working on problems of critical national importance, especially computer security).

16. I started teaching Electronic Commerce in 1995 and have produced several innovative software products, most notably the Xpress Transport Protocol software that provides reliable communications for the SAFENET network used on U.S. military ships and aircraft. In addition, I am the proud advisor of 69 Ph.D. and master’s graduate students.

17. I am an active member in the two major professional organizations for computing technology and computer science. The Institute of Electrical and Electronics Engineers (IEEE) was formed in 1963 and encompassed another group, the Computer Society (formed in 1946), that promoted research and conferences on computing technologies. I joined IEEE and the Computer Society in 1973, and I have published in numerous IEEE-sponsored journals, conferences, and workshops. I was awarded the rank of IEEE Fellow in 1996 (limited to 0.1% of the membership in any given year) for contributions to the design of computer

communications protocols. I was awarded the rank of IEEE Life Fellow in 2015. I was awarded the IEEE 3rd Millennium Medal, the IEEE Mittelman Research Achievement Award, and the IEEE Hornfeck Service Award. I am also a Life Member of the IEEE Industrial Electronics Society (IES), having served in numerous leadership positions including IES President in 1994-95.

18. I am currently a member of the Editorial Board of IEEE Computer magazine. I have been an area editor for computer networks and for electronic commerce, and I was for three years the editor of the technical column "How Things Work."

19. The Association of Computing Machinery (ACM) was formed in 1947 and, with its 100,000 current members, is the world's largest professional computing society. ACM brings together educators, researchers, and professionals to address the field's challenges. I have been a professional member of ACM since 1973 and have participated in many ACM-sponsored conferences. I gave 25 tutorials about computer networks when I was an ACM National Lecturer in 1986-89.

20. I am the founder of five companies, the most successful of which was Reliacast, Inc., which at its peak employed 90 persons. Reliacast produced software products that provided reliable multicast services using streaming multimedia. Reliacast was ultimately sold to Comcast.

21. I have served as an expert witness in 30 patent infringement cases since

1988. Six of those cases have gone to trial.

### III. MATERIALS REVIEWED AND RELIED UPON

22. I have reviewed the Petition for *Inter Partes* Review filed by Petitioner and all accompanying exhibits. In preparing my opinions, I considered the following:

Exhibit	Description
	Case IPR2020-00723, Petition for Inter Partes Review of U.S. Patent No. 7,747,217
1001	U.S. Patent No. 7,747,217 to Harvey et al. (“the ’217 patent”)
1004	Declaration of Clifford Reader
1006	GB 1,370,535 to Millar et al. (“ <i>Millar</i> ”)
1010	U.S. Patent No. 4,413,281 to Thonnart (“ <i>Thonnart</i> ”)
1011	U.S. Patent No. 4,694,490 to Harvey et al. (“the ’490 patent”)
1012	Jan. 15, 2009, Decision on Appeal, Appeal No. 2007-2115, Application No. 08/487,526 (“the ’217 Appeal Decision”)
1014	PCT Patent Publication No. WO 81/02961 to Campbell et al. (“ <i>Campbell</i> ”)
1025	PMC Infringement Contentions from related litigation for the ’217 Patent
1026	April 3, 2020, Claim Construction Order from <i>PMC v. Google</i> (2:19-cv-00090)
	Case IPR2020-00722, Petition for Inter Partes Review of U.S. Patent No. 7,747,217
1104	Declaration of Clifford Reader in IPR2020-00722
2003	June 18, 2020 Declaration of John C. Harvey

2004	June 25, 1981 Grossman Memorandum
2005	Inventor's Notebook (Excerpts with Redactions)

23. I have also relied on my personal experience. I was born in 1949 and grew up in an era when radio, television, and telephones were already deployed and in widespread commercial use. The ARPAnet, the precursor to today's Internet, was developed in 1969 when I was an undergraduate at the University of Tennessee.

While encryption is an ancient topic, commercial-grade computer-based encryption (the Data Encryption Standard) was adopted by the Federal government in 1977 as I began work at UVA. When I teach electronic commerce, a portion of that course is devoted to the history and science and mathematics of encryption from the Caesar Cipher (about 50 BC) to today's Advanced Encryption Standard (AES).

24. I have also relied on 44 years of university-level student education (43 years at UVA and 1 year at UIUC), teaching, and research experience concerning software, programming, encryption, streaming media, circuit design, computer architecture, digital logic design, embedded systems, distributed computing, consumer electronics and networks as a basis for forming my opinions.

#### **IV. SUMMARY OF OPINIONS**

25. In my opinion, the combination of *Campbell* and *Millar* does not render independent claims 1, 11, 16, and 20 obvious.

26. In my opinion, the combination of *Campbell*, *Millar*, and *Thonnart* does not

render independent claims 11 and 16 obvious.

27. I have also been asked to provide my opinion as to whether the two conception documents (the “Grossman Memorandum”, Ex. 2004, and the “Inventor’s Notebook”, Ex. 2005, collectively “Conception Documents”) provide support to independent claims 1, 11, 16, 20. In my opinion, each element of independent claims 1, 11, 16, and 20 is found in the Conception Documents.

## **V. LEGAL STANDARD**

### **A. Claim Construction**

28. I have been informed that in the Inter Partes review proceedings the claims are construed using the same standard as in district court cases. I have also been advised that in the *PMC v. Google* litigation, the District Court has construed some of the terms. *See* Claim Construction Order, Ex. 1026. My opinions set forth in this declaration are consistent with the constructions of the claim terms provided by the District Court (Ex. 1026) and on one claim term that has not been construed by the District Court. I have read and interpreted claim terms that have not been construed by the District Court from the perspective of a person of ordinary skill in the art.

### **B. Obviousness**

29. It is my understanding that a claim is invalid for obviousness under 35 U.S.C. § 103 if two or more prior art references in combination teach or suggest

every claim limitation so as to render the claim, as a whole, obvious under the clear and convincing evidentiary standard. Alternatively, a claim can be invalid under § 103 if a single prior art reference combined with the knowledge of one of ordinary skill in the art discloses the claim limitations so as to render the claim, as a whole, obvious.

30. I understand that the touchstone for the obviousness analysis is the *Graham v. John Deere* case, which focuses the § 103 inquiry on whether, in comparing the invention as a whole against the relevant prior art, the person of ordinary skill would find the invention obvious under the clear and convincing standard of proof. However, my opinion that the claims of the patents-in-suit are not obvious would be the same even under the preponderance of the evidence standard. The relevant standard for obviousness under § 103 is as follows:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. In determining whether or not a patented invention would have been

obvious, the following factors should be considered: (a) the scope and content of the prior art; (b) the differences between the prior art and the claims at issue; (c) the level of ordinary skill in the art; and (d) whatever “secondary considerations” may be present.

32. I understand that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. But multiple prior art references or elements may, in some circumstances, be combined to render a patent claim obvious. I understand that I should consider whether there is an “apparent reason” to combine the prior art references or elements in the way the patent claims. To determine whether such an “apparent reason” to combine the prior art references or elements in the way a patent claims, it will often be necessary to look to the interrelated teaching(s) of multiple patents, to the effects of demands known to the design community or present in the marketplace, and to the background knowledge possessed by a person having ordinary skill in the art.

33. I also understand that when the prior art “teaches away” from combining prior art references or certain known elements, the combination of those references to defeat the validity of a patented invention is less likely to be obvious. A prior art reference may be said to “teach away” from a patent when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set

out in the patent or would be led in a direction divergent from the path that was taken by the patent, or would be discouraged from combining that reference with another reference proposed as part of a combination alleged to render the patented invention obvious. Additionally, a prior art reference may “teach away” from a claimed invention when substituting an element within that prior art reference for a claim element would render the claimed invention inoperable.

34. I also understand that it is improper to rely on hindsight in assessing whether a claimed invention is obvious. Rather, I understand that, to assess obviousness, I must place myself in the shoes of a person having ordinary skill in the relevant field of technology at the time the invention was made who is trying to address the issues or solve the problems faced by the inventor and ignore the knowledge I currently have of the inventions.

**C. Conception**

35. I have been advised that conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice. Conception must include every feature or limitation of the claimed invention. Conception must be proved by corroborating evidence which shows that the inventor disclosed to others his completed thought, expressed in such clear terms as to enable those skilled in the art to make the invention. I understand that conception of the invention before the

priority date of a reference, coupled with diligent reduction to actual or constructive practice, disqualifies the reference as prior art.

