UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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BRITISH TELECOMMUNICATIONS PLC,

Plaintiffs,

00 Civ. 9451 (CM)

against

DECISION AND ORDER

PRODIGY COMMUNICATIONS CORPORATION,

Defendants

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OPINION AND ORDER FOLLOWING MARKMAN HEARING

McMahon, J.

On December 13, 2000, British Telecommunications ("BT") filed suit against Prodigy Communications Corporation ("Prodigy") for infringement of the Sargent patent, U.S. Patent No. 4,873,662 (issued October 10, 1989) ("the '662 patent"). Prodigy answered, asserting the defenses of non-infringement and invalidity. BT reduced the number of asserted claims from seven to five on June 22, 2001, and then from five to four on January 18, 2002. BT continues to assert independent claims 3 and 5 and dependent claims 6 and 7 of the '662 patent against Prodigy.

Infringement analysis involves two phases. The proper construction of the disputed claims is determined in the first phase (the Markman phase) as a matter of law. In the second phase, issues of validity and infringement are determined as a matter of fact. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995).

The parties exchanged proposed constructions for the patent claim terms to be interpreted, and a hearing was conducted by the Court on February 11, 2002, limited to issues of intrinsic evidence. This decision construes the disputed claims.

1. Background of the Sargent Patent

The original Sargent patent application, #814,922, was filed July 12, 1977. The Sargent invention resulted from research conducted at BT (then part of the Post Office, the provider of telephone service in the United Kingdom) on 'videotex,' a system developed in the early 1970s to provide users access to text-based information via a telephone network. (BT Br. at 1.)

The prosecution history of the Sargent patent extended over 13 years. It includes several successor patent applications, each with multiple claims. In order to aid recognition of the documents, a brief summary follows.

Application #178,307 was filed August 15, 1980 as a continuation of the original application, #814,922, and #814,922 was abandoned. #178,307 (" the '307 application") was modified several times and by January 26, 1983 claims 1-18 had been canceled, leaving claims 19-22 before the patent examiner. On June 8, 1983, #502,114 ("the '114 application") was filed as a divisional application of '307, directed to the subject matter of the claims originally filed in application '307 as claims 7-9. Amendments to '114 canceled 7-9 in favor of 12-15, and then claim 14 was canceled, leaving three claims. After the examiner issued a final rejection to both applications, the applicant appealed to the U.S. Patent Board of Appeals, which heard the appeals together on November 7, 1988. The Board reversed and the Sargent patent was granted on October 10, 1989. In the patent as issued, application '307 claims 19-22 became patent claims 1-4, and application '114 claims 12, 13 and 15 became patent claims 5-7, of #4,873,662 ("the '662 patent").

The Sargent patent describes an improved way for multiple users, each located at a remote terminal, to access data stored on a central computer. Communication between the remote terminals and the central computer takes place over a telephone network. (See BT Br. at 2-3.)

The information accessed by the remote terminals is stored on the central computer in the form of blocks, each block identified by an address. The central computer uses the address to retrieve the associated block from storage when a user requests that block of information. Each block stored on the central computer is comprised of two parts: a first portion, which contains textual and graphical data for display (a display page), and a second portion, not intended for display, which contains the complete addresses of other blocks of information that are linked to the current display page. (Id. at 2.)

In the asserted claims, the entire block is transmitted to the remote terminal where the first portion is displayed and the second portion is stored in the local memory of the remote terminal. The display page includes abbreviated addresses of particular blocks of information that can be accessed from the central computer. When the user selects one of the displayed abbreviated addresses, the terminal accesses its memory to determine the corresponding complete address. That complete address is then sent to the central computer to request the next desired block of information. (Id. at 1-3.)

BT's description of the patent infers that the abbreviated address is the invention, (BT Br. at 2 (last sentence)), but the applicant acknowledged that use of an abbreviated address was recognized in the prior art. (Jan. 24, 1986 Appeal Br., Prodigy Br. Ex. 3 at 2; Jan. 5, 1987 Appeal Br., Prodigy Br. Ex. 14 at 2.) The innovation claimed by the Sargent invention is instead how the blocks of information are stored:

> Ordinarily one would be inclined to astutely avoid storage of the address-linkage data on the disk store – where data access times are relatively long and where there necessarily must be competition for data accesses to obtain the display data itself. One typically seeks to reduce required accesses to the disk store.
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> Nevertheless, applicant teaches:
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> (a) dividing up the total address linkage data array into sub-portions associated only with the possible next screen selections to be made from a given screen;
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> (b) co-storing such sub-portions on the main store (e.g., a disk) contiguous with the said "given" screen data; and
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> (c) only temporarily stripping off and storing in RAM those sub-portions which are associated with the screen then actively being accessed and viewed within the system.

(Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987 Appeal Br. at 3.)

The applicant clarified that the "object of this invention . . . is to enable the computer to service as many requests for data as possible with a given maximum delay time[.]" (Jan. 24, 1986 Appeal Br. at 10; Jan. 5, 1987 Appeal Br. at 16.) "[Thus the] invention overcomes a very real difficulty in the art of distributed digital information storage, retrieval and display. (Jan. 24, 1986 Appeal Br. at 11; Jan. 5, 1987 Appeal Br. at 17.)

2. Claim Construction

The technique for construction of a disputed claim was set forth by the Federal Circuit in the Markman decision. 52 F.3d at 976-80. The meaning of a claim should be interpreted in light of the intrinsic evidence, comprised of the claims and the specification of the patent, and the prosecution history. Id. at 979. The intrinsic evidence constitutes the public record of the patent on which the public is entitled to rely. Id. Thus, if the intrinsic evidence is sufficient to resolve the meaning of a disputed term, then it is improper to resort to extrinsic evidence such as expert testimony or treatises. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996). Extrinsic evidence only should be relied upon where necessary to resolve an ambiguity in a disputed claim term. CVI/Beta Ventures, Inc. v. Tura, L.P., 112 F.3d 1146, 1153 (Fed. Cir. 1997).

To define the scope of the patented invention, the Court must first look at the words of the claims themselves. Vitronics Corp, 90 F.3d at 1582 (citing Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed. Cir. 1995)). Words in the claim are generally given their ordinary and customary meaning. However, "a patentee may choose to be his own lexicographer" and assign special definitions to the words in the claim, as long as those definitions are clearly stated in the patent specification or file history. Id. (citing Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996)). Therefore, "it is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Id. (citing Markman, 52 F.3d at 979). The Federal Circuit has stated that "claims must be read in view of the specification, of which they are a part." Id. (citing Markman, 52 F.3d at 979); see also Gart v. Logitech, Inc., 254 F.3d 1334, 1341 (Fed. Cir. 2001) ("it is certainly correct that the specification and the prosecution history should be consulted to construe the language of the claims."). Because the specification must contain a description sufficient to enable those of ordinary skill in the art to make and use the invention, the specification "is the single best guide to the meaning of a disputed claim term." Id.

The court also may consider the prosecution history of the patent. Id. (citing Markman, at 980; Graham v. John Deere, 383 U.S. 1, 33 (1966)). The prosecution history is the complete record of the proceedings before the Patent and Trademark Office. During the course of these proceedings, the applicant may have made express representations regarding the scope of the invention, so the prosecution history is "often of critical significance to determining the meaning of the claims. Id. (citing Markman, 52 F.3d at 980; Southwall Tech., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir.1995)). Claim terms may appear to be plain language – as in this case, where most of the words have fairly straightforward definitions, or have passed over time into common usage. However, the prosecution history may demonstrate that the claims do not cover some matters that would otherwise be encompassed in the plain meaning of the words used. Prosecution histories often contain an analysis of the distinctions between the prior art and the applicant's claims, providing the Court with clues to limitations of the claims. Id. at 1583; Autogiro Co. of America v. United States, 384 F.2d 391, 399 (Ct. Cl. 1967). Furthermore, "the prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." Southwall Tech., Inc., 54 F.3d at 1576. Even when the written description would otherwise support a construction, the prosecution history, which is generated afterwards, can relinquish any coverage of that claimed embodiment. Rheox, Inc. v. Entact, 276 F.3d 1319, 1325-27 (Fed. Cir. 2002).

Prodigy's claim construction arguments are primarily based on relinquishments allegedly made during the prosecution of the Sargent patent.

3. Means-Plus-Function

A means-plus-function element under 35 U.S.C. § 112, ¶ 6 is one that refers to a "means" for performing a given function, without specifying in the claim the structure for performing that

function. Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc., 145 F.3d 1303, 1307-08 (Fed. Cir. 1998).[1] The applicant is presumed to have used the word 'means' in a claim to state a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. York Prods., Inc. v. Central Tractor Farm & Family Ctr. and Custom Form Mfg., Inc., 99 F.3d 1568, 1574 (Fed. Cir. 1996). Means-plus-function elements have additional claim construction rules. 35 U.S.C. § 112, ¶6.

In Lockheed Martin Corp. v. Space Systems/Loral, Inc., 249 F.3d 1314, 1324-25 (Fed. Cir. 2001), the Federal Circuit set forth a three step process for construing the means-plus-function language. First, the court must identify the claimed function. Id. Once this function is identified, it must be construed using the ordinary principles of claim construction. Id. The function of a 'means plus function' claim must be construed to include the limitations contained in the claim language. Id. However, a claimed function may not be improperly narrowed or limited beyond the scope of the claim language. Id. Finally, the court must determine the corresponding structure disclosed in the patent specification for performing the function. Id.; see also Chiuminatta, 145 F.3d at 1307-08; Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir. 1987) (en banc).

Means-plus-functions limitations are construed to cover the corresponding structure described in the specification and any equivalents thereof. 35 U.S.C. § 112, ¶ 6. The structure includes any device that is identical or structurally equivalent to that structure described in the specification. Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042-44 (Fed. Cir. 1993). The structure disclosed in the patent specification must be clearly linked to the claimed function. B. Braun Medical Inc. v. Abbott Labs. and NP Medical, Inc., 124 F.3d 1419, 1424 (Fed. Cir. 1997).

