United States Court of Appeals for the Federal Circuit

03-1052

GEMSTAR-TV GUIDE INTERNATIONAL, INC.
and STARSIGHT TELECAST, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

SCIENTIFIC-ATLANTA, INC.,

Intervenor.

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Harold J. McElhinny, Morrison & Foerster LLP, for intervenors EchoStar Communications Corporation and SCI Systems, Inc., argued for all intervenors.[1] Also on the brief for EchoStar, et al., were Rachel Krevans, Ronald P. Flynn, and Zachariah A. Higgins; Stephen S. Dunham, of Denver, Colorado; Charles S. Barquist, of Los Angeles, California; and John L. Kolakowski, of McLean, Virginia. Of counsel on the brief were F. David Foster and Sturgis M. Sobin, Miller & Chevalier Chartered, of Washington, DC. On the brief for intervenors Pioneer Corporation, Pioneer Digital Technologies, Inc., Pioneer North America, Inc., and Pioneer Electronics (USA) Inc. were David P. Swenson and John T. Battaglia, Kirkland & Ellis, of Washington, DC;

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Appealed from: United States International Trade Commission

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DECIDED: September 16, 2004

Before MICHEL, CLEVENGER, and LINN, Circuit Judges.*

LINN, Circuit Judge.

Gemstar-TV Guide International, Inc. and Starsight Telecast, Inc. (collectively "Gemstar") appeal from a final order of the United States International Trade Commission ("ITC"), concluding that Scientific-Atlanta, Inc. ("Scientific-Atlanta") did not infringe Gemstar's U.S. Patents Nos. 5,479,268 ("the '268 patent"), 5,809,204 ("the '204 patent"), and 4,706,121 ("the '121 patent") (collectively "the patents-in-suit") and that the '121 patent was unenforceable for failure to join Dr. Edward Neil ("Neil") as a co-inventor.[2] In re Certain Set Top Boxes and Components Thereof, Inv. No. 337-TA-454 (Int'l Trade Comm'n Aug. 30, 2002).

Because the ITC correctly construed the "means . . . for displaying the television schedule" limitation of the '268 patent and correctly found that Scientific-Atlanta did not infringe under its construction, we affirm the decision as to the '268 patent. Because the ITC erred in construing the "visual identification" and "moving" limitations of the '204 patent, we vacate its finding that Scientific-Atlanta did not infringe the '204 patent or satisfy the domestic industry requirement, and remand that aspect of the case for further proceedings. Because the ITC erred in construing the "storage means in a data processor," "information identifying," "combining," and "said user selection criteria" limitations of the '121 patent, we vacate its finding that Scientific-Atlanta did not infringe the '121 patent or satisfy the domestic industry requirement, and remand that aspect of the case for further proceedings. Because the ITC erred in determining that Neil was an unnamed co-inventor of the '121 patent and, thus, that the '121 patent was "unenforceable," we reverse those determinations. Accordingly, we affirm-in-part, vacate-in-part, reverse-in-part, and remand for further proceedings.

I. BACKGROUND

The technology at issue concerns interactive program guides in digital cable television set-top

boxes that enable viewers to search through television program schedule information and pre-select programs for viewing or recording.

A. The ’268/’204 Patents

Gemstar owns the ’268 and ’204 patents, directed to a user interface for displaying grid-format television schedule listings on a television screen. Grid-format television schedule listings, such as those found in newspapers, typically contain program information in addition to program titles, such as program synopses or movie ratings. ’268 patent, col. 2, ll. 17-22; ’204 patent, col. 2, ll. 16-21. Displaying such information on a television is limited by the size and resolution of the television screen. ’268 patent, col. 2, ll. 22-25; ’204 patent, col. 2, ll. 21-24. The ’268 and ’204 patents teach the display of basic program schedule information in grid format on a television screen with supplemental information presented in overlays. ’268 patent, col. 2, ll. 46-49; ’204 patent, col. 2, ll. 45-48. Program listings are placed in a two-dimensional grid with time arranged in one dimension and channel in the other. Each grid cell contains a program title and has an irregular length corresponding to program duration. ’268 patent, col. 2, ll. 5-8; ’204 patent, col. 2, ll. 4-7. Using a remote control, a viewer can highlight a program on the grid and push a button to watch, record, or obtain supplemental information about a program. The ’268 and ’204 patents are both continuations of now-abandoned U.S. Patent Application No. 579,555 and share a common parent application and specification. The patents respectively issued in 1995 and 1998.

Independent claim 1 of the ’268 patent is representative and recites, with the disputed claim terms highlighted:

1. An interactive television schedule system, which comprises:

a television display,

means coupled to said television display for displaying the television schedule on said television display as a grid of two-dimensionally arranged, adjacent irregular cells which vary in length corresponding to time duration of programs, with a title of a program being displayed in each of said irregular cells, said grid having a plurality of channels listed in a first dimension and time listed in a second dimension,

user input means coupled to said means for displaying the television schedule, said user input means

including a program selector and a movement control for a visual identification of ones of said irregular cells which initiates movement of said visual identification in the first dimension, and irregular movement of said visual identification in the second dimension in steps corresponding to variation in cell size, responsive to an input by a user to said movement control, between first and second ones of said irregular cells to select a desired one of said irregular cells corresponding to a desired program,

a tuner coupled to said user input means for tuning to the desired program, and

means coupled to said means for displaying the television schedule for displaying a program note overlay including a program description for the desired program on said television display.

'268 patent, col. 14, l. 42 – col. 15, l. 4 (emphases added).

Independent claim 31 of the '204 patent is representative and states, with the disputed claim terms indicated:

31. An interactive process for operating a television schedule system, which comprises:

displaying a television schedule on a television display as a grid of two-dimensionally arranged, adjacent irregular cells which vary in length corresponding to time duration of programs, with a title of a program being displayed in each of said irregular cells, said grid having a plurality of channels listed in a first dimension and time listed in a second dimension,

providing a visual identification of a selected one of said irregular cells,

moving said visual identification in the first dimension and in the second dimension between first and second ones of said irregular cells to select a desired one of said irregular cells corresponding to a desired program,

tuning a programmable tuner to a select channel based on position of said visual identification for the desired program, and

displaying an overlay containing information relating to a television program being shown on said television set when a channel being shown on the television set is changed.

'204 patent, col. 19, l. 64 – col. 20, l. 18 (emphases added).

B. The '121 Patent

The '121 patent teaches the control of a television set by an electronic system, which receives television program schedule information for electronic manipulation and display. '121 patent, col. 1, ll. 11-24. In operation, program schedule information is supplied to the system, program selection criteria are provided by the user, and the system responds by causing program listings satisfying the criteria to be displayed on the television screen. Id. at col. 3, ll. 3-7; id. at col. 4, ll. 53-58. The '121 patent is a

continuation-in-part of now-abandoned U.S. Patent Application No. 754,630 and issued on November 10, 1987. A request for reexamination of the '121 patent was filed on December 6, 1991, and the reexamined patent ("the Re'121 patent") was issued on December 14, 1993, adding some claims and amending the specification and some of the original claims.[3]

The disputed claims of the '121 patent recite, with the disputed claim terms highlighted:

18. (amended during reexamination) A process for controlling the presentation of broadcast programs to a television receiver, which comprises supplying program schedule information to storage means in a data processor, supplying user program selection criteria to the data processor, said user program selection criteria comprising a plurality of independent user chosen program selection criteria and at least one program choice, the data processor combining said user selection criteria, selecting those programs meeting the combined user selection criteria for viewing from the program schedule information in said storage means in the data processor, storing information identifying the selected programs, said stored information identifying broadcast schedule times, channels, and program titles, and using the stored information to tune the television receiver to the selected programs.

Re'121 patent, col. 5, ll. 14-29 (emphases added).

66. (amended during reexamination) A process for controlling the presentation of broadcast programs to a television receiver, which comprises supplying program schedule information to a storage means in a data processor, supplying user program selection criteria to the data processor, said user program selection criteria comprising a plurality of independent user chosen program selection criteria and at least one program choice, the data processor combining said user selection criteria, selecting those programs meeting the combined user selection criteria for viewing from the program schedule information in said storage means in the data processor, storing information identifying the selected programs, and using the stored information to tune the television receiver to the selected programs.

Id. at col. 12, ll. 4-17 (emphases added).

C. International Trade Commission Proceedings

In March 2001, the ITC instituted an investigation of Pioneer Corporation, Pioneer Digital Technologies, Inc., Pioneer North America, Inc., and Pioneer Electronics (USA) Inc. (collectively "Pioneer"); EchoStar Communications Corporation and SCI Systems, Inc. (collectively "EchoStar"); and Scientific-Atlanta based on Gemstar's allegations that Pioneer, EchoStar, and Scientific-Atlanta were importing and distributing set-top boxes that infringed the patents-in-suit in violation of 19 U.S.C. § 1337. Following a seventeen day hearing, the ITC's Administrative Law Judge ("ALJ") issued his Final Initial Determination ("FID"), in which the ALJ construed the asserted patent claims and concluded, inter alia, that: (1) Gemstar failed to establish that the asserted claims of the patents-in-suit

were infringed; (2) the '121 patent is "unenforceable" for failure to name Neil as a co-inventor; (3) no domestic industry exists because Gemstar failed to meet its burden of proving the technical prong of the domestic industry requirement under 19 U.S.C. § 1337; and (4) Gemstar misused the '121 patent. In re Certain Set Top Boxes and Components Thereof, Inv. No. 337-TA-454 (Int'l Trade Comm'n June 21, 2002) ("FID Opinion"). With certain specific exceptions not germane to this appeal, the ITC declined to review the remainder of the ALJ's findings and, in light thereof, determined that there was no violation of section 337 in this investigation. In re Certain Set Top Boxes and Components Thereof, Inv. No. 337-TA-454 (Int'l Trade Comm'n Aug. 30, 2002).