## **VI. PERSON OF ORDINARY SKILL IN THE ART**

36. I am informed and understand that my interpretation of the patent claims and my validity analysis must be undertaken from the perspective of a hypothetical “person of ordinary skill in the art” (or “POSITA”). The “art” is the field of technology to which the patent is related. I understand that the purpose of using the viewpoint of a person of ordinary skill in the art is for objectivity.

37. In my opinion, the '217 Patent is addressed to a person with at least a bachelor's degree (or equivalent) in digital electronics, electrical engineering, computer engineering or a related technical degree, and two to five years of post-degree experience in a similar field.

38. In determining who would be a person of ordinary skill, I considered at least the following criteria: (a) the type of problems encountered in the art; (b) prior art solutions to those problems; (c) the rapidity with which innovations are made; (d) the sophistication of the technology; and (e) the education level of active workers in the field.

39. I am qualified as a person of at least ordinary skill in the art and my qualifications enable me to provide opinions regarding the '217 Patent from the perspective of a POSITA.

## **VII. BACKGROUND AND TECHNOLOGY OF THE '217 PATENT**

40. The Board has already provided the explanation of the inventions covered by the '217 Patent. The '217 Appeal Decision, Ex. 1012 at 4-8. I agree with the Board's characterization of the invention and adopt it in large part as set forth below.

41. Claims 1, 11, 16, and 20 are directed to methods for coordinating and outputting multimedia presentations. The claims are best understood by reference to the "Wall Street Week" example that illustrates the multimedia presentation.

42. The microcomputer at the receiver station is programmed with the number of shares of each stock in the user's portfolio. '217 Patent, Ex. 1001 at 11:44-63. The receiver station is further programmed to obtain relevant prices at the close of each business day. *Id.* By collecting the daily closing stock prices, the microcomputer has the base information needed to calculate the value of the user's portfolio on a daily basis. '217 Patent, Ex. 1001 at 13:29-49.

43. Fig. 1 of the '217 Patent is reproduced below

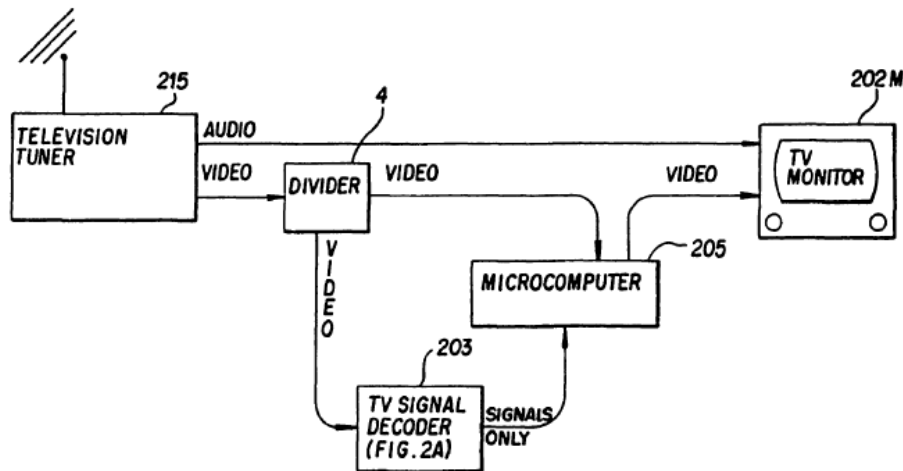


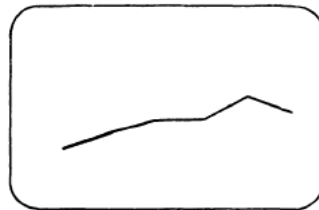
FIG. 1

'217 Patent, Ex. 1001 at 22.

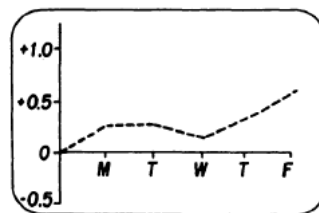
44. Figure 1 shows a video/computer combined medium subscriber station. The station receives the television broadcast transmission at television tuner 215. The tuner 215 outputs conventional audio and composite video transmissions. The audio transmission is inputted to TV monitor 202M. The video transmission is inputted to video transmission divider 4 that splits the transmission into two paths: one is inputted continuously to TV signal decoder 203 and the other to microcomputer 205. TV signal decoder 203 receives a composite video transmission and detects the digital information embedded therein and converts the digital information into digital signals that microcomputer 205 can receive and process and that can control the operation of microcomputer 205. Microcomputer 205 can store signals from the decoder 203, generate computer graphic

information, combine graphic information onto the video information of the transmission by known graphic overlay techniques, and output the combined information to a TV monitor 202M. '217 Patent, Ex. 1001 at 10:38-12:63.

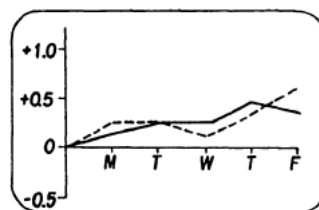
45. At the program-originating television station a series of control instructions is generated, embedded sequentially in digital form on lines of the vertical interval of the television signal, and transmitted. '217 Patent, Ex. 1001 at 12:6-12. The combined medium "Wall Street Week" example is illustrated by Figures 1A, 1B, and 1C reproduced below.



**FIG. 1A**



**FIG. 1B**



**FIG. 1C**

46. Figure 1A shows an example of a computer-generated graphic of the

subscriber's stock portfolio as it would appear by itself on the face of a television monitor. Figure 1B shows a studio generated graphic, received by transmission, displayed on the face of a television monitor. Figure 1C shows an example of the graphic of Figure 1A overlaid on the graphic of Figure 1B.

47. The "Wall Street Week" television program is transmitted with embedded information and instruction signals. Under control of the program instruction set, the microcomputer 205 calculates the performance of the subscriber's stock portfolio and constructs a graphic image of that performance as shown in Figure 1A. '217 Patent, Ex. 1001 at 13:29-34. The microcomputer 205 is programmed to hold the overlay graphic shown in Fig. 1A until commanded to turn the graphic on. '217 Patent, Ex. 1001 at 13:41-49.

48. A "GRAPHICS ON" command causes the microcomputer 205 to combine the Figure 1A information with the Figure 1B information and transmit the combined information to monitor 202M at the appropriate time in the "Wall Street Week" television program. '217 Patent, Ex. 1001 at 22:39-41 and 62:13-15. A "GRAPHICS OFF" command causes computer 205 to cease combining and transmit only the received composite video transmission to the monitor 202M. '217 Patent., Ex. 1001 at 14:41-44, 46:47-55, and 69:26-35. The information provided by Fig. 1A is given significance by the coordinated overlay with the axes and broad market index graph of Fig. 1B. '217 Patent, Ex. 1001 at 14:4-20. Only

after the overlay of Fig. 1A on Fig. 1B, resulting in Fig. 1C, can the viewer know that their stock portfolio performed better, worse, or the same as the general market on specific days of the prior week.

### **VIII. CONCEPTION OF THE '217 PATENT CLAIMS**

49. I reviewed the conception documents of the Grossman Memorandum, Ex. 2004, and the Inventor's Notebook, Ex. 2005, collectively "Conception Documents," which were authenticated by one of the named inventors, John C. Harvey, in his declaration. *See* Harvey Decl., Ex. 2003. The Grossman Memorandum describes a receiver station that receives (1) television signals with a television medium, such as "[a] TV program on economic/financial planning" and (2) from a separate source, in advance of the program, information such as bond prices of the user's portfolio. *See* Grossman Memorandum, Ex. 2004. Instructions embedded in the TV program cause the computer in the receiver station to create various overlay projections. They are superimposed on the TV program video at the appropriate times, in response to other instructions embedded into the program. The Grossman Memorandum disclosed the "Wall Street Week" example disclosed in the '490 Patent. *See* '490 Patent, Ex. 1011, 19:5-20:7. The Inventor's Notebook discloses the underlying signal processing, specifically the features related to processing identifiers embedded in the signals.