4. Means-Plus-Function Analysis

In their briefing, the parties agreed that "central computer means" and "remote terminal means" were not means-plus-function elements, while "keypad means," "modem means," "display means," "local memory means," "further memory means," "means coupled to said memory means and to said keypad means," "means responsive to information stored in the further memory means," and "logic means" were means-plus-function elements. The Court questioned how this could be so at the Markman hearing, and the parties analyzed the terms both ways.

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[1] 35 U.S.C. § 112, ¶ 6 (1994) states:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Claim 3 includes:

> a central computer means in which plural blocks of information are stored at respectively corresponding locations each of which locations is designated by a predetermined address therein by means of which a block can be selected, each of said blocks comprising a first portion containing information for display and a second portion containing information not for display but including the complete address for each of plural other blocks of information . . .

'662 patent, col. 6, ll. 15-24.

The use of the word "means" in the claim (particularly as used in the phrase "means for") raises a presumption that the means-plus-function limitation applies. York Prods., Inc., 99 F.3d at 1574; Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1584 (Fed. Cir. 1996). The means-plus-function presumption may be rebutted, however, if the claim uses the word "means" but specifies no corresponding function for the "means," or if the claim recites a function but also includes a definite structure to perform entirely the recited function. Sage Prods., Inc. v. Devon Indus., Inc., 126 F.3d 1420, 1427-28 (Fed. Cir. 1997); Cole v. Kimberly-Clark Corp., 102 F.3d 524, 531 (Fed. Cir. 1996). The Court must determine, as a matter of law, whether to apply the means-plus-function analysis.

Whether there is definite structure recited in the claim language may be evidenced by a lack of alternate structures disclosed in the specification. See Turbocare Division of Demag Delaval Turbomachinery Corp. v. General Electric Co., 264 F.3d 1111, 1120-21 (Fed. Cir. 2001). In Turbocare, the Federal Circuit found that a claim including the term "compressed spring means" recited too much structure to be means-plus-function. Id. Nothing in the specification disclosed anything other than a "spring" or a "compressed spring" to perform the function of the "compressed spring means." Id. at 1121. This result differed from the court's prior decision in Unidynamics Corp. v. Automatic Prods. Int'l, Ltd., 157 F.3d 1311, 1319-22 (Fed. Cir. 1988). In that case, the court found that the term "spring means" was written in the means-plus-function format. Id. The Federal Circuit decided that the use of the word "spring" did not preclude the means-plus-function limitation because the specification demonstrated that a "spring" was only one example of a "spring means." Therefore, the Federal Circuit found that the phrase "spring means" was broader than a "spring" as generally recognized in the mechanical arts. See Turbocare, 264 F.3d at 1120 (distinguishing Unidynamics, 157 F.3d 1311).

Accordingly, I find that the "central computer means" is not a means-plus-function claim. The functions of the central computer are stated in the claim language, however, the claim recites the entire structure necessary to perform the claimed function. Sage, 126 F.3d at 1427-28. That structure is a computer.

The function of the central computer means as asserted in the claims is storing blocks of information. The computer also communicates with the remote terminals. The specification

discloses a "computer" for performing these functions. The term "computer" is the only structure described in the specification, and there is no indication that the patentee wished the term "computer means" to be broader than a "computer." If the term "computer" does not tell us what the computer is, then the claim would be indefinite. See S3 Inc. v. Nvidia Corp., 259 F.3d 1364, 1367 (Fed. Cir. 2001) (quoting In re Donaldson Co., 16 F.3d 1189, 1195 (Fed. Cir. 1994) ("if an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required . . . ")). If possible, patents should be construed in order to preserve their validity. Modine Mfg. Co. v. United States Int'l Trade Comm'n, 75 F.3d 1545, 1557 (Fed. Cir. 1996) (abrogated on other grounds). Therefore, I find that "central computer means" is not a means-plus-function.

The same is true of the phrase "remote terminal means" found in the following claim language:

> plural remote terminal means, each including (a) modem means for effecting input/output digital data communications with said central computer means via the telephone lines of a telephone network, (b) local memory means for locally storing digital data representing at least the first portion of the selected block of information received via said modem means from the central computer and for processing digital data, (c) display means for visually displaying such a locally stored first portion of a block of information and (d) keypad means connected to communicate data to at least said local memory means for manual entry of keyed digital data; and
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> further memory means being provided as part of said local memory means at each of said remote terminal means for receiving and storing said second portion of the selected block of information in response to the selection of the block and when its respective first portion is transmitted thereto, said local memory means utilizing keyed digital data of less extent than any one of said complete addresses for another block of information but nevertheless uniquely indicative of one of the complete addresses contained in said second portion of the block of information which contains the first portion then being displayed for selectively accessing said further memory means and for supplying data to be transmitted by said modem means and indicative of the complete address of the next block of information which is to be retrieved and utilized for display purposes.

'662 patent, col. 6, ll. 25-56. The claim language discloses the structure of the remote terminal means. It describes the component parts of a terminal. The phrase starts "plural remote terminal means, *each including* . . . " – in other words, the remote terminals are comprised of the component parts that follow that language. The function of the remote terminal means, although it is not stated in the usual means-plus-function format, is to store, retrieve and display at a remote site digital information obtained from the computer means. The explanation of these components contains sufficient structure to perform this function. Therefore, the claim language overcomes the means-plus-function presumption.

In Turbocare, the Federal Circuit found that "radial positioning means" in the following claim language was not a means-plus-function:

> a radial positioning means comprising a compressed spring means biased against said ring segments to forcibly cause said segments to move to said large clearance position, while working fluid which is freely admitted to the annular space between said casing and said ring segments toward said small clearance position, whereby at low speed and small turbine loads the spring forces will predominate, while at high flows and high working fluid pressure the pressure forces will predominate.

264 F.3d at 1119. The structures for performing the function of positioning the ring segments were the compressed spring means and the working fluid. Id. Similarly, in the case at hand, I find that the component parts listed in the claim language describing the remote terminal means state its structure. Unlike in Turbocare, I have decided that some of these component parts are means-plus-function terms. However, I do not find that this distinction makes the meaning of the remote terminal means a means-plus-function where radial positioning means was not. The structure of the component parts is present – it is just found in a different part of the patent, in the specification, rather than in the claim language. Hence, I find that the phrase "remote terminal means" is not a means-plus-function.

For the same reason, I have also concluded that "modem means" is not means-plus-function terms. There is no structure disclosed in the specification for this claim term other than a "modem."

I do agree with the parties, however, that display means, keypad means, local memory means, further memory means, means coupled to said memory means and to said keypad means, means responsive to information stored in the further memory means, and logic means are all means-plus-function terms.

CLAIM 3[2]

A digital information storage, retrieval and display system comprising:

> a central computer means in which plural blocks of information are stored at respectively corresponding locations each of which locations is designated by a predetermined address therein by means of which a block can be selected, each of said blocks comprising a first

[2] I will begin the analysis of each claim by quoting its claim language. There follows, in bold type, the Court's constructions of the claim language exactly as I will give it to the jury. I will then discuss why I have construed disputed terms as I have. Terms that were not disputed may not be discussed.

portion containing information for display and a second portion containing information not for display but including the complete address for each of plural other blocks of information;

plural remote terminal means, each including (a) modem means for effecting input/output digital data communications with said central computer means via the telephone lines of a telephone network, (b) local memory means for locally storing digital data representing at least the first portion of the selected block of information received via said modem means from the central computer and for processing digital data, (c) display means for visually displaying such a locally stored first portion of a block of information and (d) keypad means connected to communicate data to at least said local memory means for manual entry of keyed digital data; and

further memory means being provided as part of said local memory means at each of said remote terminal means for receiving and storing said second portion of the selected block of information in response to the selection of the block and when its respective first portion is transmitted thereto, said local memory means utilizing keyed digital data of less extent than any one of said complete addresses for another block of information but nevertheless uniquely indicative of one of the complete addresses contained in said second portion of the block of information which contains the first portion then being displayed for selectively accessing said further memory means and for supplying data to be transmitted by said modem means and indicative of the complete address of the next block of information which is to be retrieved and utilized for display purposes.

'662 patent, col. 6, ll. 13-56.

A. Central Computer Means

A computer is a device that receives, processes and presents data. In this patent, the computer is a single device, in one location. It is referred to as "central" because it is connected to numerous physically separate stations called, "remote terminals," by the telephone lines of a telephone network. So there is one computer, connected to many remote terminals. The central computer means in this patent thus serves as the hub of a digital information storage, retrieval and display system – and all of the remote terminals connect to it.

The central computer stores information. The central computer contains a "main store." In the context of this patent, the main store is a mass information storage or memory device. An example of a main store is a magnetic disk, which is a rotating circular plate having a magnetizable surface on which information may be stored as a pattern of polarized spots on concentric recording tracks. Now, a magnetic disk is not the only thing that qualifies as a main store – that term also includes such things as a Cartridge Disc (which is a type of disk storage device consisting of a single disk encased in a compact container which can be inserted in and removed from the disk drive unit), a Magnetic Tape

9 track, and a paper tape recorder. But the main memory device does not include something called RAM – random access memory. RAM is a type of memory that is volatile, meaning that it loses its contents when the power is turned off. RAM cannot be used as the main store in the context of this patent.

The central computer contains an information database, which is "centralized" in the sense that all of the remote users can access it by accessing the central computer. This data is stored as something the inventor called "blocks of information."

The central computer means communicates "via the telephone lines of a telephone network" with "plural remote terminal means." The central computer means is the device "in which plural blocks of information are stored at respectively corresponding locations." '662 patent, col. 6, l. 15. The central computer means retrieves and sends at least a portion of the "block of information" associated with the requested "complete address" to the remote terminal from which the request originated. Id., ll. 26-28, 53-54.

1. The "central computer means" is a central computer in one location

Throughout the specification, the "central computer means" is referred to as a computer, defined as "a device that receives, processes, and presents data." Dictionary of Scientific and Technical Terms 342 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984).[3] The word "central" modifies "computer" to describe the relationship between the device where the "blocks of information" are stored, and the "remote terminals" from which an operator may access the information. The term "central" therefore suggests that the computer is the hub of a "digital information storage, retrieval and display system." This hub is in one central location, connected with many remote terminals.

