

EXHIBIT A-1
INVALIDITY CLAIM CHART FOR U.S. PATENT NO. 7,747,217

CAMPBELL

WO 81/02961 (“Campbell”), was published October 15, 1981. U.S. Patent No. 4,536,791 (“Campbell ’791”) to Campbell issued on August 20, 1985, and claim priority to U.S. Application No. 135,987 (“Campbell ’987”) filed on March 31, 1980. The Campbell references are prior art under at least 35 U.S.C. §§ 102(a)/(e).

Campbell anticipates and/or renders obvious the asserted claims of U.S. Patent No. 7,747,217 (“the ’217 patent”). To the extent that Campbell does not expressly disclose any of the limitations of the asserted claims, such limitation would have been obvious to one of ordinary skill in the art. Any of the limitations of the asserted claims would be obvious in view of Campbell alone, or in combination with either (1) the knowledge of one of ordinary skill in the art; or (2) the references listed below:

- GB 1,370,535 (“Millar”)
- U.S. Patent No. 4,413,281 (“Thonnart”)
- U.S. Patent No. 4,388,645 (“Cox”)
- U.S. Patent No. 4,051,532 (“Hilbert”)
- U.S. Patent No. 4,068,264 (“Pires”)
- U.S. Patent No. 4,390,901 (“Keiser”)
- U.S. Patent No. 4,225,884 (“Block ’884”)

To the extent any limitation is found not to be literally disclosed, such a limitation would be obvious because the ’217 patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Campbell with the teachings of the references listed above because such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the ’217 patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein. Below and

included in this chart and in the other charts in these contentions are examples of specific teachings from references that, combined with Campbell, render the '217 patent invalid under § 103.

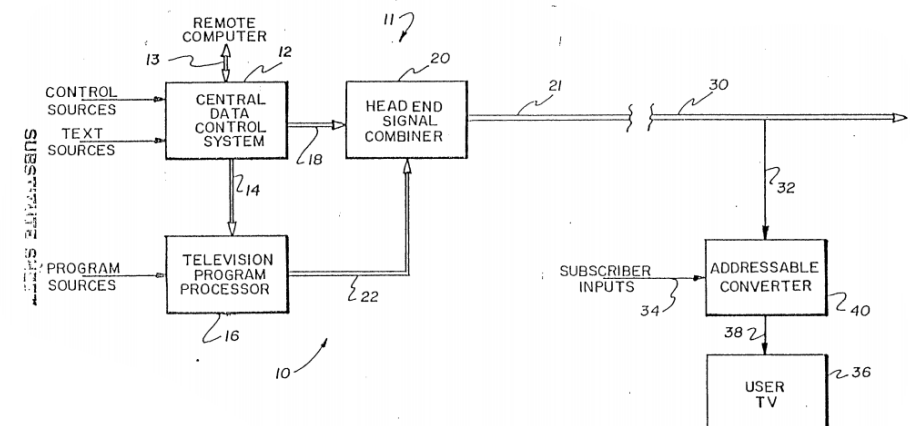
Moreover, to the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, it is Defendants' contention that any such limitation would be obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Defendants' invalidity contentions. It is also Defendants' contention that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification. Further motivation to combine is set forth in the cover pleadings.

For example, each of the prior art references above is in the same field as Campbell and discloses television systems for distributing television programming along with supplemental data and teletext. *See, e.g.*, Campbell at 3:27-36 ("The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel."), Millar at 1:9-16 ("This invention relates to television systems and receivers and concerns systems which enable alphanumeric information, such as captions and pages of information to be transmitted simultaneously with a video signal while allowing the picture represented by the video signal to be displayed with or without the alphanumeric information."), 2:121-129 ("the coded data signal can be added as pulses to one or more lines of the video signal which carry no ordinary picture information, i.e., the lines provided during the vertical interval to allow the field time base to stabilize before the first picture line of the new field."), Cox at 1:5-2:15 ("The present invention relates generally to teletext communication systems... which uses the vertical blanking interval of a broadcast television signal for transmission of text and graphics information."), Thonnart at Abstract ("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."), 1:6-32 ("This invention relates to the transmission of information coded in a digital form... "teletexts"); Hilbert at Abstract ("A low level video auxiliary signal is transmitted in addition to the conventional composite black and white or color television signal."), Pires at 1:6-26 ("The present invention resides in a pay television system..."). Further, each of these references are obvious to combine because they describe the field of TV systems, teach improvements, explain desired features, and even expressly state that one of skill in the art would be able to apply their teachings to related systems or methods.

As another example, the prior art also includes teachings and motivations to combine Campbell with the prior art references above. For example, the references teach the benefits of supplementing traditional television programming with additional data (e.g., subtitles, special messages, graphics, and other pages of information). Hilbert at 2:6-16 (“It is desirable to include additional information beyond the picture and sound information presently transmitted for the purpose of channel identification, subtitles for deaf persons, special notices and the like”). They also make clear that adding supplemental data and teletext data to television programming was well-known at the time, and that the use of teletext was “rapidly growing” worldwide. Thonnart at 1:10-32 (“It has been known to use television networks to transmit, either for supplementing or replacing the images and sounds composing the usual programs, texts and sequences coded in a digital form (designed hereinafter as teletexts).”), Cox at 1:12-17 (“Teletext is a generic term for a new and rapidly growing television based communication technique which uses the vertical blanking interval of a broadcast television signals for transmission of text and graphics information.”). Moreover, Campbell itself teaches that its system is designed to allow “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.” Campbell at 3:27-36.

Various other motivations also exist. For example, one skilled in the art would have also recognized that the combination of Campbell with these references would have involved combining prior art elements according to known methods (the addition of a digital data channel to supplement television programming with captions, graphics, and other information) to yield predictable results, for example a television system that can provide television programming and other supplemental information. Moreover, these references apply a known technique (transmitting supplemental data for a television program) to yield predictable results (a multimedia presentation that display television programming and supplemental information such as captions, special notices, graphics and other types of information). The combination also involves simple substitution (e.g., replacing or supplementing the teletext systems of Campbell with the teletext systems of the above prior art references) to yield predictable results (a television system that outputs a multimedia presentation including captions, special notices, and other types of information by receiving teletext information in a digital data channel).

Additional prior art that discloses each limitation in the asserted claims of the ’217 patent is set forth in Exhibits A-1 to A1-6. The prior art in Exhibits A-1 to A1-6 may be readily combined with Campbell and the other prior art discussed in this Exhibit to further render obvious each and every limitation in the asserted claims of the ’217 patent. In particular, the disclosure identified for each limitation of the asserted patent in Exhibits A-1 to A1-6 can be combined with the disclosure of Campbell identified below for the same limitation to render that limitation obvious.

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
<p>1[a]. A method of outputting a multimedia presentation at a receiver station adapted to receive a plurality of signals, said method comprising the steps of:</p>	<p>Campbell discloses a method of outputting a multimedia presentation at a receiver station adapted to receive a plurality of signals.</p> <p><i>See, e.g., Campbell at 3:28-36; see also U.S. Patent No. 4,536,791 (“Campbell ’791”) at 2:37-50, Patent Application No. 135,987 (“Campbell ’987”) at 3:10-18.</i></p> <p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at Figure 1; see also Campbell ’791 at Fig. 1, Campbell ’987 at Fig. 1.</i></p>  <p style="text-align: center;">FIG. 1</p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p><i>See, e.g., Campbell at 6:10-35; see also Campbell '791 at 4:24-55, Campbell '987 at 5:2-27.</i></p> <p>FIGURE 1 shows a simplified block diagram of a one-way cable television system 10 in accordance with the present invention. A head end station 11 includes a central data system 12 utilizing a control computer which gathers data from a wide variety of sources and formats the data for transmission on video frequency channels. . . . The formatted data is then transmitted by communications link 14 to a television program processor 16 where it is incorporated into the vertical blanking intervals of video signals generated by a variety of television program sources. In addition, the data may be formatted for transmission in a separate channel dedicated only for the transmission of data. . . . The dedicated data channel transmissions are connected over link 18 to a head end signal combiner 20 where they are combined with a plurality of video signals transmitted from television program systems 16 along transmission link 22. The head end unit then transmits the combined cable television and data signal to remote subscribers. . . .</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-</i></p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p>13.</p> <p>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.</p> <p>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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4.</i></p> <p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called "teletext" data. . . .</p> <p><i>See, e.g., Campbell at 29:18-22; see also Campbell '791 at 19:46-51.</i></p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p>Referring now to FIGURE 15, a preferred embodiment of the head end apparatus of FIGURE 1 for providing full-channel teletext is shown in greater detail. The preferred embodiment of FIGURE 15 is substantially the same as that shown for FIGURE 2 for the head end apparatus in the vertical interval data transmission system.</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell '791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel 3/4 modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Millar at 1:9-44, 1:67-85, 2:27-48, 2:75-91¹</i> • <i>See, e.g., Hilbert at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55</i> <p>Hilbert and Millar each teach that a receiver station can output a multimedia presentation by receiving a plurality of signals that include television information as well additional information, such as captions, special notices, and other pages of information. Millar at 1:9-25 ("This invention relates to television systems and receivers and concerns systems which enable alphanumeric information, such as captions and pages of information to be transmitted</p>

¹ The cites for each obviousness reference are merely exemplary. Further, for each element additional citations disclosing the element can be found in the corresponding section of the chart for the reference that is attached as Exhibit A, which are incorporated herein by reference.

