

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

BUFFALO PATENTS, LLC,
Patent Owner.

IPR2023-01387
Patent 8,204,737 B2

Before JAMESON LEE, MAHSHID D. SAADAT, and
CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Google LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–16 and 19 (“challenged claims”) of U.S. Patent No. 8,204,737 B2 (Ex. 1001, “the ’737 patent”). Paper 1 (“Pet.”). Buffalo Patents, LLC (“Patent Owner”) has not filed a preliminary response.

We have authority to determine whether to institute review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4. Upon consideration of the contentions and the evidence of record before us, we conclude Petitioner has shown a reasonable likelihood that it would prevail in establishing unpatentability of at least one challenged claim of the ’737 patent. Accordingly, we institute an *inter partes* review of all challenged claims of the ’737 patent on all grounds set forth in the Petition.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest, and Motorola Mobility LLC as a potential real party in interest. Pet. 87. Patent Owner identifies itself as the real party in interest. Paper 4, 1.

B. *Related Matters*

The parties identify the following four district court litigations as related to the ’737 patent (Pet. 74; Paper 4, 2):

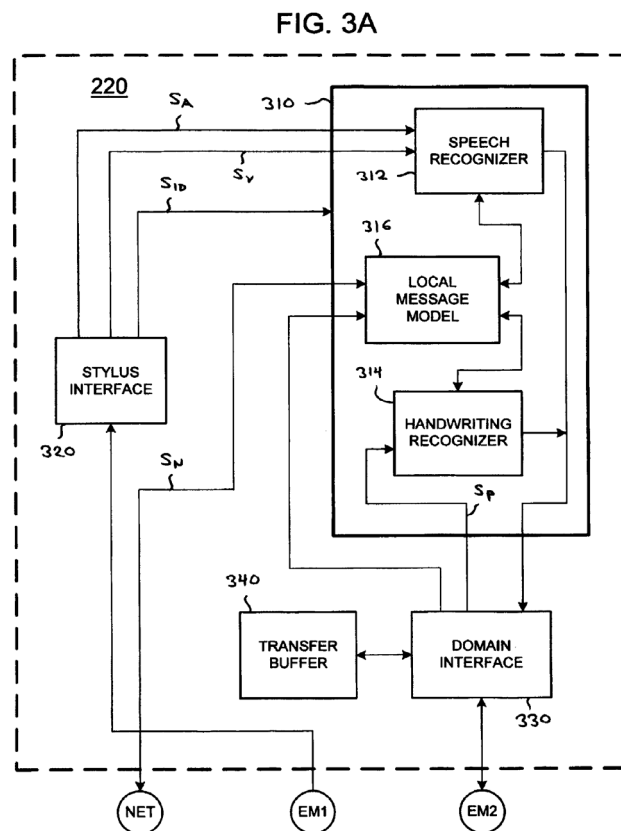
1. *Buffalo Patents, LLC v. ZTE Corp.*, Case No. 6-22-cv-00423 (W.D. Tex.);
2. *Buffalo Patents, LLC v. TCL Tech. Grp. Corp.*, Case No. 6-22-cv-00422 (W.D. Tex.);
3. *Buffalo Patents, LLC v. OnePlus Tech. (Shenzhen) Co.*, Case No. 6-22-cv-00421 (W.D. Tex.);

4. *Buffalo Patents, LLC v. Motorola Mobility LLC*, Case No. 1-22-cv-04540 (N.D. Ill.).

C. The '737 Patent

The '737 patent discloses a system for generating text responsive to both voice and handwriting input, including a microphone, stylus, and a tablet having a flat-panel display integrated into its surface. Ex. 1001, code (57). The system uses a shared language model to perform speech and handwriting recognition. *Id.* The shared language model “is trainable responsive to user correction of errors in either speech or handwriting recognition.” *Id.*

Figure 3A of the '737 patent is reproduced below:



recognizer 310, stylus interface 320, and domain interface 330, which is coupled to message recognizer 310 and a transfer buffer 340. *Id.* at 19:44–48. Stylus interface 320 receives electromagnetic signals from one or more styluses and, responsive to the electromagnetic signals, couples one or more sets of signals to message recognizer 310. *Id.* at 19:55–58. “Respective activation signals S_A activate message recognizer 310 (particularly speech recognizer 312) to provide text data responsive to voice input provided by a user of one particular stylus” *Id.* at 19:61–64. “Respective identification signals S_{ID} permit message recognizer 310 to associate message input conveyed by a particular stylus with a user message model of the user of a stylus.” *Id.* at 20:14–17. “Stylus position signal S_P communicates freehand input (conveyed to a tablet interface by a stylus) to handwriting recognizer 314 via domain interface 330.” *Id.* at 20:31–33.

Figure 3B of the '737 patent is reproduced below:

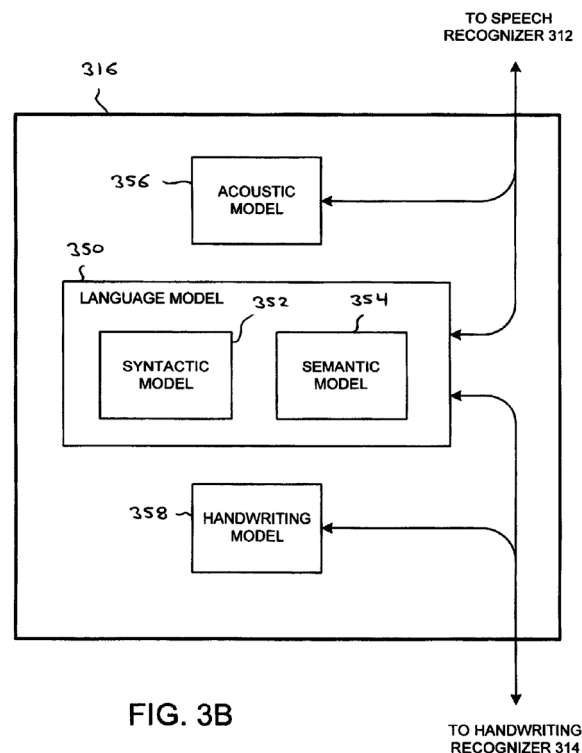


Figure 3B is a functional block diagram of a message model in a domain controller of the '737 patent. Ex. 1001, 5:16–17. The '737 patent describes:

Local message model 316 includes a language model 350, an acoustic model 356, and a handwriting model 358. An acoustic model is any model that may be used to determine basic units of speech (e.g., phonemes, allophones, etc.) responsive to suitably transformed voice input (e.g., by conventional acoustic feature extractor). A handwriting model is any model that may be used to determine basic units of handwriting conveyed by freehand input (e.g., strokes of printed characters or cursive words) responsive to suitably transformed freehand input, for example as disclosed in U.S. Pat. No. 5,903,668 to Beemink (incorporated by reference above).

Speech recognizer 312 generates text data in accordance with acoustic model 316 and shared language model 350. Handwriting recognizer 314 generates text data in accordance with handwriting model 358 and shared language model 350. Advantageously, user training of language model 350 can improve accuracy of both speech recognizer 312 and handwriting recognizer 314. For example, user correction of misrecognition by speech recognizer 312 adapts syntactic model 352 of shared language model 350. Both speech recognizer 312 and handwriting recognizer 314 then operate in accordance with the adapted syntactic model.

Id. at 22:61–23:16.

D. Illustrative Claims

Claims 1, 13, and 19 are independent. Claims 2–12 each depend, directly or indirectly, from claim 1. Claims 14–16 each depend from claim 13. Claims 1 and 13 are reproduced below:

1[pre] A system for generating text responsive to voice and handwriting input, comprising:

1[a] a tablet surface, wherein the system is configured to receive freehand input based at least in part on manipulation of a stylus relative to the tablet surface; and

1[b] a microphone for receiving voice input;

1[c] wherein the system is configured to:

select a particular user message model from a plurality of user message models;

1[d] adjust a language model of a local message model based at least in part on the particular user message model, wherein the local message model includes the language model, a handwriting model, and an acoustic model;

1[e] generate text data based at least in part on the freehand input, the adjusted language model, and the handwriting model; and

1[f] generate text data based at least in part on the voice input, the adjusted language model, and the acoustic model.

Ex. 1001, 39:23–42.¹

13[pre] A method, comprising:

13[a] receiving, at a device, freehand input based at least in part on manipulation of a stylus;

13[b] receiving, at the device, audio input based at least in part on information received at a microphone;

13[c] selecting, via the device, a selected user message model from a plurality of user message models;

13[d] adjusting, via the device, a language model of a local message model, wherein the local message model includes the language model, a handwriting model, and an acoustic model, wherein the adjusting the language model is based at least in part on the selected user message model;

13[e] generating, by the device, converted handwriting text data based at least in part on the freehand input, the adjusted language model, and the handwriting model; and

¹ The preamble and element captions are added and used by Petitioner to reference the preamble and the claim elements. *See* Pet. 10, 12, 14, 15, 22, 25, 27, 32–33. We use the same captions here for ease of reference, understanding, and consistency.

13[f] generating, by the device, converted speech text data based at least in part on the audio input, the adjusted language model, and the acoustic model.

Id. at 40:25–43.

E. Prior Art and Declaration Evidence

Petitioner relies on the following evidence:

U.S. Patent No. 6,167,376, issued December 26, 2000, filed December 21, 1998 (Ex. 1005) (“Ditzik”);

U.S. Patent No. 5,027,406, issued June 25, 1991, filed December 6, 1988 (Ex. 1006) (“Roberts”);

CA 1335002 C, issued March 28, 1995, filed February 9, 1988 (Ex. 1007) (“Tchorzewski”);

EP 0622724 A2, published November 2, 1994, filed April 15, 1994 (Ex. 1008) (“Verrier”);

J. Bellegarda et al., *A Novel Word Clustering Algorithm Based on Latent Semantic Analysis*, 1996 IEEE International Conference on Acoustics, Speech, and Signal Processing, Vol. 1, pp. 172–175 (May 7–10, 1996) (Atlanta, GA) (Ex. 1009) (“Bellegarda”);

J. Campbell et al., *Speaker Recognition: A Tutorial*, Proceedings of IEEE, Vol 85, No. 9, pp. 1437–1462 (Sept. 1997) (Ex. 1010) (“Campbell”);

U.S. Patent No. 5,600,781, issued February 4, 1997, filed May 21, 1996 (Ex. 1011) (“Root”);

U.S. Patent Application Pub. No. 2001/0053978 A1, published December 20, 2001, filed January 28, 1999 (Ex. 1012) (“Lewis”).

Petitioner also relies on the Declaration of Christopher Schmandt. Ex. 1004 (“Decl.”). Patent Owner has not submitted any declaration testimony for consideration.

