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number. Double-precision numbers are commonly handled by a computer in floating-point form. Languages such as BASIC and C provide ways for programmers to specify double-precision numbers; number-handling hardware and software such as math coprocessor chips and the Standard Apple Numerics Environment are designed to work rapidly with such numbers.

double-sided disk A floppy disk that can hold data on both its top and bottom surfaces.

double-strike On an impact printer (such as a daisy-wheel printer), the process of printing twice over a word, producing text that appears darker and heavier, or bolder, than it normally appears. On dot-matrix printers, double-striking with a slight offset can be used to fill in the space between the dots, producing smoother and darker characters.

double word A unit of data consisting of two contiguous words (connected bytes, not text) that are handled together by a computer's microprocessor.

doubly linked list A series of nodes (items representing discrete segments of information) in which each node refers to both the next node and the preceding node. Because of these two-way references, a doubly linked list can be traversed both forward and backward, rather than in one direction (forward) only, as with a singly linked list.

down Not functioning; used in reference to computers, printers, communications lines on networks, and other such hardware.

downlink The transmission of data from a communications satellite to an earth station.

download In communications, the process of transferring a copy of a file from a remote computer to the requesting computer by means of a modem or network. With a modem-based communications link, the process generally involves the requesting computer instructing the remote computer to begin the transfer and the requesting computer saving the incoming file on disk. Also, to send a block of data, such as a PostScript file, to a dependent device, such as a PostScript printer. *Compare* upload; *see also* downloadable font.

downloadable font A set of characters of a particular style and size stored on disk and sent (downloaded) to a printer's memory when needed for printing a document. Downloadable fonts are available in many typefaces and sizes and are most commonly used with laser printers and other page printers, although many dot-matrix printers can also accept some of them.

downtime The amount or percentage of time a computer system or associated hardware remains nonfunctioning. Although downtime can occur because hardware fails unexpectedly, it can also be a scheduled event, as when a network is shut down to allow time for maintenance, a change in hardware, or archiving of files.

downward compatibility Source code or programs developed on a more advanced system or compiler version that can still be executed or compiled by a less advanced (older) version. For example, a developer writing an assembly language routine on an 80386 system might choose the instructions carefully so as to maintain downward compatibility with the 8086 processor. *Compare* upward compatibility.

DP *See* data processing.

dpi *See* dots per inch.

DPSK Differential phase-shift keying. *See* phase-shift keying.

draft mode A high-speed, relatively low-quality print mode offered by most dot-matrix printers. To increase speed, draft mode uses a matrix with fewer dots. If the printer operates in more than one mode, the user can select draft mode when print quality is not important and, when printing a final copy, select one of the printer's higher-quality modes, usually called letter-quality, near-letter-quality, or correspondence mode. *See also* dot-matrix printer, draft quality, print quality.

draft quality A low grade of printing generated by the draft mode on dot-matrix printers. It typically has less-well-defined characters than do higher-quality print modes. Depending on the printer's overall print quality, draft quality might be suitable for most tasks, excluding business correspondence, or it might be almost useless. *See also* draft mode, print quality.

drag In computer graphics, to move an image or a window from one place on the screen to another by "grabbing" it and pulling it to its new location.

language, for example, are known as symbolic languages because they use short mnemonics, such as *ADD* (for *addition*) and *def* (for *define*) to represent instructions and operations. Similarly, operating systems and applications based on typed commands use mnemonics to represent instructions to the program. MS-DOS, for example, uses *dir* (for *directory*) to request a list of files.

mode The operational state of a computer or a program. For example, edit mode is the state in which a program accepts changes to a file.

model A mathematical or graphical representation of a real-world situation or object—for example, a mathematical model of the distribution of matter in the universe, a spreadsheet (numeric) model of business operations, or a graphical model of a molecule. Models can generally be changed or manipulated so that their creators can see how the real version might be affected by modifications or varying conditions. *See also* modeling, simulation.

modeling The use of mathematics to describe a situation or a physical object. Microcomputers are used in two main types of modeling: business-related and geometric. Business-related modeling usually involves spreadsheet programs and financial data. The data represents, or describes, the health and activity of the company; mathematical formulas can be used to manipulate the data, to develop business plans and projections, or to evaluate the impact of proposed changes on the company's operations and financial status. *See also* spreadsheet program.

Geometric modeling uses mathematics to describe objects and, if necessary, the spatial relationships between or among them. CAD programs, for example, are used to create on-screen representations of such physical objects as tools, office buildings, complex molecules, and automobiles. Thus, geometric models rely on equations to create lines, curves, and other shapes and to place those shapes accurately in relation to each other and to the two-dimensional or three-dimensional space in which they are drawn. Coloring and substance are provided by a process called rendering, which displays the image from a certain viewpoint and uses additional mathematics to simulate the effects of light and shade on the object. *See also* CAD, rendering, simulation, solid model, surface modeling, three-dimensional model, two-dimensional model, wireframe model.

modem Short for modulator/demodulator, a communications device that enables a computer to transmit information over a standard telephone line. Because a computer is digital (works with discrete electrical signals representing binary 1 and binary 0) and a telephone line is analog (carries a signal that can have any of a large number of variations), modems are needed to convert digital into analog and vice versa. When transmitting, modems impose (modulate) a computer's digital signals onto a continuous carrier frequency on the telephone line. When receiving, modems sift out (demodulate) the information from the carrier and transfer it in digital form to the computer. Modems operating over telephone lines typically transmit at speeds ranging from 300 baud to 9600 baud. Modems operating on leased lines can transmit reliably at 19,200 baud. Higher rates of operation are also possible but are generally constrained by the limitations of the telephone lines themselves. Sophisticated modems, aside from transmitting and receiving, are also capable of such functions as automatic dialing, answering, and redialing. Without appropriate communications software, however, modems cannot perform any useful work. *See also* baud rate.

modem eliminator A device that enables two computers to communicate without modems. *See also* null modem.

modified frequency modulation encoding Abbreviated MFM encoding. A widely used method of storing data on disks. MFM encoding is based on an earlier technique called frequency modulation encoding but improves on its efficiency by reducing the need for synchronizing information and by basing the magnetic coding of each bit on the status of the previously recorded bit. MFM encoding stores more information on a disk than does frequency modulation encoding and is used on many hard disks. It is not, however, as efficient a space saver as the technique known as run-length limited encoding, or RLL. *Compare* frequency

operation (20 megabits or more), but it is more expensive than a baseband network and can be difficult to install. Such a network is based on the same technology used by cable television (CATV). Broadband transmission is sometimes called wideband transmission. *Compare* baseband network.

broadcast As in radio or television, a transmission sent to more than one recipient. In communications and on networks, a broadcast message is one distributed to all stations.

browse To scan a database or a list of files, either for a particular item or for anything that seems to be of interest; generally, an activity that implies observing, rather than changing, information.

In unauthorized computer hacking, browsing is a (presumably) nondestructive means of finding out about an unknown computer after illegally gaining entry.

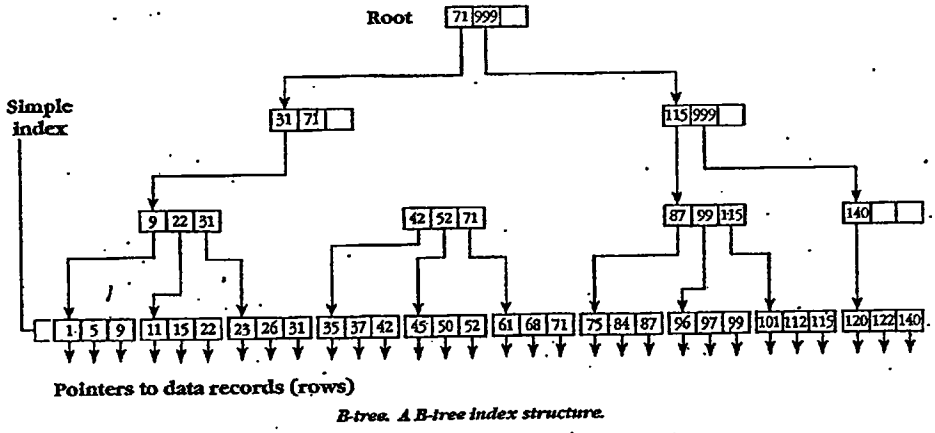
brush In computerized paint programs, a tool used to sketch or fill in areas of a drawing with the color and pattern currently in use. In programs such as MacPaint and Microsoft Paintbrush, the brush is chosen by selecting an on-screen paintbrush icon. Paint programs that offer a variety of brush shapes can produce brushstrokes of varying width and, in some cases, shadowing or calligraphic effects.

BSC *See* BISYNC.

BSD UNIX Abbreviation for Berkeley Software Distribution UNIX—versions of the UNIX system that were developed at the University of California at Berkeley. BSD innovations included support for virtual memory, networking, job control, interprocess communication, and enhancements to the file system and to system security. *See also* UNIX.

B-tree A tree structure especially well suited to storing database indexes. In a simple index structure, index values and pointers to records or rows that contain those values are stored sequentially, usually in ascending sequence. If the data being indexed is stored in many records, the time required to search for high index values can be very long. In a B-tree index structure, special entries exist in the tree to allow the database to quickly find any simple index entry without having to scan the entire tree. As shown in the illustration, the first block, or root, of the tree contains entries that indicate the highest value in each block at the next level in the tree; and the lowest level in the tree is the simple index that points to a data record. When searching for a specific value, the database system can rapidly skip down through the levels of the tree structure to find the simple index entries that contain the location of the desired records or rows.

bubble chart A type of chart in which annotated



B-tree. A B-tree index structure.

management of display screens. Control codes, sometimes called setup strings or escape sequences, are usually encountered by computer users in relation to printers. Control codes are typically preceded by an Escape character, and some may end with a terminating character; these characters tell the printer to interpret all characters in between as commands rather than as data. Printer control codes vary by make and model and are listed in the manual supplied with each printer. They are mainly employed by programmers or by users to control a printer when an application program does not support the printer or one of its specialized features.

In video, control codes are sent from a computer to a display unit to manipulate the appearance of text or a cursor on the screen. Popular video control code sets are ANSI and VT-100. *See also* control character.

control console *See* console.

control data Typically, data that consists of information about timing and switching, used to synchronize and route other data or to manage the operation of a device such as a bus or a port.

Control key A key that, when pressed in combination with another key, gives the other key an alternative meaning. In many application programs, Control plus another key is used as a command for special functions; for example, pressing Control-U (Control plus the letter U) might be the command to undo the last change, or to go up one page. In some cases, the Control key combination can enter a control character; for example, using Control-L in a word-processing program enters the command to start a new page. *See also* control character.

controller A device upon which other devices rely for access to a computer subsystem. A disk controller, for example, controls access to one or more disk drives, managing physical and logical access to the drive or drives.

control logic The electronic circuitry that generates, interprets, and uses control data.

Control Panel On the Apple Macintosh, a desk accessory that is used to control certain system parameters such as screen colors, speaker volume, cursor blink rate, and the system date and time.

In Microsoft Windows, a program used to control parameters such as display colors, fonts, port connections, system printer configuration, and the system date and time.

control sequence *See* control code.

control signal An electronic signal used to control internal or external devices or processes.

control statement A statement that affects the flow of execution through a program. Control statements include conditional statements (CASE, IF-THEN-ELSE), iterative statements (DO, FOR, REPEAT, WHILE), and transfer statements (GOTO). *See also* conditional statement, iterative statement, statement, transfer statement.

control unit A device or circuit that performs an arbitrating or regulating function. A memory controller chip, for example, controls access to a computer's memory and is the control unit for that memory.

control variable In programming, the variable in a control statement that dictates the flow of execution. For example, the index variable in a FOR loop controls the number of times a group of statements are executed. The value of the switch variable in a CASE statement dictates the set of statements that are executed. *See also* control statement.

convention Any standard used more or less universally in a given situation. Many conventions are applied to microcomputers. Some are formal; others are less formal but widely recognized. In programming, for example, a language such as C relies on formally accepted symbols and abbreviations that must be used in programs. Less formally, programmers usually adopt the convention of indenting subordinate instructions in a routine so that the structure of the program is more easily visualized. National and international committees often discuss and arbitrate conventions for programming languages, data structures, communication standards, and device characteristics. *See also* CCITT, ISO, NTSC, standard.

conventional memory The amount of RAM memory addressable by an IBM PC or compatible machine operating in real mode. This is typically 640 kilobytes (KB), although it will be less if the computer has less than 640 KB installed. Without

medium-scale integration Abbreviated MSI. A term describing the concentration of between 10 and 100 circuit elements on a single chip. *See also* integrated circuit.

meg Abbreviation for megabyte or megabytes, as in "a 30-meg hard disk."

mega- Abbreviated M. A prefix meaning 1 million (10^6). In computing, which is based on the binary (base-2) numbering system, *mega-* has a literal value of 1,048,576, which is the power of 2 (2^{20}) closest to one million.

megabit Abbreviated Mb or Mbit. Usually, 1,048,576 bits; sometimes interpreted as 1 million bits.

megabyte Abbreviated MB. Either 1 million bytes or 1,048,576 bytes (2^{20}).

megacycle Abbreviated mc. A term for 1 million cycles—usually used to mean 1 million cycles per second. *See also* megahertz.

megaflops *See* MFLOPS.

megahertz Abbreviated MHz. A measure of frequency equivalent to 1 million cycles per second.

megapel display *See* megapixel display.

megapixel display A video display capable of displaying at least one million pixels. For example, a video display with a screen size of 1024 horizontal pixels and 1024 vertical pixels is a megapixel display.

member In object-oriented programming, a variable or routine that is part of a class; also, a value that is part of a set data structure. *See also* C++, class, set.

membrane keyboard A keyboard in which an unbroken plastic or rubber shell (a membrane) covers keys that have little or no travel (movement). Rather than using normal, full-travel keys, membrane keyboards use pressure-sensitive areas that are sometimes, but not always, defined by small bumps under the membrane. Today, such keyboards are used primarily on printers, or in devices targeted for use in areas where environmental hazards such as dirt or liquid might damage a normal keyboard.

memo field A field in a database file that can contain unstructured text.

memory Circuitry that allows information to be stored and retrieved. In the most general sense, *memory* can refer to external systems such as disk drives or tape drives; in common usage, it refers only to the fast semiconductor storage (RAM) directly connected to the processor. *Compare* bubble memory, core.

memory cartridge A plug-in module containing RAM (random access memory) chips that can be used to store data or programs. Memory cartridges are used primarily in portable computers as smaller, lighter—and more expensive—substitutes for disk drives. Memory cartridges typically use either a nonvolatile form of RAM, which does not lose its contents when power is turned off, or battery-backed RAM, which maintains its contents by drawing current from a rechargeable battery within the cartridge.

