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Levine

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[54] **VCR PROGRAMMER**

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Related U.S. Application Data

[63] Continuation of Ser. No. 634,179, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 330,111, Dec. 14, 1981, abandoned.

[51] **Int. Cl.**[4] **H04N 5/782; H04B 11/16**

[52] **U.S. Cl.** **358/335; 455/181; 455/186**

[58] **Field of Search** 360/33.1, 69, 79; 358/335, 188; 434/308, 323; 455/171, 178, 181, 185, 186, 344; 340/706, 799

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,004,085	1/1977	Makino et al.	358/188
4,088,958	5/1978	Suzuki et al.	455/181
4,222,069	9/1980	Groetschel	358/335
4,305,101	12/1981	Yarbrough et al.	360/69
4,325,081	4/1982	Abe	360/33.1
4,334,242	6/1982	Mangold	358/335
4,337,480	6/1982	Bourassin et al.	358/188
4,475,153	10/1984	Kihara et al.	358/335
4,519,003	5/1985	Scholz	358/335
4,598,288	7/1986	Yarbrough et al.	360/69
4,641,205	2/1987	Beyers, Jr.	358/335

FOREIGN PATENT DOCUMENTS

2918846	11/1980	Fed. Rep. of Germany	358/335

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Attorney, Agent, or Firm—Krass & Young

[57] **ABSTRACT**

A system for programming the automatic operation of a video recorder over an extended time period uses an associated television receiver as a display device for alphanumeric messages to the operator to provide a self-explanatory, interactive programming routine. The video recorder system includes a digital memory, a real time digital clock, and an alphanumeric character generator, all connected to a central digital controller. A keypad allows the operator to initiate a programming routine in which previously stored programming messages are called up from memory and generated on the TV receiver's display tube using the character generator. The operator's responses entered via the keypad are stored in the memory and are called up at future times to generate control signals for the video recorder. The video recorder system further includes a memory storing data representing a schedule of programming available for a future period. The video recorder system permits this schedule to be recalled and displayed on the TV receiver's display for review by the user.

30 Claims, 2 Drawing Sheets

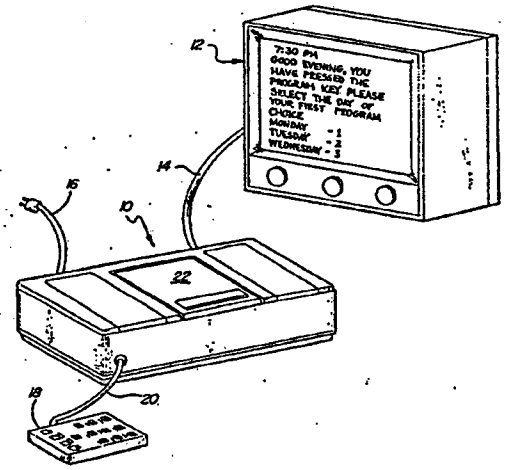


FIG. 1

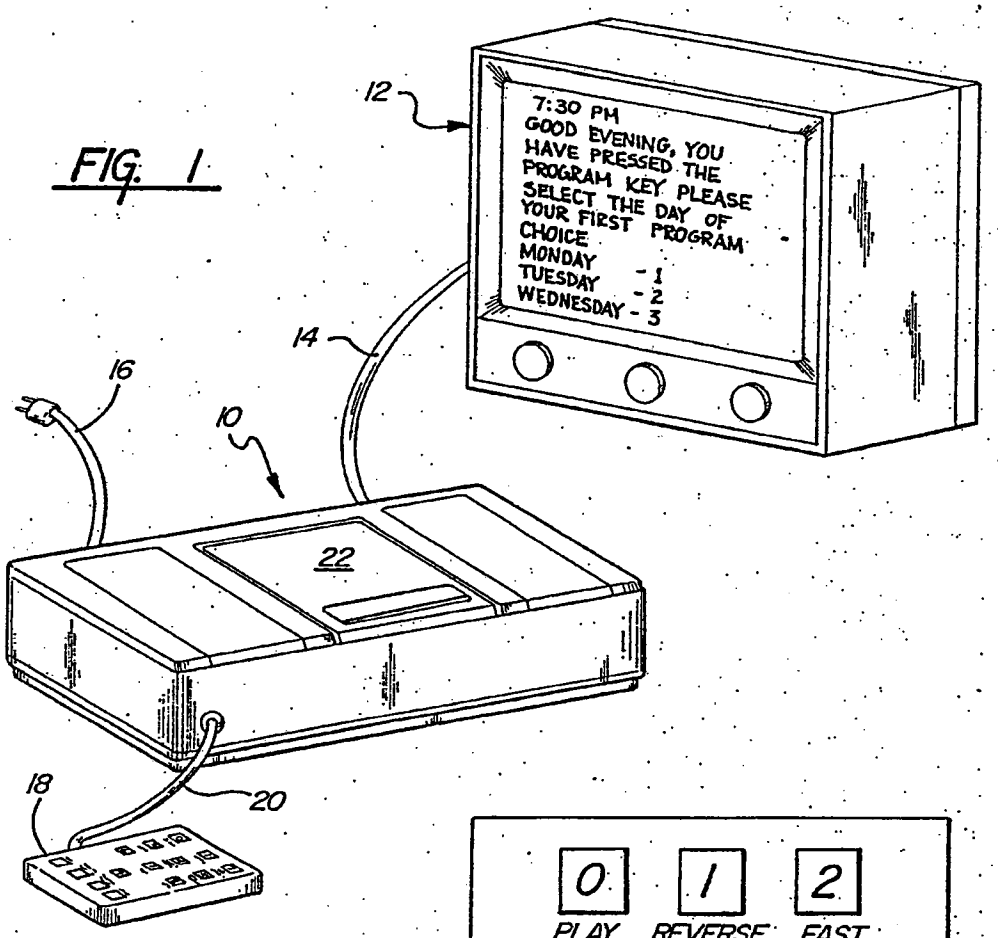
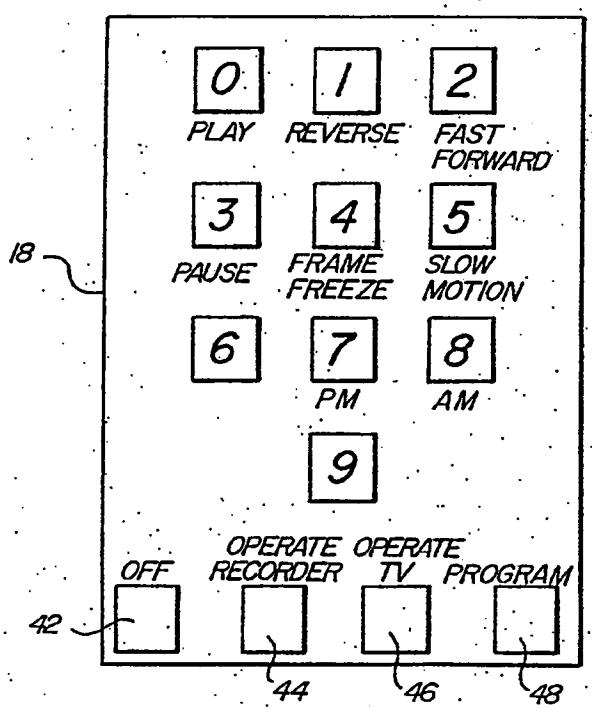

12
7:30 PM
GOOD EVENING, YOU
HAVE PRESSED THE
PROGRAM KEY PLEASE
SELECT THE DAY OF
YOUR FIRST PROGRAM
CHOICE
MONDAY - 1
TUESDAY - 2
WEDNESDAY - 3
14
16
10
22
18
20

FIG. 3


18
0
PLAY
1
REVERSE
2
FAST FORWARD
3
PAUSE
4
FRAME FREEZE
5
SLOW MOTION
6
7
PM
8
AM
9
OFF
OPERATE RECORDER
OPERATE TV
PROGRAM
42
44
46
48