F. The Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims of the '737 patent are unpatentable based on the following grounds (Pet. 2–3, 6, 38, 51, 56, 60, 77, 79, 80):

Claims Challenged	35 U.S.C. §	References/Basis
1, 4, 12, 13, 15, 16, 19	103(a) ²	Ditzik, Tchorzewski, Roberts
2, 3, 5, 6, 11, 14	103(a)	Ditzik, Tchorzewski, Roberts, Verrier
9, 10	103(a)	Ditzik, Tchorzewski, Roberts, Bellegarda
7, 8	103(a)	Ditzik, Tchorzewski, Roberts, Campbell
1, 2, 4, 12, 13, 16, 19	103(a)	Root, Roberts, Lewis
3, 5, 6, 11, 14	103(a)	Root, Roberts, Lewis, Verrier
9, 10	103(a)	Root, Roberts, Lewis, Bellegarda
7, 8, 15	103(a)	Root, Roberts, Lewis, Campbell

III. ANALYSIS

A. Legal Standards

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103. Because the '737 patent claims priority to an application filed before March 16, 2013 (the effective date of the relevant amendments), the pre-AIA versions of §§ 102 and 103 apply.

made to a person having ordinary skill in the art to which said subject matter pertains. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations.³ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Citing testimony from Christopher Schmandt, Petitioner contends a person of ordinary skill in the art “would have at least a bachelor’s degree in computer engineering, computer science, electrical engineering, or a similar field, and approximately three years of industry or academic experience in a field related to acoustics, speech recognition, speech detection, handwriting recognition, or signal processing.” Pet. 5 (citing Decl. ¶ 35). Petitioner further notes that “[w]ork experience can substitute for formal education and additional formal education can substitute for work experience.” *Id.*

At this preliminary stage and on this record, we adopt Petitioner’s statement of the level of ordinary skill in the art. It is supported by the testimony of Christopher Schmandt and not disputed by Patent Owner. Further, it appears consistent with what is reflected by the content of the applied prior art references. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (the applied prior art may reflect an appropriate level of skill).

³ The present record does not include any evidence of secondary considerations of nonobviousness.

C. Claim Interpretation

We use the same claim construction standard that would be used to construe a claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2022). The claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) is applicable.

Claim terms are generally given their ordinary and customary meaning as would be understood by one with ordinary skill in the art in the context of the specification, the prosecution history, other claims, and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Phillips*, 415 F.3d at 1312–17. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315.

The specification may reveal a special definition given to a claim term by the patentee, or the specification or prosecution history may reveal an intentional disclaimer or disavowal of claim scope by the inventor. *Phillips*, 415 F.3d at 1316. “There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and

precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). The disavowal, if any, can be effectuated by language in the specification or the prosecution history. *Poly-Am., L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016).

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner states that “[n]o terms require construction because the claims encompass the prior-art mappings under any reasonable construction consistent with the *Phillips* standard.” Pet. 5–6 (citing 37 C.F.R. § 42.100(b); *Phillips*, 415 F.3d 1303).

On the current record, we agree with Petitioner’s contention, not disputed by Patent Owner, that it is not necessary to construe any claim term expressly.

D. Alleged Obviousness of Claims 1, 4, 12, 13, 15, 16, and 19 over Ditzik, Tchorzewski, and Roberts (Petitioner’s Ground 1)

1. Overview of Ditzik (Ex. 1005)⁴

Ditzik is a U.S. patent directed to “[a] computer system with speech recognition systems and handwriting recognition systems . . . that work closely together to improve the total recognition accuracy of each system

⁴ Citations to the pages of Ditzik are made with reference to the actual page, column, and line numbers of the patent publication, not to the page numbering added by Petitioner to Exhibit 1005.

alone.” Ex. 1005, code (57). According to Ditzik, “[t]he computer system can recognize speaker-dependent and speaker-independent speech, converting this information to computer recognizable text, which may be displayed onto a display device in realtime or delayed.” *Id.*

Figure 3 of Ditzik is reproduced below:

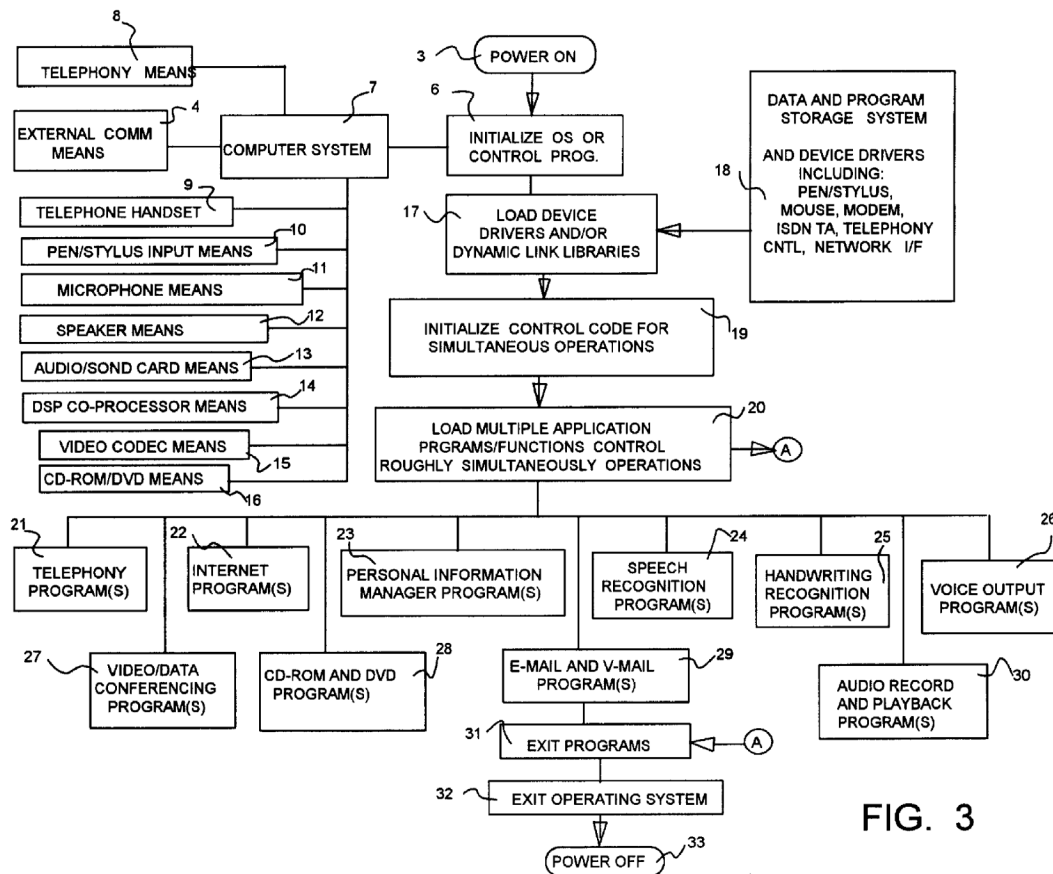


FIG. 3

Figure 3 shows a block diagram of the key computer system elements comprising, *inter alia*, a pen/stylus input means 10 and microphone means 11. Ex. 1005, 6:1–2, 6:21–29. Ditzik describes:

The speech input recognition program/functions 24 and associated hardware may include several functions including speech capture (via microphone or telephone line), digitize data, process data, store raw speech data, and storage of recognized text. The pen/stylus input handwriting recognition program/functions 25 and associated hardware may include the

following functions: handwriting capture, drawing capture, inking (displaying pen tracks).

Id. at 6:59–66.

2. *Overview of Tchorzewski (Ex. 1007)*⁵

Tchorzewski is a Canadian patent directed to “a speech recognition system capable of dealing with a plurality of users.” Ex. 1007, 4. According to Tchorzewski, in a single-speaker environment, a user “trains” a speech recognizer with his or her voice patterns, which are stored as “templates” in a memory within the speech recognizer. *Id.* In multi-user environments, “a common database is provided containing the templates of all the users.” *Id.* at 4–5. Tchorzewski describes:

A multi-user speech recognition system includes several speech recognisers which are shared between many user terminals. When a user terminal is activated, one of the recognisers is assigned to deal with voiced instructions received via that user terminal. This recogniser requests the respective “templates” from a memory device. A controller handles requests from the recognisers on a first-come first-served basis, and prevents later requests from interrupting earlier ones.

Id. at 18.

3. *Overview of Roberts (Ex. 1006)*⁶

Roberts is a U.S. patent relating to “[a] method for creating word models for a large vocabulary, natural language dictation system.” Ex. 1006, code (57). When a user speaks a word, Roberts’ “system displays

⁵ Citations to the pages of Tchorzewski are made with reference to the actual page and line numbers of the patent, not to the page numbering added by Petitioner to Exhibit 1007.

⁶ Citations to the pages of Roberts are made with reference to the actual page, column, and line numbers of the patent publication, not to the page numbering added by Petitioner to Exhibit 1006.

a list of the words in the active vocabulary which best match the spoken word.” *Id.* “By keyboard or voice command, the user may choose the correct word from the list or may choose to edit a similar word if the correct word is not on the list.” *Id.* Roberts describes:

The best words to display from the backup vocabulary are chosen using a statistical language model and optionally word models derived from a phonemic dictionary. When the correct word is chosen by the user, the speech sample is used to create or update an acoustic model for the word, without further intervention by the user. As the system is used, it also constantly updates its statistical language model. The system gets more and more word models and keeps improving its performance the more it is used.

Id. Robert describes a system for creating word models including “means for making an acoustic model from one or more utterances of a word and means for enabling a user to associate a sequence of textual characters with that acoustic model.” *Id.* at 2:36–41.

4. *Independent Claim 1*

a. *Limitation 1[pre]*

The preamble of claim 1 recites “[a] system for generating text responsive to voice and handwriting input, comprising . . .” Ex. 1001, 39:23–24.

Petitioner contends that Ditzik discloses the preamble, if limiting. Pet. 10. We need not determine whether the preamble is limiting, because Petitioner sufficiently establishes that Ditzik discloses a system for generating text responsive to voice and handwriting input.

Petitioner asserts that Ditzik discloses “a computer system with speech recognition systems and handwriting recognition systems . . . that work closely together to improve the total recognition accuracy of each system alone.” Pet. 10–11 (citing Ex. 1005, code (57)). Petitioner also

asserts that Ditzik discloses capturing “verbal information” at the speech recognition system and “convert[ing]” this information “into text and/or graphic data formats.” *Id.* at 12 (citing Ex. 1005, 1:13–14). Petitioner asserts that Ditzik discloses transforming “hand written letters, number, punctuation and symbols into recognizable computer generated text” at the handwriting recognition system. *Id.* (citing Ex. 1005, 4:32–35).

