

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

PROMPTU SYSTEMS CORPORATION,

Plaintiff,

v.

COMCAST CORPORATION and COMCAST
CABLE COMMUNICATIONS, LLC,

Defendants.

)
) CIVIL ACTION

)
) No. 2:16-CV-06516

DEFENDANTS' OPENING CLAIM-CONSTRUCTION BRIEF

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March 19, 2018

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I. INTRODUCTION

Comcast asks the Court to construe the claim terms in dispute according to governing law and both the intrinsic and extrinsic evidence.¹ In this case, Promptu asserts two families of patents²—procured from over a decade of aggressive prosecution in the Patent Office—against Comcast’s speech-recognition services. But Comcast’s speech-recognition technology is fundamentally different from that of the patents, which are rooted in cable-TV technology that is two-decades old. This basic fact forces Promptu to proffer amorphous constructions for the disputed terms to extend the patents’ reach beyond the legitimate scope of the claims. The Court’s task here is to give meaning to the claims in light of the purported invention. Comcast’s proposed constructions do so and should be adopted.

II. BACKGROUND OF THE FIELD OF THE PATENTS

A. History and evolution of cable-TV systems

The basic technology that brings TV and other video content to homes through coaxial cable has been available for at least six decades. A cable company receives TV-program content (traditionally via satellite transmission) at a facility known as a “head-end,” processes those signals, and then broadcasts all of the received programming simultaneously to all of the subscribers connected to that head-end. Head-end equipment modifies each broadcast signal into an appropriate form for transmission on its own frequency “channel.” Thus, for example, the signal from NBC10 in Philadelphia is transmitted on a frequency channel designated for that station. Subscribers have “set-top boxes” in their homes, which allow them to receive and thereby tune the set-top box to the designated NBC10 channel. *See* Bove, ¶¶ 17-18.

¹ Comcast concurrently submits the declaration of V. Michael Bove (“Bove”) and Leo L. Lam (“Lam”) respectively in support of this opening claim-construction brief.

² Promptu asserts U.S. Patent Nos. 7,260,538 (“the ’538 patent”); and 7,047,196 (“the ’196 patent”); and related RE44,326 (“the ’326 patent”). *See* Lam Exhs. 1-3.

Cable system architectures have grown far more complex since their early years. Even by the application dates of the asserted patents, cable systems had multiple tiers of head-ends and various nodes or interfaces to improve transmission of the broadcast signal to subscribers. *See* '196 at Fig. 1. These more complex architectures also took advantage of improvements in networking; cable companies began to use more efficient fiber-optics from the head-end to various downstream nodes, only using the traditional coaxial cable from each node to the set-top boxes. *See id.* at 2:51-59. This type of network is called a “Hybrid Fiber-Coaxial (HFC)” network. *Id.* at 2:3-6; Bove, ¶ 19.

The transmission of TV programming from head-ends to subscribers occurs in the “downstream” direction. *See id.* at 2:60-62. Since this was the original, and continues to be the primary, function of cable-TV systems, the downstream transmission has always had high bandwidth and is relatively efficient. There has also been some “upstream” transmission capability—for example, for interactive services such as pay-per-view requests—but bandwidth in the upstream direction has always been far more restrictive. *See id.* at 2:62-3:10.

Additionally, unlike the downstream where the head-end broadcasts the same programming to every set-top box connected to it, upstream transmissions involve messages unique to individual set-top boxes, but each set-top box must share upstream channels back to the head-end. *See id.* at 3:21-32. According to the asserted patents, upstream transmissions were inefficient because of the possibilities of “collisions” on the channel. *See id.* at 3:33-37; *see also* Bove, ¶ 20.

In the mid-1990s, many of the largest equipment vendors in the cable industry jointly developed a transmission protocol (i.e., a set of rules or procedures for transmitting data between devices) that would allow cable companies to provide Internet and other data service over the cable system. This protocol is known as DOCSIS, which stands for Data Over Cable Service

Interface Specification. *See* '196 at 11:51-59 (referring to DOCSIS). The DOCSIS protocol specifies both upstream and downstream communications of data, but it is not an alternative for TV programming signals. *See* Bove, ¶¶ 21-22.