BT's proposed definition (a computer system that stores and transmits blocks of information) ignores the juxtaposition emphasized by the description of a "central computer" connected via the telephone lines of a telephone network to "remote terminals." (emphasis added). As Prodigy points out, "all the limitations of a claim must be considered meaningful," Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1562 (Fed. Cir. 1991), and no claim language may be interpreted as mere surplusage. Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1171 (Fed. Cir. 1993). BT's definition does not make it clear that the computer means is a "central one," and thus is incomplete. BT responds that the term "central"

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[3] Words in a patent claim are to be given their plain meaning (unless it appears the inventor used them otherwise). Bell Communications Research, 55 F.3d at 620. The Court derives the "plain meaning" of a technical term from a technical dictionary, just as I would derive the "plain meaning" of other words from an ordinary dictionary. Vitronics, 90 F.3d at 1584, n.6 (although technically extrinsic evidence, dictionaries may be consulted to assist in construing claim terms, "so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents").

is conveyed by the claim language that says that the remote terminals are connected "via the telephone lines of a telephone network." While the remote terminals are indeed connected to the central computer means via the telephone lines, this does not give meaning to the term "central" in the phrase "central computer means." Prodigy's definition, which clarifies that the central computer is in one location, does.

According to the specification, "information is derived from a central computer at a remote point and transmitted via the public telephone network to terminal apparatus." '662 patent, col. 1, ll. 9-11. This indicates that there is one central computer at one point, or place. Throughout the specification, the "computer" is referred to as a singular device. The embodiments in the detailed description and diagramed by the figures are also consistent with this interpretation. While the inventor carefully describes how the computer and any remote terminal are connected (via telephone lines), the inventor never mentions connections between the parts of the "central computer means." Therefore, I find that the specification confirms that the central computer is a single device, in one location.

2. The central computer contains a main store

The "central computer means" must have a "store" for storing data. The parties dispute whether the applicant specified a particular kind of store during the patent prosecution.

Several passages from the applicant's appeal briefs discuss storage on the central computer means. The applicant's communications with the patent office included references to a "store" (Jan. 26, 1983 Amend., Prodigy Br. Ex. 4, at 6-7), "a multi-address store" (Id. at 7), a "mass storage device" (Jan. 24, 1986 Appeal Br. at 1-2), a "central main 'store' or mass memory device such as a magnetic disk," (Id. at 2), a "main store (e.g. a disk)" (Id. at 3; Jan. 5, 1987 Appeal Br., at 3), and a "main data storage device" (Jan. 24, 1986 Appeal Br. at 9). While the applicant did mention many kinds of "stores" during the course of the patent prosecution, the most compelling citation is located in two of the applicant's appeal briefs where the applicant stated:

> Ordinarily one would be inclined to astutely avoid storage of the address-linking data on the disk store – where data access times are relatively long and where there necessarily must be competition for data accesses to obtain the display data itself. One typically seeks to reduce required accesses to the disk store.
>
> Nevertheless, applicant teaches:
>
> (a) Dividing up the total address linkage data array into sub-portions associated only with the possible next screen selections to be made on a given screen;
>
> (b) *co-storing such sub-portions on the main store (e.g. a disk)* contiguous with the said "given" screen data; and

> (c) *only temporarily stripping off and storing in RAM those sub-portions* which are associated with the screen and then actively being accessed and viewed within the system.
>
> In this manner, no extra disk access cycles are required (because the relevant co-stored address linkages are fetched at the same time a given "screen" of data is fetched) – and yet – the majority of the massive address linkage data is, at any given time, actually stored on the mass store (e.g. the disk)! The necessary size of RAM can be maintained within reasonable limits – and yet – the relevant portion of the address linkage array is always readily at hand for substantially immediate access in RAM.

(Jan. 24, 1986 Appeal Br., p. 3; Jan. 5, 1987 Appeal Br., p. 3 (italics added, underlining in original).) This reference is highly significant because it: (1) describes what the invention "teaches;" (2) distinguishes the invention over prior art with respect to the type of storage used; and (3) distinguishes between the "main store" (hard disk storage) and RAM.

BT argues that this citation to the prosecution history merely discusses the advantages of the technology of the Sargent patent, rather than distinguishes prior art. BT further argues that the file wrapper describes a number of different "stores," and Prodigy improperly attempts to narrow the claim to only one of those descriptions.

However, BT is incorrect. "Teaches" is a term of art in the patent world – what the patent "teaches" is the invention. Therefore, the explanations in this passage relating to the way data is stored in the system are of particular significance. In this passage, the applicant notes that the manner of storing information is the distinction between his invention and prior art.

The parties are particularly concerned about whether this passage disclaims the use of RAM as a "main store." This quote, found in two of the applicant's appeal briefs, supports Prodigy's contention that RAM has been disclaimed. The briefs open by describing the prior art in the world of "data base storage and retrieval system[s]." (Jan. 24, 1986 Appeal Br. at 1; Jan. 5, 1987 Appeal Br. at 2.) The applicant acknowledges that the usefulness of "abbreviated keyed-in selection data is recognized in the prior art." (Jan. 24, 1986 Appeal Br. at 2; Jan. 5, 1987 Appeal Br. at 2.) In such systems (i.e., abbreviated keyed-in selection data systems), "Then one might store the necessary full address linkage data in RAM where it is readily accessible for use in translating a user's keyed-in single digit . . . into the full disk-store address of the next desired screen." (Jan. 24, 1986 Appeal Br. at 2; Jan. 5, 1987 Appeal Br. at 2.) However, this "scheme" has its disadvantages "as more voluminous and complex data bases are considered." (Jan. 24, 1986 Appeal Br. at 2; Jan. 5, 1987 Appeal Br. at 2.) These drawbacks, as stated by the applicant, are that more RAM must be used for this function, proper updating may become complicated, and inefficient use of RAM and disk storage may result.

The applicant explains that his invention flies in the face of the conventional wisdom regarding storage of the address linkage data. (Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987

Appeal Br. at 2.) The accepted wisdom was to avoid storage on the disk store where data access times are too long. Applicant's appeal brief argues that his invention instead creates a system where address information would indeed be stored on the disk store, but divided up in such a way that it could be called up quickly accessed by the user. (Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987 Appeal Br. at 3.)

The applicant also taught that the address linkage data was to be divided into sub-portions associated only with the possible next screen selections to be made. These sub-portions of data were stored on the main store and *only temporarily* stripped off and stored in RAM when actively accessed and viewed within the system. The applicant thus explained the genius of his invention – that the information is stored on the main store in the central computer means and moved to RAM only when called up by the user. In the parlance of this patent, local memory means and further memory means may be RAM, but the main store may not be. Indeed, it is integral to the invention that the main store in the central computer not be RAM. BT cannot now claim that the store on the "central computer means" includes RAM, because the applicant argued during the prosecution of the patent that his invention taught against using this storage device.[4]

The applicant states that a disk is an example of the main store. A disk is "a rotating circular plate having a magnetizable surface on which information may be stored as a pattern of polarized spots on concentric recording tracks." Dictionary of Scientific and Technical Terms 471 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984). BT asserts that other examples of stores that the applicant suggested in the file wrapper are a 64KB Store Unit, Cartridge Disc (according to the technical dictionary, a type of disk storage device consisting of a single disk encased in a compact container which can be inserted in and removed from the disk drive unit, Dictionary of Scientific and Technical Terms 256 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984)), Magnetic Tape 9 track, and a paper tape recorder. These are all examples of nonvolatile storage, defined by the technical dictionary as "a computer storage medium that retains information in the absence of power, such as a magnetic tape, drum, or core." Dictionary of Scientific and Technical Terms 1093 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984). Given that the applicant used the term "e.g.," the Court certainly will not limit the main store to a magnetic disk and nothing else. But the fact that all of the examples listed by the applicant are types of nonvolatile storage confirms my conclusion that volatile storage, like RAM, was not within the scope of the "main store" as envisioned by the patentee.

3. The central computer contains a centralized information database

Similarly, the applicant made several references during the patent prosecution to the

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[4] As one of the attorneys for Prodigy pointed out, it is entirely possible that the applicant made these arguments based on the technological limitations of RAM back in the 1970s and 1980s that no longer pertain. Whether BT would make the same arguments today is irrelevant – the concession was made, and BT is stuck with it.

"centralized informational data base," (Mar. 28, 1985 Amend., Prodigy Br., Ex. 5 at 4-5), "centralized stored data file," (Id.; Jan. 24, 1986 Appeal Br. at 8-9; Jan. 5, 1987 Appeal Br. at 14-15), and "large mass publicly accessed informational data base[]." (Jan. 24, 1986 Appeal Br. at 9.) These references were used to describe the "digital information storage, retrieval system the applicant was attempting to patent" – "where the sole purpose of the remote [terminals] is to provide a great number of users substantially simultaneous access to a centralized stored data file" (See e.g., Jan. 24, 1986 Appeal Br. at 8) or the "centralized informational data base." (Id.) Therefore, BT cannot now claim that the "central computer means" does not contain a centralized information database.

B. Blocks of Information

Now, the central computer stores information in something called "blocks." There are many of these blocks of information stored in the central computer. Each block has a first portion and a second portion. These portions are separable, contiguous and co-stored sub-units. That means that the portions are stored together, and they are stored next to each other, yet they can be separated from each other. A block of information may contain very limited programming information, the purpose of which is to reduce the complexity of keying required to communicate with the central computer.

The two parts of a block of information are the first portion and the second portion. The first portion of a block of information is intended for visual display on a remote terminal. The second portion is information not intended for display. The second portion contains the complete address for each of the other blocks of information referenced in the first portion. So if a block of information is referenced in the first portion, then the complete address for that block of information will be in the second portion. The second portion may also contain other information as well, such as information to influence the display or to reduce the complexity of keying required to communicate with the central computer. But it never contains information intended for display.

The blocks of information are stored in "respectively corresponding locations." These are simply places on the central computer's main store where blocks of information are stored. Each of these locations has a predetermined address – that is, an address that was determined, or set, before the data is accessed.

The complete address is the entire number or name that uniquely identifies, without reference to other information, a location on the central computer's main store where a block of data will be found.