memory management unit Abbreviated MMU. The hardware that supports the mapping of virtual memory addresses to physical memory addresses. In some systems, such as those based on the 68020, the MMU is separate from the processor. In most modern microcomputers, however, the MMU is built into the CPU chip. In some systems, the MMU provides interfacing between the microprocessor and memory. This type of MMU is typically responsible for address multiplexing and, in the case of DRAMs, refreshing. *See also* physical address, virtual address.

memory model The approach used to address the code and the data that are used in a computer program. The memory model dictates how much memory can be used in a program for code and how much for data. Most computers with a flat address space support only a single memory model. Computers with a segmented address space usually support multiple memory models. *See also* compact model, flat address space, huge model, large model, medium model, segmented address space, small model, tiny model.

memory typewriter An electric typewriter with internal memory and, typically, a one-line liquid crystal display for viewing the contents of that memory. Memory typewriters can usually hold a page of text at a time, and they allow small modifications to that page of text. Memory typewriters usually do not retain the contents of memory when power is turned off.

train As a verb, to teach someone to perform a particular task or job. As a noun, a sequence of items or events, such as a digital pulse train consisting of transmitted binary signals.

transaction A discrete activity within a computer system—for example, an entry of a customer order or an update of an inventory item. Transactions are usually associated with database management, order-entry, and other online systems. By definition, however, making a deletion or creating a file copy on a microcomputer could as easily be considered a transaction.

transaction file A file that contains the details of transactions, such as items and prices on invoices, and that is to be used to update a master database file. Transaction files are typical of transaction-based systems, such as those composed of online order-entry terminals that are connected to a main computer.

transaction processing A processing method in which transactions are executed immediately after they are received by the system. *Compare* batch processing.

transceiver A device that can both transmit and receive signals; derived from *transmitter/receiver*. Transceivers are used for a variety of communications, among them telephones, citizens band radio, and ship-to-shore or air-to-ground radio. On local area networks, a transceiver is the device that connects a computer to the network.

transducer A device that converts one form of energy into another. Electronic transducers either convert electric energy to another form of energy or convert nonelectric to electric energy. For example, a loudspeaker transduces electric energy to sound, and a microphone transduces sound to electric energy.

transfer The movement of data from one location to another, or the passing of program control from one portion of code to another.

transfer rate The rate at which a circuit or a communications channel transfers information from source to destination, as over a network or to and from a disk drive. The transfer rate is measured in units of information per unit of time—for example, bits per second or characters per second—and can be measured either as a raw rate, which is the maximum transfer speed, or as an average rate, which includes gaps between blocks of data as part of the transmission time.

transfer statement A statement in a programming language that transfers the flow of execution to another location in the program. *See also* GOTO statement.

transfer time The time elapsed between the start of a data-transfer operation and its completion.

transform In general, to change the appearance or format of data without altering its content—for example, to encode information according to predefined rules. In mathematics and computer graphics, *transform* means to alter the position, size, or nature of an object by moving it to another location (translation), making it larger or smaller (scaling), turning it (rotation), changing its description from one type of coordinate system to another, and so on.

transformer A device used to change the voltage of an alternating current signal or to change the impedance of an alternating current circuit. A transformer consists of two or more coils or windings of wire, usually wrapped around a ferromagnetic core. The individual windings are not electrically connected to each other but are coupled by magnetic induction. As current flows (or more accurately, changes) in the input (primary) winding, a magnetic field is created. The flux lines of this field cut across the windings of the output (secondary) winding and induce a voltage there. If the secondary winding has more turns than the primary winding, the output voltage will be higher than the input voltage; if fewer, it will be less. Because a changing current is required in the primary winding to create a fluctuating magnetic field, transformers function only with alternating current.

transient Fleeting, temporary, or unpredictable. In reference to computer memory, *transient* refers to the region of memory used for programs, such as applications, that are read from disk storage and that reside in memory temporarily until they are replaced by other programs. In this context, *transient* can also refer to the programs themselves.

In electronics, *transient* refers to a short-lived,

time. *See also* period, phase, wavelength.

wavelength The distance between successive peaks or troughs in a periodic signal that is propagated through space. Wavelength is symbolized by the Greek letter lambda (λ). Wavelength is directly related to the frequency of the signal and the speed of propagation, and it can be calculated as speed divided by frequency. For electromagnetic radiation, wavelength in meters equals 300,000,000 meters per second divided by frequency in hertz. For sound traveling through air, wavelength in meters equals 335 meters per second divided by frequency in hertz.

weak typing A characteristic of a programming language, such as C, that allows the program to change the data type of a variable during program execution. *Compare* strong typing; *see also* data type, variable.

weighted code Data representation code in which each bit position has a specified inherent value, which might or might not be included in the interpretation of the data, depending on whether the bit is on or off.

well-behaved Adjective describing a program that performs properly, even when given extreme or erroneous input values. A program that obeys the rules of a particular programming environment can also be described as well-behaved. Operating-system vendors often promise that well-behaved programs will be upwardly compatible with future enhancements of the operating system.

"what-if" evaluation A kind of spreadsheet evaluation in which certain values in a spreadsheet are changed in order to reveal the effects of those changes—for example, trying different mortgage rates and terms to see the effect on monthly payments and on total interest paid over the life of the loan. Spreadsheet programs allow values in an existing model to be changed and recalculated with little effort, so these programs are considered ideal for the otherwise tedious task of preparing and comparing financial alternatives.

wheel printer *See* daisy-wheel printer.

Whetstone A benchmark test that attempts to measure the speed and efficiency with which a computer carries out floating-point operations. The result of the test is given in units called whetstones. The Whetstone benchmark has fallen out of favor because it produces inconsistent results compared to other benchmarks such as the Dhrystone and the sieve of Eratosthenes. *See also* benchmark, Dhrystone, sieve of Eratosthenes.

white noise Noise that contains components at all frequencies, at least within the frequency band of interest. It is called "white" by analogy to white light, which contains light at all the visible frequencies. In the audible spectrum, white noise is a hiss or a roar, as when a television set is tuned to a channel over which no station is broadcasting.

whole number A number without a fractional component—for example, 1 or 123; an integer.

wide area network A communications network that connects geographically separated areas.

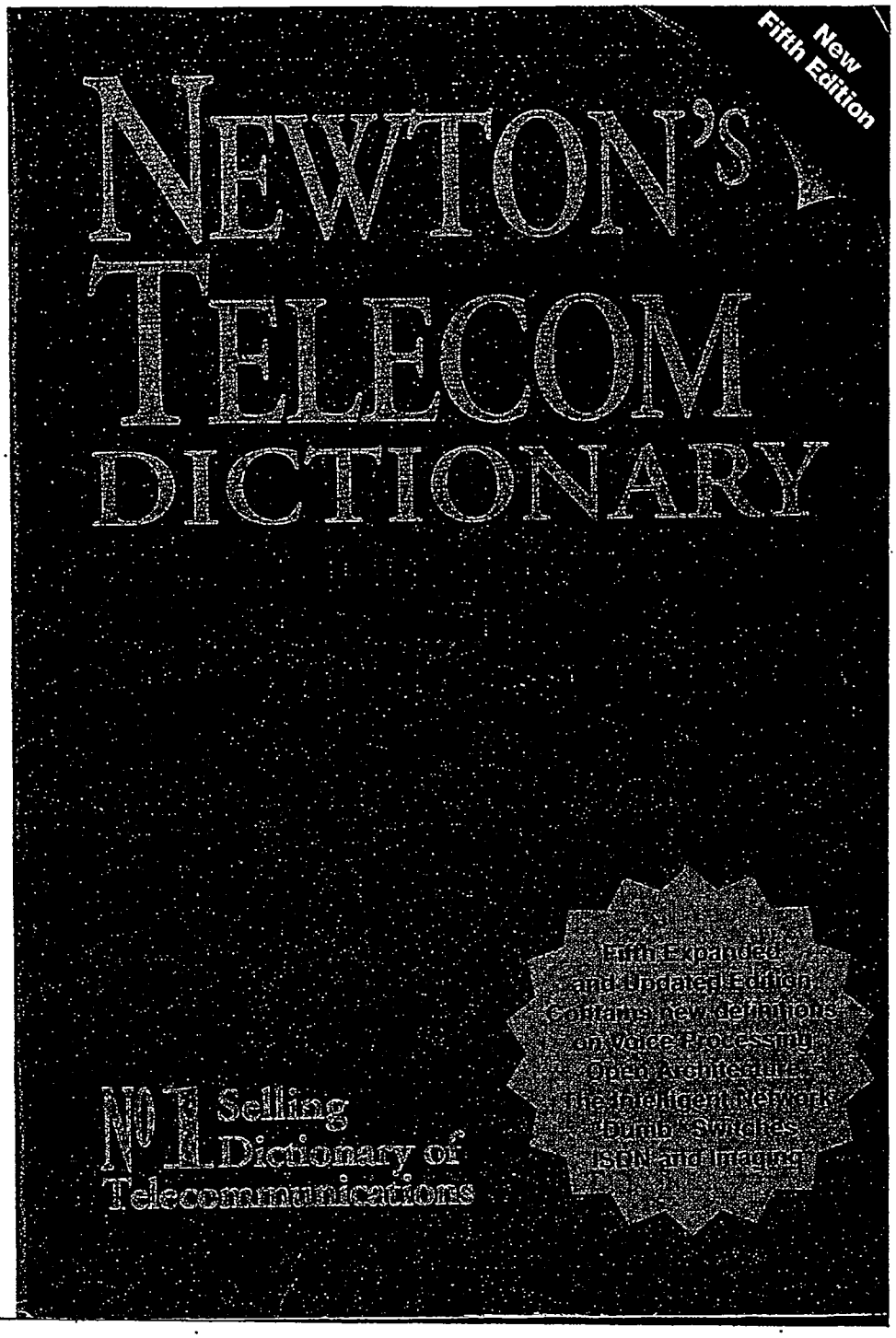
wideband *See* broadband network.

widow A single word, a portion of a word, or a few short words left on a line by themselves at the end of a paragraph or column of type on a page. A widow is considered visually undesirable on the printed page. Because it is short, however, a widow can generally be eliminated by editing or rebreaking preceding text. *Compare* orphan.

wildcard character A keyboard character that can be used to represent one or many characters; usually encountered with operating systems as a means of specifying more than one file by name. In MS-DOS, for example, the question mark (?) wildcard character can be used to represent any single character, and the asterisk (*) can be used to represent any number of characters. Thus, ?OOK.DOC would refer to BOOK.DOC, COOK.DOC, LOOK.DOC, and so on; *.DOC would refer to any filename ending in the extension .DOC; and *.* would refer to any filename and any extension—in other words, to all files on the specified disk or in a specified directory.

Winchester disk An early IBM name for a hard disk. The term is derived from IBM's internal code name for the first hard disk that stored 30 megabytes (MB) and had a 30-millisecond access time, reminding its inventors of a Winchester .30-caliber rifle known as a "30-30."

window In applications and graphical interfaces, a


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networking, to Jane Laino of Corporate Communications Consultants, NYC; to Henry Baird of Seattle consultants Baird & Associates; to Sharon O'Brien formerly of Hayes Microcomputer Products in Norcross (Atlanta); to Howard Bubb, Ed Margulies, Terry Henry, Jim Shinn, Nick Zwick and Sal Manetti, Manager of Technical Publications of leading voice processing company, Dialogic Corporation of Parsippany, NJ; to Al Wokas of voice processing company Rheterox in San Jose, CA; Ian Angus at the Angus TeleManagement Group in Ajax, Ontario, embarrassed me into expanding my Canadian coverage. At Ziff Davis, which publishes this dictionary on CD-ROM disks, I'm grateful to Jonathan Pollard and Paul Gudelis. In my own office, I'm very grateful to Muriel Fullam, Rose Bodin, Andy Moore and Jennifer Cooper-Farrow. Without all these wonderful people, this dictionary wouldn't be as good as it's actually turned out. If I sound surprised, you're right.

If I've left any definitions out, or if some of my definitions are unclear, contact me. This is the fifth edition of my dictionary. It's one-quarter bigger than the fourth edition which was fewer than 12 months ago. There'll be many more editions. Our industry is exploding.

I wrote this dictionary on a Toshiba T3300SL laptop using ZEdit, a very beautiful text editor, which Sammy Mitchell of Marietta, GA wrote. Andy and Jennifer typeset it on a Macintosh Quadra using QuarkXpress and Adobe Illustrator. Bookcrafters in Chelsa, Michigan printed it.

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such a manner that the output frequencies are lower in the spectrum than the input frequencies.

DOWNLINE LOADING A system in which programs are loaded into the memory of a computer system, such as a LAN bridge, router or server, via the same communication line(s) the system normally uses to communicate with the rest of a network. As opposed to systems in which all programs are loaded into the computer from a disk or tape associated with the computer. A PC connected to a LAN may use this type of loading when it is first turned on in the morning to get the information it needs from a file server. Diskless PCs always work this way.

DOWNLINK 1. The part of a transmission link reaching from a satellite to the ground. Some satellite transmission circuits, especially international ones, are priced and billed separately for the uplink and the downlink. This is because their transmissions are provided by different carriers. 2. In packet data communications, a downlink is a link from an NC or PAD to another NC or PAD on a different level. The defining of downlinks and uplinks depends on the network configuration of PADs, their relationships to each other and the direction of data transmission.

DOWNLOADING The act of receiving data from another computer into your computer. It's also called to RECEIVE. The opposite is UPLOAD or TRANSMIT. You have to be very careful distinguishing between the two. Choosing the "Download" option in some communications programs automatically erases a file of the same name that was meant for transmission.

DOWNSTREAM CHANNEL The frequency multiplexed band in a CATV channel which distributes signals from the headend to the users. Compare with UPSTREAM CHANNEL, the band of frequencies on a CATV channel reserved for transmission from the user to the CATV company's headend.

DOWNTIME The total time a telephone system is not working due to some software or hardware failure. You know your vendor is about to lie when he begins to answer a question about "downtime."

DP Dial Pulse (as in dialing a phone) or Data Processing. Also called EDP for Electronic Data Processing. Now more commonly called Management Information Systems — or MIS.

DPA Digital Port Adapter. A Northern Telecom word.

DPLB Digital Private Line Billing.

DPMI An acronym for Microsoft's DOS Protected Mode Interface. It is a superset of the VCPI (Virtual Control Program Interface) specification for controlling multiple programs inside a PC, as well as programs that use protected mode.

DPN LANSCOPE A Northern Telecom software package for remote management of local area networks over wide area networks based on

MOBILE PHONE One term for a cellular phone. There are four main types of cellular phones — mobile (also called car phone), transportable, portable and personal. A mobile phone is attached to the vehicle, the vehicle's battery and has an external antenna. The mobile phone (the car phone) transmits with a standard three watts of power. Mobile telephone service is provided from a broadcast point located within range of the moving vehicle. That range is called a "cell." The broadcast point in turn is connected to the public network so that calls can be completed to or from any stationary telephone, i.e. one connected to a land line. See CELLULAR and CAR PHONE.