50. I have analyzed the disclosure of the Conception Documents and arrived at

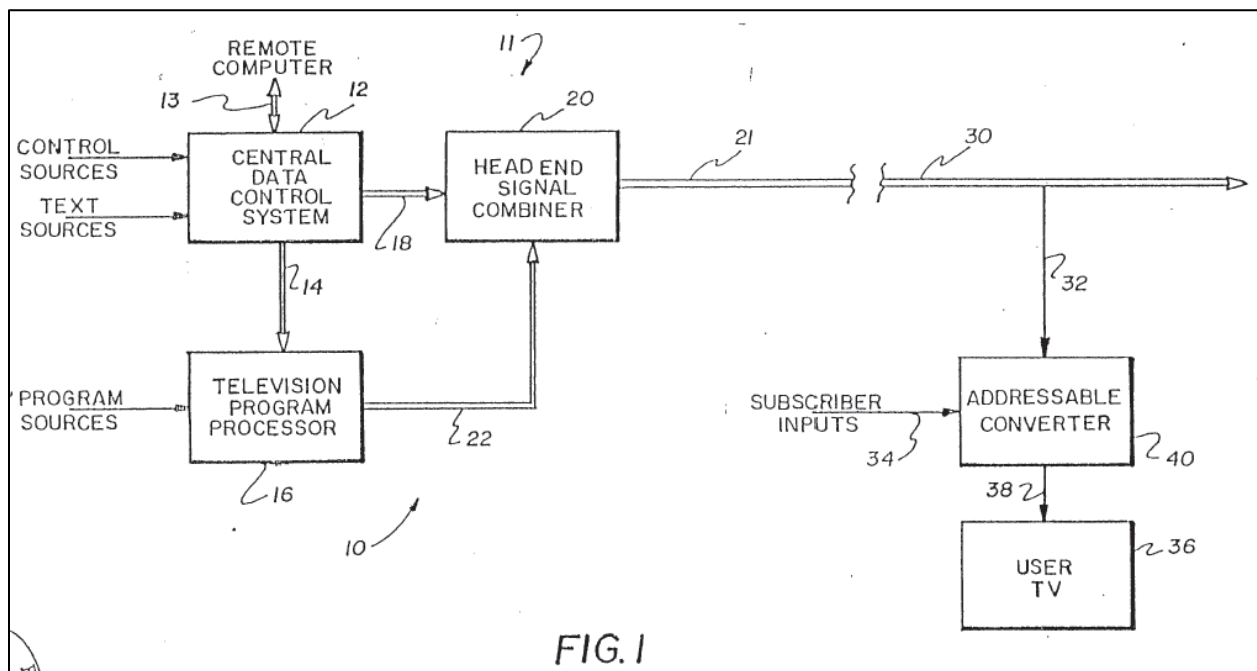
the opinion that all features of independent claims 1, 11, 16, and 20 are disclosed in the Conception Documents and the inventions covered by these claims were conceived at least as of June 23, 1981. My element-by-element analysis is set forth in Conception Claim Charts, Ex. 2015.

## IX. OVERVIEW OF ALLEGED PRIOR ART

### A. Campbell

51. WO 81/02961 to Campbell et al. ("*Campbell*") "relates to a cable television system having a multiple-function addressable converter and including data transmission in video format during the vertical interval of the video field."

*Campbell*, Ex. 1014 at 1:8-11. FIG. 1 of *Campbell* "shows a simplified block diagram of a one-way cable television system 10 in accordance with [*Campbell's*] invention." *Id.* at 6:10-11.



*Campbell*, Ex. 1014 at 51.

52. As illustrated, the cable television system 10 includes a head end station 11 (which includes a central data control system 12, a television program processor 16, and a head end signal combiner 20) in communication with an addressable converter 40, which is itself in communication with a television set 36. *Id.* at 6:30-35.

53. One aspect of *Campbell*'s invention is that its head end station "efficiently transmit[s] data signals in a video format during the vertical interval (VI) of each television program channel."<sup>1</sup> *Campbell*, Ex. 1014 at 3:31-32. In particular, "formatted data ... is incorporated into the vertical blanking intervals of video signals generated by a variety of television program sources." *Id.* at 6:17-20. "This VI data not only provides control data for an intelligent converter unit, but also provides a substantial amount of textual data per channel for use either to provide additional data to supplement a channel television program or as a separate all textual and graphic channel." *Id.* at 3:32-36. The supplementation of a

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<sup>1</sup> I agree with Dr. Reader that in the art, the terms "vertical interval" (VI), "vertical blanking interval" (VBI) and "vertical retrace interval" are commonly used. *See* Reader Decl., Ex. 1004 at p. 17, n.1.

television program is *not* superimposition of text/graphics over television video.

Rather it is a provision, on a supplemental channel, of text/graphics information pertinent to television programs presented over the television program channel.

The text information of some complementary text channels may also be formatted to supplement the television programs on its complementary program channel. For example, the textual material may amplify various new stories, shopping advertisements and other programming briefly presented over the television program channel.

*Campbell*, Ex. 1014 at 26:2-7.

54. I disagree with Dr. Reader that “characters and graphics are combined with additional video . . . and that combined output is sent to the user’s television “for display.” Reader Decl., Ex. 1004 at 26. *Campbell* discloses the structure (video switches in text/graphics generator 118) that “are used to bypass the text/graphics generator with the channel video.”

The text/graphics generator 130 provides display characters and graphic symbols that have been transmitted on the vertical interval. The converter control logic 104 directs screen control data on data link 124 to a display memory 130 which in turn sends the formatted display characters along data link 132 to the text/graphics generator 118 for display.

The text/graphics generator 118 includes a plurality of video switches which are used to bypass the text/graphics generator with the channel video.

*Campbell*, Ex. 1014 at 14:1-9.

55. In my opinion, the text/graphics that *Campbell*'s head end station may send to the receiver is not superimposed on the video signal. *Campbell*'s receiver displays either text/graphics, or the channel video, but not both at the same time. If the channel video is intended to be displayed, the text/graphics is bypassed.

*Campbell* lacks any disclosure of combining channel video with text/graphics.

56. This is in contrast with another feature where *Campbell* actually discloses superimposition of other information on the channel video—channel number overlay.

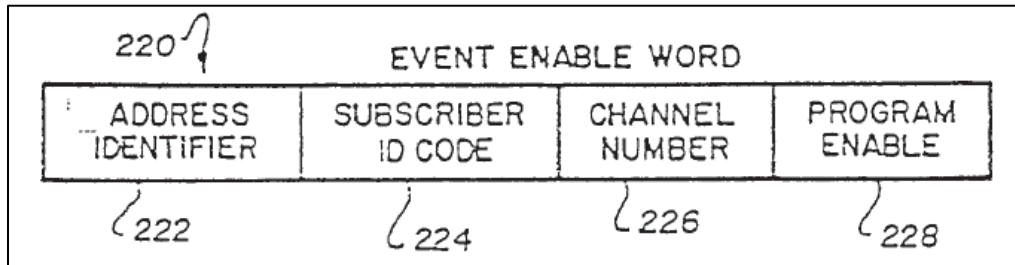
Optionally the video switches also permit the channel number display to be superimposed on the video signal of the channel which is being presented. The output of generator 118 is connected to a channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.

*Campbell*, Ex. 1014 at 14:9-13.

57. In my opinion, the channel number that *Campbell* superimposes is the one selected by the user on the remote control, which does not arrive in the VBI.

58. *Campbell* discloses receiving a channel number in the VBI in certain

situations, such as for special events.



*Campbell*, Ex. 1014 at 61 (Fig. 11, excerpted).

Event enable word 220 comprises additional enabling data sent to the convener for special events. As with word 210, word 220 includes an address code 222, and a unique subscriber identification code 224. The special event to be viewed is identified by a channel number code 226 and a program enable code 228 which together provide the data necessary for the converter to be enabled so that the user can view the special event.

*Campbell*, Ex. 1014 at 20:28-34.

59. *Campbell* does not disclose, however, that it is channel number 226 from event enable word 220 that is overlaid on the television program. Enable word 220 is transmitted to the receiver station only for special events. Therefore, *Campbell's* receiver does not have channel number 226 for regular programming. The channel number that *Campbell* superimposes is the one selected on the remote control, which does not arrive in the VBI.