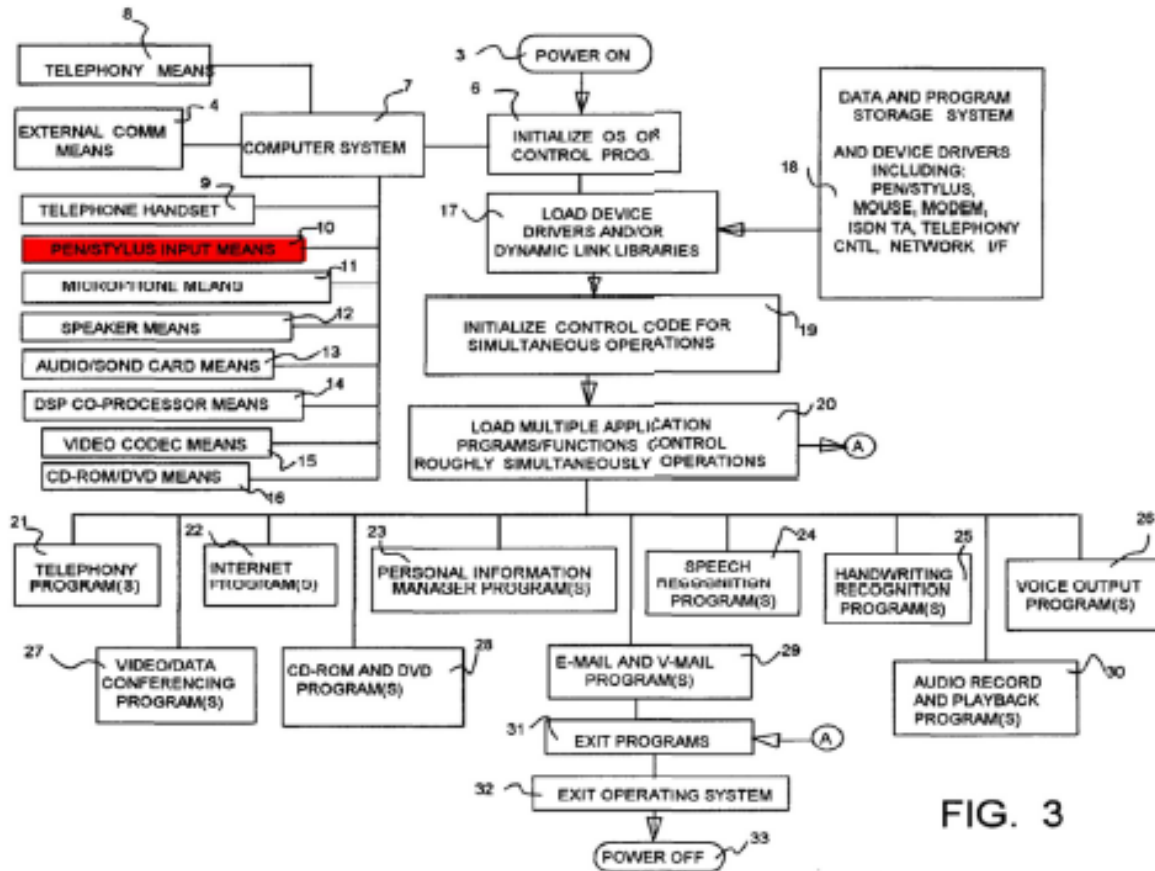
Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Ditzik discloses the preamble of claim 1.

b. Limitation 1[a]

Limitation 1[a] recites “a tablet surface, wherein the system is configured to receive freehand input based at least in part on manipulation of a stylus relative to the tablet surface.” Ex. 1001, 39:25–27.

Petitioner contends that Ditzik discloses this limitation. Pet. 12–14. Petitioner specifically asserts that Ditzik discloses capturing “a handwriting or graphic symbols” by “a pen/stylus input means” and “an opaque graphic tablet or transparent device.” Pet. 12 (citing Ex. 1005, 6:21–24; Fig. 3). According to Petitioner, the handwriting recognition system captures and digitizes the writing or symbols when a person moves the pen/stylus across the surface of the tablet. *Id.* at 12–13 (citing Ex. 1005, 4:29–41; Fig. 4).

Petitioner produces annotated versions of Figures 3 and 4 of Ditzik, reproduced below:



Pet. 13. Figure 3 of Ditzik is a block diagram of key computer system elements, including pen/stylus input means 10 for capturing a handwriting or graphic symbols from a user. Ex. 1005, 6:1–31.

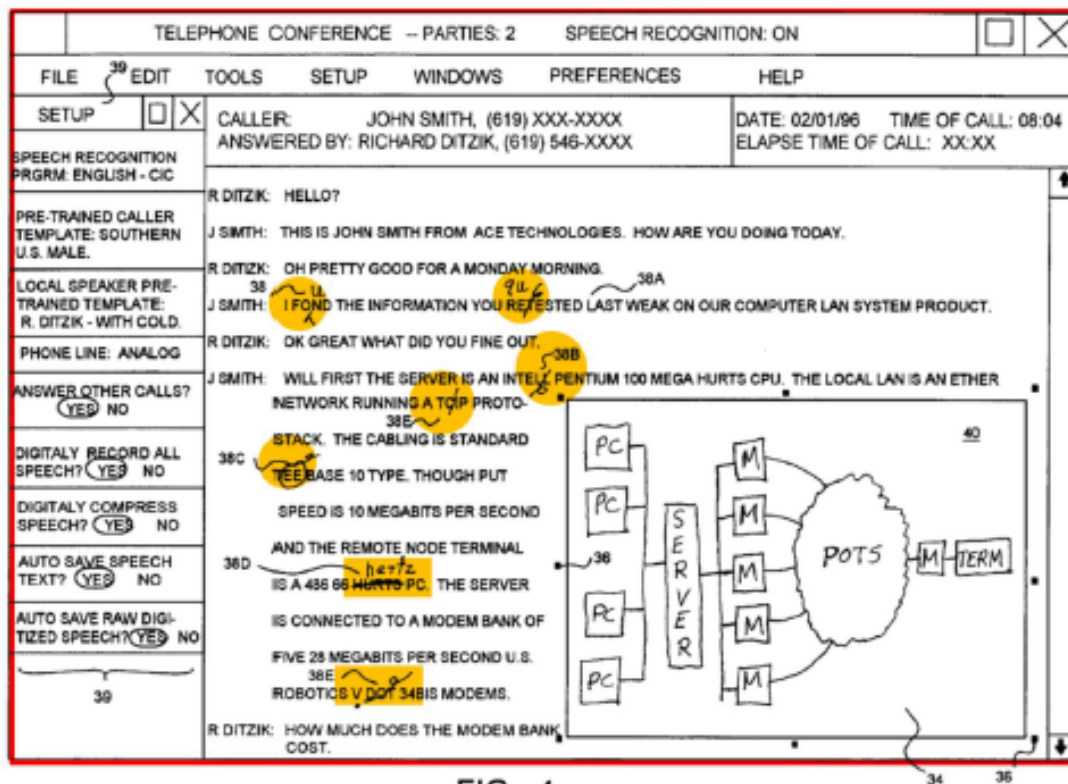


FIG. 4

Pet. 14. Figure 4 of Ditzik is a representation of the system's display screen, where the user may use the pen/stylus to correct speech recognition errors by adding editing marks 38, 38A, 38B, 38C, 38D, and 38E. Ex. 1005, 7:19–45.

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Ditzik discloses the limitation 1[a] of claim 1.

c. Limitation 1[b]

Limitation 1[b] recites “a microphone for receiving voice input.” Ex. 1001, 39:28.

Petitioner contends that Ditzik discloses this limitation. Pet. 14 (citing Decl. ¶ 58). Petitioner asserts that “speech input recognition program/functions 24 and associated hardware” disclosed in Ditzik provide for speech capture “(via microphone or telephone line), digitize data, process

data, store raw speech data, and storage of recognized text.” Pet. 14 (citing Ex. 1005, 6:59–63). Relying on Figure 3 of Ditzik, Petitioner asserts that Ditzik discloses “microphone means” 11 that receives voice input. *Id.* at 14–15 (citing Ex. 1005, 6:24–31; Fig. 3 (Referring to “microphone means” 11, *see* above reproduced Figure 3)).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Ditzik discloses the limitation 1[b] of claim 1.

d. Limitation 1[c]:

Limitation 1[c] recites “wherein the system is configured to: select a particular user message model from a plurality of user message models.” Ex. 1001, 39:29–30.

Petitioner contends that Ditzik and Tchorzewski render this limitation obvious. Pet. 15 (citing Decl. ¶ 59). Petitioner asserts Ditzik discloses “a user message model that is specific to a particular user” and includes “a language model as well as an acoustic and/or handwriting model,” as described in the ‘737 patent. *Id.* (citing Ex. 1001, 12:66–67, 13:3–4; Decl. ¶ 60). As for the “user message model” element of limitation 1[c], Petitioner asserts that Ditzik discloses “a user adaptive recognition system” that is “adapted to detect a person’s” speech and handwriting patterns.” *Id.* (citing Ex. 1005, 3:11–16, 5:28–37; Decl. ¶ 56). Petitioner asserts that Ditzik’s language modeling programs may add to a word and grammar dictionary which contain language models with rules specialized for different speech recognition applications. *Id.* at 15–16 (citing Ex. 1005, 3:52–62).

Petitioner provides additional explanation regarding well-known shared models, linguistic rules, and how to modify such models and refers to other references. Pet. 16–19. As for the “user message models” limitation, Petitioner asserts that Ditzik discloses acoustic models (or phoneme models) are user specific because such models may be trained based on “[s]peech patterns from one or more persons.” *Id.* at 17–18 (citing Ex. 1005, 3:19–24, Fig. 1; Decl. ¶ 63). Similarly, Petitioner asserts that Ditzik discloses a user-specific handwriting model because such models use handwriting/sketch patterns from a pattern database, which may “accept handwriting data from a known source with known writing samples.” *Id.* at 18 (citing Ex. 1005, 5:28–53, Fig. 2; Decl. ¶ 64).

As for the requirement of “select a particular user message model,” Petitioner asserts Tchorzewski discloses “a speech-recognition system” including “a database containing respective templates” to a number of user terminals. Pet. 19–20 (citing Ex. 1007, 2:23–30). Petitioner asserts Tchorzewski discloses that “[e]ach template includes a user’s ‘voice patterns’ (acoustic models) to ‘interpret voiced instructions.’” *Id.* at 20 (citing Ex. 1007, 1:8–14). Petitioner further asserts that Tchorzewski discloses assigning a speech recognizer to the terminal, which is activated, and providing “a copy of relevant speaker-dependent templates” to the assigned recognizer. *Id.* (citing Ex. 1007, 2:32–3:5, 3a:11–23⁷).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner.

⁷ Tchorzewski (Ex. 1007) includes pages 3a and 3b after page 3, and before page 4.

(1) Motivation to Combine Ditzik and Tchorzewski

Petitioner explains that a POSITA would have been motivated to combine Ditzik and Tchorzewski because they are in the same field of endeavor as each other and the '737 patent, directed to improving speech and handwriting recognition accuracy, and would have done so with a reasonable expectation of success. Pet. 21–22. According to Petitioner, one of ordinary skill in the art “would look to *Tchorzewski* when considering ways to improve *Ditzik*’s system” when multiple user’s use Ditzik’s tablet, each using a specific stored user message model to improve handwriting and speech recognition. *Id.* at 21 (citing Ex. 1005, 3:9–48; Ex. 1007, 1:5–19, 1:30–2:22; Decl. ¶¶ 68–69). Petitioner explains that the ordinary skilled artisan would have found the user-specific speech and handwriting recognition compatible with the system disclosed in Tchorzewski, where using different user message models would have “involved combining known elements according to known speech and handwriting recognition methods to yield the predictable result of improving user specificity for accurate recognition.” *Id.* at 21–22 (citing Decl. ¶ 69).

Petitioner’s assertion is supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the '737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Tchorzewski to meet the limitation 1[c] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

e. Limitation 1[d]

Limitation 1[d] recites “adjust a language model of a local message model based at least in part on the particular user message model, wherein the local message model includes the language model, a handwriting model, and an acoustic model.” Ex. 1001, 39:32–36.