1. Block of Information

Everyone agrees that a block of information is a unit of data containing two sub-units, which the inventor denominated "first portion" and "second portion." Both parties agree that the two sub-units of data are "co-stored" – which I take to mean they are stored in conjunction with

one another – although that word does not appear anywhere in the claim. And while BT does not include the word "separable" in its construction, it can have no quarrel with that concept, since the patent plainly teaches that the two portions within a data block are to be separated and stored in two different memories after they are retrieved from the central computer means. The hotly contested issue in connection with the term "block of information" concerns the concept of contiguity, to wit: whether the two portions must be stored contiguously in order to fall within the ambit of the invention.

The plain language of the claim does not compel, or even suggest, such a limitation. Neither does the language of the specification. And I would not read this limitation onto the claim from the visual configuration of Fig. 2 in the specification, or from the use of the word "page" in connection with that figure. If such a limitation is to be imposed, it must follow from concessions made during patent prosecution.

The prosecution history is replete with references to the contiguity between the two portions of a data block. It is seen most clearly in connection with Sargent's two appeal briefs, which contain the following statements:

> Nevertheless, applicant teaches:
>
> > (a) dividing up the total address linkage data array into subportions associated only with the possible next screen selections to be made from a given screen;
> >
> > (b) co-storing such sub-portions on the main store (e.g., a disk) *contiguous* with the said "given" screen data;

(Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987 Appeal Br. at 3. (emphasis added)) By asserting that his patent "teaches" a system that stores the hidden portions of the data block portions contiguously with the display data, applicant limits himself to contiguous storage. This conclusion is reinforced by other references in the prosecution history to contiguous storage, such as its claim amendment of June 10, 1986 ('662 File Wrapper, Tab 22 at 7), in the 1987 Appeal Brief (Jan. 5, 1987 Appeal Br. at 12-13), which states that none of the references being distinguished teaches "a system wherein each screen of displayed data is associated with its own segregated but yet *contiguously* located and co-stored and co-addressed index . . . ."

BT asserts that any notion of contiguity, as used in the prosecution history, can only be understood as referring to the data's being "co-stored" (i.e. "stored together" or "stored in conjunction with each other"). Thus, BT asks me to read co-stored and contiguous as synonymous. However, the applicant's filings with the Patent Office suggest otherwise. As noted above, Sargent refers to data that is "contiguously located *and* co-stored *and* co-addressed." (Jan. 5, 1987 Appeal Br. at 12.) If contiguity and co-storing are one and the same,

the connective used by Sargent would have been "or," not "and."[5]

I therefore find that the two sub-units of information contained in a block of data must be contiguously stored as well as co-stored (stored together).

Prodigy asks me to incorporate the word "segregated" into the construction, relying on the same passage from the 1986 Amendment and the 1987 Appeal Brief, (Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987 Appeal Br. at 3; File Wrapper Tab 22), to clarify that the portions may not be intermixed. While the word "segregated" does appear in the specification and the prosecution history, I am not aware of any rule of patent construction that requires me to incorporate each and every word ever used in conjunction with a patent claim in the claim construction. The parties have not suggested any meaning for "segregated" that makes it integral to the definition of the term "block of information." The very idea of the block's two discrete sub-parts – the first and second portions – incorporates the notion of segregation or separability, and I have already decided to include separability in the definition. It will unnecessarily confuse the jury to incorporate a second word that means much the same thing.

Prodigy also asks the Court to insert a temporal limitation into the definition of block of information, namely, that the first and second portions of the block must be accessed and transferred to their respective memories simultaneously. This limitation is derived from and supported by the claim language of Claims 3 and 5, each of which provides that the second portion is to be received by and stored in the further memory means "when" the first portion is transmitted to the remote terminal for display. "When" has been defined by the Federal Circuit as "at the time of, and not some appreciable time thereafter." Renishaw PLC v. Marposs Societa Per Azioni and Marposs Corp., 158 F. 3d 1243, 1252 (Fed. Cir. 1998). Thus, the use of the word "when" in the claim language suggests simultaneous transfer – an inference bolstered by the prosecution history, which makes liberal use of the word "simultaneous" and its synonyms, including "jointly" and "at the same time." (Aug. 29, 1983 Amend., Prodigy Br., Ex. 6; Apr. 3, 1984 Amend., Prodigy Br., Ex. 8.)

My problem is not with the limitation, but with where Prodigy seeks to place it. The temporal limitation is really part of the function for another aspect of the invention – the "further memory means." As it fits logically into that context, and is more than a little strained as part of the definition of the block of information, I shall put it where it belongs.

Finally, Prodigy asks that I decree that blocks of information as used in this patent do not encompass computer programs transmitted to the remote terminal. Prodigy does so on the basis of four virtually identical references in Applicant's March 28, 1985 and April 3, 1986 Amendments and its January 24, 1986 and January 5, 1987 Appeal Briefs, which were inserted to distinguish the Tsuda patent. The applicant stated, for example, that:

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[5] This makes no practical difference. If co-storage and contiguity are synonymous, then "stored together" would also mean "stored side by side."

> a very large amount of requested access traffic can be expected at the main computer site at any given time. Consequently, approaches like that of Tsuda et al where an entire program segment in downloaded on an ongoing basis simply would be unacceptable. . . .

(March 28, 1985 Amend. at 7). BT responds by citing the specification, which includes that "the second part of a block of information may include software, that is programming information, for simplifying entries to be made by an operator on the basis of the information displayed to him by the terminal apparatus." '662, col. 2, ll. 21-24. Given that the specification states "a block of information may include software," there must be strong proof in the file wrapper to exclude software from the "blocks of information." See Vitronics, 90 F.3d at 1583. The prosecution history citation demonstrates that under the Sargent patent, downloading an entire program segment on an ongoing basis is not acceptable. Prodigy asks the court to construe that the second portion may never contain program information at all. Prodigy points to a March 28, 1985 amendment to the '307 application as proof of its theory:

> it should be clearly recognized that the digital data being downloaded in Tsuda et al is a computer program and not mere key translation data containing the complete address for each of plural other blocks of "display" information – which can be independently and uniquely selected by the user's keyed-in responses.

(March 28, 1985 Amend. at 6.) The Tsuda invention is an educational tool that uses a computer program to respond to a user's inputs to determine the next page to access. (BT Reply Br., Ex. L, col. 1, l. 54 - col. 2, l.7.) Tsuda does not store together or download the linking information along with the information for display. The inputs in the Tsuda reference do not correspond to the complete address for other blocks of information – in fact, in that invention, what was called up on the screen depended on a number of factors, including the amount of time that it took for a student to answer the question. (Id.; see also March 28, 1985 Amend. at 6-7.) The kind of complicated computer program necessary in Tsuda cannot be used in the Sargent patent; the Sargent applicant limited himself to "mere key translation data." This term suggests a simple operation, however in order to perform the translation, a limited amount of programming information may be necessary. In other words, the '662 patent is limited to the kind of programming information disclosed in the specification – that which is used to "simplify[] entries to be made by an operator on the basis of information displayed to him by the terminal apparatus." '662, col. 2, ll. 21-24; see also col. 4, ll. 25-37 (stating that one of the uses of the information in the second portion of the block of information could be "to reduce the complexity of keying required to communicate with the computer 1"). I therefore find that the block of information may only contain very limited programming information, the purpose of which is to reduce the complexity of keying required to communicate with the central computer.

2. First and Second Portions

As to the first and second portions, both parties agree that these are the two sub-units of a block of information; that the first portion is intended for visual display at the remote terminal; and that the second portion is not intended for visual display. They part company over Prodigy's

desire to incorporate additional limitations onto each portion's definition. As to the first portion, I agree with BT that simpler is better; as to the second portion, I am constrained to conclude that Prodigy's definition more accurately describes the claimed invention.

Prodigy wants the definition of "first portion" to limit the form of the display at the remote terminal to "a plurality of parallel lines of alphanumeric and/or graphical data constituting a screen." It contends that the phrase "first portion containing information for display" used in the claim has no plain English meaning, and thus must be defined by recourse to the preferred embodiment set forth in the specification. This is nonsense. The phrase "first portion containing information for display" can be readily understood by the lay reader (of which this Court is one). It is not a technical term; the simple English words contained in the phrase need no particular defining, and it can be understood without recourse to any other material. BT is correct when it asserts that, in this instance, Prodigy is attempting to limit the claims to the preferred embodiment, which is improper. Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1341 (Fed. Cir. 1999).

When it comes to defining the "second portion," however, Prodigy is on the mark: the essential feature of the "second portion" of the block of information is that it contains the complete address where each of the pages that are referenced in the data displayed on the remote terminal can be found. That is clear from the claim language itself: it states, without any ambiguity whatever, that the block of data includes "a second portion containing information not for display but including the complete address for each of plural other blocks of information." '662 patent, col. 6, ll. 21-24.

I do, however, note something else. The clear claim language states that the second portion of information includes the complete address for other blocks of information. But the claim language does not state that this is *all* the second portion includes. Therefore, the second portion might contain other information, as well. The specification confirms that the second portion can include other information in addition to those complete addresses. In fact, it clearly states, "it will be appreciated that the second part of each block could have other uses, both for influencing the nature of the display produced and to reduce the complexity of keying required to communicate with the computer 1 . . . ." Id., col. 4, ll. 25-37. Therefore, I find that the second portion is not limited to complete addresses alone, but may contain other information, as well.

3. Complete Address

The term "complete address" is not difficult to understand. An "address" is "the number or name that uniquely identifies a register, memory location, or storage device in a computer. Dictionary of Scientific and Technical Terms 27 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984) (computer science usage). "Complete" means whole or entire or full. Thus, a block of data's "complete address" is the entire number or name that uniquely identifies a register, memory location, or storage device in a computer where a block of information will be found.

Prodigy, as usual, wants me to add a number of limitations to this rather straightforward

definition. Prodigy argues that the complete address is "a known, unique and unambiguous reference for each block of information, specifying without reference to other information the physical location on the central computer's mass memory device of the next block of information to be retrieved." It also asks that I construe the patent as limited to circumstances in which the "next block of information" can always be retrieved in "one memory device cycle."