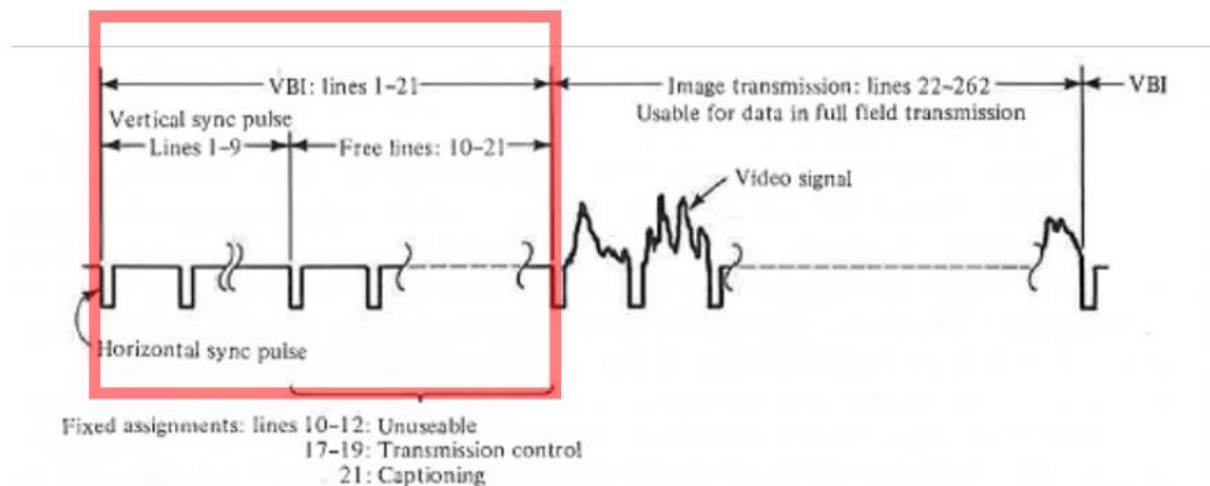
60. *Campbell* explains that *Campbell* converter 40 provides output on channels

3 or 4 for viewing in the home. *Campbell* also recognizes the need for the viewer to know what channel number she is watching. To this end, *Campbell* explains that a channel number may be superimposed on the television program. *Campbell* discloses that the source of the channel number that is superimposed on the television program is from the keyboard 168 in Fig. 13. *Campbell*, Ex. 1014 at 24:29-36. In my opinion, a POSITA would understand that *Campbell*'s receiver acquires the channel number that gets superimposed on the television program from the user's remote control. This provides the ability to superimpose the channel number on the television program in all cases, not just in limited circumstances such as a special programming event.

61. I understand that *Campbell* is entitled to priority date of October 15, 1981. I understand that Patent Owner is challenging the status of *Campbell* as prior art to claims 1, 11, 16, and 20 of the '217 Patent. In my opinion, the inventors conceived the subject matter covered by claims 1, 11, 16, and 20 of the '217 Patent by June 23, 1981, before *Campbell*'s priority date.

**B. Millar**

62. GB Patent No. 1,370,535 to Millar et al. ("*Millar*") discloses the transmission and use of alphanumeric data inserted in the vertical blanking interval ("VBI") of a television transmission. Declaration of Clifford Reader, Ex. 1004, illustrates this concept with a following figure.



**Figure 4.6** Simplified timing diagram of an NTSC field. VBI lines 13–16 and 20 are potentially available for data transmission (data lines).

Reader Decl., Ex. 1004 ¶ 35.

63. In the above Figure, “VBI” stands for vertical blanking interval, a period when no television content is transmitted, and *Millar* and other teletext systems use VBI to transmit digital information, such as text or captions. Critical to the Petition is that the Petition considers information transmitted in the VBI to be one medium, while the information transmitted in the video transmission portion is considered to be another medium.

64. *Millar* discloses two alternatives for presenting this alphanumeric data to the viewer: (1) the overlay of a one-line caption over the television video for deaf viewers, for example; and (2) full-screen teletext pages displayed by themselves.

. . . all of the possibilities envisaged above are readily catered for and the embodiments described below will demonstrate how the system can handle either the simple

addition of single line subtitles to pictures or the  
transmission of individually selectable complete pages of  
information.

*Millar*, Ex. 1006 at 1:59-66 (emphasis added).

65. *Millar* discusses text pages having 768 characters in 24 rows of 32 characters (*see, e.g., Millar*, Ex. 1006 at 3:41-71). Such amount of textual information takes the entire screen and is not intended to be overlaid with the television program video.

66. *Millar* discloses three different organisations to encode these full-screen pages. *Millar*, Ex. 1006 at 3:41-71. Moreover, *Millar* envisions the receiver receiving more alphanumeric information than it can store. To this end, *Millar* discloses two ways of selecting pages for storage: one based on timing and another based on codes associated with lines or characters that are matched by the page selector at the receiver. *Millar*, Ex. 1006 at 4:24-62, page selector 55 in Fig. 2, page selector 58 in Fig. 3.

67. On the other hand, *Millar* discusses the embodiment “intended to display a line of 32 characters, e.g. for sub-titling pictures only for deaf viewers whose receivers are appropriately equipped.” *Millar*, Ex. 1006 at 4:79-82. In this embodiment, the 32 characters transmitted in the VBI are *timed* to be overlaid with the corresponding video picture. *Millar*, Ex. 1006 at 4:77-5:122 (“When

characters are being received they are timed into the correct position in the registers 38 during the 14<sup>th</sup> line by pulses provided by a comparator 41”).

68. As I discuss below in connection with specific claim elements, Petitioner and Dr. Reader overlook the distinction between these two types of alphanumeric information (one-line v. full screen) and point to the disclosure related to processing of the full-screen pages that is inapplicable to the one-line caption implementation.

**C. Thonnart**

69. U.S. Patent No. 4,413,281 to Thonnart (“*Thonnart*”) discloses “a process for the transmission of information over television networks wherein certain information is encoded in digital form and transmitted by supplementing and/or replacing the information forming the conventional program.” *Thonnart*, Ex. 1010 at Abstract. “The information transmitted in digital form has other identifying material and is transmitted generally synchronously with the corresponding information in analog form.” *Id.* Petitioner and its Expert introduce Ground 2 in general, and *Thonnart* in particular, “. . . if the Board finds that page information (including the ‘character code’ in *Millar*) fails to identify the content of a second medium.” Petition p. 69. While *Thonnart* discloses “identifying information,” as discussed in more detail below, it fails to disclose the step of “identifying content of said second medium” performed by the receiver.

70. I understand that *Thonnart* is entitled to priority date of June 26, 1981. I understand that Patent Owner is challenging the status of *Thonnart* as prior art to claims 11 and 16 of the '217 Patent. In my opinion, the inventors conceived the subject matter covered by claims 11 and 16 of the '217 Patent by June 23, 1981, before *Thonnart*'s priority date.

**X. OPINIONS REGARDING PRIOR ART AS APPLIED TO THE '217 PATENT CLAIMS BY GOOGLE AND ITS EXPERT**

**A. Campbell in View of Millar Does Not Render Claims 1, 11, 16, and 20 Obvious**

71. In my opinion, the inventors conceived the subject matter covered by claims 1, 11, 16, and 20 of the '217 Patent before *Campbell*'s priority date. See ¶¶ 49-50. Moreover, I understand that the inventors were diligent in reducing the inventions of these claims to practice by filing a patent application. Accordingly, I understand that *Campbell* is not a prior-art reference to these claims, but even if it were, the *Campbell-Millar* combination fails to disclose, teach, or suggest elements of each independent claims as discussed below.

72. Also, to the extent the Board reviews the merits, the following chart provides Petitioner's mapping of various "medium" elements discussed below.

Claim	"first medium"	"medium received after said first medium" (claim 1) or "second medium" (claims 11, 16, 20)
1	Information in the VBI	Television program

11	Television program	Information in the VBI
16	Television program	Information in the VBI
20	Television program	Information in the VBI

**1. *Campbell* in View of *Millar* Does Not Render Claims 1 Obvious**

- a. The *Campbell-Millar* Combination Does Not Disclose Teach, or Suggest “determining content . . . of each medium received after said first medium” in element 1[d]

73. Claim 1[d] requires “determining content . . . of each medium received after said first medium.” The Petition identifies the “other medium”—the one received after the first medium—as a picture and sound television medium. Petition at 23 (Reader Decl., Ex. 1004 ¶ 65). The *Campbell-Millar* combination, however, does not determine content of this television picture/sound medium.

74. As an initial matter, Petitioner admits that “*Millar* does not, however, disclose determining the content of this *other medium*: the picture and sound television medium.” See IPR2020-00722, Reader Decl., Ex. 1104 ¶ 59.

As to *Campbell*, Petitioner states:

*Campbell* further discloses “determining content of each medium,” of this medium as recited in the claims. To determine content, *Campbell* discloses the claimed feature of ‘an identifier which identifies said content of each of said medium.’ Eligibility codes transmitted in the vertical interval of the television broadcast define the

subject matter for the program. This allows families ‘to control access to all movies having unsuitable subject matter.’

Petition at 24. In other words, each program may be accompanied by a code that may restrict access to immature or unauthorized viewers.