We discussed above in the context of limitation [1c] how “select[ing] a particular user message model from a plurality of user message models” is met by combining Ditzik and Tchorzewski and how training such models according to user-specific acoustic and handwriting/sketch patterns is disclosed by Ditzik. Petitioner asserts that Ditzik further discloses improving the recognition accuracy of speech recognition by using a training path. Pet. 23 (citing Ex. 1005, 3:11–65; Decl. ¶ 73). Petitioner asserts that Ditzik also discloses a “training mode” in which inputting user-specific data to the handwriting stroke and patterns adjusts the language models for handwriting recognition. *Id.* (citing Ex. 1005, 5:25–37; Decl. ¶ 73).

Petitioner alternatively asserts “adjust a language model” limitation would have been rendered obvious by Roberts. Pet. 23 (citing Decl. ¶ 74). Petitioner asserts Roberts discloses “adjusting a language model based on user-specific information” by describing how a user provides inputs to correct misrecognized words and to train/update the language model. *Id.* (citing Ex. 1006, code (57), 4:51–62, 13:44–47, 14:10–41, 19:32–45, 23:56–24:2, 25:19–46, 26:47–27:2, 27:48–28:19, 29:33–54, 36:26–37, Figs. 1, 25).

These assertions are supported by the cited evidence and are also not disputed by Patent Owner.

*(1) Motivation to Combine Ditzik, Tchorzewski,
and Roberts*

Petitioner asserts that one of ordinary skill in the art “would have been motivated to apply Roberts’s updating scheme to Ditzik’s recognition system (as modified by Tchorzewski, §V.A.4.d), such that Ditzik’s local language models are adjusted based at least in part on a particular user message model to increase recognition accuracy.” Pet. 24 (citing Decl. ¶ 75). Petitioner explains that one of ordinary skill in the art would have adjusted or trained local models in Ditzik based on Robert’s language model specific to a particular speaker. *Id.* at 24–25 (citing Ex. 1006, 19:23–31; Decl. ¶¶ 75–77).

These assertions are supported by the cited evidence and are also not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Tchorzewski with Roberts to meet the limitation 1[d] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

f. Limitation 1[e]:

Limitation 1[e] recites “generate text data based at least in part on the freehand input, the adjusted language model, and the handwriting model.” Ex. 1001, 39:37–39.

Petitioner asserts the handwriting recognition system of Ditzik, “extracts ‘certain features of the raw data’ from freehand input” and compares the raw data to dictionaries and writing rules databases. Pet. 26 (citing Ex. 1005, 4:41–46, 5:40–45, 5:51–53; Decl. ¶ 79). Similar to the

discussion of limitation 1[d], the adjusted or trained language models that are used to generate text data based on Ditzik's freehand input and handwriting models is met by the applied prior art. Petitioner asserts that "it would have been obvious in view of Roberts for such handwriting language models to be trained with user-specific handwriting data (the 'adjusted language model')." *Id.* (citing Pet. §§ V.A.4.d–V.A.4.e; Decl. ¶ 80).

Petitioner explains:

A POSITA would have understood handwriting word/gesture recognition program 88 is a handwriting model because it uses Hidden Markov Model techniques based on data stored in the handwriting stroke/pattern and linguistic rules databases. (*Ditzik*, 5:28-33, 5:49-50; Decl., ¶80.) Once this comparison is done, the information is sent to application text/symbol generation program 94, which then provides text data on display 78. (*Ditzik*, 5:1-14; 5:60-67.)

Pet. 26–27. Petitioner refers to an annotated version of Figure 2 of Ditzik, reproduced below:

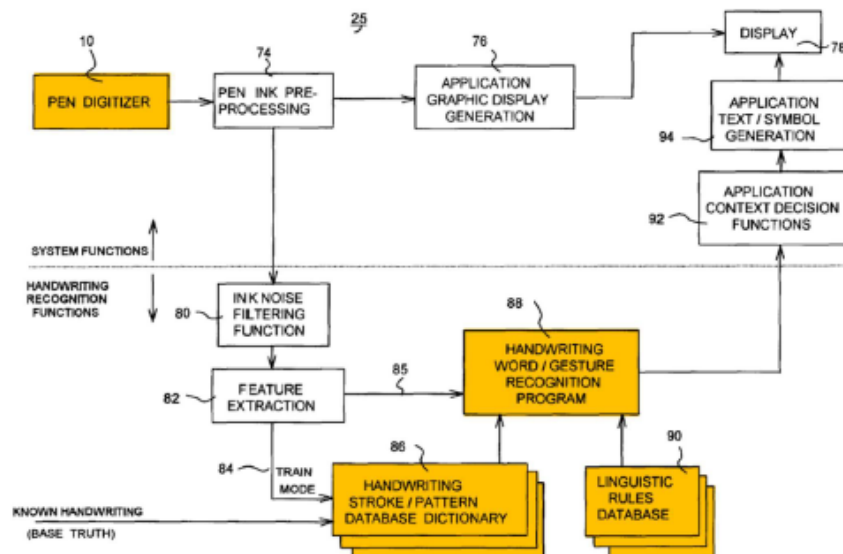


FIG. 2

Id. at 27. Figure 2 of Ditzik shows a block diagram of a handwriting recognition system that includes training mode 84 and

recognition mode 85. Ex. 1005, 5:25–37. Petitioner explains that Ditzik’s Figure 2 shows the “process of receiving freehand input and using an adjusted language model and handwriting model to generate text data.” Pet. 27 (citing Ex. 1005, Fig. 2; Decl. ¶ 81).

Petitioner’s assertions are supported by the cited evidence and are also not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Roberts to meet the limitation 1[e] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

g. Limitation 1[f]:

Limitation 1[f] recites “generate text data based at least in part on the voice input, the adjusted language model, and the acoustic model.” Ex. 1001, 39:40–42.

We discussed above in the context of limitation 1[e] how generating text data based on the freehand input, the adjusted language model, and the handwriting model is met by the applied prior art. Petitioner asserts that “*Ditzik*, in view of *Roberts*, uses voice input, the adjusted language model, and the acoustic model to do so.” Pet. 28 (citing Decl. ¶ 83). Petitioner asserts that Ditzik discloses speech recognition including capturing speech via a microphone, digitizing and processing data, and storing raw speech data and the recognized text. *Id.* (citing Ex. 1005, 6:59–63). According to Petitioner, the speech patterns from users’ voice input is captured and sent to a pre-processing function and later to a feature extraction function, based on a language model, such as the known Hidden Markov Model. *Id.* (citing Ex.

1005, 3:20–27). Petitioner contends that Ditzik and Roberts render this limitation obvious. Petitioner explains:

As explained in 1[c] and 1[d], it would have been obvious in view of Roberts for such language models to be trained with user-specific speech data (“adjusted language model”). (§§V.A.4.d-V.A.4.e; Decl., ¶83). The output from the feature extraction function is then “input to a phoneme modeling function,” an acoustic model. (Ditzik, 3:27–30.)

Id. Petitioner asserts that the described steps are shown in an annotated version of Figure 1 of Ditzik, reproduced below:

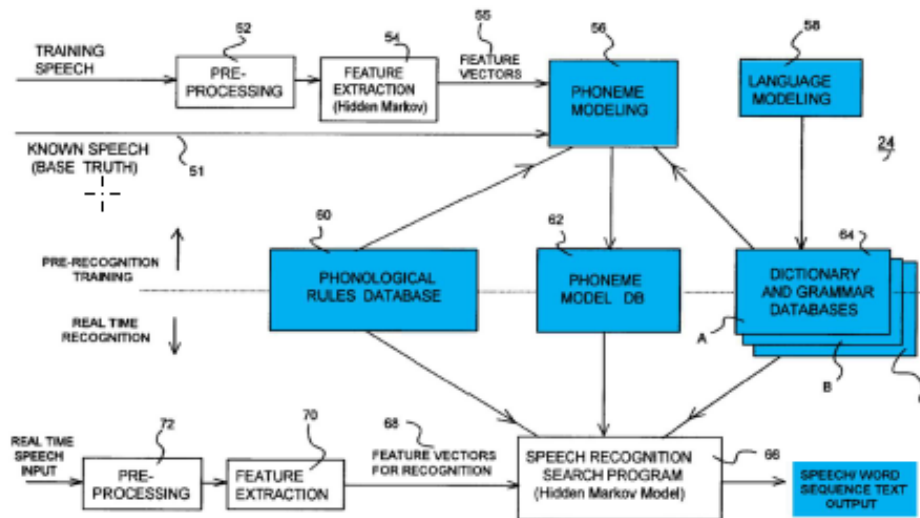


FIG. 1

PRIOR ART

Id. at 28–29. Figure 1 of Ditzik shows a block diagram of a prior art speech recognition system including a training path and a speech recognition path that detects a person’s spoken speech patterns (audio data) via a microphone. Ex. 1005, 3:8–17. Petitioner explains that Ditzik’s Figure 1 shows the process of receiving and converting speech data to text. Pet. 29 (citing Ex. 1005, 8:32–34, Fig. 1; Decl. ¶ 84).

Petitioner's assertions are supported by the cited evidence and are also not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the '737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Roberts to meet the limitation 1[f] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

h. Conclusion

For the foregoing reasons, Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 1 over Ditzik, Tchorzewski, and Roberts.

5. Claims 4 and 12

Claims 4 and 12 depend from claim 1. Ex. 1001, 39:34–36, 40:22–24. For claim 4, Petitioner sets forth argument and evidence asserting that “[b]ecause the user message model in the Ditzik, Roberts, and Tchorzewski system includes a user-specific acoustic model (§§ V.A.4.d–V.A.4.e), updating that acoustic model trains the user model.” Pet. 30 (citing Decl. ¶ 86). For claim 12, Petitioner asserts the previously discussed parts of Ditzik and Tchorzewski addressed above regarding limitations 1[c]–1[d], render obvious including user-specific acoustic model information and user-specific handwriting model information in the particular user message model. *Id.* at 31 (citing Pet. §§ V.A.4.d–V.A.4.e; Decl. ¶ 88).

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that Ditzik, in view of Tchorzewski and Roberts, discloses the additional features recited in claims 4 and 12. Petitioner has shown a reasonable likelihood that it would

prevail in establishing obviousness of claims 4 and 12 over Ditzik, Tchorzewski, and Roberts.

6. *Independent Claim 13*

Claim 13 is directed to a method but its steps substantially correspond to the functionalities of the system components recited in claim 1. Ex. 1001, 40:25–43. For claim 13’s preamble and subsequent steps, Petitioner relies on the arguments and evidence it provides for the preamble of claim 1 and limitation [1a]–1[f]. Pet. 32–33.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 13 over Ditzik, Tchorzewski, and Roberts.

7. *Claims 15 and 16*

Claim 15 depends from claim 13 and further recites: “further comprising accessing the selected user message model via a network.” Ex. 1001, 40:48–49. Claim 16 depends from claim 13 and further recites: “further comprising training the selected user message model.” *Id.* at 40:50–51.

