

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner

v.

VEVEO, INC.
Patent Owner

Case IPR2019-00291
Patent 7,937,394

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 37 C.F.R. § 42.107**

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
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PATENT OWNER'S EXHIBIT LIST

Exhibit No.	Description
2001	Affidavit of Pauline M. Pelletier
2002	U.S. Patent Application Publication No. 2006/0167859 to Verbeck Sibley et al. ("Verbeck")
2003	U.S. Patent No. 6,564,213 to Ortega et al. ("Ortega")
2004	U.S. Patent No. 6,009,459 to Belfiore et al. ("Belfiore")
2005	<i>[reserved]</i>
2006	<i>[reserved]</i>
2007	Rovi's Post Hearing Brief, <i>In the Matter of Certain Digital Video Receivers and Related Hardware and Software Components</i> , International Trade Commission Investigation No. 337-TA-1103, filed December 7, 2018 [PUBLIC VERSION]
2008	Rovi's Post Hearing Reply Brief, <i>In the Matter of Certain Digital Video Receivers and Related Hardware and Software Components</i> , International Trade Commission Investigation No. 337-TA-1103, filed December 14, 2018 [PUBLIC VERSION]
2009	<i>[reserved]</i>
2010	Order Setting Procedural Schedule, <i>In the Matter of Certain Digital Video Receivers and Related Hardware and Software Components</i> , International Trade Commission Investigation No. 337-TA-1103, issued April 16, 2018
2011	<i>[reserved]</i>
2012	Excerpts from the Prosecution History of U.S. Patent No. 7,779,011

I. INTRODUCTION

From the invention of a TV Guide-on-Screen to the acquisition of TiVo, the Rovi companies have been pioneers in the media technology industry. Today, Rovi develops, maintains, and grows its interactive program guide (IPG) products and entertainment-content solutions, providing viewers with intuitive experiences that have revolutionized the way millions of home-subscribers watch television.¹

Rovi's U.S. Patent No. 7,937,394 describes and claims a unique indexing, determining, and highlighting technique for resolving search queries received from keys on an overloaded keypad, such as a television remote control.² Overloaded keypads map multiple letters to a particular number, making the keystroke input itself "ambiguous." The claimed indexing, determining, and highlighting technique allows a user to input an incremental search query using overloaded keys and view a set of results having the letters and numbers highlighted that *correspond to* the

¹ Patent Owner in this proceeding, Veveo, Inc., is a wholly-owned subsidiary of Rovi Corporation, and is referred to throughout as "Rovi" or "Patent Owner."

² The '394 patent is a direct continuation of U.S. Patent No. 7,779,011, *see infra* Section III.A, which Comcast has challenged in a related series of petitions for *inter partes* review. *See* IPR2019-00237; IPR2019-00238; IPR2019-00239.

ambiguous keystrokes he or she entered. This is possible because the system has already indexed and determined which letters and numbers present in information associated with the search results caused them to be associated with the input.

This functionality is advantageous because the highlighting “provid[es] the user with a visual indication of the relationship between the key pressed and the incremental match results,” which is particularly helpful when “the relationship between the overloaded characters entered by the user and the match results is complicated and not necessarily intuitive to the user.” Ex. 1121, 7:51-53. Indeed, the indexing and determining processes for resolving an ambiguous query into a set of search results is not transparent or intuitive to a user. Thus, highlighting the letters and numbers in the words associated with the displayed items (e.g., the title) that *caused them to be associated with* the user’s ambiguous input visualizes how the user’s input matches the information associated with the item. *Id.* at 9:7-16.

The claimed technology is a popular feature on cable set-top boxes today, including Comcast’s own X1 System and set-top box—which are products at issue in the related ITC action. Comcast has benefitted from the innovations claimed in the ’394 patent and brings this petition arguing that they are unpatentable so that Comcast may continue to exploit them. But Comcast does so by cobbling together a series of references which, alone and in combination, lack the critical indexing, determining, and highlighting technique allowing for this popular functionality.

Comcast's petition should be denied for multiple independent reasons. As an initial matter, Comcast proposes unsupported, litigation-driven constructions for various terms but fails to provide any analysis to justify adopting them. There is no reason to depart from the language of the claims. If the Board declines to adopt any of Comcast's constructions, the petition should be denied because Comcast does not set forth any ground that does not depend on its unsupported constructions.

Second, none of Comcast's alleged grounds of unpatentability teach or suggest the requirements of "determin[ing] which letters and numbers . . . caused the items to be associated" and "highlighting *the* letters and numbers present in the one or more words in said information describing the identified items."

Third, Comcast's obviousness combinations are deficient. Comcast's arguments supporting its alleged motivations to combine are conclusory and are rooted in a series of unjustified leaps of logic that render each reference in the combination unsuitable for its intended purpose or otherwise inoperable. A person of ordinary skill in the art ("POSA") would not have combined the references in the manner that Comcast proposes with any reasonable expectation of success.

Fourth, the Board should exercise its discretion to deny the petition because substantially the same art and arguments were previously presented to the Office. Faced with art and arguments that are cumulative to those in Comcast's petition, the Office previously concluded during prosecution of the parent '011 patent that

combining a system for processing ambiguous keystrokes with an index that maps items to strings of ambiguous keystrokes with a system that highlights information incrementally in a set of search results does not render the subject matter obvious.

Indeed, Comcast does not identify anything that the Office misunderstood or overlooked. Nor does Comcast present any new arguments or evidence to address the central deficiency in the art previously identified by the Office when it allowed these claims. Therefore, nothing in Comcast's petition warrants reconsideration.

Also Comcast has already challenged the validity of the '394 patent before the ITC. In the context of that investigation, Comcast has received the benefit of discovery, expert reports, briefing, and evidentiary hearings on the same issues presented in its petition. Comcast has also had the opportunity to review Rovi's rebuttal to the same or substantially similar grounds of unpatentability asserted here, as well as Rovi's evidence of objective indicia of nonobviousness. These issues have been fully briefed and argued in the context of a five-day hearing at the ITC. Ex. 2010, 2007, 2008. An Initial Determination is expected in the near term.

Using Rovi's rebuttal in the ITC as a roadmap for this follow-on challenge, Comcast seeks to gain a tactical advantage. Comcast is similarly aware of Rovi's substantial evidence of objective indicia, but has omitted any discussion of it in its petition. Even worse, Comcast appears to have blinded its expert, Dr. Fox, from considering this evidence. Aside from severely undermining Dr. Fox's opinions on

obviousness, Comcast's refusal to perform a legally sufficient *Graham* analysis is pure gamesmanship. Such tactics should not be rewarded with institution of IPR.

II. TECHNOLOGICAL BACKGROUND

A. The '394 patent resolves ambiguous keystrokes and highlights the corresponding letters and numbers in the displayed results.

Prior to the invention, keypads that were overloaded with multiple alphanumeric characters typically required successive input from the user specifying which of the multiple characters was desired (e.g., the “2” key can be used to enter the number “2” as well as the letters “A,” “B,” and “C,” so to choose “B,” the user would press the “2” key twice quickly, and to choose “C” the user would press the key three times quickly). Ex. 1121, 1:47-55. A significant drawback with such “multi-press” interfaces is inefficiency, due to the numerous keystrokes that must be entered to select a single character. *Id.* at 1:60-62. Other overloaded keypad text entry systems used so-called “T9” vocabulary-based completion, which presented the user with a list of potential word matches. *Id.* at 1:55-58. But vocabulary-based word completion requires the additional step of making a choice from the list of all potential word matches generated by the ambiguous keypad input. *Id.* at 1:62-65.

Vocabulary-based word completion systems, like T9, are also designed for applications where the user must disambiguate each word *before* proceeding to the next word. *Id.* at 1:65-2:3. This is not suitable for multi-word search applications where results are ideally obtained based on the entry of just a few characters. *Id.* at

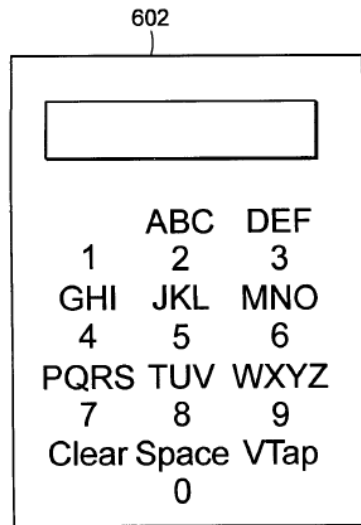
2:3-2:6. This problem is acute when T9 is used because the fewer the number of characters entered, the greater the ambiguity, the more potential matches, and the longer the list of potential word matches, creating a situation that is unacceptably inefficient. Techniques like T9 were thus inadequate for multi-word search engines that must retrieve results based on the entry of just a few characters. *Id.* at 2:6-12.