75. Although this feature is disclosed in *Campbell*, it does not meet the “determining content” element 1[d]. As discussed above, “determining content” is “ascertaining or recognizing the content, and not simply determining the type of medium.” Claim Construction Order, Ex. 1026 at 65-68. Using eligibility codes by *Campbell*’s subscriber equipment, however, is not “determining content.”

Determining whether content is suitable for a particular audience does not involve “ascertaining or recognizing” content. Indeed, in determining that a given program is not suitable for young children, for example, *Campbell*’s receiver does not ascertain or recognize the content of the program, but rather compares the eligibility code to an eligibility threshold. *Campbell*, Ex. 1014 at 21:5-21. The eligibility code does not inform the receiver station of the content, but only indicates a level of appropriateness that may be used to prevent the TV program from being viewed based on the eligibility threshold.

76. To the extent any determination of content of the television video/audio medium occurs, it occurs at the head end station 11 or further upstream, at the

program, text, or control source, before transmission to the subscriber equipment.

Content creators or cable operators that *assign* the eligibility code to a program may need to determine its content. But “determining content” is a step required by the language of claim 1 to be carried out by the “receiver station.” *See* ’217 Patent, Ex. 1001, claim 1[a] (“A method of outputting a multimedia presentation at a receiver station . . . , said method comprising the steps of: . . .”). *Campbell* does not disclose its *subscriber* equipment performing this step. Fundamentally, to *Campbell*’s subscriber equipment (receiver station), eligibility codes provide only broad classification of the *audience* (e.g., age appropriateness, tolerance for horror, nudity, and/or foul language), not the content of the program.

An eligibility code 206 defines a rating which may be assigned to many of the television programs for subject matter which may not be suitable for viewing by all parties at the user station.

*Campbell*, Ex. 1014 at 19:27-29.

77. In other words, the eligibility code, when compared to the eligibility threshold, provides only a single metric indicative of a subscriber’s viewing preferences. Accordingly, carrying out operations on this eligibility code, such as comparing it to a threshold by *Campbell*’s receiver (converter 40) is not “determining content.”

- b. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “. . . a medium comprising an identifier . . .” in element 1[e]

78. Claim 1[e] requires “coordinating . . . a presentation using said information with a presentation of a medium comprising an identifier that matches said predetermined identifier based on said step of determining content.” ’217 Patent, Ex. 1001 at 286:65-287:3. In this element “said information” refers to, and finds antecedent basis in, “storing information from said first medium” of element 1[c]. *Id.* And according to the Petition, “a medium comprising an identifier . . .” is the television picture. Petition at 28 (“coordinate presentations by virtue of the ‘information’ (caption) being superimposed on the ‘second medium’ (television picture)”) (citations and punctuation marks omitted). Further, according to the Petition, information in the VBI is a different medium from the “picture and sound television information” medium (“television medium”). Petition at 23. To the extent any identifiers are present in the *Campbell-Millar* combination, they are included in the medium received in the VBI. In these references, there is no need to include an identifier in the television medium, and neither *Campbell* nor *Millar* discloses this.

79. The Petition is evasive on this specific limitation. The *entirety* of the Petitioner’s contention regarding the television medium comprising an identifier is as follows:

*Campbell* in view of *Millar* teaches that the receiver station coordinates a presentation of the stored caption data with a picture and sound television medium, i.e., the claimed “medium comprising an identifier that matches . . . based on said step of determining content,” by creating captions and superimposing them on the picture in the proper location. (Reader Decl., Ex. 1004 ¶ 73; Section VII.A.1.d; The ’217 Appeal Decision, Ex. 1012 at 51.)

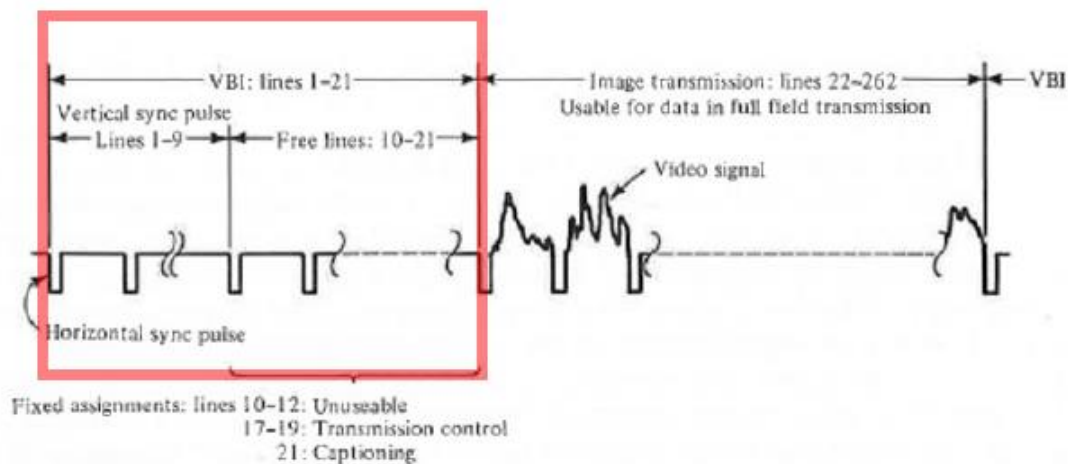
Petition at 30.

80. Petitioner simply equates “a picture and sound television medium” with “the medium comprising an identifier” without explaining where in *Campbell* or *Millar* the “picture and sound television medium” comprises an identifier. Neither reference discloses television program media comprising an identifier.

81. The citations at the end of the above-quoted discussion from the Petition are equally unavailing: Reader Decl., Ex. 1004 ¶ 73 parrots that “picture and sound television medium” is the “medium comprising an identifier . . .,” but does not explain where *Campbell* or *Millar* actually discloses or suggests the picture and sound television medium *comprising an identifier*. In fact, in both *Campbell* and *Millar*, the television picture and sound are transmitted *without* any alterations and do not include an identifier.

82. Furthermore, according to the Petition, the head end video processor, such as HVP 53 in *Campbell*, “incorporates text and graphics and control data into the

vertical interval of a television signal.” Reader Decl., Ex. 1004 ¶ 37 citing *Campbell* at 7:16-25. As applied to *Campbell*, Reader Decl. depicts the vertical blanking interval (incorporating text, graphics, and control), as distinct from other lines in the television transmission (incorporating television video and audio) as follows:



**Figure 4.6** Simplified timing diagram of an NTSC field. VBI lines 13–16 and 20 are potentially available for data transmission (data lines).

Reader Decl., Ex. 1004 ¶ 35.

83. Dr. Reader uses the same figure to explain that *Millar*’s captioning data is incorporated into the vertical blanking interval. “Specifically, [*Millar*] discloses sending a ‘digitally coded data signal’ representing caption data in what is called a ‘vertical interval’ of a television signal.” Reader Decl., Ex. 1004 ¶ 41. In other words, the *first medium* (such text and graphic information or captioning) is what according to the Petition is transmitted in the VBI, not the (television programming) medium that is required by the claim to comprise an identifier.

84. Both the Petition and Reader Decl., Ex. 1004, refer to the discussion in the respective preceding sections related to the previous element 1[d] of “determining . . .” that also fail to address an identifier included in the television picture and sound medium.

85. Finally, both the Petition and Reader Decl., Ex. 1004, refer to the ’217 Appeal Decision by the Board, Ex. 1012 at p. 51, where the Board *reversed* the rejection of the claim that ultimately issued as claim 1, even before it was finally amended. In any event, the referenced discussion does not address the television picture and sound medium comprising an identifier.

86. As mentioned above, the *Campbell-Millar* combination fails to disclose, teach, or suggest that the television picture and sound medium has an identifier because in both of these references the television program is transmitted unaltered, without any identifiers, and the text/graphics/control information of *Campbell* and the caption data of *Millar* are a part of the “first medium,” the one transmitted in the vertical blanking interval, not as part of the television picture and sound medium.

c. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “coordinating . . . based on said step of determining content” in element 1[e]

87. Claim 1[e] requires “coordinating . . . based on said step of determining content.” ’217 Patent, Ex. 1001 at 286:65-287:3. Petitioner notes that:

*Campbell* and *Millar* render “based on the said step of determining content” obvious. *Campbell* describes eligibility codes that define a subject matter for a program, and indicate if it contains suitable content for children or content for mature audiences. A family controls access to all movies having unsuitable subject matter. If the content is unsuitable, the program is not presented. *Campbell* therefore provides the picture and sound portion of a multimedia presentation *only after it has determined the content* and deemed it appropriate for the audience.