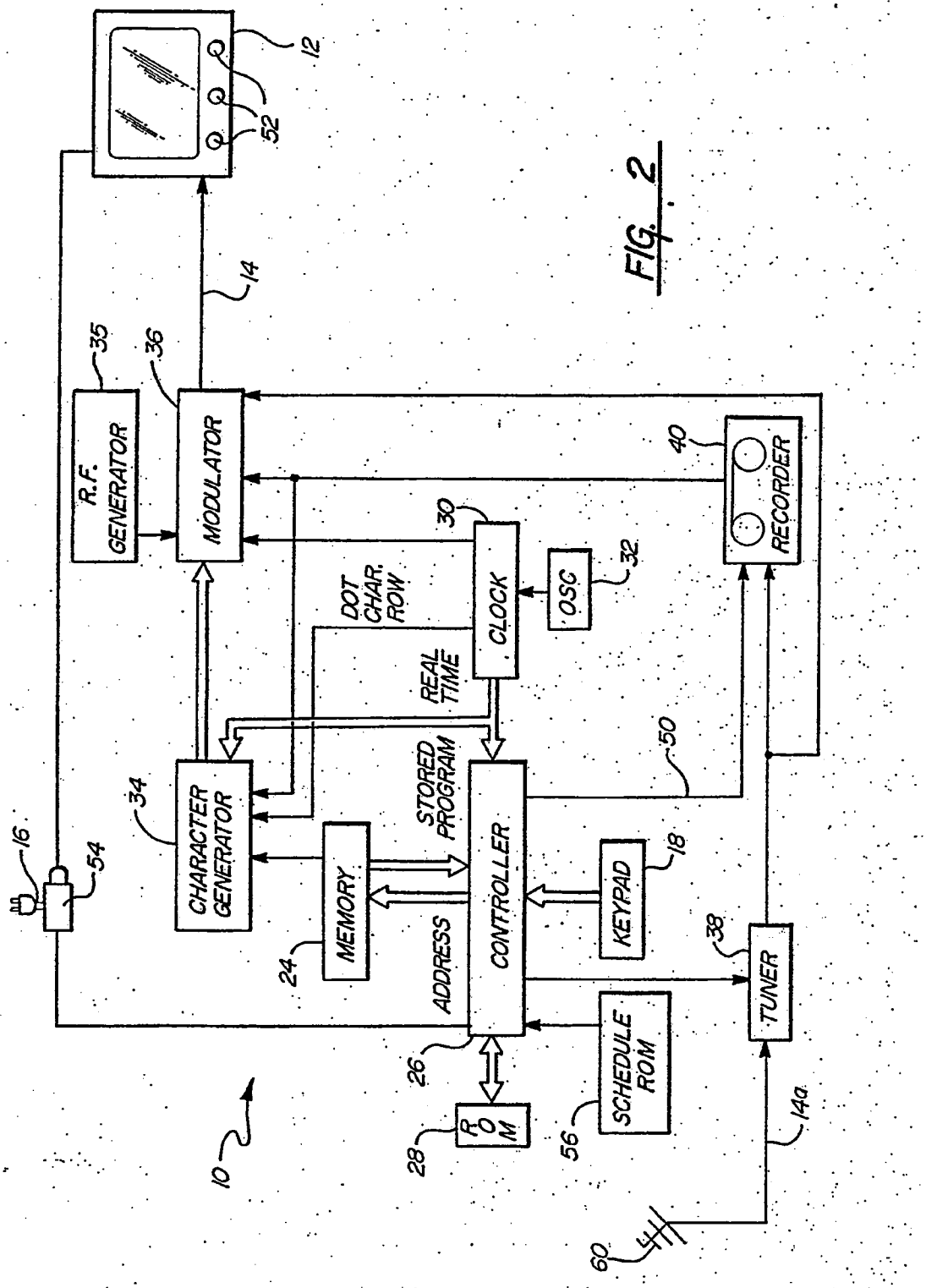

12
52
14
35
36
R.F. GENERATOR
MODULATOR
40
RECORDER
30
CLOCK
OSC
32
DOT CHAR. ROW
REAL TIME
STORED PROGRAM
50
34
CHARACTER GENERATOR
16
54
MEMORY
24
ADDRESS
CONTROLLER
KEYPAD
18
38
TUNER
26
ROM
28
SCHEDULE ROM
56
14a
10
60

FIG. 2

VCR PROGRAMMER

This application is a continuation of U.S. patent application Ser. No. 634,179, filed July 24, 1984, now abandoned, which is a continuation of U.S. patent application Ser. No. 330,111, filed Dec. 14, 1981, now abandoned.

TECHNICAL FIELD

This invention relates to automatic control systems for video recorders of the type used with television receivers and more particularly to a system for using the television receiver as a display device for an operator interactive system for programming future automatic operation of the recorder.

BACKGROUND ART

Magnetic video recorders are commonly used as accessories for television receivers to record broadcast television programs for later replay over the receivr or to record the output of a TV camera so the users may produce their own programs.

Frequently it is desirable to make recordings of broadcastor cablecast video programs which originate at times when the operator is not available to control the recorder and many commercially available video recorders are equipped with programming devices that enable the video recorder at a predetermined future time. Some of these video recorders include built-in tuners and a program can be established that specifies the time at which a recording is to start and stop as well as the channel to be recorded. U.S. Pat. No. 4,193,120 discloses a video recorder with this capability.

The programming of these devices is usually accomplished through use by the operator of a series of pushbuttons and multiple selector switches with the aid of a numerical display incorporated in the video recorder. In systems in which a plurality of recording instructions relating to a number of programs on different channels at different times can be recorded, the programming sequence is complex and difficult to remember and achieve. The process is susceptible to error and it is difficult or impossible to determine the sequence of programming commands that have already been recorded. Moreover, the control panels of these programmable recorders are complicated, including a number of separate input devices and displays and are accordingly expensive to manufacture and susceptible to failure in use.

DISCLOSURE OF THE INVENTION

The present invention is accordingly directed toward a programming control for video recorders that is easier to use and less complicated and expensive than existing systems. This simplification is achieved by using the television receiver associated with the video recorder as a display device and providing the video recorder with a digital memory that stores an interactive programming routing for directing the operator through the programming sequence on a simple-to-follow, step-by-step basis. The operator initiates the routine by actuating a control that places the system in its programming mode. Programming instructions are then displayed to the operator on the TV receiver picture tube in alphanumeric and/or graphic form. The instructions direct the operator in the use of the controls to record a desired programming routine on a step-by-step basis and display the routine to insure proper programming.

In the preferred embodiment of the invention, which will subsequently be disclosed in detail, the operator input device consists of a simple keypad for the decimal numerals and several mode selection keys. This keypad supplants all of the pushbuttons, selector switches and digital displays employed in prior art video recorders, lowering the cost of the system and simplifying its maintenance.

The programming control of the present invention employs a random access memory for storing alphanumeric statements to be displayed on the TV receiver and future programming commands entered into the system by the operator. A character generator forming part of the system receives the stored command statements in encoded form and generates luminance control signals for the television receiver. These signals are generated in timed relation to horizontal and vertical synchronizing signals generated by a digital clock that also provides an output indicative of real time as opposed to machine time. The synchronizing signals and the outputs of the character generator are fed to an RF modulator which also receives video signals played back from the tape. The modulator produces a signal that is provided to the antenna terminals of the TV receiver.

The system operates under the supervision of a controller which preferably takes the form of a microcomputer and includes a read-only memory storing the operating program for the system. The controller receives the output of the keypad and uses it to control the display of messages on the TV receiver, the storage of operator-entered control signals into the random access memory and the automatic, unattended operation of the video recorder under control of the future programming commands stored in the random access memory for use in the system. The controller preferably produces a series of menus on the television receiver screen which are selected via decimal keys on the keypad. The controller also preferably displays the desired future recording time and channel for verification.

The character generator can also be used to generate a display of alphanumeic information stored on the magnetic tape of the video recorder. Alphanumeric information can be stored on the magnetic tape with a much higher density when it is digitally encoded rather than in video form.

The present invention also incorporates means for recording a future program schedule which may either by provided via airwave or cable broadcast or alternatively may be inserted into the device in the form of a throw-away read-only memory. These schedules may be displayed as an assist to the programming of the video recorder.

In a further embodiment of the present invention the controller transmits control signals for separate control of the television receiver from control inputs received at the operator input device.

Other objectives, advantages and applications of the present invention will be made apparent by the following detailed description of a preferred embodiment. The description makes reference to the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a video recorder forming a preferred embodiment of the present invention connected to an associated TV receiver;

FIG. 2 is a block diagram of the system; and

FIG. 3 is an illustration of the keypad used with the preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The programming control device of the present invention may be embodied in a separate unit adapted to be connected to a conventional video recorder and to a television receiver, but in the preferred embodiment of the invention, illustrated in FIG. 1, the programming control is incorporated within a video cassette recorder system, generally indicated at 10. Video recorder system 10 is illustrated as being connected to a conventional television receiver 12 through cable 14 that preferably connects to the antenna terminals of the receiver 12. The video recorder system 10 is powered through a conventional alternating current line cord 16.

Operator input to the video recorder system 10 is provided through a keypad 18 connected to the recorder by a flexible cable 20. In alternative embodiments of the invention, keypad 18, or its equivalent, could be built into the chassis of the video recorder system 10 or could be connected to the video recorder system 10 by a conventional communication link such as telephone, radio or an infrared transmitter incorporated in the remote unit and a corresponding receiver disposed in the video recorder system 10. These wireless links may be of the same type used for the remote control of television receivers.

Video recorder system 10 includes an access panel 22 which may be manually opened to permit insertion or removal of standard video tape cassettes and a socket not shown for receipt of program schedule disposable memories. The video recorder system 10 will typically include a record-playback head, spindles for transporting the tape between take-up and supply reels of the cassette, and other hardware typically associated with such a machine, which are not shown.

The broad electrical arrangement of the preferred embodiment of the present invention is illustrated in block form in FIG. 2.

The system includes a digital, random access memory 24. The memory 24 is supervised by a digital controller 26. In the preferred embodiment of the invention the controller takes the form of a microprocessor such as Zilog Z-80 or Intel 8080. In alternative embodiments of the invention the controller could be implemented with discrete components. A readonly memory 28 is connected to the controller and provides the operating program for the video recorder system 10. In alternative embodiments of the invention the operating program could be stored in part of the digital memory 24 so that only a single memory chip would be required for the video recorder system.

A clock 30 driven by pulses from a high frequency Quartz oscillator 32 is used to generate real time signals for use in programming the video recorder system 10 as well as synchronizing signals which are used to control the generation of display signals and the raster of the television receiver 12. The oscillator 32 preferably has a frequency of about 15.75 MHz and includes conventional dividers used to generate dot, character and row signals for provision to a character generator 34, forming part of the system, as well as horizontal and vertical synchronizing signals which are provided to a radio frequency modulator 36. The moduator operates on the output of a radio frequency generator 35. The video recorder system 10, further includes an electronically adjustable TV channel tuner 38 connected to the TV set antenna 60 through portion 14a of the cable 14 and to the magnetic video record/playback unit 40.

The arrangement of the preferred embodiment of the keypad 18 is illustrated in FIG. 3. It should be recognized tht other manual input control devices could be used and other keypad configurations could be employed in alternative embodiments of the invention. The preferred embodiment of the keypad 18 incorporates fourteen keys. Ten of the keys designate the decimal numerals and also have legends representing alternate functions. For example, the key that represents numeral 0 also has a designation "play" and is used to control energization of the video record/playback unit 40 when the system is in the proper mode.

The keypad also includes four mode keys 42, 44, 46 and 48. The key 42 is labeled "off" and allows the operator to de-energize the system. The key 44 is labeled "operate recorder". Depression of this key enters the video recorder system 10 into a mode in which the video recorder system 10 40 may be controlled through energization of the numeric keys of the pad. For example, key 0 is designated "play" and enables forward operation of the video record/playback unit 40 at normal speed. Numeric key 1 is labeled "reverse" and depression of this key causes reversal of the tape. Similarly, numeric key 2 is designated "fast forward"; numeric key 3 is designated "pause"; numeric key 4 is designated "frame freeze"; and numeric key 5 is designated "slow". Each of these keys implements the designated operation of the recorder. These operations are achieved by control signals provided to the video record/playback unit 40 from the controller 26 over line 50. These operating modes are part of the normal complement of modes of operation of conventional, commercially available, video recorders and any new modes of operation incorporated in recorders in the future could be similarly controlled.