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	<p>simultaneously with a video signal while allowing the picture represented by the video signal to be displayed with or without alphanumeric information.”), Hilbert at 1:5-16 (“It is desirable to include additional information beyond the picture and sound information presently transmitted for the purpose of channel identification, subtitles for deaf persons, special notices and the like.”). A person of skill in the art considering Campbell and Hilbert and/or Millar would have been motivated to modify Campbell’s head end station 11 to insert subtitles and other pages of information.</p> <p>As another example, there are various teachings, suggestions and motivations in the prior art that would have led one of ordinary skill to modify the prior art reference and to combine prior art reference teachings to arrive at the claimed invention. For instance, Hilbert discloses that “it is desirable to add auxiliary video signals to the normal or conventional television signal for display on the face of the television.” Hilbert at 2:22-30. Similarly, Millar discloses that it is “well-known” and desirable to “superimpose captions such as sub-titles on a picture by including the information relating thereto in the video signal itself.” Millar at 1:9-16. Both Millar and Hilbert also disclose that including additional information such as captions is beneficial at least because it aids deaf persons in their viewing experience. Moreover, Campbell itself teaches that its system is designed to all “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.” Campbell at 3:27-36.</p> <p>Various other motivations also exist. For example, one skilled in the art would have also recognized that the combination of Campbell with these references would have involved combining prior art elements according to known methods (the addition of a data channel to supplement television programming with captions and other information) to yield predictable results, for example a television system that can provide television programming with captions and supplemental information. Moreover, each of these references applies a known technique (transmitting supplemental information along with the television signal) to a known device (a television system) to yield predictable results (a multimedia presentation that display television programming and supplemental information such as captions, special notices, and other types of information). The combination also involves simple substitution (e.g., replacing the text data generated by text formatters 54 in Campbell with the teaching of Hilbert and Millar) to yield</p>

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	<p>predictable results (a television system that outputs a multimedia presentation including captions, special notices, and other types of information).</p> <p>A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[b]. receiving said plurality of signals including at least two media which include a first medium received in a digital data channel from a source external to said receiver station;</p>	<p>Campbell discloses receiving said plurality of signals including at least two media which include a first medium received in a digital data channel from a source external to said receiver station.</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:30-35; see also Campbell '791 at 4:49-55, Campbell '987 at 5:22-27.</i></p> <p>Figure 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.</p>

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	<p><i>See, e.g., Campbell at 9:18-20; see also Campbell '791 at 6:29-31, Campbell '987 at 8:33-34.</i></p> <p>Preferably, the present invention uses lines 17 and 18 of the vertical interval to transmit both the text data and the subscriber address and channel control data.</p> <p><i>See, e.g., Campbell at 10:19-26; see also Campbell '791 at 7:6-15.</i></p> <p>Data is encoded in the video scan line 724 following the color burst signal 722 as shown in FIGURE 2B. This line is normally composed of 92 bit intervals with each bit being identified as "1" with an amplitude level of 50 to 80 IRE unites or "0," carrying an amplitude of approximately zero IRE units. In this manner, the standard analog video signal is replaced by a binary digital data packet 724 of 92 bits which is transmitted together with the horizontal sync pulse and color burst pulse, both of which are analog signals.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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.</p> <p><i>See, e.g., Campbell at Fig. 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p>

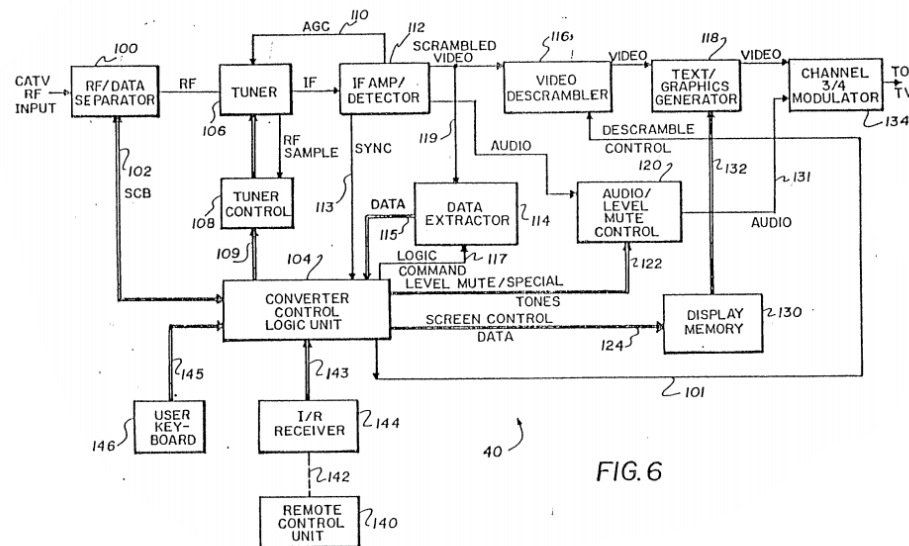


FIG. 6

See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.

Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .

See, e.g., Campbell at 16:1-5; see also Campbell '791 at 10:50-55.

The digital data is transmitted from the head end processor in the vertical interval of the television signal as two discrete voltage levels, a digital "zero" being equivalent to the black level of the video signal and a digital "one" being equivalent to the 50 IRE units above the black level.

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	<p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g.</i>, Hilbert at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55, Fig. 1 • <i>See, e.g.</i>, Millar at 1:47-53, 1:67-85, 2:18-21, Figs. 2, 3, 3:9-12, Figs. 1-3, Claim 1 <p>Both Hilbert and Millar disclose this limitation. For example, a person of skill in the art would understand Hilbert and/or Millar to teach that a receiver station can receive from an external source a plurality of signals, including television programming and supplemental data in a digital data channel (e.g., captions, special notices, and other pages of information) that may be stored and used to output a multimedia presentation. Millar at 1:9-25 (“This invention relates to television systems and receivers and concerns systems which enable alphanumeric information, such as captions and pages of information to be transmitted simultaneously with a video signal while allowing the picture represented by the video signal to be displayed with or without alphanumeric information.”), 1:67-86 (“storing the digitally coded data signal”), Hilbert at 1:5-16 (“It is desirable to include additional information beyond the picture and sound information presently transmitted for the purpose of channel identification, subtitles for deaf persons, special notices and the like.”).</p> <p>A person of skill in the art would have been motivated to combine these references for this limitation for at least the reasons set forth above and at the beginning of this chart. Moreover, because each of the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>

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<p>1[c]. storing information from said first medium in a storage medium at a computer at said receiver station;</p>	<p>Campbell discloses storing information from said first medium in a storage medium at a computer at said receiver station.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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.</p> <p>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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell '791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel 3/4 modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p><i>See, e.g., Campbell at Fig. 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p>

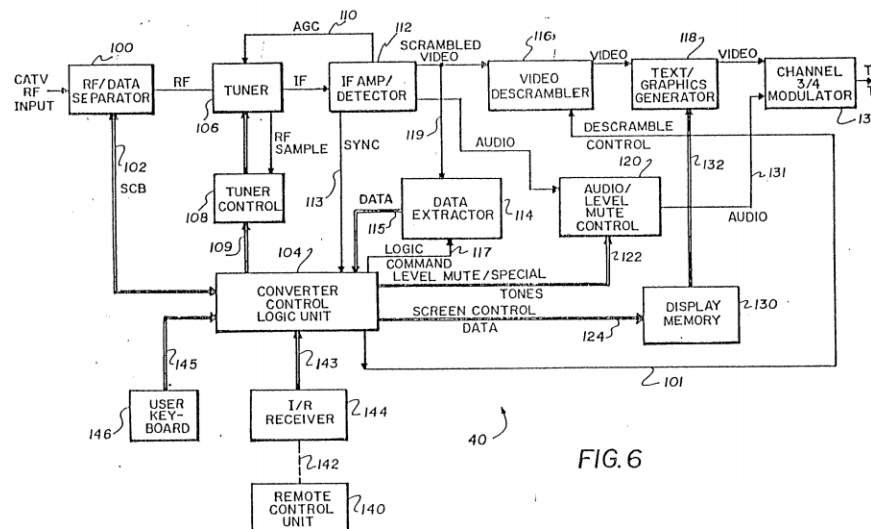


FIG. 6

To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

- See, e.g., Millar at 1:5-47, 1:67-85, 2:8-15, 2:49-61, 3:22-37, 3:92-112, 4:24-35, Figures 2, 3, 3:9-12, Claim 1
- See, e.g., Hilbert at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55, Fig. 1

Both Hilbert and Millar teach a person of skill in the art that a receiver station can receive television and additional data (e.g., such as sub-titles, special notices, and other pages of information) and that both medium can be stored at the receiver station. Millar at 1:67-85 (“means for storing the digitally coded signal”), Hilbert 2:8-15 (“Circuitry is employed for detecting the auxiliary signal information and adding it to the normal video information in the

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p>receiver.”). A person of skill in the art would have been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[d]. determining content, through use of processor instructions resident on said computer at said receiver station, of each medium received after said first medium in said plurality of signals,</p>	<p>Campbell discloses determining content, through use of processor instructions resident on said computer at said receiver station, of each medium received after said first medium in said plurality of signals.</p> <p><i>See, e.g., Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.</i></p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals, tier signals and eligibility code signals These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television</p>

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	<p>program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p> <p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>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.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at</i></p>

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	<p data-bbox="573 235 684 261">19:8-17.</p> <p data-bbox="573 310 1791 557">The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p> <p data-bbox="573 599 1728 667"><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p data-bbox="573 709 1797 1177">If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enabled to transmit the audio signal to the television set.</p> <p data-bbox="573 1219 1782 1362">To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<ul style="list-style-type: none"> • <i>See, e.g.</i>, Keiser '901 at Abstract, 1:38-48, 4:14-22, 4:25-30, 4:31-43. • <i>See, e.g.</i>, Pires at Abstract, 2:19-43, 3:46-66, 5:58-62, 7:27-48, 8:34-54, 11:6-31 • <i>See, e.g.</i>, Block '884 at 9:60-10:67, Fig. 2. <p>Keiser, Pires, and Block '884 disclose this limitation. For example, these references disclose identifiers (e.g., program codes) that are compared with a predetermined identifier to, for instance, determine program type or authorization to view programming. A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. For example, each of the references is directed at improvements to a television receiver station like that disclosed in Campbell. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
1[e]. wherein determining content of each medium comprises: processing an identifier which identifies said content of each of said medium: comparing said processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said	<p>Campbell discloses wherein determining content of each medium comprises: processing an identifier which identifies said content of each of said medium: comparing said processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals.</p> <p><i>See, e.g.</i>, Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.</p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals,</p>

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<p>plurality of signals;</p>	<p>tier signals and eligibility code signals These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p> <p>The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p>

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	<p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Keiser '901 at Abstract, 1:38-48, 4:14-22, 4:25-30, 4:31-43.</i> • <i>See, e.g., Pires at Abstract, 2:19-43, 3:46-66, 5:58-62, 7:27-48, 8:34-54, 11:6-31</i> • <i>See, e.g., Block '884 at 9:60-10:67, Fig. 2.</i> <p>Keiser, Pires, and Block '884 disclose this limitation. For example, these references disclose identifiers (e.g., program codes) that are compared with a predetermined identifier to, for instance, determine program type or authorization to view programming. A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. For example, each of the references</p>

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	<p>is directed at improvements to a television receiver station like that disclosed in Campbell. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[f]. coordinating, through use of processor instructions resident on said computer at said receiver station, 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; and</p>	<p>Campbell discloses coordinating, through use of processor instructions resident on said computer at said receiver station, 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.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p>

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	<p>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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>The text information of some complementary text channels may also be formatted to</p>

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	<p>supplement the television programs on its complementary program channel. For example, the textual material may amplify various news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4.</i></p> <p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called "teletext" data. . . . As shown in FIGURE 14, a preferred approach is to encode approximately 200 lines of the total 262.5 lines in the video field as a portion 800 for transmission of teletext data. Each data line contains one or more "pages" of text, each page being a full display field shown on a user television terminal.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Hilbert at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55</i> • <i>See, e.g., Millar at 1:9-44, 1:67-85, 3:22-37, 4:77-5:122, Figures 4, 5</i> <p>Both Hilbert and Millar disclose coordinating a presentation of a television program with supplemental information such as sub-titles, special notices, and other pages of information that would be based on the determining step discussed above. <i>See, e.g., Millar at 1:9-25</i> ("This invention relates to television systems and receivers and concerns systems which enable alphanumeric information, such as captions and pages of information to be transmitted simultaneously with a video signal while allowing the picture represented by the video signal to be displayed with or without alphanumeric information."), <i>Hilbert at 1:5-16</i> ("It is desirable to include additional information beyond the picture and sound information presently transmitted</p>