MODAL DISPERSION Digital pulse rounding in lightwave communications that takes place because of the slightly different paths followed by the laser light rays as they arrive at the detector slightly out of phase.

MODAL DISTRIBUTION 1. In an optical fiber operating at a single wavelength, the number of modes supported by the fiber, and their propagation time differences. 2. In an optical fiber operating at multiple wavelengths simultaneously, the separation in wavelengths among the modes being supported by the fiber.

MODAL LOSS In an open waveguide, such as an optical fiber, a loss of energy on the part of an electromagnetic wave due to obstacles outside the waveguide, abrupt changes in direction of the waveguide, or other anomalies, that cause changes in the propagation mode of the wave in the waveguide.

MODE Mode is essentially a switch inside a computer that makes it run like another computer, usually an older one.

MODEM Acronym for MOdulator/DEModulator. Equipment which converts digital signals to analog signals and vice-versa. Modems are used to send data signals (digital) over the telephone network, which usually is analog. The Modem modulates the "1's" and "0's" into tones which can be carried by the phone network. At the other end, the demodulator part of the modem converts the tones back into digital 1's and 0's.

MODEM ELIMINATOR A wiring device designed to replace two modems; it connects equipment over a distance of up to several hundred feet. In asynchronous systems, this is a simple cable. Here is a specific application using a Modem Eliminator: You can connect a PC to a printer, or a PC to another printer using a cable. But you can only go a certain distance — maybe 100 feet. After that, the traditional solution has been to use a modem and go over traditional phone lines. Instead, you can connect the two devices directly by wire using a Modem Eliminator. There are two advantages of a Modem Eliminator over a normal modem. The eliminator is cheaper and it can often transmit faster. According to Glasgal Communications, there are many cases where it is either unnecessary,

PAGES A-538 – A-552 REDACTED

PAGES A-553 – A-566 REDACTED

PAGES A-567 – A-569 REDACTED

PAGES A-570 – A-588 REDACTED

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)

REBUTTAL EXPERT REPORT OF J. TIPTON COLE CONCERNING VALIDITY

transmitting geographical information or receiving television programming information in response to transmitted geographical information.

3. The Young patent

37. Dr. Tjaden asserts that claims 1-8 and 10 of the '078 patent are anticipated by U.S. Patent No. 4,706,121 to Patrick Young (the "Young patent").

38. The Young patent discloses multiple related systems "for controlling a television receiver to allow user selection of broadcast programs from schedule information" and multiple related processes "for controlling the presentation of broadcast programs to a television receiver, which [comprise] supplying program schedule information to storage means in a data processor, supplying user program selection criteria to the data processor," and combining the schedule information with the program selection criteria to "tune the television receiver to the selected programs."

39. The Young patent does not, however, disclose at least the "transmitting" step of claim 1 (1.3), the "zip code" limitation of claim 2, the "transmitting" step of claim 6 (6.3), the "zip code" limitation of claim 7, the first "receive" element of claim 8 (8.1b), or the "transmit" element of claim 8 (8.1c).

40. Specifically, as explained by the applicant during the prosecution of the '078 patent, the Young patent does not disclose how a user accesses a television programming schedule (see '078 patent prosecution history at TG002283).

41. Indeed, the disclosure of the Young patent concerning the access of and downloading of television programming schedules to a computer is limited to the few brief sentences Dr. Tjaden repeatedly quotes: "the schedule information could be accessible with a personal computer through an information utility, such as CompuServe or The Source, and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then download the selected program information, or download

the program schedule information for his or her locality, ..." Young patent at 21:67-22:7. This brief passage does not itself disclose the transmission of geographic information, and, as I discussed above, the CompuServe system references relied upon by Dr. Tjaden do not disclose the transmission of geographic information. Therefore, the reference to the CompuServe system in the Young patent simply does not serve as disclosure of using transmitted geographic information to access television programming information.

42. As Dr. Tjaden notes, Tjaden Report at 19 ¶ 48, the Young patent was considered by the Examiner during prosecution of the application that led to the '078 patent.

43. Dr. Tjaden, however, asserts that the applicant mischaracterized the Young patent in its response to the Examiner's rejection. Tjaden Report at 20-21, ¶¶ 48-49.

44. I disagree. Based on my review of the Young patent, I believe the applicant accurately stated that the Young patent "does not imply transmitting particular geographical location information." '078 patent prosecution history at TG002283. And, as I have explained, I agree with the applicant's statement that "retrieval of information from a database does not, by definition, include or even suggest transmittal of a viewer's geographic location." *Id.*

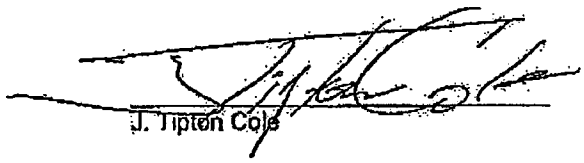
45. In connection with his anticipation analysis, Dr. Tjaden relies on the CompuServe system to argue that the applicant was mistaken. Tjaden Report at 20. I note, however, that two of the CompuServe references on which Dr. Tjaden relies were published ***after*** the application for the Young patent was filed. Moreover, as I explained above, the CompuServe system does not disclose the transmission of geographic information as part of a system or method for receiving television programming information.

4. The Muguet patent

46. Dr. Tjaden asserts that claims 1, 3, 4, 5, 6, 8, and 10 of the '078 patent are anticipated by U.S. Patent No. 4,787,063 to Francis Muguet (the "Muguet patent").

Ropes & Gray LLP. I am to be paid an hourly rate of $475, plus necessary and reasonable disbursements for my work. I receive no other compensation for my work on this action.

February 9, 2007



J. Tipton Cole

PAGES A-593 – A-595 REDACTED

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

----------x

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.

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page 1 of Exhibit N?
A. Okay.
Q. Page 1 of Exhibit N is a claim chart for claim 1; correct?
A. Yes, sir.
Q. Do you see the second row on page 1 of Exhibit N, the limitation providing a computerized unit at the particular viewing location?
A. Yes, I do.
Q. "The unit included an operator input and a modem." Do you see that?
A. Yes, I do.
Q. Who provides the computerized unit at the particular viewing location?
A. I believe the person who provides that varies.
Q. Is it true that an end user provides a computerized unit at the particular viewing location in your opinion?
A. In some cases, yes.
Q. What are the other cases?
A. Examples cited where I believe employees of Tribune used the facility at the

Tribune offices.
Q. Are you aware of any situation in which TMS has provided a non-employee with a computer?
A. I am not aware of any such situation, no.
Q. Are you aware of any situation in which TMS has provided an employee a computer for his or her home?
A. I am not sure I'm aware of that, no.
Q. It's correct that TMS as an entity does not provide a computerized unit at a user's particular viewing location; correct?
A. For general users that's correct, yes.
Q. What other uses are there other than general uses?
A. I think I mentioned that we had a deposition where one of the witnesses said that he used the services from his offices at the Tribune Media or Tribune -- I don't remember exactly which entity.
Q. With respect to use of zap2it.com

at a user's home Tribune Media Services does not provide a computer for that user to access zap2it.com; correct?
A. As far as I know that's correct.
Q. Can you please turn to page 2 of Exhibit N. Do you see the limitation there establishing a connection to a wide area network through the modem?
A. Yes, I do.
Q. Isn't it correct it is a user who establishes a connection to a wide area network through the modem, in your opinion?
A. The user initiates the process that does that, yes.
Q. How does a user initiate the process to establish a connection to a wide area network through the modem?
A. In various ways by turning on their computer if it is automatic or by engaging the modem through some software, if that's required.
Q. If the user does not turn on the computer or engage the modem through some software, will the user be able to establish a connection to a wide area network through the

modem?
A. Well, the user -- I don't think so.
Q. As you sit here today do you have any reason to believe that if a user does not turn on his or her computer or engage his or her modem through some software, that the user will be able to establish a connection to a wide area network through the modem?
A. To be clear, I think I said earlier the user doesn't establish the connection, the equipment, the software establishes the connection.
Q. Is it fair to say the user's equipment establishes a connection to a wide area network through the modem, in your opinion?
A. Yes.
Q. Isn't it correct it is not Tribune Media Services that establishes a connection to a wide area network through the modem?
A. Tribune Media Services does not establish a wide area network through the modem, I think they do, yes.
Q. No. Let me read the question again. Isn't it correct that Tribune Media Services

does not establish a connection between a user's computer and a wide area network?

MR. HARNETT: Objection, form.

A. I think that is essentially correct, yes.

Q. Please turn to page 4 of Exhibit N.

A. Okay.

Q. Do you see the limitation under claim 6 "Providing that a television viewing location a controller interfaced bidirectional modem and a display device?"

A. Yes, I do.

Q. Isn't it correct that Tribune Media Services does not provide a controller interfaced to a bidirectional modem and a display device?

A. As before, I believe they do in some circumstances, yes.

Q. In what circumstances?

A. In what I described earlier.

Q. With the employee situation?

A. In the employee situation, yes.

Q. Is it fair to say you are -- strike that.

Leaving aside the employee situation, would you agree -- strike that.

Sorry. Would you agree that the controller referred to in claim 6 is part of the user's equipment?

A. Yes, I believe so.

Q. Are you aware of any situation in which TMS has provided a user with a controller for use at their home to access zap2it.com?

A. I am not aware of any such circumstances.

Q. Please turn to page 5 of Exhibit N.

A. Yes, sir.

Q. I want to focus on the limitation establishing a connection to the wide area network through the modem.

A. I see that, yes.

Q. Is your opinion with respect to the limitation of claim 6, establishing a connection to a wide area network through the modem, the same as your opinion with respect to claim 1 for establishing a connection to a wide area network through the modem?

A. Yes, sir, I believe so.

Q. It's correct then that if a user does not turn on his or her computer or engage software to establish a connection with a modem, that the user will not in fact establish a connection to a wide area network through the modem?

A. That's correct. Yes.

Q. Can you please turn to page 7 of Exhibit N.

A. Yes, sir.

Q. Do you see the first row on page 7 of Exhibit N it references an electronic terminal unit?

A. Yes, I do.

Q. And you reference on page 7 of Exhibit N that electronic terminal unit is a personal computer, for example?

A. Yes, I believe it is.

Q. TMS does not provide the electronic terminal unit required by claim 8; correct?

A. I believe it does in some cases, yes.

Q. In what cases?

A. In the cases we referred to where

it provides a computer for the user for its employees at the work site to connect to the service.

Q. Isn't it correct that TMS does not provide any electronic terminal unit for use by a user at his or her home?

A. I don't know whether that's correct.

Q. Do you have any evidence whatsoever to suggest that TMS has ever provided an electronic terminal unit for a user to use at his or her home?

A. The evidence that I have of that is whatsoever is the depositions of the TMS employees who said they use the service from their homes. If those are provided by TMS, then that's the best evidence that I know of.

Q. Do you know whether any of those employees you're referring to have computers provided by TMS?

A. I do not know.

Q. Leaving aside the TMS employees, do you have any evidence whatsoever to understanding that TMS has ever provided an

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electronic terminal unit for a user to access zap2it.com?

A. None that I'm aware of.

Q. With respect to claim 8, I want to direct your attention to steps A, and C.

A. Yes, sir, I see.

Q. I guess B as well. Isn't it correct that steps A, B and C of claim 8 are performed by the electronic terminal unit?

A. No, sir, I don't think that's true.

Q. Isn't it true that step A of claim 8 is performed by the electronic terminal unit?

A. I think not.

Q. Who performs step A of claim 8?

A. I believe the TMS server performs that step.

Q. How does the TMS server perform step A of claim 8?

A. It's the TMS server that establishes the browser session, connection to the server or to the user.

Q. How does the TMS server establish a browser connection to the user?

A. By accepting the inquiry from the

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user and establishing a sessionID and setting up the two way dialogue between the server and the user's browser.

Q. Before TMS would ever establish – strike that.

Didn't you tell me earlier as you were looking through all the source code in your infringement report that there was nothing in there to suggest a sessionID.

A. I think what I was answering whether I had any documentary evidence to that effect. I don't have a document that points to that.

Q. Before TMS can establish any connection with the user, doesn't the user have to do something first?

A. Yes, I believe so. The user enters the website address WWW.zap2it.com into the address bar of his browser and hits return or some such.

Q. The step A, the connection established to a service provider through the modem –

A. Yes.

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Q. -- isn't that connection established through the user's personal computer?

A. No. I don't think the connection is established until the server sets up the sessionID.

Q. If the user does not expressly -- strike that.

Let me backup for a second, make sure I understand what you're saying. Before sessionID is established can you explain to me what has to happen by the user?

A. Well, in the normal course, again, I think that the user initiates the connection to the server by entering the website address.

Q. If the user does not enter zap2it.com website address, isn't it true that there will not be a connection established to a service provider through the modem?

A. I believe it is a necessary precondition. I'm sorry, I think that is the common precondition, yes.

Q. Isn't it true a user must affirmatively access zap2it.com before any

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connection is established through the user's modem?

A. Yes, I believe he does that before the connection is established.

Q. Step B of claim 8 where it says "Receive information through the operator input" do you see that?

A. Yes, I do.

Q. What is it in your opinion that receives information through the operator input as specified in claim 8 of the '078 patent?

A. I believe it is the web page that receives the input.

Q. The web page being TMS web page?

A. Well, there are actually multiple receptors, I guess the web page receives it, ultimately the server receives it, yes.

Q. How does the TMS web page, in your opinion, receive information through the operator input pertaining to the geographic location of the television receiver?