To solve this problem, the '394 patent describes and claims an algorithm for identifying an item from a set of items based on ambiguous keystrokes entered by the user. The user can enter an ambiguous search query directed at identifying the desired item. *Id.* at 2:22-25. The query comprises a prefix substring of at least one word in information describing the item (e.g., movie title). *Id.* A “prefix substring” of a word is a variable length string of characters that contains fewer than all the characters making up the word. *Id.* at 3:34-37. *Prior to any input from the user*, the search space containing the searchable items has been pre-indexed by performing a many-to-many mapping from the alphanumeric space of potential search terms to numeric strings corresponding to the prefixes of each potential search term forming the potential query string. *Id.* at 3:45-55. In a numeric string, each alphanumeric character in the string is replaced by its corresponding numeric equivalent, based on the arrangement of characters on the keypad, e.g., twelve-key reduced keypad illustrated in Figure 1. *Id.* at 3:54-59. This mapping scheme enables the system to incrementally retrieve results matching the ambiguous alphanumeric input as the

user types-in each character of the query. *Id.* at 3:58-62. In this system, the user need not explicitly specify the termination of each word in the query; rather, the user need only enter an input query that includes prefix substrings from the one or more words of the query. *Id.* at 3:61-67. If multiple-word prefixes are entered, the system can leverage multiple-word prefixes to disambiguate it. *Id.* at 3:67-4:4.

As a user inputs each character of the search query, the system dynamically identifies a group of one or more items from a set of items having one or more words in the information describing the item (e.g., movie title) matching the query. *Id.* at 3:37-40; *id.* at 4:14-21; *id.* at 6:63-66. The group of one or more items is then displayed with the letters and numbers of the one or more words in the information describing the item corresponding to the prefix substring of the search query being highlighted. *Id.* at 3:37-45. For example, as illustrated in Figures 6A and 6B of the patent reproduced below, if a user has entered a search query by pressing “866” on the overloaded keypad, the “8” character entered initially matches all items in the search database containing any word that begins with 8, T, U, or V. *Id.* at 7:21-24. The “6” character next entered limits these results only to items containing words that begin with 8, T, U, or V *and* whose second character is one of 6, M, N, or O, “or to items containing words that begin with [8, T, U, or V] and that also contain subsequent words that begin with [6, M, N, or O].” *Id.* at 7:27-35. In other words, and as illustrated below, the system can identify sequential matches within a word

but also across *multiple words* in the information describing the item (e.g., item 605 highlighting the title “**Twelve Monkeys**(1995)”). *Id.* (emphasis in original).



USER INPUT: 866

FIG. 6A

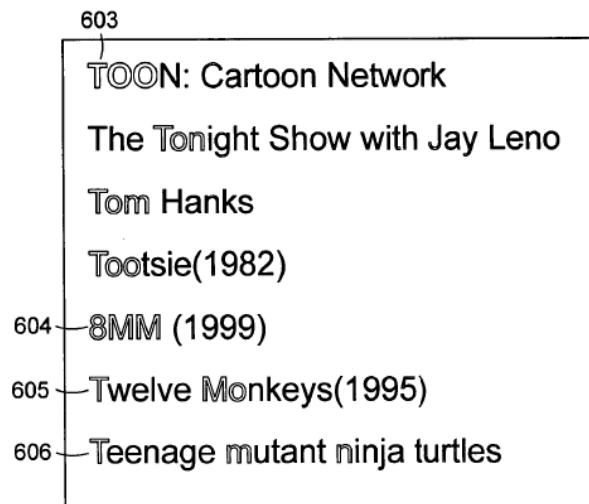


FIG. 6B

Figure 6A and Figure 6B of the '394 patent (Ex. 1121)

The feature of highlighting the letters and numbers of the one or more words in the information describing the item that correspond to the now-resolved prefix substring of the ambiguous search query provides the user with a visual indication of the relationship between the keys pressed and the incremental search results. *Id.* at 6:28-35; 7:49-55. By contrast, simply displaying the text input “866” alongside the search results does not give the user enough information to associate his or her input with the results. *Id.* at 7:17-21. This is because the mapping between a user’s input and the search results is made possible by the indexing and determining steps, which are not intuitive or transparent to the user. *Id.* at 7:46-48. In this manner, the

claimed invention significantly improves the search engine user interface. Because the claimed functionality offers these advantages, it is featured in cable television platforms nationwide, including Comcast's own X1 System and set-top box.

B. None of the references, alone or in combination, highlight the letters and numbers that caused the association to occur.

Challenged independent claim 1 of the '394 patent requires:

1. A method of processing unresolved keystroke entries by a user from a keypad with overloaded keys in which a given key is in fixed association with a number and at least one alphabetic character, the unresolved keystroke entries being directed at identifying an item from a set of items, each of the items being associated with information describing the item comprising one or more words, the method comprising:

providing access to an index of the items, the index having an association between subsets of the items and corresponding strings of one or more unresolved keystrokes for overloaded keys so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes for various search query prefix substrings;

for at least one subset of items, *determining which letters and numbers present in the information associated with and describing the indexed items of the subset caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset;*

receiving from a user a search query for desired items composed of unresolved keystrokes, the search query comprising a

prefix substring for at least one word in information associated with the desired item;

in response to each unresolved keystroke, identifying and displaying the subsets of items, and information associated therewith, that are associated with the strings of one or more unresolved keystrokes received from the user based on the direct mapping of strings of unresolved keystrokes to subsets of items; and

in response to each unresolved keystroke, as the identified items are displayed, *highlighting **the** letters and numbers present in the one or more words in the information describing the identified items that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes that are directly mapped to the items* so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items.

Ex. 1121, 8:44-9:16 (emphasis added).

The “letters and numbers” recited in the highlighting step are “***the** letters and numbers*” that were determined to have “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset.”

Furthermore, and as explained in detail below (*see infra* Section III.A), the applicant overcame rejections during prosecution by clarifying through argument and amendment that the claims require highlighting ***the** letters and numbers* that were determined to correspond to the unresolved keystrokes entered by the user,

even in *multi-word* search applications where the letters and numbers do not necessarily appear in succession or at the beginning of words describing the item. In particular, if a user were to enter the ambiguous keystrokes “866,” the claimed system would highlight, among other matching results, “**T**welve **M**onkeys(1995).” Ex. 1121, FIG. 6B. Thus, the system “illustrat[es] to the user how the unresolved keystrokes entered match the information associated with the displayed items.”

Rather than identify prior art that specifically teaches or suggests this unique functionality, Comcast recycles references that are either substantially identical, or otherwise cumulative to, those applied by the Office during original prosecution of the '011 patent. As explained in detail below, Zigmond, Smith, and Payne, alone or in combination, fail to teach or suggest the determining-highlighting feature.

1. Zigmond (Ex. 1112)

U.S. Publication No. 2005/0256846 (“Zigmond”) is directed to a client-server search system that accepts search inputs from a user. Ex. 1112, Abstract.

Zigmond uses a bin-based index structure that stores pre-mapped data in different subsets, which Zigmond refers to as “bins.” *Id.* ¶¶42-43. The data is included in a given bin when a word or a prefix of a word in the title corresponds to a character string assigned to that bin. *Id.* at ¶¶46-48. Titles that include a word beginning with “A” are mapped to an “A” bin, titles including a word beginning

with “B” are mapped to the “B” bin, and titles including a word beginning with “TA” are mapped to the “TA” bin, and so on. *Id.* at ¶¶42, 44, 48, Figs. 2, 3.

Zigmond’s pre-mapped lists of titles in a particular bin are then displayed in response to a user entering a search query that includes the character-string prefix directly mapped to that bin. *Id.* ¶¶65-66. If a user enters a “T,” program titles from the “T” bin of the first index are displayed to the user. *Id.* at ¶65. If the user further enters an “E,” program titles from the “TE” bin are displayed to the user. *Id.* ¶47.

2. Smith (Ex. 1113)³

U.S. Patent No. 6,529,903 (“Smith”) is directed to a system for searching web pages, and similar documents, that “allows a user to submit an ambiguous search query and to receive potentially disambiguated search results.” Ex. 1113, Abstract. Smith uses an index to translate ambiguous strings of numbers entered on a telephone handset into letters corresponding to search terms. *Id.* at FIG. 5A; 5:1-7. For example, the numeric term “227” can be translated into the alphanumeric term “car” (i.e., “c” is mapped to “2,” “a” is mapped to “2,” and “r” is mapped to “7”). *Id.* at 5:7-19. When Smith receives a numeric query from a user it then

³ Smith is cited on the face of the ’394 patent. *See infra* Section VI.A.

compares the numeric query to the numeric index, generates results (i.e., a list of documents that contain the entire term), and provides the results. *Id.* at Figs. 5A-C.

Smith recognizes that because “the numeric index is more ambiguous than [an] alphanumeric index (e.g., both ‘car’ and ‘bar’ map to ‘227’), the search results may not be as precise as with [an] alphanumeric index.” *Id.* at 5:43-49. Thus, the user would enter “227” and would obtain Document 1 (because it includes the term “car”) and Document 3 (because it includes the term “bar”); however, Document 3 is not relevant because it is unrelated to cars. *Id.* at 5:53-58. Smith recognizes that its numerical index causes this imprecision, but does not describe any solution. *Id.*

3. Payne (Ex. 1109)

U.S. Patent No. 6,370,518 (“Payne”) is directed to search query techniques for displaying a record from a structured database and displaying visual feedback to the user that indicates “how many characters have been entered;” in particular, “the first and second characters in the indexes.” Ex. 1109, 7:13-15, 7:55-56.

The purpose of Payne is to provide an “easy and fast key entry method for displaying a desired record from a structured database on a display screen.” *Id.* at 5:51-53. Payne states that a “structured database means that all the records in the database are sorted with respect to the indexes in either an ascending or descending order.” *Id.* at 5:62-64. The key example described in Payne is a traditional address book containing contact records “in which last name 402 is used as an index of

record 400” and, “[t]o retrieve the record, at least a portion of the index must be supplied.” *Id.* at 6:1-3. In Payne’s representative example and associated figures, “the last name, is used as [the] index” that is displayed on the screen. *Id.* at 6:9-10.

