

Google LLC

v.

Dialect, LLC

IPR2024-00753

Patent 7,640,160 B2

Petitioner's Demonstratives

August 1, 2025

Before Neil T. Powell, George R. Hoskins, and Jon M. Jurgovan,

Administrative Patent Judges

Google Exhibit 1018
IPR2024-00753

Claim 12 of the '160 Patent

12. A method for interpreting natural language utterances using knowledge-enhanced speech recognition engine, wherein the knowledge-enhanced speech recognition engine is configured to determine an intent and correct false recognitions of the natural language utterances, comprising:

receiving a transcription of a natural language utterance at a computer comprising the knowledge-enhanced speech recognition engine;

identifying one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the matching contexts includes comparing the text combinations against the grammar expression entries in the context description grammar and against one or more expected contexts stored in a context stack;

scoring each of the identified matching contexts;

selecting the matching context having a highest score to determine a most likely context for the utterance; and

communicating a request to a domain agent configured to process requests in the most likely context for the utterance, the request formulated using at least one grammar expression entry in the context description grammar.

U.S. Patent 7,640,160 B2

(12) United States Patent
(10) Patent No.: US 7,640,160 B2
(45) Date of Patent: Dec. 29, 2009

(54) SYSTEMS AND METHODS FOR
RESPONDING TO NATURAL LANGUAGE
SPEECH UTTERANCE

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 190 days.

(21) Appl. No.: 11/077,204

(22) Filed: Aug. 5, 2005

(65) Prior Publication Data
US 2007/0039065 A1 Feb. 8, 2007

(51) Int. Cl.
G10L 15/08 (2006.01)
G10L 15/04 (2006.01)
G10L 15/06 (2006.01)
G10L 15/07 (2006.01)

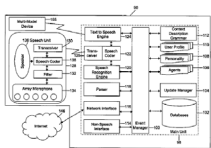
(52) U.S. Cl.
704/257; 704/9; 704/251

(56) Field of Classification Search
See application file for complete search history.

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10 Claims, 8 Drawing Sheets



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U.S. Patent 7,640,160 B2
EX1001

Instituted Ground

Ground	Claim	Basis for Challenge under §103
1	12	Kennewick (EX1004) and Ross (EX1005)

Prior Art

Kennewick (EX1004)

(19) United States

(12) Patent Application Publication (10) Pub. No.: US
Kennewick et al. (43) Pub. Date:

(54) SYSTEMS AND METHODS FOR
RESPONDING TO NATURAL LANGUAGE
SPEECH UTTERANCE

Related U.S. A
(60) Provisional application
3, 2002.

(76) Inventors: Robert A. Kennewick, Seattle, WA
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(US); Tom Freeman, Mercer Island,
WA (US)

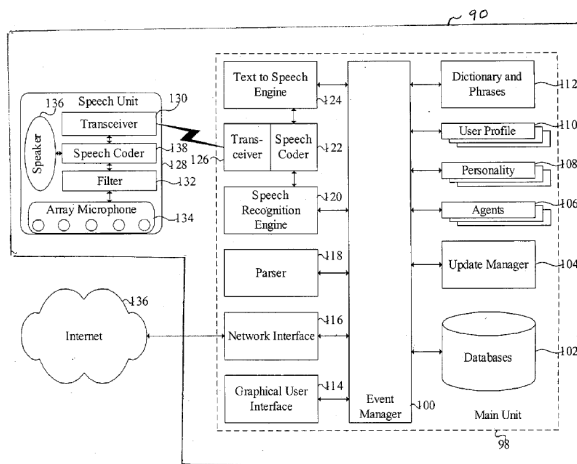
Publication C
(51) Int. Cl.⁷
(52) U.S. Cl.
(57) ABST

Systems and methods for rece
and/or commands and execu
mands. The systems and met
cies of prior art speech query
the application of a comple
query, retrieval, presentation
This environment makes sig
information, domain knowles
data to achieve a natural env
making queries or commands
this integrated approach, a complete speech-based natural
language query and response environment can be created.
The systems and methods creates, stores and uses extensive
personal profile information for each user, thereby improv
ing the reliability of determining the context and presenting
the expected results for a particular question or command.

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(21) Appl. No.: 10/452,147

(22) Filed: Jun. 3, 2003



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(19) United States

(12) Patent Application Publication
Kennewick et al.

(10) Pub. No.: US 2004/0044516 A1
(43) Pub. Date: Mar. 4, 2004

(54) SYSTEMS AND METHODS FOR
RESPONDING TO NATURAL LANGUAGE
SPEECH UTTERANCE

Related U.S. Application Data

(60) Provisional application No. 60/384,388, filed on Jun.
3, 2002.

- Shares common named inventor with '160 patent (Robert Kennewick)
- Much of Kennewick incorporated nearly verbatim into '160 patent

(Petition at 12; see also EX1007 (redline comparison between '160 and Kennewick (EX1004)))

Kennewick (EX1004)

- Much of Kennewick incorporated nearly verbatim into '160 patent

Fig. 1, Kennewick

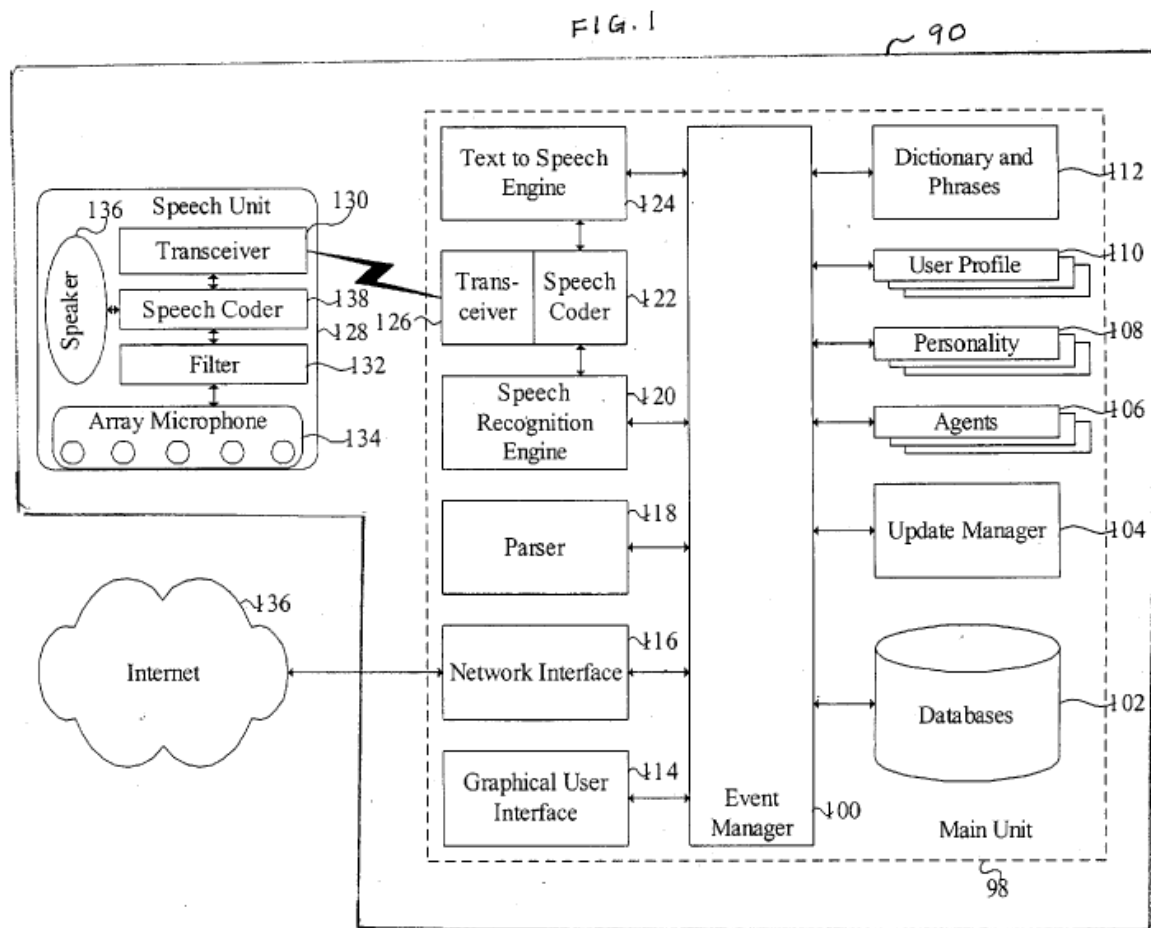
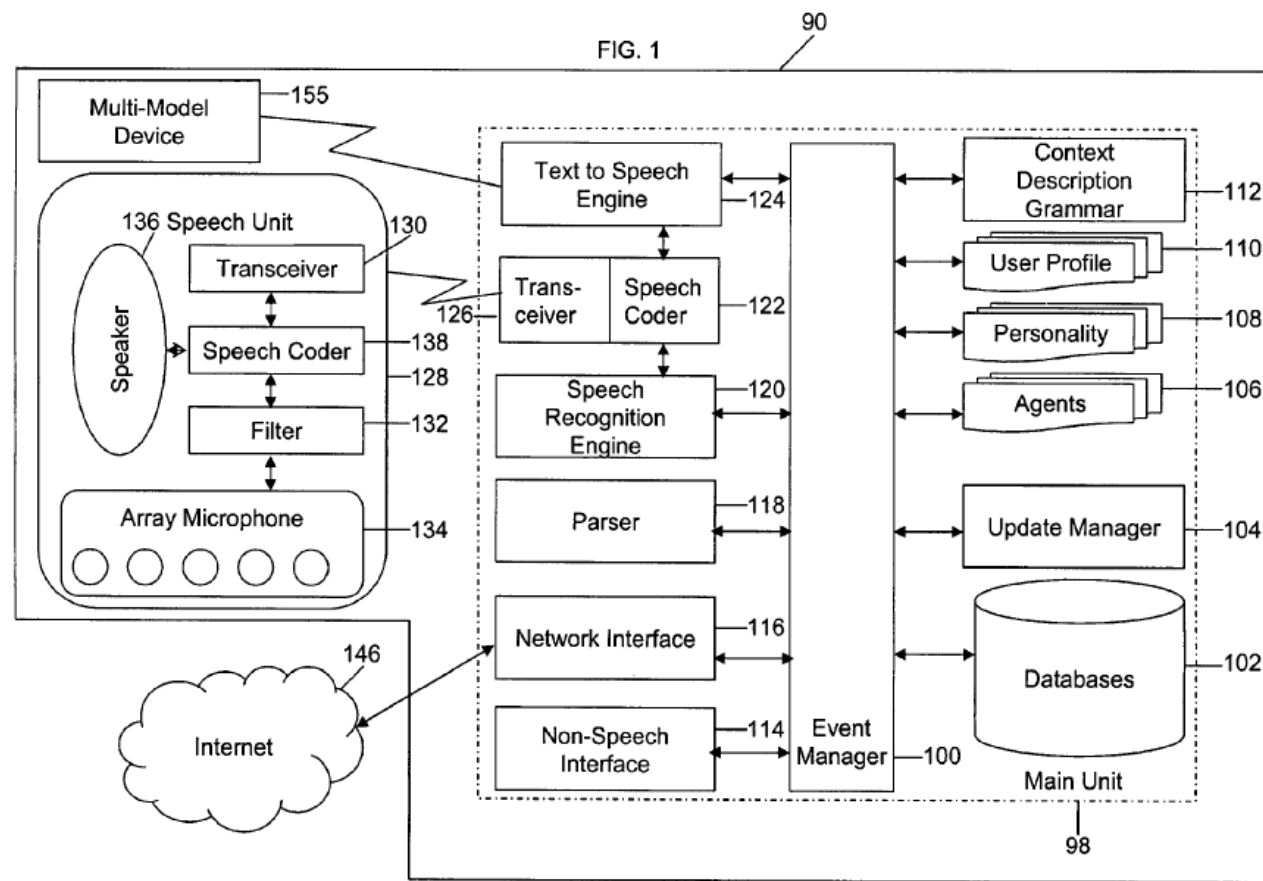


