**IN THE UNITED STATES DISTRICT COURT**
**FOR THE DISTRICT OF DELAWARE**

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|---|---|
| VB Assets, LLC,<br><br>Plaintiff,<br><br>v.<br><br>AMAZON.COM SERVICES LLC,<br><br>Defendant. | C.A. No. 1:24-cv-00839-MN<br><br>**DEMAND FOR JURY TRIAL** |

**DEFENDANT'S PRELIMINARY INVALIDITY CONTENTIONS**

## I. INTRODUCTION

Pursuant to paragraph 7(d) of the Court's Scheduling Order, defendant Amazon.com Services LLC ("Defendant" or "Amazon"), provides the following preliminary invalidity contentions to plaintiff VB Assets, LLC. ("Plaintiff" or "VBA") regarding the currently asserted claims of U.S. Patent Nos. 10,297,249 ("the 249 patent"); 10,755,699 ("the 699 patent"); 11,087,385 ("the 385 patent"); 11,080,758 ("the 758 patent"); and 9,502,025 ("the 025 patent") (collectively, the "Asserted Patents").

Plaintiff has asserted the following claims of the Asserted Patents against Amazon in this case (collectively, the "Asserted Claims").

| Patent | Asserted Claims |
|---|---|
| 249 Patent | 1-2, 7-15 |
| 699 Patent | 1-10, 12-21 |
| 385 Patent | 1-15, 31-34 |
| 758 Patent | 1-14, 17-22 |
| 025 Patent | 1-7, 8-17, 19 |

Amazon is providing its initial invalidity contentions for the above-identified Asserted Claims of the Asserted Patents. Amazon is providing these contentions for only those Asserted Claims of the Asserted Patents that Plaintiff identified pursuant to paragraph 7(c) of the Court's Scheduling Order (D.I. 19). To the extent VBA later attempts to assert additional claims against Amazon, Amazon reserves the right to amend these contentions and contend that any additional claims are also invalid. Amazon's Invalidity Contentions are not an admission of validity as to any other claims of the Asserted Patents.

Pursuant to paragraph 7(d) of the Court's Scheduling Order (D.I. 19), and based on Amazon's investigation and knowledge developed to date, Amazon: (a) identifies each currently known item of prior art that anticipates and/or renders obvious the Asserted Claims; (b) states whether each such item of prior art anticipates the Asserted Claims or renders the Asserted Claims obvious (alone or in combination); (c) provides claim charts identifying where specifically in each item of prior art each element of the Asserted Claims is found; and (d) identifies grounds of invalidity of the Asserted Claims under 35 U.S.C. § 112 based on indefiniteness, enablement, and/or written description.

Contemporaneously with these invalidity contentions, Amazon produces the documents required by paragraph 4(d) of the Default Standard. This includes the prior art identified herein.

Amazon incorporates by reference all prior art references, charts, theories, and disclosures served on VBA in any prior or pending court action or proceeding before the Patent Trial and Appeal Board involving any of the Asserted Patents or related patents as though set forth fully herein, including but not limited to, *VB Assets, LLC v. Amazon.com, Inc.*, No. 19-cv-01410-MN (D. Del.), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01346 (Jul. 23, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01367 (Jul. 28, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-

01374 (Jul. 28, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01377 (Jul. 29, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01380 (Jul. 29, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01381 (Jul. 29, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01388 (Jul. 29, 2020), *Amazon.com, Inc. v. VB Assets, LLC*, IPR2020-01390 (Jul. 29, 2020).

Amazon's invalidity contentions are based on information reasonably available at this time with respect to the Asserted Claim(s), and are necessarily preliminary and may require subsequent amendment, modification, and/or supplementation. Amazon reserves the right to amend, modify, and/or supplement these invalidity contentions based on, among other things, amendments, modifications or supplements to VBA's infringement contentions, further investigation, third-party discovery, fact or expert discovery and/or evaluation of the scope and content of the prior art (including, for example, the prior art from any other cases in which VBA asserts one or more of the Asserted Patents), disclosure of the parties' claim constructions, an order construing the Asserted Claims, new developments in the case, or any other basis contemplated by the Federal Rules of Civil Procedure, the Court's Local Rules, and any other applicable order entered by the Court.[1]