Keypad button 46, when depressed, enters the video recorder system 10 into an "operate TV" mode wherein the channel selection of the TV may be controlled by depression of pairs of numeric keys. For example, to tune channel 7 the keys 07 would be depressed. This key sequence causes the controller 26 to provide signals to the tuner 38 causing it to tune channel 7. The output of the tuner 38 is then provided to the modulator 36. The modulator uses these signals to modulate a radio frequency signal produced by the generator 35 and having the wavelength of an unused channel on the television reciever 12. For example, if there is no local television station broadcasting on channel 5, the frequency of that station may be produced by generator 35. The television receiver 12 may be used in the normal manner by operator actuation of its controls 52. When operation of the TV receiver 10 in connection with the video recorder system 10 and its programming system is desired, the manual channel control of the receiver 12 is turned to channel 5 and it is then capable of receiving signals outputted by the modulator 36. In this manner the internal tuner of the receiver 12 is not used for active channel control.

In alternative embodiments of the invention the remote control unit could be equipped with the capability of controlling other functions of the TV receiver 12 such as its volume, contrast, etc. This mode of control would require a more complex set of connections between the video recorder system 10 and the TV receiver 12. Electrically powered devices other than the TV receiver 12 could be similarly controlled.

Depression of the keypad button 48 places the video recorder system 10 in the program mode in which the operator may specify a future operating program for the video recorder system 10. This mode uses the interactive capabilities of the television receiver 12. The nature of this interactive programming machine will be subsequently specified in greater detail.

The television receiver 12 power cord is preferably plugged into a unit 54 that also receives the unit line cord 16 and provides electrical power to video recorder system 10. The unit 54 operates under supervision of the central controller 26. The television receiver power switch is left in the "on" position when the programmer is to be used and the application of power to the TV receiver 12 is controlled by the unit 54 under supervision of controller 26. When the modes controlled by the switches 44, 46 or 48 are entered, the TV receiver 12 is energized and when the button 42 is depressed the TV receiver 12 is de-energized. The TV receiver need not be energized during programmed operation of the video recorder system 10 as stored in the system.

Alphanumeric or graphic messages to be displayed on the face of the TV receiver 12 are initiated by the controller 26 by providing digital codes representative of the character sequences to the character generator 34. The character generator stores the appropriate dot matrix characters and outputs Z axis control signals to modulator 36 in timed relation to the generation of the dot, character and row signals by the clock 30. This is the conventional arrangement for generating alphanumeric information on a TV raster scan display and the arrangement may take the detailed form disclosed in U.S. Pat. No. 4,146,877.

The alphanumeric messages to be displayed may be stored in the memory 24 and called up by the controller 26 or they may be recorded on a magnetic tape played in the video record/playback unit 40. In the latter case the recorded information should contain codes specifying the formatting in terms of lines and paragraphs so that the system can generate the material in timed relation to the synchronizing signals provided to modulator 36 by the clock 30.

Alternatively, the synchronizing signals could be derived from the horizontal and vertical sync generators of the TV receiver 12. This arrangement allows alphanumeric information from the video recorder system 10 to be displayed superimposed over broadcast programs being displayed on the receiver.

When the video recorder system 10 is in operation in either the operate recorder or operate TV mode, the character generator may be used to display alphanumeric information in super-position with the video picture generated from either the record/playback unit 40 or the tuner 38. Information might include the present time, the tuner channel in use, or the title of a prerecorded program, with the title information either being broadcast in a coded form or entered via an appropriate keyboard (not shown).

The video recorder system 10 may be configured to accept a plug-in read only memory 56 containing a program schedule for some future period such as a week or month. Those ROM's might be sold on a subscription basis, in the same way as magazines, and contain digitally encoded alphanumeric and graphic information that could be displayed on the TV receiver 12 to assist the operator in selecting a program for future recordings. The ROM 56 could simply contain a schedule showing the programs available during the scheduled period on each channel, or might additionally include text describing the program or even segments of the program for display.

In alternative embodiments of the invention the schedule information might be broadcast at a particular time and the video recorder system 10 could be programmed to record that information during the broadcast time for later display and use.

When the video recorder system 10 is in the off mode the controller 26 interrogates the memory 24 to derive the start time of the next program to be recorded. This start time is continually compared with the real time as generated by the clock 30 and when the two are in coincidence the controller 26 interrogates the memory to derive the number of the channel to be recorded, controls the tuner 38 to select that channel and initiates the video record/playback unit 40. At the end time of the recording the controller 26 turns off the video record/playback unit 40 and the video recorder system 10. This arrangement is conventional, and is disclosed, among other places, in the U.S. Pat. No. 4,193,120.

When the video recorder system 10 is in the operate recorder mode enabled by depressing the pushbutton 44 the recorded TV signals are provided by the video record/playback unit 40 directly to the modulator 36 and there is not need to modulate the sync pulses generated by the clock 30.

In the play recorder mode it is possible to have playback of alphanumeric information encoded on the tape in digital form. For this purpose the output of the video record/playback unit 40 is provided to the character generator 34. The signals from the clock 30 are used to generate the sync signals which are provided to the modulator 36 as well as dot, character and row signals which are provided to the character generator 34 so that the alpha-numeric information can be encoded on the appropriate carrier and provided to the TV reciever 12.

In the program mode, initiated by the operator by depression of key 48, the controller 26 provides addresses to the memory 24 of coded alpha-numeric statements which are displayed on the television receiver 12 through action of the character generator 34 and the modulator 36. The displayed statements will request the operator to provide the video recorder system 10 with information relative to his programming choices by hitting appropriate keys on the pad 18. Following each choice the information will be displayed to allow verification and a further item of information will be requested. The operator need only follow the sequence of commands to achieve the desired program. If the operator depresses keys which signify an inappropriate response, such as starting a programming selection at 14:01 p.m., the controller will choose a display statement that will advise the operator of his error. The programming choices are displayed so the operator has the opportunity to correct erroneous choices.

The system may maintain a total of programmed recording time and display the result so that the operator will recognize the total length of tape required.

The command statements are preferably arranged in such a simple and self-correcting manner that the operator need only have the knowledge to enter the system into the programming mode in order to successfully complete the program.

The system of the present invention is therefore mechanically simpler than previous programming devices and results in a simple and error-free program routine.

What is claimed is:

1. A video recorder interactive control system for connection to a source of television signals and a television display, the system comprising:

an electronically adjustable television channel tuner connected to the source of television signals;

a video record/playback means having a input connected to said television channel tuner and a video output, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a previously recorded television signal;

a character generator having an input for receiving digital signals representative of a video display, said character generator being operative to convert said digital signals into a video signal;

an interface means connected to the television display, said video record/playback means and said character generator for displaying either said video signal from said video record/playback means or said video signal from said character generator via the television display;

a clock means for generating a real time clock signal indicative of the current time;

a record program memory having stored therein the channel and the time of occurrence of at least one instance of a future program which it is desired to record;

a schedule memory having stored therein a plurality of digital signals representive of a schedule of television programming available for a future period;

an operator controlled input means for entering a plurality of control inputs for said video recorder interactive control system; and

a control means connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory, said schedule memory and said input means, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said input means,

place said video record/playback means in either record mode or playback mode in response to control inputs from said input means,

store the channel and the time of at least one instance of a desired future recording program in said record program memory in response to control inputs from said input means,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory for an instance of a desired future recording program to said television channel tuner,

recall digital signals representative of an appropriate portion of the schedule of programming available for a future period from said schedule memory,

supply said digital signals to said character generator, and

select said video signal from said character generator at said interface means for display via the television display.

2. The video recorder interactive control system as claimed in claim 1, further comprising:

a message memory having stored therein a plurality of digital signals representative of a plurality of prompting messages for an operator; and said control means being further operative to

recall digital signals representative of appropriate prompting messages from said message memory,

supply said digital signals to said character generator,

select said video signal from said character generator at said interface means for display via the television display, and

store the channel and time of at least one instance of a desired future recording program in said record program memory in accordance with an interactive program adapted to receive control inputs from said input means, said interactive program being operative to adaptively select said prompting messages according to the previous control inputs from said input means.

3. The video recorder interactive control system as claimed in claim 1, wherein:

said schedule of television programming available for a future period stored in said schedule memory includes the program available during each scheduled period for each channel contained in said television signal.

4. The video recorder interactive control system as claimed in claim 3, wherein:

said schedule of television programming available for a future period stored in said schedule memory further includes text describing at least one program.

5. The video recorder interactive control system as claimed in claim 3, wherein:

said schedule of television programming available for a future period stored in said schedule memory further includes digitally encoded graphic information.

6. The video recorder interactive control system as claimed in claim 3, wherein:

said schedule of television programming available for a future period stored in said schedule memory further includes segments of at least one program for display.

7. The video recorder interactive control system as claimed in claim 1, wherein:

said schedule memory consists of a plug-in read only memory.

8. The video recorder interactive control system as claimed in claim 30, wherein:

said schedule memory consists of a throw-away read only memory.

9. The video recorder interactive control system as claimed in claim 1, wherein:

said schedule memory is loaded via the source of television signals.

10. The video recorder interactive control system as claimed in claim 9, wherein:

said interface means includes means to simultaneously display said video signal from said video record/-playback means and said video signal from said character generator via the television display by superposition of said video signal from said character generator on said video signal from said video record/playback means; and said control means is further operative to

supply digital signals representative of a program title from a video tape to said character generator, and select superposition of said video signal from said video record/playback means at said interface means for display via the television display when in said playback mode.

11. A program schedule display generator for use in connection with a television receiver comprising:

a schedule memory having stored therein a plurality of digital signals representative of a schedule of programming available for a future period;

a character generator having an input for receiving digital signals representative of a video display, said character generator being operative to convert said digital signals into a video signal;

an interface means connected to the television receiver and said character generator for displaying said video signal from said character generator via the television receiver;

a control means connected to said schedule memory, said character generator and said interface means, said control means being operative to reacall digital signals representative of an appropriate portion of the schedule of programming available for a future period from said schedule memory and supply said digital signals to said character generator for display via the television receiver.

12. The program schedule display generator as claimed in claim 11, wherein:

said schedule of programming available or a future period stored in said schedule memory includes the program available during each scheduled period for each channel.