Fig. 1, '160 patent



(Petition at 11 ('160 Fig. 1), 22 (Kennewick (EX1004), Fig. 1))

(19) United States

(12) Patent Application Publication (10) Pub. No.:
Ross et al. (43) Pub. Date:

(54) SYSTEM AND METHOD FOR
DETERMINING UTTERANCE CONTEXT IN
A MULTI-CONTEXT SPEECH APPLICATION

(75) Inventors: Steven I. Ross, S. Hamilton, MA (US);
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(73) Assignee: International Business Machines Corporation, Armonk, Armonk, NY 01504

(21) Appl. No.: 09/931,505

(22) Filed: Aug. 16, 2001

US
(51) Int. Cl.
(52) U.S. CL.
(57)

A speech center
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(19) United States

(12) Patent Application Publication
Ross et al.

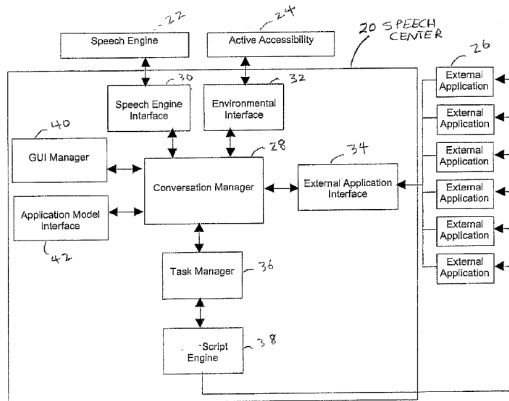
(10) Pub. No.: US 2002/0133354 A1

(43) Pub. Date: Sep. 19, 2002

(54) SYSTEM AND METHOD FOR
DETERMINING UTTERANCE CONTEXT IN
A MULTI-CONTEXT SPEECH APPLICATION

Related U.S. Application Data

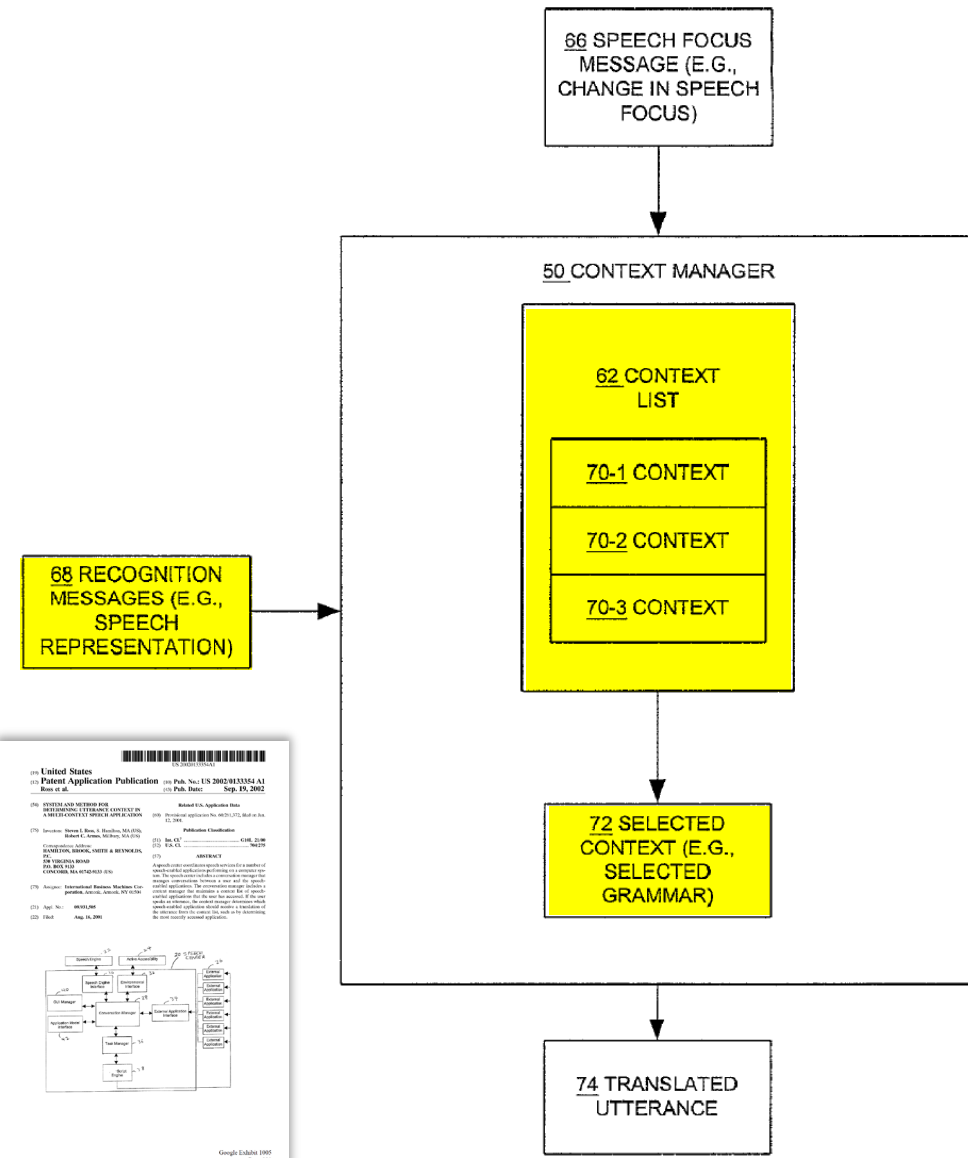
(60) Provisional application No. 60/261,372, filed on Jan. 12, 2001.