Gemstar timely appealed. During the pendency of this appeal, Gemstar entered into a settlement agreement with Pioneer, and on March 9, 2004 this court dismissed Pioneer as a party to this appeal. Subsequently, Gemstar entered into a settlement agreement with EchoStar, and on April 27, 2004 this court likewise dismissed EchoStar as a party to this appeal. Gemstar, the ITC, and Scientific-Atlanta remain as parties to this litigation.

We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(6).

II. ANALYSIS

A. Standard of Review

Claim construction is a question of law reviewed de novo. Finnigan Corp. v. Int'l Trade Comm'n, 180 F.3d 1354, 1362 (Fed. Cir. 1999); Checkpoint Sys. v. Int'l Trade Comm'n, 54 F.3d 756, 760 (Fed. Cir. 1995) ("We review de novo the ITC's legal determinations, including those relating to claim interpretation . . . ."). Infringement is a question of fact. Finnigan, 180 F.3d at 1362. "Because findings on infringement, whether literal or under the doctrine of equivalents, are questions of fact, they are therefore reviewed under the substantial evidence standard in an appeal from a final determination of the Commission." Oak Tech., Inc. v. Int'l Trade Comm'n, 248 F.3d 1316, 1325 (Fed. Cir. 2001).

Inventorship is a question of law, reviewed de novo, based on underlying questions of fact.

Univ. of Colo. Found., Inc. v. Am. Cyanamid Co., 342 F.3d 1298, 1304 (Fed. Cir. 2003). In an appeal from the decision of a district court, the factual findings underlying an inventorship determination are reviewed for clear error. Id.; Ethicon, Inc. v. U.S. Surgical Corp., 135 F.3d 1456, 1460 (Fed. Cir. 1998). However, in an appeal from the ITC, factual findings are reviewed for substantial evidence pursuant to the Administrative Procedures Act, 5 U.S.C. § 706(2)(E). Kinik Co. v. Int'l Trade Comm'n, 362 F.3d 1359, 1361 (Fed. Cir. 2004). Thus, in an appeal from the ITC, the findings of fact upon which a determination of inventorship is based are reviewed for substantial evidence.

B. The '268 Patent

Gemstar appeals the ITC's construction of the following three claim terms recited in claim 1 of the '268 patent: "visual identification," "movement . . . between . . . cells," and "means . . . for displaying the television schedule." Gemstar further appeals the ITC's finding that Scientific-Atlanta did not infringe the '268 patent based on the ITC's construction of the foregoing claim terms. Thus, Gemstar can only prevail in its contention that the ITC erred in finding that Scientific-Atlanta did not infringe if the ITC erred in either its claim construction or its infringement analysis for each disputed claim term of the '268 patent. See Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211 (Fed. Cir. 1998) ("If even one limitation is missing or not met as claimed, there is no literal infringement."). Because the ITC's construction and infringement analysis for the "means . . . for displaying the television schedule" claim term was correct, we affirm the ITC's conclusion that Scientific-Atlanta did not infringe claim 1 of the '268 patent.

1. "Means . . . for Displaying the Television Schedule"

The disputed limitation of claim 1 of the '268 patent is:

> means coupled to said television display for displaying the television schedule on said television display as a grid of two-dimensionally arranged, adjacent irregular cells which vary in length corresponding to time duration of programs, with a title of a program being displayed in each of said irregular cells, said grid having a plurality of channels listed in a first dimension and time listed in a second dimension . . . .

'268 patent, col. 14, ll. 45-52 (emphasis added). The ITC construed this claim term as a means-plus-

function limitation subject to 35 U.S.C. § 112, ¶ 6. FID Opinion at 98. The ITC found corresponding structure for this limitation in "the CPU, the video display generator, and the video switcher." Id. at 100.

The parties do not dispute whether "means . . . for displaying the television schedule" is a means-plus-function limitation subject to § 112, ¶ 6. Under our precedent, a claim limitation that employs the language "means . . . for" invokes a rebuttable presumption that § 112, ¶ 6 applies. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1369 (Fed. Cir. 2002). Instead, the parties principally dispute what structures comprise the corresponding structure of this means-plus-function limitation; specifically, whether the ITC erred in including the video switcher as part of the corresponding structure. Gemstar argues that only the CPU and video display generator comprise the corresponding structure. According to Gemstar, the function of the limitation is to cause the television schedule to be displayed in a particular way: as a two-dimensional grid containing irregular cells with specific lengths and content. Because the video switcher does not affect the function of how the schedule will be displayed, Gemstar contends that it is merely a conduit for coupling the "means . . . for displaying" and the television, and that it is not properly part of the corresponding structure. Scientific-Atlanta responds that the ITC was correct to include the video switcher as part of the corresponding structure. Scientific-Atlanta argues that the video switcher does not merely enable the function of displaying the schedule, but controls and affects whether schedule data is displayed.

"The determination of the claimed function and corresponding structure of a means-plus-function claim limitation is a question of law, reviewed de novo." ACTV Inc. v. Walt Disney Co., 346 F.3d 1082, 1087 (Fed. Cir. 2003). In construing a means-plus-function claim limitation, the recited function within that limitation must first be identified. Id. "Then, the written description must be examined to determine the structure that corresponds to and performs that function." Id.

We consult the claim language to determine the function of the limitation. Here, the function of the "means coupled to said television display for displaying the television schedule on said television display as a grid" limitation is displaying the television schedule on the television screen as a grid.

Thus, the function includes both displaying the schedule on the television screen and displaying the schedule in a grid format.

We then consult the written description to determine the corresponding structure necessary to accomplish the stated function. ACTV, 346 F.3d at 1087. An examination of the written description reveals the following passages describing structure corresponding to the "means . . . for displaying":

> For a What's on TV request, the listing stored in schedule memory 232 is retrieved, processed by CPU 228, and outputted to video display generator 224. Video switcher 226 is enabled by CPU output 246 to select the video display generator 224 output whenever schedule data is to be presented to the TV/monitor 210.

'268 patent, col. 13, ll. 8-14 (emphasis added).

> The VCR tape mechanism 252 contains all the record and playback electronics of the video recorder, less the programmable tuner 207. Data recorded on the control track of a tape is coupled to the CPU 228 over input bus 258 and output bus 256. . . . CPU 228 commands to the VCR 211 are carried over bus 254. When schedule information is to be displayed, video switcher control input 246 selects the display generator on line 218. At other times, video switcher 226 selects the output of the VCR mechanism 252 on line 250.

Id. at col. 14, ll. 4-14 (emphasis added); see also id. at Fig. 22B.

In these passages, the written description indicates that the combination of a CPU, video display generator, and video switcher is required to perform the function of displaying the television schedule in a grid format on the television screen. Without the transmission of electrical signals by the video display generator to enable the video switcher, the television schedule would not be selectively displayed on the television screen and would not be displayed in grid format, as are required by the functional statement of the claim limitation. Thus, the video switcher is integral to performing the stated function.

Gemstar argues that the video switcher should not be included as part of the corresponding structure because it does not perform the recited function. Gemstar relies on language in Asyst Technologies, Inc. v. Empak, Inc., 268 F.3d 1364, 1371 (Fed. Cir. 2001), that "[t]he corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, not merely enable the pertinent structure to operate as intended . . . ." In Asyst, the disputed

claim limitation in claim 1 of the '421 patent was: "second microcomputer means for receiving and processing digital information communicated with said respective second two-way communication means." Id. at 1370. The district court construed the corresponding structure to include "communication line 51" disclosed in the written description, which carried information between the communication means and the microcomputer means. Id. On appeal, this court held that the corresponding structure includes only local control processor 20, and "does not include any external cables or devices that are connected to local control processor 20, such as line 51." Id.

Gemstar argues that the video switcher in the '268 patent is analogous to "communication line 51" in Asyst, and similarly should not be included as part of the corresponding structure because it does not perform the function of causing the television schedule to be displayed on the television screen. An analogy between Asyst and the case before us cannot be drawn. The conclusion in Asyst was compelled by the language of the claim limitation: "second microcomputer means for receiving and processing digital information communicated with said respective second two-way communication means." Id. (emphases added). The court determined the function of the limitation to be receiving and processing digital information from a second two-way communication means. Id. Although the court acknowledged that communication line 51 "enable[d]" the second microcomputer means to perform the function, in the sense that digital information would not reach the microcomputer means without a communication line, it did not actually perform either of the recited functions. See id. at 1371. Thus, the corresponding structure only included microcomputers because "receiving" data into the microcomputers' internal registers and further "processing" the data are exclusively functions of microcomputers, not communication line wires.