A. How does it receive it, through the JavaScript code that is in the web page.

Q. Does a user have to take any action

receiver?
A. In part that's true, yes. It does so under the instructions of the software, however.
Q. Without the user's computer transmitting information pertaining to the geographic location, can a user receive television programming information from zap2it.com?
A. Without that link in the chain, the user can't receive the information. That's correct.
Q. Let's turn back to page 14 of your infringement report, paragraph 30.
A. Okay.
Q. You're talking here about level of ordinary skill in the art as it pertains to the '078 patent; correct?
A. Yes, sir.
Q. Do you see the three bullet points under paragraph 30 on page 14 of your infringement report?
A. Yes, I do.
Q. Do those three bullet points

reflect your opinion of the qualification that one of ordinary skill in the art in the 1991 to 1992 time frame would have as it relates to the '078 patent?
A. Yes, it does.
Q. You have listed there high school training, some college training, two year college degree or four year college degree.
A. Yes.
Q. Then you have two to three years of programming, including database and network experience; and an understanding of television programming schedule information; correct?
A. Yes.
Q. Are all those qualifications what one of ordinary skill in the art would have?
A. All of them?
Q. Yes.
A. I think I meant to imply in my listing that their formal training might have ended at any one of those stages, high school, some college, two year degree or four year degree. Not the accumulation of all of them.
Q. Is it fair to say at a minimum, in

your opinion, one of ordinary skill in the art in the 1991 and 1992 time frame as it relates to the '078 patent would at a minimum have a high school degree?
A. Yes, I think so.
Q. Would a person of ordinary skill in the art in the 1991 and 1992 time frame as it relates to the '078 patent have two to three years of programming experience including database and network experience?
A. Yes, sir.
Q. Would a person of ordinary skill in the art in the 1991 and 1992 time frame as it relates to the '078 patent have an understanding of television programming schedule information in your opinion?
A. Yes, sir.
Q. You would agree, wouldn't you, that someone with a high school degree would know of zip codes in the 1991 and 1992 time frame?
A. Yes, I believe they would.
Q. You would agree, wouldn't you, that someone with a high school degree in the 1991 and 1992 time frame would understand that zip

codes represent geographic information; right?
A. Yes, I believe so.
Q. You would agree, wouldn't you, that that someone with a high school degree in the 1991 and 1992 time frame would understand that zip codes reflect a particular geographic area; wouldn't you?
A. Yes, I believe so.
Q. Wouldn't you agree that a junior high school student would know about zip codes?
A. Yes, I believe they would.
Q. Wouldn't you agree that a junior high school student in the 1991 and 1992 time frame would know a zip code represents a geographic area?
A. I believe that's correct, yes.
Q. Wouldn't you agree that a junior high school student in the 1991, 1992 time frame would have known that zip codes reflect a particular geographic area?
A. I believe so, yes.
Q. Wouldn't you agree that in the 1991 to 1992 time frame a fifth grader would know of zip codes?

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A. I'm not sure. I think so, but I don't know for sure.
Q. Would someone with two years of programming experience, including database and network experience, in your opinion, have knowledge of search queries?
A. Yes.
Q. In your opinion would someone with two to three years of programming experience including database and network experience in the 1991, 1992 time frame have knowledge of database searching?
A. Yes.
Q. What understanding of television programming schedule information is required for one of ordinary skill in the art in the 1991 to 1992 time frame as it relates to the '078 patent?
A. I believe the level of understanding of the television programming schedule information would include what grouping of time slot with a program identification and perhaps other descriptive information that goes with it. And the linkage of a lineup to a head

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end.
Q. What would, in your opinion, one of ordinary skill in the art in the 1991 to 1992 time frame know about linking a lineup to a head end?
A. Just that the programming lineups are matched to the head end from what, you know, matched to a head end.
Q. What do you mean by head end?
A. The head end is the programming source for the television programming.
Q. Can you give me an example of a head end?
A. What Austin's Time Warner head end would be serving the Austin community and have a fixed lineup of programs and services available over their cable.
Q. Head end serves a particular geographic area; correct?
A. I think so, yes.
Q. In the 1991 to 1992 time frame did head end serve a particular geographic area?
A. I believe they did, yes.
Q. In the 1991 to 1992 time frame

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wouldn't you agree that one of ordinary skill in the art as it relates to the '078 patent would know that head ends represent a particular geographic area?
A. I believe they would, yes.
Q. Would you agree that a person of ordinary skill in the art in the 1991 to 1992 time frame as it relates to the '078 patent would understand that television programming schedules are geography based?
A. Television programming schedules are geography based? I am not sure exactly what you mean by that.
Q. Let me ask it this way: Would you agree a person of ordinary skill in the art in the 1991 to 1992 time frame as it relates to the '078 patent would understand that different geographic areas have different television programming schedules?
A. If you mean it gets served by different head ends or that they have – yes, I guess so. I am not quite sure what you're getting at with that question, though.
Q. Do you not understand the question?

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A. I am not sure that I do.
Q. Let me make sure again, I want to make sure you understand it.
A. Yes.
Q. What I am trying to figure out is if in your opinion one of ordinary skill in the art in the 1991 to 1992 time frame would understand that television programming information is provided on a basis of geography. In other words, that Manhattan may have a different television programming schedule lineup than Chicago than Los Angeles. That's what I am trying to get at.
So let me ask the question again with that understanding. Would you agree that a person of ordinary skill in the art in the 1991 to 1992 time frame would understand that television programming schedule information is geography based?
A. I think the question is geography based. It varies by geography. I am not sure if geography based is the way to say that.
Q. So you would agree in the 1991 and 1992 time frame one of ordinary skill in the art

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as it relates to the '078 patent would understand that television programming schedules vary by geography?

A. Yes.

Q. Isn't it correct that one of ordinary skill in the art in the 1991 to 1992 time frame as it relates to the '078 patent would understand that a head end database is also organized by geography?

MR. HARNETT: Objection, form.

A. Again, I think organized by geography, I don't think that is quite true. The head end database is simply organized to represent whatever services and lineup the head end delivers.

Q. The head end delivers information to a particular geographic area; correct?

A. I believe that's correct. Yes.

Q. The head end in Austin, Texas would not deliver information to a user in Chicago; correct?

A. In the normal course, I don't think so. No.

Q. Can you please turn to page 15 of

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your report. The last sentence right before section F begins --

A. Yes.

Q. -- you say there "The TMS server thus transmits the grid of television listings for display on the user's computer." Do you see that?

A. Yes, I see it.

Q. To where exactly does a TMS server transmit the grid of television listings?

A. It transmits it to the user's computer for display on their computer's disk.

Q. Does it transfer it, in your opinion, directly to the user's computer or is there some intermediate component?

A. There are intermediate components.

Q. What are the intermediary components?

A. Beginning from the TMS servers there are any number of switches and communications lines between the server and the particular user. Those vary with location.

Q. Can you please turn to page 17 of your report.

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A. Yes, sir.

Q. I want to direct your attention to claim 1 that is reflected there?

A. Yes.

Q. Please look at footnote 23. Where you say "The claim, claim 1, however, is referring to the distribution of television programming to dispersed geographic locations." Do you see that?

A. Yes, sir, I do.

Q. Claim 1 requires distribution of television programming to dispersed geographic locations; correct?

A. Sorry -- yes, sir, I believe so.

Q. Who or what is it that provides the geographically dispersed television viewing locations?

A. Sorry, that provides the locations?

Q. Let me ask it this way: In your opinion who is it that performs the aspect of claim 1 relating to a plurality of geographically dispersed television viewing locations receiving television programming from a source of such programming?

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MR. HARNETT: Objection, form.

A. I'm sorry, but locations are locations. I am not sure anyone is responsible for there being locations. Is that what you're asking me?

Q. Isn't it correct that TMS is not responsible for their being a plurality of geographically dispersed television viewing locations receiving television programming from a source of such programming?

A. I don't think they are responsible for the existence of the locations, no.

Q. Can you please turn to page 18 of your report, paragraph 41.

A. 41?

Q. Yes.

A. Yes, sir.

Q. You say there that "TV Guide's construction of viewing location is a residence or other building at which a television signal can be received." Do you see that?

A. Yes, I do.

Q. Do you agree that the term "viewing location" in the claims should be defined as a

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top of my head, but I believe it is documented in here somewhere.

Q. The next sentence on paragraph 43 says "TMS knows and intends that users access its website from their homes." Do you see that?

A. Yes, I do.

Q. What is your basis for saying TMS intends that users access zap2it.com from the users' homes?

A. They intend to access -- well, TMS offers a website which is accessible through normal internet connections and many, many, many normal internet connections are from people's homes.

Q. My question is a little bit different. My question, what evidence do you have as you are sitting here today that TMS specifically intends for users to access zap2it.com from the users' homes?

A. They have to be aware that that is where it is happening. I believe that is part of the intent of the offering of the service. I am not sure there is anything deep or mysterious about that.

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Q. Is it speculation on your part that TMS intends that users access zap2it.com from the user's homes?

A. I don't think that is speculative. I think that is exercise of normal observation.

Q. You explained to me earlier your infringement report contains all the information that you need for your infringement opinions.

A. Yes.

Q. Can you let me know where there is any evidence whatsoever that TMS intends that users access zap2it.com from the users' homes?

A. I believe in the reports that are referenced here TMS comments on the usage of their service and the percentage of people who use it from their homes and percentage of people that use it from their offices, the percentage of people who watch television simultaneously while using the website. I don't think you can take anything other than intend out of that awareness.

Q. Do you have any direct evidence that TMS intends for users to access zap2it.com from the users' homes?

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MR. HARNETT: Object, asked and answered.

A. Direct evidence, I believe that that is as close to direct evidence as you can get. That's the fact that you offer the service in the knowledge that it is going to be used in that way and that you track it. It would seem to me as sufficient evidence that you intend it to happen that way.

Q. Do you have any evidence that TMS intends for any user to infringe the '078 patent?

A. That they intend for people to infringe?

Q. Yes.

MR. HARNETT: Objection, calls for a legal conclusion as opposed to technical opinion. Go ahead to the extent you can.

A. I think that my opinion relates only to the fact they intend to instigate the action that I've described. Not that they intend to -- well, I mean they intend to have people do what they do.

Q. Isn't it correct that TMS doesn't

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care from where people access zap2it.com?

MR. HARNETT: Objection, form.

A. That they don't care? No, I don't think that's quite right. I believe they are happy to have people use it from whatever source, but I believe, yes, they do care. They would be very disappointed if nobody would ever use it from their homes.

Q. Do you know if TMS has a preference for the location from which users access zap2it.com?

MR. HARNETT: Objection to the form.

A. Whether they have a preference? I don't know that they have a preference.

Q. You mentioned people accessing zap2it.com while simultaneously watching TV; is that right?

A. Yes, I do.

Q. Do you have any evidence that people access zap2it.com while simultaneously watching TV?

A. I believe I cite it in here that there are, Mr. Yamada's deposition and the

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Q. Claim 9 is not asserted against TMS in this litigation; correct?
A. That's correct.
Q. Have you studied claim 9 of the '078 patent?
A. I haven't studied it. I read it. I haven't spent a whole lot of time on it.
Q. Do you have any opinion whether TMS infringes claim 9 of the '078 patent?
A. None whatsoever.
Q. Can you turn to page 46, paragraph 130.
A. Yes, sir.
Q. This portion of your report is directed to indirect infringement; correct?
A. Let me look and see. Yes, it is under the heading from page 45, indirect infringement.
Q. Do you understand indirect infringement to refer to contributory infringement or inducement infringement?
A. Just a moment. Paragraph 125 "infringement may also infringe by inducing others to infringe and/or by contributing to the

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infringement by others," yes.
Q. First sentence of paragraph 130 of your report on infringement says "Access of the website by users not at their home or office where their television is located is not substantial, being one quarter or less of those accessing the DocuServe website for television program schedule information." Do you see that?
A. Yes, sir.
Q. Do you consider 25 percent or less to be not substantial?
A. I believe that is my understanding for purposes of this analysis, yes.
Q. Let's say that gasoline prices increase by 25 percent, would you consider that to be a substantial increase in gasoline prices?
A. I think so, yes.
Q. Let's say that TV Guide were to say, Mr. Cole, we made a decision we are reducing your compensation in this case by 25 percent per hour, will you consider that to be a substantial reduction?
A. Yes, I believe I would.
MR. PARKS: Should we take a lunch

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break now; is this a pretty good time for it?
MR. HARNETT: Sure. Whatever you want.
VIDEOGRAPHER: Going off the record. 12:24 tape 2.
(Luncheon Recess: 12:24 p.m.)
AFTERNOON SESSION
1:34 p.m.

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resumed, having been previously duly sworn, was examined and testified further as follows:
VIDEOGRAPHER: Back on the record. It is 1:36. This is tape 2.
CONTINUED EXAMINATION BY MR. PARKS:
Q. Mr. Cole, let's move on to your Rebuttal Report concerning validity which we marked as Deposition Exhibit 150.
A. Okay.
Q. Let me direct your attention to page 4, paragraph 5 where you list the materials you reviewed in formulating your opinions regarding validity.
A. Yes, sir.

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Q. Paragraph 5 says the materials you considered are those identified in Exhibit E to your December 15, 2006 Expert Report as well as those materials identified on Exhibit A to your validity report; is that correct?
A. That's correct.
Q. Can you please take a look at Exhibit A to your validity report and make sure that it accurately reflects the materials you considered in addition to what is set forth on Exhibit H of your December 15 report?
A. I can't determine whether it accurately reflects it, I believe it did at the time.
Q. Did you consider the deposition testimony of Barry Berkov, B-E-R-K-O-V, in formulating your opinions regarding validity?
A. Let me think. I don't see Mr. Berkov's name on either list. So I don't think so.
Q. So you did not consider the deposition testimony of Mr. Berkov in formulating your opinions; correct?
A. I don't believe I did, no.

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Q. Can you tell me, just in a general sense, what's the inventive aspect of the '078 patent?

MR. HARNETT: Objection, calls for legal conclusion.

A. I guess the nub of the invention would be what shows up in all of the validity discussion in here for every one of the references is that the '078 patent addresses having a user provide some geographic information that the service provider then employs to limit the universe of possible programming, television programming information to just that that is appropriate to that geographical information, or a viewing location that is associated with that geographic information.

I think that is the central point in all of this. Of course all the elements that are in here apply, but I think that is the inventive step in this.

Q. Does the '078 patent as an inventive aspect have any particular way or method for a user to provide geographic

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information to a service provider?

A. Let me think about that for just a second.

MR. HARNETT: Objection, legal conclusion. Form.

A. The patent recites other steps or actions that are involved in doing that, such as establishing connection to a wide area network and so forth. All of those things are part of providing the geographical, the geographical information about the viewing location to the service provider, yes.

Q. In connection with formulating your opinions in this case did you study the '078 patent?

A. Yes, I did.

Q. In connection with formulating your opinions in this case did you study the prosecution history of the '078 patent?

A. Yes, I did.

Q. In connection with formulating your opinions in this case did you study the references cited by Dr. Gary Tjaden, T-J-A-D-E-N, and his reports?

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A. Yes, sir, I did.

Q. If you can just tell me in summary fashion, we will get into it in more detail, based upon your review of the prosecution history of the '078 patent and the references Dr. Tjaden cites in his reports, what is it, in your opinion, that distinguishes the '078 patent claims from the prior art cited by Dr. Tjaden?

MR. HARNETT: I object to the extent that calls for a narrative that is reflected in a rather lengthy Expert Report. Go ahead.

A. As I mentioned about the inventive aspect of this. It is pretty much the same thing, that is if you look at the analysis of the proposed prior art, I think each one of them is lacking the same elements, although some of them lack others. But each one of them lacks the same of a small group of elements that are related to that inventive aspect. The provision of the geographical information and the response of the limited set of television programming information to that.

Q. Let's start going through the

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references.