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- Techniques for determining a context associated with user's spoken command or question to determine an application to invoke to process the command or question

(Petition at 31; Ross (EX1005), ¶¶0010, 0013)



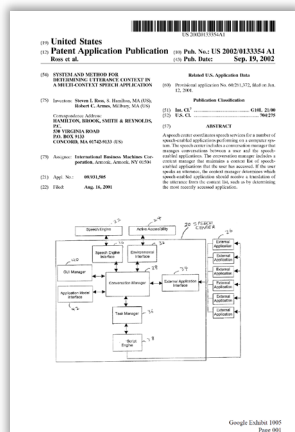
- Compares speech-to-text against contexts in context list to select appropriate application to invoke

For example:

- “print the first message” → email
- “print the first appointment” → calendar

- Contexts can include grammars, list of keywords or phrases (and other approaches)

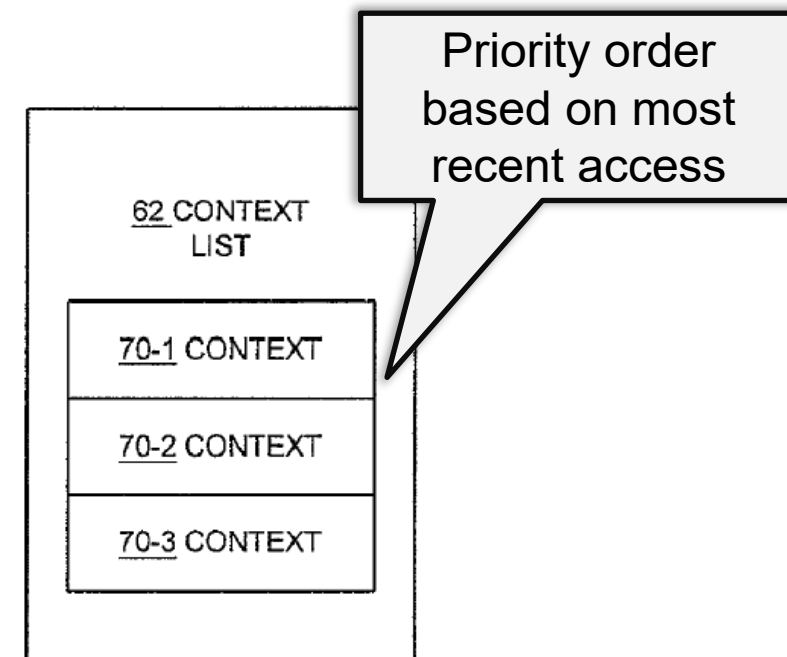
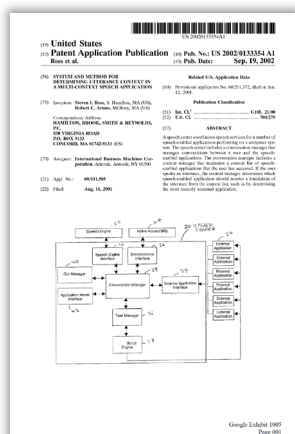
[0060] In a preferred embodiment, the grammar used for each speech-enabled application 26 may be a Backus Naur Form (BNF) grammar as shown above. In other embodiments, context 70 may include another type of grammar, lists of keywords or phrases, hashed lists of words, or other suitable approaches to allow identification of a phrase as acceptable to a speech-enabled application 26.



- Priority ordering of contexts in context list

module priorities and grammar states. Recognition messages 68 from the speech engine interface 30 are tested by the context manager 50 against the active grammars in the context list 62 in **priority order**. When a successful match is found, the corresponding translation 74 is dispatched to the script engine 38 for execution, and the priority of the matching grammar (i.e., selected context 72) is raised.

Likewise, whenever an application 26 which is not the top priority application 26 is chosen as the target for a speech command, the application 26 indicated by the selected context 72 will move to the head of the list 62. In this way, the last application 26 that the user touched or talked to will get the first opportunity at interpreting the next user utterance, and the other applications 26 will be **ordered in a most-recently-accessed way**.



Key Disputes

Key Disputes

- Whether prior art discloses “**expected contexts**” as claimed
 - Whether claim requires, and prior art discloses, entirely separate “**identifying**” and “**scoring**” steps
12. A method for interpreting natural language utterances using knowledge-enhanced speech recognition engine, wherein the knowledge-enhanced speech recognition engine is configured to determine an intent and correct false recognitions of the natural language utterances, comprising:
- [a] receiving a transcription of a natural language utterance at a computer comprising the knowledge-enhanced speech recognition engine;
 - [b] **identifying** one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the matching contexts includes comparing the text combinations against the grammar expression entries in the context description grammar and against **one or more expected contexts** stored in a context stack;
 - [c] **scoring** each of the identified matching contexts;
 - [d] selecting the matching context having a highest score to determine a most likely context for the utterance; and
 - [e] communicating a request to a domain agent configured to process requests in the most likely context for the utterance, the request formulated using at least one grammar expression entry in the context description grammar.

“expected contexts”

Petition provided three alternative mappings for “**expected contexts**”:

- (1) Kennewick alone – “possible contexts”
- (2) Kennewick alone – contexts associated with earlier questions
- (3) Kennewick in view of Ross

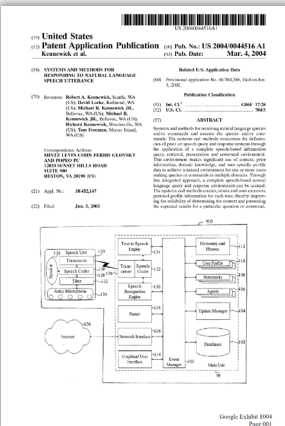
“expected contexts” – first mapping

“expected contexts” – Petitioner

Kennewick matches against “possible contexts”

[0152] Once the words and phrases have been recognized by the speech recognition engine 120, the tokens and user identification is passed to the parser 118. The parser 118 examines the tokens for the questions or commands, context and criteria. The parser 118 determines a context for an utterance by applying prior probabilities or fuzzy possibilities to keyword matching, user profile 110, and dialog history. The context of a question or command determines the domain and thereby, the domain agent 156, if any, to be evoked. For example, a question with the keywords “temperature” implies a context value of weather for the question. The parser dynamically receives keyword and associated prior probability or fuzzy possibility updates from the system agent 150 or an already active domain agent 156. Based on these probabilities or possibilities the possible contexts are scored and the top one or few are used for further processing.

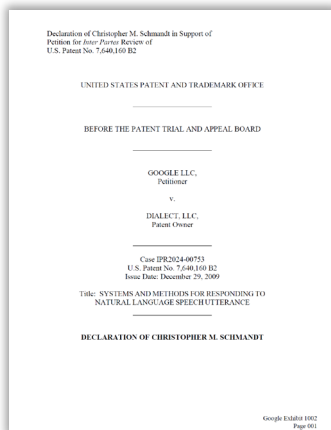
(Kennewick (EX1004), ¶0152)
(Petition at 38, 42; Reply at 2)



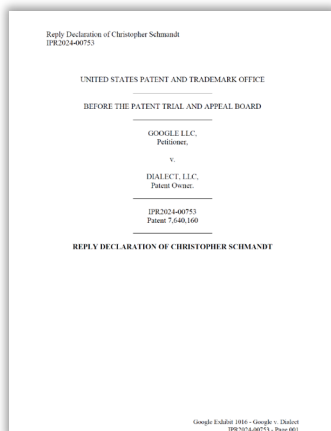
“expected contexts” – Petitioner

Kennewick’s “possible contexts” are “expected contexts”

Petitioner’s expert:



top one or few are used for further processing.” (Kennewick, ¶¶0152.) Therefore, because these “possible contexts” are recognized as possibly matching the user’s intent, the “possible contexts” are a first way that Kennewick discloses the “one or more expected contexts.” Kennewick further discloses that possible contexts



Kennewick, ¶¶0144-0145).) In other words, Kennewick’s “possible contexts” are “expected contexts” because Kennewick’s processing reflects an anticipation, or expectation, that they may match the user’s intent. Notably, neither claim 12 nor the

(EX1002, ¶¶78; EX1016, ¶4)
(Petition at 38; Reply at 2)

Patent Owner argues:

- “expected contexts” are a “subset” and do not include every entry in a context stack
- “expected contexts” part of a different embodiment than “possible contexts”
- “possible contexts” are scored, but “expected contexts” are used to identify matching contexts

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” are a “subset” and do not include every entry in a context stack