As discussed previously, it is essential to identify correctly the function recited in a means-plus-function limitation in order to construe such a limitation properly. ACTV, 346 F.3d at 1087. A careful examination of the claim language and the recited function provides guidance as to what the corresponding structure of a claim should encompass. In this case, the function dictated by the '268 patent claim language requires that the video switcher be included as part of the corresponding structure. The function of the "means . . . for displaying the television schedule" limitation is displaying

the television schedule on the television screen as a grid. The function includes both displaying the television schedule and displaying the schedule in grid format. Linking this function with the corresponding structure includes: creating the schedule image (the CPU), converting the schedule image to an analog signal suitable for display on a television screen (the video display generator), and controlling the input line on the television to ensure that the schedule image appears on the television screen (the video switcher properly enabled). The video switcher is integral to performing the claimed function of the "means . . . for displaying the television schedule" limitation of claim 1 of the '268 patent. Thus, the ITC's conclusion that the video switcher was part of the corresponding structure of the "means . . . for displaying the television schedule" limitation is correct.

2. Infringement

We review the ITC's factual findings of non-infringement for substantial evidence.[4] Oak Tech., 248 F.3d at 1325. The ITC found that Scientific-Atlanta did not infringe the "means . . . for displaying the television schedule" limitation of claim 1 of the '268 patent, either literally or under the doctrine of equivalents. FID Opinion at 145. The ITC found that Scientific-Atlanta did not literally infringe claim 1 because its accused products used an alternative approach instead of video switchers. Id. The ITC further found that the approach used by Scientific-Atlanta was distinct from video switchers, and thus did not infringe under the doctrine of equivalents. Id. at 142. The ITC relied on expert testimony to find that the Scientific-Atlanta system relied on a different technology that could produce results unattainable by video switcher technology. Id. We have carefully reviewed Gemstar's record evidence of infringement and conclude that substantial evidence supports the ITC's finding that Scientific-Atlanta's products do not contain video switchers or their equivalents. Because substantial evidence supports the ITC's finding that Scientific-Atlanta does not infringe the claims of the '268 patent, either literally or under the doctrine of equivalents, we affirm.

C. The '204 Patent

Gemstar appeals the ITC's construction of the '204 patent claim terms, "visual identification" and "moving . . . between . . . cells." Because the ITC erred in construing both of the disputed

limitations of the ’204 patent, we vacate the order of non-infringement and remand for further proceedings.

1. “Visual Identification”

The relevant limitation of claim 31 of the ’204 patent is:

displaying a television schedule on a television display as a grid of two-dimensionally arranged, adjacent irregular cells which vary in length corresponding to time duration of programs . . . providing a visual identification of a selected one of said irregular cells . . . .

’204 patent, col. 19, l. 66 – col. 20, l. 7 (emphasis added). Gemstar argues that the ITC erred by failing to afford the term “visual identification” its ordinary meaning, instead importing limitations from the written description to limit the term to the specific innovative cursor described in the written description. Gemstar argues that a restriction requirement in the prosecution history of the ’204 patent precluded it from claiming the “innovative cursor” disclosed in the written description, and thus it did not redefine “visual identification” in the claims of the ’204 patent to mean the “innovative cursor.” Scientific-Atlanta responds that Gemstar disclaimed a broader construction by stating in the written description that the innovative cursor was a “required” aspect of the invention and repeatedly describing the “visual identification” as the invention. Scientific-Atlanta further contends that Gemstar’s proposed construction would improperly include conventional cursors, which were disclaimed in the written description when it discussed the conventional cursor’s undesirable properties. Scientific-Atlanta responds that Gemstar’s restriction requirement argument is both waived and incorrect.

The ITC construed “visual identification” as the innovative cursor described in the written description. The ITC found that the claim term “visual identification” was not used or defined in the written description. FID Opinion at 92. Holding that Gemstar had disclaimed a conventional cursor in the written description, the ITC concluded that the “visual identification” must therefore be limited to the innovative cursor described in the written description. Id. at 96-97.

We begin our claim construction analysis with the words of the claim. Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1201 (Fed. Cir. 2002). “[U]nless compelled otherwise, a court will give

a claim term the full range of its ordinary meaning as understood by persons skilled in the relevant art." Id. at 1202. The ordinary and customary meaning of a claim term may be determined by reviewing a variety of sources, which may include the claims themselves; dictionaries and treatises; and the written description, the drawings, and the prosecution history. Ferguson Beauregard v. Mega Sys., LLC, 350 F.3d 1327, 1338 (Fed. Cir. 2003). The presumption of ordinary meaning will be "rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." ACTV, 346 F.3d at 1091.

The ITC failed to examine the ordinary meaning of the "visual identification" claim term. See FID Opinion at 92. Instead, the ITC exclusively looked to the '204 patent written description, including the following passage:

> Turning now to the drawings, more particularly to FIGS. 1-7, there are shown a series of menu screens 10, 12, 14, 16, 18, 20 and 22 used in operation of the system and carrying out the process of the invention. Screens 10, 12, 14, 18 and 20 each consists of an array 24 of irregular cells 26, which vary in length, corresponding to different television program lengths of one half hour to one-and-one half hours or more. The array is arranged as three columns 28 of one-half hour in duration, and twelve rows 30 of program listings. Some of the program listings overlap two or more of the columns 28 because of their length. Because of the widely varying length of the cells 26, if a conventional cursor used to select a cell location were to simply step from one cell to another, the result would be abrupt changes in the screens 10, 12, 14, 18 and 20 as the cursor moved from a cell 26 of several hours length to an adjacent cell in the same row. Such abrupt changes disorient a user of the system.
>
> An effective way of taming the motion is to assume that behind every array 24 is an underlying array of regular cells. By restricting cursor movements to the regular cells, abrupt screen changes will be avoided. However, there is now a potential ambiguity between the underlying cell which governs cursor movement and a visible cell 26 which holds the program title.
>
> Viz.: if the cursor moves in half hour steps, and the cell length is, say four hours, should the cursor be 1/2 hour long or four hours long? If the cursor only spans the interval of the underlying cell (1/2 hour), the cursor appears to be highlighting a segment of the cell, which is misleading. On the other hand, if the cursor spans the entire four hours of the TV listing, the cursor underlying position will be obscure. In this case, cursor right/left commands will appear inoperative while traversing a long cell. The absence of feedback following a cursor command is befuddling to users. Therefore, an innovative cursor 32 (FIG. 1) for the irregular array 24 is required which satisfies several conflicting requirements.

'204 patent, col. 4, l. 35 – col. 5, l. 5 (emphasis added). Based on this passage, the ITC concluded that the innovative cursor was a required part of the invention, and thus the "visual identification" was the innovative cursor. FID Opinion at 95, 97.

The statement in the written description that the "innovative cursor . . . is required" was made in the context of a discussion of the features of the preferred embodiment. The passage reproduced above beginning at column 4, line 35 is the initial discussion in the Detailed Description of the Invention section of the preferred embodiment in the '204 patent specification. See '204 patent, col. 4, l. 33 – col. 5, l. 5. The passage describes a series of menu screens from the preferred embodiment depicted in Figures 1-7 of the '204 patent. See id. at col. 4, ll. 35-38. In the discussion, the embodiment discusses some of the drawbacks of using a conventional cursor in navigating the menu screens of the preferred embodiment. See id. at col. 4, ll. 46-52. In the context of discussing the advantages of an alternate cursor approach, there is a statement in the written description that: "Therefore, an innovative cursor 32 (FIG. 1) for the irregular array 24 is required which satisfies several conflicting requirements." Id. at col. 5, ll. 3-5. From this language, it follows that the "innovative cursor 32" is a preferred cursor for navigating irregular array 24 in the menu depicted in Figure 1 of the '204 patent. See id.

Our precedent has emphasized that the disclosure in the written description of a single embodiment does not limit the claimed invention to the features described in the disclosed embodiment. Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 906 (Fed. Cir. 2004) ("[T]his court has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment."). "Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction.'" Id. (quoting Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1327 (Fed. Cir. 2002)).

In the context of the disclosure of the preferred embodiment of the '204 patent, the statement that "innovative cursor 32 . . . is required," is not the "us[e] [of] words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." Teleflex, 299 F.2d at 1327; see also ACTV, 346 F.3d at 1091. This statement did not limit the "visual identification" to the "innovative cursor 32" discussed in the written description. Properly read in this context, the statement merely conveys the advantages of "innovative cursor 32" over prior art conventional cursors in the preferred

embodiment. It was not a disavowal or disclaimer indicating that the claims excluded all or part of the properties of prior art conventional cursors. Indeed, if the innovative cursor constituted the entirety of the invention, all of the particular formatting and movement characteristics specific to the innovative cursor must be attributed to the "visual identification." See '204 patent, col. 5, ll. 6-13 (describing aspects of the innovative cursor, including, "3-D highlighting," "offset shadows," and "segmented" and "solid" portions of the "underlying black bar" denoting the "current position" of the cursor). Instead, the ITC construed "visual identification" to include only select properties of the innovative cursor, namely "a cursor that (1) highlights the entire cell, (2) identifies the current half-hour position within a cell that is longer than a half-hour, and (3) differentially identifies the remaining portions of the cell." FID Opinion at 97. Because Gemstar did not disclaim cursors beyond the innovative cursor discussed in the embodiment disclosed in the '204 patent, "visual identification" is not limited to innovative cursors.