Moreover, fact discovery is ongoing, and Amazon has not obtained in this case deposition testimony from the named inventors of the Asserted Patents or any third party, including, without limitation, deposition of any third party identified in these invalidity contentions. Amazon expects further discovery will reveal additional prior art, including related disclosures and corresponding evidence for many of the prior art references identified herein. As such, Amazon has not yet completed their investigation, discovery or analysis of matters relating to the validity or

[1] *See, e.g.*, Default Standard for Discovery, Including Discovery of Electronically Stored Information ("ESI"), at ¶ 4 n.3 ("As these disclosures are 'initial,' each party shall be permitted to supplement.").

enforceability of the Asserted Claim(s), including, without limitation, invalidity due to on-sale statutory bars, public use statutory bars, improper inventorship, or unenforceability due to inequitable conduct. The disclosures herein are not and should not be construed as a statement that no other persons have discoverable information, that no other documents, data compilations, and/or tangible things exist that any Amazon may use to support its claims or defenses, or that no other legal theories or factual bases will be pursued. Accordingly, Amazon reserves the right to amend, modify and/or supplement these invalidity contentions as additional information is discovered, identified or otherwise appreciated, including testimony about the scope and content of the prior art and the claimed inventions. Further, Amazon is still evaluating the large universe of potential prior art to identify additional prior art systems, publications related to those systems, and the proper third parties from which to seek such discovery.

These preliminary invalidity contentions are based on the Amazon's present understanding of VBA's infringement contentions served on Amazon on March 4, 2025. Nothing in these preliminary invalidity contentions should be regarded as conceding that VBA's infringement contentions are legally or factually adequate or as necessarily reflecting the proper interpretation of the claims or an interpretation of the claims that Amazon agrees with or proposes. Amazon disputes VBA's apparent claim interpretations and will identify claim constructions for specific claim terms under the scheduling order governing this case. To the extent additional information regarding VBA's infringement contentions becomes available, Amazon anticipates that they will provide corresponding invalidity contentions correlating VBA's interpretation of the claims with the prior art and the Amazon may thus amend its invalidity contentions accordingly as applicable to the claims asserted by VBA.

Nothing in these invalidity contentions shall be treated as an admission that Amazon's accused products meet any limitation of the Asserted Claims. Amazon denies that it infringes any claim of the Asserted Patents. To the extent that any prior art reference identified by Amazon contains a claim element that is the same as or similar to an element in an accused product, inclusion of that reference in Amazon's invalidity contentions shall not be deemed a waiver of any claim construction or non-infringement position. Any use of these invalidity contentions to support any allegation of infringement would be misleading, false, and wrong as a matter of law and fact.

Unless otherwise specified, the invalidity contentions set forth herein are based on the alleged priority dates of the Asserted Patents asserted by VBA in its infringement contentions. To the extent VBA asserts entitlement to an earlier priority date for prior art purposes, Amazon reserves the right to amend these contentions. Further, nothing in these contentions constitutes an admission concerning the priority dates, conception date, or reduction to practice of the Asserted Claims of the Asserted Patents.

## II. IDENTIFICATION OF PRIOR ART

The concepts disclosed and claimed in each of the Asserted Patents are not new, and had been disclosed, and actively practiced by others prior to the claimed invention date. The prior art includes various documents, products, patents, and inventions that separately and together render the Asserted Claims invalid. In addition, as described in more detail below, claims of the Asserted Patents are invalid under 35 U.S.C. §§ 101 and 112.

Amazon asserts that the prior art listed in Exhibits A-F, individually or in combination, invalidate(s) the Asserted Claims. Amazon identifies patents, publications, and the products and systems they describe as prior art under 35 U.S.C. §§102 (a), (b), (e), (g) and §103. With respect to the 249, 699, 758, and 025 patents, which have an earliest filing or priority date before March

16, 2013 and are therefore not subject to the AIA rules relating to what qualifies as prior art, Amazon asserts that as of the date of these invalidity contentions, these products and systems were: (1) known or used in this country before the alleged invention of the claimed subject matter of the Asserted Claims; (2) in public use and/or on sale in this country more than one year before the filing date of the patent; (3) invented in this country by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the asserted claim; (4) patented or described in a printed publication in this or a foreign country; before the alleged invention of the claimed subject matter of the Asserted Claims; and/or (5) patented or described in a printed publication in this or a foreign country more than one year prior to the filing date of the patent.