My first problem with Prodigy's "known, unique and unambiguous reference" language is that it is unnecessarily wordy. The definition of "address" incorporates the word "unique," and much of the rest of their proposal is surplusage.

The larger issue is whether the complete address is a physical address or whether it may be a virtual one. A virtual address is "a symbol that can be used as a valid address part but does not necessarily designate an actual location." Dictionary of Scientific and Technical Terms 1732 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984) (computer science definition). Virtual addressing encompasses the concept of "pointers." A pointer is "the part of an instruction which contains the address of the next record to be accessed." Dictionary of Scientific and Technical Terms 1237 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984) (computer science definition). BT argues that the complete address covers virtual addressing because physical and virtual addressing were both known in the art at the time, and nothing in the Sargent patent or its prosecution precludes having a complete address point to another complete address, which ultimately points to the desired block of information. I disagree.

Let me review here what the Sargent patent does. This invention stores linking data associated with a given display page together in one block in the main memory with that same display page. (Fedida, for example, differed from this invention by storing the linking information in its own separate location on the main memory disk. The problem with that system was that in order to identify the complete address of the next display page, the main disk store would have to be accessed again.) The point of the Sargent invention is that the linking data is moved to the further memory at the same time as the display page is moved to the remote terminal. This linking data "may subsequently be accessed upon the keying of an abbreviated code (e.g. a single digit) without the need to search through a more comprehensive collection of linking data that might be separately stored somewhere in the main memory disk files." (Apr. 3, 1984 Amend. at 5-7.) In the Sargent invention, there is no need to go anywhere else other than the further memory in order to call up the next page of information to be displayed. This allows the Sargent invention to call up information quickly by avoiding "bottlenecks" at the main disk store. The Sargent invention "speed[s] up operations by avoiding the necessity for doing a possible further disk access when a user response is received." (Id. at 7.)

During the course of the patent prosecution, the applicant distinguished the NTZ article by stating that his simple addressing system allows the "abbreviated keyed-in data to directly read out the complete address of the next block to be fetched from the main store." (Dec. 4, 1985 Amend., File Wrapper Tab 16 at 9-10.) In distinguishing the Sargent patent from Tsuda the applicant stated:

> Indeed, the execution of a "Judge Order" (col. 6, line 40 et seq.) [as described in Tsuda] involves a fairly complex algorithm to determine what next should be displayed. By contrast, the applicant's novel arrangement permits one to merely directly read out from a 'further' memory the next complete address – as addressed by abbreviated input keyed-data.

(Id. at 7.) I find the term "directly" in these phrases to mean just that – in a direct manner, rather than an indirect one which would point to an infinite number of other complete addresses before calling up the next block of information. A virtual address is simply not a complete address.

> In its decision to allow the claims, the Patent Board of Appeals stated that:
>
> We find no indication, however, that the 'Request Order' [taught by Tsuda] includes the complete address of the next block of information which is to be retrieved and utilized for display purposes as claimed. At most it would appear to us from a review of the [prior art] that the data included in the request order [taught by Tsuda] would be used by the computer [] for determining such an address.

(Prodigy Br., Ex. 12, p. 4.) This passage lends the strongest support to Prodigy's argument that the "complete address" does not reference another address, but rather, that the "complete address" is what is referenced. A complete address is therefore more than simply the address by which the central computer is able to retrieve a block of information. The complete address calls up the block of information directly, without reference to another address. The operating system software of the computer that Sargent referenced as implementing the Viewdata system may have included the capability of using pointers. (See Further Declaration of Graham David Turner, Ex. B, at § 3.2.)[6] However, the applicant's arguments to the Patent Board regarding his invention indicated that the complete address directly called up the blocks of information without referencing other information.

I decline to include Prodigy's additional language that the complete address enables retrieval of a block of information in one memory access cycle. Prodigy notes that, in a 1984 Amendment, applicant emphasized to the patent office that the Sargent invention constituted an improvement over the Fedida prior art reference because "the present application has described and claimed a novel system structure wherein linking data is stored together in the main memory with that same display page as a block of commonly accessed data such that it is jointly accessed in one access cycle." (Apr. 3, 1984 Amend. at 6 (emphasis in original).) However, this passage only refers to the fact that the first and second portions (linking data and display page) can be accessed in a single memory cycle (which is a necessary accoutrement of their being stored as a block). Prodigy cites several similar references in support of their argument. (August 28, 1983 Amend. at 8-9; January 24, 1986 Appeal Br. at 3.) I find that these citations refer to the fact that

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[6] I could not reach any such conclusion without reference to extrinsic evidence, but I do not need reach the matter.

the Sargent patent eliminates the need for multiple accesses to the main disk store, rather than to any suggestion that the block of information must be retrieved in one memory access cycle.

The complete address must also be "predetermined." Again, the parties complicate matters without need when they try to read too much into the "predetermined" nature of the address. An address is "predetermined" if it is determined prior to the block of data's being selected by the operator at the remote terminal. Contrary to Prodigy's assertion, it is not necessary to decide precisely when the predetermined address must be determined in order to construe the claim language – though as Prodigy points out, it may be necessary for anyone using the invention to predetermine addresses at some particular point in order for a product using the invention to work properly.

4. Respectively Corresponding Locations

The next term that I must address is "respectively corresponding locations." According to the technical dictionary, a location is "any place in which data may be stored." Dictionary of Scientific and Technical Terms 932 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984) (computer science definition). Respectively corresponding locations are places on the central computer's main store where blocks of information are stored. According to the claim language, each of these locations has a predetermined address that corresponds to the location.

The main point of contention between the parties regarding this claim phrase is how the blocks of information are stored. BT argues that the locations need not be physical locations because the claim is broad enough to cover virtual addressing. BT agrees, however, that the claim language states that the blocks of information are stored at respectively corresponding locations in the central computer means. (BT Br. at 13.) And, as discussed above, the central computer means has a main store (e.g. a disk, or some other nonvolatile storage device) for the purpose of storing these plural blocks of information. I am convinced, in light of the claim language, specification and prosecution history, that the applicant taught that the blocks of information are stored in this main store. (See Jan. 24, 1986 Appeal Br. at 3; Jan. 5, 1987 Appeal Br. at 3. See also Apr. 3, 1984 Amend. at 5-6 ("the computer must somewhere store information linking the keyed abbreviated response (e.g. digit) and the complete address of the next desired display page. . . [T]he present application has . . . claimed a novel structure wherein linking data associated with a given display page is stored together in the main memory with that same display page as a block of commonly accessed data.") (emphasis in original).) I therefore cannot accept BT's assertion that the blocks of information can be stored in locations other than in a nonvolatile storage device.

C. Remote Terminal Means

Now, remember that I told you that the central computer means was the hub of a digital information, storage retrieval and display system, and that there are many remote terminals connected to it. The remote terminals are used to store, access and display digital information obtained from the central computer means. The remote terminals are

physically remote (i.e. separate and apart from) the central computer means. They are made up of the following parts: a modem, memory, a display, and a keypad. I will tell you about these parts of the remote terminals in a minute.

The word "terminal" means "a site or location at which data can enter or leave a system." Dictionary of Scientific and Technical Terms 1623 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984). A terminal is an apparatus, and I have used that word in the definition. The necessary component parts are listed in the claim language, and hence are included in the definition. They are, of course, separately defined.

Just as the term "central" is integral to the definition of "central computer means," so the word "remote" must be part of the definition of "remote terminal means." The definition of remote is obvious.

The technical dictionary supports this conclusion, defining "remote terminal" as "a computer terminal which is located away from the central processing unit of a data-processing system, at a location convenient to a user of the system." Dictionary of Scientific and Technical Terms 1359 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984).

BT points out that nothing in the claim language, the specification, or the file wrapper suggests that the remote terminal must be a dumb terminal – that is, a terminal incapable of performing data processing functions. BT is essentially correct. There is one reference in the specification to a simplified form of computer terminal, which differs from what Sargent calls "the conventional computer terminal" in two ways: "in the simplicity of its operation and in the form of its display." '662 patent, col. 1, ll. 19-20. Prodigy asks the Court to infer from this rather non-specific language that any complex machine (such as a personal computer) could not serve as a remote terminal in the context of the invention.

Prodigy reads far too much into these words. The ONLY identified ways in which the remote terminal is "simplified" are that it is easy to operate and has a simplified form of display – in short, the remote terminals are user-friendly. Today's personal computers are extremely easy to operate and have a very simple form of display from the perspective of the user. True, in 1976, when the patent was first submitted, the form of display on today's computer monitors – which far exceeds the quality of the most expensive television set a quarter century ago – was a Jules Verne-esque concept. But the fact that the technology that creates the display is complex does not render "the form of its display" complex as well. Nothing in the language of the patent or in the prosecution history that would force me to read "dumb terminal" onto the claim language.

Indeed, there is language in the specification that would preclude such a reading. The specification states that the second part of the block of information "may include software, that is programming information, for simplifying entries to be made by an operator on the basis of the information displayed to him by the terminal apparatus." '662 patent, col. 2, ll. 21-34. (See

definition of "block of information" *infra*.[7]). Since the second part of the block of information may, in certain configurations (the Fig. 3 configuration), be stored in a "further memory" located in the remote terminal, it stands to reason that the remote terminal must be capable of downloading a computer program.

Finally, Prodigy asks the Court to include in the definition of remote terminal means a limitation stating that the sole purpose of the remote terminals is to provide a great number of users substantially simultaneous access to the centralized data store. BT correctly responds that, while this is how remote terminals are used in the invention, the ultimate use of the device is not an integral part of what it is, and hence, part of its definition. Once again, Prodigy seeks to get at the concept of the dumb terminal by the back door – or, rather, to eliminate today's personal computer as a form of remote terminal. I decline Prodigy's invitation.

D. Modem Means

Each of the remote terminals contains a modem means. Fortunately, I think most of you will have some familiarity with modems and what they do. A modem is a device that is connected to the telephone lines of a telephone network. The purpose of the modem is to take digital information from the central computer and translate it into audio signals so that the information can be transmitted over the telephone lines. In the other direction, the modem takes audio tone signals and converts them into digital information so that they can be read by the computer.