The parties agree that "visual identification" is not a term of art or explicitly used in the written description. Because the parties have presented no evidence that "visual identification" has a specialized technical meaning in the art, we consult non-technical dictionary definitions to determine its ordinary meaning. Inverness Med. Switz. GmbH v. Princeton Biomeditech Corp., 309 F.3d 1365, 1369 (Fed. Cir. 2002) ("The parties here do not argue that the term . . . has an established specialized meaning in technical dictionaries, encyclopedias, or treatises of the relevant field of art, and we agree . . . . Accordingly, standard dictionaries of the English language are the proper source of ordinary meaning of the phrase."); see also Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n, 366 F.3d 1311, 1321 (Fed. Cir. 2004). "Visual" is defined as "capable of being seen: VISIBLE." Webster's Third New International Dictionary 2558 (1993). "Identification" is "an act or the action of identifying or the state of being identified," id. at 1123; "identify" is "to link in an inseparable fashion : make correlative with something," id. We examine the language of claim 31 in considering the ordinary meaning in the context of the claims:

providing a visual identification of a selected one of said irregular cells, moving said visual identification in the first dimension and in the second dimension between first and second ones of said irregular cells to select a desired one of said irregular cells corresponding to a desired program . . . .

'204 patent, col. 20, ll. 6-11. Thus, the "visual identification" within the meaning of claim 31 visibly correlates or links an irregular cell selected by the user with the selected irregular cell on the television screen.

Scientific-Atlanta argues that this construction of "visual identification" may include aspects of a conventional cursor, which it argues were disclaimed in the written description of the '204 patent. For the reasons previously discussed, the passage pertaining to conventional and innovative cursors in the '204 patent written description, see id. at col. 4, l. 39 – col. 5, l. 5, establishes neither a disavowal or disclaimer of prior art conventional cursors nor a limitation of the claim scope to the disclosed innovative cursor.

In light of our claim construction that "visual identification" is not limited to the innovative cursor described in the written description of the '204 patent, we need not reach Gemstar's additional claim construction arguments pertaining to the examiner's restriction requirements made during the prosecution of the '204 patent.

Based on the foregoing, the ITC's claim construction erroneously limited the "visual identification" limitation to the features of the innovative cursor. "Visual identification" within the meaning of the claim requires a visual correlation or linkage of a selected irregular cell with the selected irregular cell displayed on the television screen. This may include the properties of a conventional cursor.

2. "Moving . . . Between . . . Cells"

The relevant limitation of claim 31 of the '204 patent is:

moving said visual identification in the first dimension and in the second dimension between first and second ones of said irregular cells to select a desired one of said irregular cells corresponding to a desired program . . . .

'204 patent, col. 20, ll. 8-11 (emphases added). The ITC construed "moving . . . between . . . cells" to require: (1) that the "visual identification" move in regular, half-hour increments, "which may result in

cell to cell movement or movement within a cell," FID Opinion at 103; and (2) that the "visual identification" move along both dimensions of the grid guide relative to the television screen, id. at 102.

Gemstar argues that the ITC erred in construing "moving . . . between . . . cells" by failing to afford the term "moving" its ordinary meaning. Gemstar argues that because the '204 patent imposed no limitations on the movement of the "visual identification," the ITC unduly narrowed the claim term by importing the limitation of regular movement from the innovative cursor embodiment. Further, Gemstar contends that the ITC's construction that the cursor must move relative to both dimensions of the television screen is not required by the claim language, and it was error for the ITC to import limitations from the written description and drawings. Scientific-Atlanta responds that since the "visual identification" is the innovative cursor, the "visual identification" must move like the innovative cursor in regular, half-hour increments. Scientific-Atlanta argues that because the written description disclaimed the irregular movement of the conventional cursor as an undesirable aspect of the prior art, the claim should not encompass such irregular movement. Further, Scientific-Atlanta states that the ITC's requirement that the "visual identification" must move in both dimensions on the grid and relative to the television screen is supported by the plain language of the claims, which requires the movement of the "visual identification," not the grid of cells.

a. Regular Movement

The parties dispute whether the claim requires that the "visual identification" must move in regular intervals of a fixed time duration (e.g., 30 minutes) in the time dimension, often within the same program cell in the grid guide; or whether the "visual identification" may move in irregular intervals of varying time durations (e.g., 30 minutes, 60 minutes, etc.) between adjoining program cells in the grid guide, depending on the length of the cells. The ITC required that the "visual identification" move in regular, half-hour increments, "which may result in cell to cell movement or movement within a cell." FID Opinion at 103. The ITC found that irregular, cell-to-cell movement was disclaimed when the written description of the '204 patent disclaimed the regular movement of a conventional cursor. Id. at 104. In finding a disclaimer, the ITC placed special emphasis on the following passage from the '204

patent:

If this array is navigated by a cursor that goes from cell to cell, a single cursor command can produce violent screen changes. For example, a cursor right command may cause an abrupt jump to a cell situated several hours from the current page. Not only is this unsettling, but may take considerable effort to recover. Clearly, a gentler cursor motion is needed for the irregular cells found in a grid TV guide.

Id. (quoting '204 patent, col. 2, ll. 8-15 (emphasis added)).

The ITC erred in its construction of "moving . . . between . . . cells." The claim language only requires "moving said visual identification in the first dimension and in the second dimension between first and second ones of said irregular cells." '204 patent, col. 20, ll. 8-10. The ordinary meaning of "moving" is: "that is marked by or capable of movement : that is not fixed or stationary." Webster's Third New International Dictionary 1480 (1993). This claim language encompasses any type of movement by the "visual identification"—regular or irregular steps—in the time dimension.

The ITC's reliance on the description of the preferred embodiment in the written description to conclude that only regular movement in the time dimension was encompassed by the claims was error. See Liebel-Flarsheim, 358 F.3d at 906. Consistent with our earlier construction of "visual identification," the discussion of the preferred embodiment in the written description concerning the drawbacks of the irregular movement of the conventional cursor does not provide a basis for importing a limitation of regular movement into the claim. See, e.g., Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 867 (Fed. Cir. 1985) ("[P]articular limitations or embodiments appearing in the specification will not be read into the claims."). Because there was no regular movement limitation in the claim language and no express disavowal of irregular movement in the written description, the claim encompasses both regular and irregular movement in the time dimension of the television schedule. Thus, it was error for the ITC to limit the broad "moving . . . between . . . cells" claim language to encompass only irregular movement in the time dimension.

b. Movement of the "Visual Identification" or Grid Guide

In construing the "moving . . . between . . . cells" limitation, the ITC further required that the

"visual identification" move relative to the television screen along both dimensions of the grid guide. In other words, the ITC's construction precluded the grid guide from moving relative to the television screen while the "visual identification" remains stationary to reflect the relative movement of the "visual identification" through the cells of the grid guide. FID Opinion at 102-03. In support of its construction, the ITC relied on statements in the abstract and written description that describe the "[m] ovement of the cursor." Id. at 103. The ITC further relied on Figures 1-3 of the '204 patent, which depict the cursor moving within the schedule grid and relative to the television screen, with the grid remaining static relative to the television screen. Id.

This construction was also incorrect. The claim language does not specify a frame of reference for moving the "visual identification" such as to require that the "visual identification" move or not move relative to the television screen. The claim language only requires that the "visual identification" move between the cells themselves. See '204 patent, col. 20, ll. 8-10 ("moving said visual identification in the first dimension and in the second dimension between first and second ones of said irregular cells" (emphasis added)). Thus, this limitation can be met either by the grid or the "visual identification" moving relative to the television screen, as long as the "visual identification" is capable of navigating along both dimensions of the schedule grid.

The ITC's reliance on isolated language in the written description that the cursor must "mov [e] . . . in the array" does not limit the claim. FID Opinion at 103 (quoting '204 patent, col. 2, ll. 64-66). This language is consistent with our construction that the movement within a particular frame of reference is immaterial, so long as the "visual identification" is able to move in both dimensions of the grid guide array. There is no express requirement in the claim language that the "visual identification" must move both within the grid and further relative to the television screen. Moreover, the ITC's reliance on the depiction of the cursor in the preferred embodiment moving relative to the television screen in Figures 1-3 is misplaced. See Gart v. Logitech, Inc., 254 F.3d 1334, 1342 (Fed. Cir. 2001) (noting that "drawings [depicting the preferred embodiment] are not meant to represent 'the' invention or to limit the scope of coverage defined by the words used in the claims themselves").

In light of the foregoing, we conclude that the ITC erred in its construction of "moving . . . between . . . cells." "Moving said visual identification . . . between . . . cells" includes both regular and irregular movement of the "visual identification," and requires only that the visual identification be capable of moving relative to the cells in the grid guide in either dimension. There is no requirement that the "visual identification" must move relative to the television screen.