Petition at 31-32 (citations omitted) (emphasis in the original).

88. In summary, Petitioner’s argument as to why this limitation is met is as follows. *Campbell* determines whether a given program is suitable for presentation. *Millar* coordinates the display of television picture with captioning. And because in this hypothetical *Campbell-Millar* system, the coordination occurs *after* the determination of the content appropriateness, Petitioner claims that coordination is *based on* this determination.

89. This argument fails because in this combination of references, the coordinating is not *based on* determining. A person of ordinary skill in the art, would understand that plain meaning of “coordinating . . . *based on* . . . determining” requires causal relationship, not just temporal. In my opinion,

Petitioner relies on an unreasonably broad construction of “based on” to mean “after.”

90. Turning to the Petition, the argument that the *Campbell-Millar* combination renders obvious the “coordinating . . . based on said step of determining content” limitation must fail. The *only* reason advanced in the Petition for why the *Campbell-Millar* combination renders this limitation obvious is “*Campbell* therefore provides the picture and sound portion of a multimedia presentation *only after it has determined the content* and deemed it appropriate for the audience.” Petition at 31-32. The Petition does not contend that *Millar* discloses the “based on” limitation.<sup>2</sup> Accordingly, in view of the proper construction, a mere temporal relationship between “determining” and “coordinating” is not sufficient to render this limitation obvious over the *Campbell-Millar* combination.

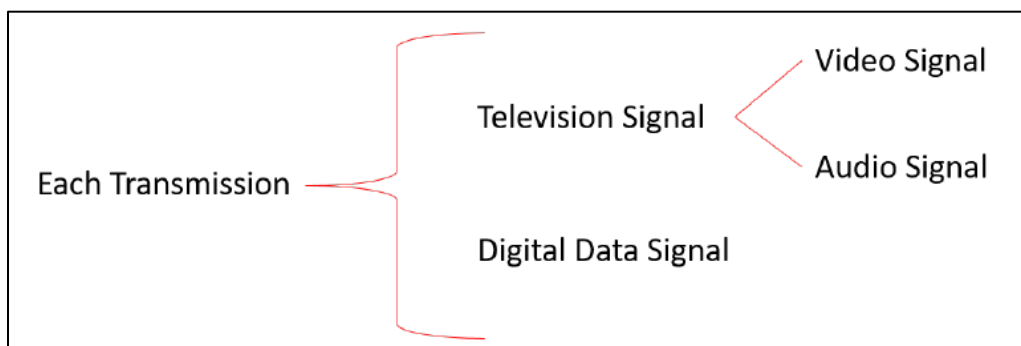
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<sup>2</sup> In the parallel Petition, the Petitioner relies on disclosure in Keiser (not Millar) for “determining.” IPR2020-00722, Reader Decl., Ex. 1104 ¶ 59 (“*Millar* does not, however, disclose determining the content of this *other medium*.”) So “determining” or anything occurring “*based on*” determining is not found in or suggested by *Millar*.

**2. *Campbell* in View of *Millar* Does Not Render Claim 11 Obvious**

- a. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “each signal of said subset of said plurality of signals including an identifier” in element 11[b]

91. Claim 11 requires “[11a] a receiver station adapted to process a plurality of signals . . . [11b] receiving a subset of said plurality of signals . . . wherein said subset of said plurality of signals comprises a plurality of said plurality of signals.” ’217 Patent, Ex. 1001 at 287:41-50. In other words, the receiver station is adapted to receive a plurality of signals, where a subset of that plurality is also a plurality of signals. Petitioner contends that the first plurality (super plurality) “includes (1) digital signals with text and graphics (captions in view of *Millar*), and (2) television signals with picture and sound television information.” Petition at 40, Reader Decl., Ex. 1004 ¶ 102. And the subset plurality comprises an audio signal and a video signal. Petition at 40, Reader Decl., Ex. 1004 ¶ 103. Petitioner’s expert has created the graphic, reproduced below, to illustrate signals as mapped by the Petitioner.



Reader Decl., Ex. 1004 ¶ 102.

92. Further, claim 11[b] requires “each signal of said subset of said plurality of signals including an identifier.” ’217 Patent, Ex. 1001 at 287:47-48. While Petitioner points to the “sound signal” and “video signal” as the subset of the super-plurality of signals, the *Campbell-Millar* combination fails to disclose, teach, or suggest that any of those signals, let alone each of them, includes an identifier. As explained in Section X.A.1.b, ¶¶ 78-86 above, to the extent this reference combination discloses an identifier, it is included in the VBI or what the above figure refers to as “Digital Data Signal,” not in each signal of the subset plurality (i.e., not in the video signal and not in the audio signal).

93. Petitioner cannot show this claim limitation in the prior art of record; instead, they rely on an unavailing sequence of citations. The Petition relies on the accompanying on the citation to its Expert Declaration, Reader Decl., Ex. 1004 ¶ 104, which in turn relies on ¶¶ 64-69 (*id.*) that discusses the eligibility code transmitted in what Dr. Reader characterizes as “Digital Data Signal,” not video/audio signals.

94. Finally, the Petition mentions, in footnote 10, PMC’s infringement contentions in the *PMC v. Google* litigation, where Google characterizes PMC’s statements as: “where the alleged receiver station receives a TCP/IP packet comprising ‘TCP Destination Port’ number (the alleged ‘identifier’) and ‘audio

and/or video signals.’ Petition at 41, n.10. Petitioner then concludes: “Thus, *Campbell*’s disclosure of an identifier that accompanies that audio and/or video signals discloses or renders obvious this limitation based on PMC’s statements.” Petition at 41 n.10. In my opinion, this conclusion is without merit.

95. Petitioner appears to analogize (a) the TCP Destination Port header field with the claimed identifier and (b) the TCP packet payload with the claimed subset signal plurality. PMC’s contentions, Ex. 1025, do not state, as Petitioner implies, that the “TCP Destination Port” number is part of a *different* signal. Petitioner, however, does state that the identifier in the *Campbell-Millar* combination is part of the digital data signal (the VBI), the signal that is, according to the Petition, different and distinct from the subset plurality of signals carrying television video and audio. Again, in *Campbell* and *Millar*, none of the signals in the subset plurality (video and audio) includes an identifier.

b. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “identify content of said second medium” in element 11[f]

96. Claim 11[f] requires “identify[ing] content of said second medium.” Petitioner states that the “second medium” is the text and graphic (captions in view of *Millar*) information carried by digital signals. Petitioner admits that “*Campbell* does not expressly disclose identifying the content of this second medium.” Petition at 44-45. Petitioner’s expert follows with a gratuitous statement that

“*Campbell* does disclose displaying the ‘transmitted channel frequency’. . .”

Reader Decl., Ex. 1004 ¶ 118. There is no citation to this statement and I was unable to find this quote in *Campbell*. In any event, even if *Campbell* did disclose displaying the “transmitted channel frequency,” such a disclosure does not amount to “identify[ing] content of said second medium.”

97. Petitioner argues that *Millar* discloses “identify the content of said [caption information] second medium.” Petition at 46.

98. First, Petitioner confuses the disclosure of (1) a full-screen page that does not get overlaid with the television video (*Millar*, Ex. 1006 at 3:41-71, 4:24-62) and (2) the one-line caption that does overlay the video (*Millar*, Ex. 1006 at 4:77-5:122). Yet, Petitioner uses the disclosure related to the full-screen pages as if it applied to one-line captions. As mentioned above, the one-line caption is *timed* and is not accompanied by any identifying information. *See id.* The one-line caption transmitted in the VBI of a television frame is overlaid on top of the television picture in *that* frame only. *Millar*, Ex. 1006 at 5:38-41 (“When characters are being received they are timed into the correct position in the registers 38 during the 14th line by pulses provided by a comparator 41.”). The only identification that the *Millar* receiver performs is to identify the television transmission frame line number and that is not “content” because it is not “the substance or gist,” but rather “form or structure,” specifically excluded from the

construction of “content.” *See* PMC v. Google Claim Construction Order, Ex. 1026 at 65-68. *See also* Reader Decl., Ex. 1004 at p. 39 n. 8.

99. Turning to the full-screen text pages, initially, it cannot be the claimed “second medium” because information in the full-screen text pages is not coordinated and combined with the television video of the first medium as required in claim 11[h].