The parties do not have any disputes regarding this claim term. They agree that the function of the modem means is "modulating signals to be transmitted to the central computer via the telephone lines of a telephone network, and demodulating signals received from the central computer via the telephone lines of a telephone network." The parties' construction accords with the technical dictionary's, defining a modem as "a combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the line, and vice versa." Dictionary of Scientific and Technical Terms 1033 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984). A "modulating signal" according to the technical dictionary is "signal which causes a variation of some characteristics of a carrier." Id. at 1034. To demodulate is "to recover the modulating wave from a modulated carrier. Also known as decode; detect." Id. at 428. To put it simply, a modem is a device that varies signals so that data can be sent from the central computer over the telephone lines of a telephone network, and also decodes signals so that the central computer can receive data via the telephone lines of a telephone network.

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[7] This is an example of Prodigy's strategy of inserting the same concept, clothed in slightly different verbiage, into the definition of multiple terms in the patent – most of which cannot accommodate the concept. This issue is dealt with as part of the definition of "second portion." It does not belong in the definition of "remote terminal."

E. Display Means

The remote terminal has a display means. The purpose of the display means is to display the first portion of a block of information retrieved from the central computer. The structure that this patent discloses for performing this function includes a television receiver, a cathode-ray tube screen, a display, some special purpose apparatus for performing this function, or a special purpose alphanumeric display and structural equivalents.

I agree with the parties that this claim term is expressed in means-plus-function format. The term "means" is in the claim, followed by functional language. Insufficient structure is disclosed to rebut the means-plus-function presumption.

The parties agree that the functional language in the claim is "visually displaying such a locally stored first portion of a block of information." They also agree on the construction of this function – displaying the first portion of a block of information retrieved from the central computer. This is a straight-forward construction of the functional language, and I have no problem with it.

The parties also agree on the structure disclosed in the specification – a display, cathode-ray tube screen, a television receiver, a special purpose apparatus, or a special purpose alphanumeric display and structural equivalents. These structures are all disclosed in the patent specification, see Figure 1; Figure 3; Col. 1, ll. 20-26, and are clearly linked to the function of the display means. B. Braun Medical, Inc., 124 F.3d at 1424.

Prodigy properly limits "equivalents" to "structural equivalents." A means-plus-function element only encompasses a device that "employ[s] means identical to or the equivalent of the structures . . . described in the patent specification." Valmont Indus., Inc., 983 F.2d at 1042.

F. Keypad Means

The purpose of the keypad means is the manual entry of keyed digital data. An operator located at the remote terminal presses one or more keys in order to input information. The information that the operator provides to the keypad means may be in the form of numbers or letters. The structure for performing this function is a keypad or keyboard, and their structural equivalents. The keypad or keyboard may be numeric or alphanumeric, that is, they may have the capability of typing only numbers, or they may be able to type numbers, letters, and symbols.

The parties agree that the claimed function of the keypad means is "manual entry of keyed digital data." This claim language is straight-forward. Manual input is defined as "the entry of data by hand into a device at the time of processing." Dictionary of Scientific and Technical Terms 972 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984).

The structure for performing this function is a keypad, or a keyboard, and structural equivalents. These structures are disclosed in the specification, see Fig 1; Fig. 3; '662 patent, col. 1, l. 29; col. 2, l. 60; col. 3, l. 38; col. 4, l. 7-18, 60, 65; col. 5, ll. 4-16, and are clearly linked to the claimed function of the keypad means. B. Braun Medical, Inc., 124 F.3d at 1424.

Prodigy argues that the structure of the keypad means is limited to a device with numerically labeled keys. (Prodigy Br. at 30.) A keypad is "a cluster of special-purpose keys to one side of the regular typing keys on a terminal keyboard." Dictionary of Scientific and Technical Terms 1028 (Sybil P. Parker ed., McGraw Hill 4th ed. 1989). The patentee also disclosed a "keyboard" in the specification, "a set of keys or control levers having a systematic arrangement and used to operate a machine or other piece of equipment such as a typewriter, typesetter, processing unit of a computer, or piano." Dictionary of Scientific and Technical Terms 870 (Sybil P. Parker ed., McGraw Hill 3d ed. 1984). Neither of these devices is limited to numeric keys. Limiting the operator to only numeric inputs would therefore improperly limit the claim language. Burke, 183 F.3d at 1341.

Prodigy asserts that because the operator input is referred to as "digital data," the structure of the keypad means must be limited to a device with numeric keys. The term "digital data" is used in the claim for a reason that has nothing to do with the nature of the keypad. Computers manipulate data in digital form, even if that data represents letters or other non-numeric symbols. For example, if I type "The quick brown fox jumped over the lazy dog" into my computer, it is digitized, or translated through the magic of computer technology into a series of digits, 0s and 1s. The claims use "digital data" to refer to the code as stored in local memory, communicated via modem, and received as operator input. '662 patent, col. 6, ll. 26-27, 29-30, 37-38.

Prodigy cites portions of the specification in support of a numeric limitation on the keypad. Id., col. 1, ll. 26-31; col. 2, ll. 24-28; col. 4, ll. 10-18. These excerpts describe the preferred embodiment, which indisputably utilizes numeric inputs. However, the specification also gives alternatives to the preferred embodiment. For example, the Sargent patent describes an educational program where answers are the input. Id., col. 4, ll. 48-52. The specification does not limit these answers to numeric input.

BT would like me to add the term "data entry means" to the list of structures for the keypad means. The phrase "data entry means" does appear in the specification: "[t]he terminal apparatus may include data entry means, such as a manual keyboard . . . ." '662 patent, col. 2, ll. 59-60. However, the term "data entry means" describes the function of the manual keyboard (entering data) – it does not describe the structure of the keypad means. If I included "data entry means" as a disclosed structure, I would conflate the function with the structure. This is not permissible under the means-plus-function construction rules, which mandate that the structure and the function are not the same thing! The structures corresponding to the claimed function must be specifically identified in the specification. See B. Braun Medical Inc.,124 F.3d at 1425; Fonar Corp. v. General Electric Co., 107 F.3d 1543, 1551-52 (Fed. Cir. 1997) ("The '966 specification discloses uses of a generic gradient waveform. Although it states that other

waveforms may be used, it fails to specifically identify those waveforms. Thus, under section 112, § 6, claim 12 is limited to use of a generic gradient waveform and its equivalents."). I therefore do not add "data entry means" as a disclosed structure of the keypad means.

G. Keyed Digital Data

Keyed digital data is the information that is generated by manually pressing one or more keys of the keypad means, converted to digital form. Digital data is stored in combinations of the digits 0 and 1.

Prodigy seeks to include that this input is "uniquely indicative of one of the complete addresses contained in the second portion of the block of information." This addition is not an appropriate part of the definition of keyed digital data.

H. Local Memory Means and Further Memory Means

The remote terminal also contains something called the local memory means. According to claim 3, when a block of information is selected by the operator via her keyed input, and called up to the remote terminal, the block of data splits apart and the two portions go to separate parts of the local memory means. These portions of data are simultaneously transferred – that is, they go to their respective places at the same time. The second portion of the block of information is received by and stored in the further memory means when the first portion is transmitted to the remote terminal for display.

The first portion of the block of information that is received from the central computer goes to what we will call "Memory A" of the local memory means and the second part goes to what we will call "Memory B." Memory B has a special name – it is called the further memory means – and in this claim, it is a part of what it is called the local memory means. The purpose of the further memory means (or Memory B) is to receive and store the second portion of the block of data that the remote terminal user has selected from the central computer – the portion containing the complete addresses that are referenced in the data that is displayed on the remote terminal.

In addition to storing the first and second portions of the block of information, the local memory means figures out the complete address for the block of information that is associated with an abbreviated address. According to the claim, the operator enters keyed digital data of "less extent" than any one of the complete addresses for other blocks of information that are contained in the second portion, but which is nevertheless uniquely indicative of one of those complete addresses. The keyed digital data is sort of like an abbreviation for the complete address. By inputting this abbreviated form of the complete address for the next block of data that the operator wishes to access, the operator accesses the further memory means – where, as you will recall, the second portion containing the complete addresses is stored – and retrieves the complete address represented by the abbreviation. That complete address is then transmitted, via the modem, to the central

computer, where the new block of information desired by the terminal operator is retrieved and sent to the remote terminal, so that he or she can view the first portion of this new block of data.

The abbreviated address is indicated by keyed digital data. Remember, we already described keyed digital data as operator input that is generated by manually pressing one or more keys of a keypad or keyboard or their structural equivalents.

For example, if a user at the remote terminal punches in 9, then that information is transmitted by the modem to the local memory means, and the local memory means determines what the complete address is that corresponds to the number 9 – let us say that complete address is 987.654.321. The local memory means then gives that complete address to the modem means. The modem means transmits that information to the central computer, and the new block of information is retrieved and sent to the remote terminal.

The structure of the local memory means in claim 3 is memory, a memory control unit, or a memory logic unit, and their structural equivalents. The structure of the further memory means is memory and its structural equivalents.

1. Local Memory Means

Everyone agrees that this phrase is written in means-plus-function format. The term "means" is in the claim, followed by functional language and insufficient structural information to describe precisely the device that performs the function.

Everyone also agrees that the recited function in the claim language is "locally storing digital data representing at least the first portion of the selected block of information received via said modem means from the central computer and processing digital data." '662 patent, col. 6, ll. 29-33.

The storing function of the local memory means is locally storing at least the first portion of the selected block of information received via the modem means from the central computer. In claim 3, the local memory means may store data other than the first portion of the block of information – but it stores "at least" that first portion.

The local memory means in Claim 3 also performs an additional function — processing digital data. The parties part ways over the construction of this function. BT asserts that this function is "determining the address associated with keyed digital data" and then supplying that address to the modem means, while Prodigy urges that the function should be "selecting for another block of information its complete address associated with keyed digital data" and then supplying that address to the modem means.