3. Infringement

Because the ITC's determination that Scientific-Atlanta did not infringe the '204 patent is based on erroneous constructions of the "visual identification" and "moving . . . between . . . cells" limitations, we vacate the ITC's order of non-infringement and remand for reconsideration of infringement and satisfaction of the domestic industry requirement in light of the correct claim constructions.

D. The '121 Patent

Gemstar appeals the ITC's construction of the '121 patent claim terms, "storage means in a data processor," "information identifying," "combining," and "said user selection criteria," and the ITC's finding that Scientific-Atlanta did not infringe the '121 patent based on the foregoing constructions. Gemstar also appeals the ITC's finding that the '121 patent is "unenforceable" for failure to join Neil as a co-inventor. Because the ITC erred in construing all of the disputed '121 patent claim terms, we vacate the ITC's order of non-infringement and remand for further proceedings. Because the ITC erred in finding Neil to be a co-inventor of the '121 patent, we reverse the ITC's order that the '121 patent is "unenforceable."

1. Claim Construction

As a preliminary matter, not all of the disputed limitations are contained in all of the independent claims at issue. For clarity, the affected claims will be noted for each limitation.

a. "Storage Means in a Data Processor" (Claims 18 and 66)[5]

The relevant limitation of claims 18 and 66 of the '121 patent is: "supplying program schedule information to a storage means in a data processor." Gemstar argues that dictionaries establish that the phrase "storage means in a data processor" meant, to persons skilled in the art in the mid-1980s, the internal memory of a computer. In support of its proffered ordinary meaning, Gemstar relies on dictionary definitions of "data processor" and "internal storage." Gemstar argues that the ITC erred by ignoring the ordinary meaning and instead reading in limitations from the written description in construing this term to encompass the five particular buffers referenced in the written description. Scientific-Atlanta responds that the ITC correctly found that "storage means" had no clear meaning to a person of ordinary skill in the art. Scientific-Atlanta disputes Gemstar's proffered definitions, instead arguing that the ITC correctly construed the limitation in accordance with the written description and prosecution history.

The ITC construed "data processor" to be a CPU. This construction was based on the "relevant evidence" of the abstract, which four times matched "data processor" with reference number "110." FID Opinion at 28-29. The ITC found that, because the front page of the patent identified CPU by the reference number 110, therefore the "data processor" was a CPU. Id. The ITC next concluded that the "storage means" had to be located physically within a CPU. Id. at 28. Citing its own precedent, the ITC found that the ordinary meaning of "in" was "within." Id. The ITC further concluded that the "storage means" had to be physically located within the "data processor" because the examiner rejected Gemstar's proposed amendments to claim 18 that an electronic memory was "associated with" a data processor. Id. at 29.

The ITC then construed "storage means" to be the five buffers of a CPU disclosed in the '121 patent: the program list buffer, theme buffer, screen buffer, channel buffer, and prime time buffer. Id. at 23-24. Holding that "storage means" did not have a clear meaning to one of ordinary skill in the art, id. at 23, the ITC looked to the following passage of the written description in defining "storage means" as these five buffers:

> A search of the program listing 352, stored in program list buffer 303, is made. The search is dependent on the status of the channel buffer, the theme buffer, the prime time buffer, and the direction of search. . . . The search continues until the screen buffer is full 354 in which case the search is

terminated. The status lines information is passed to the screen buffer and displayed 355 by the TV. Program list buffer 303, screen buffer 353, and the other buffers discussed above comprise a data storage means.

Re'121 patent, col. 2, ll. 38-52 (amending the '121 patent, col. 17, ll. 38-49) (emphases indicate material added during reexamination) (quoted in FID Opinion at 24). The ITC also considered several of Gemstar's proposed reexamination amendments in early 1993 which attempted to define "storage means" as an electronic memory. FID Opinion at 24-27. The ITC noted that Gemstar eventually abandoned the proposed amendments and instead amended the '121 patent written description to add the above-quoted passage concerning "data storage means." Id. at 27; see also Re'121 patent, col. 2, ll. 38-52.

The ITC's construction of "storage means in a data processor" is erroneous. The ITC initially held that "storage means" did not have a clear meaning to one of ordinary skill in the art. FID Opinion at 23. Our consideration of technical dictionaries reveals otherwise. See Inverness Med. Switz. GmbH v. Warner Lambert Co., 309 F.3d 1373, 1378 (Fed. Cir. 2002) (noting that technical dictionaries are useful in "providing specialized meanings as used in particular fields of art"). Further, the ITC failed to consider whether the specific expression "data processor" had an ordinary meaning to one skilled in the art that would have provided insight and context for the claim language "storage means in a data processor."

Contemporaneous technical dictionaries defined "data processor" as "[a] device capable of performing operations on data, such as a digital computer, an analog computer, or a desk calculator," Charles J. Sippl, Computer Dictionary 117 (4th ed. 1986) ("Computer Dictionary"), or "a device capable of performing data processing, such as a desk calculator, a punched card machine, or a computer," Jerry M. Rosenberg, Dictionary of Computers, Data Processing, and Telecommunications 128 (1984) ("Dictionary of Computers"). These dictionaries also defined "storage" as "[a] device capable of receiving data, retaining them for an indefinite period of time, and supplying them upon command," Computer Dictionary at 473, and "a device, or part of a device, that can retain data," Dictionary of Computers at 504. General use dictionaries define "in" as "used as a functional word to indicate location or position in space or in some materially bounded object." Webster's Third New International

Dictionary 1139 (1993). From these definitions, the ordinary meaning of "storage means in a data processor" is a device capable of retaining data located within a data processing device or system.

The passages the ITC relies upon from the written description fail to redefine this claim term or to expressly disclaim or disavow claim scope. The ITC relies on the following passage: "Program list buffer 303, screen buffer 353, and the other buffers discussed above comprise a data storage means." Re'121 patent, col. 2, ll. 50-52 (amending the '121 patent, col. 17, ll. 38-49) (emphasis added). This passage falls far short of a clear disavowal of claim scope using words of manifest exclusion. See ACTV, 346 F.3d at 1091. Instead, this passage provides only an example or embodiment of a "data storage means" and does not limit the otherwise broad claim language. See Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed. Cir. 1998) (cautioning against the limitation of the claimed invention to preferred or specific embodiments or examples in the specification). Thus, the written description provides no basis for redefining or otherwise limiting the construction of this claim term.

Based on the foregoing, we conclude that the ITC erred and should have construed the claim limitation "storage means in a data processor" in the '121 patent to mean a device capable of retaining data located within a data processing device or system.

b. "Information Identifying" (Claim 18)

The disputed limitation at issue in claim 18 of the reissued '121 patent recites: "storing information identifying the selected programs, said stored information identifying broadcast schedule times, channels, and program titles." Re'121 patent, col. 5, ll. 25-27. The parties principally dispute whether "information identifying" should require storage of actual data, and if not, whether program titles must be separately stored.

(1) Actual Data or References to Data

Based on the plain claim language, the ITC construed "information identifying" to be broadcast

schedule times, channels, and program titles, and further required "that this information is stored after the data processor selects the programs on the basis of combined user selection criteria." FID Opinion at 52. Thus, the ITC rejected Gemstar's arguments that "information identifying" could include an address or software pointer to the broadcast schedule times, channels, or program titles data. Id.

Citing to definitions of "information" and "identifying" in Webster's Ninth New Collegiate Dictionary (1988), Gemstar argues that the ordinary meaning of "information identifying" is data that can establish the identity of the relevant times, channels, and titles of selected television programs, encompassing software pointers in addition to the actual data. Gemstar argues that the ITC's construction, which required the storage of actual data, was nonsensical and inconsistent with similar language in claim 57 of the '121 patent, which used the word "comprising" in place of "information identifying," to indicate the storage of actual data.

Scientific-Atlanta argues that Gemstar's proposed ordinary meaning is incorrect, because the ordinary meaning of "identify" is "to establish the identity of," which is not reflected in Gemstar's construction, "data that can establish the identity of the relevant times, channels, and titles." Further, Scientific-Atlanta contends that Gemstar's proposed construction that "information identifying" encompasses software pointers is misleading and conflicts with the prosecution history. According to Scientific-Atlanta, Gemstar's "pointers" are not limited to software pointers, but could include time and channel information that could be used to retrieve program titles from a schedule.

The claim language calls for the storage of "information identifying the selected programs, said stored information identifying broadcast schedule times, channels, and program titles." Re'121 patent, claim 18. The construction of this limitation turns on the meaning of the term "information identifying." "Information" is defined as "facts or figures ready for communication or use as distinguished from those incorporated into a formally organized branch of knowledge : DATA." Webster's Third New International Dictionary 1160 (1993). "Identifying" is defined as "to link in an inseparable fashion : make correlative with something." Id. at 1123. Thus, the ordinary meaning of storing "information identifying" broadcast schedule times, channels, and program titles is the storage of

data that can be linked or correlated with broadcast schedule times, channels, and program titles. "Information identifying" is not limited to the storage of the actual broadcast schedule times, channels, and program titles data, but includes storage of either the actual data or references to the actual data, such as addresses or software pointers.