100. Even assuming, for the sake of the argument, that the full-page text is overlaid on top of the video signal in *Millar*, the disclosure quoted by Petitioner still falls short of “identifying content,” as properly construed. The portion of *Millar* cited by Petitioner deals with the storage of *full-screen* text pages. *Millar* discloses “serial stores” of the full-screen text information that is based on timing. Specifically, *Millar* states “The page selector 58 simply selects the timing gate position for reading into the store if the page-interlace organisation is used or sets the field counter as just described if either of the other organisations is used.” *Millar*, Ex. 1006 at 4:30-35. Then *Millar* introduces an alternative—“random access stores.” *Millar*, Ex. 1006 at 4:49-50. To implement these random access stores, *Millar* includes address codes that are compared to set-up codes by the page selector. This way, only the desired text page is stored. Petitioner relies on the following disclosure in *Millar* taken out of context.

Instead of using serial stores as described, addressed

random access stores may be employed, in which case each character or row of characters has added thereto address code bits defining the page and/or the position within the page thereof, depending on the data organisation employed.

In this case the page selector sets up the required page code and the timing signals set up a sequence of character or row address codes. The incoming address codes are compared with the set-up codes and, as matches occur, the associated character codes are entered into storage.

Petition at 46 (citing to *Millar*, Ex. 1006 at 4:24-62).

101. The process of matching these set-up codes to the codes included in the full-screen page line and characters is not “identifying content,” because the above process does not “ascertain or recognize” the “substance or gist” of the full-screen page(s). The process results in some lines/characters entering the storage and some being discarded. But this is performed without any recognition of the “substance or gist” of those lines and characters.

102. It is also telling that Petitioner introduces Ground 2 in this Petition and felt the need to rely on yet another reference, *Thonnart*, to address this specific limitation.

- c. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “generate information based on said second medium based on identifying said content of said second medium” in element 11[g]

103. Claim 11[g] requires “generat[ing] information based on said second medium based on identifying said content of said second medium.” ’217 Patent, Ex. 1001 at 288:1-2. The *Campbell-Millar* combination does not render this limitation obvious for at least two reasons.

104. First, because the *Campbell-Millar* combination lacks the step of “identify[ing] content of said second medium,” as discussed in Section X.A.2.b, ¶¶ 96-101 above, common sense dictates that this combination of references does not perform any other step *based on* identifying said content of said second medium. The Board made a similar observation with respect to claim 1 (claim 2 on appeal):

The subsequent step of “coordinating . . . a presentation . . . based on said step of determining” is based on the step of determining, and the step of “outputting . . . based on said step of coordinating” is indirectly based on the step of determining. Since Turner does not describe the step of “determining content of a second medium,” these steps are also not present.

The ’217 Appeal Decision, Ex. 1012 at 51.

105. Second, the *Campbell-Millar* combination does not “*generate* information based on said second medium.” The Petition identifies two types of supposedly

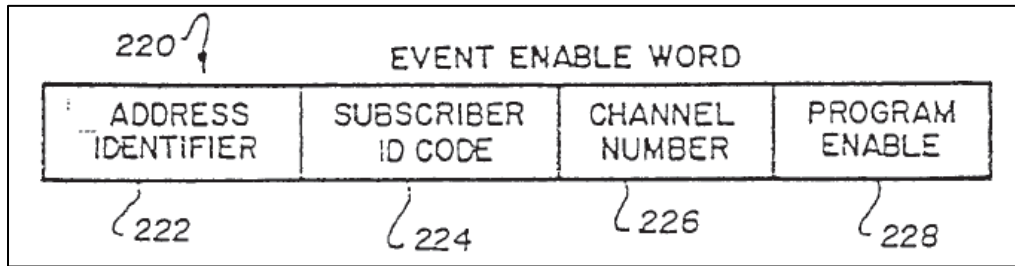
“generated” information: subtitles presumably from *Millar* and a channel number presumably from *Campbell*. In both cases, no information is *generated*, i.e., brought into existence based on said second medium, under the proper construction of the term. *See PMC v. Google* Claim Construct Order, Ex. 1026 at 56-57. Rather, the information “is simply selected or retrieved,” the operations specifically not covered by the construction and therefore excluded from the claim scope. *See id.*

106. *Campbell* discloses a channel number overlay.

Optionally the video switches also permit the channel number display to be superimposed on the video signal of the channel which is being presented. The output of generator 118 is connected to a channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.

*Campbell*, Ex. 1014 at 14:9-13.

107. But while *Campbell* discloses receiving a channel number in the VBI in certain situations, as I discussed above in ¶¶ 59-60, the channel number that is superimposed is not the one transmitted from the head end station. *Campbell* discloses its subscriber station receiving the channel number in the vertical blanking interval only for special events.



*Campbell*, Ex. 1014 at 61 (Fig. 11, excerpted).

Event enable word 220 comprises additional enabling data sent to the converter for special events. As with word 210, word 220 includes an address code 222, and a unique subscriber identification code 224. The special event to be viewed is identified by a channel number code 226 and a program enable code 228 which together provide the data necessary for the converter to be enabled so that the user can view the special event.

*Campbell*, Ex. 1014 at 20, lines 28-34. *Campbell* does not disclose, however, that it is channel number 226 from event enable word 220 is overlaid on the television program. Enable word 220 is transmitted to the receiver station only for special events. Therefore, *Campbell*'s receiver does not have channel number 226 for regular programming. The channel number that *Campbell* superimposes is the one selected on the remote control, which is always available regardless of whether the displayed program is a special event or a regular television program and which does not arrive in the VBI.

108. *Campbell* explains that *Campbell* converter 40 provides output on channels

3 or 4 for viewing in the home. *Campbell* also recognizes the need for the viewer to know what channel number she is watching. To this end, *Campbell* explains that a channel number may be superimposed on the television program and is acquired from the user's remote control in all cases, not just in limited circumstances of a special programming event. The *Campbell* system uses the user-input channel number to superimpose on the television program picture. Petitioner's expert appears to agree. See Reader Decl., Ex. 1004 ¶ 53 (stating *Campbell* can transmit teletext and is capable of superimposing text like a "channel number" on the screen with the associated picture, but not the same "channel number" as the one received as teletext.) The user input of the channel number is not the second medium identified in the Petition because it is not received through transmission of the identified medium (in the VBI), as required by the claims.

109. Moreover, regardless of the channel number source, *Campbell's* receiver does not bring the channel number into existence because the channel number already exists by the time it is received.

110. Likewise, *Millar* also does not disclose or suggest that any information is *generated* based on the second medium. The process that the Petition portrays as generating information based on the second medium—extraction, selection, storage, and character generation—is simply decoding the information of the second medium, not *bringing into existence* information *based on* the second

medium. Rather, *Millar*'s steps outlined in the Petition is simply selecting or retrieving the information from the second medium, which is outside the scope of the properly construed claim. *See* Claim Construction Order, Ex. 1026 at 56-57.

111. The '490 Patent, to which this patent claims priority, discloses the receiver station receiving all closing stock prices applicable to that day and then

“generat[ing] several graphic video overlays, which microcomputer, 205, has the means to generate and transmit and TV set, 202, has the means to receive and

display.” '490 Patent, Ex. 1011 at 19:49-52. The *Campbell-Millar* combination fails to disclose, teach, or suggest this step. Again, in *Millar*, the data transmitted as captions in the vertical blanking interval is displayed after appropriate processing and decoding, while no new information is generated based on that data. The displayed channel number in *Campbell* is not even received in the second medium as required by the claim.

112. I note that (even before the April 3, 2020 Court claim construction), while considering a number of similar references, the Board observed that teletext (of which captioning, the Board determined, was a special case) lacks the step of “generat[ing] information” as claimed.

One special type of teletext data is captioning.

Captioning is a program related teletext message that is transmitted to the decoder and superimposed over the program video at a pre-determined time. [The description

applicable to *Millar*] . . . Another way the disclosed invention differs from conventional teletext is that teletext methods display the received teletext data, whereas the disclosed invention causes the computer to generate a display based on stored information from another source.

The '217 Appeal Decision, Ex. 1012 at pp. 20-21 (emphasis added). The question of whether teletext and closed caption references, collectively, disclose the “generat[ing] information” step has already been considered and resolved by the Board. The above discussion of *Campbell* and *Millar* (in view of the Court’s recent construction) only supports this conclusion.