With respect to the 385 patent, which has an earliest filing or priority date after March 16, 2013 and is therefore subject to the AIA rules relating to what qualifies as prior art, Amazon asserts that as of the date of these invalidity contentions, these products and systems were: (1) patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; and/or (2) described in a patent issued under 35 U.S.C. § 151, or in an application for patent published or deemed published under 35 U.S.C. § 122(b), in which the patent or application names another inventor and was effectively filed before the effective filing date of the claimed invention. These prior art products and systems and their associated patents and/or printed publications individually anticipate and/or collectively render obvious each of the Asserted Claims.

These prior art references and products disclose each and every element of one or more of the Asserted Claims either explicitly, inherently, or via an obvious combination and may also be relied upon to show the state of the art in the relevant timeframes. The date these prior art items

were offered for sale or publicly used or known, is at least as early as the date the related publications were published. Amazon anticipates that the actual dates, circumstances, and identities of individuals will be the subject of third-party discovery during this lawsuit. Amazon therefore reserves the right to modify, amend, or supplement these invalidity contentions if additional information becomes available during the course of discovery.

## A. The 758 Patent

### 1. Preliminary Identification of Invalidity Grounds

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the asserted claims of the 758 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 758 patent invalidity charts attached as Exhibit A set forth, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Amazon reserves the right to amend its invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery continues including third party discovery. Amazon explicitly reserves the right to further narrow each ground by reducing the number of references in each ground as needed to continue streamlining this case for trial. The below identification of prior art invalidity grounds in no way limits Amazon from relying on additional prior art references to establish the state of the art and knowledge of one of skill in the art, nor does it limit Amazon's other invalidity defenses including under Section 101 or Section 112.

Defendants provide the following identification of preliminary invalidity grounds for the currently asserted claims of the 758 patent:

| Claim No. | Invalidity Grounds[2] [3] under 35 U.S.C. §§ 102 and/or 103[4] |
|---|---|
| 1 | MIT Galaxy System in combination with Kennewick II, Aretoulaki, Stillman, Ramer, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>MiPad System in combination with Kennewick II, Aretoulaki, Stillman, Ramer, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>NVP System in combination with Kennewick II, Aretoulaki, Stillman, Ramer, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>Kennewick II in combination with Aretoulaki, Stillman, Ramer, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>Aretoulaki in combination with Kennewick II, Stillman, Ramer, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>Partovi in combination with Kennewick II, Aretoulaki, Stillman, Ramer, Desai, Dicker, Hao, Zsigmond, and Sloane.<br><br>Ramer in combination with Kennewick II, Aretoulaki, Stillman, Partovi, Desai, Dicker, Hao, Zsigmond, and Sloane. |
| 2 | *See* grounds of claim 1. |
| 3 | *See* grounds of claim 1. |
| 4 | *See* grounds of claim 1. |
| 5 | *See* grounds of claim 1. |
| 6 | *See* grounds of claim 1. |
| 7 | *See* grounds of claim 1. |
| 8 | Grounds of claim 1 in combination with Bocchieri or Roy. |
| 9 | *See* grounds of claim 1. |

[2] For brevity, each reference in this table is identified by its short cite, which is defined later in subsections below.