13. The program schedule display generator as claimed in claim 12, wherein:

said schedule of programming available for a future period stored in said schedule memory further includes text describing at least one program.

14. The video recorder interactive control system as claimed in claim 12, wherein:

said schedule of programming available for a future period stored in said schedule memory further includes digitally encoded graphic information.

15. The program schedule display generator as claimed in claim 12, wherein:

said schedule of programming available for a future period stored in said schedule memory further includes segments of at least one program for display.

16. The program schedule display generator as claimed in claim 11, wherein:

said schedule memory consists of a plug-in read only memory.

17. The program schedule display generator as claimed in claim 11, wherein:

said schedule memory consists of a throw-away read only memory.

18. The video recorder interactive control system as claimed in claim 11, wherein:

said schedule memory is loaded via a source of RF signals at a particular time.

19. A video recorder interactive control system for connection to a source of television signals and to a television display, the system comprising:

a video recorder system housing;

an electronically adjustable television channel tuner disposed in said video recorder system housing and connected to the source of television signals;

a video record/playback means disposed in said video recorder system housing and having a input connected to said television channel tuner and having an output, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a previously recorded video signal on said output;

a character generator disposed in said video recorder system housing and having an input for receiving digital signals representative of alphanumeric characters, said character generator being operative to convert said digital signals into video signals;

an interface means disposed in said video recorder system housing and connected to the television display, to said video record/playback means and to said character generator for displaying either said output signal from said video record/playback means or said video signal from said character generator via the television display;

a clock means disposed in said video recorder system housing for generating a real time clock signal indicative of the current time;

a message memory disposed in said video recorder system housing and having stored therein a plurality of digital signals representative of a plurality of alphanumetic prompting messages for an operator;

a record program memory disposed in said video recorder system housing and being operative to store the channel and the time of occurrence of a plurality of future programs that are to be recorded;

a first operator controlled input means disposed remotely from said video recorder system housing for entering a plurality of control inputs for said video recorder interactive control system including the channel and start time of future programs that are to be recorded in said record program memory;

second operator controlled input means disposed on said video recorder system housing not including means for entering the channel and start time of future programs to be recorded; and

a control means disposed in said video recorder system housing and connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory and said first and second input means, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said first or second input means,

place said video record/playback means in either record mode or playback mode in response to control inputs from said first or second input means,

recall digital signals representative of appropriate prompting messages from said message memory,

supply said digital signals to said character generator,

select said video signal from said character generator at said interface means for display via the television display,

store the channel and start time of future programs that are to be recorded in said record program memory in accordance with an interactive program adapted to receive control inputs from said first input means, said interactive program being operative to adaptively select said prompting messages according to the previous control inputs from said input means,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory to said television channel tuner;

and place said video record/playback means in record mode when said real time signal is included within a time stored in said record program memory for the recording of a program;

whereby said first operator controlled input means disposed remotely from said video recorder system housing replaces substantially all controls for entering the channel and start time of future programs that are to be recorded, which controls would otherwise be disposed on said video recorder system housing.

20. The video recorder interactive control system as claimed in claim 19, wherein:

said first operator controlled input means is connected to said control means via a cable.

21. The video recorder interactive control system as claimed in claim 19, wherein:

said first operator controlled input means is connected to said control means via a telephone line.

22. The video recorder interactive control system as claimed in claim 19, wherein:

said first operator controlled input means is connected to said control means via an radio transmitter.

23. The video recorder interactive control system as claimed in claim 19, wherein:

said first operator controlled input means is connected to said control means via an infrared transmitter.

24. The video recorder interactive control system as claimed in claim 19, wherein:

said first operator controlled input means includes a keypad having a set of keys corresponding to decimal numbers and at least one mode selection key.

25. The video recorder interactive control system as claimed in claim 24, further including designation indica for said set of keys wherein:

said designation indicia are modified to designate symbols corresponding to video record/playback means operation upon selection of a predetermined one of said at least one mode selection key.

26. A video recorder interactive control system for connection to a source of television signals and to a television display, the system comprising:

an electronically adjustable television channel tuner connected to the source of television signals;

a video record/playback means having an input connected to said television channel tuner and having an output, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a previously recorded video signal on said output;

a character generator having an input for receiving digital signals representative of alphanumeric characters, said character generator being operative to convert said digital signals into video signals;

an interface means connected to the television display, to said video record/playback means and to said character generator for displaying either said output signal from said video record/playback means or said output signal from said character generator via the television display;

a clock means for generating a real time clock signal indicative of the current time;

a message memory having stored therein a plurality of digital signals representative of a plurality of alphanumeric prompting messages for an operator;

a record program memory being operative to store therein the channel and the time of occurrence of a plurality of desired future programs that are to be recorded;

a keypad having a set of keys corresponding to decimal numbers and at least one mode selection key, said at least one mode selection key including a record program mode selection key; and

a control means connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory, said schedule memory and said keypad, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said keypad,

place said video record/playback means in either record mode or playback mode in response to control inputs from said keypad,

recall digital signals representative of appropriate prompting messages from said message memory,

supply said digital signals to said character generator,

select said video signal from said character generator at said interface means for display via the television display,

store the channel and the time of at least one instance of a desired future recording program in said record program memory in accordance with an interactive program adapted to receive input from said kaypad, said interactive program being operative to

adaptively select said prompting messages corresponding to menu selections according to the previous decimal key inputs from said keypad,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory to said television channel, and

place said video record/playback means in record mode when said real time signal is included within the time for that instance of a desired

future recording program stored in said record program memory.

27. A video recorder interactive control system for connection to a source of television signals and to a television display, the system comprising:

an electronically adjustable television channel tuner connected to the source of television signals;

a video record/playback means having an input connected to said television channel tuner and an output, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a previously recorded video signal on its output;

a character generator having an input for receiving digital signals representative of a video display, said character generator being operative to convert said digital signals into a video signal;

an interface means connected to the television display, said video record/playback means and said character generator for displaying either said video signal from said video record/playback means or said video signal from said character generator via the television display;

a clock means for generating a real time clock signal indicative of the current time;

a message memory having stored therein a plurality of digital signals representative of a plurality of prompting messages for an operator;

a record program memory having stored therein the channel and the time of at least one instance of a future program which the operator desires to record;

an operator controlled input means for entering a plurality of control inputs for said video recorder interactive control system; and

a control means connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory and said input means, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said input means,

place said video record/playback means in either record mode or playback mode in response to control inputs from said input means,

recall digital signals representative of appropriate prompting messages from said message memory,

supply said digital signals to said character generator,

select said video signal from said character generator at said interface means for display via the television display,

and store the channel and the time of at least one instance of a desired future recording program in said record program memory in accordance with an interactive program adapted to receive control inputs from said input means, said interactive program being operative to

adaptively select said prompting messages according to the previous inputs from said input means,

display the channel and the time of the present desired future recording program for verification via said input means,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory to said television channel and

place said video record/playback means in record mode when said real time signal is included within the time for that instance of a desired future recording program stored in said record program memory.

28. A video recorder interactive control system for connection to a source of television signals and a television receiver, the system comprising:

an electronically adjustable television channel tuner connected to the source of television signals;

a video record/playback means having an input connected to said television channel tuner and a video output, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a previously recorded video signal;

a character generator having an input for receiving digital signals representative of a video display, said character generator being operative to convert said digital signals into video signals;

a radio frequency modulator connected to the television receiver, said video record/playback means and said character generator for controllably modulating a radio frequency carrier with a selected one of either said video signal from said video record/playback means or said video signal from said character generator and supplying said modulated radio frequency carrier to the television receiver;

a clock means for generating a real time clock signal indicative of the current time;

a message memory having stored therein a plurality of digital signals representative of a plurality of prompting messages for an operator;

a record program memory having stored therein the channel and the time of at least one instance of a desired future recording program;

an operator controlled input means for entering a plurality of control inputs for said video recorder interactive control system and for the television receiver; and

a control means connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory and said input means, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said input means,

place said video record/playback means in either record mode or playback mode in response to control inputs from said input means,

recall digital signals representative of appropriate prompting messages from said message memory,

supply said digital signals to said character generator,

select said video signal from said character generator for modulation by said radio frequency modulator for supply to the television receiver, and

store the channel and time of at least one instance of a desired future recording program in said record program memory in accordance with an interactive program adapted to receive control inputs from said input means, said interactive program being operative to

adaptively select said prompting messages according to the previous control inputs from said input means,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory to said television channel

place said video record/playback means in record mode when said real time signal is included within the time for that instance of a desired future recording program stored in said record program memory, and

transmit control signals to the television receiver in response to control inputs for the television receiver from said operator controlled input means.

29. A video recorder interactive control system for connection to a source of television signals and a television display, the system comprising:

an electronically adjustable television channel tuner connected to the source of television signals;

a video record/playback means having an input connected to said television channel tuner, a video output and being adapted to receive a video tape, said video record/playback means operating in a record mode for recording the television signal tuned by said television channel tuner and in a playback mode for reproducing a video signal previously recorded on a video tape;

a character generator having an input for receiving digital signals representative of a video display, said character generator being operative to convert said digital signals into a video signal;

an interface means connected to the television display, to said video record/playback means and to said character generator for displaying either said video signal from said video record/playback means or said video signal from said character generator via the television display;

a clock means for generating a real time clock signal indicative of the current time;

a message memory having stored therein a plurality of digital signals representative of a plurality of prompting messages for an operator;

a record program memory having stored therein the channel and the time of occurrence of at least one instance of a desired future recording program;

an operator controlled input means for entering a plurality of control inputs for said video recorder interactive control system; and

a control means connected to said television channel tuner, said video record/playback means, said character generator, said interface means, said clock means, said message memory, said record program memory and said input means, said control means being operative to

supply a channel input to said television channel tuner in accordance with control inputs from said input means,

place said video record/playback means in either record mode or playback mode in response to control inputs from said input means,

compare said real time clock signal with the time for the next instance of a desired future recording program stored in said record program memory,

supply said channel stored in said record program memory to said television channel,

place said video record/playback means in record mode when said real time signal is included within the time for that instance of a desired future recording program stored in said record program memory,

recall digital signals representative of appropriate prompting messages from said message memory, supply said digital signals to said character generator,

select said video signal from said character generator at said interface means for display via the television display, and

store the channel and time of at least one instance of a desired future recording program in said record program memory in accordance with an interactive program adapted to receive control inputs from said input means, said interactive program being operative to

adapatively select said prompting messages according to the previous control inputs from said input means, and

place said video record/playback means in playback mode and transmitting alphanumeric messages stored on a video tape to the television display via said interface means.