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	<p>for the purpose of channel identification, subtitles for deaf persons, special notices and the like.”). Both systems make clear that the inclusion of additional medium information beyond the television programming is desirable. <i>Id.</i> A person of skill in the art would have been motivated to combine these references for this limitation at least for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[g]. outputting and displaying said multimedia presentation to a user at said receiver station based on said step of coordinating</p>	<p>Campbell discloses outputting and displaying said multimedia presentation to a user at said receiver station based on said step of coordinating.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p>

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	<p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 25:6-8; see also Campbell '791 at 16:57-59, Campbell '987 at 22:14-16.</i></p> <p>No sound is available for the text channels other than the complementary television program channel sound which is muted if desirable.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4.</i></p> <p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called "teletext" data. . . . As shown in FIGURE 14, a preferred approach is to encode approximately 200 lines of the total 262.5 lines in the video field as a portion 800 for transmission of teletext data. Each data line contains one or more "pages" of text, each page being a full display field shown on a user television terminal.</p> <p><i>See, e.g., Campbell at Fig. 1; see also Campbell '791 at Fig. 1, Campbell '987 at Fig. 1.</i></p>

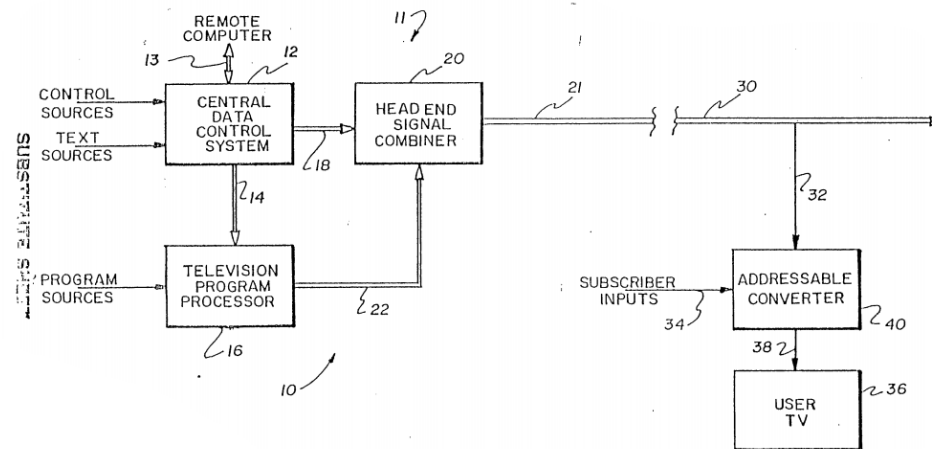


FIG. 1

To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

- *See, e.g.*, Millar at 1:9-44, 2:27-48, 4:77-5:122
- *See, e.g.*, Hilbert at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55

Both Hilbert and Millar disclose outputting and displaying a television program with supplemental information such as sub-titles, special notices, and other pages of information that would be based on the determining step discussed above. *See, e.g.*, Millar at 1:9-25 (“This invention relates to television systems and receivers and concerns systems which enable alphanumeric information, such as captions and pages of information to be transmitted simultaneously with a video signal while allowing the picture represented by the video signal to be displayed with or without alphanumeric information.”), Hilbert at 1:5-16 (“It is desirable to

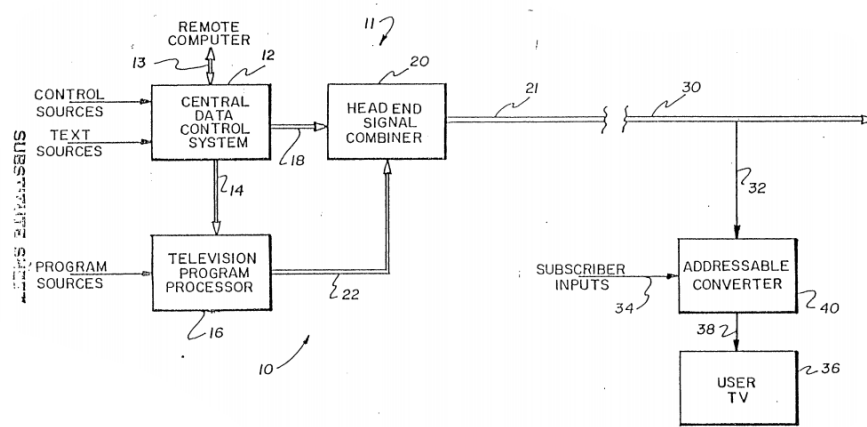
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	<p>include additional information beyond the picture and sound information presently transmitted for the purpose of channel identification, subtitles for deaf persons, special notices and the like.”). Both systems make clear that the inclusion of additional medium information beyond the television programming is desirable. <i>Id.</i> A person of skill in the art would have been motivated to combine these references for this limitation at least for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[h]. such that said presentation using said information has a predetermined relationship to said content of said medium comprising an identifier that matches said predetermined identifier and</p>	<p>Campbell discloses such that said presentation using said information has a predetermined relationship to said content of said medium comprising an identifier that matches said predetermined identifier.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell ’791 at 9:27-42, Campbell ’987 at 12:1-13.</i></p> <p>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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber’s television set.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell ’791 at 15:40-65, Campbell ’987 at 21:20-22:5.</i></p>

U.S. Patent No. 7,747,217	Representative Disclosure in Prior Art
	<p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Millar at 1:9-44, 4:77-81, Figs. 4-5</i> • <i>See, e.g., Hilbert at Abstract, 1:6-16</i>

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	<p>Both Millar and Hilbert disclose that a receiver station can output captions, special notices, and other pages of information with television programming that have predetermined relationships to one another. A person of skill in the art would have been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>1[i] said content of said medium comprising an identifier that matches said predetermined identifier explains a significance of said presentation using said information.</p>	<p>Campbell discloses said content of said medium comprising an identifier that matches said predetermined identifier explains a significance of said presentation using said information.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not</p>

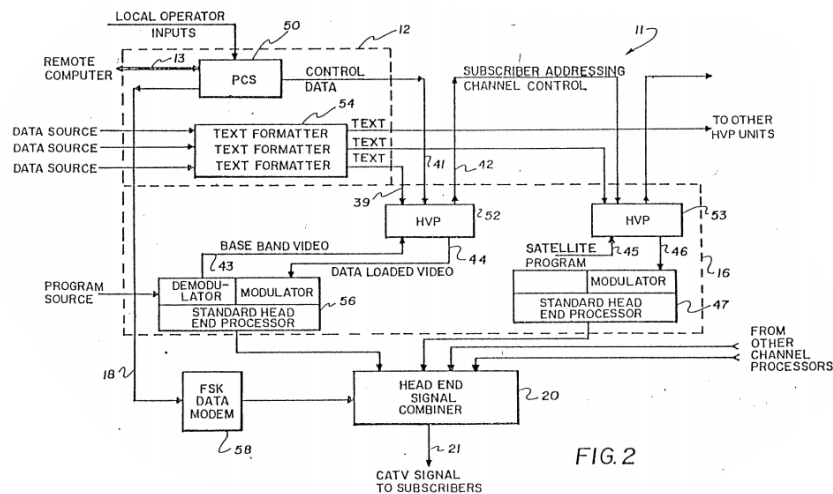
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	<p>enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Millar at 1:9-44 , 4:77-81, Figs. 4-5</i> • <i>See, e.g., U.S. Patent No. 4,051,532 (“Hilbert”) at Abstract, 1:6-16</i> <p>Millar and Hilbert that captions, special notices, and other pages of information can be output with the television programming, such that the information in each would explains the</p>

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	<p>significance of the other (e.g., the sub-titles explain the significance of the television programming and the television programming explains the significance of the sub-titles). A person of skill in the art would have been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>2. The method of claim 1, wherein each of said plurality of signals is received from an external transmitter station.</p>	<p>Campbell discloses the method of claim 1, wherein each of said plurality of signals is received from an external transmitter station.</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:10-29; see also Campbell '791 at 4:24-55, Campbell '987 at 5:2-27.</i></p> <p>FIGURE 1 shows a simplified block diagram of a one-way cable television system 10 in accordance with the present invention. A head end station 11 includes a central data system 12 utilizing a control computer which gathers data from a wide variety of sources and formats the data for transmission on video frequency channels. . . . The formatted data is then transmitted by communications link 14 to a television program processor 16 where it is incorporated into the vertical blanking intervals of video signals generated by a variety of television program sources. In addition, the data may be formatted for transmission in a separate channel dedicated</p>

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	<p>only for the transmission of data. . . . The dedicated data channel transmissions are connected over link 18 to a head end signal combiner 20 where they are combined with a plurality of video signals transmitted from television program systems 16 along transmission link 22.</p> <p><i>See, e.g., Campbell at Figure 1; see also Campbell '791 at Fig. 1, Campbell '987 at Fig. 1.</i></p>  <p style="text-align: center;">FIG. 1</p> <p><i>See, e.g., Campbell at Figure 2; see also Campbell '791 at Fig. 2, Campbell '987 at Fig. 2.</i></p>

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	<p style="text-align: center;">FIG. 2</p>
<p>3. The method of claim 2, wherein said external transmitter station is an intermediate transmitter station.</p>	<p>Campbell discloses the method of claim 2, wherein said external transmitter station is an intermediate transmitter station.</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:10-29; see also Campbell '791 at 4:24-55, Campbell '987 at 5:2-27.</i></p> <p>FIGURE 1 shows a simplified block diagram of a one-way cable television system 10 in accordance with the present invention. A head end station 11 includes a central data system 12 utilizing a control computer which gathers data from a wide variety of sources and formats the</p>

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	<p>data for transmission on video frequency channels. . . . The formatted data is then transmitted by communications link 14 to a television program processor 16 where it is incorporated into the vertical blanking intervals of video signals generated by a variety of television program sources. In addition, the data may be formatted for transmission in a separate channel dedicated only for the transmission of data. . . . The dedicated data channel transmissions are connected over link 18 to a head end signal combiner 20 where they are combined with a plurality of video signals transmitted from television program systems 16 along transmission link 22.</p> <p><i>See, e.g., Campbell at Figure 1; see also Campbell '791 at Fig. 1, Campbell '987 at Fig. 1.</i></p> <p style="text-align: center;">FIG. 1</p> <p><i>See, e.g., Campbell at Figure 2; see also Campbell '791 at Fig. 2, Campbell '987 at Fig. 2.</i></p>



To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

- See, e.g., Cox at 3:21-26, 3:28-43, Fig. 1.