Cable companies deploying DOCSIS-compliant equipment are able to provide broadband-internet and telephone services separate from traditional TV programming. DOCSIS requires a cable modem at the subscriber's home, which connects over the HFC network to a device called a Cable Modem Termination System ("CMTS"), typically located at the head-end. From the CMTS, cable companies deploy a complex network of routers, gateways, servers and other equipment to route internet data and telephone data across their own networks, to the public telephone network, or to the public Internet. *See* Bove, ¶¶ 22-25. The CMTS also delivers data routed to it from the public Internet and elsewhere downstream to the cable subscribers connected to that CMTS. This data travels on separate channels and in a different format than the TV signals carried in a traditional cable network.

Unlike TV-broadcast signals, internet traffic (such as email, web pages, video streaming, or even telephone calls) is carried in Internet Protocol ("IP") packets. Instead of reserving a dedicated channel of a certain frequency for the data to travel from source to destination, internet communications are broken up into many small packets of data. Each data packet includes information regarding the source and destination, such as their respective IP addresses. The packets are individually sent out over the network, and internet routers dispersed throughout the network forward the packets based on the destination information contained in each packet. At a high level this is how the public Internet operates. Now, thanks in part to the evolution of DOCSIS, IP routing also serves a significant role in the operations of modern cable networks, including Comcast's. *See* Bove, ¶ 24.

B. Speech recognition

Speech recognition existed for decades before the application dates for the asserted patents. *See, e.g.*, '538 at 1:19-26. At its most basic, speech recognition involved training computers to recognize a limited number of individual words, and then advanced to systems that could recognize and discriminate “individual words from spoken phrases.” *Id.* at 1:26-28.

Speech recognition requires, at a minimum, (1) a device that “hears” speech audio and converts the corresponding soundwaves into an electronic form of the audio, and (2) a computer that analyzes the electronic form of the audio to interpret it as text. Human brains learn to do this from infancy, but developing a computer system to do this accurately has been challenging. Speech recognition must account for accents, slang, dialect, and other minor speech differences.

By the early 2000s, a technique had already been developed and deployed in sophisticated enterprises that provided reliable and flexible speech-recognition capabilities, known as “natural language processing.” Natural language processing requires substantially more computing power than earlier speech-recognition systems. *See* '196 at 1:53-56. In recent years, speech recognition has harnessed the power of cloud computing. The voice-to-text services that are familiar today—such as Apple’s “Siri” and Android “Voice to Text”—rely on artificial intelligence and datacenters housing hundreds of computer servers to support many users simultaneously. *See* Bove, ¶¶ 26-29.

III. ARGUMENT

A. Legal standard for claim construction

Patent claims define the scope of a patentee’s right to sue for infringement, and the interpretation of those claims presents a question of law. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977-78 (Fed. Cir. 1995). A patent may disclose or discuss a wide range of technology, but “the claims of a patent define the invention[.]” *Phillips v. AWH Corp.*, 415 F.3d

1303, 1312 (Fed. Cir. 2005) (*en banc*). The paramount guide to claim construction is the *intrinsic* evidence—the claims themselves, the patent specification, and its prosecution history. *See id.* at 1312-17, 1319. “Because the patentee is required to ‘define precisely what his invention is,’ ... it is ‘unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms.’” *Id.* at 1312 (quoting *White v. Dunbar*, 119 U.S. 47, 52 (1886)).

Unless used in a particular manner, the words of a claim are given their “ordinary and customary meaning.” This is not the ordinary meaning to a layperson, but rather “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Id.* at 1312-13 (internal citations and quotation marks omitted).

While “the claims themselves provide substantial guidance as to the meaning of particular claim terms,” the Court must look to “the context of the entire patent.” *Id.* at 1314. In addition to the words of the claims, the specification “is always highly relevant to the claim construction analysis,” if not “dispositive” as “the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). This means “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (citation omitted).

The prosecution history may also provide useful insight into the proper construction of the claim terms. *See Markman*, 52 F.3d at 980. The prosecution history, which “consists of the complete record of the proceedings before the Patent and Trademark Office (PTO) and includes the prior art cited during the examination of the patent,” can demonstrate “how the inventor

understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317. By consulting the prosecution history, the court can “exclude any interpretation that was disclaimed during prosecution.” *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005). This ensures “that claims are not construed one way in order to obtain their allowance [*e.g.*, narrowly to avoid prior art] and in a different way against accused infringers [*e.g.*, broadly to sweep in accused products].” *Id.*