30. The video recorder interactive control system as claimed in claim 29, wherein:

said character generator is further connected to said video record/playback means for receiving digital signals indicative of alphanumeric characters from a video tape for display by the television display via said interface means.

* * * * *

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September 21, 2007

Via E-Mail

Christopher J. Harnett
Fish & Neave IP Group of Ropes & Gray LLP
1211 Avenue of the Americas
New York, NY 10036

Re: TV Guide Online v. Tribune Media Services

Dear Chris:

I write to confirm the disputed claim construction issues for the upcoming briefing in this matter.

First, please confirm whether TV Guide will agree to drop any of the asserted claims in an effort to narrow the disputed issues between the parties. If TV Guide will not so agree, TMS understands that claims 1-8 and 10 of the '078 patent are being asserted.

Second, TMS understands that the terms listed on the attached chart are being disputed by the parties. The only term for which TV Guide previously proposed a construction that is not identified on this chart is "controller." TMS will agree to TV Guide's proposed construction: "a programmable electronic device." TMS confirms that its position is that the remaining terms in the asserted claims should be given their plain and ordinary meaning. Please let us know if TV Guide's understanding regarding these disputed terms is different so that we may resolve any differences promptly.

Sincerely,

Meredith Zinanni

cc: Stuart Yothers

TV Guide v. TMS: Proposed Claim Constructions as of September 21, 2007

Term	Claims	TV Guide Proposed Constructions	TMS Proposed Constructions
viewing location	1-7	residence or other building at which a television signal can be received	the specific room within a building where a television set is positioned and watched
transmitting	1-7	sending electronically	making an affirmative indication
transmit	8, 10	send electronically	make an affirmative indication
receiving	1-7	receiving electronically	no construction necessary; see "receiving … information" constructions below
receive	8, 10	receive electronically	
receiving … information specific to the type of programming available to the particular viewing location	1-5	no construction necessary; see "receive" construction above	having data transferred to a computer such that a user can perform database-type manipulations directly on the transferred data without being connected to the original source of the data
receiving … television programming schedule information specific to the viewing location	6-7		having data transferred to a computer such that a user can perform database-type manipulations directly on the transferred data without being connected to the original source of the data
receive … the information specific to the type of television programming available to the receiver	8, 10		having data transferred to a computer such that a user can perform database-type manipulations directly on the transferred data without being connected to the original source of the data
modem	1-8, 10	data signal conversion device that connects data terminal equipment to a communication line	a data signal conversion device that converts digital signals to analog signals (and vice versa) and allows a computer to exchange data over a standard dial-up telephone line
controller being programmed to perform	8, 10	no construction necessary; plain and ordinary meaning	computer application programs are installed on the controller prior to its user by a user to perform

TV Guide v. TMS: Proposed Claim Constructions as of September 21, 2007

Term	Claims	TV Guide Proposed Constructions	TMS Proposed Constructions
information ... regarding the geographical location of the particular viewing location	1-5	geographical information regarding the residence or other building at which a television signal can be received	any information, irrespective of how the information is encoded, that expressly indicates in geographic language (e.g., name of a continent, country, province, state, city, town, region, street address, zip code, area code, etc.) the approximate portion of the planet in which the particular viewing location is located
information ... regarding the geographical area of the viewing location	6-7	geographical information regarding the residence or other building at which a television signal can be received	any information, irrespective of how the information is encoded, that expressly indicates in geographic language (e.g., name of a continent, country, province, state, city, town, region, street address, zip code, area code, etc.) the approximate portion of the planet in which the viewing location is located
information ... pertaining to the geographic location of the television receiver	8, 10	geographical information pertaining to the residence or other building at which a television receiver is located	any information, irrespective of how the information is encoded, that expressly indicates in geographic language (e.g., name of a continent, country, province, state, city, town, region, street address, zip code, area code, etc.) the approximate portion of the planet in which the television receiver is located

Case 1:05-cv-00725-SLR-LPS Document 240-2 Filed 11/28/2007 Page 14 of 43

IN THE DISTRICT COURT OF THE UNITED STATES

FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC., and

TV GUIDE ONLINE, LLC,

Plaintiffs,

vs. Case No. 05CV725 KAJ

TRIBUNE MEDIA SERVICES, INC.,

Defendant.

The Confidential Videotaped Deposition of

MICHAEL LEVINE,

Taken at 2701 Troy Center Drive, Suite 330,

Troy, Michigan,

Commencing at 9:20 a.m.,

Friday, August 25, 2006,

Before Judith C. Werner, CSR-2349.

B-50 THROUGH B-51

REDACTED ENTIRELY

UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

- - - - - - - - - - - - - - - - - -

TV GUIDE ONLINE, INC ., and TV)
GUIDE MEDIA SERVICES, LLC)
Plaintiffs,) NO. 05-CV-725-KAJ
v.)
TRIBUNE MEDIA SERVICES, INC.)
Defendant.)

- - - - - - - - - - - - - - - - - -

DEPOSITION OF BARRY BERKOV

TAKEN ON: WED., OCTOBER 11, 2006

TAKEN AT: 1380 Harbor Island Drive
San Diego, California

REPORTED BY: Florinda St. Cyr
CSR No. 10180, RPR

Defendant's Exhibit 42?
A. Yes.
Q. And what is it?
A. It's an issue of CompuServe today.
(The document was marked as Defendant's Exhibit 42 and is made a part of this deposition.)
BY MS. ZINANNI:
Q. And what is the date of Defendant's Exhibit 42?
A. Well, it looks like it says September and October of 1982.
Q. And was this document created in the ordinary course of CompuServe's business?
A. It was.
Q. Mr. Berkov, have you heard of the Personal Entertainment Guide?
A. Yes.
Q. What is the Personal Entertainment Guide?
A. It was an area on CompuServe that had various things with respect to entertainment. I believe it was in what we would have called a forum or a bulletin board area.
Q. What was the bulletin board area?
A. Well, a bulletin board is an area where people

post messages or files that represent content that's available for other members to either comment on or download to their computers.
Q. In the personal entertainment guide was part of one of these bulletin boards?
A. I believe so.
Q. Mr. Berkov, I'm handing you what's been marked as Defendant's Exhibit 43, which is a document bearing the Bates numbers TMS 8885 through 8887.
(The document was marked as Defendant's Exhibit 43 and is made a part of this deposition.)
BY MS. ZINANNI:
Q. Do you recognize Defendant's Exhibit 43?
A. I do.
Q. What is it?
A. It's an issue of CompuServe magazine from October 1992, CompuServe Magazine renamed Publication of CompuServe Today.
Q. And was Defendant's Exhibit 43 created in the ordinary course of CompuServe's business?
A. It was.
Q. As of October 1992, did you oversee the production of CompuServe magazine?
A. I did.

Q. Mr. Berkov, if you turn to TMS 8887, do you see on the left-hand column the article entitled "On TV? On TV," exclamation mark?
A. Yes, I do.
Q. Is the personal entertainment guide referred to in this article the same personal entertainment guide you were describing earlier?
A. Yes.
Q. And you said that the personal entertainment guide provided entertainment information; correct?
A. That is correct.
Q. Did that entertainment information include TV listings?
MR. YOTHERS: Objection to form.
THE WITNESS: Yes.
BY MS. ZINANNI:
Q. Mr. Berkov, we talked about how CompuServe operated as of 1981 through the menu structure, and you indicated that the users' interaction with CompuServe changed over time.
A. It did.
Q. What was -- when was the first change away from a menu-based structure made?
A. Well, I'm fuzzy on the exact dates, but it was in the late '80s when the first CompuServe information

manager appeared.
Q. What was the CompuServe information manager?
A. It's a piece of software that ran on the user's personal computer that interfaced with the CompuServe information service and provided a more computer-like interface than the prior dumb terminal interface.
Q. Were users able to search the CompuServe information service using the CompuServe information manager?
A. Yes.
Q. Can you describe how that search function worked?
A. Search function worked very similar to the way it worked previously in that the user would invoke a search or Find command, present a dialogue box with an input blank. The user would type in the desired search term. In this case they would click okay or search, depending on how the dialogue was constructed. It would turn on the screen, a list, a computer screen list or menu of the items that met the search criteria.
Q. Using the CompuServe information manager, did a user always select from a menu of options available to the user?
A. Well, at some point they might get to that. I

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mean, they could have issued a Go command, which would take them directly to a service or offering.
Q. When the user initially -- strike that.
Would a user open CompuServe information manager on their computer?
A. Yes.
Q. When they initially opened the CompuServe information manager, were they presented with a list of menu options at that time?
A. Well, I think we need to step back and say that when you have a CompuServe client software, you would load that software. You would be presented with a screen that might have icons on it, so it's a menu or a list of options, but they're in the form of icons. Upon selecting one of those, the user would be logged on to CompuServe. Now, in some cases the user might be prompted for the user I.D. and password. In other cases it might have been prestored on their personal computer in conjunction with the software.
Q. Was the user I.D. and password used with the CompuServe information manager set by CompuServe?
A. Yes.
Q. Using the CompuServe information manager, did a user always -- after the initial screen that you described, did a user always select an icon?