The written description does not restrict "information identifying" to the storage of actual data supplied by the user. The '121 patent describes the broadcast of "schedule information" to the television receiver, conversion to digital format, and supplying the digitized information to the CPU. See '121 patent, col. 7, ll. 33-46. Then:

> The CPU 110 supplies control outputs, based on user selections, to a programmable TV tuner 132 on line 134. Information identifying programs selected from the schedule information on the basis of the user selection criteria is stored in memory 111 by the CPU 110. The CPU retrieves the information at the appropriate time for generating the control outputs.

Id. at col. 7, ll. 60-66 (emphasis added). Thus, even in the embodiment presented in the '121 patent where "information identifying" is stored in memory, there is no additional requirement that only actual data is stored. Instead, references to the actual data could be stored and used by the CPU to look up the actual data in order to generate control outputs.

(2) Separate Storage of Program Title

After reviewing the prosecution history, the ITC held that "information identifying" must include program titles because Gemstar had repeatedly distinguished prior art on that basis. FID Opinion at 52-55.

Scientific-Atlanta argues that the ITC's claim construction correctly requires the storage of television program titles. It argues that Gemstar is estopped from arguing otherwise, because it repeatedly argued during prosecution that claim 18 required storing program titles in addition to times and channels to overcome prior art that only required the storage of times and channels.

As the ITC correctly recognized, the prosecution history requires that "information identifying" must include the separate storage of program titles. During reexamination, Gemstar amended claim 18

to include the language, "said stored information identifying broadcast schedule times, channels, and program titles." Supplemental Amendment After Final, Feb. 25, 1993, at 7. When submitting this amendment, Gemstar referenced its prior arguments that the current claims were distinguishable over prior art systems that did not require storage of program title data:

> In response to earlier arguments that claims require schedule information including program title to be stored for selected programs, the Examiner only argued that the term "schedule information" was not defined so as to require program title. Several claims have been amended to specify the storage of program title for the selected programs and are thus believed to be allowable. As previously noted, prior art systems simply program the VCR with channels and times for selected programs; information identifying the title was not stored.

Id. at 23 (emphasis added). This statement makes clear that "information identifying" must separately reference program title, since prior art systems included storage of only broadcast schedule times and channels. Because the storage of "information identifying . . . broadcast schedule times, channels, and program titles" in claim 18 requires storage of the actual data or references to such data, each category of data must be actually stored or have its own separate reference (e.g., software pointer or address). In other words, this limitation is not met if the "information identifying" program title is derived from the storage of "information identifying" broadcast schedule times and channels. Storage of the "information identifying" program title must be storage of the actual title itself or a reference directly indicating where the stored actual program title data may be found.

In short, "information identifying" includes the storage of either the actual "broadcast schedule times, channels, and program titles" data or separate references, such as addresses or software pointers, to the location of the actual data. If references are used, there must be separate references for the broadcast schedule time, channel, and program title parameters.

c. "Combining" (Claims 18 and 66)

The disputed limitation of claims 18 and 66 of the '121 patent is: "supplying user program selection criteria to the data processor, . . . the data processor combining said user selection criteria." Re'121 patent, claims 18, 66 (emphasis added). The parties raise two issues, addressed in turn below.

(1) Logical Combining of the User Selection Criteria

Relying on the intrinsic evidence, the ITC held that "combining" required logical AND combination of the user selection criterion, specifically the "theme, prime time, and channel" criteria. FID Opinion at 45. The ITC noted further that because the theme and channel criteria could be "comprised of lists of multiple themes or channels," the themes or channels composed in such lists are "combined in a logical 'OR' manner." Id. The ITC based its construction on alleged waivers made by Gemstar in the prosecution history to distinguish the claimed invention from the Kram prior art reference. Id. at 45-46.

Gemstar argues that neither the ordinary meaning nor prosecution history limits "combining" to the particular sequence of logical AND/OR combinations enumerated in the ITC's construction. Scientific-Atlanta defends the ITC's construction, arguing that Gemstar disclaimed other methods of "combining" by describing this particular sequence of logical AND/OR combinations to distinguish its invention over the prior art.

The ordinary meaning of "combining," which is a present participle of "combine," is "to cause (as two or more things or ideas) to mix together : MINGLE : BLEND." Webster's Third New International Dictionary 452 (1993). This broad definition of "combining" as mixing or blending is not constrained to the specific logical AND/OR combinations required by the ITC's construction. Instead, "combining" may encompass any logical combination of the user selection criteria.

The ITC's claim construction is not warranted by alleged disavowals or disclaimers in the prosecution history relied upon by Scientific-Atlanta. The ITC referred to the following passage from the prosecution history:

> Furthermore, even if the system of Kram could be used as a television guide controller for Kruger, the present system would not result. . . . The examiner cited a "weather" then "city" operation in Kram. . . . If the user selects a keyword topic "weather", the system constructs an index menu including each page having the keyword "weather". Each such page will also have a particular supplemental keyword which will be displayed on the index menu. The user then chooses one of the index entries to retrieve either a single or a series (one at a time) of relational pages. The system of Kram cannot automatically combine two selection criteria such as "weather" and "channels 2, 5, and 11" to provide the user a custom assembled list of programs meeting the combined criteria. The system of Kram could only provide a

first index in response to "weather", from which the user would have to select "channel 2" to receive that screen, and then select "channel 5" to receive that screen, and then select "channel 11" to receive that screen.

Amendment, Aug. 2, 1992, at 43-44 (emphasis added). Gemstar's statements in the prosecution history do not indicate a disavowal or disclaimer of claim scope, see ACTV, 346 F.3d at 1091, but merely provide an example to illustrate differences between the invention and the prior art. In essence, Gemstar stated only that the Kram reference was incapable of performing a certain type of search, not that the scope of the claimed invention was limited to that particular type of search. Contrary to the ITC's holding, the prosecution history did not limit the '121 patent to that particular sequence of logical searching.

(2) Combining the User Selection Criteria Prior to Search

The second issue disputed by the parties is the ITC's requirement that the user selection criteria "must be combined prior to any search." FID Opinion at 52. The ITC found that the parties agreed that Gemstar disclaimed "dependent, hierarchal" searching during prosecution and dismissed Gemstar's arguments that hierarchal searching with independent user selection criteria was preserved. Id. at 50. Hierarchal searching involves sequential searching where the data input to the current search is the output from the prior search.

Gemstar argues that statements in the prosecution history cannot reasonably be read to disclaim the sequential entry and combination of user selection criteria. Specifically, Gemstar contends that the statements in the prosecution history relate specifically to unasserted claim 65, and there are numerous examples of sequential searching in the prosecution history. Scientific-Atlanta responds that Gemstar's disclaimer of "dependent, hierarchal" searching applies equally to all asserted claims because it appeared in a section entitled "Combining User Selection Criteria and Selecting Programs," which was not specific to unasserted claim 65.

We must consider statements made in the prosecution history "because it may demonstrate that . . . the patentee disclaimed or disavowed subject matter, narrowing the scope of the claim terms." ACTV, 346 F.3d at 1091. The disputed statement in the prosecution history states in pertinent part:

Combining User Selection Criteria and Selecting Programs

Several of the present claims recite a process in which the user enters user program selection criteria, and the data processor combines the program selection criteria, searches through the stored schedule information, and creates and stores a display list of program listings that meet the combined criteria. . . . The user may then make program selection choices (which the Examiner has characterized as further program selection criteria) from this display. The data processor then stores information for these program selections, including information identifying program titles, in a reminder calendar list.

Several claims recite the data processor combining a plurality of user selection criteria other than the program choices. This is different from the scenario that the Examiner has proposed would be inherent in Levine and similar art, namely that the user could enter a date as a first selection criteria, then be presented with a page of program listings, and then enter a program choice as a second criteria to be 'combined' with the data selection criteria. As amended, several claims (such as claim 1) require the data processor combine a plurality of selection criteria in addition to the program choice. The Examiner's proposed date entry does not meet the requirement of combined selection criteria even if entered as a series of page commands. Each page command simply establishes a new requirement that supersedes and replaces the previous requirement rather than being combined with it. . . .

The user selection criteria may be entered and activated independently under different categories (theme, channel, prime time) and are maintained by the data processor whether currently activated or not. This is disclosed, for example from column 12 line 12 to column 15 line 17 (wherein it is stated that buttons can be pressed to independently activate the THEME, PRIME-TIME, and CHANNEL selection criteria) and from column 18 line 11 to column 20 line 38. Furthermore, the selection criteria can be combined as alternatives (in a logical OR fashion), such as a list of acceptable channels or a list of acceptable themes. This is far different from even the cited teletext art, where search criteria are entered and combined in a dependent, hierarchal fashion. At each stage in the cited teletext art, the available search choices are determined by and dependent upon the previous choices made. Furthermore, they are only combined in a logical AND fashion. Also, the prior art does not allow complex entries (such as theme or channel lists) to be deactivated yet saved in memory.

Supplemental Amendment After Final, Feb. 25, 1993, at 22-24 (emphases added; emphasis in original omitted).

Gemstar's comments in the prosecution history constitute a disclaimer of claim scope to distinguish the prior art. To avoid a rejection based on teletext prior art cited by the examiner, Gemstar explained the operation of its claimed invention as follows:

[T]he user enters user program selection criteria, and the data processor combines the program selection criteria, searches through the stored schedule information, and creates and stores a display list of program listings that meet the combined criteria. . . . The user may then make program selection choices (which the Examiner has characterized as further program selection criteria) from this display . . . .