A. Okay.

Q. Let's take CompuServ first. I believe your discussion of CompuServ begins on page 8 of your Expert Report concerning validity.

A. Yes, sir.

Q. What is the CompuServ system, do you know?

A. CompuServ was an on-line service that hosted good size number, like 1400 or so different databases ultimately and was accessible by subscription, by paid subscription.

You could sign on to CompuServe, the service was to provide information out of those databases or some other game playing and a few things like that.

Q. Have you ever used CompuServ?

A. I did.

Q. When?

A. Let's see, before the internet -- I am not sure when I started using CompuServ but when I established my internet domain in 1995 I

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moved over from a CompuServ mail account to the internet email account.
Q. Have you used CompuServ subsequent to 1995?
A. I may have used it a little bit. But it was trailing out at that point.
Q. Did you ever use CompuServ to retrieve information?
A. I am sure I must have a little bit, but I used it mostly for the email type services.
Q. Can you explain to me how a user would retrieve information using the CompuServ system?
MR. HARNETT: Objection, vague.
A. One way that they would do it is CompuServ published a type of index or table of contents of their services which you could download to your computer and then print off into a booklet. In that booklet -- I'm sorry, in that listing of services that they had, you could find topics of interest.
When you got on to CompuServ, logged in as a user, identified yourself so that

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they could keep account of your charges. You would then navigate through the CompuServ system by entering what they called a go word. It was a name of a page that was described in the booklet. Particularly if you were repeat user you knew pretty much where you wanted to go.
Later, CompuServ added what they call their CompuServ information manager. You could sort of explore through the index, I believe, and pick out the places you wanted to go and preload them so that when you connected, rather than spending time charges as you typed new things in, it would spit them out very quickly and you would get the service that was back that way. Rather than typing in then reading it, then going to type the next thing you would identify a lot of things, it would pluck them all, download them, then cut you off line and you cut your charges.
Q. In order to access CompuServ a user had to have a computer; correct?
A. I think that was necessary, yes.
Q. CompuServ allowed a user to transmit information to the CompuServ system;

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correct?
A. Yes.
Q. In response to a user requesting information from the CompuServ system, CompuServ would send information back to the user; correct?
A. Yes, that's correct.
Q. Do you see paragraph 20 of your validity report on page 8?
A. Yes, I do.
Q. Do you see the four CompuServ references listed there?
A. I do.
Q. I take it that you've read each of those references; is that correct?
A. I have, yes.
Q. Did you read each of the references listed in paragraph 20 carefully?
A. I believe so. Yes.
Q. You say in paragraph 21 of your report, on page 8 "Without further information, I cannot verify that these four documents do in fact describe the same system." Do you see that?
A. Yes, I do.

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Q. Are the four documents you're referring to the documents listed in paragraph 20 of your report concerning validity?
A. Yes, they are.
Q. What is the basis for your statement you cannot verify that the four documents do, in fact, describe the same system?
A. Well, for instance, the CompuServ Information Service Today document is 8 pages long. It doesn't describe the entire system. It describes on a very small segments of what was available in 1982 on the CompuServ system.
The On-Line Today document is only two pages long and it describes a very small piece of what was available in 1985.
Glossbrenner's is what? 16 pages and describes the state in 1987 of a small piece of the CompuServ system.
Then the Schepp and Schepp book is much larger, it is a full book, 6, 700 pages something like that, which purports to give a very thorough picture of what it looked like in 1990. I don't have specific information that says there were radical changes or movement in

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it called, geographically dispersed television viewing locations. You're supposed to be transmitting geographical, the geographical location of a particular viewing location. And I don't believe the CompuServ system was aimed at generating or transmitting geographical locations of viewing locations.

Q. Is it the content of what was transmitted that forms the basis of your distinction?

A. Is it the content?

MR. HARNETT: Objection to the form.

A. Certainly the content is part of it. I would say content in context for the patent, yes.

Q. A user could search on CompuServ; correct?

A. Yes.

Q. A user could search on CompuServ using key words; correct?

A. I think that's correct, yes.

Q. Isn't it correct that geographical information is a type of key word in the

CompuServ system?

A. I don't recall one off the top of my head.

Q. You would agree, wouldn't you, that a user could transmit geographic information through CompuServ; wouldn't you?

MR. HARNETT: Objection, asked and answered?

A. I believe that I recall the use of a zip code to pick up weather information. Yes.

Q. In fact, don't you say in paragraph 26 of your report, "In connection with the retrieval of information that related to television programming (Such as weather reports) the references on which Dr. Tjaden relies specifically teach the use of geographical information?"

A. Sorry? What are we referring to there.

Q. Paragraph 26 of the validity report, second sentence there.

A. Second sentence, okay. I was looking at the wrong place.

Q. If you can read that sentence into

the record so we are on the same page about it.

A. "In connection with the retrieval of information not related to television programming (Such as weather reports), the references on which Dr. Tjaden relies specifically teach the use of geographical information."

Q. So you agree then that CompuServ teaches using geographical information to obtain weather information; correct?

A. Yes.

Q. Do you believe there is a patentable distinction between using a system to obtain weather information and using that same system to obtain television programing information?

A. I've been told that's the case. I am not sure that -- whether there is a patentable distinction I believe is a legal question.

Q. Who told you that is the case there was a patentable distinction?

A. The United States Patent Office told me. TV Guide's attorneys have told me.

Q. Which TV Guide attorney told you that?

A. Mr. Harnett, Mr. Yothers, Mr. Morgan and Ms. Ching-Lee Fukada are the ones I've spoken to.

Q. What did TV Guide's attorneys tell you regarding any potential patentable distinction between using a system to transmit geographic information to receive weather, and using that same system to transmit geographic information to obtain television programming information?

A. I am not sure we had discussion specifically on that point. But they maintain the legal position that the patent is valid, can't be valid without that, I don't think. But, again, I think that is a little bit outside my place in all of this.

Q. Let's say that you were one of ordinary skill in the art in the 1991 to 1992 time frame.

A. Okay.

Q. And you had the qualifications that you identified as one of ordinary skill in the

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been asked and answered, but go ahead.
A. The answer is --
Q. Let me ask you a question. Just wanted to let you know where I was headed here.
A. That's okay.
Q. So my question is if a user selects information from a list, is that information then transmitted in any fashion?
MR. HARNETT: Objection, incomplete hypothetical.
A. It may or may not be. I'm not sure.
Q. You're familiar with the list and menus in the CompuServ system; correct?
A. Generally, yes.
Q. If a user selects something from a list or menu in the CompuServ system, is that selection transmitted anywhere?
A. If you select something from a list in the CompuServ system, so it lists items A, B, C and D, if you type in the D and hit the return key, the D is sent down the line. Is that what you're talking about?
Q. Yes.

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A. Yes.
Q. In the CompuServ system if a user selects something from a list and it is then transmitted, is that an affirmative indication by the user?
A. I think so. It is an affirmative indication of his choice, yes.
Q. Let me look at the sentence on paragraph 28 of your report beginning with "Moreover," Where you say "Moreover, user entry of such a short cut term or key word is not the same as transmission of geographic information from the user to the service provider. The user is not entering geographic information (e.g., San Francisco), but instead the short cut term for what the user wants (i.e. the page name SFC-7)." Do you see that?
A. Yes, I do.
Q. Your language here is referring to the use of SFC-7 to select the San Francisco Chronicle in the CompuServ system; is that correct?
A. To select entries associated with the San Francisco Chronicle, yes.

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Q. Would you agree that in the SFC-7 term that the SFC stands for San Francisco Chronicle?
A. To you and me, yes.
Q. Would you agree that the SF in SFC-7 stands for San Francisco?
A. Again, yes, to you and me that would be a cognate, yes.
Q. Do you think anyone else would have a different opinion?
A. I am not worried about anyone else.
Q. Is it your opinion that SFC-7 does not reflect geographic information?
A. In the context of the CompuServ system I believe that's correct, yes.
Q. Leaving aside the CompuServ system and just in general, is it your opinion that SFC does not designate a geographic location?
MR. HARNETT: Objection to the extent that you're saying apart from the CompuServ system. Go ahead.
A. If I take it outside of the CompuServ context, then it has no meaning at all. Unless you are in the context that assigns

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meaning to it.
Q. In the CompuServ context though you believe that SF-7 represents San Francisco Chronicle?
A. Not SF-7, but SFC.
Q. SFC, correct. Thank you. Do you believe there is any technical distinction between a user entering San Francisco to obtain information about the San Francisco Chronicle versus entering SFC-7 to obtain information about the San Francisco Chronicle?
A. Yes.
Q. What's the difference?
A. As I explained in the report here the SFC-7 is what is called in the CompuServ system a page number or page name. It designates a page in the system. You might think of it as a separate file that is sitting out there. It would be the name of the file.
Within the system that you're talking about in the CompuServ system it's not geographical information, it is the name of the page.
Q. So if a user would enter SFC-7 in

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Q. Is it fair to say that the distinction between retrieving weather information using geographical information and receiving television listings using geographical information really relates to the content of what's being received?
A. Retrieving information based on the geographic information requires that the subject matter data that you want is accessible and, as we talked about earlier, distinguishable by the geographic information in some way. That's a very general description of how you might do something like that. That general description would be applicable in multiple contexts, yes.
Q. I'm not sure if I understand the distinction that you're drawing. So perhaps you could help me with it. Here is what I am trying to figure out, it was known in the art to transmit geographic information to obtain weather information; correct?
A. Yes.
Q. Television programming information was also known in the art in the 1991 to 1992 time frame; correct?

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A. Television programming information was known, yes.
Q. A skilled programmer in the 1991, 1992 time frame, one who would be of ordinary skill in the art would have known of the CompuServ system; correct?
A. Could have certainly known that. Yes.
Q. So what I would like for you to explain to me, I would like it explained to me like you would explain to a jury, how is it that the '078 patent claims are distinguishable from the CompuServ system, leaving aside the content of the information being retrieved?
A. Part of it has to do with the content. But the, I think what you're saying -- what you're asking is did people know how to do database retrievals at the time and therefore no database retrieval is inventive; is that what you're trying to get at?
Q. That is a fair question. Yes. People at the time knew about database retrieval; correct?
A. I believe they did, yes.

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Q. Would one of ordinary skill in the art who knew about database retrieval in the 1991 to 1992 time frame know you could retrieve any information from a database so long as that information was loaded in the database?
A. Yes, I think so.
Q. One of ordinary skill in the art who knew about database retrieval in the 1991 to 1992 time frame would in fact know that television listings could be retrieved from a database if there were a database that exists of television listings; correct?
A. Yes.
Q. Is it your understanding that TMS retains a database of television programming information?
MR. HARNETT: Objection, form.
A. I'm not sure that I understand that. I am not sure if they provide television programing information, whether they maintain the database or tap someone else's or assemble something on the fly. I don't know the details of that, but they have access to that information. That's apparent, yes.

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Q. Does the '078 patent teach how to make a database of television listing information, how to obtain a database of television listing information?
A. How to make a database television information? I don't believe it teaches that, no.
Q. Does the '078 patent assume that one practicing the patent already has a database of television programming information?
MR. HARNETT: Objection, form.
A. I believe it assumes that one has access to it. As I mentioned before, you don't have to have it in order to have access to it.
Q. Isn't it the case that one of ordinary skill in the art in the 1991 to 1992 time frame, as you've defined it, who knew about television programming information and database searches, and who also had knowledge of the CompuServ system, would know to use a database to retrieve television listings information?
MR. HARNETT: Objection to form.
A. I'm not sure. I think that is almost a tautology. But I think the answer to

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'078 patent?
A. Young is all about selection. It doesn't teach the transmission of geographic information.
Q. Can you please turn to column 21 of Young page marked TMS 0001314.
A. Yes, sir.
Q. Do you see toward bottom of column 21, beginning line 67 and carrying over to column 22?
A. Yes.
Q. Do you see the language that reads column 21 and 22 of the '121 patent "For example, the schedule information could be accessible with a personal computer through an information utility, such as CompuServ or The Source and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then download the selected program information or download the program schedule information for his or her locality." Do you see that?
A. Yes, I do.
Q. Young teaches receiving program

schedule information; correct?
A. I believe it does, yes.
Q. Is it your opinion that Young does not teach transmitting geographic information?
A. Young does not teach transmitting geographic information of the viewing location, yes.
Q. Young teaches in column 22, receiving program schedule information for a user's locality; correct?
A. Sorry, Young teaches what?
Q. Young teaches in column 22, receiving program schedule information for a user's locality; correct?
A. Yes.
Q. A user's locality is a user's viewing location; correct?
A. I think that is a reasonable reading at this point, yes.
Q. How is it in your opinion that in the Young patent a user receives program schedule information for his or her viewing location without transmitting the location of the viewing location?

A. Well there are a couple of different ways in which that could be true. One of which is that he gets information for his locality that is generic information and not based on the geographic location. Or geographic information, he asks for a national schedule for ABC television and gets it. It is programming information for his locality, but it is not derived for his locality.
The other is he identifies, for instance, a cable supplier and says give me the information for this cable supplier, the head end. And he gets the information that way. And again he has received the information without providing geographical location about his viewing location.
Q. Anything else?
A. That's what comes immediately to mind.
Q. You can't think of anything else as you sit here today; is that fair?
A. Read back the question to me again, I didn't think it -- but I think I answered it.
Q. No, I just want to make sure you

have given a complete answer; you have nothing else to add to your answer?
A. Are there other ways -- there are other ways of doing this. For instance, if you use the CompuServ method of identifying the page in a database as opposed to identifying the supplier of the programming, that would work.
What else? Identify a page of information you get based on, that identify the head end, get generic information without -- that is applicable to you. That's a pretty good list. I think that is about it. That is all I can really think of right now.
Q. In the 1991 to 1992 time frame one of ordinary skill in the art as it relates to the '078 patent would know about localized television listings; correct?
A. I think so, yes.
Q. In the 1991 to 1992 time frame wouldn't one of ordinary skill in the art as it relates to the '078 patent know about databases storing program schedule information?
A. Not necessarily, but they certainly could, yes.