Petitioner Response:

language. Claim 12 simply recites “**one or more expected contexts stored in a context stack.**” Nothing in the plain language of claim 12 requires that this claimed context stack also store other contexts—the claimed context stack could exclusively store expected contexts. (EX1016, ¶14.) Other contexts, whether expected or not, could be stored apart from these expected contexts, such as in a different context stack or not even on a context stack at all. This straightforward understanding of the

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” are a “subset” and do not include every entry in a context stack

Petitioner Response (cont’d):

Moreover, there is likewise no basis in the written description for this requirement. Patent Owner relies on the ’160 patent’s statement that “[t]he knowledge-enhanced speech recognition may access a set of expected contexts that are stored in a context stack to determine a most likely context.” (POR, p.25 (citing ’160, 13:64-14:2).) Putting aside that claim 12 does not even recite a “set” of

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” are a “subset” and do not include every entry in a context stack

Petitioner Response (cont’d):

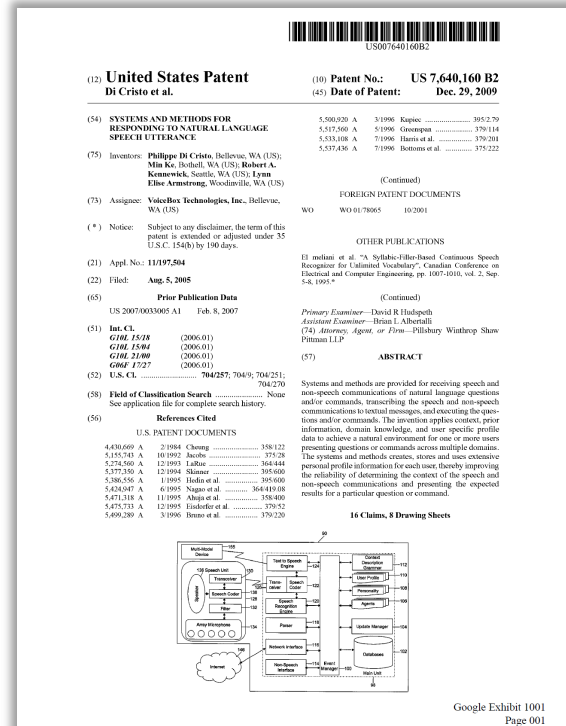
’160, 13:64-14:2).) Putting aside that claim 12 does not even recite a “set” of expected contexts, nothing about this statement requires that the “set of expected contexts” be only a subset of contexts stored in that context stack. For example, there is nothing about a “set” being “stored in a...stack” that requires that stack to store anything additional—the “set of expected contexts” alone, based on their ordering, could comprise a context stack. (EX1016, ¶15.) In other words, the “set” describes a logical collection, while the “context stack” describes how that set is actually stored. (EX1016, ¶15.) Patent Owner’s requirement that “the processing

request and/or to correct false recognitions. The knowledge-enhanced speech recognition may access a set of expected contexts that are stored in a context stack to determine a most likely context. The knowledge-enhanced speech recognition

(’160, 13:64-14:2)
(Reply at 7-8)

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” part of a different embodiment than “possible contexts”



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According to another embodiment of the invention, if a match is not found, or only a partial match is found, between the text message and active grammars, then a knowledge-enhanced speech recognition system may be used to semantically broaden the search. The knowledge-enhanced speech recognition system may be used to determine the intent of the request and/or to correct false recognitions. The knowledge-enhanced speech recognition may access a set of **expected contexts** that are stored in a context stack to determine a most likely context. The knowledge-enhanced speech recognition may use context specific matchers that are able to identify context such as time, location, numbers, dates, categories (e.g., music, movies, television, addresses, etc.) and other context. The matching may be performed by comparing a character, group of characters, a word, group of words, and other text combinations. Alternatively, or in addition to text based matching, the matching may be performed using phonetic matching, among other techniques. The results of any match may be used to generate a command and/or request that is communicated to agents 106 for additional processing. According to one embodiment of the invention, non-speech interface 114 may show system, state and history information in a more concise manner than is possible through the speech interface. Non-speech interface 114 may be accessed to create or extend capabilities of agents 106. These operations may include scripting of agents, adding data to the agent or databases 102 used by the agent, adding links to information sources, among other operations.

(‘160, 13:60-14:20)
(POR at 16-17)

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” part of a different embodiment than “possible contexts”

Petitioner Response:



“[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.”

GE Lighting Solutions, LLC v. AgiLight, Inc., 750 F.3d 1304, 1309 (Fed. Cir. 2014)
(quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004))

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” part of a different embodiment than “possible contexts”

Petitioner Response (cont’d):

No clear indication to limit claims—for example:

F.3d 898, 913 (Fed. Cir. 2004)). Here, not only does the ’160 patent disclose multiple embodiments, the particular embodiment Patent Owner points to is described as yet “another embodiment.” The patent does not describe it as a distinct invention or otherwise clearly indicate that claims should be limited to that embodiment, through disavowal, lexicography or otherwise. (EX1016, ¶16.) For example, the passage Patent Owner points to has no discussion of scoring matching contexts, which indicates that the passage should not be read in isolation, but rather as a part of the entire written description. (EX1016, ¶16.) Moreover, the ’160 patent

“expected contexts” – Response to Patent Owner

Patent Owner argues: “expected contexts” part of a different embodiment than “possible contexts”

Petitioner Response (cont’d):

No clear indication to limit claims—for example:

as a part of the entire written description. (EX1016, ¶16.) Moreover, the ’160 patent

also separately describes how “agents may update a context stack to enable follow-

up requests.” (’160, 3:14-15 (“The agents may update a context stack to enable

follow-up requests.”), 13:57-59 (“Agents 106 may update a context stack, that

includes an ordered list of command contexts, to enable follow-up requests.”).) A

person of ordinary skill in the art would have recognized that these context stack

updates to enable follow-up requests would comprise “**expected contexts**” just as in

Kennewick; and the patent provides no reason to exclude them. (EX1016, ¶16.)

generator module. Agents 106 may update a context stack, that includes an ordered list of command contexts, to enable follow-up requests.

(’160, 3:14-15)
(Reply at 9)

“expected contexts” – Response to Patent Owner

Patent Owner argues: “possible contexts” are scored, but “expected contexts” are used to identify matching contexts

Petitioner Response:



A “comprising” claim is “inclusive or open-ended and does not exclude additional, unrecited elements or method steps.”

CIAS, Inc. v. Alliance Gaming Corp., 504 F.3d 1356, 1360-61 (Fed. Cir. 2007)

“expected contexts” – Response to Patent Owner

Patent Owner argues: “possible contexts” are scored, but “expected contexts” are used to identify matching contexts

Petitioner Response (cont’d):

matching contexts,” the claim does not exclude scoring other contexts. Claim 12

does not recite, for example, “scoring only the identified matching contexts.” In

fact, step 12[b] broadly recites that “**identifying...includes**” a comparison against

expected contexts; it does not say that identifying is limited to only the recited

comparisons. Moreover, the scoring step 12[c] could take place in parallel with, or

even as part of, the identifying step 12[b] performed by Kennewick. I disagree that

“expected contexts” – Response to Patent Owner

Patent Owner argues: “possible contexts” are scored, but “expected contexts” are used to identify matching contexts

Petitioner Response (cont’d):

Kennewick:

[0152] Once the words and phrases have been recognized by the speech recognition engine 120, the tokens and user identification is passed to the parser 118. The parser 118 examines the tokens for the questions or commands, context and criteria. The parser 118 determines a context for an utterance by applying prior probabilities or fuzzy possibilities to keyword matching, user profile 110, and dialog history. The context of a question or command determines the domain and thereby, the domain agent 156, if any, to be evoked. For example, a question with the keywords “temperature” implies a context value of weather for the question. The parser dynamically receives keyword and associated prior probability or fuzzy possibility updates from the system agent 150 or an already active domain agent 156. Based on these probabilities or possibilities the possible contexts are scored and the top one or few are used for further processing.

(Kennewick (EX1004), ¶0152)
(Reply at 10; Petition at 38, 42)

“expected contexts” – second mapping

Kennewick matches against contexts associated with earlier questions

[0144] While the invention is intended to be able to accept most any natural language question or command, ambiguity can still be a problem. To assist users formulate concise questions and commands the system 90 may support a voice query language. The language is structured to allow a variety of queries with minimal ambiguity. Thus, the voice query language helps users clearly specify the keywords or contexts of the question or command along with the parameters or criteria. The language provides a grammar to clearly specify the keyword used to determine the context and a set of one or criteria or parameters. A user asking a question or stating a command in the voice query language is nearly always guaranteed to receive a response.