A court also may rely on *extrinsic* evidence, which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980. Although extrinsic evidence is given less weight than intrinsic evidence, extrinsic evidence can be a useful tool for understanding the relevant art and underlying technology. *See Phillips*, 415 F.3d at 1317-18. For example, technical dictionaries can be helpful if they “endeavor to collect the accepted meanings of terms used in various fields of science and technology.” *Id.* at 1318. And expert testimony may aid the Court in understanding that a particular term would have a specific meaning in the field and “ensur[ing] that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art.” *Id.*

B. ’538 patent terms

The ’538 patent, entitled “Method and Apparatus for Voice Control of a Television Control Device,” generally pertains to voice control in a cable-TV system and claims priority to January 2002. The patent acknowledges that voice-recognition systems existed in the prior art, but asserts that “[a] problem with the prior art voice recognition systems is that they require a sophisticated voice recognition system in close proximity to the user.” The patent purports to solve this problem by providing “a centralized voice command processing system [that] services

a multitude of users” at a “head-end unit” or “central processing station” at the head-end in a cable network. ’538 at 1:59-63, 2:29-36, 4:7-23; Bove, ¶¶ 30-35.

1. “head-end unit” (’538 claims 2, 6, 9)

Comcast	Promptu
central unit in a cable-TV network that processes and delivers cable-TV signals to subscribers	component of a cable system that is remote from the television controller or receiver

“Head-end” is a common term of art that denotes a specific facility in cable-TV network architecture. By using the term without any special definition or elaboration, the ’538 patent inventors signaled their intent to use the commonly understood meaning. *See InterDigital Commc’ns, LLC v. ITC*, 690 F.3d 1318, 1324 (Fed. Cir. 2012) (“The plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer and provides a special definition for a particular claim term.”). Since the inception of cable TV in the 1950s through today (including as of the filing date of the ’538 patent), a head-end has always been understood to mean the facility in a cable-TV network that receives and processes TV signals for distribution to customers. Thus, Comcast’s proposed construction of “head-end unit” is how one of skill in the art would have understood the term. *See Bove*, ¶¶ 38-39; Lam Exhs. 5-8.

The ’538 patent does not purport to offer any unique lexicography for the term “head-end unit.” Instead, the patent takes a traditional head-end and adds the additional function of voice-recognition processing. *See, e.g.*, ’538 at Abstract, 2:29-36, 4:7-10, 5:12-21, 5:46-56, 9:41-42 (claim 2), 11:56-57 (claim 19); Figs. 1, 4, 6; *see also Bove*, ¶ 39.³ In sum, the intrinsic evidence is consistent with Comcast’s proposed construction.

³ The prosecution history also confirms that the claimed invention adds voice-recognition functionality to the head-end. *See Lam Exh. 9* (March 1, 2007 Notice of Allowability) at 2 (examiner concluding that prior art “do[es] not teach where the voice command is transmitted from the set-top-box to a remote head-end unit for processing as recited in the claims”).

The extrinsic evidence also supports Comcast's construction. Promptu's own documents, including the other two asserted patents, confirm that the named inventors from AgileTV (Promptu's predecessor) had the conventional understanding of a head-end in mind in developing the AgileTV system. *See* Lam Exh. 4 (the "AgileTV Solution"). Moreover, all the dictionaries and technical references proffered by both sides are consistent. *See, e.g.,* Lam Exh. 5 (Commc'ns Handbook—"The point of origination of the cable TV signals before they are transmitted out on the system."), Lam Exh. 6 (McGraw-Hill—"Where cable-TV signal processing takes place."), Lam Exh. 7 (McGraw-Hill—"In cable TV, the head end is where the cable company has its satellite dish and TV antenna for receiving incoming programming."), Lam Exh. 8 (Newton's—"The originating point of a signal in cable TV systems."), Lam Exh. 10 (IEEE (cited by Promptu)—"A cable system consists of a headend, where video signals are collected and modulated in a frequency stack known as the channel lineup.").

Promptu offers a vague and overbroad construction of "head-end unit" to capture any component that is "remote from the television controller or receiver" (*i.e.*, anything other than the remote control or set-top box). This construction improperly sweeps in components that would never be considered part of a head-end. *See* Bove, ¶ 40. For example, Promptu's construction contradicts the '538 patent's own Figure 1, which differentiates a "node" (block 140) from "head-end unit" (block 160). *See* '538 at 4:4-10, Fig. 1. Yet Promptu's construction would sweep the "node" (as well as the cabling and fiber-optics connecting the blocks in Figure 1) within the definition of "head-end unit." Promptu's construction would also encompass other components that no one of skill in the art would understand to be a head-end, such as a junction box on a utility pole. *See* Bove, ¶ 40. Thus, the Court should reject Promptu's construction.