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Q. What I would like for you to do is explain to me how one of ordinary skill in the art in the 1991 to 1992 time frame with the Young '121 patent and CompuServ references before him or her would not know to transmit geographic information in order for a user to receive program schedule information for his or her locality?
A. I think with Young and CompuServ in front of them, he might very well organize his data exactly the way CompuServe did. Which is to segregate things off into known chunks, name them by page number and do it exactly the way CompuServe did it.
That's a very reasonable practice off of those taking those two things together.
Q. What's the basis for the opinion you just gave?
A. You asked me to combine those two references. That's the way the -- what CompuServ adds to Young is the prospect of identifying something just by a page number in the CompuServ database as opposed to using the, what I would think of as more generic selection

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stuff that is provided in Young. It gives specific organizational structure that will let you preload, prepackage things in that way.
Q. CompuServ taught transmitting geographical information in order to retrieve information in response; correct?
MR. HARNETT: Objection.
A. It talked about for weather programming, for weather, yes. What it talks specifically though for television programming was the SFC-7 methodology, the go word. If I were going to combine CompuServ with Young with the notion of using, you know, that they are both involved in television programming information, I think that would be a much more likely combination.
MR. HARNETT: Can we take five. I am not even talking and there is no Oxygen in this room.
MR. PARKS: Sure.
VIDEOGRAPHER: Going off the record 3:20 tape 3.
(Recess taken.)
VIDEOGRAPHER: We are back on the

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record. It is 3:36. This is tape 3.
Q. Can you please turn to page 14 of your report, it is a carry over of paragraph 41.
A. Okay. Yes, sir.
Q. Do you see on page 14 when you're discussing Young and CompuServ, you make the statement, "As I discussed above the CompuServe reverences relied on by Dr. Tjaden did not disclose the transmission of geographic information." Do you see that?
A. Yes, I do.
Q. That is a false statement; isn't it?
MR. HARNETT: Objection.
A. I believe it is incomplete. It doesn't disclose transmission of geographic information for purpose of getting the television programming information.
Q. It is correct, isn't it, CompuServ does disclose transmission of geographic information; right?
A. Yes, that's right.
Q. Do the '078 patent claims require a user to receive television programming

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information in response to a transmittal of geographic information?
A. Yes, I think that is the sense of the claims.
Q. If a zap2it.com user received television programming information without a direct transmittal of geographic information, that would not fall within the scope of the '078 patent claims; correct?
A. I'm not sure. I think an indirect transmittal would also suffice.
Q. What is an indirect transmittal?
A. I don't know. You used the term direct. I'm saying I'm not sure that is a reasonable qualifier.
Q. Is it possible for a user to infringe the '078 patent if the user receives television programming information without making a request for the television programming information? Do you want me to rephrase that?
A. Okay.
Q. Is it possible for a user to infringe the '078 patent if the user receives television programming information without

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stored in that database; is that correct?
A. The discussion about how to access a database if you can access a database by zip code then it has to be organized in some way that is distinguishable by zip code, yes.
MR. PARKS: We need to change the tape. We should probably go off the record and do that now.
VIDEOGRAPHER: We will go off the record. The time is 4:39. This is the end of tape 3.
(Recess taken.)
VIDEOGRAPHER: We are back on the record. It is 4:48. This is tape 4.
Q. Mr. Cole, can you please turn to page 83 of your invalidity report, page 23. Sorry, I meant paragraph 83.
A. 83. I didn't think I had a page 83.
Q. Yes. Sorry. Do you see in paragraph 83 on page 23 of your validity report, you say "There is no reason to believe, in my opinion, that a person of ordinary skill in the art would combine references so far afield as,

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for example, the Muguet patent and the Prodigy system." Do you see that?
A. Yes, sir.
Q. The Muguet patent teaches obtaining television program information in order to record a VCR; correct?
A. Yes, it does.
Q. Doesn't the '078 patent also disclose obtaining television program information to record a VCR -- to program a VCR?
A. Just a moment, let me check. Yes, sir, in claim 9.
Q. And the specification of the '078 patent as well, it discusses obtaining television programming information in order to program a VCR; correct?
A. Yes, sir.
Q. The '078 patent also discloses a Prodigy system; correct?
A. Yes, it does.
Q. Given that Muguet and the '078 patent both disclose obtaining television programming information for programming a VCR, wouldn't you agree that there would be a

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motivation for someone to combine the Muguet patent and the Prodigy system?
A. Not necessarily, no.
Q. Why not?
A. I'm looking at the Prodigy system as shown in the reference that we have, the guide here. And the system that is described there never talks about using the Prodigy as, not that I recall, anyway, talks about using the Prodigy system to feed any other sort of automated system.
I don't recall anything like that. The Muguet patent doesn't talk about using external sources, it talks about making direct selections off of things. I just don't see the very good link between those two things.
Q. Anything else?
A. No. Not really.
Q. Let us turn briefly to Deposition Exhibit 151 which is the Supplemental Expert Report that you submitted on February 28, 2007.
A. Yes, sir.
Q. Do you have that in front of you now?

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A. I do have it in front of me.
Q. Let me direct your attention briefly to paragraph 28 of Deposition Exhibit 151.
A. Okay.
Q. Do you see where you make reference to a zap2it.com user being able to copy program schedule information and paste it into a database program such as Microsoft Excel or Microsoft Access?
A. Yes, sir.
Q. Then you go on to say that that information can be manipulated by the user with relative ease.
A. Yes, sir.
Q. Have you yourself ever copied television program information from zap2it.com and pasted it into a database program?
A. I have.
Q. When did you do that?
A. In the process of preparing this Rebuttal Report.
Q. When you copied program schedule information from zap2it.com and pasted it in the

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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:

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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

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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

J. TIPTON COLE
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

PAGES A-614 – A-623 REDACTED

UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

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

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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

Page 14

Q. When was that?
A. In the fall of 1983, I believe.
Q. And what was your position when you rejoined CompuServe?
A. Something like vice-president of business development.
Q. And would you describe your responsibilities as vice-president of business development?
A. Well, it's difficult to describe what they were. It was a general position, ostensibly responsible for putting together business deals of a variety of -- in a variety of natures. In actuality, however, my responsibilities turned out to be to return to the product planning, product management, and I also wound up running the customer support organization for CompuServe.
Q. For how long were you vice-president of business development?
A. Probably six months.
Q. And what was your next position after that?
A. I'm not sure of the exact title, but it was effectively something like vice-president of product management and business support.
Q. And was that a change in your responsibilities?

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A. Not really. It was mostly a change in title.
Q. For how long were you vice-president of project management and business support?
A. Product management as opposed to project. It's product.
Q. That's what I have written down.
A. Product marketing, management, one of the two. Again, I don't remember exactly, because there are a variety of titles, but we could probably say until 1990 in one form or another.
Q. And in 1990, were you still working for CompuServe?
A. I was.
Q. What did your title change to in 1990?
A. Executive vice-president CompuServe information services.
Q. And did your responsibilities change when you became executive vice-president of CompuServe information services?
A. They did.
Q. What were your responsibilities as executive vice-president?
A. I had responsibilities for the entire business unit devoted to the CompuServe information service or services, so I had responsibility for all of the

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business functions other than computer operations, finance, human resources and the low-level operating system software.
Q. Were you responsible for the content in the CompuServe information system?
A. Yes.
Q. Did you work with -- strike that.
Were you responsible for negotiating with other companies to add content to CompuServe?
A. That was a key component of my responsibility.
Q. During your time with CompuServe, did you have reason to understand how a user accessed CompuServe?
MR. YOTHERS: Objection to form.
THE WITNESS: Understanding the user interface, building, developing and refining the user interface as to CompuServe was a primary portion of my responsibility from the time that I joined CompuServe until the time that I left.
BY MS. ZINANNI:
Q. And when did you leave CompuServe?
A. November of 1995.
Q. And why did you leave CompuServe?
A. Had a difference of opinion with the new management of CompuServe at the time with respect to their pursuit of a very highly consumer-oriented

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information service, which they had called WOW.
Q. When did CompuServe information service launch?
A. CompuServe information service started out in approximately 1979 as a service that had the name for a brief period of time of Micronet. Turned out Micronet was not a protectable name, and very soon thereafter, it was referred to as the CompuServe information service or CIS. I would say the true launch of the CompuServe information service beyond that initial group of semiexperimental enthusiasts was probably in 1980.
Q. How did a business user of the CompuServe time-sharing service access the CompuServe computer?
A. For the most part, that person would have a terminal, a modem and a phone line, would dial a number to a CompuServe access point and make a telephonic connection via modem to CompuServe.
Q. How would a user of the CompuServe information service access it?
MR. YOTHERS: Objection to form.
THE WITNESS: In exactly the same way. Users of the CompuServe information service would connect by using a telephone, dialing a phone number, connecting to an access point and logging into the CompuServe

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information service.
BY MS. ZINANNI:
Q. Could a user follow those steps from -- I understand they're called a dumb terminal.
A. Yes.
Q. Could a user follow those steps using a modem to connect to CompuServe from a micro computer?
A. Yes.
Q. Where were -- where were the computers that those users were accessing located?
MR. YOTHERS: Objection to form.
THE WITNESS: Well, I presume you're referring to the host computers, not the individual user's personal computer that they were using to access.
BY MS. ZINANNI:
Q. Correct.
A. So the computers they were accessing were, for the most part, located in Columbus, Ohio and Dublin, Ohio.
Q. Was the user ever connected through the CompuServe information service to another host computer, as you used that term?
A. Yes.
Q. Can you give me an example of such a situation?

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A. Certainly. The official airline guide, the PARS TWA airline reservation system, the EZ Saver airline reservation system, a system called IQuest. Those are some of the examples.
Q. Can you explain to us how a user would connect to the official airline guide?
A. The CompuServe user would make an initial connection to CompuServe, would go through an authentication process, whereby the user supplies a user I.D. and a password, and is then, quote, unquote, logged into CompuServe. Once on CompuServe, the user would select a service through a menu choice typically, which would result in their being connected and logged in to the official airline guide's computers without being logged off of CompuServe computers.
Q. You said there's an -- a user would undergo an authentication process with the CompuServe server?
A. Right.
Q. With a user I.D. and a password?
A. That is correct.
Q. What was the content of the user I.D.?
A. The user I.D. was a series of numbers, typically five or six numbers and a comma or a period, and then from one to four additional numbers.
Q. Did the numbers of the user's I.D. stand for

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anything in particular?
A. No.
Q. Did the user choose their own user I.D.?
A. No.
Q. Was their user I.D. assigned by CompuServe?
A. Yes.
Q. Did the user select their own password?
A. Not initially.
Q. CompuServe assigned it initially?
A. CompuServe assigned the password initially. The user then was then able to change his or her password.
Q. When a user accessed CompuServe using a micro computer and a modem, was the user able to download any of the information to their micro computer?
A. Yes.
Q. Were they able to do that for all content on CompuServe?
MR. YOTHERS: Objection to form.
THE WITNESS: The answer is a qualified yes, in that any computer connected to another computer can potentially capture and save the information that's delivered to it.
BY MS. ZINANNI:
Q. Would the user be able -- would a CompuServe

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user connecting to the CompuServe servers using a micro computer be able to save the information to their computer in a form that they then would be able to manipulate or search?
A. Again, my answer is a qualified yes to that.
Q. What is the qualification?
A. Well, again, any information that is downloaded to a personal computer can potentially be searched or reviewed, so it would be up to the user to determine what form it took on his or her computer and what, if any, transformations were made to it or indexing occurred in order to make it searchable.
Q. How is the information stored on CompuServe's servers?
MR. YOTHERS: Objection to form.
THE WITNESS: You're going to need to clarify that question. It's stored on disc drives that are attached to the computer.
BY MS. ZINANNI:
Q. How is the data on the CompuServe host system organized so that a user could access it?
A. It's in a variety of files that have differing structures depending on the particular application or function that's being used.
Q. How did a user identify the database that they

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wanted to access?
A. The answer to that question has to be set in the context of the time which the user was accessing it and the methodology that the user was accessing.
Q. Okay.
A. So --
Q. In 1981.
A. In 1981, the user would typically be presented with a menu structure, menu being a list of items, each of which had an identifier, typically a number. The user would select an item on that menu by typing the number, pressing the caricature or enter key on the keyboard, which would, in turn, either take the user to a particular service or area or alternatively, would produce another menu. The process would be repeated in terms of having a list of topics or alternatives. Selection of one of those would lead, again, either to a submenu or to the particular service.
Q. In 1991, was there any way a user could search for information other than through that --
A. No. You said 1991, or did you say -- what did you mean?
Q. I said 1981, I thought.
A. You said '91.
Q. Excuse me. 1981.

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A. In 1981, I believe the user had the ability to execute what was called the Find command, which would allow typing in a key word, the result of which would be a list of items to choose from.
Q. Did the user type in the key word with the command all at the same -- all before hitting the enter button?
A. The user had the option of typing Find and being prompted with an input box or a request for input, depending on what the interface was, and then supplying the key word, or alternatively, the user could put the key word after the Find command.
Q. Were there any restrictions on what a user could enter for a key word?
A. No, no practical restrictions.
Q. Could a user enter a city?
A. Yes.
Q. Could a user enter a state?
A. Yes.
Q. If a user entered Find and a city name, what information would be returned to the user?
A. The user would get back a list of those services or databases on CompuServe that were somehow related to the particular search term. So, for example, if I put Find Columbus, I would get a menu or

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a list of things that were related to Columbus.
Q. Mr. Berkov, in 1981, were TV listings available on CompuServe?
MR. YOTHERS: Objection to form.
THE WITNESS: To the best of my recollection, TV listings were part of the offerings of several of the newspaper organizations who were on-line on CompuServe.
BY MS. ZINANNI:
Q. Mr. Berkov, I'm handing you what's been marked as Defendant's Exhibit 38.
(The document was marked as Defendant's Exhibit 38 and is made a part of this deposition.)
BY MS. ZINANNI:
Q. Do you recognize this document?
A. Yes, I do.
Q. What is it?
A. This is the premier issue of a magazine published by the CompuServe information service for its members.
Q. Was this created in the ordinary course of CompuServe's business?
A. It was.
Q. Did you write Defendant's Exhibit 38?
A. I did not write it.

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Q. Did you supervise the creation of Defendant's Exhibit 38?
A. I did not directly supervise the creation of this exhibit.
Q. Did you indirectly supervise the creation of this exhibit?
A. I was aware of the content of this exhibit, and my recollection is fuzzy, but I probably reviewed the copy or selected portions of it.
Q. Did you participate in the decision to create a publication for CompuServe's subscribers?
A. I did not.
Q. Mr. Berkov, may I ask you to turn to the page with the Bates number TMS 1093?
A. Yes, ma'am.
Q. In the center column, about halfway down, do you see where it says Hampton Road, Virginia area?
A. I do.
Q. And below that, there's a line that says Television Schedule; correct?
A. Yes.
Q. What does the "Go VPL-7" across from Television Schedule, the middle column of TMS 1093, stand for?
A. That is a page number within the CompuServe

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system, which would be expected to produce the television schedule.
Q. Was that television schedule specific for a geographic location?
MR. YOTHERS: Objection to form.
THE WITNESS: It would have been for the Hampton Road, Virginia area.
BY MS. ZINANNI:
Q. How could a user access the television schedule for the Hampton Road, Virginia area on the CompuServe information service?
A. They would have a variety of options to do that. They might do Find Hampton Road and be presented with a listing very much as you saw here. They might do a Find command on television listings, in which case I would expect that this entry would also have appeared. They might have known what the base level database identifier for Hampton Road was, which is apparently VPL, so they might have done a Go VPL, which would have taken them to what's called the top level of the database, which would have been a menu of entries or services available or content available in that database. Or they might have, if they knew it, done a Go command of VPL-7, which would have taken them directly to this listing.