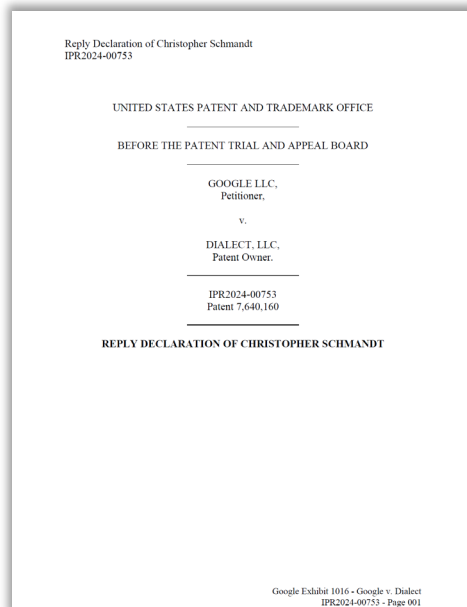
[0145] The voice query language may be sensitive to the contents of the context stack. Thus, a following-on question can be asked using an abbreviated grammar, since key words and criteria can be inherited from the stack. For example, the user can simply asked about another keyword if the criteria of the question remain constant.

[0166] The domain agent 156 evaluates the results of the one or more queries as they arrive. The domain agent 156 scores the relevance of the results based on results already received, the context, the criteria, the history of the dialog, the user profile 110 and domain specific information using probabilistic or fuzzy scoring techniques. Part of the dialog history is maintained in a context stack. The weight of each context for the scoring is based on the relevance of one context to another and the age of the contexts. Other scoring variables can be associated through the context stack. Contexts can also be exclusive, so that previous contexts have no weight in the scoring.

“expected contexts” – Petitioner

Kennewick’s contexts associated with earlier questions are “expected contexts”

Petitioner’s expert:



expected contexts.” (EX1002, ¶78.) The contexts associated with earlier dialog are “expected contexts” because they are contexts anticipated to match “follow-on” dialog—as shown by Kennewick’s teaching that a “following-on question can be asked using an abbreviated grammar.” (EX1002, ¶78 (quoting Kennewick, ¶¶0144-0145).) These expected contexts enable “the user [to] simply ask[] about another keyword if the criteria of the question remain constant.” (EX1002, ¶78 (quoting Kennewick, ¶¶0144-0145).)

(EX1016, ¶6)
(Reply at 4; see also Petition at 39)

Patent Owner argues:

- Kennewick’s contexts associated with earlier questions are scored, but “expected contexts” are used to identify matching contexts
- Kennewick does not identify which entries in a context stack are considered “expected contexts,” or how a search of a following-on question utterance is limited to “expected contexts”

“expected contexts” – Response to Patent Owner

Patent Owner argues: Kennewick’s contexts associated with earlier questions are scored, but “expected contexts” are used to identify matching contexts

Petitioner Response:

Kennewick teaches using contexts associated with earlier questions(s) to identify matching contexts

expected contexts.” (EX1002, ¶78.) The contexts associated with earlier dialog are “expected contexts” because they are contexts anticipated to match “follow-on” dialog—as shown by Kennewick’s teaching that a “following-on question can be asked using an abbreviated grammar.” (EX1002, ¶78 (quoting Kennewick, ¶¶0144-0145).) These expected contexts enable “the user [to] simply ask[] about another keyword if the criteria of the question remain constant.” (EX1002, ¶78 (quoting Kennewick, ¶¶0144-0145).)

(Reply at 4, 15; Petition at 38-39)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Kennewick does not identify which entries in a context stack are considered “expected contexts,” or how a search of a following-on question utterance is limited to “expected contexts”

Petitioner Response:

(POR, p.29.) But as explained in Part II above, neither claim 12 nor the written description imposes any requirement as to the point in time when a context may be “expected,” nor is there any requirement that the system expressly flag or otherwise identify a context as “expected.” (EX1016, ¶¶4, 26, 32.) A context associated with an earlier question is an “**expected context**” by virtue of its function in Kennewick’s system in subsequently identifying matching contexts. (EX1016, ¶32.) Just like sayings such as “the best predictor of future behavior is past behavior,” tracking and using contexts associated with earlier questions reflects an expectation that the contexts will be used again. (EX1016, ¶32.) And, as a “comprising” claim, there is

“expected contexts” – Response to Patent Owner

Patent Owner argues: Kennewick does not identify which entries in a context stack are considered “expected contexts,” or how a search of a following-on question utterance is limited to “expected contexts”

Petitioner Response (cont’d):

contexts will be used again. (EX1016, ¶32.) And, as a “comprising” claim, there is nothing in claim 12 that requires the claimed identifying step to be directed only to, or to be constrained to, only “expected contexts.” *See, e.g., CLAS*, 504 F.3d at 1360-61 (“comprising” claim). In fact, as discussed, claim 12’s identifying step 12[b] broadly recites that “**identifying...includes**” a comparison against expected contexts; it does not say that identifying is limited to only the recited comparisons. (EX1016, ¶32.)

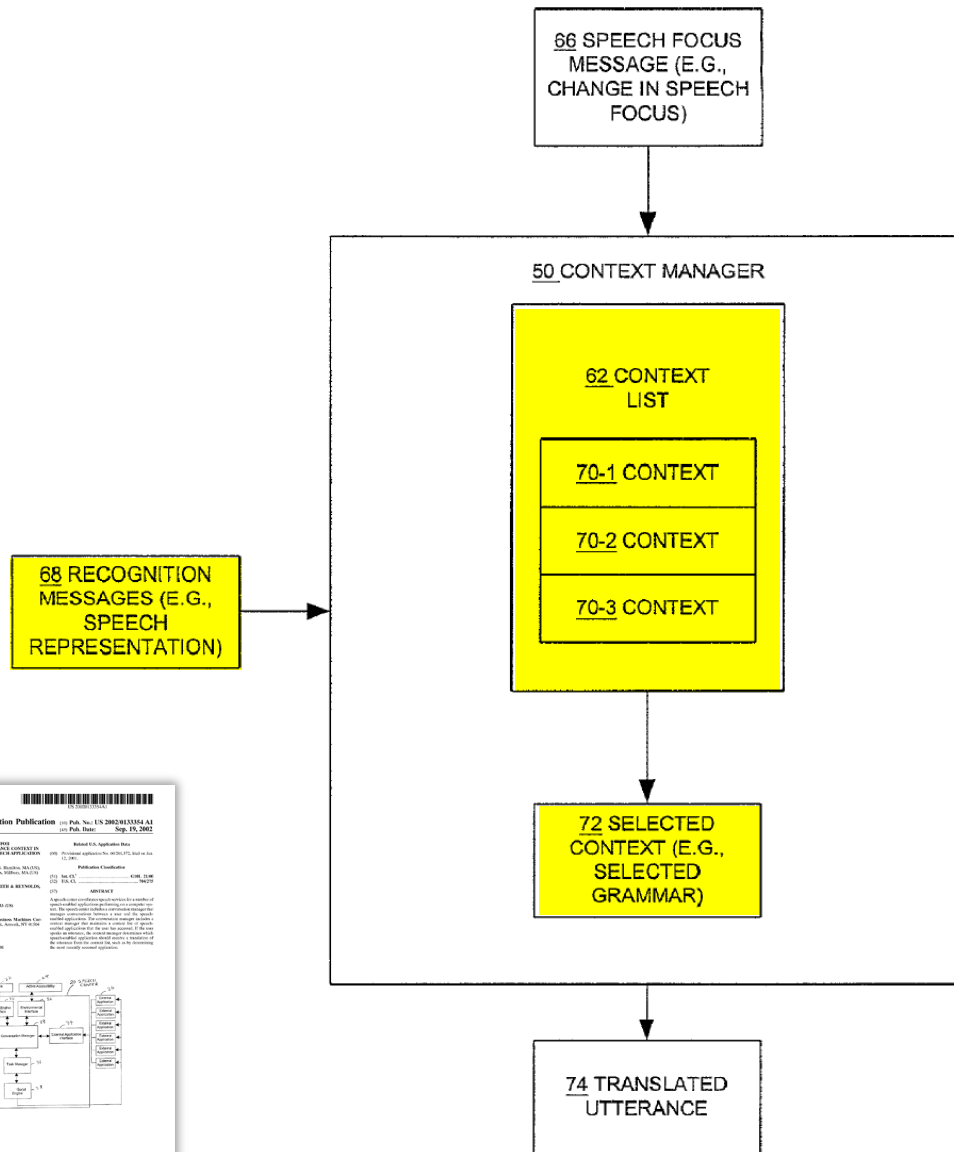
“expected contexts” – third mapping

“expected contexts” – Petitioner

- Ross compares speech-to-text against contexts in context list to select appropriate application to invoke

For example:

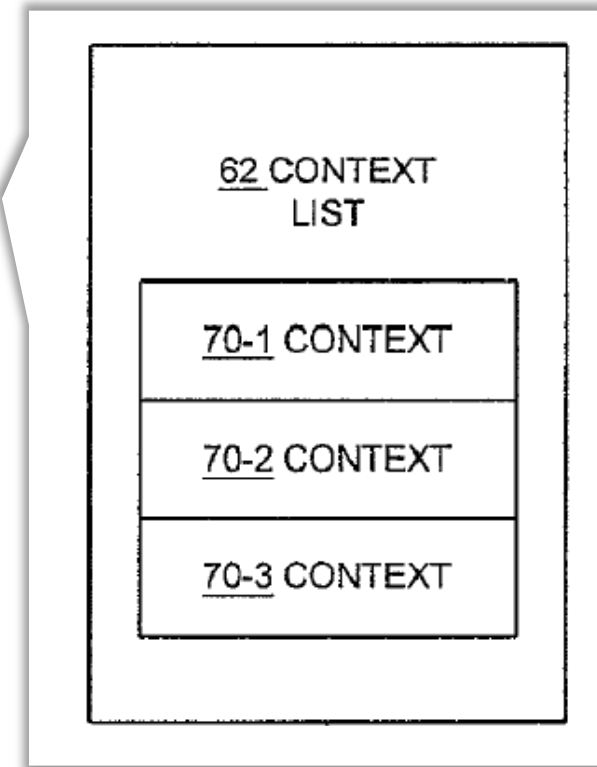
- “print the first message” → email
- “print the first appointment” → calendar



(Ross (EX1005), Fig. 4, ¶¶0052-0053; Petition at 31-32, 35-36, 39-40)

Ross matches against contexts

[0037] In step 106, if the message received in step 100 is determined to be a recognition message 68, the context manager 50 receives the recognition message 68 and selects a context 70 for a speech enabled application 26 by checking the speech representation against contexts 70, starting at top of context list 62 to determine the highest priority context 70 that can process the speech representation. For example, the context manager 50 uses the grammar associated with each context 70 to determine if the recognition message 68 is capable of being processed by that grammar. In step 108, the context manager 50 directs the speech representation to be translated according to the selected context 72 and directs the translation to the script engine 38. In step 110, the context manager 50 sends the translated utterance 74 to the speech enabled application 26 indicated by the selected context 72 to perform the action indicated by the translated utterance 74. In step 112, the context manager 50 places the selected context 72 at the top of the context list 62.



(Ross (EX1005), ¶0037)
(Petition at 40; Reply at 4)

Ross matches against contexts (cont'd)

Patent Owner's expert:

Q Okay. And so Ross at paragraph 60 says, In other embodiments context 70 may include another type of grammar, list of key words or phrases, past list of words, or other suitable approaches to allow identification of a phrase as acceptable to a speech-enabled application 26. Do you see that?

A Yes.

Q Okay. So in Ross, a context can include, for example, lists of key words or phrases, right?

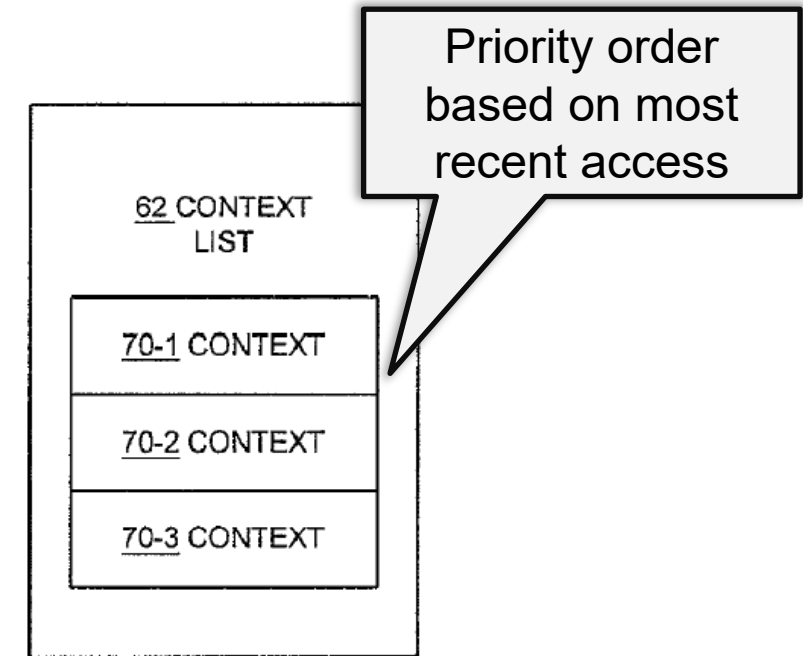
A Yeah, I've read the sentence literally, and that's what the sentence says. The context may include going to that second list of key words.

[0060] In a preferred embodiment, the grammar used for each speech-enabled application 26 may be a Backus Naur Form (BNF) grammar as shown above. In other embodiments, context 70 may include another type of grammar, lists of keywords or phrases, hashed lists of words, or other suitable approaches to allow identification of a phrase as acceptable to a speech-enabled application 26.

Ross’s contexts have priority ordering

module priorities and grammar states. Recognition messages 68 from the speech engine interface 30 are tested by the context manager 50 against the active grammars in the context list 62 in priority order. When a successful match is found, the corresponding translation 74 is dispatched to the script engine 38 for execution, and the priority of the matching grammar (i.e., selected context 72) is raised.

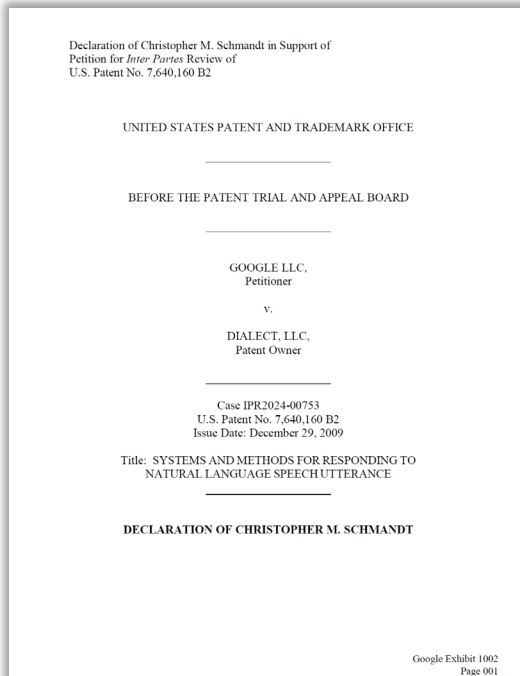
Likewise, whenever an application 26 which is not the top priority application 26 is chosen as the target for a speech command, the application 26 indicated by the selected context 72 will move to the head of the list 62. In this way, the last application 26 that the user touched or talked to will get the first opportunity at interpreting the next user utterance, and the other applications 26 will be ordered in a most-recently-accessed way.



“expected contexts” – Petitioner

Ross’s contexts are “expected contexts”

Petitioner’s expert:



applies here as well. Moreover, with respect to this portion of 12[b], it would have been obvious to combine Kennewick with Ross’s disclosures regarding storing contexts associated with accessed applications on a context stack. The combination would have predictably resulted in **“one or more expected contexts”**—such as the contexts associated with applications that had already been invoked—**“stored in a context stack.”**

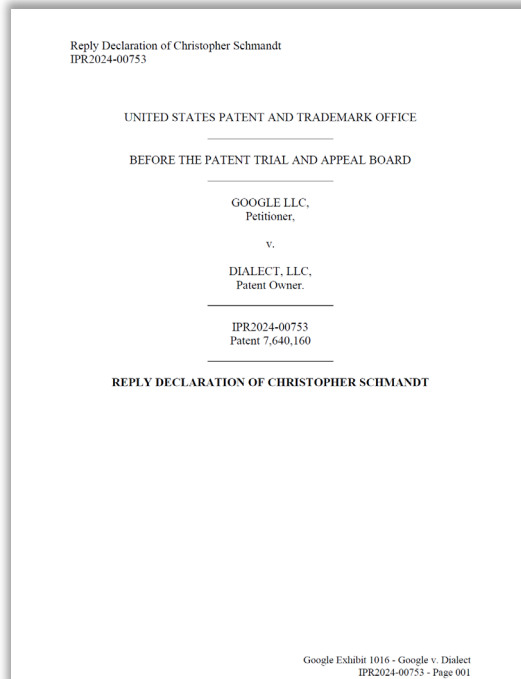
. . .