2. “centralized processing station” (’538 claims 34, 40)

Comcast	Promptu
device at a cable-TV network head-end unit that receives and performs voice recognition on voice commands, and generates and returns instructions to set-top boxes to carry out the commands	portion of a cable television system at which voice commands are received and command functions are transmitted

The term “centralized processing station” goes hand-in-hand with “head-end unit.” The ’538 patent explains that the centralized processing station is “located at a cable television head-end unit” (’538 at 2:29-35); and also refers to block 160 in Figure 1 interchangeably as both the “head end unit” (*id.* at 4:7-9) and “central processing station” (*id.* at 4:17-23). *See* Bove, ¶ 41. Accordingly, the “centralized processing station” is a “device at a cable-TV network head-end unit” as Comcast proposes. Comcast’s proposal further tracks what the claims explicitly require:

... a centralized processing station configured to receive and process second output from a multitude of television set top boxes by applying voice recognition to the second output to identify user-intended voice commands, to derive set-top-box-compatible instructions to carry out the identified voice commands, and returning signals representing the instructions to respective top [sic] boxes via the cable television link

Id. at 13:51-58 (claim 34), 14:52-59 (claim 40). Thus, the claims require that the centralized processing station receive voice commands (“second output” in the claims), perform (“apply”) voice recognition to identify user-intended commands, and generate (“derive”) and return set-top-box-compatible instructions to carry out the commands. Comcast’s proposed construction is faithful to both the specification and claims—i.e., the intrinsic evidence—and should be adopted.

In contrast, Promptu’s construction contradicts the patent’s specification and claims, as well as the words “centralized processing station” themselves. First, Promptu’s language “portion of a cable television system” ignores the word “**centralized**” and its use in the ’538 patent to refer to being co-located with the “head-end unit.” *See* Bove, ¶¶ 41, 45. Second, Promptu reads “**station**” out of the claim term—“station” refers to a discrete device, and not just

a non-descript “portion” of a system as Promptu asserts. *See* Lam Exhs. 11-12; Bove, ¶¶ 42, 45. Third, Promptu’s recitation of the functions of the centralized processing station (per Promptu, “at which voice commands are received and command functions are transmitted”) omits the most critical function being claimed—i.e., voice-recognition processing. *See* Bove, ¶¶ 42, 44. For at least these reasons, the Court should reject Promptu’s construction.

3. “voice recognition [processing]” (’538—all claims)

Comcast	Promptu
conversion of spoken words into computer text	understanding by a computer of spoken words for the purpose of receiving commands and data input from the speaker

The core of the invention claimed in the ’538 patent is performing “voice recognition [processing]” at a “head-end unit” (*see* ’538 at 9:41-42 (claim 2), 11:56-57 (claim 19))⁴ or “centralized processing station” (*see id.* at 13:51-53 (claim 34), 14:51-53 (claim 40)), instead of in the customer’s remote control or set-top box. *See* Bove, ¶ 47. In either case, “voice recognition” refers to the function of converting speech to text. *See* ’538 at 4:10-16 (“speech recognition processing includes user voice identification and word recognition”); Bove, ¶ 47.⁵ Comcast’s proposed construction makes this clear and should be adopted.

Promptu’s construction does not clearly require “voice recognition” to perform speech-to-text conversion. The word “understanding” in Promptu’s construction is imprecise, and Promptu’s phrase “for the purpose of receiving commands and data input from the speaker”

⁴ The term “voice recognition processing” appears in the preamble of claims 2 and 19. These preambles limit the claims because they recite subject matter deemed important by the patent specification, and provide antecedent basis for “head-end unit.” *See Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015); *Proveris Sci. Corp. v. Innvasystems, Inc.*, 739 F.3d 1367, 1372 (Fed. Cir. 2014).