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A. Might have selected an icon. They might have selected a menu choice.
Q. At any time, would a user of the CompuServe information manager type in information?
A. Yes.
Q. Would the user ever type in geographical information?
MR. YOTHERS: Objection to form.
THE WITNESS: There were several places where geographical information might have been entered into the system for the purposes of doing a retrieval of some type.
BY MS. ZINANNI:
Q. Can you give me some examples where geographical information might be entered?
A. Yes. The first one that comes to mind is weather. There's a weather feature. Typed in the city name. You got the weather back for that particular location.
Q. Do you know when that weather function first appeared on CompuServe?
A. The weather function was there very early on. I don't remember the exact date, but it was very early and prior to the existence of the CompuServe information manager. There are people who would know

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the dates associated with that.
Q. And other than the weather, were there other --
A. Yes.
Q. -- options?
A. All of your airline reservation systems require typing in a destination and a departure location. Those are both geographical. There was a database called Site, which was demographical information where you could type in a zip code and receive demographic information for the particular zip code that you typed in. The subscriber directory, one of the components of finding someone's e-mail address in addition to the user's name would have been their geographical location, city and state.
Q. Can you think of any others at this time?
A. No, but there probably were others. Geographical location is a typical method of retrieving information from an information service, so it would have been used throughout the service.
Q. Mr. Berkov, I'm handing you what's been marked as Defendant's Exhibit 44, which is a document bearing the Bates range TMS 54623 through 54627.
(The document was marked as Defendant's Exhibit 44 and is made a part of this

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deposition.)
THE WITNESS: Uh-huh.
BY MS. ZINANNI:
Q. Do you recognize this document?
A. Well, I'm trying to see what the date on this is. 1988? Yes, I've seen this document.
Q. And what is it?
A. Well, it appears to be an issue of Online Today, which -- which was the predecessor of the CompuServe magazine, so we've gone back in time.
Q. And was Defendant's Exhibit 44 created in the ordinary course of CompuServe's business?
A. It was.
Q. In March 1988, did you oversee the staff of Online Today?
A. I did not.
Q. Mr. Berkov, I'll ask you to turn to TMS 54626.
A. Okay.
Q. I believe the first sentence starts on the page before. On the upper left-hand column, it lists various online reservation systems. Do you see that?
A. Well, which -- where are you looking exactly?
Q. On Page TMS 54626 on the top left column.
A. Yes, right. Okay. I see that.
Q. You mentioned that airline reservation systems

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

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TV GUIDE ONLINE, INC., and
TV GUIDE ONLINE, LLC
Plaintiffs,
Civil Action No.
-against- 05-CV-725-KAJ

TRIBUNE MEDIA SERVICES, INC.,

Defendant.

----------x

June 21, 2007
9:00 a.m.

Videotaped Deposition of J. TIPTON COLE, taken by Defendant, pursuant to Notice, at the offices of Ropes & Gray, 1211 Avenue of the Americas, New York, New York, before TAMMEY M. PASTOR, a Registered Professional Reporter, Certified LiveNote Reporter and Notary Public within and for the State of New York.

database program, what did the information look like in that database program?
A. I don't recall. It was laid out roughly in a grid. Again, I don't remember how well it was formatted. Line breaks and things like that. It was just laid out in a grid in the spreadsheet the same way it was laid out or similar to what it was laid out -- sorry, on the web page.
Q. Were you able to see the actual textual information of the television programming listings?
A. Yes, I think so.
Q. Did you retain the file or whatever it was in which you copied the television programming information from zap2it.com?
A. I don't recall. I may have, but I don't recall, I don't think I did.
Q. Could you please check and see if you retained that file. If you did we would request production of it.
A. Very good, yes.
INFORMATION REQUESTED TO BE SUPPLIED:

Q. Can you please turn to paragraph 37 of your report on page 15.
A. Yes, sir.
Q. You make reference in paragraph 37 to various articles; correct?
A. Yes, I do.
Q. You take the position the articles cited paragraph 37 of Deposition Exhibit 151 are examples of systems that downloaded or installed incremental functionality while the application program was being executed; is that correct?
A. Yes.
Q. You don't provide any specific citations to the articles you cite in paragraph 37?
MR. HARNETT: Objection, mischaracterizes the report.
A. I cite to the articles means specific passages within the articles?
Q. Correct.
A. Yes.
Q. Are you able to identify specific passages in the articles cited in paragraph 37 of Deposition Exhibit 151 that support the

opinions you provide in that paragraph?
A. Yes, I am sure I am. Do you want me to look now?
Q. Could you quickly do it now. Would it take you a long time to do that?
A. I don't think it would take too long.
Q. They are attached to your report. In fact let me help you, they are Exhibits D through F of your report that has been marked as Deposition Exhibit 151.
A. Let me do one quickly here.
Q. Thank you.
A. Because it is a paragraph heading it is relatively easy to locate. This is Exhibit F what is labeled as page 16 of Exhibit F.
Q. Are you skipping over Exhibits D and E for the time being?
A. Just because I turned to this one. I recognize it. I'm not leaving them out. Exhibit F, on page 16 the section above the Conclusion section where it says "Static and dynamic assignments of programs to nodes." It is

in the right-hand column about halfway down.
Q. That paragraph?
A. Yes. That is a good characterization there.
Q. Anything else?
A. Yes, there is more. Let's see. In Exhibit D, it will take a little bit longer here, I kind of have an idea where a few of them are, but I won't know all of them. Okay. If you look at the abstract on page numbered 347 which is the first page in Exhibit D, if you look at the abstract a little less than halfway in. Or about halfway in. The sentence begins "It supports the ability." Do you see that?
Q. Yes.
A. "It supports the ability to extend the functionality of servers' agents at execution time." That's the characterization. Now, this whole system, this whole paper is about that capability.
So there are quite a few places in here I think where you find that description. But let me, if you go to page numbered 350 in that, under section 3.1. About three or four

sentences in. Right after you see the word MAD capitalized in the middle of the paragraph there, very next sentence.

Q. The one beginning with "delegation?"

A. "Delegation provides a flexible way for managers to dynamically associate functionality and responsibility with other managers." That is the way that these papers are written. But that's another good spot.

Let's see if you go to page 351, the third full paragraph.

Q. Which column?

A. Left column. I'm sorry.

Q. The one beginning with "from."

A. Yes. "From a software configuration perspective delegation provides a simple yet powerful scheme to dynamically compose management systems by connecting and integrating independent delegated scripts. It's not required, though allowed, that manager processes actually write programs to be delegated during their execution."

In that case he is not talking

about just downloading a piece of stuff, but actually composing the program. Then downloading it, perhaps compiling it ahead of time and downloading the object code or downloading the source code to be compiled or interpreted on the agent. Those are a few references in here. Like I say the whole thing for the MAD paper is about this dynamic hand-off from servers to agents.

Q. Anything else?

A. Well, okay, in the MAD article there is going to be a lot more. If I look now at the other one. I am having a little trouble locating the next one. I think it will -- I think I have to read the whole thing to get it to you. Do you want to do that now or?

Q. Well, anything you could point out to me as you're sitting here would be helpful. If you can't I would be happy to take it up at a later date if that would work?

A. I just don't, you know, the others kind of pop out at me. I remember them better. This one I don't remember as well. I'm struggling to find that point.

Q. What is the one you don't remember as well?

A. It is Exhibit E.

Q. Exhibit E is entitled Command Execution in a Heterogenous Environment; is that right?

A. Yes.

Q. Does that complete all the references then?

A. Those are the three references I believe that are mentioned.

Q. What did you do to prepare for your deposition today?

A. Besides writing all these reports, the recent preparation began on Monday I think, I began reading through the old reports which I did a little bit on Monday, Tuesday as well. Then yesterday met here with several of the attorneys and went back through the reports.

Q. Which attorneys did you meet with?

A. I met with Chris and with Stewart Yothers and with Jeff from TV Guide. I don't know if anybody else participated in those, in the discussion.

Q. I believe I am just about out of time now. So, I don't have --

A. Don't leave on my account.

Q. I don't have any further questions for you at this point, especially since I'm out of time. I don't know if Mr. Harnett has any questions.

MR. HARNETT: I have a couple of quick ones. I will clear up a couple of points.

EXAMINATION CONDUCTED BY MR. HARNETT:

Q. You testified earlier in the day about the language at which the code that you examined relating to zap2it was written. Do you remember that?

A. Yes.

Q. What were the languages you referred to?

A. I referred to the ASP, Active Server Pages in the Microsoft system, and the JSP, the Java based Server Pages in the more recent system.

Q. How would you characterize your ability to read and comprehend that code?

A. I read it fluently. I think the

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC. and TV GUIDE ONLINE, LLC, Plaintiffs,	)	
v.	)	C.A. No. 05-725 KAJ
TRIBUNE MEDIA SERVICES, INC., Defendant.	)	**FILED UNDER SEAL**

REBUTTAL EXPERT REPORT OF DR. GARY S. TJADEN REGARDING NON-INFRINGEMENT OF U.S. PATENT NO. 5,988,078

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Dated: February 9, 2007

B-59 THROUGH B-61

REDACTED ENTIRELY

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC. AND TV GUIDE ONLINE, LLC, Plaintiffs, v. TRIBUNE MEDIA SERVICES, INC. Defendant.	Civil Action No. 05-725 (KAJ) **CONFIDENTIAL – SUBJECT TO PROTECTIVE ORDER**

EXPERT REPORT OF J. TIPTON COLE
CONCERNING INFRINGEMENT

B-63 THROUGH B-68

REDACTED ENTIRELY

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC. AND TV GUIDE ONLINE, LLC, Plaintiffs, v. TRIBUNE MEDIA SERVICES, INC. Defendant.	Civil Action No. 05-725 (KAJ) **CONFIDENTIAL--SUBJECT TO PROTECTIVE ORDER**

SUPPLEMENTAL EXPERT REPORT OF J. TIPTON COLE
CONCERNING INFRINGEMENT AND VALIDITY

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Dated: February 28, 2007

B-70 THROUGH B-76

REDACTED ENTIRELY

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC. and TV GUIDE ONLINE, LLC, Plaintiffs and Counterclaim Defendants, v. TRIBUNE MEDIA SERVICES, INC., Defendant and Counterclaim Plaintiff.	)	Case No.: 05-725-***

DECLARATION OF GARY S. TJADEN

I, Gary S. Tjaden, declare and state as follows:

1. I have been retained by Tribune Media Services, Inc. ("TMS") as an expert witness in this action to provide my technical assessment and opinions regarding U.S. Patent No. 5,988,078 ("the '078 patent").

2. I am currently Founder and President of COCOMO ID, LLC, a developer of technology for mobilized speech-audio publishing.

3. I hold a Bachelor of Science degree in Electrical Engineering (B.S.E.E.), which I received from the University of Utah in 1966. I received a Master of Science degree in Electrical Engineering (M.S.E.E.) in 1969 from Northwestern University. In 1973, I received a Doctor of Philosophy (Ph.D.) degree in Computer Science from the Johns Hopkins University.

4. I have personal knowledge of all facts set forth in this Declaration, and could testify to these facts if called to do so.