**3. *Campbell* in View of *Millar* Does Not Render Claim 16 Obvious**

- a. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “each signal of said plurality of signals including an identifier” in element 16[c]

113. The Petition does not provide any independent analysis related to limitation 16[c]. Instead, the Petition relies on the discussion in connection with elements 11[d] and 11[e]. For the reasons set forth in Section X.A.2.a, ¶¶ 91-95, in my opinion, the *Campbell-Millar* combination fails to disclose, teach, or suggest “each signal in said plurality of signals including an identifier.” Accordingly, this combination does not render this claim element obvious either. To reiterate, in the *Campbell-Millar* combination, the signals carrying television video and audio do

not include any identifiers.

- b. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “identifying content of said second medium” in element 16[f]

114. The Petition does not provide any analysis related to limitation 16[f].

Instead, the Petition relies on the discussion in connection with element 11[f]. For the reasons set forth in Section X.A.2.b, ¶¶ 96-101, in my opinion, the *Campbell-Millar* combination fails to disclose, teach, or suggest “identifying content of said second medium.” Accordingly, this combination does not render this claim element obvious either. To reiterate, in the *Campbell-Millar* combination, the receiver does not identify content of the second [text, graphic, caption] medium. Even under the view most favorable to Petitioner, *Millar*’s receiver only identifies the structure of the second medium, which is outside the scope of the claim applying the April 3, 2020 Court constructions. *See* Claim Construction Order, Ex. 1026 at 65-68.

- c. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “processing, based on said content of said second medium, said second medium to generate information based on said second medium” in element 16[g]

115. The Petition does not provide any analysis related to limitation 16[g].

Instead, the Petition relies on the discussion in connection with element 11[g]. For the reasons set forth in Section X.A.2.c, ¶¶ 105-110, in my opinion, the *Campbell-*

*Millar* combination fails to disclose, teach, or suggest “processing, based on said content of said second medium, said second medium to generate information based on said second medium.” Accordingly, this combination does not render this claim element obvious either. To reiterate, in the *Campbell-Millar* combination, the receiver does not generate (i.e., it does not bring into existence) any information based on the second medium (text, graphics, captions); it only presents the received information.

**4. *Campbell* in View of *Millar* Does Not Render Claims 20 Obvious**

- a. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “each of said plurality of signals including an identifier” in element 20[c]

116. The Petition does not provide any analysis related to limitation 20[c]. Instead, the Petition relies on the discussion in connection with element 16[c], which in turn relies on discussion related to 11[d] and 11[e]. For the reasons set forth in Sections X.A.1.b, ¶¶ 78-86, in my opinion, the *Campbell-Millar* combination fails to disclose, teach, or suggest “each of said plurality of signals including an identifier.” Accordingly, this combination does not render this claim element obvious either. To reiterate, again, the signals carrying television video and audio do not include any identifiers.

- b. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “processing a control signal at said receiver station that causes execution of processor instructions to process data received in a second medium” in element 20[e]

117. Claim 20[e] requires “processing a control signal . . . that causes execution of processor instructions to process data received in a second medium.” In my opinion, Petitioner’s mapping of *Campbell* and *Millar* overlooks the *causal* connection between a “control signal” and “process[ing] data received in a second medium.”

118. Petitioner first points to the disclosure in *Campbell* and *Millar* that supposedly render obvious the element of “process data received in a second medium . . .”

*Campbell* receives a digital data signal, extracting it from the television signal, storing it, and transferring it to a text/graphic generator to provide characters and graphics symbols (captions superimposed on the picture in view of *Millar*) “for display” at a user’s television.

Petition at 64 (citations omitted).

119. Then the Petition states that *Campbell* further discloses “processing a control signal at said receiver station that causes execution of processor instructions,” while failing to explain how the “control signal” identified above *causes* execution of processor instructions to process data received in a second medium.

Specifically, the Petition points to *Campbell*'s processing of "channel control codes" (tier codes and eligibility code) that determine which program the receiver displays.

. . . *Campbell* explains that its receiver also processes channel control codes (tier codes and eligibility codes, inter alia) that determine which programs the receiver will displays [*sic*]. The control information is received at the RF/data separator and sent to converter control logic unit "carried out by a microprocessor."

Petition at 65-66 (citations omitted).<sup>3</sup> This argument fails for at least two reasons.

120. First, these control signals (tier and eligibility codes) relied on by the Petitioner do not affect teletext or caption information (the second medium). They do not *cause* execution of processor instructions to process data received in the second medium. The fields in the eligibility word 200 provide a value (such as tier and/or eligibility) to determine if the television program is displayed, not whether information in the VBI is processed. "A channel control word 200 is generated by

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<sup>3</sup> Petitioner identifies a similar disclosure in Millar, but because it is presented in a footnote (n. 16), and adds no material substance over Campbell, it should be disregarded, and I do not address it.

PCS 50 to define the codes [such as tier code 202 and eligibility code 206] required for access to each television program being transmitted.” *Campbell*, Ex. 1014 at 19:15-17. Petitioner itself states that codes it identified control the display of the television “programs,” which, according to the Petition, is the *first* medium.

Petition at 63 (“. . . first medium, i.e., a picture and sound television medium.”); Reader Decl., Ex. 1004 ¶ 159 (same).

121. The control signal identified by the Petition has no effect on the data received in the second medium (teletext or captions). *Campbell* and *Millar* lack disclosure of the control signals (tier and eligibility codes) that “cause[ing] execution of processor instructions to process data received in a second medium.”

122. Second, the Petition points to a portion of the second medium information as the control signal (*Campbell*’s tier and eligibility codes). But this means that by the time these codes are acted upon, the information in the second medium has already been processed to extract *these* codes. For example, in *Campbell* FIG. 17, the receiver compares the subscriber’s tier with tier enable code in step 322 with the eligibility code to the threshold in step 330, but to use the eligibility code, the receiver had to have already processed the data received in a second medium before that comparison, in step 318. So, the processing of these codes (claimed control signal) cannot “cause[] execution of processor instructions to process data received in a second medium.”

- c. The *Campbell-Millar* Combination Does Not Disclose, Teach, or Suggest “. . . to create a series of discrete video images” in element 20[e]

123. Claim element 20[e] requires “. . . to create a series of discrete video images,” that properly construed means to “bring into existence a series of discrete video images and not simply select or retrieve the series of discrete video images” (Claim Construction Order, Ex. 1026 at 89). The captions and graphics that Petitioner points to as supposedly matching the “series of discrete video images” are transmitted to the receiver and are decoded by the receiver, but the receiver does not bring them into existence, as I explained in ¶¶ 109-110 above.

**B. *Campbell* in View of *Millar* in Further View of *Thonnart* Does Not Render Claims 11 and 16 Obvious**

124. Petitioner introduces Ground 2, adding *Thonnart* to the *Campbell-Millar* combination as supposedly disclosing the “identify[ing] content of said second medium” limitation of claims 11 and 16.

Each of claims 11 . . . and 16 . . . requires “identifying content of said second medium,” i.e., identifying the content of the caption information transmitted via their digital data signals. . . . Even if the Board finds that page information (including the “character code” in *Millar*) fails to identify the content of a second medium, this element nevertheless would have been obvious to a POSITA in view of *Thonnart*. (Id. ¶¶ 171-175.).

Petition at 62 (citations omitted).

125. In my opinion, the inventors conceived the subject matter covered by claim 1, 11, 16, and 20 of the '217 Patent before *Thonnart*'s priority date. See ¶¶ 49-50.

Moreover, I understand that the inventors were diligent in reducing the inventions of these claims to practice by filing a patent application. Accordingly, I understand that *Thonnart* is not a prior-art reference to these claims, but even if it were, the *Campbell-Millar-Thonnart* combination fails to disclose, teach, or suggest elements of each independent claims as discussed below.

126. Irrespective of its prior art status, *Thonnart* does not disclose, teach, or suggest identify[ing] content of said second medium" required by claims 11 and 16. *Thonnart* does not disclose the step of "identifying content" by the receiver consistent with proper claim construction. Petitioner argues that *Thonnart*'s identifying information is used "to ensure that the digital teletext information is transmitted 'in a manner at least approximately synchronous with the corresponding information in the analog form,' i.e. to ensure that the corresponding information aligns." Petition at 62-63. Claims 11 and 16 require the identifying step to be performed by the receiver, not at the transmitter.

Moreover, The Petition fails to point to any disclosure or teachings of "ascertaining or recognizing" "the substance or gist," in contrast to form or structure in *Thonnart*. If anything, *Thonnart*'s "synchronous transmission" and "alignment"

speak to the “form or structure,” (not gist or substance).

I 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.

Executed on June 24, 2020

  
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Alfred C. Weaver, Ph.D.