The difference between the parties' contending definitions are not great, but Prodigy's definition more accurately describes what the local memory means really does when "processing

digital data." Prodigy takes its language from claim 3. This passage describing the local memory means states:

> said local memory means utilizing keyed digital data of less extent than any one of said complete addresses for another block of information but nevertheless uniquely indicative of one of the complete addresses contained in said second portion of the block of information which contains the first portion then being displayed for selectively accessing said further memory means and for supplying data to be transmitted by said modem means and indicative of the complete address of the next block of information which is to be retrieved and utilized for display purposes.

'662 patent, col. 6, ll. 44-56. Once the reader parses this convoluted passage, the function is relatively clear: the local memory means takes the abbreviated address that is given to it in the form of keyed digital data and associates with that abbreviated address the complete address for another block of information. I construe the processing digital data function to mean determining the complete address for another block of information that is associated with the abbreviated address received in the form of keyed digital data.

The remaining issue is the structure associated with these functions. Both parties agree that the structure corresponding to the claimed function of the local memory means is described as Memory A in the specification, "[w]hen a block of information is received from the computer 1, the first part is stored in memory A 7 and the second part in memory B 14 under the control of memory control unit 8." Id., col. 4, l. 68 - col. 5, l. 4. Prodigy argues that the memory device is therefore separate from the further memory means since the parts of the block of information go to different places. BT points out, however, that claim 3 requires "further memory means being provided *as part of* said local memory means." Id., col. 6, ll. 39-40 (emphasis added). BT therefore argues that the structure associated with the local memory means in this claim does not necessarily have to be separate from the further memory means. I agree. Indeed, under claim 3, the local memory means *cannot* be structurally separate from the further memory means. The language of claim 3 clearly states that the further memory means is a part of the local memory means.

BT argues that the structures disclosed in the specification are memory, a memory controller, and memory logic, while Prodigy asserts that the disclosed structures are a memory device, a memory control unit and a memory logic unit. The specification discloses "memory," Id., col. 3, l. 29, l. 60 - col. 4, l. 4, a "memory control unit 8," Id., col. 3, ll. 30, 34-35, 61, 68; col. 4, ll. 3, 58, 66; col 5, ll. 3-4, "memory B LOGIC unit 16," Id., col. 4, ll. 59-60, and "logic unit 16," Id., col. 5, ll. 8, 14. I find no reason to limit the structure of memory A in this claim to a memory "device," nor will I read out the word "unit" in the disclosed structures. Hence, I find that the structures associated with the local memory means are memory, a memory control unit, a memory logic unit, and structural equivalents.

2. Further Memory Means

Further memory means is recited in means-plus-function format. The parties disagree

about the recited function of the "further memory means," the proper construction of that functional language, and the identification of the structures in the specification that correspond to the claimed function.

Prodigy argues that the recited function in this claim is "receiving and storing said second portion of the selected block of information." BT urges the Court to add on to the end of this language, "selected by a particular terminal means." I find that the recited function is "receiving and storing said second portion of the selected block of information in response to the selection of the block and when its first portion is transmitted thereto." '662 patent, col. 6, ll. 42-44.

As for the construction of this function, I find that the purpose of the further memory is to receive and store the second portion of the block of data that the remote terminal user has selected from the central computer – the portion containing the complete addresses that are referenced in the data that is displayed on the remote terminal. This is a straight-forward reading of the functional language. It is consistent with Prodigy's construction, although with slightly different wording. BT's construction does not include the idea that the block of information is selected by the user, which is odd, since BT urged that the recited function should include the idea that the block of information is selected by a particular terminal means.

BT argues that the structure corresponding to this function is memory and equivalents. Prodigy asserts that the structure disclosed in the specification corresponding to the function of the "further memory means" is a memory device of the terminal means separate from the memory device of the local memory means and structural equivalents. Because of the reasons stated in the discussion of "local memory means," see *infra*, page 28, I disagree with Prodigy that the further memory means in claim 3 is a memory device separate from the local memory means. I also find no support in the specification that the disclosed structure of the further memory means is a "memory device" rather than simply "memory."

CLAIM 5

> A terminal apparatus for use in a digital information storage, retrieval and display system having a central computer and a plurality of remote terminal apparatuses providing access via telephone lines to information stored in the central computer as plural blocks of information, each said block of information being stored at a respectively corresponding location designated by a predetermined unique address by means of which single address that complete block of information can be selected, each of said blocks comprising a first portion containing information for display at a remote terminal apparatus and a second portion containing information not for display but including the complete address for each of plural other stored blocks of information, said terminal apparatus comprising:
>
> (a) modem means for effecting input/output digital data communications with said central computer via the telephone lines of a telephone network,

(b) local memory means linked to said modem means for locally storing digital data representing at least the first portion of the selected block of information received via said modem means from the central computer,

(c) display means coupled to said local memory means for visually displaying such a locally stored first portion of a block of information,

(d) keypad means coupled to at least one of said modem means and said local memory means for manual entry of keyed digital data,

(e) further memory means for receiving and storing said second portion of a selected block of information when its respective first portion is transmitted for display to the terminal means, and

(f) means coupled to said further memory means and to said keypad means for addressing such second portion stored in said further memory means using keypad digital data of less extent than any one of said complete addresses for another block of information to address a portion of the further memory means and cause a read-out portion of the further memory means to supply the complete address of the next block of information which is to be retrieved and utilized for display purposes, the thus obtained complete address being transmissible via the modem means to said central computer.

'662 patent, col. 6, l. 66 - col. 8, l. 14.

Claims 5, 6, and 7 all describe terminals that might be found at a remote station in the information storage and retrieval system described in Claim 3. These three claims address only the remote terminal, not the entire system, but each terminal can only be understood in the context of the system in which it functions. Claim 5 sets out the basic structure of that system. Like the one described to you earlier, the system has a central computer and many remote terminals that provide access to information stored in a central computer. This information is stored as many blocks of information. Each block of information has a first portion and a second portion. Like before, the first portion contains information for display at the remote terminal, and the second portion contains information that is not for display. This "hidden" information contains the complete address for other blocks of information stored at the central computer. Each block of information has a predetermined address, just as before. With that predetermined address, the block of information can be called up out of the central computer.

Now, this terminal apparatus has several components. I will describe each of those components to you.

The terminal apparatus has a modem means and a display means that are exactly the same as the modem means and display means of the remote terminal that I described to you in the discussion of claim 3.

In claim 5, the "local memory means," "further memory means," and something called the "means coupled to said further memory means and to said keypad means," taken together, perform the same functions as the "local memory means" in claim 3 – they just have different boundaries based on the way the patentee phrased the claims.

The only function of the local memory means in claim 5 is to store in the remote terminal at least the first portion of the block of information received from the central computer through the modem means. The local memory means has a more limited function in claim 5 – it doesn't perform that extra processing function that was described to you in claim 3. So in claim 5, you can think of the local memory means as being limited to memory A. The structure for performing this function is a memory device within the terminal apparatus separate from the memory device of the further memory means.

Now, as in claim 3, this terminal apparatus also has a further memory means to receive and store the second portion of a selected block of information. The structure for performing this function is a memory device within the terminal means separate from the memory device of the local memory means. You will recall that, in claim 3, both the local memory means and the further memory means were the same device. So this is a difference between the terminal described in claim 3 and the terminal claimed in claim 5.

The claim 5 terminal also contains a "means coupled to said further memory means and to said keypad means." The means is attached to the further memory means and to the keypad means. It determines the complete address associated with keyed digital data and supplies that complete address to the central computer via the modem means. In other words, it receives the abbreviated address (in the form of keyed digital data) from the keypad means and then reaches into the further memory means to get the second portion of the block of information that is associated with that abbreviated address. This means coupled to said further memory means and to said keypad means then supplies the complete address to the modem means so that it can be sent to the central computer. The structure for performing this function is a memory control unit, a memory logic unit and structural equivalents.

I will discuss the local memory means and the means coupled to said memory means and to said keypad means here, since the rest of the disputed terms in this claim have been discussed above.

A. Local Memory Means

The parties and I agree that this claim is written in means-plus-function format. The functional language in the claim is "locally storing digital data representing at least the first portion of the selected block of information received via said modem means from the central computer." '662 patent, col. 7, ll. 18-21.

We also agree in principle, though not in verbiage, on the construction of this function. The parties' construction is "locally storing at least the first portion of the selected block of information received via said modem means from the central computer." The storing function of the local memory means in claim 5 is identical to the storing function recited in claim 3, and is construed identically. I agree with the parties that the concept of local storage should be kept in the claim construction, since this will help the jury understand that the function is to store at the remote terminal, as opposed to in the central computer means. But I simply say it outright, by noting that the local memory means stores in the remote terminal at least the first portion of the block of information received from the central computer through the modem means.

The structure associated with this function is a matter of dispute between the parties. Prodigy argues that the structure disclosed is a memory device of the terminal apparatus separate from the memory device of the further memory means, and structural equivalents. BT argues that the structure is simply memory and equivalents.

BT argues that the claim requires "further memory means being provided as part of said local memory means" (emphasis added) and not separate from the further memory means. However, this argument only applies to the remote terminal in claim 3. The underscored language does not appear in claim 5.

In the specification, the local memory means and the further memory device are two separate memory devices. The parties agree that, in the specification, Memory A is described as the structure for storing the first part of a block of information. '662 patent, col. 4, l. 68 - col. 5 l. 4.) In other words, Memory A is the local memory means. The second portion of the block of information is received by the further memory means, or Memory B. The diagrams in the patent depict Memory A and Memory B as separate devices. The text referring to the diagrams states, "[w]hen a block of information is received from computer 1, the first part is stored in memory A 7 [local memory] and the second part in memory B 14 [further memory] under the control of memory unit 8." Id., col. 4, ll. 68 - col. 5, l. 4.

The prosecution history of claim 5 contains the following language:

> none of the [prior art] references teach a memory control circuit (e.g., see element 8 in applicant's Figure 3) for identifying and separating first and second portions of a received block of information and for separately storing each of them in different respectively associated local memory devices."