In Payne’s representative example, it is assumed that the user wants to view a record indexed by the last name “Bakers.” *Id.* at 6:60-62. It is also assumed that the numeric key “2” on the keypad used to enter input means “a,” “b,” and “c.” *Id.* at 7:1-2. In response to the first key entry, Figure 3B shows that all indexes starting with “a,” “b,” and “c” are chosen and the first portion of the chosen indexes is then displayed on screen 310. *Id.* at 7:5-10. Figure 3B shows that match index number 316 indicates the number of indexes that match the numeric key “2”—which is equivalent to the query “a,” “b,” and “c”—such that “any of the indexes of the structured database *having a first character that begins with* an ‘a’, ‘b’ or ‘c’ is displayed on the screen 310.” *Id.* at 7:8-10 (emphasis added). Payne then explains that “*the first character* 317 in the indexes can also be highlighted to provide the visual feedback to the user *how many* characters have been entered.” *Id.* at 7:13-16 (emphasis added). Thus, in this step, Payne highlights only the first character.

Payne goes on to explain that, “[s]ince the number of the matched or chosen indexes is still fairly large, namely the user does not see the desired index in the screen after the first character entry...” a second numeric key “2” is pressed for the second character “a” in the index. *Id.* at 7:47-51. As shown in Figure 3D, matched

index number 316 now indicates the number of the matched indexes is lower (i.e., 7), which means that there are seven indexes that have the first character being “a,” “b,” or “c” and have the second character being “a,” “b,” or “c.” *Id.* at 7:51-55. In this regard, Payne’s technique provides that “*the first and second characters* in the indexes are optionally highlighted to provide the visual feedback to the user *how many* characters have been entered.” *Id.* at 7:55-58 (emphasis added). Thus, Payne highlights only the first and the second characters in the displayed index records for the purpose of showing the user “how many” characters have been entered. *Id.*

III. PROCEDURAL BACKGROUND

A. Prosecution of the ’011 Patent

The ’394 patent is the direct continuation of U.S. Patent No. 7,779,011.⁴ The ’394 patent references the ’011 patent and they share a common specification.

During original prosecution of the ’011 patent, the examiner rejected the then pending claims as obvious based on the combination of U.S. Publication No.

⁴ The prosecution history of the ’394 patent consisted of a single rejection for obviousness-type double patenting based on the parent ’011 patent, which was overcome by terminal disclaimer. Accordingly, the prosecution history of the ’011 patent provides the relevant history with respect to the reasons for allowance.

2006/0167859 (“Verbeck”) (Ex. 2002), U.S. Patent No. 6,564,213 (“Ortega”) (Ex. 2003), and U.S. Patent No. 6,009,459 (“Belfiore”) (Ex. 2004). Ex. 2012 at 29-33.

In his rejection, the examiner relied on Verbeck as disclosing an overloaded keypad used to enter an ambiguous search query, presenting results dynamically to the user, and ranking the results. *Id.* at 29-30. The examiner acknowledged that Verbeck does not teach or suggest “indexing . . . so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes” *Id.* at 30. Rather, the examiner pointed to Ortega as disclosing indexing database objects by creating datasets that contain search term strings, the datasets associated with the input of unresolved keywords, such that when a user enters an ambiguous keystroke the datasets are accessed to retrieve the object that is mapped to said entered keystroke. *Id.* at 30-31. The examiner further acknowledged that neither Verbeck nor Ortega, alone or in combination, teach or suggest the “highlighting” feature that illustrates to the user how the unresolved keystrokes entered match the information associated with the displayed results. *Id.* at 32-33. Thus, the examiner pointed to Belfiore as disclosing highlighting words that match the search term that the user entered so that the user can identify the matching information. *Id.*

In response, the applicant amended the claims to further require “for at least one subset of items, determining letters and numbers present in the information associated with and describing the indexed items of said subset that correspond to

the alphabetical and numerical symbols in fixed association with the strings of one or more unresolved keystrokes that are directly mapped to said subset ...” and “highlighting the ~~alphabetical and numerical symbols of~~ letters and numbers present in the one or more words in said information describing the identified items that were determined to correspond to at least partially match the alphabetical and numerical symbols in fixed association with the unresolved keystrokes received so as to illustrate to the user how the unresolved keystrokes entered match the information associated with the displayed items” *Id.* at 18-19. The applicant argued that none of the references taught or suggested these features. *Id.* at 22-25.

In the accompanying remarks, the applicant stated that the amendments “clarify the highlighting aspect of the claimed invention,” noting that “Examiner Reyes stated that amendments further clarifying the highlighting aspect of the claimed invention would be helpful.” *Id.* at 22. The applicant clarified this feature by explaining that the combination of Verbeck, Ortega, and Belfiore would result in highlighting occurrences of an *ambiguous search string*, but not *the particular characters* corresponding to the unresolved keystrokes entered by the user. *Id.* at 22-25. The applicant clarified that, in the examiner’s obviousness combination, if a user were to enter keystrokes corresponding to “866,” the combination of Verbeck, Ortega, and Belfiore would directly search for and highlight the exact term “866”

and would not be able to perform the example of “**Twelve Monkeys**(1995)” listed in the specification. *Id.* at 24-25 (citing FIG. 6B and its associated description).

In response to the applicant’s amendments and remarks, contingent on some clarifying amendments later authorized by the applicant, the examiner allowed the claims, stating: “[T]he prior art of record neither rendered obvious nor anticipated the combination of claimed elements in light of the specification.” *Id.* at 12.

B. The Related ITC Investigation

The ’394 patent was at one point the subject of an ITC investigation. Pet. at 2 (citing *In the Matter of Certain Digital Video Receivers and Related Hardware and Software Components*, Investigation No. 337-TA-1103). In that action, Rovi asserted the ’394 patent against Comcast. As a defense to alleged infringement, Comcast challenged the validity of the ’394 patent, and others, based on the same or substantially the same art raised here (e.g., Gross, Smith, King, and Payne). The parties exchanged expert reports on validity. The ’394 patent was later dropped.

IV. CLAIM CONSTRUCTION

The rules require that a petition set forth how each challenged claim is to be construed. 37 C.F.R. § 42.104(b)(3); *Medicines Co. v. Mylan, Inc.*, 853 F.3d 1296, 1308 (Fed. Cir. 2017). The Rules also require the petitioner to adequately explain “[h]ow the construed claim is unpatentable.” 37 C.F.R. § 42.104(b)(4). Comcast has proposed constructions and attempted to explain how the *construed* claims are

unpatentable; however, Comcast's constructions are unsupported and if the Board declines to adopt them, none of Comcast's grounds specifically address how the claims are unpatentable when simply afforded their plain and ordinary meaning.

Comcast proposes constructions for three terms: (1) "directly mapped;" (2) "letters and numbers;" and (3) "caused said items to be associated with the strings of one or more unresolved keystrokes that are directly mapped to said subset." Pet. at 9-17.⁵ Comcast provides no analysis or evidence to support departing from the plain and ordinary meaning of these terms. And for purposes of the obviousness challenges presented by Comcast in its petition, their meanings are clear based on the claim language. Rovi does not acquiesce to any of Comcast's constructions and reserves the right to address any claim construction issue should trial be instituted.

A. Comcast's construction of "directly mapped" is unsupported and there is no reason to depart from the claim language.

Comcast proposes an unsupported and needlessly confusing construction for the term "directly mapped"—one that is apparently calculated to revive a rejected position it took before the ITC. Comcast suggests that its construction "parallels" the Board's prior construction in IPR2017-00715, which involved U.S. Patent No.

⁵ Each of these terms is present in the challenged independent claim (claim 1).

8,433,696. Pet. at 11-13.⁶ But as shown below, Comcast’s construction bears no resemblance whatsoever to the Board’s construction in IPR2017-00715. Rather, it is a transparent attempt to have the Board adopt its failed proposal to the ITC:

“directly mapped”			
<i>Comcast’s Construction in Petition</i>	<i>Comcast’s Construction before ITC</i>	<i>ITC’s Construction (Ex. 1118)</i>	<i>Board’s Prior Construction of ’696 Patent</i>
“each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.”	“each alphanumeric character of a search query prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.”	“each alphanumeric character of a prefix substring associated with an item is matched with its corresponding numeric key equivalent on an overloaded keypad.”	“matching each alphanumeric character of a descriptor identifying a content item with its corresponding numeric key equivalent on an overloaded keypad”

⁶ While Comcast characterizes the ’696 patent as “related,” Pet. at 11, that is an overstatement. The ’696 patent is related only in the sense that it claims priority to a common provisional application. Importantly, it does *not* share a specification with the ’394 patent, making the Board’s prior construction inapplicable here.

Specifically, Comcast’s construction adds that the prefix substring being matched is part of a “search query,”⁷ which is the argument Comcast made, and the ITC rejected because the claim language and specification require mapping *before* a search query occurs. Ex. 1117 at 24-25 (rejecting Comcast’s claim construction).