Id. at 22. Gemstar then distinguished this "independent[]" method of combining search criteria, id. at 23, as "far different" from the teletext prior art where new search criteria were continuously entered and

combined with prior search results in a "dependent, hierarchal fashion," id. at 24.

Based on Gemstar's statements in the prosecution history disclaiming dependent searching to distinguish the prior art, the "combining" limitation must be read consistently in the claim. See Tegal Corp. v. Tokyo Electron Am., Inc., 257 F.3d 1331, 1343 (Fed. Cir. 2001). Thus, the ITC's requirement that "combining" must be combined prior to any search is correct.

In conclusion, "combining" within claims 18 and 66 of the '121 patent encompasses any logical combination of the user selection criteria. However, the logical combination of the user selection criteria must occur prior to any search and does not include dependent, hierarchal searching where new user selection criteria are combined with prior search results.

d. "Said User Selection Criteria" (Claims 18 and 66)

The disputed limitation of claims 18 and 66 of the '121 patent is:

> supplying user program selection criteria to the data processor, said user program selection criteria comprising a plurality of independent user chosen program selection criteria and at least one program choice, the data processor combining said user selection criteria, selecting those programs meeting the combined user selection criteria for viewing . . . .

Re'121 patent, claims 18, 66 (emphasis added).

(1) Theme, Channel, and Prime Time

The ITC initially found that "user selection criteria" was limited by the written description and reexamination prosecution history to the "theme," "channel," and "prime time" criteria. FID Opinion at 41. It relied on a passage in the written description that stated: "At the bottom of the screen is a two line status display, showing the actual time and date, and whether any of the search restrictions (prime, theme, and channel) are activated." Id. (citing '121 patent, col. 11, ll. 34-37). The ITC cited other examples in the written description indicating the system only performed searches based on theme, channel, and prime time. Id. at 42. The ITC also cited instances during reexamination where Gemstar reiterated theme, channel, and prime time as individual selection criteria. Id. at 42-43.

Gemstar argues that the ordinary meaning of "user selection criteria" includes any search criteria selected by the user, and that the written description discloses many other types of "user selection criteria" besides theme, channel, and prime time. Gemstar contends that during reexamination, it provided theme, channel, and prime time as examples of "user selection criteria," not as an exhaustive list limiting claim scope. Scientific-Atlanta responds that the written description and reexamination prosecution history identify only theme, channel, and prime time as "user selection criteria," and fail to identify a single search criterion other than these three parameters.

The ITC correctly looked to dictionary definitions, including a definition of "criterion," the singular form of "criteria," from Webster's Third New International Dictionary 538 (1993): "a standard on which a decision or judgment may be based." From this definition, the ordinary meaning of "user selection criteria" is simply any parameter chosen by the user in selecting a program.

The next step is to consider the written description and prosecution history to see if the applicant disclaimed or otherwise narrowed the scope of this claim limitation. From our examination, the passages from the written description and reexamination proceedings cited by the ITC and Scientific-Atlanta fail to establish that "user selection criteria" was limited to theme, channel, and prime time. Although Gemstar routinely referred to theme, channel, and prime time as examples of user selection criteria in the written description and during reexamination, these passages lack "words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope" required to limit user selection criteria to these three parameters. ACTV, 346 F.3d at 1091. As an example, Gemstar stated during reexamination:

> The user selection criteria may be entered and activated independently under different categories (theme, channel, prime time) and are maintained by the data processor whether currently activated or not. This is disclosed, for example from column 12 line 12 to column 15 line 17 (wherein it is stated that buttons can be pressed to independently activate the THEME, PRIME-TIME, and CHANNEL selection criteria) and from column 18 line 11 to column 20 line 38. Furthermore, the selection criteria can be combined as alternatives (in a logical OR fashion), such as a list of acceptable channels or a list of acceptable themes.

Supplemental Amendment After Final, Feb. 25, 1993, at 23-24. Because Gemstar did not expressly limit "user selection criteria" to the theme, channel, and prime time parameters, but simply cited them as

examples during reexamination, "user selection criteria" are not limited to theme, channel, and prime time.

(2) Program Choice

The ITC and the parties agreed that the expression "said user selection criteria" in claims 18 and 66 does not have an exact antecedent—the preceding claim language reciting "user program selection criteria" and "independent user chosen program selection criteria." Re'121 patent, col. 5, ll. 17-23 (emphases added); see FID Opinion at 36-37. The ITC found that the plain language of the claim indicated that "said user selection criteria" referred back to "independent user chosen program selection criteria" and was exclusive of program choice. FID Opinion at 37.

Gemstar argues it was error for the ITC to construe "said user selection criteria" to refer back to "independent user chosen program selection criteria" instead of "user program selection criteria," thereby excluding program choice from the user selection criteria. Scientific-Atlanta responds that including program choice in "said user selection criteria" would be superfluous since the invention requires the user to make a program choice only after the data processor has combined the user selection criteria and produced a list of programs satisfying the combined criteria. Further, Scientific-Atlanta argues that Gemstar consistently described the operation of its invention in this manner during the reexamination.

From an examination of the disputed claim language, we conclude that the ITC correctly held that "user selection criteria" did not include program choice. Although it may appear on first glance that "said user selection criteria" actually refers back to "said user program selection criteria" and thus includes "a plurality of independent user chosen program selection criteria and at least one program choice," see Re'121 patent, col. 5, ll. 17-23, our prior claim construction of "combining" makes clear that such a conclusion is incorrect. The operative claim language is "combining said user selection criteria." Re'121 patent, claims 18, 66 (emphasis added). We previously construed this claim language to require that the combination of "user selection criteria" occur prior to any search. Statements made during the reexamination proceeding make clear that "user selection criteria" are first selected, then

combined, following which the system produces search results from the program listing satisfying the "user selection criteria." A statement by the examiner during reexamination clarified that from the search results, a user makes a program choice:

> Applicant also agreed to add further limitations to the claims so as to set forth the user's ability to control the processor to select programs from the schedule information which was selected from incoming information based on the "combined" user selection criteria.

Examiner's Statement in Reexamination Advisory Action, Feb. 16, 1993, at 2. Gemstar agreed with this understanding:

> Combining User Selection Criteria and Selecting Programs
>
> Several of the present claims recite a process in which the user enters user program selection criteria, and the data processor combines the program selection criteria, searches through the stored schedule information, and creates and stores a display list of program listings that meet the combined criteria. This is disclosed, for example, at col. 17 lines 33 et seq. The user may then make program selection choices (which the Examiner has characterized as further program selection criteria) from this display. The data processor then stores information for these program selections, including information identifying program titles, in a reminder calendar list.

Supplemental Amendment After Final, Feb. 25, 1993, at 22-23 (emphases added). Gemstar and the examiner agreed during reexamination that a program choice was made after the "user selection criteria" were combined. From this it is clear that a contrary construction was disclaimed. "[S]aid user selection criteria" must refer to what the language of the claim describes as "independent user chosen program selection criteria," excluding program choice.

In conclusion, the limitation "said user selection criteria" refers to any parameters chosen by the user to search for a program. Such parameters are not limited to theme, channel, and prime time. Further, "said user selection criteria" does not include a specific program choice.

e. "Tuning" Limitations (Claims 18 and 66)

In a post-argument motion, Scientific-Atlanta argues that we should consider whether the ITC erred in construing the "tune" limitation in claims 18 and 66 of the '121 patent as an alternate ground to affirm the finding that its products do not infringe the '121 patent.

In the parties' initial briefing, Intervenor EchoStar, which has since been dismissed from this appeal, argued: "All three patents in suit have 'tuning' limitations that, properly construed, provide an independent basis to affirm the ITC's finding that the accused EchoStar products do not infringe." EchoStar Br. at 51. EchoStar then stated that Gemstar had previously conceded that EchoStar did not infringe "any of the asserted claims under EchoStar's construction of the 'tuning' limitations." Id. EchoStar then presented its claim construction arguments. Id. at 51-58. EchoStar's brief did not provide any arguments that Pioneer, which also has since been dismissed from this appeal, or Scientific-Atlanta did not infringe any of the patents at issue under its proposed claim construction of the "tuning" limitations. Neither Pioneer's brief nor Scientific-Atlanta's brief separately addressed the "tuning" limitations.

Following argument and after EchoStar was dismissed from the case, Scientific-Atlanta represented to this court that we should consider the "tuning the television receiver" limitations of claims 18 and 66 of the '121 patent because the limitations were still at issue in the case. Specifically, Scientific-Atlanta stated that because EchoStar had presented the issue in its brief, and because Scientific-Atlanta had incorporated EchoStar's brief in its entirety, the claim constructions were still disputed.