⁵ The ’538 patent specification uses the phrase “voice recognition” interchangeably with the phrase “speech recognition.” *Compare* ’538 at 1:19-25, 1:35-41, 2:14, 4:11, 5:54, 6:2, 7:49, Figs. 4, 6 (all using the phrase “speech recognition”) *with id.* at 1:29, 1:52-60, 5:58-59 (all using “voice recognition”); *see also* Bove, ¶ 47.

could be read to suggest that the “voice recognition” requires only identifying whose voice is speaking as opposed to translating the spoken words into text. *See* Bove, ¶¶ 47-48. To avoid yet another dispute about claim scope later in the case, Promptu’s construction should be rejected.

C. ’196 and ’326 patent terms

The ’196 and ’326 patents are both entitled “System and Method of Voice Recognition Near a Wireline Node of a Network Supporting Cable Television and/or Video Delivery.” They share a common specification and claim priority to June 2000.⁶ These patents disclose a method and equipment for processing voice commands from user sites, such as cable subscriber homes. The processing occurs at a “central speech recognition and identification engine. The speech recognition and identification engine ... is capable of processing thousands of speech commands simultaneously and offering a low latency entertainment, information and shopping experience to the user or subscriber.” ’196 at 5:25-31.

As explained in the Abstract of the ’196 patent, the patent purports to address the problem of how to transmit the voice commands upstream and receive the commands at the speech recognition engine. Cable networks were designed for very “efficient downstream information delivery,” but upstream transmission “is much more restrictive, supporting only limited bandwidth.” *Id.* at 2:60-65. For communications back to a cable head-end, “sufficient upstream bandwidth must be made available.” *Id.* at 3:1-3. According to the patent, this is accomplished with a system that uses a “back channel containing a multiplicity of identified speech channels” from user sites, which are presented at a speech processing system located at a “wireline node” such as a head-end. *Id.* at Abstract. The method of partitioning and using this back channel is captured generally in Figure 10.

⁶ For contents that are common across both specifications, Comcast cites the ’196 patent.

The '196 patent issued in 2006 and was a “parent” to a “continuation” patent that issued five years later in 2011, U.S. Patent No. 7,685,523. A year later, Promptu broadened the claims of the '523 patent by way of a “reissue” application. This process resulted in the currently-asserted '326 reissue patent in 2013. Although the '326 patent shares the same or largely the same written description as the '196, the '326 claims are directed to the functionality of the “speech recognition engine,” and how that engine receives and transmits information from and to the user sites along “network paths.” Thus, the '326 claims are based on the patent’s extensive discussion of the AgileTV Voice Process Unit or AVPU beginning at column 12 of the patent. *See* '326 at 12:43 *et seq.* The AVPU serves as the “speech engine.” *Id.* at 21:50-51 (“speech engines, also known herein as an AVPU”). The '326 claims also capture some of the functions of the speech engine as part of an “augmented headend” or “augmented node,” as depicted for example in Figures 23-24 and 26-31.

1. “back channel” ('196—all claims)

Comcast	Promptu
a band of frequencies or designated time slot(s) for transmitting signals from set-top boxes	stream of communications from user sites to a speech processing system or engine

The '196 patent addresses bandwidth constraints and inefficiencies in the upstream data path, *i.e.*, the “back channel.” *See* '196 at 3:11-41. As noted, traditional cable systems had a low-bandwidth upstream channel to carry data such as a request for a pay-per-view selection. *See* Bove, ¶ 20. As explained further with respect to the term “multiplicity of received identified speech channels” below, the purported solution of the '196 patent involved partitioning the upstream “back channel” into multiple individual channels.

Regarding the term “back channel,” the parties at least agree that “back” refers to the upstream direction—*i.e.*, per Comcast, “from set-top boxes”; and per Promptu, “from user sites.”

As between the two proposals on this aspect of the term, however, Comcast's use of "set-top box" is more concrete; and the patent specification makes clear that "user site" equates to a set-top box. *See* '196 at 30:4-7 ("This back channel includes multiple identified speech channels from **multiple user sites (STBs) 1100**, as shown in FIGS. 21 and 22.") (emphasis added), 32:39 (referring to "multiple user sites STBs"), 34:6-9 (again referring to "multiple user sites (STBs)").

Comcast's proposal is also more accurate with respect to the word "channel." In the context of telecommunications, "channel" means "a band of frequencies" or a designated "time slot," as Comcast proposes. *See*, Lam Exh. 11 (IEEE—"(7) a band of frequencies dedicated to a certain service transmitted on the broadband medium"), Lam Exh. 6 (McGraw-Hill—"one segment or time-slot in a broadband communications transmission"); Bove, ¶¶ 57-59. Promptu's use of "stream of communications" in its construction introduces more confusion than clarity, as it suggests that "channel" could refer to the underlying data (*e.g.*, programming content) as opposed to the frequency band or time slot that carries the data. Put another way, "streams of communications" could be misinterpreted to mean the data on the channel as opposed to a portion of the medium designated to carry some type of transmission, regardless of whether data is actually being transmitted. For these reasons, Comcast's proposal is both straightforward and accurate.