Notably, Comcast fails to cite any relevant evidence to support the proposed construction itself. *See MarcTec, LLC v. Johnson & Johnson*, 664 F.3d 907, 919 (Fed. Cir. 2012) (noting that “proposed claim construction was so lacking in any evidentiary support that assertion of this construction was unreasonable”). Aside from conclusory references to IPR2017-00715 and the ITC’s claim construction order, Comcast provides no claim construction analysis or evidence to justify its special definition—apparently expecting the Board to adopt it blindly. Comcast cites to the declaration of Dr. Fox as alleged support for its construction, Pet. at 10-

⁷ Pet. at 49 (asserting that “although limitation 1[b] appears in the claim before limitation 1[c], which recites receiving a search query, the claims do not explicitly require performance of limitation 1[b] before performance of limitation 1[c].”); *see also* Ex. 1114, ¶¶99-107 (Dr. Fox asserting that “a POSA would realize that the ‘determining’ step in which the limitation appears could be performed **before** a search query is received or **after** receiving a search query”) (emphasis in original).

11; however, the declaration merely parrots Comcast’s arguments about IPR2017-00715 and the ITC claim construction order, almost verbatim. Ex. 1114, ¶¶79-89.

The Board should not adopt Comcast’s proposal because the “words of [a] claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Any special definition for a claim term must be set forth in the specification with “reasonable clarity, deliberateness, and precision,” absent which additional limitations may not be read into or read out of claims. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Comcast has not provided any analysis or evidence to justify departing from the plain and ordinary meaning. For purposes of addressing the obviousness challenges raised in Comcast’s petition, the meaning of “directly mapped” is abundantly clear based on the claim language.

B. Comcast’s construction of “letters and numbers” is unsupported and there is no reason to depart from the claim language.

Comcast seeks to redefine that phrase “letters and numbers” to mean any set of “alphanumeric characters.” Pet. at 14-15. Comcast argues that—while the *claim language* refers to letters and numbers—“[t]his same information is described as ‘alphanumeric’ in the specification.” Pet. at 14. Yet Comcast again fails to provide any analysis or evidence to justify departing from the plain language of the claims. To the extent Comcast cites to Dr. Fox’s declaration, the declaration merely parrots arguments in Comcast’s petition. *Compare* Ex. 1114, ¶¶87-89, *with* Pet. at 14-15.

Comcast does not argue that the plain and ordinary meaning of “letters and numbers” is inconsistent with the specification or prosecution history, or that there is some special definition in the specification that overrides the plain language of the claims. *Trivascular*, 812 F.3d at 1062; *In re Paulsen*, 30 F.3d at 1480. Rather, Comcast asks the Board to rewrite the claim language. But without clear support from the intrinsic evidence, limitations may not be read into or read out of claims. *Source Vagabond Sys. Ltd. v. Hydrapak, Inc.*, 753 F.3d 1291, 1299-1300 (Fed. Cir. 2014). Additionally, to the extent Comcast’s construction is redundant, although it appears to be broader, construction is not an unnecessary practice in redundancy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

For purposes of addressing the obviousness challenges raised in Comcast’s petition, the phrase “letters and numbers” has a plain and ordinary meaning that is evident from the language of the claims. Comcast’s proposed construction attempts to rewrite the claim language without justification and should therefore be rejected.

C. Comcast’s construction “caused the items . . .” is unsupported and there is no reason to depart from the claim language.

Comcast seeks to redefine that phrase “caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset” to mean “determining the characters that ‘match a string of unresolved keystrokes directly mapped to the subset.’” Pet. at 16-17. Again Comcast fails to provide any analysis or evidence to justify departing from the plain language of the

claims. To the extent Comcast points to Dr. Fox's declaration, Dr. Fox parrots the arguments in Comcast's petition. *Compare* Ex. 1114, ¶¶94-95, *with* Pet. at 16-17.

Comcast does not argue that the plain meaning of "caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset" is inconsistent with the specification or prosecution history, or that there is some special definition in the specification that overrides the plain language of the claims. *Trivascular*, 812 F.3d at 1062; *In re Paulsen*, 30 F.3d at 1480. Rather, Comcast asks the Board to rewrite the claim language. But without clear support from the intrinsic evidence, limitations may not be read into or read out of claims. *Source Vagabond Sys. Ltd.*, 753 F.3d at 1299-1300. To the extent Comcast's construction is an attempt to articulate differently what is recited in the claims, such a construction should be rejected. *Vivid Techs., Inc.*, 200 F.3d at 803.

For purposes of addressing the obviousness challenges raised in Comcast's petition, the phrase "caused the items to be associated with the strings of one or more unresolved keystrokes that directly mapped to the subset" has a plain and ordinary meaning that is evident from the claim language itself. Comcast's construction rewrites the claim without justification and should thus be rejected.

* * *

If the Board declines to adopt Comcast's constructions the petition should be denied because Comcast has not specifically alleged any ground of unpatentability

that does not rest on its proposed constructions. As the Supreme Court explained in *SAS*, every IPR must be “guided by a petition describing ‘each claim challenged’ and ‘the grounds on which the challenge to each claim is based.’” *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018). This does not “contemplate a petition that asks the Director to initiate whatever kind of inter partes review he might choose.” *Id.* This is, in turn, because “Congress chose to structure a process in which it’s the petitioner, not the Director, who gets to define the contours of the proceeding.” *Id.*

Having elected not to specify any ground that does not depend on adoption of its constructions, Comcast has “defin[ed] the contours,” *id.*, of this IPR as rising or falling with them. Comcast’s choice to frame its petition as resting on specific but deficient claim constructions warrants denial because the Board cannot “raise, address, and decide unpatentability theories never presented by the petitioner.” *In re Magnum Oil Tools International, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016).

In sum, the Board should not adopt Comcast’s constructions because they are wholly unsupported and unjustified. But regardless of how the Board construes these terms—if at all—Comcast’s grounds are deficient, as explained below.

V. THE PETITION SHOULD BE DENIED FOR FAILING TO SET FORTH SUFFICIENT PRIOR ART COMBINATIONS.

The petition must identify “[t]he specific statutory grounds under 35 U.S.C. 102 or 103 on which the challenge to the claim is based and the patents or printed publications relied upon for each ground.” 37 C.F.R. § 42.104(b)(2). The petition must also identify “[h]ow the construed claim is unpatentable under the statutory grounds identified in paragraph (b)(2) of this section” and “specify where each element of the claim is found in the prior art patents or printed publications relied upon.” 37 C.F.R. § 42.104(b)(4). Pursuant to these requirements, the petition alleges that independent claim 1 is unpatentable as obvious under 35 U.S.C. § 103(a) based on the combination of Zigmond, Smith, and Payne (Ground 1).

For the reasons that follow, Zigmond, Smith, and Payne fail to teach each and every requirement of challenged independent claim 1 and the petition fails to explain how a POSA would have or could have combined them. Accordingly, the petition should be denied as having no reasonable likelihood of prevailing.

A. Ground 1: the combination of Zigmond, Smith, and Payne does not teach or suggest every requirement of the claims and a POSA would not have combined them in the manner proposed.

Independent claim 1 of the '394 patent requires “determin[ing] which letters and numbers . . . caused the items to be associated” and “highlighting the letters and numbers present in the one or more words in the information describing the identified items.” This claim also requires “index[ing] . . . so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes.” As shown below, the petition fails to demonstrate that independent claim 1 would have been obvious based on the combination of Zigmond, Smith, and Payne.⁸

1. The petitions fails to establish that the combination of Zigmond, Smith, and Payne renders obvious “determining which letters and numbers . . . caused the items to be associated” and “highlighting *the* letters and numbers . . .”

Comcast concedes that neither Zigmond nor Smith teach “determining” or “highlighting” as required by the claims, relying instead on Payne. Pet. at 46. In particular, Comcast contends that “Payne’s system [] highlights each character of the search results that matches the search query” and meets the “determining” and

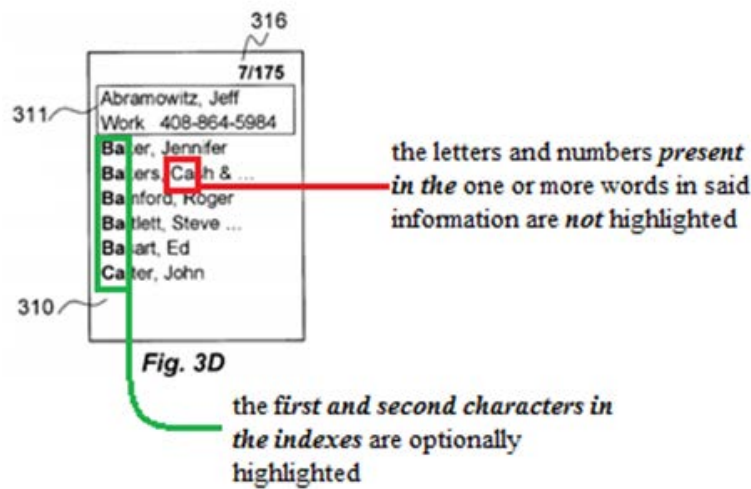
⁸ Grounds 2 and 3 challenge only dependent claims, which are patentable at least by virtue of depending from a patentable independent claim (claim 1). Rovi does not waive any argument that these dependent claims are separately patentable.