Cox discloses an intermediate transmitter station that transmits data, including television programming and other supplementation information (e.g., teletext) to a receiver station. A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-

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	<p>known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>9. The method of claim 1, further comprising the step of storing said medium comprising an identifier that matches said predetermined identifier at said receiver station.</p>	<p>Campbell discloses the method of claim 1, further comprising the step of storing said medium comprising an identifier that matches said predetermined identifier at said receiver station.</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i>See, e.g., Campbell at Fig. 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p> <p style="text-align: center;">FIG. 6</p>

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	<p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g.,</i> Keiser at Abstract, 4:14-19, 4:31-43 <p>A person of skill in the art would have been motivated to combine these references for this limitation at least for the reasons set forth above and at the beginning of this chart. For example, this limitation would have been obvious to a person of skill in the art based on Campbell alone and/or Keiser as a person of ordinary skill in the art would have understood received programming including graphics, and captions and text could be stored onto a local VCR like the one taught in Keiser. Millar also discloses that received data and programming can be stored at the receiver station. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>11[a]. A method of outputting a multimedia presentation at a receiver station adapted to process a plurality of signals, said plurality of signals including first and second media of said multimedia presentation, said method comprising the steps of:</p>	<p><i>See</i> Limitation 1[a]-1[b]</p>

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<p>11[b]. receiving a subset of said plurality of signals from a source external to said receiver station, each signal of said subset of said plurality of signals including an identifier, wherein said subset of said plurality of signals comprises a plurality of said plurality of signals;</p>	<p>Campbell discloses receiving a subset of said plurality of signals from a source external to said receiver station, each signal of said subset of said plurality of signals including an identifier, wherein said subset of said plurality of signals comprises a plurality of said plurality of signals.</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:30-35; see also Campbell '791 at 4:49-55, Campbell '987 at 5:22-27.</i></p> <p>Figure 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.</p> <p><i>See, e.g., Campbell at Figure 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p>

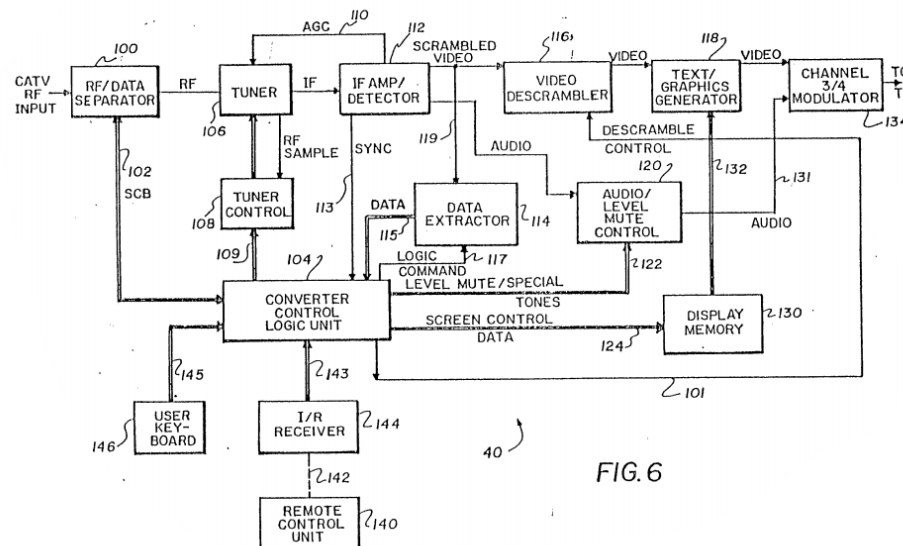


FIG. 6

See, e.g., Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.

The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals, tier signals and eligibility code signals . . . These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.

See, e.g., Campbell at 12:32-13:1; ; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.

Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in

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	<p>greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p>

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	<p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>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.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p> <p>The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made</p>

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	<p>as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
<p>11[c]. receiving said second medium in a digital data channel from a source external to said receiver station, wherein said second medium is not included in said subset of said plurality of signals;</p>	<p>Campbell discloses receiving said second medium in a digital data channel from a source external to said receiver station, wherein said second medium is not included in said subset of said plurality of signals;</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:30-35; see also Campbell '791 at 4:49-55, Campbell '987 at 5:22-27.</i></p> <p>Figure 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.</p> <p><i>See, e.g., Campbell at 9:18-20; see also Campbell '791 at 6:29-31, Campbell '987 at 8:33-34.</i></p> <p>Preferably, the present invention uses lines 17 and 18 of the vertical interval to transmit both</p>

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	<p>the text data and the subscriber address and channel control data.</p> <p><i>See, e.g., Campbell at 10:19-26; see also Campbell '791 at 7:6-15.</i></p> <p>Data is encoded in the video scan line 724 following the color burst signal 722 as shown in FIGURE 2B. This line is normally composed of 92 bit intervals with each bit being identified as "1" with an amplitude level of 50 to 80 IRE unites or "0," carrying an amplitude of approximately zero IRE units. In this manner, the standard analog video signal is replaced by a binary digital data packet 724 of 92 bits which is transmitted together with the horizontal sync pulse and color burst pulse, both of which are analog signals.</p> <p><i>See, e.g., Campbell at 12:32-13:1; ; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 16:1-5; see also Campbell '791 at 10:50-55.</i></p> <p>The digital data is transmitted from the head end processor in the vertical interval of the television signal as two discrete voltage levels, a digital "zero" being equivalent to the black level of the video signal and a digital "one" being equivalent to the 50 IRE units above the black level.</p> <p><i>See, e.g., Campbell at Figure 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p>

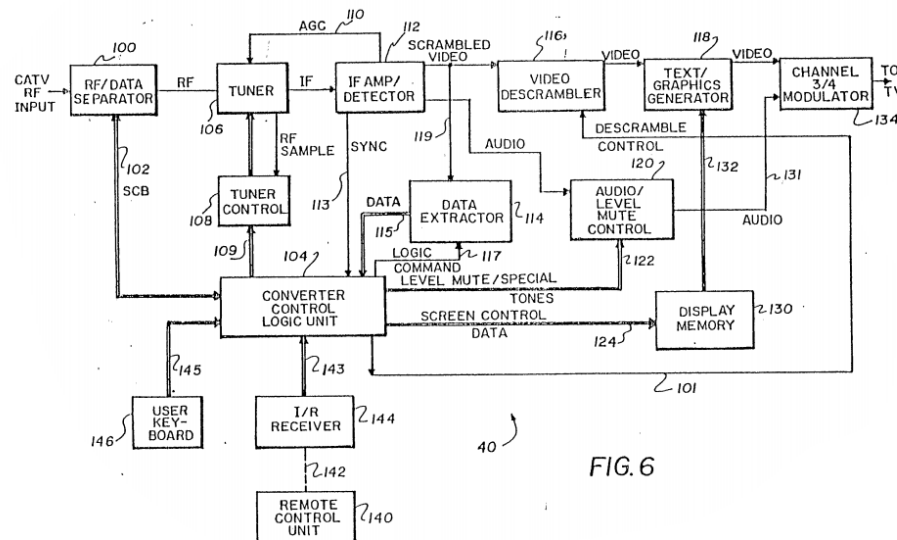


FIG. 6

To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

- See, e.g., Millar at 1:47-53, 1:67-85, 2:18-21, Figs. 2, 3, 3:9-12, Claim 1
- See, e.g., Hilbert at Abstract, 1:6-16, 3:27-55, Fig. 1

Both Millar and Hilbert disclose this limitation. For example, Millar and Hilbert teach a person of skill in the art that the receiver station can receive digital data (e.g., sub-titles, special notices, and other pages of information) that is not included in the subset of said plurality of signals from an external source.

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	<p>A person of skill in the art would have been motivated to combine this reference for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references.</p> <p>Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>11[d]. controlling a microcomputer at said receiver station, through execution of processor instructions, to: process each identifier of each signal of said subset of said plurality of signals, compare each processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals and identifies content of said first medium, process only a signal of said subset of said plurality of signals that includes an identifier that matches said predetermined identifier to</p>	<p>Campbell discloses controlling a microcomputer at said receiver station, through execution of processor instructions, to: process each identifier of each signal of said subset of said plurality of signals, compare each processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals and identifies content of said first medium, process only a signal of said subset of said plurality of signals that includes an identifier that matches said predetermined identifier to provide said first medium of said multimedia presentation.</p> <p><i>See, e.g., Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.</i></p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals, tier signals and eligibility code signals These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access</p>

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<p>provide said first medium of said multimedia presentation;</p>	<p>to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p> <p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>An eligibility code 206 defines a rating which may be assigned to many of the television</p>

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	<p>programs for subject matter which may not be suitable for viewing by all parties at the user station.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p> <p>The eligibility threshold code 238 is set by the authorized party an identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
11[e]. identify content of	Campbell identifies content of said second medium, generate information based on said second

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<p>said second medium, generate information based on said second medium based on identifying said content of said second medium, and coordinate presentation of said first medium and said information based on said second medium; and</p>	<p>medium based on identifying said content of said second medium, and coordinate presentation of said first medium and said information based on said second medium; and</p> <p><i>See, e.g., Campbell at 13:16-14:6; see also Campbell '791 at 9:3-33, Campbell '987 at 11:21-12:5.</i></p> <p>A data extractor 114 is connected to the scrambled video output of unit 112. Extractor 114 will be referred to as a vertical interval data extractor in discussing this embodiment and will be called a data extractor in discussing the full-channel teletext embodiment. Vertical interval data extractor 114 provides a serial data stream extracted from the vertical interval of the scrambled video signal to the converter control logic 104. A logic command signal for timing control is transmitted to extractor 114 by logic 104 on line 117. IF amp detector unit also generated a synchronizing [sic] signal from the video signal which is transmitted to logic 104 on line 113. A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base-band video signal which is directed to a text/-graphics generator 118. The scramble/descramble timing signal generated by the scrambler controller 90 of HVP unit 52 and transmitted to converter 40 as part of the control data is processed by converter control logic 40 and input on line 101 to the video descrambler 116 to control its operation. The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104. 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.</p> <p><i>See, e.g., Campbell at 22:3-15; see also Campbell '791 at 14:51-66, Campbell '987 at 20:5-17.</i></p> <p>The text data transmitted from text formatters 54 to converter 40 may be arranged in whatever format is suitable for transmission on the vertical interval of the television signals. Text transmission word 250 preferably includes a text identification code 252 indicating that the following data is to be treated as text. . . .</p>