2. "wireline node" ('196—all claims)

Comcast	Promptu
a network node providing video or cable television delivery to multiple users using a wireline physical transport between those users at the node	node connected by a wire, as opposed to a wireless connection

Comcast proposes adopting the definition of "wireline node" used in the patent's specification: "a centralized wireline node refers to a network node providing video or cable

television delivery to multiple users using a wireline physical transport between those users at the node.” ’196 at 1:67-2:2. The patent thus provides express lexicography that should be adopted. *See Phillips*, 415 F.3d at 1315 (specification is “single best guide to the meaning of a disputed claim term”). The patent applicants plainly intended to define “wireline node” in the context of their invention, describing the concept of “a wireline node of a network supporting ***cable television and/or video delivery***” throughout the specification. ’196 at 1:26-29 (emphasis added). Here, because “the specification reveals a special definition given to a claim term by the inventor, [] the inventor's lexicography governs.” *David Netzer Consulting Eng’r LLC v. Shell Oil Co.*, 824 F.3d 989, 994 (Fed. Cir. 2016).

3. “multiplicity of received identified speech channels” (’196—all claims)

Comcast	Promptu
at the wireline node, multiple different channels to carry speech data from set-top boxes, wherein ⁷ each channel is assigned to a particular set-top box “channel” means “a band of frequencies or designated time slot(s) for transmitting signals”	plurality of streams of communications received by a speech processing system or engine identified as originating from specific user sites

This phrase, found in all of the asserted claims of the ’196 patent, is core to the purported novelty of the invention. By partitioning the limited-bandwidth upstream channel—*i.e.*, the back channel—into multiple speech channels identified as such, the inventors believed they had developed a solution to the restrictive upstream communication path from set-top box to head-end. *See* ’196 at 3:11-41. Comcast breaks down the constituent elements of this phrase below.

⁷ Comcast has revised its construction in the Joint Claim Construction Statement to replace “where” with “wherein” to avoid a potential ambiguity with the word “where.” Comcast informed Promptu of this revision on March 13, and received no objection from Promptu.

To capture the meaning of the word “received” in “multiplicity of *received* identified speech channels,” Comcast’s construction begins with “at the wireline node.” The ’196 patent explains that the wireline node is where this multiplicity of received identified speech channels is present. And Figure 10, which introduces this feature of the claim, “depicts a flowchart of a method that uses a back channel containing a multiplicity of identified speech channels for speech recognition *at a wireline node*” ’196 at 22:8-12 (emphasis added). This channel “is presented to a speech processing system *at the wireline node*.” *Id.* at 22:13-14 (emphasis added); *see also id.* at 22:43-51 (“the wireline node provides multiple received identified speech channels to the speech processing system”). This is critical to the claimed invention because the wireline node is where the speech recognition occurs, and AgileTV’s speech processor was designed to use these identified speech channels to process incoming speech commands efficiently and associate them with user sites.

The parties do not appear to disagree in substance on this point. Under Promptu’s construction, these speech channels are received by the “speech processing system,” which itself is located at or coupled to a wireline node in all of the asserted claims.

The next part of Comcast’s proposal—“multiple different channels to carry speech data from set-top boxes, wherein each channel is assigned to a particular set-top box”—construes the non-controversial word “multiplicity” (“multiple different”) and the more unique phrase “identified speech channels.” Regarding the latter phrase, the ’196 patent clearly explains that the “identified speech channels” come from “multiple user sites (STBs).” ’196 at 30:5-6. Beyond that, the patent specification does not provide much insight.

Instead, the concept of identified speech channels is explained in a patent application in the same chain as the ’196 patent. *See* ’196 at 1:14-16; Lam Exh. 13 (U.S. App. No. 09/664,874)

(“the ’874 application”).⁸ In the ’874 application, entitled “Increased Bandwidth in Aloha-based Frequency Hopping Transmission Systems,” the same inventors explained that existing cable set-top boxes had inefficient methods for upstream transmission. They used a protocol known as “Aloha” in which, if multiple set-top boxes needed to transmit upstream messages at the same time, the system would solve the inevitable “collisions” by having the boxes simply repeat the transmission until receiving an acknowledgement of successful delivery. *Id.* at 2:14-18.