“highlighting” steps allegedly because “Payne highlights the ‘letters and numbers themselves’ that match the search query.” *Id.*, at 47. Comcast argues that because Payne discloses highlighting characters in the search result, it necessarily discloses the claimed determining. *Id.* at 46-47. Thus, Comcast contends that to the extent “determining” is not taught necessarily as a result of Payne’s highlighting, a POSA would have found it obvious that such highlighting requires a determination. *Id.*

Regardless of whether “highlighting” necessarily teaches “determining,” the claims require both operations. Specifically, the claims require first “determining . . . letters and numbers present in the information associated with . . . the indexed items . . . caused the items to be associated with the strings of one or more unresolved keystrokes” *and then* “highlighting the letters and numbers present in the one or more words in the information . . . that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes.” In sum, the claims require first determining *which* letters and numbers caused a direct mapping to occur and then highlighting *those letters and numbers* in the results.

In an attempt to contort Payne’s teachings to read on the claim language, Comcast exaggerates Payne’s disclosure with respect to “highlighting.” Payne does not teach or even suggest highlighting the particular characters that caused a match to occur. Rather, Payne teaches only that “*first and second characters in the indexes* are optionally highlighted to *provide the visual feedback to the user how*

many characters have been entered.” Ex. 1109, 7:55-58 (emphasis added). In other words, Payne teaches highlighting the first and second characters in the index to indicate *how many* characters a user has entered, not *which characters* caused a match to occur. This is confirmed in annotated Figure 3D of Payne shown below:



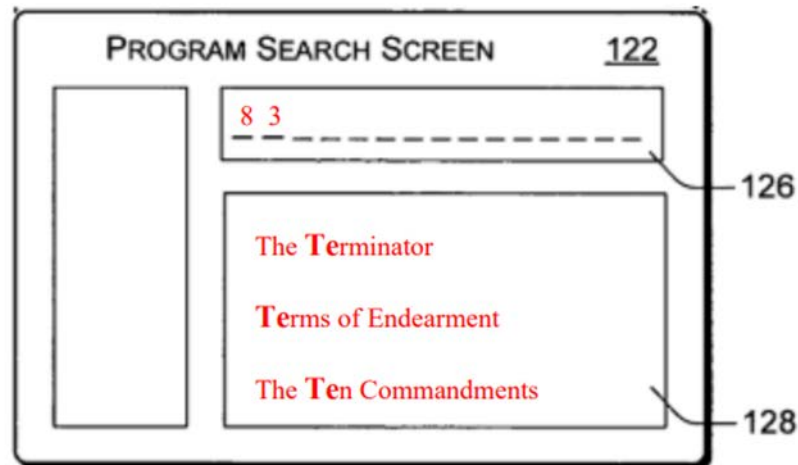
Annotated Figure 3D of Payne showing highlighting function

As shown in annotated Figure 3D, as well as Figure 3B of Payne, “first and second characters” indicate “the first and second letters” *of the indexed string*, not “the letters and numbers *present in the* one or more words in said information describing the identified items that were determined to have caused the displayed items to be associated with the strings of unresolved keystrokes.” As illustrated above for “Carter, John,” the letters “Ca” are highlighted, yet those same letters are not highlighted in the “Bakers, Cash.” If those letters had in fact *caused* the “Ca” in “Carter, John” to match, they should have matched the “Ca” in “Cash” too.

And to the extent Comcast contends that highlighting letters corresponding to the number of keystrokes entered by a user in a search query somehow meets both the “determining” and “highlighting” steps required by the claims, Comcast improperly ignores the meaning and purpose of the predicate “determining” step. Comcast cannot establish obviousness by ignoring a distinct claim limitation or attempting to collapse two requirements into one merely because *the asserted art* fails to disclose both. *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“obviousness requires a suggestion of all limitations in a claim”).

To the extent Comcast is alleging inherent obviousness of the “determining” feature, it has not met its burden at least because Payne highlights letters and numbers in a set of search results *without* first making any determination about the association between strings of unresolved keystrokes and information associated with items. *Personal Web Technologies, LLC v. Apple, Inc.*, 917 F. 3d 1376, 1381 (Fed. Cir. 2019) (rejecting inherent obviousness argument because steps alleged to be inherent “*necessarily must* be accomplished,” not possibly or probably). The claimed “determining” is clearly *not* necessary in Payne’s method of highlighting.

Evidently recognizing these shortcomings of Payne, Comcast attempts to brush over them by providing an alleged “example of how a POSA would combine Payne’s highlighting feature with Zigmond and Smith.” Pet. at 47-48. But this so-called example, reproduced below, mischaracterizes the teachings of Payne.



Ex. 1112 at Fig. 1 (as modified by Smith and Payne)

Fig. 1

Comcast's alleged "example" of the combination (Pet. at 48)

As can be seen, Comcast contends that, in the combination of Zigmond, Smith, and Payne, if a user enters "83," the letters "Te" would be highlighted as shown above in Figure 1. But Payne does not operate that way and discloses no functionality whatsoever for achieving this result. Payne discloses highlighting *only* the "**first and second characters in the indexes . . .** to provide the visual feedback to the user of how many characters have been entered." Ex. 1109, 7:55-58. Thus, if a POSA were to combine Payne with Smith and Zigmond, the "Te" in "The Terminator" or "The Ten Commandments" would *not* be highlighted.

As shown above, the petition fails to establish that the combination of Zigmond, Smith, and Payne (Ground 1) teaches or suggests every requirement of independent claim 1 of the '394 patent. Thus, Comcast's petition should be denied.

2. The petition fails to establish that the combination of Zigmond, Smith, and Payne renders obvious “indexing . . . so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes”

Independent claim 1 of the '394 patent requires “index[ing] . . . so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes” None of Zigmond, Smith, or Payne teaches this element and the petition otherwise fails to explain how the combination of these references teaches this element. Specifically, Comcast points to Zigmond and Smith when discussing this element, but concedes that Zigmond does not teach indexing where the indices contain “the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes.” Pet. at 41. Nor does Comcast contend that Smith discloses this feature because Smith only maps *entire terms* to their numeric equivalents, not individual keystrokes. Ex. 1113, 5:10-15 (“Using this mapping information, the alphanumeric *term* ‘car’ is translated into the numeric term ‘227’” and the “other *terms* in the alphanumeric index are mapped to their numeric equivalents”) (emphasis added). Payne is not cited at all for this requirement. In sum, Comcast has failed to allege that *any reference* discloses “index[ing] . . . so that the subsets of items are directly mapped to the corresponding strings of unresolved keystrokes.”

Recognizing the shortcomings of Zigmond and Smith, Comcast appears to suggest that it is the “combination” of Zigmond and Smith that meets the “indexing” requirement. In particular, Comcast contends that a POSA would have substituted Zigmond’s alphanumeric “bins” with Smith’s number-based keys. Pet. at 33, 42-44.

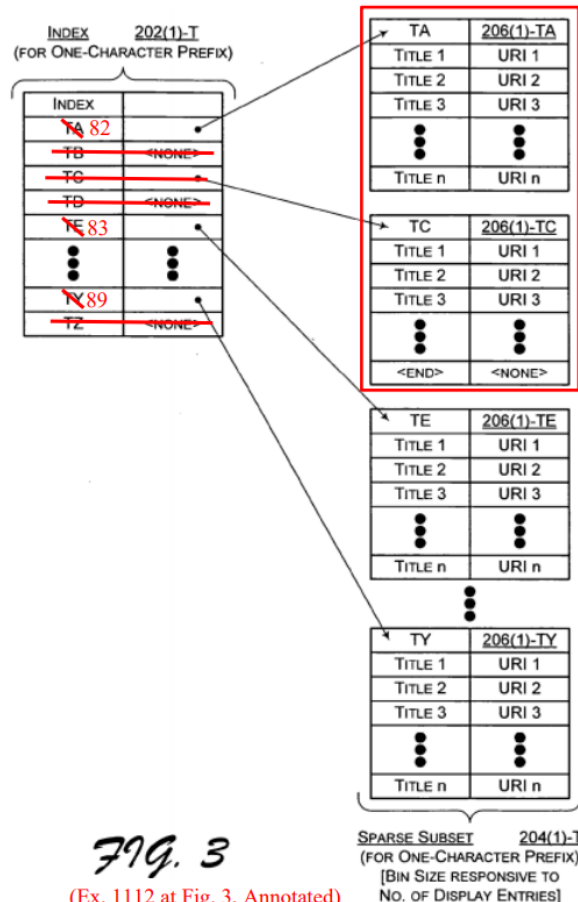


Fig. 3
(Ex. 1112 at Fig. 3, Annotated)

Comcast’s alleged combination relied upon for “indexing” (Pet. at 45)

But even assuming *arguendo* that a POSA could have combined Zigmond and Smith in the manner illustrated above, Comcast still fails to explain why a POSA would have combined the teachings of Zigmond with those of Smith in the

manner proposed, particularly when neither reference teaches or suggests directly mapping items to “corresponding strings of unresolved keystrokes” as claimed.

Comcast alleges three motivations for why a POSA would have combined Zigmond with Smith as it proposes. Pet. at 42 (minimize keystrokes in Zigmond), *Id.* at 32 (“mere application of a known technique”), *id.* at 33 (“simple substitution” of known elements). But none of these alleged motivations provide a rationale for adapting Zigmond’s *alphanumeric* bin index to process Smith’s *number-based* keystrokes to directly map items to corresponding strings of unresolved keystrokes. At best they address why a POSA would have added *overloaded keystrokes* to a given search system; however, none address why a POSA would have adapted an *alphanumeric index* to process ambiguous input received from numeric keys.