(Jan. 5, 1987 Appeal Br., pg. 12, emphasis in original.) This brief is clear that the two portions of the block of information are stored in separate memory devices, and BT has not responded to this citation. While in general, words used in different places in a patent should be construed consistently, see Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1345 (Fed. Cir. 1998), the doctrine of claim differentiation commands that I not read one claim onto another. Comark Commun. Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998). The claim language in claim 5 differs from that in claim 3, and I cannot ignore the applicant's statement in this brief. I

therefore find that the local memory means and the further memory means are separate memory devices in claim 5.

B. Means Coupled to Said Memory Means and to Said Keypad Means

The parties agree that this claim phrase is written in means-plus-function format. They also agree that the recited function in the claim language of "means coupled to said further memory means and to said keypad means" is "addressing such second portion stored in said further memory means using keypad digital data of less extent than any one of said complete addresses for another block of information to address a portion of the further memory means to supply the complete address of the next block of information." '662 patent, col. 8, ll. 4-8.

They disagree, however, on the construction of that functional language, and on the identification of the structures in the specification that correspond to the claimed function.

I agree with BT that, in claim 5, the "means coupled to said further memory means and said keypad means" together with the "local memory means" serve the function that the local memory means serves in claim 3. (BT Br. at 21.)

Simplifying the recited claim language one step, it means – using the abbreviated address to address a portion of the further memory means (Memory B) to supply the complete address of the next block of information. Prodigy proposes that the construction should be "supplying to the central computer via the modem means the complete address uniquely associated with the keyed digital data based on the key translation data of the second portion stored in the further memory means." BT's proposal is the simpler "determining the address associated with keyed digital data, and supplying that address to the modem means." As has often been the case, BT's construction does not completely represent the claimed function, while Prodigy's proposal is overly-complicated. I therefore come down somewhere in the middle. The construction of the function of the means coupled to said further memory means and to said keypad means is "determining the complete address associated with keyed digital data and supplying that complete address to the central computer via the modem means." Complete address is defined above, therefore I have already addressed Prodigy's arguments regarding whether the address is "uniquely associated with keyed digital data" and will not repeat that discussion here.

The structure corresponding to this function, as disclosed in the specification, is a memory control unit, a memory logic unit and structural equivalents. '662 patent, col. 4, ll. 54-66.

CLAIM 6

A terminal apparatus as in claim 5 including means responsive to information stored in the further memory means for modifying signals derived from the keypad means to

produce the signals to be transmitted by the modem to a telephone line.

'662 patent, col. 8, ll. 15-19.

Claim 6 describes a terminal apparatus. Indeed, this terminal apparatus is just like the one described in claim 5, except it has one additional feature. Claim 6 includes a "means responsive to information stored in the further memory means for modifying signals derived from the keypad means to produce the signals to be transmitted by the modem to a telephone line." Now, this may sound like what the "means coupled to the further memory means and the keypad means" is, but it is a little bit different.

This means modifies – changes – the signals that come from the keypad means and then produces signals that are to be transmitted by the modem back to the central computer. It does this by combining keyed digital data with information that it receives from the further memory means.

This is different from the "means coupled to the further memory means and the keypad means" in claim 5. Remember, what that did was essentially matching up the abbreviated address with the complete address in the further memory means. The "means responsive" in this claim does something more than matching the addresses – it can combine the information it receives from the keypad means with information it takes out of the further memory means in order to *create* the complete address to send back to the modem.

So, to give you an example, let us suppose that the number 12 is keyed into the keypad means. But 12 is not enough to figure out what the complete address of the next screen should be. The "means responsive to information stored in the further memory means" would be able to modify this number 12, based on some information that it receives from the further memory means. In this case, the further memory means might give the "means responsive to information stored in the further memory means" information that is not necessarily a complete address, but rather some information that the "means responsive" can combine with what it has to create a complete address. The "means responsive to information stored in the further memory means" then produces signals that the modem means can send back to the central computer.

Now, remember, this is only an example of what the "means responsive to information stored in the further memory means" does – its function is to modify the signals that come from the keypad means and to produce signals that are to be transmitted by the modem back to the central computer. It does this by combining keyed digital data with information stored in the further memory means.

The structure for performing this operation is a logic unit, and its structural equivalents.

A. Means Responsive to Information Stored in the Further Memory Means

Everyone agrees that this element is recited in a means-plus-function format and that the functional language in the claim is "modifying signals derived from the keypad means to produce the signals to be transmitted by the modem to a telephone line." '662 patent, col. 8, ll. 15-19.

BT's construction of this function is "modifying signals from the keypad means to produce the signals to be transmitted to the modem." Prodigy proposes that the construction should be to "augment or modify address data from the keypad means by combining keyed digital data with the appropriate information stored in the further memory means and then transmitting the complete address of the requested next block of information to the central computer via the modem means." I find that Prodigy's proposal improperly narrows the claim meaning.

Prodigy and BT both argue that the logic unit 16 in figure 3 (referred to in the '662 patent, col. 5, ll. 4-11) is the depiction of the means responsive to information stored in the further memory means. According to that part of the specification, if the information stored in Memory B is used to modify address data from the keypad, the pressing of a key on the keypad causes the memory control to select the appropriate memory from Memory B and apply it to the logic unit 16 where it is combined with data from the keypad and the full address is then transmitted.

However, this is only an embodiment, albeit the preferred embodiment, of the broader claim language. I therefore find that BT's broader construction of the function of the "means responsive to information stored in the further memory means" is correct.

The structure for this function, as disclosed in the specification, is a logic unit and its structural equivalents. '662 patent, col. 5, ll. 4-11. I decline to limit the structure to a "further memory logic unit," since I find no support for that phrase is the specification. Nor is there support for BT's proposed structure of just "logic."

CLAIM 7

> A terminal apparatus as in claim 5 including logic means responsive to data entered through the keypad means and the second portion then stored in the further memory means, the logic means having an output connected to the local memory means which logic and local memory means jointly cause the generation of a display dependent (a) on the data entered through the keypad means and (b) on the second portion then stored in the further memory means.

'662 patent, col. 8, ll. 20-28.

That brings us to the last claim at issue, claim 7. Claim 7, like claim 6, describes a terminal apparatus similar to the one in claim 5. There is a difference between the claims,

however. In this claim, there is something called the logic means. The logic means acts together with the local memory means (Memory A, where the first portion of the block of information is stored) to put out a display. The logic means receives keyed digital data from the keypad means and also receives data stored in the further memory means. It then generates signals to the local memory means so that the display means knows what to display. The structure of the logic means is a logic unit – that is, a separate unit to carry out logical operations – and the structural equivalents of a logic unit.

Once again, in claim 7, the local memory means has a special definition. The local memory means in this claim, as in all the others, stores at the remote terminal at least the first portion of the selected block of information received via the modem means from the central computer. The local means in this claim, however, acts in conjunction with the logic means. Together, they cause the generation of a display dependent on two things – the data entered through the keypad means, and the second portion stored in the further memory means.

As for the structure of the local memory means in claim 7, it is a memory device of the terminal apparatus separate from the memory device of the further memory means, and structural equivalents.

Now, in order to help you understand how the Claim 7 terminal differs from the terminals described in Claims 5 and 6, I will give you an example of how these parts function. Imagine that the operator at the remote terminal in this claim is using an educational computer program. In this educational program, the display shows a question for the user to answer. (This question is the first portion of the block of data.) The user keys in an answer to the question by using the keypad. This answer (now in the form of keyed digital data) is combined with the data that is housed in the further memory means. The logic means then transmits a response to the local memory means, so that a new display is generated. This display might read "Very good, you have answered correctly" or "Wrong answer, try again." What I have described to you is only an example of how the logic means and the local memory means would act together to generate a new display, but I hope that will help you to understand how this terminal functions.

A. Logic Means.

The claimed function of the logic means is to "jointly cause the generation of a display dependent (a) on the data entered through the keypad means and (b) on the second portion then stored in the further memory means" '662 patent, col. 8, ll. 25-28.

According to the claim language, the logic means is what responds to the data in the keypad means and the second portion stored in the further memory means. The logic means is connected to the local memory means so that it and the local memory means jointly cause a display to be generated. This display is dependent upon the information entered through the keypad means and on the second portion stored in the further memory means.

The specification states that the "second part of each block [of information] could have other uses, both for influencing the nature of the display produced and to reduce the complexity of keying required to communicate with the computer 1." Id., col. 4, ll. 24-29. The specification describes the system as allowing the operator to play a game, or answering questions as part of an educational program. In this embodiment, the patentee states that:

> [t]his alternative embodiment [where the further memory means is located in the terminal instead of the central computer] would have an advantage if the displayed information were in the form of questions, for example, of an educational programme, because the answers would be stored in the memory B and they could be compared with answers provided by the user and entered through the keyboard without the need for further communication with the computer 1.

Id., col. 4, ll. 47-53. The example for the jury is adapted from the following example in the specification:

> Where an entry on the key pad 12 is in answer to a question, the entry is compared with the correct answer from the memory B in the logic unit 16 and the appropriate response applied via the line 17 for display.

Id., col. 5, ll. 12-16.

The structure for performing the function of the logic means is a logic unit and structural equivalents. Id.

B. Local Memory Means

The phrase "local memory means" in claim 7 is also a means-plus function. The parties and I agree that the claimed function is to:

> jointly cause the generation of a display dependent (a) on the data entered through the keypad means and (b) on the second portion then stored in the further memory means"

The structure of the local memory means is a memory device of the terminal apparatus having a connection to the logic means, and structural equivalents. Since this claim is dependent on claim 5, and I found that the local memory means in claim 5 is separate from the further memory means, I also include here that the local memory means is separate from the memory device of the further memory means. According to claim 7, the memory device is connected to the logic means, '662 patent, col. 8, ll. 23-24 ("the logic means having an output connected to the local memory means."), however I agree with BT that this claim language elucidates the function of the local memory means rather than describing its structure. Hence, the local memory means in claim 7 is a memory device of the terminal apparatus separate from the memory device of the further memory means and structural equivalents.

Further Proceedings

The claims having been construed, the parties have 30 days from today to file motions for summary judgment. The briefing schedule is as set forth in the Court's order dated February 4, 2002. The joint pre-trial order is due July 15, 2002. The final pre-trial conference will be held on September 6, 2002.

This constitutes the decision and order of the Court.

Dated: March 13, 2002

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U.S.D.J.