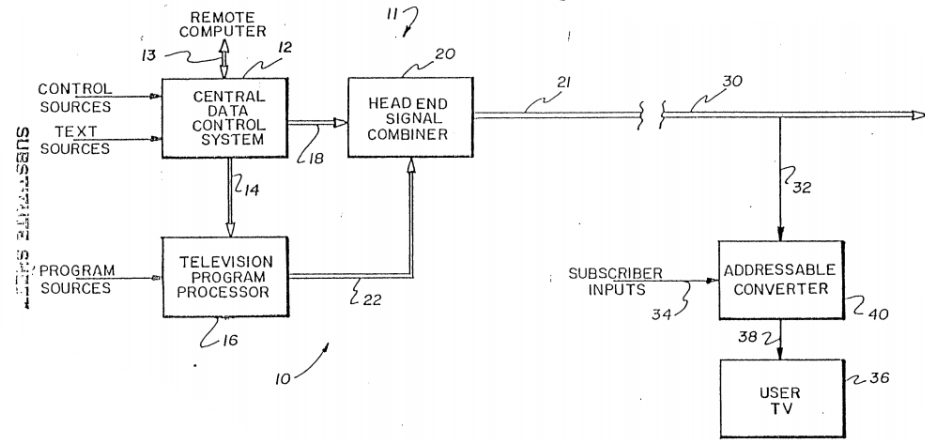
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	<p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g.</i>, Millar at 3:41-59, 3:72-91, 4:56-62, 4:66-73, 4:123-5:122 • <i>See, e.g.</i>, U.S. Patent No. 4,413,281 (“Thonnart”) at Abstract, 1:46-55, 2:24-42, 4:14-58 • <i>See, e.g.</i>, U.S. Patent No. 4,388,645 (“Cox”) at Abstract, 3:68-4:7 <p>Millar, Thonnart and Cox disclose this limitation. For example, each reference discloses that a receiver station identifies content of supplemental data it receives and generates information (e.g., sub-titles, special notices, and other pages of information) that can be coordinated to supplement television programming. <i>See, e.g.</i>, Millar at 4:56-62 (“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.”), Thonnart at 1:46-55 (“Each scan of the same group repeats the same content and each scan is of a duration equal to that necessary for the transmission of a scan of a television image. Preferably, an identifying message is associated with each scan or each group of scans so that teletexts, indexed by other identifying messages, are transmitted in a digital form in a manner at least approximately synchronous with the corresponding information in the analog form. It is also preferred that the receiving television stations of the users be equipped with selectors sensitive to identifying messages.”), 4:14-58 (“In a receiver, the signal received is passed simultaneously on the one hand into a teletext decoder 25 and on the other, to the detector 14 of identifying messages. . . .”), Cox at 3:68-4:7 (“Each page comprises an initial pseudo page header row which enables decoder 22 for acquiring the immediately succeeding first auxiliary row, i.e. row 24. The pseudo page header row includes forty 8-bit data bytes arranged in conventional teletext format with two bytes being used to specify the row address and magazine code and two bytes specifying the page number code.”). A person of skill in the art considering Campbell and</p>

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	<p>Thonnart, Miller and/or Cox would have been motivated to modify Campbell's system to identify the content of the second medium, generate information based on said second medium (e.g., sub-titles or other pages of information) based on identifying the content, and coordinate presentation of said first medium (the television program) and the information based on the second medium (e.g., to display the television programming with sub-titles).</p> <p>For example, there are various teachings, suggestions and motivations in the prior art that would have led one of ordinary skill to modify the prior art reference and to combine prior art reference teachings to arrive at the claimed invention. For instance, each of Millar, Thonnart, Cox, and Campbell are directed at techniques for transmitting teletext data in the vertical blanking interval that can be used to supplements a television program (e.g., using sub-titles, special notices, or other pages of information and textual and graphic displays). The prior art also makes clear that it was well-known to add such teletext information in a television system. For instance, Cox discloses that teletext is a "rapidly growing television based communication technique which uses the vertical blanking interval of a broadcast television signal for transmission of text and graphics" that has wide use across the world. Cox at 1:52-2:14. Millar discloses that it is "well-known" and desirable to "superimpose captions such as sub-titles on a picture by including the information relating thereto in the video signal itself." Millar at 1:9-16. Similarly, Thonnart teaches that it was "known to use television networks to transmit, either for supplementing or replacing the images and sounds composing the usual programs, texts and sequences coded in digital form." Moreover, Campbell itself teaches that its system is designed to all "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." Campbell at 3:27-36.</p> <p>Various other motivations also exist. For example, one skilled in the art would have also recognized that the combination of Campbell with these references would have involved combining prior art elements according to known methods (the addition of a data channel to supplement television programming with sub-titles and other information) to yield predictable results, for example a television system that can provide television programming with captions and supplemental information. Moreover, each of these references applies a known technique (transmitting supplemental information along with the television signal that is identified and</p>

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	<p>displayed along with the television program) to a known device (a television system) to yield predictable results (a multimedia presentation that display television programming and supplemental information such as captions, special notices, and other types of information). The combination also involves simple substitution (e.g., replacing the teletext system of Campbell with that of Millar, Thonnart, and/or Cox) to yield predictable results (a television system that outputs a multimedia presentation including captions, special notices, and other types of information).</p> <p>A person of skill in the art would have also been motivated to combine this reference for this limitation for the reasons set forth at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>11[f]. outputting and displaying said multimedia presentation to a user at said receiver station based on said step of controlling such that content of said first medium has a predetermined relationship to said information based on said second medium and said content of said first medium explains a significance of said information based on said</p>	<p>Campbell discloses outputting and displaying said multimedia presentation to a user at said receiver station based on said step of controlling such that content of said first medium has a predetermined relationship to said information based on said second medium and said content of said first medium explains a significance of said information based on said second medium.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at</i></p>

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second medium.	<p data-bbox="571 235 701 261">11:28-36.</p> <p data-bbox="571 310 1772 448">A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p data-bbox="571 492 1772 557"><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p data-bbox="571 600 1797 922">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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p data-bbox="571 966 1726 1031"><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p data-bbox="571 1075 1787 1398">If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not</p>

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	<p>exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16.</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4.</i></p> <p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called "teletext" data. . . . As shown in FIGURE 14, a preferred approach is to encode approximately 200 lines of the total 262.5 lines in the video field as a portion 800 for transmission of teletext data. Each data line contains one or more "pages" of text, each page being a full display field shown on a user television terminal.</p> <p><i>See, e.g., Campbell at Figure 1; see also Campbell '791 at Fig. 1, Campbell '987 at Fig. 1.</i></p>

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	 <p style="text-align: center;">FIG. 1</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • See, e.g., Millar at 1:9-44, 2:27-48, 4:77-5:122 • See, e.g., U.S. Patent No. 4,051,532 (“Hilbert”) at Abstract, 1:6-16 <p>Both Millar and Hilbert disclose this limitation. For example, Hilbert and Millar each teach that a receiver station can output captions, special notices, and other pages of information with television programming that have predetermined relationships to one another. A person of skill in the art would have been motivated to combine this reference for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would</p>

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	<p>have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>12. The method of claim 11, wherein said first medium comprises a television program including video and audio.</p>	<p>Campbell discloses the method of claim 11, wherein said first medium comprises a television program including video and audio.</p> <p><i>See, e.g., Campbell at 3:28-36; see also Campbell '791 at 2:37-50, Campbell '987 at 3:10-18.</i></p> <p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal</p>

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	<p>from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
16[a]. A method of outputting a multimedia presentation at a receiver station adapted to receive a plurality of media, said method comprising the steps of:	<i>See 1[a]-1[b]</i>
16[b]. receiving, at said receiver station, at least two of said plurality of	Campbell discloses receiving, at said receiver station, at least two of said plurality of media from different sources, a first medium of said plurality of media being received in a plurality of signals and a second medium of said plurality of media being received in a digital data channel

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<p>media from different sources, a first medium of said plurality of media being received in a plurality of signals and a second medium of said plurality of media being received in a digital data channel from a remote transmitter station;</p>	<p>from a remote transmitter station;</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:10-29; see also Campbell '791 at 4:24-55, Campbell '987 at 5:2-27.</i></p> <p>FIGURE 1 shows a simplified block diagram of a one-way cable television system 10 in accordance with the present invention. A head end station 11 includes a central data system 12 utilizing a control computer which gathers data from a wide variety of sources and formats the data for transmission on video frequency channels. . . . The formatted data is then transmitted by communications link 14 to a television program processor 16 where it is incorporated into the vertical blanking intervals of video signals generated by a variety of television program sources. In addition, the data may be formatted for transmission in a separate channel dedicated only for the transmission of data. . . . The dedicated data channel transmissions are connected over link 18 to a head end signal combiner 20 where they are combined with a plurality of video signals transmitted from television program systems 16 along transmission link 22. The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:30-35; see also Campbell '791 at 4:49-55, Campbell '987 at 5:22-27.</i></p> <p>Figure 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.</p>

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	<p data-bbox="573 269 957 305"><i>See, e.g., Campbell at 7:8-13</i></p> <p data-bbox="573 345 1797 483">As shown in FIGURE 2, a programming control system (PCS) 50 generates a continuous stream of data that contains a mixture of subscriber addressing signals and channel control signals. This data is transmitted to a plurality of head end video processors (HVP) 52 and 53 for combining with video signals in a plurality of different channel frequencies.</p> <p data-bbox="573 524 974 560"><i>See, e.g., Campbell at 7:16-19</i></p> <p data-bbox="573 600 1785 703">A text formatter system 54 receives data from a wide variety of sources such as weather, news, stock and others which are formatted for video transmission and then selectively transmitted in text form to the plurality of HVP units 52, 53.</p> <p data-bbox="573 743 1770 812"><i>See, e.g., Campbell at 9:18-20; see also Campbell '791 at 6:29-31, Campbell '987 at 8:33-34.</i></p> <p data-bbox="573 889 1755 958">Preferably, the present invention uses lines 17 and 18 of the vertical interval to transmit both the text data and the subscriber address and channel control data.</p> <p data-bbox="573 998 1451 1034"><i>See, e.g., Campbell at 10:19-26; see also Campbell '791 at 7:6-15.</i></p> <p data-bbox="573 1075 1785 1291">Data is encoded in the video scan line 724 following the color burst signal 722 as shown in FIGURE 2B. This line is normally composed of 92 bit intervals with each bit being identified as "1" with an amplitude level of 50 to 80 IRE unites or "0," carrying an amplitude of approximately zero IRE units. In this manner, the standard analog video signal is replaced by a binary digital data packet 724 of 92 bits which is transmitted together with the horizontal sync pulse and color burst pulse, both of which are analog signals.</p> <p data-bbox="573 1331 1766 1367"><i>See, e.g., Campbell at Figure 2; see also Campbell '791 at Fig. 2, Campbell '987 at Fig. 2</i></p>

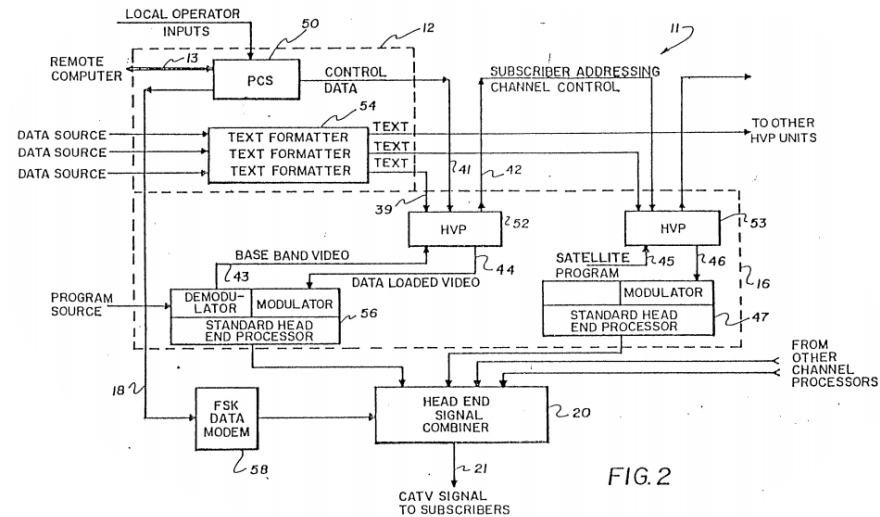


FIG. 2

See, e.g., Campbell at Figure 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.