In sum, the proposed combination lacks a relevant and sufficient motivation to combine and thus the petition should be denied. *Google LLC v. Seven Networks, LLC*, IPR2018-01102, Paper 25 at 30 (P.T.A.B. Feb. 25, 2019) (denying petition as “[n]owhere in the art cited by Petitioner do we see sufficient explanation of why that additional modification would have been made”); *Apple Inc. v. Corephotonics, Ltd.*, IPR2018-01348, Paper 9 at 14 (P.T.A.B. Feb. 4, 2019) (denying petition on grounds “Petitioner fails to explain adequately why the combination of Christie’s embodiments teaching an optional icon for HDR with Parulski’s embodiments teaching and implementation of HDR would result in the claimed invention”);

Samsung Electronics Co., Ltd. v. Seven Networks, LLC, IPR2018-01114, Paper 27 at 29 (P.T.A.B. Jan. 22, 2019) (denying petition as “fail[ing] to provide a sufficient rationale for modifying Hasegawa or Beyda to incorporate such features”).

3. A POSA would not—and could not—have combined Zigmond’s bin-based indexing structure with Smith’s translation index with a reasonable expectation of success.

Even assuming arguendo that a POSA would have combined Zigmond and Smith in the manner that Comcast proposes, a POSA *could not* have done so.

Comcast asserts that “[s]ince Zigmond already teaches using devices with overloaded keypads . . . a POSA would have been motivated to adapt Smith’s techniques to search more efficiently using input from these devices.” Pet. at 32. To do so, however, a POSA would have to fundamentally reorganize Zigmond’s alphanumeric bin indexing structure by merging its various separated bins into *aggregated* bins corresponding to the groupings of letters and numbers represented on an overloaded keypad. While Comcast appears to acknowledge this, *id.* at 44, the petition brushes over the practical implications of such a significant change to Zigmond’s principle of operation and the magnitude of the proposed modification.

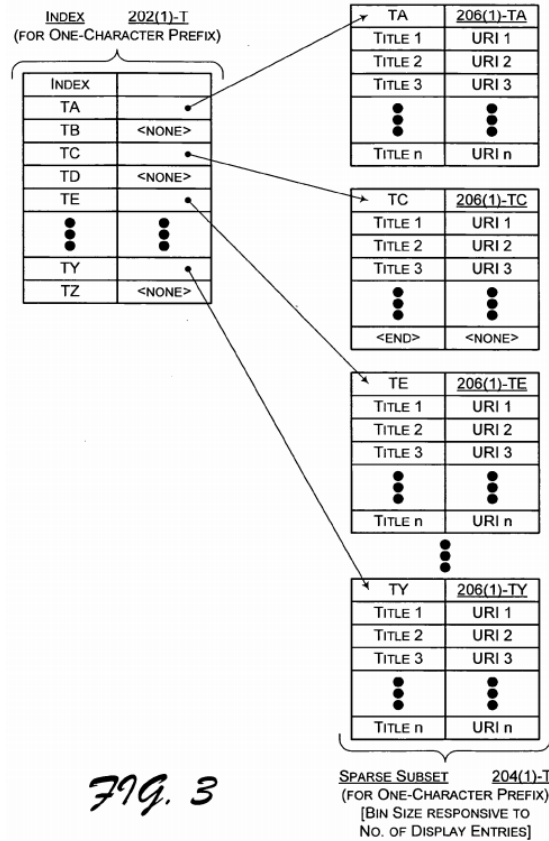


FIG. 3

Zigmond's Figure 3 showing letter-based bin index (Ex. 1112)

As shown above, in Zigmond, the entries mapped to each bin represent the entries that will be displayed for a given request. *Id.* at ¶48. Each letter input corresponds to a bin that contains the results. *Id.* Zigmond teaches, for example, one bin for “T,” one bin for “TE,” and the like. *Id.* at FIGs. 2 and 3. Each bin is a discrete set of results. The petition proposes a combination that completely undoes Zigmond's structure. Specifically, Comcast aggregates or merges Zigmond's bins so that “2” would effectively group four distinct bins (2, A, B, and C), “22” would merge 16 bins (22, 2A, 2B, 2C, A2, AA, AB, AC, B2, BA, BB, BC, C2, CA, CB,

CC), “222” would merge 32 bins, etc. The result quickly becomes unmanageable and it is not clear how this ungrouping would improve efficiency as alleged.

In its combination, Comcast relies on Smith’s numeric index as the structure for mapping unresolved keystrokes to items. Pet. at 41-43 (citing FIG. 5C). In this regard, Smith teaches only that terms are translated into numbers using mapping information corresponding to the keys on a telephone handset. Ex. 1113, 4:59-5:7. Smith’s numeric index is shown in Figure 5C, which illustrates a mapping of numeric “terms” to corresponding locations in various documents in the database.

TERM	LOCATION (DOCUMENT)
3	DOCUMENT 1
227	DOCUMENTS 1 AND 3
242672463	DOCUMENT 3
48367	DOCUMENT 3
736825	DOCUMENTS 1 AND 2
737247	DOCUMENTS 1
84336	DOCUMENT 2
8463	DOCUMENT 3

Smith’s Figure 5C depicting its “numeric index” (Ex. 1113)

As shown above, Smith’s numeric index does *not* map numeric terms to the letters and numbers present in the information associated with and describing the

items. Thus, the proposed combination would not work and Zigmond would be rendered inoperable for its intended purpose of generating results that correspond to each letter input provided by a user of its search system. *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (explaining that an obviousness combination cannot render the art being combined inoperable for its intended purpose); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

And regardless of Comcast's failure to properly articulate a combination that would work, adapting Zigmond to yield the claimed subject matter would require far more than a simple substitution. For example, Smith's process for converting an alphanumeric index to a numeric index involves additional steps for mapping terms to their numeric equivalents and then mapping the numeric equivalents to documents. Ex. 1113, 5:1-33, 4:59-5:7. Such additional translation processes would clearly not make Zigmond "search more efficiently." Pet. at 32. Thus, to the extent any such combination includes all of the processing steps necessary to adapt Zigmond and Smith to arrive at the claimed subject matter, that combination lacks rational underpinning. *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007).

* * *

The combination of Zigmond, Smith, and Payne (Ground 1) fails to teach each and every requirement of the challenged independent claim and the petition

fails to explain how a POSA would have and could have combined them. Thus, the petition should be denied as having no reasonable likelihood of prevailing.

VI. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY THE PETITION UNDER §§ 325(D) AND 314(A).

The claimed subject matter was previously reviewed by the Office based on the same or substantially the same art considered during original prosecution.

Furthermore, by delaying the filing of this petition until after challenging the '394 patent based on the same or substantially the same art at the ITC, Comcast seeks to gain an unfair advantage. In particular, Comcast's refusal to address, or make their expert aware of, known evidence of objective indicia in support of nonobviousness is gamesmanship that warrants denial of Comcast's petition.

A. The Office previously considered art and arguments that are substantially similar to those in the petition during prosecution.

Comcast's petition rests on a singular theory of alleged obviousness: that a POSA would have taken a system for receiving ambiguous keystrokes entered on an overloaded keypad, combined it with an index that maps objects to strings of unresolved keystrokes, and further combined those with a system that highlights information in a set of search results, yielding the claimed subject matter. But the same theory has already been considered by the Office based on references that are cumulative to the references asserted by Comcast. None of the references asserted

by Comcast address the fundamental problem previously recognized by the Office when it allowed these claims following clarification of the “highlighting” feature.

The '394 patent is a direct descendent of U.S. Patent No. 7,779,011. *See supra* Section I, n. 1. The prosecution history of a parent informs the prosecution history of a subsequent, related application like the '394 patent. *Hakim v. Cannon Group, PLC*, 479 F.3d 1313, 1317 (Fed. Cir. 2007) (“The district court did not err in holding that the examiner’s action in allowing the continuation claims without further prosecution was based on the prosecution argument in the parent.”). As explained in detail below, Comcast’s central theory of obviousness was considered by the Office during prosecution of the '011 patent, which is directly relevant here.

In evaluating whether to exercise its discretion to deny institution under 35 U.S.C. § 325(d), the Board may consider certain non-exclusive factors, including: (1) the similarities and material differences between the asserted art and the prior art involved during examination; (2) the cumulative nature of the asserted art and the prior art evaluated during examination; (3) the extent to which the asserted art was evaluated during examination; (4) the extent of the overlap between arguments made during examination and the manner in which a petitioner relies on the prior art or a patent owner distinguishes the prior art; (5) whether the petitioner has pointed out sufficiently how the Office erred in evaluating the asserted prior art; and (6) the extent to which additional evidence and facts presented in the petition

warrant reconsideration of the prior art or arguments. *Becton Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (P.T.A.B. Dec. 15, 2017).

For the reasons set forth below, these factors weigh in favor of denial.

Regarding *Becton*'s first, second, third, and fourth factors: (A) Zigmond is cumulative to Verbeck and is relied upon by Comcast in the same way as Verbeck was relied upon during prosecution of the '011 patent; (B) Smith⁹ is cumulative to Ortega and is relied upon by Comcast in the same way as Ortega was relied upon during prosecution of the '011 patent; and (C) Payne is cumulative to Belfiore and is relied upon by Comcast in the same way as Belfiore was relied upon during prosecution of the '011 patent. These comparisons are explained in detail below.