For claim 15, Petitioner asserts “*Ditzik* discloses a ‘computer telephony application program’ that uses ‘telephone-like connections’ (‘telephone, Internet, and cable networks’) to connect *Ditzik*’s tablet to a network.” Pet. 34 (citing Ex. 1005, claim 11). Petitioner further asserts that Tchorzewski also discloses connecting a plurality of user terminals via a telephone network wherein a user connection causes the database to send a copy of a requested template from one of the recognizers. *Id.* (citing Ex. 1007, 3:6–10, 3:27–3a:10). According to Petitioner, a proper combination

of Ditzik, Tchorzewski, and Roberts suggests the limitations of claim 15 (*id.* at 34–35 (citing Decl. ¶¶ 98, 99)), and the limitation of claim 16, which is substantially identical to claim 4 discussed above (*id.* at 35 (citing Pet. § V.A.5; Decl. ¶ 100)).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 15 and 16 over Ditzik, Tchorzewski, and Roberts.

8. *Independent Claim 19*

Claim 19 is directed to a non-transitory computer-readable medium containing computer-executable instructions that cause the computing device to perform functions which substantially correspond to the functionalities recited in claim 1. Ex. 1001, 40:60–41:12. Claim 19’s preamble recites “[a]n article of manufacture including a non-transitory computer-readable medium having stored thereon instructions executable by a computing device to cause the computing device to perform operations comprising.” *Id.* For claim 19’s preamble, Petitioner asserts that Ditzik discloses the recited computer system elements. Pet. 35 (citing Pet. § V.A.4.a; Ex. 1005, 6:1–7:18, Fig. 3; Decl. ¶ 101).⁸ For the subsequent steps, Petitioner relies on the arguments and evidence it provides for claim 1 limitations 1[a]–1[f]. *Id.* at 36–37.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that

⁸ This issue need not be resolved at this stage because, regardless of whether the preamble is limiting, Petitioner shows sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble.

it would prevail in establishing obviousness of claim 19 over Ditzik, Tchorzewski, and Roberts.

E. Alleged Obviousness of Claims 2, 3, 5, 6, 11, and 14 over Ditzik, Tchorzewski, Roberts, and Verrier (Petitioner's Ground 2)

1. Overview of Verrier (Exhibit 1008)⁹

Verrier is a European patent application publication directed to “[a]n improved voice communication feature” in “an untethered personal stylus used with a digitizing display in a pen-based computer system.” Ex. 1008, code (57).

Figure 2 of Verrier is reproduced below:

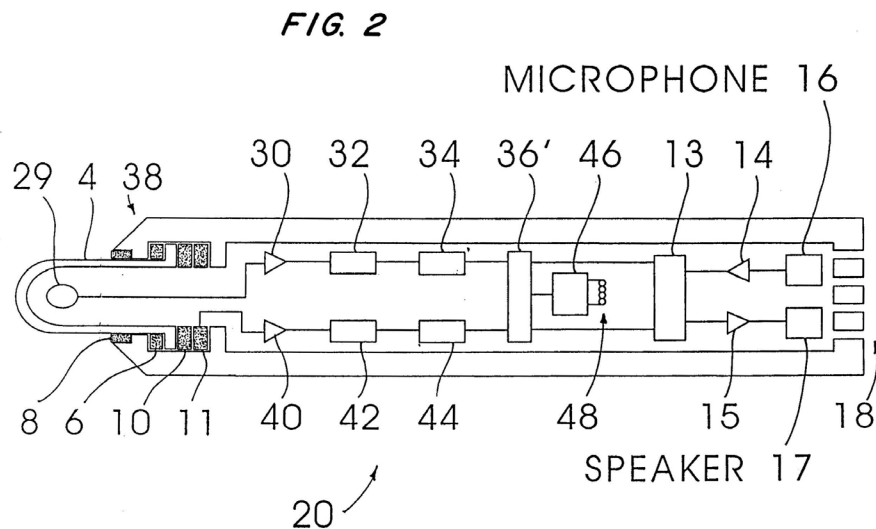


Figure 2 of Verrier shows the side view of stylus 20, which includes a multiplexer 36' having inputs, via CODEC 13, for microphone connection 16 and outputs for speaker connections 17. Ex. 1008, 4:24–27, 7:27–29, 9:18–20. Verrier describes:

⁹ Citations to Verrier are made with reference to the actual page numbers of the patent application publication, not to the page numbering added by Petitioner to Exhibit 1008.

The microphone can be coupled through a switching mechanism to an input of the multiplexer, for converting input audio signals to an audio message to be transmitted to the digitizing display or to the pen-based computer system. A speaker in the stylus is coupled to an output of the multiplexer, for receiving signals transmitted from the digitizing display or from the pen-based computer system, for producing output audio signals containing an audio message.

Id. at 4:27–36.

Verrier also describes:

a stylus in a pen-based computer system includes a contact detection mechanism such as a pressure transducer which is connected through to an analog-to-digital converter to a multiplexer inside the stylus. Also connected to the multiplexer is a position detector such as a radiative pickup mechanism and signal strength detector, which provides second analog-to-digital converted bit stream to the multiplexer. The multiplexed signal which includes information relating to stylus contact and to stylus position, is then passed through a transmitter and transmitted by electromagnetic radiation to a nearby digitizing display.

Ex. 1008, 4:9–21; *see also id.* at 7:15–8:4 (describing the pressure detector 38 in the stylus 20 acquiring the pressure sensing data), 8:4–29 (describing the pickup antenna 29 of the stylus 20, which is radiatively coupled to the electrodes in the tablet, and the signal strength detector 32).

2. Motivation to Combine Ditzik, Tchorzewski, and Roberts with Verrier

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Ditzik, Tchorzewski, and Roberts with Verrier, and would have done so with a reasonable expectation of success. Pet. 38–39. Petitioner explains that

A POSITA [one of ordinary skill in the art] would have been motivated to combine *Ditzik*, *Tchorzewski*, and *Roberts*

with *Verrier*. (Decl., ¶110.) *Ditzik* discloses a stylus for putting information into the tablet. (§V.A.4.b.) A POSITA would have been motivated to improve *Ditzik*'s stylus in view of *Verrier* in several ways. First, a POSITA would have been motivated to move the microphone to *Ditzik*'s stylus to minimize receiving inputs from multiple sources and efficiently transition between receiving audio input and handwriting input. (*Verrier*, 3:27-36; Decl., ¶110.) This would lead to improved speech and handwriting recognition, and improved text generation in response to speech and handwriting inputs. (*Id.*) Second, a POSITA would have been motivated to include a proximity sensor to efficiently transition between receiving speech input and handwriting input depending on the location of the stylus relative the tablet. (Decl., ¶110.) This would improve speech and handwriting recognition and improve text generation in response to speech and handwriting inputs. (*Id.*) Third, a POSITA would have been motivated to identify the user upon activation of the stylus, and in turn retrieve a particular user message model (as in *Tchorzewski*) based on that identification. (*Id.*) This would have personalize[d] user experiences and improve the accuracy of any associated speech recognition. (*Id.*)

A POSITA would have made these changes with a reasonable expectation of success. (Decl., ¶111.) Doing so would have been substituting a known element for another to improve accuracy using personalized speech and handwriting data. (*Id.*) It would combine a known tablet with a known stylus according to known methods in the same way to improve speech and handwriting recognition and identification. (*Id.*)

Id.

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that one of ordinary skill in the art would have been motivated to combine *Ditzik*, *Tchorzewski*, and *Roberts* with *Verrier* in the manner proposed by Petitioner.

3. *Claim 2*

Claim 2 recites:

2. [pre] The system of claim 1, wherein the system is further configured to:

[a] identify information relating to a particular user;

[b] wherein the particular user message model is selected based at least in part on the information relating to the particular user; and,

[c] wherein the plurality of user message models includes two or more user message models corresponding to users that are different from the particular user.

Ex. 1001, 39:43–51.

a. *Limitation 2[pre]*

As for limitation 2[pre] of claim 2, Petitioner asserts “*Ditzik, Tchorzewski, and Roberts* render claim 1 obvious. (§V.A.4; Decl., ¶112.)” Pet. 40. Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner.

b. *Limitation 2[a]*

Petitioner asserts that limitation 2[a] is rendered obvious by the combination of *Ditzik, Tchorzewski, Roberts, and Verrier*. Pet 40 (citing Decl. ¶ 113). According to Petitioner, Verrier discloses that a user of a personal stylus, having a personal identification, can be validated on a tablet. *Id.* at 40–41 (citing Ex. 1008, code (57), 8:53–58, 9:11–17, 18:13–20, Fig. 3A). Based on the Petitioner’s discussion of the motivation for modifying *Ditzik* with the stylus of *Verrier* (Pet. 38–39), Petitioner asserts that one of ordinary skill in the art would have been motivated to make the combination. *Id.* at 41 (citing Decl. ¶¶ 114–115; Pet. § V.C.2). Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this

stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the '737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik, Tchorzewski, Roberts, and Verrier to meet the limitation 2[a] of claim 2 in the manner proposed by Petitioner with a reasonable expectation of success.

c. Limitation 2[b]

Petitioner asserts that Ditzik and Tchorzewski render obvious the recited “selecting a particular user message model from a plurality of user message models based on which user terminal is activated,” whereas Tchorzewski discloses “‘speaker-dependent templates’ (e.g., user message model) are transferred from the database to that user terminal.” Pet. 41–42 (citing Ex. 1007, 2:32–3:5; Pet. § V.A.4.d). Petitioner further asserts that one of ordinary skill in the art would have understood that the identification number in Verrier’s stylus, as a simple substitute of known components for user identification, would predictably trigger the selection of a specific user message model. *Id.* at 42 (citing Ex. 1008, 8:56–57, 9:11–15, 18:13–20; Decl. ¶¶ 116–118; Pet. § V.C.2).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the '737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Tchorzewski to meet the limitation 2[b] of claim 2 in the manner proposed by Petitioner with a reasonable expectation of success.

d. Limitation 2[c]

Petitioner asserts that Ditzik and Tchorzewski render obvious the recited plurality of “user message models,” whereas Tchorzewski discloses “user-trained patterns ‘stored as “templates” in Random Access Memory,’ ‘a common database . . . containing the *templates of all the users*.’” Pet. 42 (citing Ex. 1007, 1:8–9, 2:1–2; Decl. ¶ 119). Petitioner further asserts that it would have been obvious to one of ordinary skill in the art “to support models for three or more different users” in such systems and to store different user message models to improve recognition based on speech and handwriting patterns specific to each user. *Id.* at 42–43 (citing Decl. ¶¶ 120–121; Pet. § V.B.2).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of Ditzik and Tchorzewski to meet the limitation 2[b] of claim 2 in the manner proposed by Petitioner with a reasonable expectation of success.

e. Conclusion

For the foregoing reasons, Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 2 over Ditzik, Tchorzewski, Roberts, and Verrier.

4. Claim 3

Claim 3 depends from claim 2 and further recites: “wherein the microphone is housed in the stylus.” Ex. 1001, 39:52–53. Referring to Figure 2 of Verrier, Petitioner asserts “*Verrier* discloses a stylus with ‘a

microphone and a speaker.” Pet. 43 (citing Ex. 1008, code (57), 4:24–27, 8:57–58, 9:18–20). Petitioner further asserts that one of ordinary skill in the art “would have been motivated to modify *Ditzik*’s stylus in a similar way to provide a personalized user experience and improve the accuracy of speech and handwriting recognition.” *Id.* (citing Decl. ¶ 123; § V.B.2). According to Petitioner, adding a microphone to the stylus would result in smooth transition between speech and handwriting input and avoids clashes between the two. *Id.* (citing Ex. 1008, 3:4–36; Decl. ¶ 124).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 3 over *Ditzik*, *Tchorzewski*, *Roberts*, and *Verrier*.