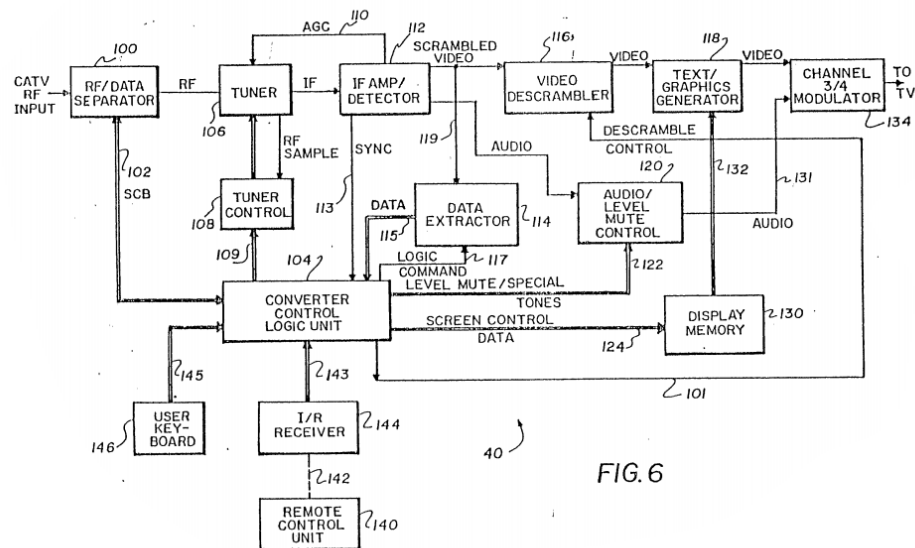


FIG. 6

See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.

Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .

See, e.g., Campbell at 16:1-5; see also Campbell '791 at 10:50-55.

The digital data is transmitted from the head end processor in the vertical interval of the television signal as two discrete voltage levels, a digital "zero" being equivalent to the black level of the video signal and a digital "one" being equivalent to the 50 IRE units above the black level.

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	<p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g.</i>, Millar at 1:47-53, 1:67-85, 2:18-21, Figs. 2, 3, 3:9-12, Claim 1 • <i>See, e.g.</i>, U.S. Patent No. 4,051,532 (“Hilbert”) at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55, Fig. 1 <p>A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
16[c]. identifying, using a processor, content of a first medium of said at least two of said plurality of media processing each signal of said plurality of signals, each signal of said plurality of signals including an identifier, and comparing each processed identifier to a predetermined identifier, said predetermined	<p>Campbell discloses identifying, using a processor, content of a first medium of said at least two of said plurality of media processing each signal of said plurality of signals, each signal of said plurality of signals including an identifier, and comparing each processed identifier to a predetermined identifier, said predetermined identifier being determined prior to receiving said plurality of media and identifying content of said first medium;</p> <p><i>See, e.g.</i>, Campbell at 7:33-8:4; see also Campbell ’791 at 5:25-35, Campbell ’987 at 6:18-26.</p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals,</p>

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<p>identifier being determined prior to receiving said plurality of media and identifying content of said first medium;</p>	<p>tier signals and eligibility code signals These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p>

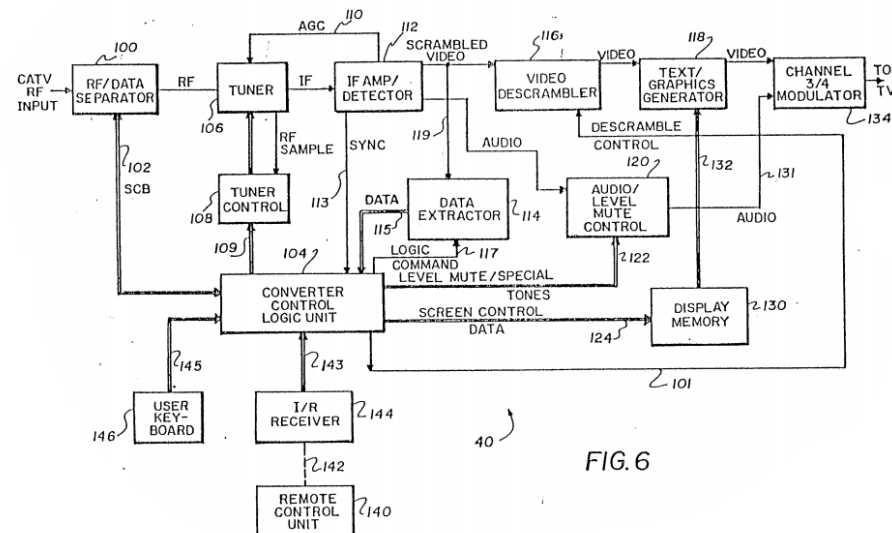
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	<p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>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.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p> <p>The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made</p>

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	<p>as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
<p>16[d]. processing only a signal of said plurality of signal that includes an identifier that matches said predetermined identifier to provide said first medium;</p>	<p>Campbell discloses processing only a signal of said plurality of signal that includes an identifier that matches said predetermined identifier to provide said first medium;</p> <p><i>See, e.g., Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.</i></p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals, tier signals and eligibility code signals These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . . All television channels are preferably scrambled by HVP unit 52 at the head end and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter.</p>

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	<p>For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p> <p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>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.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p> <p>The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs</p>

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	<p>which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140..</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
16[e]. storing said first medium at said receiver station; and	<p>Campbell discloses storing said first medium at said receiver station; and</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p>

See, e.g., Campbell at Figure 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.



To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

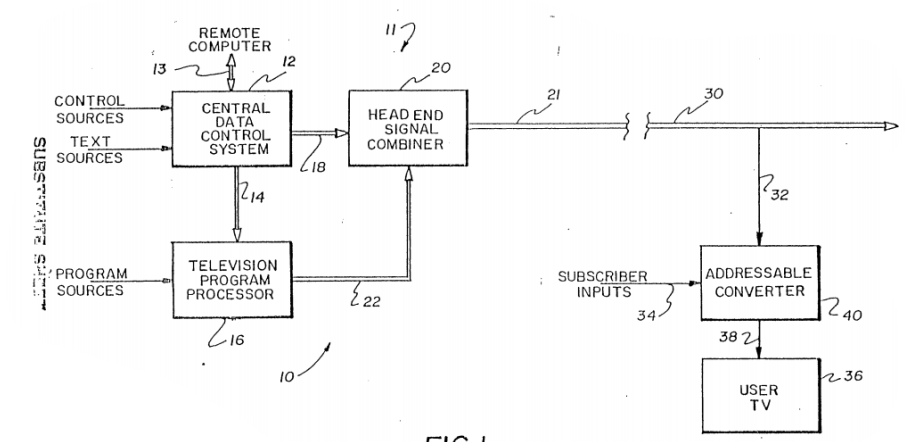
- *See, e.g.*, Millar at 2:93-104

A person of skill in the art would have been motivated to combine this reference for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market

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	<p>forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
16[f]. identifying content of said second medium;	<i>See</i> Limitation 11[e]
16[g]. processing, based on said content of said second medium, said second medium to generate information based on said second medium;	<i>See</i> Limitation 11[e]
16[h]. outputting and displaying said multimedia presentation, said multimedia presentation comprising a coordinated presentation of information included in said first medium and said generated information based on said second medium, said information included in said first medium having a predetermined relationship to said generated information based on said second medium and said	<p>Campbell presentation comprising a coordinated presentation of information included in said first medium and said generated information based on said second medium, said information included in said first medium having a predetermined relationship to said generated information based on said second medium and said information included in said first medium explaining a significance of said generated information based on said second medium.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p>

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<p>information included in said first medium explaining a significance of said generated information based on said second medium.</p>	<p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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. 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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step</p>

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	<p>332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4.</i></p> <p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called "teletext" data. . . . As shown in FIGURE 14, a preferred approach is to encode approximately 200 lines of the total 262.5 lines in the video field as a portion 800 for transmission of teletext data. Each data line contains one or more "pages" of text, each page being a full display field shown on a user television terminal.</p> <p><i>See, e.g., Campbell at Figure 1; see also Campbell '791 at Fig. 1, Campbell '987 at Fig. 1.</i></p>

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	 <p>The diagram, labeled FIG. 1, illustrates a television system architecture. At the top left, a 'REMOTE COMPUTER' (11) is connected to a 'CENTRAL DATA CONTROL SYSTEM' (12). The Central Data Control System (12) receives 'CONTROL SOURCES' (13) and 'TEXT SOURCES' (14). It is also connected to a 'TELEVISION PROGRAM PROCESSOR' (16) via line 14. The Television Program Processor (16) receives 'PROGRAM SOURCES' (15) and outputs to the Head End Signal Combiner (20) via line 22. The Head End Signal Combiner (20) receives signals from the Central Data Control System (12) via line 18 and from the Television Program Processor (16) via line 22. The Head End Signal Combiner (20) outputs to a cable network (21) which leads to a 'SUBSCRIBER INPUTS' (34) block. This block is connected to an 'ADDRESSABLE CONVERTER' (38) via line 32. The Addressable Converter (38) outputs to a 'USER TV' (36) via line 38. The entire system is labeled with a reference numeral 10.</p> <p>FIG. 1</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • See, e.g., Millar at 1:9-44, 2:27-48, 4:77-5:122 • See, e.g., U.S. Patent No. 4,051,532 ("Hilbert") at Abstract, 1:6-16, 2:22-30, 2:32-40, 3:28-43, 4:31-55 <p>A person of skill in the art would have been motivated to combine these references for this limitation for at least the reasons set forth above and at the beginning of this chart. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a</p>

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	<p>finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>17. The method of claim 16, said method further comprising the step of storing said information based on said second of said at least two of said plurality of media at said receiver station.</p>	<p>Campbell discloses the method of claim 16, said method further comprising the step of storing said information based on said second of said at least two of said plurality of media at said receiver station.</p> <p><i>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</i></p> <p>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.</p> <p>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 channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set.</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell '791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel 3/4 modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p><i>See, e.g., Campbell at Figure 6; see also Campbell '791 at Fig. 6, Campbell '987 at Fig. 6.</i></p>