(A) Zigmond (Ex. 1112) is cumulative to Verbeck (Ex. 2002), which was considered and applied in rejections during prosecution of the '011 patent. Both references are directed to searching television content by entering a search query using an ambiguous keypad. *Compare* Ex. 1112, *with* Ex. 2002. The Office relied on Verbeck as disclosing: receiving a search query from a user for desired items composed of unresolved keystrokes from a keypad with overloaded keys and, as a

⁹ Smith is also cited on the face of the '394 patent and was expressly considered by the examiner, although not applied in a rejection. Ex. 1101 at 2; Ex. 1121 at 2.

new keystroke is entered, dynamically presenting a search result to the user. Ex. 2012 at 30-31. Comcast relies on Zigmond in substantially the same way, alleging that Zigmond discloses: “input interfaces [that] would provide the claimed ‘unresolved keystroke entries’” and “the same incremental mapping and return of search results as described and claimed in the ‘394 patent.” Pet. at 38, 23.

(B) Smith (Ex. 1113) appears on the face of the ’394 patent and is otherwise cumulative to Ortega (Ex. 2003), which was considered and applied in rejections during prosecution of the ’011 patent. Both references are directed to web-based searching using an overloaded keypad and offer methods for mapping ambiguous keystroke queries to their corresponding terms located within web pages or similar documents. *Compare* Ex. 1113, *with* Ex. 2003. The Office relied on Ortega as disclosing: indexing objects by creating datasets that contain terms, the datasets directly associated with the input of unresolved keystrokes such that when a user enters a keystroke the datasets are accessed to retrieve the object mapped to the keystroke. Ex. 2012 at 31. Comcast relies on Smith in substantially the same way, alleging that Smith discloses: a “numeric index allow[ing] a user to input a query on an overloaded keypad using fewer unresolved keystrokes,” such that, “items stored in the index and retrievable as search results may be associated with words such as ‘car,’ ‘bar,’ or ‘wine.’” Pet. at 32, 39. Comcast’s petition also relies upon

Figure 5C of Smith in its combination, *id.* at 41-43, which is an index consisting of a “term” column and a “location/document” column. Ex. 1113, FIG. 5C, 2:46-47.

(C) Payne (Ex. 1109) is cumulative to Belfiore (Ex. 2004), which was considered and applied in rejections during prosecution of the '011 patent. Both references are directed to search query input techniques that can display visual feedback to the user in the form of alleged highlighting. *Compare* Ex. 1109, with Ex. 2004. The Office relied on Belfiore as disclosing: that, in response to each unresolved keystroke, as the identified items are displayed, highlighting words in the searched information that match the search terms entered by the user. Ex. 2012 at 32-33. Comcast relies on Payne in substantially the same way, alleging that it discloses: incremental highlighting that corresponds to search terms. Pet. at 46-49.

With respect to *Becton's* fifth factor, Comcast does not address any of the similarities between the art and arguments applied during prosecution of the '011 patent and the art and arguments raised in its petition. Similarly, Comcast has not suggested how the Office may have erred when it found that a system for receiving ambiguous keystrokes entered on an overloaded keypad (Verbeck), combined with an index that maps objects to strings of unresolved keystrokes (Ortega), combined with a system that highlights information in a set of search results (Belfiore), does not render the subject matter obvious. Nor did the Office err in concluding that this subject matter is nonobvious over such a combination. Rather, upon the applicant's

explanation that the indexing and determining steps undergird the “highlighting” feature, as clarified by amendment and supported by the specification’s example of “**Twelve Monkeys**(1995),” shown in Figure 6B and its associated description, *see supra* Section III.A, the Office allowed the claims. Ex. 2012 at 12 (stating in Reasons for Allowance that the claims are nonobvious based on “the combination of the claimed elements *in light of the specification . . .*”) (emphasis added).

With respect to *Becton*’s sixth factor, any additional facts and arguments raised in the petition do not warrant reconsideration here. Dr. Fox’s declaration merely parrots Comcast’s arguments along with conclusory assertions as to why a POSA would allegedly have combined aspects of the asserted references. *See, e.g., JTEKT Corp. v. GKN Auto Ltd.*, IPR2016-00046, Paper 27 (P.T.A.B. Jan. 23, 2017) (according the petitioner’s expert’s declaration testimony “very little weight” on grounds that it “merely mimics the language in the Petition.”). Any additional facts or arguments asserted by Comcast in its combinations are ancillary to the central problem with the asserted art identified by the Office when it decided to allow this subject matter: that a system for receiving ambiguous keystrokes on an overloaded keypad, combined with an index that maps items or objects to strings of unresolved keystrokes, combined with a system that highlights information in a set of search results does not render the subject matter obvious. Comcast’s petition fails to offer any additional arguments or evidence to address this central problem. Rather, it

cobbles together a series of cumulative references in substantially the same way, asserting the same theory of obviousness previously considered by the Office.

Yet none of these references, alone or in combination, teach or suggest “determining which letters and numbers . . . caused the items to be associated” and “highlighting *the* letters and numbers.” Comcast’s petition offers the same theory of obviousness considered during prosecution of the ’011 patent and does not address the fundamental deficiency in the art that exists under this theory. As a result, the Board should deny institution under § 325(d). *Supercell Oy v. Gree, Inc.*, PGR2018-00071, Paper 7 at 6 (P.T.A.B. Jan. 23, 2019) (denying institution where petitioner “fail[ed] to account for the very step that led to allowance of the claims”).

B. Comcast’s petitions are cumulative to one another and, if all were to be instituted, would result in redundant proceedings.

On April 3, 2019, the Board issued an order concerning Comcast’s filing of another series of multiple petitions against related Rovi patents, explaining:

Maintaining multiple, concurrent proceedings per patent presents a significant burden for the Board, because, among other things, the Board endeavors to assign all such cases to the same panel. *See* SOP 1 (Rev. 15), III.G.3. Additionally, when there are other related patents also each challenged by multiple petitions at the same time, as is the case here, this can undermine the Office’s ability to complete proceedings in a timely manner and may place an unfair burden on the Patent Owner. *See* Trial Practice Guide Update at 10; *cf. General Plastic*, slip op. at 16 (requiring the Board to consider ability to meet

statutory deadlines as an institution factor); 37 C.F.R. § 42.1(b) (“[The rules] shall be construed to secure the just, speedy, and inexpensive resolution of every proceeding.”) [T]he number of Petitions here challenging each patent may place a substantial and unnecessary burden on the Board and Patent Owner. Accordingly, the panel issues this Order under 37 C.F.R. § 42.5 to give the parties an opportunity to focus the Board’s limited resources on genuine issues in dispute.

Comcast Cable Communications, LLC v. Rovi Guides, Inc., IPR2019-00224 et al., Paper 10 at 3 (P.T.A.B. Apr. 3, 2019). The present series of *seven* petitions filed against the ’011 and ’394 patents gives rise to precisely the same concern.¹⁰

Comcast has filed four petitions against the ’394 patent, each attacking the same claims. Pet. at 1 (indicating that it is “Petition 2 of 4”). Comcast argues that “[t]his petition is not redundant to others filed concurrently herewith, as the grounds in the other petitions present additional ways at arriving at the claims” Pet. at 9. Comcast then attempts to distinguish the grounds in this petition, based on Zigmond, Smith, and Payne, from its grounds based on Howard, King, and

¹⁰ In the present series, Comcast has filed three petitions challenging the same claims of the ’011 patent. *See* IPR2019-00237; IPR2019-00238; IPR2019-00239. And Comcast has filed four petitions challenging the same claims of the ’394 patent. *See* IPR2019-00291; IPR2019-00290; IPR2019-00292; IPR2019-00293.

Payne (Petition 1) and Gross and Smith (Petition 3). As shown below, the alleged distinctions are immaterial and do not offer meaningfully different theories.

First, the references and combinations asserted across Comcast's multiple petitions are entirely cumulative to one another. Howard, Zigmond, and Gross are all relied upon for allegedly disclosing incremental searching. King and Smith are all relied upon for allegedly disclosing the indexing and mapping. Gross and Payne are both relied upon for allegedly disclosing highlighting. Comcast combines these references in substantially the same way across the various petitions. As Comcast admits, it relies on Payne's highlighting in Petitions 1 and 3. Pet. at 9-10. Thus, if the Board instituted on all petitions, there would be redundant proceedings.

Second, Comcast fails to explain why any of the distinctions it raises are even material. *Id.* at 9-10. For example, Comcast argues that the instant petition is not cumulative to Petition 1 because, "Howard teaches a search system embodied within a mobile client device" and "Zigmond teaches a client-server system." *Id.* Yet Comcast does not explain how or why this is relevant to its theory of unpatentability, which is essentially the same between its Petitions 1 and 2: that a POSA would have taken a system for incremental searching and combined it with a system for mapping ambiguous keystrokes entered on an overloaded keypad to objects in a database. Likewise, Comcast argues that "King ... teaches a tree index, whereas Zigmond and Smith teach other types of indices." *Id.* at 10. But here again,

Comcast fails to explain why this distinction is material or relevant. *See Apple Inc. v. Corephotonics Ltd.*, IPR2018-01356, Paper 9 at 7-8 (P.T.A.B. Feb. 5, 2019 (finding that where a petitioner “merely argues that its Petition ‘is not redundant’” because the reference was not raised in another petition “weigh[s] in favor of exercising our discretion to deny institution ... on the basis of 35 U.S.C. § 314(a)”).

C. Comcast has attempted to gain an unfair tactical advantage by delaying the filing of this IPR until after a trial at the ITC.