5. *Claim 5*

Claim 5 depends from claim 1 and further recites: “further comprising a proximity sensor configured to sense a proximity of a user to the microphone.” Ex. 1001, 39:57–59. Petitioner has shown that *Verrier* discloses a personal stylus having a personal identification that is used to validate the stylus or its user in analyzing claim 2. Pet. 40–42. With regard to the added feature of “a proximity sensor . . . to sense a proximity of a user to the microphone,” Petitioner asserts that

Verrier discloses a proximity sensor. (Decl., ¶126.) *Verrier*’s stylus has a sensor “in the tip of the stylus [that] picks up the electromagnetic signals radiated from the display overlay and converts those signals into a suitable form for retransmission back to the pen-based computer system.” (*Verrier*, 2:46–51.) “The relative signal strength of the signals picked up by the stylus is used to infer the relative separation distance *Z* of the tip of the stylus with respect to the overlay.” (*Verrier*, 2:51–54.) A POSITA would have understood this is a proximity sensor

because it detects the strength of a radiative signal to determine whether the “user [has] brought the stylus 20 into a relatively close position with respect to the electromagnetic tablet.” (*Verrier*, 10:34–42.) When the sensor does not detect a signal indicating the stylus is close to the tablet, but instead receives a voice signal, the stylus sensor determines the stylus is close to the speaker and enables the microphone. (*Verrier*, 10:15–30.) It would have been obvious that the sensor (signal strength detector) in the stylus tip is configured to sense a proximity of a user to the microphone.

Id. at 44–45 (citing Ex. 1008, Fig. 3A; Decl. ¶ 126).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 5 over Ditzik, Tchorzewski, Roberts, and Verrier.

6. *Claim 6*

Claim 6 depends from claim 1 and further recites: “further comprising an identification circuit configured to identify an owner of the stylus, wherein the system is configured to select the particular user message model at least in part in response to the identification circuit.” Ex. 1001, 39:60–64. Petitioner has shown that Verrier discloses a stylus having an identification circuit for storing a password in a personal identification number storage. Pet. 46 (citing Ex. 1008, code (57), 8:53–58, 9:11–17, 18:13–20; Decl. ¶¶ 128–129). Petitioner asserts that one of ordinary skill in the art would have understood that such an identification circuit uses the user identification information to identify and validate that user. *Id.* (citing Decl. ¶ 129). With regard to the recitation of “select the particular user message model . . . in response to the identification circuit,” Petitioner asserts that this limitation is rendered obvious by the combination of Ditzik, Tchorzewski,

Roberts, and Verrier because one of ordinary skill in the art “would have understood that the electronic components in *Verrier* used for identification are in an electronic circuit.” *Id.* (citing Ex. 1008, 18:9–12; Decl. ¶ 130; Pet. § V.B.3.c.3).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 6 over Ditzik, Tchorzewski, Roberts, and Verrier.

7. *Claim 11*

Claim 11 depends from claim 1 and further recites: “further comprising an activation circuit configured to sense movement of the stylus toward the tablet surface, wherein the system is further configured to receive the freehand input in response to the activation circuit sensing the movement.” Ex. 1001, 40:17–21. Petitioner asserts that Verrier’s proximity sensor measures the “relative signal strength of the signals picked up by the stylus . . . to infer the relative separation distance Z of the tip of the stylus with respect to the [tablet] overlay.” Pet. 47 (citing Ex. 1008, 2:46–54) (alterations in original). According to Petitioner, Verrier’s stylus includes a sensor, which “is connected to a pressure detector 42 and signal strength detector 32, which feed signal strength data to the multiplexor 36.” *Id.* (citing Ex. 1008, 7:43–9:17). Petitioner asserts that, as shown in Figure 3B of Verrier, “the components act as an activation circuit that senses movement of the stylus toward the tablet surface.” *Id.* (citing Ex. 1008, Fig. 3B; Decl. ¶ 132).

Petitioner asserts that one of ordinary skill in the art would have understood that “these components are in an electronic circuit.” Pet. 48

(citing Ex. 1008, 18:9–12; Decl. ¶ 133). With regard to the recitation of “to receive the freehand input in response to the activation circuit sensing the movement,” Petitioner asserts that receiving a proximity signal and the touchdown of the tip of the stylus on the display surface causes receiving freehand input from Verrier’s stylus. *Id.* (citing Ex. 1008, 11:5–20, 3:4–26). According to Petitioner, one of ordinary skill in the art “would have been motivated to modify *Ditzik*’s stylus in a like way to improve the accuracy of handwriting recognition with a reasonable expectation of success.” *Id.* (citing Decl. ¶ 133).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 11 over *Ditzik*, *Tchorzewski*, *Roberts*, and *Verrier*.

8. *Claim 14*

Claim 14 depends from claim 13 and further recites: “further comprising switching from receiving audio input to receiving freehand input in response to detecting movement of the stylus towards a tablet.” Ex. 1001, 40:44–47. Petitioner asserts that, upon detecting that the tip of the stylus has touched the surface of the tablet, Verrier’s system disables the microphone in the stylus to avoid receiving unwanted acoustic noise as the stylus tip moves on the surface of the tablet. Pet. 49–50 (citing Ex. 1008, 11:5–4, Fig. 7). According to Petitioner, one of ordinary skill in the art “would have been motivated to modify *Ditzik*’s stylus in a like way to improve the accuracy of handwriting recognition with a reasonable expectation of success.” *Id.* at 50 (citing Decl. ¶¶ 135–136).

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 14 over Ditzik, Tchorzewski, Roberts, and Verrier.

F. Alleged Obviousness of Claims 9 and 10 over Ditzik, Tchorzewski, Roberts, and Bellegarda (Petitioner's Ground 3)

*1. Overview of Bellegarda*¹⁰

Bellegarda is a paper titled "A Novel Word Clustering Algorithm Based on Latent Semantic Analysis." Ex. 1009, 172. Bellegarda describes "a word clustering approach based on the latent semantic analysis paradigm first formulated in information retrieval." *Id.* at 175. "The basic premise of the latent semantic framework is that co-occurrence analysis should take place across larger contexts (longer spans) than traditionally considered" *Id.* at 172–173. According to Bellegarda, "the proposed approach results in clusters that are semantic in nature, by exploiting large span relationships between words," while "conventional class-based modeling techniques rely on short span relationships, and therefore tend to produce syntactically-oriented clusters." *Id.* at 175; *see also id.* at 172, Abstract ("Because these clusters are semantic in nature, this approach may prove useful as a complement to conventional class-based statistical language modeling techniques.").

¹⁰ Citations to Bellegarda are made with reference to the actual page numbers of the article, not to the page numbering added by Petitioner to Exhibit 1009.

2. Motivation to Combine Ditzik, Tchorzewski, and Roberts with Bellegarda

Petitioner argues that a POSITA would have been motivated to combine Ditzik, Tchorzewski, and Roberts with Bellegarda's "well-known implementation details for language models, including using syntactic and semantic models together." Pet. 52 (citing Decl. ¶ 138). Petitioner asserts that because conventional syntactic and semantic language models' drawbacks were known (*id.* (citing Ex. 1018, 1:54–61, 2:51–55)), Bellegarda discloses "it would have been desirable to use a semantic model as a 'complement to conventional class-based statistical language modeling' to improve speech recognition, remedying each other's shortcomings and optimizing accuracy." *Id.* (citing Ex. 1009, 172; Ex. 1018, 2:55–58; Decl. ¶ 138). According to Petitioner, to improve speech recognition accuracy, one of ordinary skill in the art "would have used such a language model in the *Ditzik, Tchorzewski, Roberts* combined system with a reasonable expectation of success." *Id.* (citing Ex. 1009, 172; Decl. ¶ 139).

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that one of ordinary skill in the art would have been motivated to combine Ditzik, Tchorzewski, and Roberts with Bellegarda in the manner proposed by Petitioner.

3. Claims 9 and 10

Claim 9 depends from claim 1 and further recites: "wherein the system adjusting the language model includes adjusting a syntactic model and a semantic model included in the language model." Ex. 1001, 40:4–6.

Claim 10 recites:

10. [pre] The system of claim 9, wherein the semantic model comprises at least one semantic cluster selected from the group consisting of:

[a] a semantic cluster of a first type that is a mathematically derived group of vectors representing text segments;

[b] a semantic cluster of a second type that is a discrete grouping of text having a particular context; and

[c] a semantic cluster of a third type that is defined with respect to an individual reference word that is indicative of a particular context.

Id. at 40:7–16.

As for the limitation directed to adjusting syntactic and semantic models in claim 9, Petitioner asserts that “*Ditzik* and *Roberts* render obvious adjusting the language model. (§V.A.4.e.) It was known that a language model would have included a syntactic model and a semantic model. (Decl., ¶142; *Bellegarda*, 172.).” Pet. 53. Petitioner asserts that one of ordinary skill in the art would have understood that “the adjusted language model in the combined *Ditzik*, *Tchorzewski*, *Roberts* system would include such well known syntactic and semantic models, and that adjusting the language model would mean adjusting the constituent syntactic and semantic models.” *Id.* (citing Decl. ¶ 142).

Regarding the preamble of claim 10, Petitioner asserts “*Bellegarda* discloses ‘a latent semantic analysis’ applying ‘familiar clustering techniques’ that are ‘a complement to conventional class-based statistical language modeling techniques.’ (*Bellegarda*, 172.) Although all three semantic clusters are not required, *Bellegarda* discloses all three.” Pet. 54 (citing Ex. 1009, 172; Decl. ¶ 146). Regarding the remaining limitations of

claim 10, Petitioner asserts that Bellegarda discloses each of the limitations 10[a], 10[b], and 10[c]. *Id.* at 54–56 (citing Ex. 1009, 172–175; Decl. ¶¶ 147–149). We are sufficiently persuaded that Bellegarda discloses the recited semantic clusters of claim 10.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 9 and 10 over Ditzik, Tchorzewski, Roberts, and Bellegarda.

G. Alleged Obviousness of Claims 7 and 8 over Ditzik, Tchorzewski, Roberts, and Campbell (Petitioner’s Ground 4)

*1. Overview of Campbell*¹¹

Campbell is a paper titled “Speaker Recognition: A Tutorial.” Ex. 1010, 1437. Campbell presents a “tutorial on design and development of automatic speaker recognition systems,” wherein “[a]utomatic speaker recognition is the use of a machine to recognize a person from a spoken phrase.” *Id.*; *see also id.* at 1461. According to Campbell, automatic speaker recognition systems “can be used in two modes: to *identify* a particular person or to *verify* a person’s claimed identity.” *Id.* at 1461.

2. Claims 7 and 8

Claim 7 depends from claim 1 and further recites: “wherein the system is configured to select the particular user message model based at least in part on an identifying signal received from the microphone.” Ex. 1001, 39:65–67.

¹¹ Citations to Campbell are made with reference to the actual page numbers of the article, not to the page numbering added by Petitioner to Exhibit 1010.