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Q. To your knowledge, was the television schedule available for any locations other than Hampton Road, Virginia at the time of Defendant's Exhibit 38?
A. There were several newspapers that participated in the AP agreement with CompuServe that had television listings.
Q. Do you recall any of those newspapers?
A. I don't remember exactly which ones did and didn't. I believe Columbus and New York did. Again, my memory would be fuzzy.
Q. If you turn to TMS 1094 in Defendant's 38, in the left-hand column, do you see where it says "Columbus area"?
A. Yes.
Q. Is that referring to the newspaper, as you just mentioned, for Columbus?
MR. YOTHERS: Objection to form.
THE WITNESS: Based on these listings here, I would expect that all of the items there, since they have a CDP designator, were part of the dispatch, Columbus dispatch offerings.
BY MS. ZINANNI:
Q. And one of those offerings is television listings; correct?
A. It is.

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Q. Mr. Berkov, do you know why CompuServe -- strike that.
Defendant's Exhibit 38 in the front says it is the premier issue; correct?
A. That is correct.
Q. Do you know why CompuServe developed this publication?
A. Yes, I do.
Q. Why was that?
A. CompuServe felt it was appropriate and necessary to have a communications vehicle to provide its members or subscribers, however you want to call them, with information about the service and how to optimize the use of the service. It was also a method of identifying new products and services that the members or subscribers might not otherwise have heard about.
Q. For how long was CompuServe Information Service Today in publication?
A. I don't know exactly, but we know that it was obviously produced up through the time that I left, which was in 1995, so it began in 1981 and ran through until 1995.
Q. Was it in continuous publication from 1981 through 1995?

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A. I believe so.
Q. How often was CompuServe Information Service Today issued?
A. Monthly.
Q. I'm handing you what's been marked as Defendant's Exhibit 39.
(The document was marked as Defendant's Exhibit 39 and is made a part of this deposition.)
MS. ZINANNI: It's a document bearing the Bates range TMS 1084 through TMS 1090.
THE WITNESS: Okay.
BY MS. ZINANNI:
Q. Do you recognize Defendant's Exhibit 39?
A. I do.
Q. And what is it?
A. It's another issue of CompuServe magazine. At this time it was called CompuServe Today.
Q. And what is the date of Defendant's Exhibit 39?
A. 1981.
Q. And was this document created in the ordinary course of business of CompuServe?
A. It was.
Q. Did you supervise the copy of Defendant's

PAGES A-629 – A-636 REDACTED

PAGES A-637 – A-638 REDACTED

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

C.A. No.: 05-CV-725

TV GUIDE ONLINE, INC., and)
TV GUIDE ONLINE, LLC,)
Plaintiffs,)
vs.)
TRIBUNE MEDIA SERVICES, INC.,)
Defendant.)

Videotaped Deposition of KATHLEEN FRANCES TOLSTRUP, taken before GREG S. WEILAND, CSR, RMR, CRR, Notary Public, pursuant to Rule 30(b)(6) of the Federal Rules of Civil Procedure for the United States District Court, at Suite 5400, 200 East Randolph Drive, in the City of Chicago, Cook County, Illinois, commencing at 9:30 o'clock a.m., on the 9th day of August, 2006.

VOLUME 1

PAGE 1 - 120

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A. Yes.
Q. As you sit here today, can you tell me that that's wrong?
A. I do not know.
Q. Okay. You can't tell me it's wrong though, can you?
A. I can't tell you whether it's wrong or right.
Q. Okay. And it says under user entertainment consumption on this document that bears the Zap2it/advertising/demos URL that 65 percent of Zap2it users spend time on line and watching television simultaneously.
Do you see that?
A. Yes, I do.
Q. And can you tell me sitting here today as TMS's Rule 30(b)(6) witness that that's wrong?
A. I can't tell you that it's wrong or it's right.
Q. But you can tell me that this document came out of TMS's files, correct?
A. I presume so.
Q. Thank you. If you wanted to know the name of the person who knows most -- strike this.

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If your boss came into your office and showed you Page 2033 and said who in our organization would know most about this page and I need the answer now, what would you tell him?
A. I would probably say Barbara Needleman.
Q. Okay. Anyone who's presently with the company?
A. I would guess Mark Yamada.
Q. Okay. And in preparing for your deposition today, you did not talk to Ms. Needleman about user demographics, did you?
A. No.
Q. And in preparing for your deposition today, you did not speak to Mr. Yamada at all, correct?
A. No.
Q. And you certainly didn't speak to Mr. Yamada about people who use the TMS accused product, correct?
A. Your question is did I speak to Mark Yamada about people who use --
Q. Zap2it.
A. -- Zap2it? Not recently.
Q. Okay. When was the last time you did?

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A. I don't recall.
Q. But it certainly wasn't in preparation for your deposition today --
A. No.
Q. -- correct? Okay.
A. No.
Q. Thank you. And you were not shown Page 2033 in preparation for your deposition today, were you?
A. No.
Q. Okay. All right. Number 6. Is that right?
Okay. Let me mark as Plaintiffs' Exhibit 6 a two-page document bearing production numbers TMS 34117 and 118.
(Plaintiff Exhibit 6 marked as requested.)
BY MR. HARNETT:
Q. All right. The question I'm going to have for you is, have you seen this before today?
A. It's possible I saw pieces of this study when it was conducted, but I don't recall details of it.
Q. Okay. Let's look at the first page. This

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is -- this appears to me to be a summary of the Frank Magid study that TMS contracted for, correct?
A. It would appear that way.
Q. Yeah. And on the first page is a bar graph.
Do you see that?
A. Yes.
Q. And that's Page 34177, correct?
A. Correct.
Q. And it says that 74 percent of the Zap2it users access it from home and 21 percent access it from work, correct?
A. I think so.
Q. Okay. Does it make any difference from TMS's perspective whether a user of Zap2it accesses it from work or at home?
A. Does it make any difference in terms of what?
Q. Does it make any difference to TMS in terms of their business, whether they care about it, how the product is used, the service is used, you know, advertising revenues, whatever is important to TMS? Does it make any difference to TMS whether the Zap2it users use the site, access the site from home

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or at work?
A. I would believe TMS would be indifferent as to where a user sees access to Zap2it.com.
Q. It would be substantially the same effect using it at work or at home, correct?
MR. PARKS: Objection to the form of the question.
THE WITNESS: I'm not sure what you mean by substantially effect.
BY MR. HARNETT:
Q. Using the Zap2it site at home is effectively the same thing as using it at work, correct?
MR. PARKS: Same objection.
THE WITNESS: The -- what you see when you go onto Zap2it.com is the same regardless of where you are.
BY MR. HARNETT:
Q. Yeah. So a user who uses Zap2it at work uses Zap2it the same way as they would use it at home, correct?
A. The -- what's available and what you see on Zap2it.com is the same regardless of where you access it --

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Q. Right.
A. -- where you are when you access it.
Q. And if you access it on your PC at home and you access it -- or you access it on your PC at work, you're accessing it in the same way, correct?
A. I would presume so. I'm not sure if somebody was in a different location such as work there might be some other means that they would have to go through to get to an external web site.
Q. Assuming, however, if someone is sitting there at work with a PC that allows them free access to the internet, the steps that a user would use to access Zap2it at work is the same way that they would access it at home, correct?
A. What a user would see on Zap2it would be the same regardless of the location.
Q. And the steps that a user would use to access TV listings on Zap2it at work are the same steps that they would take to access TV listings at home, correct?
A. The information that they might put into the web site may have to be different.
Q. In what circumstances would it have to be different and what circumstances would it be the

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same?
A. Well, I guess if you're working in Chicago and you wanted to see the same thing on that web site, you would put in a different zip code and access a different channel lineup.
Q. Okay. Do you have any doubt in your mind that some people who visit -- that a substantial number of people who visit Zap2it.com work and live in the same area code?
MR. PARKS: Objection to the form of the question.
THE WITNESS: Could you ask that question again?
BY MR. HARNETT:
Q. Do you have any doubt in your mind that of the 3.4 million people who have visited, 3.4 million unique visitors to Zap2it.com a substantial number of them work and live in the same area code?
MR. PARKS: Same objection.
THE WITNESS: Are you asking if they work in the same area code as they live in?
BY MR. HARNETT:
Q. Yes. Do you have any doubt in your mind that of those 3.4 million visitors a substantial

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number of them work and live in the same zip code?
MR. PARKS: Same objection.
THE WITNESS: I couldn't confirm that.
BY MR. HARNETT:
Q. You don't know one way or the other?
A. No. I mean, my own experience is my zip code at work and my zip code at home is different.
Q. Okay. But of the 3.4 million people, just as a matter of common sense, you can't tell me --
A. I live in a very small town, so if it's true for me, I could not make that judgment.
Q. Okay. But no doubt, when a Zap2it user accesses it from home, there's only one zip code they could be entering, correct?
MR. PARKS: Objection --
THE WITNESS: No.
MR. PARKS: -- to the form of the question.
BY MR. HARNETT:
Q. Do you know any people whose houses are in two different zip codes?
A. The location of their house is in two different zip codes?
Q. Right.

PAGES A-642 – A-650 REDACTED

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 transmit	1-7 8, 10	sending electronically send electronically	making an affirmative indication make an affirmative indication
receiving receive	1-7 8, 10	receiving electronically receive electronically	no construction necessary; see "receiving … information" constructions below
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

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, make the following Declaration in support of Tribune Media Services, Inc.'s Motions for Summary Judgment of Invalidity and Noninfringement and its *Markman* Brief. I 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. 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.

6. Users of Zap2it.com request information from the web site with a message sent from the Internet browser (e.g., Microsoft Internet Explorer) running on the user's personal computer to the Zap2it.com web site via the Internet. Whenever an Internet web site, including Zap2it.com, returns information to an end-user's Internet browser in response to such a request, the information is contained in a specially formatted file called an HTML file. The acronym HTML means HyperText Markup Language. The contents of such a file are the text to be displayed by the Internet browser, along with special "tags" (also textual) embedded with the text that the browser interprets to determine what information to display, and how to format it for display. Other files may also be returned to the browser, such as files containing graphics images to be displayed by the browser along with the text in the HTML file.

7. The information that is returned to a user's Internet browser by Zap2it.com is not information that is, or can be, manipulated on the user's personal computer by a database

program. For example, a "search" of the information cannot be performed by a commercially available database manipulation program running on the user's personal computer to identify or select a particular television program based on some property of the program such as time, title, subject or provider. Therefore users do not "receive information specific to the type of programming available to the particular television viewing location," as this term is properly construed in my opinion, and thus users cannot perform this step or function, which is required by all of the asserted claims.

8. Although users viewing a Zap2it.com television program listing grid returned to the user's Internet Browser may request that the information displayed be for a different block of time, or for programs having only a particular subject or provider, such requests always result in a request message being sent to the Zap2it.com web site host computer, which performs a search of its database and then returns the requested information in the form of an HTML file to the browser. No searching or database type manipulation of the television programming information returned from Zap2it.com to the user's Internet browser takes place on the user's personal computer. This new television programming information is not produced in the same way as claimed (search is not done locally) and does not have the same result as the claims specify (delays are incurred for the request message to be sent and the response to be received). Thus, users also do not "receive information specific to the type of programming available to the particular television viewing location," as this term is properly construed in my opinion, under the doctrine of equivalents, and thus users cannot perform this step or function, which is required by all of the asserted claims.

9. The attached "Invalidity Claim Chart" accurately reflects the teachings of Young and CompuServe and compares them to the asserted claims of the '078 patent.

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 October 5, 2007, in Alpharetta, Georgia.

Gary S. Tjaden

'078 Patent, Young and CompuServe: Invalidity Claim Chart

Claim 1	Prior Art Teaching
Preamble. In a television distribution arrangement wherein a plurality of geographically dispersed television viewing locations receive television programming from a source of such programming, a method of receiving information specific to the type of programming available to a particular one of the viewing locations, the method comprising the steps of:	
providing a computerized unit at the particular viewing location, the unit including an operator input and a modem;	Young teaches providing a computerized unit: "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. Young teaches that this computerized unit is located at a particular viewing location: "[t]he television set and VCR could then be controlled as peripherals of the personal computer." Young at 22:9-10. Young teaches that this computerized unit includes an operator input, because the user of the personal computer could make "selection inputs." Young at 22:2-5. Young teaches that this computerized unit includes a modem, because a user accesses schedule information "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe was accessed using a modem. Berkov Dep. at 16:22-17:8; Schepp at 25 ("Your PC has a modem and communications software"); *id.* at 38-39 ("MS-DOS machines require the following hardware: An IBM or IBM-compatible PC, A color or monochrome monitor (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, **A serial port/Hayes-compatible modem.**").

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Claim 1	Prior Art Teaching
establishing a connection to a wide-area network through the modem;	Young teaches establishing a connection to a wide-area network through the modem because it teaches that "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe was accessed by connecting to a wide-area network through a modem. Berkov Dep. at 17:13-18:19; Schepp at 4 ("CompuServe's success is rooted in its telecommunications network. As of this writing, **the network has 1,800 communication nodes that service about 400 U.S. cities.**"); *id.* at 20 ("Your computer needs three items to communicate with other computers. It needs a modem to transmit and receive data over standard telephone wires. It needs communications software to give your computer instructions for operating the modem. Finally, it needs access to a telephone line.").
transmitting, from the computerized unit, information to a service provider through the wide-area network regarding the geographical location of the particular viewing location; and	Young inherently teaches transmitting geographical information from a computerized unit to a service provider through a wide-area network: "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source, and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then download the selected program information **for his or her locality.**" Young at 21:67-22:6. One of ordinary skill in the art at the time would understand that in order for a service provider to locate information for a particular locality, the service provider would need to be told that locality, and thus Young inherently teaches this limitation. Additionally, Young teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed a user to transmit information to it regarding geographical location:

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Claim 1	Prior Art Teaching
	"As you can see, the default shows you a local weather forecast for the node from which you are calling. You can also **choose a report by city and state** or by National Weather Service reporting station." Schepp at 101 and Fig. 4-11 (showing data entry fields for city and state that a user could fill in). "Option 5 from NewsGrid's main menu lets you search the database by keyword. Stories from the last seven days are available for searching. NewsGrid editors assign five to ten keywords for each story. Keywords are most often: • Proper names • **Country names** • **Regions of the world"** Schepp at 87-88. "Many IQuest databases enable you to search by field quite easily. A database record (the complete hit) is divided into distinct searchable parts called fields, enabling searchers to pull out only the information they need. Examples of fields include company name, SIC code, **geographic area**, and a person's name. The ability to search by field effortlessly, through IQuest and its spinoffs, is a great boon." Schepp at 219. CompuServe also included a "Find" command, which allowed users to search CompuServe based on a keyword typed into their computer, such as a city or state name. Berkov Dep. at 23:1-19. Using this "Find" feature, users could transmit geographical information to CompuServe for the purpose of getting television listings. Berkov Dep. at 26:9-17.