[3] To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

[4] Defendant contends that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified by itself as a ground invalidates the relevant asserted claim under 35 U.S.C. § 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under §103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

| Claim No. | Invalidity Grounds[2] [3] under 35 U.S.C. §§ 102 and/or 103[4] |
|---|---|
| 10 | *See* grounds of claim 1. |
| 11 | *See* grounds of claim 1. |
| 12 | *See* grounds of claim 1. |
| 13 | *See* grounds of claim 1. |
| 14 | *See* grounds of claim 1. |
| 17 | *See* grounds of claim 1. |
| 18 | *See* grounds of claim 1. |
| 19 | *See* grounds of claim 1. |
| 20 | *See* grounds of claim 1. |
| 21 | *See* grounds of claim 1. |
| 22 | *See* grounds of claim 1. |

The asserted claims of the 758 patent are invalid in view of the grounds identified above, A person having ordinary skill in the art would have naturally consulted each of these references and combined the teachings, for the reasons identified herein and the accompanying charts. Accordingly, a person of ordinary skill in the art at the time of filing of the asserted patents would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. One or more expert witnesses may further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid for obviousness in accordance with the case schedule.

The invalidity grounds provided above are preliminary. Additional or alternative grounds are possible, including grounds which include fewer references than identified in the above combinations or additional references, and Amazon may rely on such grounds in this litigation. Amazon is currently unaware of what claim constructions VB Assets may seek in this case.

Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by defendants as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would not have been known to persons of skill in the art. Additionally, discovery is ongoing. Amazon is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Amazon may subpoena third parties for such information. VB Assets may also be in possession of prior art that defendants may receive during discovery in this case. Amazon reserves the right to amend and supplement these contentions to identify other prior art, invalidity grounds, and combinations rendering the asserted claims invalid.

**2. Identification of Prior Art**

In accordance with paragraph 4(d) of the Default Standard, the tables below list prior art references that anticipate or render obvious one or more of the Asserted Claims are listed in the tables below. The attached claim charts in Exhibits A-1 through A-27 demonstrate where each limitation of the claims is found in certain of the references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole is understood by a person having ordinary skill in the art. At least the following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

**a. Prior Art Patents and Patent Publications That Anticipate or Render Obvious One or More Asserted Claims of the 758 Patent**

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 5,329,608 | United States | April 2, 1992 | July 12, 1994 | "Bocchieri" |

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 7,752,209 | United States | May 30, 1996 | August 13, 2002 | "Sloane" |
| United States Patent No: 7,376,586 | United States | October 22, 1999 | May 20, 2008 | "Partovi" |
| United States Patent No: 7,752,209 | United States | September 14, 2005 | July 6, 2010 | "Ramer I" |
| United States Patent No: 10,232,408 | United States | December 10, 2004 | March 19, 2019 | "Zsigmond" |
| US Patent Publication No: 2003/0078779 | United States | January 4, 2001 | April 24, 2003 | "Desai" |
| US Patent Publication No: 2003/0105682 | United States | September 18, 1998 | June 5, 2003 | "Dicker" |
| US Patent Publication No: 2004/0193420 | United States | July 15, 2002 | September 30, 2004 | "Kennewick II" |
| US Patent Publication No: 2004/0215449 | United States | June 28, 2002 | October 28, 2004 | "Roy" |
| US Patent Publication No: 2004/0230440 | United States | June 21, 2002 | November 18, 2004 | "Malhotra" |
| US Patent Publication No: 2004/0267628 | United States | June 30, 2003 | December 30, 2004 | "Stillman" |
| US Patent Publication No: 2005/0234727 | United States | July 3, 2001 | October 20, 2005 | "Chiu" |
| US Patent Publication No: 2005/0242180 | United States | April 30, 2004 | November 3, 2005 | "Byford" |
| US Patent Publication No: 2008/0189187 | United States | February 1, 2007 | August 7, 2008 | "Hao" |
| EP Patent Publication No: EP1269732 | EP | March 21, 2000 | January 2, 2003 | "Carriere" |

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| Japanese Patent Publication No: JP2003044756 | Japan | July 26, 2001 | February 14, 2003 | "Omae" |
| WO Patent Publication No: WO02/073331 | WIPO | February 20, 2001 | September 19, 2002 | "Aretoulaki" |

**b. Additional Prior Art Publications That Anticipate or Render Obvious One or More Asserted Claims of the 758 Patent**

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "The Role of a Natural Language Conversational Interface in Online Sales: A Case Study" | 2001[5] | Joyce Chai et al. | "Chai III" |
| "A User-Sensitive Spoken Dialogue System Incorporating Emotional Responsiveness" | 2002[6] | Gloria Dabiri et al. | "Dabiri" |
| "A Hybrid Dialogue Strategy for Speech-enabled Mobile Commerce" | 2005[7] | Yangdong Fan et al. | "Fan" |
| "GENIO: An Ambient Intelligence application in home automation and entertainment environment" | 2005[8] | Garate et al. | "Garate" |
| "Spoken Language Processing: A Guide to Theory, Algorithm, and System Development" | 2001[9] | Xuedong Huang et al. | "Huang III" |

[5] Published in International Journal of Speech Technology 4, pp. 285-295 (2001).