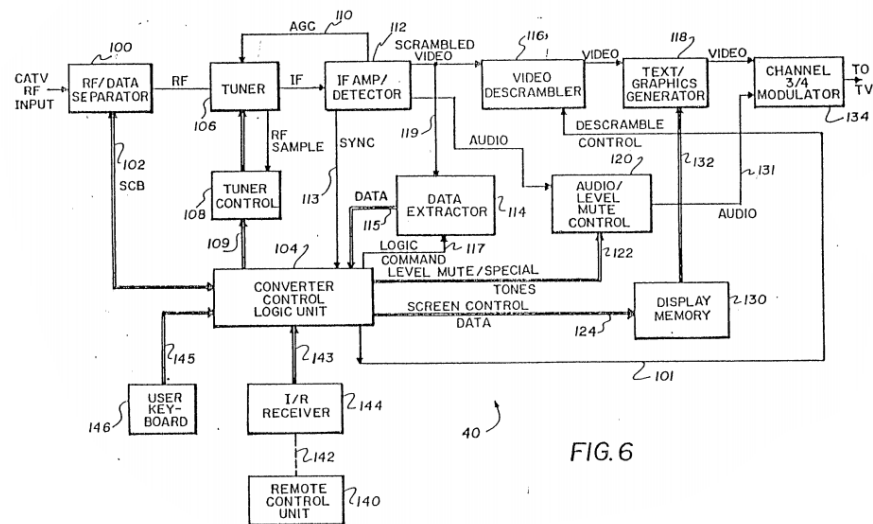


FIG. 6

To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:

- *See, e.g.*, Millar at 1:67-85, 2:49-61, 3:22-37, 3:92-112, 4:24-35, Figures 2, 3, 3:9-12, Claim 1
- *See, e.g.*, Keiser at Abstract, 4:14-19, 4:31-43

A person of skill in the art would have been motivated to combine these references for this limitation at least for the reasons set forth above and at the beginning of this chart. For example, this limitation would have been obvious to a person of skill in the art based on

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	<p>Campbell alone and/or Keiser as a person of ordinary skill in the art would have understood received programming including graphics, and captions and text could be stored onto a local VCR like the one taught in Keiser. Millar also discloses that received data and programming can be stored at the receiver station. Moreover, because they are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>18. The method of claim 16, wherein said first medium comprises a television program including video and audio.</p>	<p>Campbell discloses the method of claim 16, wherein said first medium comprises a television program including video and audio.</p> <p><i>See, e.g., Campbell at 3:28-36; see also Campbell '791 at 2:37-50, Campbell '987 at 3:10-18.</i></p> <p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p>

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	<p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p><i> See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
20[a]. A method of outputting a multimedia presentation at a receiver station having an output device, said method comprising the steps of:	<i>See Limitation 1[a]-[b].</i>

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<p>20[b]. receiving a plurality of signals from a source external to said receiver station:</p>	<p>Campbell discloses receiving a plurality of signals from a source external to said receiver station:</p> <p><i>See, e.g., Campbell at 1:7-24; see also Campbell '791 at 1:15-37, Campbell '987 at 1:2-19.</i></p> <p>This invention relates to an addressable cable television control system. More particularly, the present invention relates to a cable television system having a multiple-function addressable converter including data transmission in video format during the vertical interval of the video field or during substantially the entire video field. . . . The head end unit then transmits the combined cable television and data signal to remote subscribers.</p> <p><i>See, e.g., Campbell at 6:30-35; see also Campbell '791 at 4:49-55, Campbell '987 at 5:22-27.</i></p> <p>Figure 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.</p> <p><i>See, e.g., Campbell at 9:18-20; see also Campbell '791 at 6:29-31, Campbell '987 at 8:33-34.</i></p> <p>Preferably, the present invention uses lines 17 and 18 of the vertical interval to transmit both the text data and the subscriber address and channel control data.</p> <p><i>See, e.g., Campbell at 10:19-26; see also Campbell '791 at 7:6-15.</i></p> <p>Data is encoded in the video scan line 724 following the color burst signal 722 as shown in FIGURE 2B. This line is normally composed of 92 bit intervals with each bit being identified as "1" with an amplitude level of 50 to 80 IRE unites or "0," carrying an amplitude of approximately zero IRE units. In this manner, the standard analog video signal is replaced by a</p>

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	<p>The digital data is transmitted from the head end processor in the vertical interval of the television signal as two discrete voltage levels, a digital “zero” being equivalent to the black level of the video signal and a digital “one” being equivalent to the 50 IRE units above the black level.</p>
<p>20[c]. identifying, using a processor, content of a first medium to be output in said multimedia presentation by: processing said plurality of signals, each of said plurality of signals including an identifier, and comparing each said identifier with a predetermined identifier, said predetermined identifier determined prior to receiving said plurality of signals and identifying content of said first medium; processing only a signal of said plurality of signal that includes an identifier that matches said predetermined identifier to provide said first medium;</p>	<p>Campbell discloses identifying, using a processor, content of a first medium to be output in said multimedia presentation by: processing said plurality of signals, each of said plurality of signals including an identifier, and comparing each said identifier with a predetermined identifier, said predetermined identifier determined prior to receiving said plurality of signals and identifying content of said first medium; processing only a signal of said plurality of signal that includes an identifier that matches said predetermined identifier to provide said first medium;</p> <p><i>See, e.g., Campbell at 7:33-8:4; see also Campbell '791 at 5:25-35, Campbell '987 at 6:18-26.</i></p> <p>The subscriber addressing channel control data from PCS 50 is input to HVP 52 on line 41 where it is inserted in the vertical interval of the video signal. The channel control data from PCS 50 is processed at HVP 52 to generate scrambler signals, program identification signals, tier signals and eligibility code signals . . . These signals are utilized by each subscriber's addressable converter 40 to determine the particular subscriber's authorization to receive each program and to control descrambling of the video signals.</p> <p><i>See, e.g., Campbell at 17:33-18:35; see also Campbell '791 at 11:66-12:22, Campbell '987 at 14:22-15:15.</i></p> <p>The system of the present invention provides for several different procedures to restrict access to the television programming, including restrictions on the basis of addressable tiers, special events and eligibility codes. These different types of access control are all effected by a one-way system of the present invention using an intelligent converter at each subscriber location which can compare program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber. . . All television channels are preferably scrambled by HVP unit 52 at the head end</p>

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	<p>and descrambled by video descrambler unit 115 in converter 40. The descrambling process at the converter is enabled only after the proper control parameters are satisfied by the converter. For tiered program control, the channel control signals from the control data system program the addressable converter to compare each program tier code with the tier code of the subscriber. Thus, the remote subscribers can have access to different tiers of service regardless of the channel selected depending upon the type of service subscribed to by each user. . . .</p> <p><i>See, e.g., Campbell at 19:9-14; see also Campbell '791 at 12:62-68, Campbell '987 at 16:23-28.</i></p> <p>As previously mentioned, the transmitted data is of two types, namely control data generated by PCS 50 and text data generated by text formatter 54 (see Figure 2). The control data is further divided into subscriber addressing data and channel control data. The format for both the control data and the text data is shown in the form of words in FIGURE 11.</p> <p><i>See, e.g., Campbell at 19:15-34; see also Campbell '791 at 13:1-18, Campbell '987 at 17:1-15.</i></p> <p>A channel control word 200 is generated by PCS 50 to define the codes required for access to each television program being transmitted. . . . Channel control word 200 includes a tier code 202 defining the level of access required for the program in question. Channel control word 200 also includes a program identification code 204 to indicate whether the television program in question is a special event requiring further limitation on access by viewers only to those who have subscribed to the special event.</p> <p>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.</p> <p><i>See, e.g., Campbell at 21:12-21; see also Campbell '791 at 14:17-28, Campbell '987 at 19:8-17.</i></p>

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	<p>The eligibility threshold code 238 is set by the authorized party and identifies certain eligibility codes 206 transmitted as part of the channel control word 200 for certain television programs which require limited access because of the subject matter. Eligibility word 230 is also transmitted from PCS 50 to converter 40 where it is stored in converter control logic 104. When the eligibility threshold code 233 is exceeded by the eligibility code of a given television program being sent to the converter, logic 104 will disable the converter until key number 236 is input by the local keyboard 139 or the remote control unit 140.</p> <p><i>See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</i></p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enabled to transmit the audio signal to the television set.</p>
20[d]. processing a control signal at said receiver station that causes execution of processor instructions to process data received in a second medium from an external	<p>Campbell discloses processing a control signal at said receiver station that causes execution of processor instructions to process data received in a second medium from an external source to create a series of discrete video images, wherein said second medium is not included in said plurality of signals.</p> <p><i>See, e.g., Campbell at 3:28-36; see also Campbell '791 at 2:37-50, Campbell '987 at 3:10-18.</i></p>

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<p>source to create a series of discrete video images, wherein said second medium is not included in said plurality of signals;</p>	<p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at 22:3-15; see also Campbell '791 at 14:51-66, Campbell '987 at 20:5-17.</i></p> <p>The text data transmitted from text formatters 54 to converter 40 may be arranged in whatever format is suitable for transmission on the vertical interval of the television signals. Text transmission word 250 preferably includes a text identification code 252 indicating that the following data is to be treated as text. The text transmission word 250 also includes a number of text characters 254, 255, 256 and 257 for transmitting the text data. The number of characters in a given text word are optional and may be determined by the parameters of the system. Preferably, each text word has a length equivalent to a "line", that is the time it takes for the television receiver to make one horizontal scan. Using a modified ASCII code, four text characters are transmitted with each text word to provide an equivalent data rate of 240 characters per second.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4</i></p>

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	<p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called “teletext” data. . . .</p> <p><i>See, e.g., Campbell at 31:21-23; see also Campbell ’791 at 21:5-7.</i></p> <p>Preferably, memory bank 524 has a storage capacity of at least 10,640 pages, each page consisting of 512 characters.</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell ’791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel $\frac{3}{4}$ modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p>Further, to the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Thonnart at 4:14-58</i> • <i>See, e.g., Cox at 1:13-49</i> • <i>See, e.g., Millar at 2:27-105, 3:41-71, 3:92-112, 5:71-80</i>