Claim 8 depends from claim 7 and further recites: “wherein the system is configured to access the particular user message model via a wide area network.” Ex. 1001, 40:1–3.

As for claim 7, Petitioner asserts that “*Campbell* discloses ‘automatic speaker recognition,’ which ‘recognize[s] a person from a spoken phrase’ at a microphone, ‘to identify a particular person or to verify a person’s claimed identity.’” Pet. 58 (citing Ex. 1010, 1437, Fig. 1). Petitioner further asserts that “a POSITA would have understood adding *Campbell*’s design to the *Ditzik, Roberts, Tchorzewski* combination would have improved accuracy because *Campbell*’s recognizer ‘performs with 98.9% correct identification’—far more accurate and secure than pre-existing methods using IDs and passwords.” *Id.* at 58–59 (citing Ex. 1010, 1437–38; Decl. ¶ 153).

As for claim 8, Petitioner asserts that similar to the discussion of claim 15, “*Ditzik, Roberts, and Tchorzewski* would have rendered this limitation obvious. (§V.A.8.)” as one of ordinary skill in the art “would have understood that the Internet and cable networks disclosed in *Ditzik* are wide area networks, which would be used to access user message models.” Pet. 60 (citing Decl. ¶ 155).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 7 and 8 over *Ditzik, Tchorzewski, Roberts, and Campbell*.

H. Alleged Obviousness of Claims 1, 2, 4, 12, 13, 16, and 19 over Root, Roberts, and Lewis (Petitioner’s Ground 5)

I. Overview of Root¹²

Root is a U.S. patent relating to “a portable personality database that specifies a particular user’s personal preferences.” Ex. 1011, 1:11–13. According to Root, to implement a computer system that knows exactly how each particular user desires to interact with it, a set of personalized information that defines how a particular user desires to interact with the computer system is stored on a small portable memory device. *Id.* at code (57). When a user wishes to use any computer system, the user inserts the portable memory device containing the personalized information, which is then read into and used to configure the computer system. *Id.*

Figure 1 of Root is reproduced below:

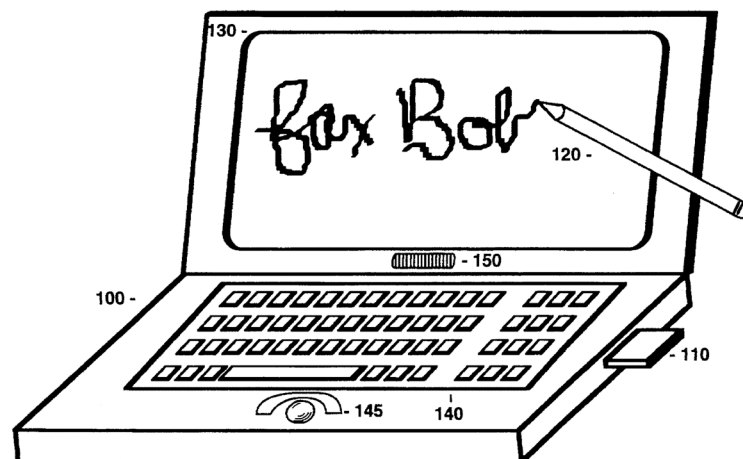


FIG. 1

¹² Citations to the pages of Root are made with reference to the actual page, column, and line numbers of the patent publication, not to the page numbering added by Petitioner to Exhibit 1011.

Figure 1 above shows a portable computer system 100 with a display screen 130, a keyboard 140, a trackball 145, an electronic pen 120, a microphone 150, and a PCMCIA card slot 110. *Id.* at 3:45–55. According to Root, the portable computer system 100 can have a personalized user interface system, which is “a computer-user interface that is customized to accommodate the personal preferences of the particular person who will be using the computer system.” *Id.* at 3:62–65. Root describes a handwriting recognition system and a voice recognition system as examples of a personalized user interface:

An example of a personalized user interface would be a handwriting recognition system. In a handwriting recognition system, the computer system is trained to learn the user’s handwriting and thus recognize words written by that particular user. For example, as illustrated in FIG. 1, text can be written on the screen with an electronic pen and a computer will decipher what words have been written on the screen.

Another example of a personalized computer user interface system would be a trained voice recognition system. Trained voice recognition systems recognize the spoken commands and words of a particular user. Trained voice recognition systems must initially be trained by the user that will use the system. The user trains the system by speaking a series of known example words. The trained voice recognition system uses the information obtained during the training to decipher the user’s speech.

Id. at 3:66–4:15.

*2. Overview of Lewis*¹³

Lewis is a U.S. patent application publication directed to “system and methods which can be implemented in a machine recognition device to

¹³ Citations to Lewis are made with reference to the actual paragraph numbers of the patent application publication, not to the page numbering added by Petitioner to Exhibit 1012.

provide a user (via a user interface) the option of selecting one of a plurality of recognition modes” Ex. 1012, ¶ 9.

Lewis describes that “conventional machine recognition systems recognize input data by decoding the data using a plurality of trained models.” *Id.* ¶ 4. For example, “speech recognition systems decode input speech utterances using trained speech models to recognize spoken words,” and “handwriting recognition systems recognize input handwriting data using trained character models to convert the handwriting data to machine printed text.” *Id.*

Lewis points out that while “utilizing the default recognition parameters will result in optimal data recognition” in most situations, “[t]here is a need . . . for a system and methods for use with machine recognition that allow a user to temporarily modify default recognition parameters by selecting one or more recognition constraints to decode uncharacteristic and/or special data so as to obtain increased recognition accuracy.” *Id.* ¶¶ 7, 8.

3. *Independent Claim 1*
Limitation 1[pre]

As for the recited “[a] system for generating text responsive to voice and handwriting input,” Petitioner contends that Root discloses a computer user interface including voice recognition and handwriting recognition systems which are trainable based on each user’s handwriting pattern. Pet. 61 (citing Ex. 1011, 3:66–4:4, 4:9–15, 5:49–56, 6:29–31, Fig. 3; Decl. ¶ 158). Petitioner further asserts that “[g]enerating text in response to handwriting and speech input would have been obvious in view of *Lewis*,

which provides specific implementation details for the conventional system used in *Root*.” *Id.* at 62 (citing Ex. 1012 ¶ 4; Decl. ¶ 159).¹⁴

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that *Root* in view of *Lewis* discloses the preamble of claim 1.

a. Limitation 1[a]

As for the recitation of “a tablet surface, wherein the system is configured to receive freehand input based at least in part on manipulation of a stylus relative to the tablet surface,” Petitioner contends that *Root* discloses “a pen based system” including a tablet surface for receiving a user freehand input when the user manipulates an electronic pen. Pet. 63 (citing Ex. 1011, 1:24–28; Fig. 1).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that *Root* discloses the limitation 1[a] of claim 1.

b. Limitation 1[b]

As for the recitation of “a microphone for receiving voice input,” Petitioner contends that *Root* discloses a microphone included in the computer system. Pet. 63 (citing Ex. 1011, 3:49–52; Decl. ¶ 161). Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that *Root* discloses the limitation 1[b] of claim 1.

¹⁴ This issue need not be resolved at this stage because, regardless of whether the preamble is limiting, Petitioner shows sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble.

c. Limitation 1[c]

As for the recitation of “wherein the system is configured to: select a particular user message model from a plurality of user message models,” Petitioner asserts Root discloses “a personal user interface database for each and every user” on each computer system, whereas the database includes information about the user’s handwriting and voice to be used by handwriting and voice recognition components. Pet. 64 (citing Ex. 1011, 1:41–48, 1:52–60). Petitioner further asserts that Root discloses selecting a user message model from the user’s “personality profiles” stored on a “PCMCIA type flash memory card” including a handwriting model and a voice recognition system that is required to be trained by the user. *Id.* (citing Ex. 1011, 4:50–5:42, 5:28–42, 6:25–35, Fig. 2; Decl. ¶ 163). Petitioner explains:

Root explains these personalized models include a handwriting model that “recognize[s] words written by that particular user.” (*Root*, 3:66–4:4, 4:9–15.) *Root* also discloses a “trained voice recognition system” must “be trained by the user that will use[] the system.” (*Root*, 4:7–13.) “The user trains the system by speaking a series of known example words,” and the system “uses the information obtained during the training to decipher the user’s speech.” (*Root*, 4:13–15.) A POSITA would have understood this training “information” includes user-specific language models and acoustic models. (Decl., ¶ 164.) It was well known that a speech and handwriting recognition system includes a language model for satisfactory speech and handwriting recognition. (Decl., ¶ 164.)

Id. at 64–65.

Petitioner asserts “it would have been obvious to include a language model and an acoustic or handwriting model in view of *Roberts*.” Pet. 65. Regarding the disclosure of *Roberts*, Petitioner explains:

Roberts discloses customizing an acoustic model and a language model for each speaker through training. (*Roberts*, 1:65–67; Decl., ¶165.) The acoustic model is made “from one or more utterances of a word” (*Roberts*, 2:37–41) and is updated through user input, e.g., correcting a misrecognized word by picking an alternative word. (*Roberts*, 2:41–47.) *Roberts* discloses a language model, which “indicates word probabilities based on the language context of the word.” (*Roberts*, 4:59–62, 19:23–31.) The language model is updated based on user correction. (*Roberts*, 4:51–59, 13:3–60.).

Id. As for the reason to combine the teachings of *Root* and *Roberts*, Petitioner provides:

A POSITA would have been motivated to combine *Root* and *Roberts*. (Decl., ¶166.) First, *Root* and *Roberts* are in the same field of endeavor, where speech recognition is combined with some type of user input (e.g., handwriting input in *Root* and user selection of correct words in *Roberts*) to improve overall recognition accuracy. (Decl., ¶166.) Second, *Root* discloses storing user-specific models, *Roberts* simply provides implementation details and explains that speech recognition systems known at the time used acoustic models and language models. (*Id.*).

Id. at 65–66. Petitioner provides additional explanation on page 66 of the Petition.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of *Root* with *Roberts* to meet the limitation 1[c] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

d. Limitation 1[d]

As for the recitation of “adjust a language model of a local message model based at least in part on the particular user message model, wherein the local message model includes the language model, a handwriting model, and an acoustic model,” Petitioner asserts that Root and Roberts in combination would have rendered obvious limitation 1[d]. Pet. 66 (citing Decl. ¶ 168). As explained with respect to limitation 1[c] above and Root’s disclosure of speech and handwriting recognition software downloading the user personality profile, Petitioner asserts that a person of ordinary skill in the art would have understood that the system includes a local message model to which the user-specific message model is added. *Id.* at 66–67 (citing Ex. 1006, 4:51–62; Decl. ¶ 169).

Petitioner provides additional explanation for Root and Roberts combination rendering obvious the adjusting a language model of a local message model limitation. Pet. 67. Petitioner explains:

Roberts discloses adjusting “a language model of a local message model based at least in part on the particular user message model” for the reasons explained for 1[d] in Ground 1 (§V.A.4.e.) A POSITA would have been motivated to apply *Roberts*’s language model updating step to *Root*’s system, such that *Root*’s language models are trained to increase recognition accuracy. (Decl., ¶171.) *Root* and *Roberts* are in the same field of endeavor. (Decl., ¶171; §V.E.3.d.) Further, *Root* discloses adapting its recognition user interface “to a user’s habits,” including their speech and handwriting habits (e.g., *Root*, 1:38–48). *Roberts* simply discloses implementation details for this process, including adjusting the language model. (Decl., ¶171.) A POSITA would have made such an adjustment with a reasonable expectation of success because doing so would have involved combining known speech and handwriting recognition methods to yield a predictable recognition system trainable using user-specific information.