In its precedential decision *General Plastic Co., Ltd. v. Canon Kabushiki Kaisha*, the Board highlighted the goal of *inter partes* review as providing a quick and cost-effective alternative to litigation and also “recognize[d] the potential for abuse of the review process by repeated attacks on patents.” IPR2016-01357, Paper 19 at 16-17 (P.T.A.B. Sept. 6, 2017). Comcast’s petition presents a classic case of abuse: delaying in bringing an IPR until long after challenging the validity of the patent in another venue. By waiting until a full record had been developed before the ITC, Comcast seeks to gain a tactical advantage; namely, using Rovi’s rebuttal as a roadmap for its challenge and advancing claim construction positions that it lost before the ITC in an attempt to re-litigate the same issues. As further evidence of Comcast’s gamesmanship, it has refused to address known evidence of objective indicia in its petition and, even worse, has blinded its expert from considering it.

The Board has complete discretion to deny a petition for reasons that go to fundamental issues of fairness and abuse of process. 35 U.S.C. § 314(a); *Shenzhen*

Silver Star Intelligent Technology Co. Ltd., v. IRobot Corp., IPR2018-00761, Paper 15 at 19 (P.T.A.B. Sept. 5, 2018) (observing that where a petition is filed for a tactical reason, “such tactics may result in denials under *General Plastic*”).

Comcast challenged the validity of the '394 patent before the ITC and is now attempting to take advantage of that history to gain a tactical advantage before the Board. Where convenient, Comcast strategically ignores the ITC record and heaps the burden of explaining any countervailing evidence—including that of objective indicia of nonobviousness—onto Rovi. This gamesmanship frustrates the purpose of the AIA and results in unnecessary legal process and unfairness. The Board should exercise its discretion to deny the petition under 35 U.S.C. § 314(a).

1. Comcast waited until the ITC conducted a full trial on the same issues, seeking to gain a tactical advantage.

Before the ITC, Comcast has already attempted to prove invalidity based on references attributed to, among others, Gross, Smith, King, and Payne.¹¹ Comcast here advances essentially the same theories of unpatentability that it has before the ITC after receiving the benefit of previewing all of Rovi’s rebuttal and its expert’s testimony. By strategically waiting until this late stage to file its petition, Comcast

¹¹ Any differences between the specific references attributed to Gross, Smith, King, and Payne asserted before the ITC and those asserted here are inconsequential.

seeks to gain a tactical advantage. Such dilatory gamesmanship frustrates the goals of *inter partes* review, which should be an alternative not an insurance policy.

The tactical advantage gained by Comcast that results in unfairness to Rovi is evident in how Comcast has specifically tailored its multiple-petition challenge to address certain flaws identified by Rovi in the ITC action. For example, having been alerted to the numerous deficiencies in the Gross art, Comcast raises multiple additional challenges to the same claims based on two other primary references (e.g., Zigmond, Howard) with associated combinations. *See* IPR2019-00291 (using Zigmond as a primary reference); IPR2019-00290 (using Howard as a primary reference); IPR2019-00293 (using Venkataraman as a primary reference).¹²

Additionally, Comcast repeatedly cites to the testimony of Rovi's expert in the ITC proceeding (Dr. Bovik) as alleged support for its arguments. *See, e.g.*, Pet. at 47 and 52 (citing Exs. 1115 and 1116). Comcast's attempt to leverage statements by Rovi's expert given in the context of the ITC action as the foundation for this challenge illustrates the tactical advantage Comcast seeks to obtain through this

¹² As explained above, Comcast's multiple-petition attacks against the same patent and claims are cumulative and, if all were to be instituted, would result in redundant reviews of substantially the same issues. *See supra* Section VI.B.

delay. By waiting until after expert reports were exchanged and expert discovery had been completed, Comcast gains the tactical advantage of using Rovi's prior arguments and positions taken by its experts as a roadmap for its IPR challenge.

Comcast also abuses this process by advancing a claim construction position that it lost before the ITC in the guise of asking the Board to adopt a construction that "parallels" the Board's construction of "directly mapped" in IPR2017-00715. Pet. at 11. As explained above, Comcast's construction bears no resemblance to the Board's prior construction. *See supra* Section IV.A. Rather, it tracks *verbatim* a claim construction that Comcast advanced before the ITC in an attempt to avoid infringement, but which the ITC expressly refused to adopt as inconsistent with the claim language and the specification. *Id.* (citing Ex. 1117 at 24-25). That Comcast failed to provide any claim construction analysis or evidence to support its proposed construction, other than pointing to what the Board did in IPR2017-00715, underscores that its motives are purely tactical and untethered to the merits.

2. Comcast has ignored compelling evidence of objective indicia and blinded their expert from considering them.

Comcast has also neglected to address known evidence of long-felt but unresolved need, praise by others, and copying.¹³ Ex. 2008 at 10-13. Even worse, Comcast appears to have blinded its expert from even considering this evidence.

The Federal Circuit has “repeatedly held that . . . objective evidence of secondary considerations ... *must* be considered before determining whether the claimed invention would have been obvious ...” *Apple, Inc. v. ITC*, 725 F.3d 1356, 1365 (Fed. Cir. 2013) (emphasis added). The Board has also repeatedly “cautioned petitioners in prior proceedings that known evidence of secondary considerations should be addressed in the Petition.” *Robert Bosch Tool Corp. v. SD3, LLC*, IPR2016-01753, Paper 15 at 28 (P.T.A.B. Mar. 22, 2017); *see also Coalition for Affordable Drugs V LLC v. Hoffman-LaRoche, Inc.*, IPR2015-01792, Paper 14 (P.T.A.B. Mar. 11, 2016) (denying institution based on petitioner’s failure to address objective indicia available in the public record from original prosecution).

The Board has also expressly recognized, albeit in the context of motion to amend practice, that “a petitioner should keep in mind that it has a duty of candor

¹³ Rovi provides this discussion as exemplary of evidence of objective indicia known to Comcast. Rovi reserves the right to present further evidence as needed.

in relation to relevant information that is inconsistent with a position advanced by the petitioner during the proceeding,” identifying as a specific example that “such information could include objective evidence of non-obviousness of proposed substitute claims, if a petitioner is aware that such evidence is inconsistent with a position it has advanced during the proceeding, and the evidence is not already of record in the case.” *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 10 (P.T.A.B. Feb. 25, 2019) (precedential) (citing 37 C.F.R. § 42.51(b)(iii)).

As in the *Robert Bosch* case, Comcast knew of the evidence presented in the related ITC action at least one month before the filing of this petition. Yet, instead of addressing these known secondary considerations, Comcast’s petition is silent on objective indicia. This fails to satisfy Comcast’s burden to make out a case of obviousness in accordance with *Graham v. John Deere Co.*, 383 U.S. 1 (1966). Comcast’s refusal to do so fails to satisfy its burden, which includes addressing known objective indicia as part of every *prima facie* case of obviousness. *Apple Inc. v. Samsung Electronics Co. Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016).

The Board is well-justified in denying institution where a petitioner fails, or refuses, to address known evidence of objective indicia of nonobviousness, and has done so in the past. *Robert Bosch Tool Corp.*, IPR2016-01751, Paper 15 at 22-32; *Praxair Distr., Inc. v. Mallinckrodt Hosp. Prods.*, IPR2016-00777, Paper 10 at 9-10 (P.T.A.B. Sept. 22, 2016); *Coalition For Affordable Drugs V LLC*, IPR2015-

01792, Paper 14 at 17-18; *Semiconductor Component Indust., LLC, v. Power Integrations, Inc.*, IPR2016-01588. Paper 15 at 28-29 (P.T.A.B. Feb. 17, 2017).

Comcast's refusal to address known objective indicia of nonobviousness is still more gamesmanship calculated to compound the burdens on Rovi. But even worse, Comcast appears to have blinded its expert, Dr. Fox, from even considering this substantial evidence. *See* Ex. 1114, ¶244 ("I understand the need to consider objective evidence or secondary considerations that may impact the obviousness analysis I am not aware of any evidence of commercial success, long-felt but unresolved need(s), failure(s) of others, copying, or industry praise relative to the subject matter of any of those claims."). Dr. Fox thus knew that he was required to consider objective indicia and weigh it in the context of his obviousness analysis; yet he was evidently shielded from it by Comcast in its efforts to gain a tactical advantage. At a minimum, this situation severely undermines Dr. Fox's opinions, which may have been different had he been made aware of all the relevant facts.

* * *

Fundamentally, and as a matter of fairness, Comcast's strategic delay and refusal to address known objective indicia should not be rewarded with institution. That would only encourage future dilatory, wait-and-see IPR filings calculated to obscure the merits and compound the unnecessary burden on patent owners.

VII. CONCLUSION

For the foregoing reasons, the petition should be denied.

Respectfully submitted,

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CERTIFICATION OF WORD COUNT (37 C.F.R. § 42.24(d))

The undersigned hereby certifies that the portions of the above-captioned **PATENT OWNER'S PRELIMINARY RESPONSE** specified in 37 C.F.R. § 42.24 have 12,298 words, in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1). This word count was prepared using Microsoft Word 2010.

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CERTIFICATION OF SERVICE (37 C.F.R. § 42.6(e))

The undersigned hereby certifies that the above-captioned **PATENT OWNER'S PRELIMINARY RESPONSE PURSUANT TO 37 C.F.R. § 42.107** and associated Exhibits 2002-2004, 2007-2008, 2010, and 2012 were served electronically in their entireties on April 8, 2019, upon the following parties by email:

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