The invention disclosed in the ’874 application solved upstream transmission problems by having the head-end calculate the number of set-top boxes “active in this node [the headend]” and then “partition[] the total number of set-top boxes into an approximately equal number of set-top boxes for each of the available upstream data channels.” *Id.* at 4:10-13. Moreover, the head-end assigns “each set-top box [not only to] a specific transmission channel, but also a specific transmission time slot.” *Id.* at 4:20-22. The ’874 application continues: “[b]y assigning a specific set-top box to a particular slot, it becomes possible for multiple set-top boxes to transmit in sequential slots, while assuring that the transmission packets do not collide.” *Id.* at 4:22-5:2. Thus, the “multiplicity” of “identified speech channels” reflects a division of the back channel into assigned frequencies and time slots, with each corresponding to a particular user site for improved upstream transmission.⁹ *See* Bove, ¶¶ 58-61.

Lastly, Comcast provides a definition of “channel” that is the same as that proposed for “back channel.” This well-understood meaning is consistent with the usage in the ’874 application also, namely: a band of frequencies or designated time slot(s) for transmitting

⁸ The ’196 patent is a “continuation-in-part” of the ’874 application, which has since been abandoned. *See* ’196 cover page (“Related U.S. Application Data”).

⁹ Promptu’s construction appears to capture this concept as well, insofar as it provides that the channels are “identified as originating from specific user sites.”

signals. *See* Bove, ¶¶ 57-58; Lam Exh. 13. Promptu’s use of “streams of communications” conflates the channel with the data transported on the channel.

4. “speech recognition engine” (’326—all claims)

Comcast	Promptu
computer running software at a central location that processes speech packets to create speech content and to formulate the response to the speech content for each of the user sites	computer running software that accepts spoken language as input and determines (or identifies) what words and phrases or semantic information are present

A *centralized* “speech recognition engine” that both processes speech packets from multiple users *and* formulates a response is fundamental to the claimed invention of the ’326 patent. *See* ’326 at 5:7-9 (“The invention comprises a multi-user control system for audio visual devices that incorporates a speech recognition system that is centrally located”); Bove, ¶ 69. The ’326 patent defines the term with regard to these functions, providing an express lexicography that governs: “The speech recognition engine *processes speech packets to create speech content and formulate the response to the speech content for each of the user sites.*” ’326 at 18:23-25 (emphasis added). Comcast’s construction, which adheres to the definition in the specification, is consistent with the patent’s explicit intent and should be adopted.

The speech recognition engine’s dual functions are further described in great detail throughout the patent specification. For example, the specification states that the speech engine performs “at least the operations of Figure 10,” (’326 at 29:58-59) which includes both “*processing* multiplicity of received identified voice channels to create multiplicity of identified speech content,” and “*responding* to identified speech content” (*id.* at Fig. 10 (emphasis added)). The “processing” that occurs, at a minimum, is the conversion of speech to text. *See id.* at 16:67-17:3 (“Soon after the speech recognition engine has returned a result, visual text corresponding to the recognized spoken request is displayed on the display, e.g. television, screen.”); *see*

Bove, ¶¶ 65-67. Indeed, in response to comments from the Patent Office, the applicants stated they intended to use “speech recognition” to mean “identification of what is being said.” *See* Lam Exhs. 18-19; Bove, ¶ 66.¹⁰

Comcast’s construction also reflects the specification’s repeated references to the “central” location of the speech recognition engine (all emphases below added):

- “The invention ... incorporates a speech recognition system that is ***centrally located***” ’326 at 5:7-9.
- “The analog signals ... undergo additional processing before being transmitted to the speech recognition and identification engine ***located in the cable Headend or other centralized location***.” *Id.* at 10:50-54.
- “The microphone in the remote relays the subscriber’s speech commands to the ***central*** speech recognition engine.” *Id.* at 10:20-21.
- “Therefore, the data coming from this equipment, which contain other upstream traffic, may be parsed in such a way that only the speech commands and address information from the subscriber are input to the speech recognition engine in the ***central location***.” *Id.* at 12:23-28.