Ross, with a similar system, confirms storage of **“expected contexts”** in a **“context stack,”** and that doing so enables comparing text against the expected contexts to efficiently identify a matching context. (Ross, ¶0035 (“The speech focus priority is

(EX1002, ¶¶81-82)
(Petition at 40-41)

Ross’s contexts are “expected contexts” (cont’d)

Petitioner’s expert:



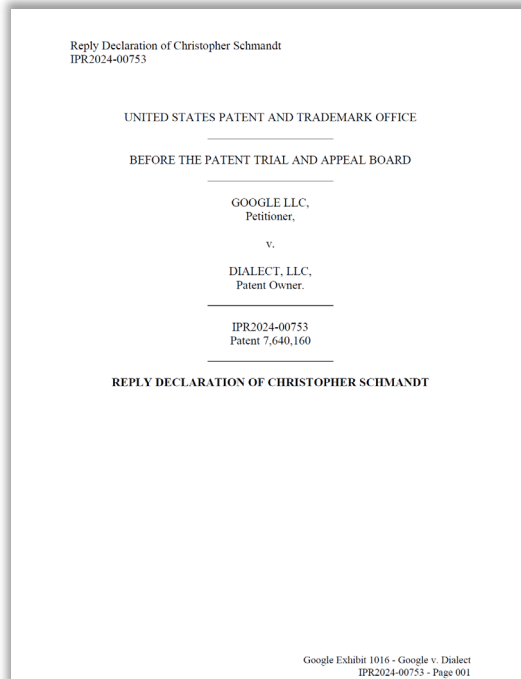
(underlining added).) This result is irrespective of Ross’s methods for later selecting an application to invoke—i.e., it is reasonable to expect that an application invoked in the past will be invoked again. And the addition of Ross’s methods for selecting an application using priority ordering reflects a reasonable heightened expectation that the most-recently accessed application (and thus its context) is more likely to match the user’s next utterance. (EX1002, ¶82 (explaining that priority ordering “enables comparing text against the expected contexts to efficiently identify a matching context”).) This common sense expectation is consistent with numerous well-known aphorisms, such as “history repeats itself,” “past is prologue,” and “the best predictor of future behavior is past behavior.”

(EX1016, ¶7)
(Reply at 4-5)

“expected contexts” – Petitioner

Ross’s contexts are “expected contexts” (cont’d)

Petitioner’s expert:



(EX1002, ¶82 (emphasis in original).) Accordingly, similar to Kennewick, the ordering of a context stack reflects expectations regarding which contexts are likely to be matched in the future—and therefore, as I explained, “[t]he combination would have predictably resulted in ‘one or more expected contexts’—such as the contexts associated with applications that had already been invoked—‘stored in a context stack.’” (EX1002, ¶81 (underlining added).) For example, in Ross, the most recently accessed context matched to process a user’s utterance, and moved as a result to the top of the context stack, is an example of an “expected context.”

(EX1016, ¶37)
(Reply at 19)

“expected contexts” – Patent Owner

Patent Owner argues:

- Ross’s process of selecting a context is “not a comparison of text combinations from an utterance against one or more expected contexts (i.e., prior utterances)”
- Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”
- Ross has no concept of “expected contexts”
- Ross only selects one grammar among the context list based on a first match

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross’s process of selecting a context is “not a comparison of text combinations from an utterance against one or more expected contexts (i.e., prior utterances)”

Petitioner Response:

Patent Owner’s argument appears to hinge on equating “**expected contexts**” with “prior utterances.” But this ignores how Petitioner mapped Ross and the proposed combination, and improperly attacks Ross individually.

. . .

For example, in Ross, the most recently accessed context matched to process a user’s utterance, and moved as a result to the top of the context stack, is an example of an “**expected context.**” Applying Ross’s “expected context” technique to Kennewick’s own contexts—either of Kennewick’s “possible contexts” or “contexts associated with earlier question(s)” —would have accordingly predictably resulted in Kennewick’s own contexts being “**expected contexts.**” (Petition, p.41; EX1016, ¶37.)

(EX1016, ¶37)
(Reply at 18-20)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross’s process of selecting a context is “not a comparison of text combinations from an utterance against one or more expected contexts (i.e., prior utterances)”

Petitioner Response (cont’d):



“A finding of obviousness... cannot be overcome ‘by attacking references individually where the rejection is based upon the teachings of a combination of references.’”

Bradium Techs. LLC v. Iancu, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (citation omitted)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

Petitioner Response:

contexts.” (POR, pp.32-35.) For starters, Patent Owner’s argument is based on a misreading of claim 12. The claim only requires comparing against one expected context: “comparing the text combinations...against one or more expected contexts stored in a context stack.” (’160, 31:4-7 (claim 12); EX1016, ¶38.) Therefore, even

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

Petitioner Response (cont’d):

But moreover, as the Board correctly recognized, Ross does disclose matching

multiple expected contexts. (DI, pp.28-29.) For example, as noted, Ross states:

[S]ince there will always be overlap between what the different application grammars will accept, the speech center 20 does not necessarily dispatch a command back to the application 26 whose grammar recognized it. Instead, when an utterance is recognized, it will be tested against each application’s grammar to see if the grammar will accept it.

(Ross, ¶0035 (underlining added).) Patent Owner attempts to dismiss this clear

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

Petitioner Response (cont’d):

But moreover, Ross teaches matching multiple contexts. For example, claim 12 of the ’160 patent states that matching can be both “partial” and “complete.” (’160, 31:1-3 (“completely or partially match one or more text combinations contained in the transcription”) (underlining added).) In Ross, the phrase “open the first message,” for example, would both completely match the electronic mail application and partially match the calendar application, because the calendar application would match the “open the first” portion that corresponds to an “open the first appointment” phrase. (Ross, ¶¶0041-0042, 0047-0048; EX1016, ¶40.)

identifying one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the matching contexts includes comparing the text combinations against the grammar expression entries in the context description grammar and against one or more expected contexts stored in a context stack;

(’160, claim 12 (excerpt))
(Reply at 21)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

Petitioner Response (cont’d):

Ross teaches matching multiple contexts:

Ross would select”) (underlining added).) Therefore, even if Patent Owner were correct about Ross, if the context for the calendar application was tested before the context for the electronic mail application, Ross would have matched multiple contexts—the first a “partial” (and unacceptable) match, and the second a “complete” (and acceptable) match. (EX1016, ¶40.)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

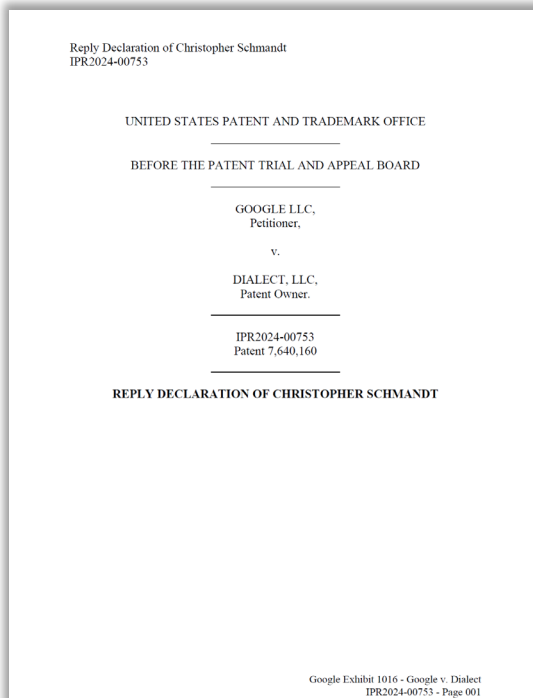
Petitioner Response (cont’d):

Patent Owner also improperly attacks Ross individually

Petitioner’s expert: *expected contexts*. In particular, as discussed in my Opening Declaration,

Kennewick expressly teaches both scoring multiple contexts and prompting a user for confirmation if a “score is not high enough to ensure a reliable response.” (EX1002, ¶¶55 (citing Kennewick, ¶¶0031, 0153) (confidence level), 78 (citing Kennewick, ¶0152), 83 (citing Kennewick, ¶0153).) It would have been obvious to a person of ordinary skill in the art, therefore, **when combining Ross with Kennewick, to adapt Ross’s context matching techniques so that multiple expected contexts were matched, identified, and scored to help ensure that the most appropriate context was selected.** (*See also* EX1002, ¶82.)