Id. at 67–68.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of Root with Roberts to meet the limitation 1[d] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

e. Limitation 1[e]

As for the recitation of “generate text data based at least in part on the freehand input, the adjusted language model, and the handwriting model,” Petitioner asserts that Root discloses generating text data based on recognizing handwritten user input using an electronic pen and the handwriting recognition system using the handwriting model to output text representing the user’s input. Pet. 68 (citing Ex. 1011, 4:3–6, 5:49–60; Decl. ¶¶ 172–174). Similar to the discussion of limitation 1[c], the adjusted or trained language models that are used to generate text data based on Root’s freehand input and handwriting models is met by the combination of Root and Roberts. *Id.* Petitioner further asserts that “Lewis discloses a handwriting recognition system with a ‘writer prototypes store’ that ‘contains one or more writer prototypes’ and a ‘word list/grammar store’ that contains ‘a plurality of word lists and associated grammars which may be applied to the recognition engine.’” *Id.* at 68–69 (citing Ex. 1012 ¶¶ 19–20). According to Petitioner, “A POSITA would have understood the writer prototypes, and the word list and associated grammars, are the language model.” *Id.* at 69 (citing Ex. 1012 ¶ 21 (“In the default recognition mode,

the recognition engine 22 will decode the user's handwriting data using the writer-dependent prototype 26" "associated with the user, as well as the relevant default word lists/grammars 24."); Decl. ¶ 175).

Petitioner asserts that one of ordinary skill in the art would have been motivated to improve the handwriting recognition accuracy of an adjusted language model, based on the Root and Roberts combination, with Lewis because

First, *Lewis* is in the same field of endeavor as *Root* and *Roberts*: a trainable system with user-specific information. (*Id.*) Second, *Root* and *Roberts* already render obvious a user-trainable handwriting recognition system, *Lewis* simply provides implementation details for using adjusted language models in such a handwriting recognition system. (*Id.*) Third, a POSITA would have found it desirable to use *Lewis*'s trainable language models to customize based on the user's handwriting information, such as grammatical habits, to improve accuracy. (*Id.*)

Pet. 69.

These assertions of Petitioner are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the '737 patent, one of ordinary skill would have been motivated to combine the teachings of Root, Roberts, and Lewis to meet the limitation 1[e] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

f. Limitation 1[f]

As for the recitation of "generate text data based at least in part on the voice input, the adjusted language model, and the acoustic model,"

Petitioner asserts that “*Root* discloses generating text data based in part on the voice input because it ‘uses the information obtained during the training to decipher the user’s speech’ into ‘words that the computer system can interpret.’” Pet. 70 (citing Ex. 1011, 4:13–15, 6:28–33). As discussed in the context of limitation 1[d] of claim 1, Petitioner contends that *Root* and *Roberts* render this limitation obvious. *Id.* (citing Decl. ¶ 178; Pet. §§ V.E.3.d–V.E.3.e).

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. At this stage, and on this record, we determine that Petitioner has cited sufficient evidence and provided sufficient articulated reasoning to explain why, at the time of the filing of the ’737 patent, one of ordinary skill would have been motivated to combine the teachings of *Root* and *Roberts* to meet the limitation 1[f] of claim 1 in the manner proposed by Petitioner with a reasonable expectation of success.

g. Conclusion

For the foregoing reasons, Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 1 over *Root*, *Roberts*, and *Lewis*.

4. Claims 2, 4, and 12

Claims 2, 4, and 12 depend from claim 1. Ex. 1001, 39:43–51, 39:54–56, 40:22–24. Petitioner puts forth arguments and evidence asserting that the *Root* and *Roberts* combination discloses the additional limitations of claims 2, 4, and 12. Pet. 70–74. The assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that *Root* in view of *Roberts* discloses the additional features recited in claims 2, 4, and 12 relative to the independent claims on which they depend.

5. *Independent Claim 13*

Claim 13 is directed to a method but its steps substantially correspond to the functionalities of the system components recited in claim 1. Ex. 1001, 40:25–43. For claim 13’s preamble and subsequent steps, Petitioner relies on the arguments and evidence it provides for the preamble of claim 1 and limitation 1[a]–1[f]. Pet. 74–75.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 13 over Root, Roberts, and Lewis.

6. *Claim 16*

Petitioner puts forth argument and evidence asserting that Roberts discloses the additional limitations of claim 16 related to “training a selected user message model.” Pet. 75. The assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that Root in view of Roberts discloses the additional features recited in claim 16 relative to the independent claim on which it depends.

7. *Independent Claim 19*

For claim 19’s preamble requiring a non-transitory computer-readable medium, Petitioner asserts that “*Root*’s portable computer system (e.g., tablet, Root, 1:24–28) includes a ‘processor’ (a computing device) and a ‘memory’ (a non-transitory computer-readable medium).” Pet. 76 (citing Ex. 1011, code (57), 3:44–52, claims 1, 8; Decl. ¶ 196).¹⁵ According to

¹⁵ This issue need not be resolved at this stage because, regardless of whether the preamble is limiting, Petitioner shows sufficiently for purposes of institution that the prior art satisfies the recitation in the preamble.

Petitioner, Root's memory stores the instructions to perform the functions required by limitations 19[a]–19[f] similar to Petitioner's discussion of claim 1. *Id.* at 76–77 (citing Decl. ¶¶ 197–202).

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claim 19 over Root, Roberts, and Lewis.

I. Alleged Obviousness of Claims 3, 5, 6, 11, and 14 over Root, Roberts, Lewis, and Verrier (Petitioner's Ground 6)

1. Motivation to Combine Root, Roberts, and Lewis with Verrier

Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Root, Roberts, and Lewis with Verrier, and would have done so with a reasonable expectation of success. Pet. 77–78.

Petitioner explains that

A POSITA would have been motivated to combine *Root*, *Roberts*, and *Lewis* with *Verrier*. (Decl., ¶204.) Each discloses receiving user input. (*Id.*) *Root* discloses a stylus for inputting information to the computer. (§ V.E.3.b.) It was known that a stylus could be used to input information, like user identifying information or voice and handwriting information. (Decl., ¶204.) It would have been obvious to add a microphone to *Root*'s stylus to more smoothly transition between speech and handwriting input and avoid clashes between the two inputs. (*Verrier*, 3:4-36; Decl., ¶204.) A POSITA would have done so with a reasonable expectation of success. (Decl., ¶204.) *Root* uses a stylus (§ V.E.3.b; Decl., ¶204); thus, replacing that stylus with *Verrier*'s would have merely involved a simple substitution of one known element for another to improve recognition accuracy using personalized speech and handwriting data. (Decl., ¶204.) It would have involved combining prior art tablet and personalized stylus elements according to known methods to yield predictable results, adding a known stylus in *Verrier* to a known device in *Root* in the

same way. (*Id.*) It would have been obvious to add a microphone to smoothly transition between speech and handwriting input and avoid clashes between the two types of inputs. (*Verrier*, 3:4-36; Decl., ¶204.)

Id. Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that one of ordinary skill in the art would have been motivated to combine Root, Roberts, and Lewis with Verrier in the manner proposed by Petitioner.

2. Claims 3, 5, 6, 11, and 14

For claim 3, 5, 6, 11, and 14, Petitioner relies on the arguments and evidence it provides for the discussion of Verrier with respect to Ground 2. Pet. 78–79.

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 3, 5, 6, 11, and 14 over Root, Roberts, Lewis, and Verrier.

J. Alleged Obviousness of Claims 9 and 10 over Root, Roberts, Lewis, and Bellegarda (Petitioner’s Ground 7)

1. Motivation to Combine Root, Roberts, and Lewis with Bellegarda

Petitioner asserts that a person of ordinary skill in the art “would have been motivated to combine these disclosures with a reasonable expectation of success for the same reasons explained in Ground 3.” Pet. 79 (citing Decl. ¶ 209). According to Petitioner, “*Bellegarda* discloses known implementation details for language models used in the *Root/Roberts/Lewis* system.” *Id.*

Petitioner’s assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that one of

ordinary skill in the art would have been motivated to combine Root, Roberts, and Lewis with Bellegarda in the manner proposed by Petitioner.

2. *Claims 9 and 10*

For claim 9 and 10, Petitioner relies on the arguments and evidence it provides for the discussion of Bellegarda with respect to Ground 3. Pet. 79.

Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 9 and 10 over Root, Roberts, Lewis, and Bellegarda.

K. *Alleged Obviousness of Claims 7, 8, and 15 over Root, Roberts, Lewis, and Campbell (Petitioner's Ground 8)*

As for claim 7, Petitioner asserts that, similar to the discussion related to 1[c] limitation of claim 1 in Ground 5, "*Root* alone or with *Roberts* renders obvious selecting a particular user message model from a plurality of user message models. (§V.E.3.d; Decl., ¶212.) A POSITA would have further combined *Root*, *Roberts*, and *Lewis*, with *Campbell* with a reasonable expectation of success. (§V.D; Decl., ¶212.)." Pet. 80. Petitioner's assertions are supported by the cited evidence and not disputed by Patent Owner. We are sufficiently persuaded that one of ordinary skill in the art would have been motivated to combine Root, Roberts, and Lewis with Campbell in the manner proposed by Petitioner.

As for claim 8, Petitioner asserts that "*Root* discloses its invention may 'comprise a general purpose computer,' (*Root* 3:21–23), which was known to include network interfaces and access remote servers, filesystems, and databases. (Decl., ¶213.)." Pet. 80. Petitioner alternatively asserts that Campbell discloses operating the computer in cooperation with telephone networks, which would have suggested to one of ordinary skill in the art to

use a server for storing large amounts of data and access message models via a wide area network as an alternate to using a local storage device. *Id.* at 80–81. Although Petitioner’s assertion that Root discloses connection to a wide area network is not clearly supported by evidence, Petitioner’s assertion that this limitation would have been rendered obvious by the combined teachings of Root, Roberts, Lewis, and Campbell is supported by the cited evidence and not disputed by Patent Owner.

As for claim 15, Petitioner relies on evidence and the arguments provided regarding the combination of Root, Roberts, and Lewis for claim 13 and asserts that claim 15 would have been obvious in view of Campbell. Pet. 82. These assertions of Petitioner are supported by the cited evidence and not disputed by Patent Owner.

For the foregoing reasons, Petitioner has shown a reasonable likelihood that it would prevail in establishing obviousness of claims 7, 8, and 15 over Root, Roberts, Lewis, and Campbell.

IV. CONCLUSION

For the foregoing reasons, we conclude that the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail in establishing that at least one of claims 1–16 and 19 of the ’737 patent is unpatentable.¹⁶

¹⁶ Patent Owner has not filed a preliminary response.

V. ORDER

In consideration of the foregoing, it is

ORDERED that *inter partes* review of all challenged claims, i.e., claims 1–16 and 19 of the '737 patent, is instituted on all grounds stated in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

IPR2023-01387
Patent 8,204,737 B2

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