5. The claim term **"controller being programmed to perform,"** is found in Claim 8 of the '078 Patent. TMS's proposed construction of the term is "computer application

programs are installed on the controller prior to its use by a user to perform." This declaration is concerned with TV Guide's objection to TMS's proposed construction of this term.

6. As I have stated in my Non-Infringement Rebuttal Expert Report, and in my October 5, 2007 Declaration in this matter, it is clear from the '078 specification that the functions performed by the "controller" are embodied in a computer application that runs on the controller (or personal computer-like device). At the priority date of the '078 patent (March 1992), personal computer application programs were completely installed on the personal computer before they began executing. The concept of downloading during the execution of the application program incremental functionality for it to perform was not used or commonly known to skilled artisans. Only several years after the introduction of the first widely available Internet browser, a time subsequent to the '078 patent's priority date, was this concept commonly known and in use. Thus, I conclude that all of the functions embodied in the '078 controller's programming must exist as one or more software executable files (computer application programs) within the controller prior to its use by a user to perform those functions. By this I mean that all functions embodied in the controller's programming must exist therein prior to its use by a user to perform *any* of them.

7. Mr. Cole, TV Guide's Expert Witness, responded to my above statements in his Supplemental Expert Report Of J. Tipton Cole Concerning Infringement and Validity of February 28, 2007 ("Cole Supplemental"), stating: "At the time of the '078 patent's priority date, examples of systems that downloaded or installed incremental functionality while the application program was being executed were common." (Cole Supplemental at ¶37.) Mr. Cole then listed three documents as examples of his assertion, attached to his report as Exhibits D, E and F, which I shall refer to here as "Goldszmidt," "Korb" and "Bell," respectively. Mr. Cole

did not cite to any specific passages in these documents, nor did he discuss their contents in any further way. When questioned about this in his deposition Mr. Cole did point to three passages in the Goldszmidt document and one in the Bell document that he claimed support his contention, but he did not elaborate as to how they support it. (Cole Deposition Transcript dated June 21, 2007 at pp. 244-247.)

8. In fact, the Goldszmidt, Korb and Bell documents referenced by Mr. Cole do not show examples of systems "that downloaded or installed incremental functionality while the application program was being executed," as he contends.

9. Before discussing the documents a bit of background regarding how personal computers function may be in order to assist in understanding the technology described in the documents. When one buys a new personal computer today, and when one bought a new personal computer in 1992, included with or within the computer are several hardware components and some pre-installed software. The hardware components include a central processing unit (CPU) having volatile memory (called main memory or RAM (random access memory)), a non-volatile memory (called a hard drive), a removable memory device (a floppy disk drive in 1992, or a CD (compact disk) drive today), a keyboard, a monitor, some input/output (I/O) ports, and, often, some input/output devices such as a telephone modem.

10. The software will include a Basic Input/Output System (BIOS, and usually called firmware because it cannot easily be changed) retained on yet another memory device called read-only memory (ROM), and an operating system (e.g., Microsoft Windows or Apple OS X). The operating system is stored on the computer's hard drive. Some application software, such as a wordprocessor, may also have been "installed" and is stored on the hard drive. When the user turns-on the computer the BIOS firmware program is activated. It is responsible for activating

and controlling basic system functions such as communications between the CPU and the other hardware devices. The BIOS also causes certain portions of the operating system software to be copied from the hard drive to the main memory. When this is completed control is transferred from the BIOS to the operating system and the computer is ready for use by the user.

11. Computer software is developed by software engineers using "programming languages" that allow the units of the software (statements or instructions) to be expressed in textual form. This is because the form in which the computer instructions that make up the program that the CPU actually executes is that of combinations of one's and zero's (bits or binary digits), something very hard for humans to comprehend. While comprehending a computer programming language requires much training and skill, doing so is much easier than comprehending instructions in the form of binary digits.

12. Once a computer program has been written in a programming language, it normally (and commonly in 1992) must be translated into binary digit form in order for a computer's CPU to execute the program (i.e., perform the functions specified by the program). The process of translating from a programming language to binary digit form is called "compilation." That is, a computer program written by a human in a programming language normally must be "compiled" by another computer program, called a compiler, before it can actually be executed by a computer. It is the binary digit form of the computer program that comprises the software retained on a computer's hard drive for subsequent copying to main memory when the program is to be executed.

13. Furthermore, in order for a computer program to be executed by a personal computer in binary digit form the program must first be "installed" on the personal computer's hard drive. This installation process involves both copying all of the necessary files in binary

digit form (called executable files) to the computer's hard drive, and "registering" certain information regarding the location of the files with the computer's operating system.

14. It is possible for a computer program in program language form to be executed by a computer without first being compiled. The process for doing so is called "interpretation." The program so executed is often called a "script." In order for such interpretation to occur a special program, called an "interpreter," must be installed (in binary digit form) on the computer. The interpreter, when presented with the script, performs the function of, in effect, compiling the script immediately before it is executed under control of the interpreter.

15. Use of scripts and interpreters, in my opinion, and as explained in detail in my Non-Infringement Rebuttal Expert Report, is outside of the scope of the '078 patent. As stated therein and repeated above, such use was not commonly known to a skilled artisan in 1992 and was not used in personal computers in user's homes as required by the '078 patent. Rather, in order for a computer program to have been executed on a personal computer in a user's home in 1992 the program would first have had to have been installed in binary digit form on the computer's hard drive.

16. At his deposition, Mr. Cole identified three passages in Exhibit D to his Supplemental Report, the Goldszmidt article, to support his opinion: "It supports the ability to extend the functionality of servers (agents) at execution time...." (Abstract); "Delegation provides a flexible way for managers to dynamically associate functionality and responsibility with other managers." (p. 350); and "From a software configuration perspective, delegation provides a simple yet powerful scheme to dynamically compose management systems, by connecting and integrating independent delegated scripts. It is not required, though allowed, that manager process actually write programs to be delegated during their execution." (p. 351) (Cole

Deposition Transcript dated June 21, 2007 at pp. 245-247) In my review of Goldszmidt, neither the passages identified by Mr. Cole nor any other portion of the article supports Mr. Cole's opinion that "At the time of the '078 patent's priority date, examples of systems that downloaded or installed incremental functionality while the application program was being executed were common." (Cole Supplemental at ¶37.)

17. The Goldszmidt document is entitled "Network Management by Delegation – The MAD Approach." It has three authors, one a Ph.D. candidate in the Department of Computer Science at Columbia University, another an associate professor at the Columbia University Computer Science Department, and the third a member of the research staff at the IBM Thomas Watson Research Center. The document is a research paper presented at the *1991 Conference of the Centre For Advanced Studies on Collaborative Research.* The paper deals with issues of the management (i.e., operation and control) of large corporate private communication networks. The first sentence of the Introduction section sets the stage, saying: "Industrial enterprises are increasingly dependent upon large scale complex networked systems serving as their information backbones." (Goldszmidt at p. 347, Introduction.) In the Abstract of the paper the authors say regarding its content and purpose: "We describe the delegation model, its application to network management, and the design of a **prototype** implementation." (*Id.* at p. 347, Abstract, emphasis mine.)

18. Two points can be made so far regarding Mr. Cole's interpretation of the relevance of the Goldszmidt paper to the issue at hand. First, since the paper is a research paper, and was published in late 1991, its contents can hardly be characterized as representing methods that would have been commonly known to a skilled artisan in 1992. Secondly, since the subject is dealing with the operation and control of corporate networks, whatever it might have to say

can hardly be understood as applying to the use of personal computers in user's homes as required by the '078 patent and as so understood by a skilled artisan.

19. Goldszmidt sets the context for its teaching by saying: "A typical network management system [Rose91] involves agents, which are responsible for monitoring and controlling managed-objects of the network, and managers, which have the responsibility for collecting dynamic status data from the agents, interpreting that data, and directing the agents (e.g., how to handle fault scenarios)." (*Id.* at p. 347, col. 2, para. 2.)

20. Goldszmidt describes the problem addressed in the paper as follows: "Agents and managers must spend bandwidth and cycles to divide detection responsibilities. ... However, both SNMP and CMIP provide limited or no capabilities to combine primitives to handle composite scripts. Thus, the manager must step the agent through the execution of the script." (*Id.* at p. 349, col. 2, para. 5 – p. 350, col. 1, para. 2.) Goldszmidt refers to this as the "micro-management problem." ("SNMP" and "CMIP" are acronyms for protocols used by managers to communicate with agents.) And, Goldszmidt proposes that: "The micro-management problem can be resolved by delegating entire composite management scripts from managers to agents. ... The agent would then execute the composite script without manager interaction (except when the script itself requires it)." (*Id.* at p. 350, col. 1, para. 6 – col. 2, para. 1.) Goldszmidt refers to its proposed solution throughout the paper with the acronym "MAD," which stands for "Manager-Agent Delegation."

21. The above "composite script" is referred to in Goldszmidt as a "Delegated Management Program" (DMP). "A DMP is written in a Management Scripting Language (MSL). There is a whole spectrum of languages that can serve as MSLs, from general purpose programming languages such as C, to more restricted specialized languages for management."

(*Id.* at p. 351, col. 2, para. 3.) To use a DMP it is "... transferred via a delegation protocol, from a delegating manager to an accepting agent, which stores it in the Repository." (*Id.* at p. 351, col. 2, para. 1.) "The Repository allows storing and retrieving of DMPs from which the DMPIs [*Delegated Management Process Instances*, or executing programs] can be instantiated. DMPs can be stored at agent startup (boot time), or downloaded from a remote manager into the Repository during execution, via the delegation protocol. After receiving a Delegate request, the agent will store the DMP in a repository, and return to the delegating manager (through the protocol) a handle to it (DMPIid)." (*Id.* at p. 353, col. 2, para. 9.)

22. In other words, the above paragraph says the following: A computer program (DMP) is written in a programming language (MSL). The program is for execution on an agent. The program is copied to the hard drive of the agent (Repository). It can be copied to the hard drive when the agent is not running (e.g., during factory setup or boot time), or while the agent is running another program (during execution of), say, a wordprocessor. After the program is copied to the hard drive it is "installed" on the agent (producing the DMPIid necessary for execution, or "instantiation," to be initiated).