Indeed, it is the centralized location of the “speech recognition engine” at the head-end that creates the upstream bandwidth problems that the patent purported to solve. Bove, ¶ 69.

In contrast, Promptu urges the Court to adopt a version of a truncated glossary definition that is vague, confusing, and divorced from the intrinsic record. *First*, Promptu removed the phrase “and outputs a text translation as a result” from the cited glossary definition, making it unclear what Promptu means by “computer running software that accepts spoken language as input and determines (or identifies) what words and phrases or semantic information are present.” Lam Exh. 20; Bove, ¶ 70. As a result of Promptu’s edits, it appears that voice-to-text translation is not even included within its scope of the functions of the “speech recognition

¹⁰ The ’538 patent uses the terms “speech recognition” and “voice recognition” interchangeably. The PTO, however, objected to this informality during prosecution of the ’196 patent. Thus, the ’196 patent consistently uses throughout the specification the term “speech recognition,” which refers to “word recognition” or “identification of what is being said.” *See* Lam Exhs. 18-19.

engine.” Such an omission flies in the face of the patent, the intrinsic evidence, and the common technical understanding that “speech recognition” means conversion of voice to text. *See Bove*, ¶ 71. *Second*, the phrase “semantic information” does not appear once in the ’326 patent’s specification—it is not apparent what Promptu is referring to, and the term is not easily understood by a jury. *Third*, Promptu’s proposal does not incorporate the central location of the engine. *Fourth*, Promptu’s proposal does not include the patent’s explicit requirement that the speech recognition engine perform both the processing of speech from multiple user sites and formulation of a response to the user sites. *See Bove*, ¶ 71. Accordingly, the Court should adopt Comcast’s proposal.

5. “network path” (’326—all claims)

Comcast	Promptu
the physical route a telecommunications signal follows between two nodes in a given network	sequence of network nodes through which data is routed from source to destination

On its face, a “network path” in a cable-TV or video-delivery system entails (1) a “path” or physical route of travel between two nodes (2) within a “network.” Comcast’s construction of “network path” adheres to these elements, which are set forth in the patent’s specification and the extrinsic evidence, and thus should be adopted.

As described in the patent, a “typical residential broadband network” in a cable-TV system consists of a hierarchical structure of set-top boxes, neighborhood nodes, and head-ends connected via Hybrid-Fiber Coaxial (HFC) wiring. *See* ’326 at 2:55-63, 4:16-18, Figs. 1-2; *Bove*, ¶¶ 17-19. Telecommunication signals between two different nodes (*i.e.*, set-top boxes, neighborhood nodes, and head-ends) in the residential broadband network travel over a “network path.” *See Bove* ¶ 74 (explaining dual usage of “node”). For example, Figure 2 of the patent describes a “distinct path” from Node 126 to the Headend 104. This upstream “network path” is

different from the return “network path” from Headend 104 to Node 126, which is routed through Node 120 and Node 124. *See* ’326 at 2:55-63. The term “path” is used in this manner throughout the specification. *See, e.g., id.* at 47:54-61 (referring to “well-characterized data paths for both management and billing” within a network), 11:14-26 (referring to “return path” from set-top box to central location (head-end) within residential broadband network).

The extrinsic evidence also supports Comcast’s definition. In telecommunications dictionaries from the relevant time period, “path” is referred to as a route or a link connecting two nodes within a network. *See* Bove, ¶ 73 *relying on* Lam Exh. 7 (McGraw Hill–“In communications, the route between any two nodes. Same as line, channel, link or circuit.”), Lam Exh. 8 (Newton’s–“The physical route a telecommunications signal follows from transmitter to receiver. The path includes all circuits and all intermediate devices, such as switches and routes.”); Lam Exh. 14 (Microsoft–“In communications, a link between two nodes in a network.”).

Promptu’s construction, in contrast, is vague and inaccurate. By defining “network path” as a “sequence of network nodes through which data is routed,” Promptu both ignores the word “path” and creates unnecessary ambiguity. A “sequence” of “network nodes” just identifies routing points or computers along the way, but not the actual path taken between the nodes. Bove, ¶ 75. Because there may be multiple paths connecting any two or more “nodes,” Promptu’s construction is both technically wrong, and an invitation for mischief at trial. The Court should reject Promptu’s construction.

IV. CONCLUSION

For the foregoing reasons, the Court should adopt Comcast’s proposed constructions.

Respectfully submitted,

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Dated: March 19, 2018