(EX1016, ¶41)
(Reply at 22-23)



“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross discloses a first-to-match system and therefore fails to disclose “expected contexts”

Petitioner Response (cont’d):

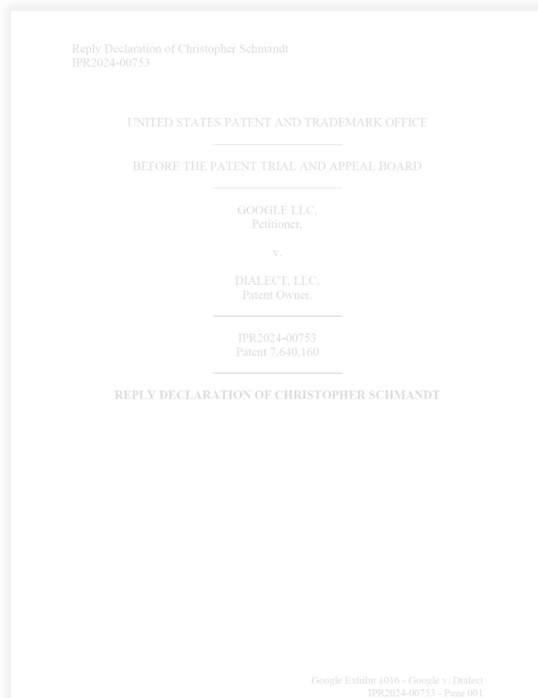
Patent Owner also improperly attacks Ross individually

Petitioner’s expert:

Kennewick:

Based on these probabilities or possibilities the possible contexts are scored and the top one or few are used for further processing.

[0153] The parser 118 uses a scoring system to determine the mostly likely context or domain for a user’s question and/or command. The score is determined from weighting a number of factors including, the user profile 110, the domain agent’s data content and previous context. Based on this scoring, the system 90 invokes the correct agent. If the confidence level of the score is not high enough to ensure a reliable response, the system 90 may ask the user to verify whether the question and/or command is correctly understood. In general, the question that is asked by the system 90



(Kennewick ¶¶0152-0153; EX1016, ¶41)
(Reply at 22-23)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross has no concept of “expected contexts”

Petitioner Response:

Patent Owner’s argument appears to be, again, that Ross does not expressly flag or distinguish between “contexts” and “expected contexts.” (POR, p.37 (“To satisfy claim 12, Petitioner would have to show that some contexts in Ross’s context list were ‘expected.’”)).) But again, as discussed in Part II above, neither claim 12 nor

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross only selects one grammar among the context list based on a first match

Petitioner Response:

(Again) Ross teaches matching multiple contexts:

Ross would select”) (underlining added).) Therefore, even if Patent Owner were correct about Ross, if the context for the calendar application was tested before the context for the electronic mail application, Ross would have matched multiple contexts—the first a “partial” (and unacceptable) match, and the second a “complete” (and acceptable) match. (EX1016, ¶40.)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross only selects one grammar among the context list based on a first match

Petitioner Response (cont'd):

However, claim 12 only requires identifying one matching context:

“identifying one or more contexts.” (’160, 31:1-7 (claim 12); EX1016, ¶44.)

Although claim 12 later recites “scoring each of the identified matching contexts,” that phrase is referring back to the “one or more contexts” identified in step 12[b], as Patent Owner’s expert agreed at his deposition. (EX1017 (Occhiogrosso Dep. Tr.), 16:2-5; *see also* EX1016, ¶45.) Because “the identified matching contexts”

And so the identified matching contexts in 12C, that's referring to the one or more contexts that were identified in Step 12B, right?

A That's my understanding.

(EX1017, 16:2-5)
(Reply at 24)

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross only selects one grammar among the context list based on a first match

Petitioner Response (cont’d):

Tr.), 16:2-5; *see also* EX1016, ¶45.) Because “the identified matching contexts”

refers back to “one or more contexts,” it does not require multiple matching contexts.

See, e.g., Mohawk Energy Ltd. v. Enventure Global Tech. Inc., Case IPR2016-00954, Paper 22, pp.17-19 (PTAB Oct. 26, 2017) (finding claim term “the tubular members” referred to antecedent “one or more tubular members,” such that the claims required only one or more tubular members) (Final Written Decision aff’d Fed. Cir. R. 36, No. 2018-1356 (Fed. Cir. Jan. 15, 2019)); *cf. Baldwin Graphic Sys.*,

“expected contexts” – Response to Patent Owner

Patent Owner argues: Ross only selects one grammar among the context list based on a first match

Petitioner Response (cont'd):

Moreover, as explained above, Patent Owner again improperly attacks Ross individually, when Petitioner’s analysis is based on the combination of Kennewick and Ross. Even if claim 12 required identifying multiple contexts, as explained in the Petition, and above, a person of ordinary skill in the art would have found it obvious under the combination to identify multiple contexts (Petition, pp.39-42), score those multiple contexts (Petition, e.g., p.42 (citing Kennewick, ¶0152 (“the possible contexts are scored and the top one or few are used for further processing”))), and select the context with a highest score to determine a most likely context (Petition, pp.43-44).

“identifying” and “scoring” steps

'160 claim 12:

identifying one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the matching contexts includes comparing the text combinations against the grammar expression entries in the context description grammar and against one or more expected contexts stored in a context stack;

scoring each of the identified matching contexts;

“identifying” and “scoring” steps – Patent Owner

Patent Owner argues:

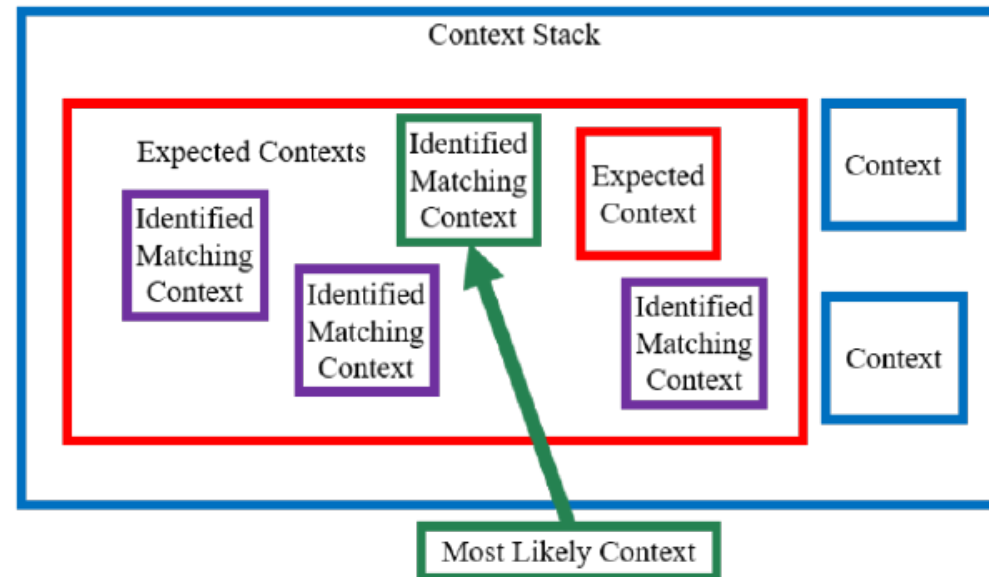
Patent Owner next argues that “Petitioner also fails to recognize the claimed order of steps imposed by the plain language of claim 12.” (POR, p.17.) The gist of Patent Owner’s argument appears to be that steps 12[b] and 12[c]—i.e., “identifying one or more contexts” and “scoring each of the identified matching contexts”—are entirely separate steps that must occur in sequence. (POR, pp.18-20.) For example, according to Patent Owner, the claim language requires that “the step of ‘scoring’ is performed on each ‘identified matching context[]’ rather than on an entire context stack, or even on each ‘expected context[].’” (POR, p.19.)

(Reply at 10-11; see PO Resp. at 18-20)

“identifying” and “scoring” steps – Patent Owner

Patent Owner argues:

Using the diagram below to illustrate, Patent Owner argues that “the claim requires a context stack with contexts, with some of those contexts being expected contexts, and with some of those expected contexts being identified as matching contexts, which are scored to select one of those identified matching contexts as a most likely context”:



(Reply at 11; see PO Resp. at 20-21)

“identifying” and “scoring” steps – Response to Patent Owner

Instead, put simply, claim 12 is a “comprising” claim. It is well-established that a “comprising” claim is “inclusive or open-ended and does not exclude additional, unrecited elements or method steps.” *CLAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360-61 (Fed. Cir. 2007). Therefore, for example, when claim 12 recites “scoring each of the identified matching contexts,” the claim does not exclude scoring other contexts. (EX1016, ¶21.) Claim 12 does not recite, for example, “scoring only the identified matching contexts.” In fact, step 12[b] broadly recites that “**identifying...includes**” a comparison against expected contexts; it does not say that identifying is limited to only the recited comparisons. (EX1016, ¶21.)

“identifying” and “scoring” steps – Response to Patent Owner (cont’d)

Moreover, the scoring step 12[c] could take place in parallel with, or even as part of, the identifying step 12[b] performed by Kennewick. *See, e.g., Google LLC v. Personal Audio, LLC*, 743 F. App’x 978, 985 (Fed. Cir. 2018) (“The Board’s holding is consistent with the principle that in infringement or obviousness analysis, a single element, feature, or mechanism can ordinarily satisfy multiple claim limitations, including by performing multiple claimed functions.”) (underlining

Thank you