23. Regarding the process I have called "installation," Goldszmidt provides the following details for its MAD system: "Each DMP is represented in the repository as a data structure which contains the actual code of the program, and additional information describing its characteristics and requirements. ... DMPs can be in source code format, which may require compilation and linking or interpretation, or as object code that requires only dynamic linking. The Mad Agent uses the Translator for preparing the DMP for instantiation, via compilation and linking. The Translator uses the Repository to store the executable images which are produced by the compilation." (*Id.* at p. 354, col. 1, para. 1.) Here Goldszmidt proposes a type of

installation that was certainly not used on personal computers in user's home in 1992, and still is not used today, that is, compiling a program locally on the personal computer during the installation process. Goldszmidt does refer to interpretation in passing, but again only if the program to be interpreted is already "installed" in the Repository (agent hard drive). Such interpretation was not used in the prototype system described by Goldszmidt, nor is it performed by user's personal computers when using the Zap2it.com service.

24. The above discussion of Goldszmidt should make it clear that the Goldszmidt document actually affirms my contention that at the priority date of the '078 patent (March 1992), personal computer application programs were completely installed on the personal computer before they began executing. In any case, Goldszmidt's teachings would apply only to systems of communicating computers used to operate and control private computer networks, not to consumer applications used in user's homes.

25. I turn now to the Korb document, Exhibit E to Cole's Supplemental Report. At his deposition, Mr. Cole was unable to identify specific passages that support his opinion. (Cole Deposition Transcript dated June 21, 2007 at pp. 247-248) In my review of Korb I do not find anything to support Mr. Cole's opinion that "At the time of the '078 patent's priority date, examples of systems that downloaded or installed incremental functionality while the application program was being executed were common." (Cole Supplemental at ¶37.)

26. Korb is a research paper written by two authors who, at the time, were associated with the Department of Computer Science at Purdue University. The paper does not give their positions, but typically one would be a student and the other the student's research advisor. The paper, entitled "Command Execution in a Heterogeneous Environment," was published in 1986 in the Proceedings of the Association For Computer Machinery (ACM) Special Interest Group

on Communications (SIGCOMM) *Conference on Communications Architectures & Protocols.* The issues discussed at this conference would have been research concepts and results of interest to those doing research and advanced development in the area of systems of networked computers.

27. The paper describes its context as follows: "In the UNIX operating system [9], each command is in fact a binary file that is loaded into memory and executed. In our model of distributed environment the user interacts with an executive on a personal workstation connected to a local network, and views commands not as binary files, but as *services* provided by *servers* in the network. The user no longer is logged in at a particular host in the network, but accesses the computing engine using the workstation to locate and execute services on its behalf." (Korb at p. 68, col. 2, para. 2.)

28. Korb's "services" or "binary files" are computer programs installed and executing on the servers, not the personal workstations, so do not represent functionality that the '078's controller would be "programmed to perform." Korb requires that the personal workstations and servers communicate with each other over a local area network. The '078 patent does not teach or imply communications with its controllers over a local area network, but rather over a dial-up telephone wide area network. So, most of Korb's context does not apply to the '078 patent's requirements, and Korb's teachings certainly do not directly apply to the '078 patent.

29. Korb is concerned with the issue of how to support a user on a personal workstation who wishes to perform a computation that chains together services already installed on different servers such that the results computed by one service are to be used as input to another service. At the time the way this was done was to send the intermediate results to the personal workstation, which would then issue them to the next server in the chain. The personal

workstation was a performance bottleneck in this process. Korb proposes a mechanism for sending the intermediate results directly to the next server without involving the personal workstation. This problem, of course, is not at all relevant to the requirements of the '078 patent, nor to Zap2it.com's service.

30. There are only two statements in Korb that could possibly be misconstrued to relate to the issue at hand of downloading during the execution of an application program incremental functionality for it to perform. The first is: "The setup for a V pipeline involves downloading a local (to the workstation) helper program for each remote service to handle input and output for that service." (*Id.* at p. 72, col. 2. para. 5.) The second is: "After creation of all connections, the executive downloads a local V program to connect to the input port of the first service, and to listen on all the local TCP ports." (*Id.* at p. 72, col. 2. para. 6.) In these statements the term "pipeline" refers to the mechanism used to transfer the results of a service's computation to its intended destination. In both of these statements the reference to "downloading a local program" refers to the process that is used to setup the chained computation prior to performing the computation. It does not in any way imply downloading during the execution of the computation incremental functionality for it to perform.

31. While Mr. Cole has not specified what in particular in Korb supports his contention that it teaches downloading during the execution of an application program incremental functionality for it to perform, it is my opinion, for the reasons stated above, that Korb does not teach this, either explicitly or inherently.

32. The third, and final document proffered by Mr. Cole to support his contention that, as of 1992, "examples of systems that downloaded or installed incremental functionality while the application program was being executed were common" is the Bell document. At his

deposition, Mr. Cole identified the following passage in Bell, Exhibit F to his Supplemental Report, to support his opinion: The section entitled "Static and Dynamic Assignment of Programs to Nodes" on page 16. (Cole Deposition Transcript dated June 21, 2007 at p. 244-245) In my review of Bell, neither the passage identified by Mr. Cole nor any other portion of the article supports Mr. Cole's opinion that "At the time of the '078 patent's priority date, examples of systems that downloaded or installed incremental functionality while the application program was being executed were common." (Cole Supplemental at ¶37.)

33. The author of this document, C. Gordon Bell, was a prominent computer designer and developer at the time the paper was published (1986), credited as one of the inventors of the minicomputer, and one of the founders of the Digital Equipment Corporation (DEC), a prominent and successful developer and supplier of minicomputer systems. The document, entitled "Toward A History Of (Personal) Workstations (Draft)" was apparently prepared by the author for presentation as the keynote address at a technical conference sponsored by the ACM. However, I cannot ascertain that the document was indeed published, or the keynote speech given.

34. The context of the Bell paper is the same as that of the Korb document, namely a multiplicity of computers interconnected via a local area network such that computer programs (services) installed on one or another of the computers (servers) can be used to perform computations on behalf of programs residing and executing on a different server. Some of the servers provide a graphical user interface to users, and are called by Bell "personal workstations." Such systems are called, generically, distributed computer systems. As with Korb's context, Bell's context is very different from, and therefore not relevant to, the '078 patent or Zap2it.com's service.

35. One small variation in Bell from the context of Korb is the concept of the "file server." About this concept Bell says: "LANs differ from Wide Area Networks (WANs) in that they assume a low latency, high bandwidth interconnect. This permits file access as well as file transfer applications. With file access, it is possible to remotely locate part or all of a system's mass storage to a file-serving computer. File access requires bandwidth and latency which are roughly equal to that of a disk (i.e., 10 Mbs rates); file transfer can be done at substantially slower rates (56Kbs to 1 Mbs)." In a distributed computer system that contains such a file server, the application programs can all be "installed" to the file server, where they reside until instantiated (initiated). At instantiation, or during execution, the actual program files in binary digit form will be copied to the local memory of the server assigned to execute the program, just as these files are copied to the local memory of a personal computer from its hard drive when the program is executed on it.

36. The only statements in Bell identified by Mr. Cole to support his assertion that it shows an example of a system that downloaded or installed incremental functionality while the application program was being executed are the following: "Ideally, a user can decide on how to compute on a completely variable basis at the following times:

- at system purchase or rent time ...
- at system use time ... here work is bound statically to a particular set of system resources. Most likely, particular nodes would execute special programs on data located at the node.
- at task time on the basis of reliability. VAX clusters provide for dynamic allocation of work among the computers in the cluster to affect load balancing since files are centralized.
- at task-use time on a completely dynamic basis, ranging from computing on his own local system to be able to select any resource and move work dynamically while programs are in execution. With this ability, as a program goes through its

various stages of development, it might be moved from small system to large system to take advantage of increased computational power at higher level nodes.

- at task time on a dynamic basis with the ability to acquire arbitrary resources to engage in parallel computation."

37. However, these statements teach something different than what Mr. Cole asserts. The statements refer to a computer system in which all of the programs are already "installed" on whatever servers they will be executed before the user begins the computation of interest. The entire collection of computers together with the local area network that interconnects them is a *single system*. During execution of the user's computation the data may be dynamically reassigned to another server where the appropriate program is installed, as taught also by Korb, but in no sense is incremental functionality downloaded or installed while the user's computation is being executed. In fact, the computers to which Bell refers, called VAX, that were manufactured by the company he founded, are the same computers used by Korb in its experiments.

38. In summary, for the reasons detailed above, the three documents cited by Mr. Cole in his Cole Supplemental Report, Goldszmidt, Korb and Bell, do not show that "at the time of the '078 patent's priority date, examples of systems that downloaded or installed incremental functionality while the application program was being executed were common." Rather, if anything they show that such functionality was not at the time commonly known to or understood by a skilled artisan, and certainly not used by consumer personal computers in user's homes.

39. I understand that TV Guide stated in its claim construction brief: "Indeed, it was common in the early 1990's, as it is today, for programs to be placed on a computer connected to a network as the computer is being used. (See Cole Ex. B at ¶¶ 121-123; Cole Ex. C at ¶ 37, Exs

D, E and F)," and I understand that Cole Ex. B refers to Cole's Rebuttal Report on Invalidity and Cole Ex. C refers to the Cole Supplemental Report. This statement mischaracterizes Mr. Cole's statements in the Cole Rebuttal Report on Invalidity and Cole Supplemental, and my statements in my Non-Infringement Rebuttal Report to which Cole was responding. I find nothing in Mr. Cole's reports to support this statement. This statement does not bear at all on the rationale for TMS's proposed construction of the term **"controller being programmed to perform,"** found in Claim 8 of the '078 Patent, to mean "computer application programs are installed on the controller prior to its use by a user to perform". This statement also is incorrect. It was not common in the early 1990's for programs to be placed, or installed, on a computer connected to a network as the computer was being used. I reserve the right to respond in the event Mr. Cole provides support for TV Guide's statement that "Indeed, it was common in the early 1990's, as it is today, for programs to be placed on a computer connected to a network as the computer is being used."

I declare the foregoing to be true and correct under penalty of perjury under the laws of the United States, and that this Declaration was executed on November 20, 2007, in Alpharetta, Georgia.

G S. Tjaden

Gary S. Tjaden