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	<p>To the extent that Campbell does not expressly disclose this limitation, it would have been obvious to one of ordinary skill in the art that Campbell's teaching to provide additional data to supplement a channel television program includes creating a series of discrete video images such as subtitles. Further, Campbell's preferred storage capacity of 10,640 pages, each consisting of 512 characters or one page of character display, is well suited to create a series of discrete video images such as subtitles. Moreover, this limitation was also obvious in view of Millar, Thonnart and Cox disclose that a receiver station can processes control signals to cause the execution of processor instructions to process teletext data not included in the plurality of signal from an external source to create a series of discrete video images, for example a series of text, diagrams, alphanumeric images or other images. <i>See, e.g.</i>, Thonnart at 4:14-58 ("pages of the teletext and/or images and/or audio commentaries"), Cox at 1:13-49 ("display of the text and graphics information"); Millar at 2:49-61 ("alphanumeric information may be provided at the receiving terminal on a large scale, for example 25,000 characters equivalent to say 32 printed pages"). A person of skill in the art considering Thonnart, Miller and/or Cox would have been motivated to combine these references with Campbell.</p> <p>For example, there are various teachings, suggestions and motivations in the prior art that would have led one of ordinary skill to modify the prior art reference and to combine prior art reference teachings to arrive at the claimed invention. For instance, each of Millar, Thonnart, Cox, and Campbell are directed at techniques for transmitting teletext data in the vertical banking interval that can be used to supplements a television program (e.g., using sub-titles, special notices, or other pages of information and textual and graphic displays). The prior art also makes clear that it was well-known to add such teletext information in a television system. For instance, Cox discloses that teletext is a "rapidly growing television based communication technique which uses the vertical blanking interval of a broadcast television signal for transmission of text and graphics" that has wide use across the world. Cox at 1:52-2:14. Millar discloses that it is "well-known" and desirable to "superimpose captions such as sub-titles on a picture by including the information relating thereto in the video signal itself." Millar at 1:9-16. Similarly, Thonnart teaches that it was "known to use television networks to transmit, either for supplementing or replacing the images and sounds composing the usual programs, texts and sequences coded in digital form." Moreover, Campbell itself teaches that its system is designed to all "substantial amount of textual data per channel for use either to provide additional data to</p>

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	<p>supplement a channel television program or as a separate all textual and graphic channel.” Campbell at 3:27-36.</p> <p>Various other motivations also exist. For example, one skilled in the art would have also recognized that the combination of Campbell with these references would have involved combining prior art elements according to known methods (the addition of a data channel to supplement television programming with video images) to yield predictable results, for example a television system that can provide television programming with captions and supplemental information. Moreover, each of these references applies a known technique (transmitting supplemental information along with the television signal that is identified and displayed along with the television program) to a known device (a television system) to yield predictable results (a multimedia presentation that display television programming and supplemental information such as discrete video images). The combination also involves simple substitution (e.g., replacing the teletext system of Campbell with that of Millar, Thonnart, and/or Cox) to yield predictable results (a television system that outputs a multimedia presentation including discrete video images).</p> <p>A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
20[e]. causing a video image of said series of discrete video images to be output and displayed subsequent to said step of	<p>Campbell discloses causing a video image of said series of discrete video images to be output and displayed subsequent to said step of identifying; and</p> <p><i>See, e.g., Campbell at 3:28-36; see also Campbell ’791 at 2:37-50, Campbell ’987 at 3:10-18.</i></p>

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identifying; and	<p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at 22:3-15; see also Campbell '791 at 14:51-66, Campbell '987 at 20:5-17.</i></p> <p>The text data transmitted from text formatters 54 to converter 40 may be arranged in whatever format is suitable for transmission on the vertical interval of the television signals. Text transmission word 250 preferably includes a text identification code 252 indicating that the following data is to be treated as text. The text transmission word 250 also includes a number of text characters 254, 255, 256 and 257 for transmitting the text data. The number of characters in a given text word are optional and may be determined by the parameters of the system. Preferably, each text word has a length equivalent to a "line", that is the time it takes for the television receiver to make one horizontal scan. Using a modified ASCII code, four text characters are transmitted with each text word to provide an equivalent data rate of 240 characters per second.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4</i></p>

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	<p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called “teletext” data. . . .</p> <p><i>See, e.g., Campbell at 31:21-23; see also Campbell ’791 at 21:5-7.</i></p> <p>Preferably, memory bank 524 has a storage capacity of at least 10,640 pages, each page consisting of 512 characters.</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell ’791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel $\frac{3}{4}$ modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p>Further, to the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Thonnart at 4:14-58</i> • <i>See, e.g., Cox at 1:13-49</i> • <i>See, e.g., Millar at 2:27-105, 3:41-71, 3:92-112</i> <p>To the extent that Campbell does not expressly disclose this limitation, it would have been</p>

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	<p>obvious to one of ordinary skill in the art that Campbell's teaching to provide additional data to supplement a channel television program includes creating a series of discrete video images such as subtitles. Further, Campbell's preferred storage capacity of 10,640 pages, each consisting of 512 characters or one page of character display, is well suited to create a series of discrete video images such as subtitles. Moreover, this limitation would have been at least obvious based on one or more of Thonnart, Cox and/or Millar. A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>20[f]. combining said outputted video image into said multimedia presentation at said output device based on said step of causing to be output, said multimedia presentation comprising said first medium and said outputted video image of said series of discrete video images, said first medium having a predetermined relationship to said series of discrete video images and said first medium</p>	<p>Campbell discloses combining said outputted video image into said multimedia presentation at said output device based on said step of causing to be output, said multimedia presentation comprising said first medium and said outputted video image of said series of discrete video images, said first medium having a predetermined relationship to said series of discrete video images and said first medium explaining a significance of said video image of said series of discrete video images.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p><i>See, e.g., Campbell at 28:3-22; see also Campbell '791 at 18:50-19:4</i></p>

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<p>explaining a significance of said video image of said series of discrete video images.</p>	<p>With reference to FIGURES 14-17 another preferred embodiment of the present invention is shown. In the system shown therein, a data transmission system is disclosed for the transmission of data in portions of the video field in addition to the vertical interval portion. . . . This data can be control data or textual or graphic data for visual display, called “teletext” data. . . .</p> <p><i>See, e.g., Campbell at 33:4-10; see also Campbell ’791 at 22:6-14.</i></p> <p>If the control word indicates that the signals being transmitted are in full-channel text format, logic unit 104 (shown in FIGURE 6) simply switches channel $\frac{3}{4}$ modulator 134 to the text/graphics generator 118 and hold it there for the entire channel communication. The display memory 130 is then filled with appropriate data from converter control logic unit 104 which is formatted by generator 118 and transmitted by modulator 134 for display on the user television set.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Thonnart at 4:14-58</i> • <i>See, e.g., Cox at 1:13-49</i> • <i>See, e.g., Millar at 1:9-44, 1:67-85, 3:22-37, 4:77-5:122, Figures 4, 5</i> <p>Thonnart, Cox, and Millar disclose this limitation. A person of skill in the art would have been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated</p>

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	<p>one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>
<p>21. The method of claim 20, wherein said first medium comprises a television program including video and audio.</p>	<p>Campbell discloses the method of claim 20, wherein said first medium comprises a television program including video and audio.</p> <p><i>See, e.g., Campbell at 3:28-36; see also Campbell '791 at 2:37-50, Campbell '987 at 3:10-18.</i></p> <p>The present invention provides a relatively inexpensive and simple cable television system having the capability of controlling access to a wide range of television program and data signals while efficiently transmitting data signals in a video format during the vertical interval (VI) of each television program channel. 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.</p> <p><i>See, e.g., Campbell at 12:32-13:1; see also Campbell '791 at 8:46-52, Campbell '987 at 11:1-6.</i></p> <p>Referring now to FIGURE 6, the addressable converter unit 40 of FIGURE 1 is shown in greater detail. The converter, under direction of converter logic, process the RF data-loaded television signals from combined video output line 21 of head end signal combiner 20 and provides video and audio output for a television set, preferably on channels 3 or 4. . . .</p> <p><i>See, e.g., Campbell at 13:27-36; see also Campbell '791 at 9:15-26, Campbell '987 at 11:28-36.</i></p> <p>A conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descrambled base band video signal which is directed to a text/-</p>

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	<p>graphics generator 118. . . . The channel sound information is amplitude adjusted or muted by an audio level/mute control unit 120 controlled by a signal on data line 122 from logic 104.</p> <p> See, e.g., Campbell at 23:12-32; see also Campbell '791 at 15:40-65, Campbell '987 at 21:20-22:5.</p> <p>If the answer is no to each of decision steps 320, 322 and 324, then the user station is not enabled for reception of the television program being broadcast on the selected channel. In that event, step 326 is taken in which the text/graphics generator 118 generates an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel. . . . In the event that a yes answer is received for any of the three decision steps 320, 322 and 324, converter control logic 104 proceeds with a further decision step 330. A determination is made as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected. . . . If the threshold is not exceeded, then the converter is enabled for processing of the television signal. As shown in step 332, the video descrambler 116 is enabled to process the video signal of the selected television program and the audio level/mute control unit 120 is enable to transmit the audio signal to the television set.</p>
<p>22. The method of claim 20, wherein said second medium is received in a digital data channel.</p>	<p>Campbell discloses the method of claim 20, wherein said second medium is received in a digital data channel.</p> <p>See, e.g., Campbell at 14:1-13; see also Campbell '791 at 9:27-42, Campbell '987 at 12:1-13.</p> <p>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.</p>

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	<p><i>See, e.g., Campbell at 16:1-5; see also Campbell '791 at 10:50-55.</i></p> <p>The digital data is transmitted from the head end processor in the vertical interval of the television signal as two discrete voltage levels, a digital “zero” being equivalent to the black level of the video signal and a digital “one” being equivalent to the 50 IRE units above the black level.</p> <p><i>See, e.g., Campbell at 26:2-7; see also Campbell '791 at 17:28-34, Campbell '987 at 24:12-16</i></p> <p>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 news stories, shopping advertisements and other programming briefly presented over the television program channel.</p> <p>To the extent that Campbell does not expressly or inherently disclose this limitation, it would have been obvious to one of ordinary skill in the art to modify the teachings of Campbell, such as by combining with the common general knowledge and/or the teachings of the numerous prior art references that disclose this limitation, including:</p> <ul style="list-style-type: none"> • <i>See, e.g., Thonnart at 2:24-42</i> • <i>See, e.g., Cox at 1:13-49</i> • <i>See, e.g., Millar at 1:47-53, 1:67-85, 2:18-21, Figs. 2, 3, 3:9-12, Figs. 1-3, Claim 1</i> <p>Thonnart, Cox and Millar disclose this limitation. For example, a person of skill in the art would understand that Thonnart, Cox and Millar receive supplemental data (e.g., captions, special notices, and other pages of information) in a digital data channel. Millar at 1:67-86 (“storing the digitally coded data signal”); Thonnart at 2:24-42 (“The text and the diagrams composed in the device 6 are passed in the form of digitally coded information into a memory</p>

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	<p>7”), Cox at 1:13-49 (“text and graphics material is transmitted in digitally encoded form”).</p> <p>A person of skill in the art would have also been motivated to combine these references for this limitation for the reasons set forth above and at the beginning of this chart. Moreover, because the references are in the same field, they are aimed at solving the same perceived problems in the art, and the nature of the problem to be solved was the same. Known design incentives and market forces would have also motivated one of ordinary skill to combine these references. Furthermore, one of skill in the art would understand that this limitation was a standard implementation and an obvious design choice. Such an implementation simply reflects one of a finite number of well-known techniques implemented in a predictable manner, to achieve well-known, predictable results.</p>