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Claim 1	Prior Art Teaching
receiving, from the service provider, information specific to the type of programming available to the particular viewing location.	Young teaches receiving information specific to the programming available to the particular viewing location from the service provider: "the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then **download the selected program information for his or her locality**" Young at 22:2-9.

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Claim 2	Prior Art Teaching
The method of claim 1, wherein the information transmitted to the service provider includes the Zip Code associated with the particular viewing location.	Young teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed a user to transmit zip code information: "The database is searchable by **zip code** or area code." Schepp at 424. "Both the database and the techniques have been developed and refined to the point that, for a fee, you can now get an instant report on any **ZIP code** or U.S. county." Glossbrenner at TMS 0054634. "SuperSite information comes from CACI, a management consulting firm specializing in demographic analysis. Information is provided for every **ZIP code** and county in the United States .... All SuperSite reports are preformatted and are of presentation quality. You simply specify the areas you want to look at and the reports you need. The information is displayed immediately for you to review or print on hard copy." Today 1985 at TMS 0054629:2-5.. Additionally, it would have been obvious to one of ordinary skill in the art to use a Zip Code as a type of geographical information to be transmitted. As TV Guide's expert admits, even a junior high school student, let alone one of ordinary skill in the art, would know that a Zip Code is geographic information. Cole Dep. at 69:10-69:22 ("Q: Wouldn't you agree that a junior high school student in the 1991, 1992 time frame would have known that zip codes reflect a particular geographic area? A: I believe so, yes.").

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Claim 3	Prior Art Teaching
The method of claim 1, wherein the information received from the service provider includes a schedule of the television programming available to the particular viewing location.	Young teaches that the information received from a service provider is a schedule of television programming available to the particular viewing location: "the **schedule information** could be accessible with a personal computer through an information utility, such as Compuserve or The Source, and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then **download the selected program information**" Young at 21:67-22:5.

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Claim 4	Prior Art Teaching
The method of claim 1, wherein the computerized unit is interfaced to a display, and wherein the method further includes the step of displaying the information specific to the type of programming available to the particular viewing location.	Young teaches that the computerized unit is interfaced to a display device, because a user accesses schedule information "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe required a display device in order to display information. Schepp at 4 ("It provides **information delivered through friendly, menu-driven screens.**"); *id.* at 25 ("CompuServe is **delivered to your PC's screen in 'pages.'** Each page has its own identifying number or word. The pages are organized under menus."); *id.* at 38-39 ("MS-DOS machines require the following hardware: **An IBM or IBM-compatible PC, A color or monochrome monitor** (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, A serial port/Hayes-compatible modem.").

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Claim 5	Prior Art Teaching
The method of claim 1, wherein the computerized unit further includes a memory for storing the information specific to the type of programming available to the particular viewing location.	Young teaches that the computerized unit includes a memory for storing the information specific to the type of programming available: "[a] memory 179 is connected to the CPU 178 at 181 to receive selected program information." Young at 8:35-37; *id.* at 7:47 ("[a] memory 111 is connected to the CPU 110.").

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Claim 6	Prior Art Teaching
Preamble. A method of receiving customized television programming schedule information, comprising the steps of:	
providing, at a television viewing location, a controller interfaced to a bidirectional modem and a display device;	Young teaches providing a controller: "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. Young teaches that this controller is located at a particular viewing location: "[t]he television set and VCR could then be controlled as peripherals of the personal computer." Young at 22:9-10. Young teaches that this controller is interfaced to a modem, because a user accesses schedule information "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe was accessed using a modem. Berkov Dep. at 16:22-17:8; Schepp at 25 ("Your PC has a modem and communications software"); *id.* at 38-39 ("MS-DOS machines require the following hardware: An IBM or IBM-compatible PC, A color or monochrome monitor (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, **A serial port/Hayes-compatible modem.**"). Young teaches that this controller is interfaced to a display device, because a user accesses schedule information "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe displayed information on a display device. Schepp at 4 ("It provides **information delivered through friendly, menu-driven screens.**"); *id.* at 38-39 ("MS-DOS machines require the following hardware: **An IBM or IBM-compatible PC, A color or monochrome monitor** (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, A serial port/Hayes-compatible modem.").

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Claim 6	Prior Art Teaching
establishing a connection to a wide-area network through the modem;	Young teaches establishing a connection to a wide-area network through the modem because it teaches that "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe was accessed by connecting to a wide-area network through a modem. Berkov Dep. at 17:13-18:19; Schepp at 4 ("CompuServe's success is rooted in its telecommunications network. As of this writing, **the network has 1,800 communication nodes that service about 400 U.S. cities.**"); *id.* at 20 ("Your computer needs three items to communicate with other computers. It needs a modem to transmit and receive data over standard telephone wires. It needs communications software to give your computer instructions for operating the modem. Finally, it needs access to a telephone line.").
transmitting, from the television viewing location, information to a service provider through the wide-area network regarding the geographical area of the viewing location;	Young inherently teaches transmitting geographical information from a computerized unit to a service provider through a wide-area network: "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source, and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then download the selected program information **for his or her locality.**" Young at 21:67-22:6. One of ordinary skill in the art at the time would understand that in order for a service provider to locate information for a particular locality, the service provider would need to be told that locality, and thus Young inherently teaches this limitation. Additionally, Young teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed a user to transmit information to it regarding geographical location: "As you can see, the default shows you a local weather forecast for the node from which you are calling. You can also **choose a report by city and state** or by National Weather Service reporting station." Schepp at 101 and Fig. 4-11 (showing data entry fields for city and state that a user could fill in). "Option 5 from NewsGrid's main menu lets you search the database by keyword. Stories from the last seven days are available for searching. NewsGrid editors assign

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Claim 6	Prior Art Teaching
	five to ten keywords for each story. Keywords are most often: • Proper names • **Country names** • **Regions of the world"** Schepp at 87-88. "Many IQuest databases enable you to search by field quite easily. A database record (the complete hit) is divided into distinct searchable parts called fields, enabling searchers to pull out only the information they need. Examples of fields include company name, SIC code, **geographic area**, and a person's name. The ability to search by field effortlessly, through IQuest and its spinoffs, is a great boon." Schepp at 219. CompuServe also included a "Find" command, which allowed users to search CompuServe based on a keyword typed into their computer, such as a city or state name. Berkov Dep. at 23:1-19. Using this "Find" feature, users could transmit geographical information to CompuServe for the purpose of getting television listings. Berkov Dep. at 26:9-17.
receiving, from the service provider, television programming schedule information specific to the viewing location; and	Young teaches receiving information specific to the programming available to the particular viewing location from the service provider: "the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then **download the selected program information for his or her locality**" Young at 22:2-9.

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Claim 6	Prior Art Teaching
viewing the information on the display device.	Young teaches that the user views the information on the display device, because "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe displayed information on a display device. Schepp at 4 ("It provides **information delivered through friendly, menu-driven screens.**"); *id.* at 25 ("CompuServe is **delivered to your PC's screen in 'pages.'** Each page has its own identifying number or word. The pages are organized under menus."); *id.* at 38-39 ("MS-DOS machines require the following hardware: **An IBM or IBM-compatible PC, A color or monochrome monitor** (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, A serial port/Hayes-compatible modem.").

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Claim 7	Prior Art Teaching
The method of claim 6, wherein the information transmitted to the service provider through the wide-area network regarding the geographical area of the viewing location is the Zip Code associated with the viewing location.	Young teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed a user to transmit zip code information: "The database is searchable by **zip code** or area code." Schepp at 424. "Both the database and the techniques have been developed and refined to the point that, for a fee, you can now get an instant report on any **ZIP code** or U.S. county." Glossbrenner at TMS 0054634. "SuperSite information comes from CACI, a management consulting firm specializing in demographic analysis. Information is provided for every **ZIP code** and county in the United States ... . All SuperSite reports are preformatted and are of presentation quality. You simply specify the areas you want to look at and the reports you need. The information is displayed immediately for you to review or print on hard copy." Today 1985 at TMS 0054629:2-5.. Additionally, it would have been obvious to one of ordinary skill in the art to use a Zip Code as a type of geographical information to be transmitted. As TV Guide's expert admits, even a junior high school student, let alone one of ordinary skill in the art, would know that a Zip Code is geographic information. Cole Dep. at 69:10-69:22 ("Q: Wouldn't you agree that a junior high school student in the 1991, 1992 time frame would have known that zip codes reflect a particular geographic area? A: I believe so, yes.").

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Claim 8	Prior Art Teaching
Preamble. A system enabling a viewer of a television receiver to download information specific to the type of television programming available to the receiver, the system comprising:	
an electronic terminal unit including an operator input, a bidirectional modem, and a controller in communication with the operator input and the modem,	Young teaches providing an electronic terminal unit that includes a controller: "the schedule information could be accessible with a **personal computer** through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. Young teaches that this electronic terminal unit is located at a particular viewing location: "[t]he television set and VCR could then be controlled as peripherals of the personal computer." Young at 22:9-10. Young teaches that this electronic terminal unit includes an operator input, because the user of the personal computer could make "selection inputs." Young at 22:2-5. Young teaches that this electronic terminal unit includes a modem, because a user accesses schedule information "with a personal computer through an information utility, such as CompuServe or The Source." Young at 21:67-22:2. CompuServe was accessed using a modem. Berkov Dep. at 16:22-17:8; Schepp at 25 ("Your PC has a modem and communications software"); *id.* at 38-39 ("MS-DOS machines require the following hardware: An IBM or IBM-compatible PC, A color or monochrome monitor (no graphics necessary), A hard disk and one floppy drive, MS-DOS 2.0 or higher, **A serial port/Hayes-compatible modem.**").
the controller being programmed to perform the following functions:	Young teaches that the controller is programmed to perform a series of functions, as described below, because it teaches that "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe was accessed using software called the CompuServe Information Manager, which programmed the controller to establish a connection to and communicate with the CompuServe system. Schepp at 14-15, 22.

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Claim 8	Prior Art Teaching
a) establish a connection to a service provider through the modem,	Young teaches the controller establishing a connection to a service provider network through the modem because it teaches that "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe was accessed by connecting to a it through a modem. Berkov Dep. at 17:13-18:19; Schepp at 4 ("CompuServe's success is rooted in its telecommunications network. As of this writing, **the network has 1,800 communication nodes that service about 400 U.S. cities.**"); *id.* at 20 ("Your computer needs three items to communicate with other computers. It needs a modem to transmit and receive data over standard telephone wires. It needs communications software to give your computer instructions for operating the modem. Finally, it needs access to a telephone line.").
b) receive information through the operator input pertaining to the geographic location of the television receiver,	Young teaches the controller receiving geographical information through the operator input because "the user could either **make the selection inputs** to the utility's mainframe and then download the selected program information **for his or her locality.**" Young at 21:67-22:6. One of ordinary skill in the art would understand that to download information for a locality, the selection inputs entered must indicate that locality. Young also teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed the controller to receive geographical information from an operator input, such as a keyboard, so that such information could be transmitted to CompuServe: "As you can see, the default shows you a local weather forecast for the node from which you are calling. You can also **choose a report by city and state** or by National Weather Service reporting station." Schepp at 101 and Fig. 4-11 (showing data entry fields for city and state that a user could fill in). "Option 5 from NewsGrid's main menu lets you search the database by keyword. Stories from the last seven days are available for searching. NewsGrid editors assign five to ten keywords for each story. Keywords are most often:

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Claim 8	Prior Art Teaching
	• Proper names • **Country names** • **Regions of the world"** Schepp at 87-88. "Many IQuest databases enable you to search by field quite easily. A database record (the complete hit) is divided into distinct searchable parts called fields, enabling searchers to pull out only the information they need. Examples of fields include company name, SIC code, **geographic area**, and a person's name. The ability to search by field effortlessly, through IQuest and its spinoffs, is a great boon." Schepp at 219. CompuServe also included a "Find" command, which allowed users to search CompuServe based on a keyword typed into their computer, such as a city or state name. Berkov Dep. at 23:1-19.
c) transmit the information pertaining to the geographic location of the television receiver to the service provider, and	Young inherently teaches transmitting geographical information from a computerized unit to a service provider through a wide-area network: "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source, and the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then download the selected program information **for his or her locality.**" Young at 21:67-22:6. One of ordinary skill in the art at the time would understand that in order for a service provider to locate information for a particular locality, the service provider would need to be told that locality, and thus Young inherently teaches this limitation. Additionally, Young teaches this limitation because "the schedule information could be accessible with a personal computer through an information utility, such as Compuserve or The Source." Young at 21:67-22:2. CompuServe allowed a user to transmit information to it regarding geographical location: "As you can see, the default shows you a local weather forecast for the node from which you are calling. You can also **choose a report by city and state** or by

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Claim 8	Prior Art Teaching
	National Weather Service reporting station." Schepp at 101 and Fig. 4-11 (showing data entry fields for city and state that a user could fill in). "Option 5 from NewsGrid's main menu lets you search the database by keyword. Stories from the last seven days are available for searching. NewsGrid editors assign five to ten keywords for each story. Keywords are most often: • Proper names • **Country names** • **Regions of the world"** Schepp at 87-88. "Many IQuest databases enable you to search by field quite easily. A database record (the complete hit) is divided into distinct searchable parts called fields, enabling searchers to pull out only the information they need. Examples of fields include company name, SIC code, **geographic area**, and a person's name. The ability to search by field effortlessly, through IQuest and its spinoffs, is a great boon." Schepp at 219. CompuServe also included a "Find" command, which allowed users to search CompuServe based on a keyword typed into their computer, such as a city or state name. Berkov Dep. at 23:1-19. Using this "Find" feature, users could transmit geographical information to CompuServe for the purpose of getting television listings. Berkov Dep. at 26:9-17.
d) receive, from the service provider, the information specific to the type of television programming available to the receiver.	Young teaches receiving information specific to the programming available to the particular viewing location from the service provider: "the user could either make the selection inputs to the utility's mainframe for running a selection program on the mainframe and then **download the selected program information for his or her locality**" Young at 22:2-9.

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Claim 10	Prior Art Teaching
The system of claim 8, further including a memory in communication with the controller for storing and retrieving the information specific to the type of television programming available to the receiver.	Young teaches that the controller is in communication with memory for storing and retrieving the information specific to the type of programming available: "[a] memory 179 is connected to the CPU 178 at 181 to receive selected program information." Young at 8:35-37; *id.* at 7:47 ("[a] memory 111 is connected to the CPU 110.").

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