Scientific-Atlanta's argument is misplaced. EchoStar's brief only presented arguments as to why EchoStar's products do not infringe the '121 patent under its proposed claim constructions. See id. at 51-58. Scientific-Atlanta has not presented any arguments that its products do not infringe the "tuning" limitations of the '121 patent under any claim construction; not in its own brief, nor in the briefs of Intervenors EchoStar and Pioneer that Scientific-Atlanta incorporated by reference. Because this court reviews judgments, and not claim construction arguments unrelated to products identified and placed at issue, we decline to construe the "tuning" limitations of the '121 patent. See Int'l Rectifier Corp. v. Samsung Elecs. Co., 361 F.3d 1355, 1359 n.1 (Fed. Cir. 2004) ("This court reviews judgments."); see also Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1540 (Fed. Cir. 1983) ("We sit to review judgments, not opinions."). Scientific-Atlanta's motion is denied.

2. Infringement

Because the ITC's order that Scientific-Atlanta did not infringe the '121 patent is based on erroneous constructions of the "storage means in a data processor," "information identifying," "combining," and "said user selection criteria" claim limitations, we vacate the ITC's order and remand for reconsideration of infringement and satisfaction of the domestic industry requirement in light of the correct claim constructions.

3. Inventorship

The parties dispute whether Neil is an omitted co-inventor of the '121 patent. Gemstar argues that the ITC erred by failing to construe the claims, instead determining that Neil made contributions to "key facets" or "foci" of the patent. Gemstar maintains that the ITC erred in finding that Neil presented facts supported by clear and convincing evidence corroborating his contribution to the claims of the '121 patent. Scientific-Atlanta responds that the ITC specifically identified Neil's inventive contributions, explained how those contributions appeared in particular claim limitations, and correctly concluded that Neil's testimony was adequately corroborated under the "rule of reason" analysis.

A patent is invalid if more or fewer than the true inventors are named. Jamesbury Corp. v. United States, 518 F.2d 1384, 1395 (Ct. Cl. 1975). Because a patent is presumed valid under 35 U.S.C. § 282, there follows a presumption that the named inventors on a patent are the true and only inventors. See Hess v. Advanced Cardiovascular Sys., Inc., 106 F.3d 976, 980 (Fed. Cir. 1997).

When two or more persons jointly invent, they must jointly apply for a patent. 35 U.S.C. § 116 (2000). Co-inventors must so apply "even though . . . they did not physically work together or at the same time, . . . each did not make the same type or amount of contribution, or . . . each did not make a contribution to the subject matter of every claim of the patent." Id. § 116. Because conception is the touchstone of inventorship, each "joint inventor must contribute in some significant manner to the conception of the invention." Fina Oil & Chem. Co. v. Ewen, 123 F.3d 1466, 1473 (Fed. Cir. 1997); see also Ethicon, 135 F.3d at 1460. "Conception is the formation in the mind of the inventor, of a definite

and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1376 (Fed. Cir. 1986) (internal quotation marks omitted). "An inventor may solicit the assistance of others when perfecting the invention without 'losing' any patent rights." Trovan, Ltd. v. Sokymat SA, 299 F.3d 1292, 1302 (Fed. Cir. 2002).

Because co-inventors need not contribute to the subject matter of every claim of the patent, inventorship is determined on a claim-by-claim basis. Id. Moreover, the inventorship analysis, like an infringement or invalidity analysis, first requires the construction of each disputed claim to determine the subject matter encompassed thereby. Id. The second step is a comparison of the alleged contributions of each asserted co-inventor with the subject matter of the correctly construed claim to determine whether the correct inventors were named. Id.; Ethicon, 135 F.3d at 1460-61.

Alleged co-inventors must establish their co-inventorship by facts supported by clear and convincing evidence. Ethicon, 135 F.3d at 1461. To meet the burden of clear and convincing evidence, the alleged co-inventors must prove their contribution to the conception of the invention with more than their own testimony concerning the relevant facts. Trovan, 299 F.3d at 1302 (citing Price v. Symsek, 988 F.2d 1187, 1194 (Fed. Cir. 1993)). Whether the co-inventor's testimony has been sufficiently corroborated is evaluated under a "rule of reason analysis," which requires that an "evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached." Price, 988 F.2d at 1195. Corroborating evidence may take many forms. Reliable corroboration preferably comes in the form of records made contemporaneously with the inventive process. Sandt Tech., Ltd. v. Rosco Metal & Plastics Corp., 264 F.3d 1344, 1350-51 (Fed. Cir. 2001). Circumstantial evidence of an independent nature may also corroborate. Trovan, 299 F.3d at 1303. Additionally, oral testimony from someone other than the alleged inventor may corroborate. Id.

Because Neil failed to present facts supported by clear and convincing evidence of his co-inventorship, the ITC erred in holding Neil to be an unnamed co-inventor of the '121 patent. In support of his co-inventorship claim, Neil principally relies on his own testimony and the content of two product

disclosure documents, an original disclosure document and a "second version" of the disclosure document.[6] FID Opinion at 253.

The ITC found that Neil's testimony was "credible and straightforward," while Young's testimony "lacked those characteristics." Id. at 257. Under our precedent, more than just the alleged co-inventor's testimony is required to establish co-inventorship by facts supported by clear and convincing evidence. Trovan, 299 F.3d at 1302. The mere fact that the ITC found the alleged inventor's testimony to be more credible than the named inventor does not itself rise to the level of clear and convincing evidence.

Relying on its own precedent, the ITC exhaustively examined both Neil and Young's educational and employment backgrounds. FID Opinion at 246-49. However, this was only weak circumstantial evidence with only a very attenuated relationship to Neil's potential contributions to the invention of the '121 patent. Although technical education and experience is relevant and may assist in corroborating an inventorship claim under the rule of reason, it adds little to the other evidence in this case, and thus does not surmount the clear and convincing evidentiary requirement.

The ITC found that the two product disclosure documents corroborated Neil's co-inventorship. Id. at 252. Although these product disclosures each contained an annotation listing Neil by name, they did not explicitly state what subject matter Neil contributed. Id. at 256-57. The product disclosures fail to explicitly identify Neil's contributions, and thus fail to show that Neil's contributions exceeded the prior art or were part of the invention claimed in the '121 patent. Neil's own testimony cannot fill in these gaps in the product disclosure documents to establish whether Neil contributed to the subject matter of the invention claimed in the '121 patent. Thus, even taken collectively, Neil's own testimony, technical background, and the ambiguous product disclosure documents fail to establish Neil's co-inventorship of the '121 patent by facts supported by clear and convincing evidence.

Because Neil did not present facts supported by clear and convincing evidence that he contributed to the conception of one or more claims of the '121 patent, we reverse the ITC's holding that the '121 patent is "unenforceable" for failure to name Neil as a co-inventor.

III. CONCLUSION

Because the ITC correctly construed the "means . . . for displaying" limitation and because there was substantial evidence to support its finding of non-infringement under that construction, we affirm the order of non-infringement of claim 1 of the '268 patent. Because the ITC erred in construing the "visual identification" and "moving . . . between . . . cells" limitations of claim 31 of the '204 patent, we vacate its order of non-infringement. Because the ITC erred in construing the "storage means in a data processor," "information identifying," and "said user selection criteria" limitations of claims 18 and 66 and the "combining" limitation of claim 18 of the '121 patent, we vacate its order of non-infringement. Because the ITC erred in holding that Neil is an unnamed co-inventor of the '121 patent, we reverse the ITC's order that the '121 patent is "unenforceable." This case is remanded for further proceedings consistent with this opinion. Accordingly, the case is:

AFFIRMED-IN-PART, VACATED-IN-PART, REVERSED-IN-PART, AND REMANDED

IV. COSTS

No costs.

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[1] Intervenors EchoStar Communications Corporation, et al. and Pioneer Corporation, et al., were dismissed from the appeal after oral argument was heard.

* Judge Michel heard oral argument but did not participate in the decision.

[2] The ITC characterized the '121 patent as "unenforceable" for failure to name Neil as a co-inventor. FID Opinion at 278, 429. We treat this conclusion as one of invalidity, inasmuch as the failure to name a co-inventor presents a question of invalidity not unenforceability. See, e.g., Jamesbury Corp. v. United States, 518 F.2d 1384, 1395 (Ct. Cl. 1975).

[3] The original ’121 patent and Re’121 patent are collectively referred to as “the ’121 patent” in subsequent discussions, unless otherwise indicated.

[4] Note that the operation of Scientific-Atlanta’s accused device is subject to a protective order, thus precluding explicit discussion for purposes of evaluating the ITC’s infringement determination.

[5] In its brief, Gemstar appears to dispute the construction of “supplying program schedule information to a data processor” in claim 32 of the ’121 patent. Appellant’s Br. Appx. at 1-A. Gemstar noted that the ITC made no independent findings pertaining to claim 32. Appellant’s Br. at 60. Gemstar presented no independent claim construction arguments for claim 32, stating only that its arguments pertaining to claim 18 of the ’121 patent also applied to claim 32. Id. The ITC interpreted “data processor” in claim 32 consistent with its preceding interpretation of “data processor” in claim 18. FID Opinion at 66. On this limited record, it appears that the only aspect of claim 32 that Gemstar is appealing is the construction of the term “data processor” in claim 32. Thus, our revised construction of “data processor” for claims 18 and 66 also applies to claim 32 of the ’121 patent.

[6] The court notes that the content of Neil’s testimony and the product disclosure documents are subject to a protective order, thus precluding explicit discussion of their content.