[6] Published in Methods and Applications of Artificial Intelligence, Springer (2002).

[7] Published in Proceedings of the 2005 IEEE International Conference on e-Business Engineering (ICEBE'05).

[8] Published in Proceedings of the 2005 Joint Conference on Smart Objects and Ambient Intelligence: Innovative Context-Aware Services: Uses and Technologies, pp. 245-245 (sOc-EUSAI '05). Available at https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=12c3eb1a51f4a14fdadf95e121aef1a0900ae851.

[9] This is a book published by Prentice Hall (2001). Available at https://doc.lagout.org/science/0_Computer%20Book%20published%20by%20Prentice%20Hall%20(2001).%20%26%20Hon%202001-05-05%5D.pdf.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "User Evaluation of the MASK Kiosk" | 2002[10] | Lamel et al. | "Lamel" |
| "LINGUINI: Acquiring Individual Interest Profiles by Means of Adaptive Natural Language Dialog" | 2006[11] | Rosmary Stegmann | "Stegmann" |
| MIT Galaxy[12] | | | |
| "Real-Time Telephone-Based Speech Recognition in the Jupiter Domain" | 1999[13] | James R. Glass et al. | "Glass I" |
| "Telephone-Based Conversational Speech Recognition in the Jupiter Domain" | 1999[14] | James R. Glass et al. | "Glass II" |
| "Response Planning and Generation in the Mercury Flight Reservation System" | 2002[15] | Stephanie Seneff | "Seneff I" |
| "Dialogue Management in the Mercury Flight Reservation System" | 2000[16] | Stephanie Seneff et al. | "Seneff II" |
| "Hypothesis Selection and Resolution in the Mercury Flight Reservation System" | 2001[17] | Stephanie Seneff et al. | "Seneff III" |

[10] Published in Speech Communication 38, Elsevier Science B.V., pp. 131-139 (2002).

[11] This is a Dissertation of the TUM School of Computation, Information and Technology, Rosmary Stegmann, March 30, 2006. Available at https://mediatum.ub.tum.de/doc/601808/document.pdf.

[12] Documents identified under this section of the table relate to the MIT Galaxy System identified below.

[13] Published by the Spoken Language Systems Group, Laboratory for Computer Science, MIT (1999). Available at https://sls.csail.mit.edu/publications/1999/icassp99-jupiter.pdf.

[14] Published in Fifth International Conference on Spoken Language Processing (ICSLP 98). Available at https://www.isca-archive.org/icslp_1998/glass98_icslp.pdf.

[15] Published in Computer Speech and Language 16, (2002) pp. 238-312. Available at https://people.csail.mit.edu/seneff/mercury-generation.pdf.

[16] Published by the Spoken Language Systems Group, Laboratory for Computer Science, MIT (2000). Available at https://sls.csail.mit.edu/publications/2000/acl2000.pdf.

[17] Published by the Spoken Language Systems Group, Laboratory for Computer Science, MIT (2001). Available at https://dl.acm.org/doi/pdf/10.3115/1072133.1072184.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Formal And Natural Language Generation in the Mercury Conversational System" | 2000[18] | Stephanie Seneff et al. | "Seneff IV" |
| "Galaxy-II: A Reference Architecture for Conversational System Development" | 1998[19] | Stephanie Seneff et al. | "Seneff V" |
| "Organization, Communication, And Control in The Galaxy-II Conversational System" | 1999[20] | Stephanie Seneff et al. | "Seneff VI" |
| "Multimodal Discourse Modelling in a Multi-user Multi-domain Environment" | 1996[21] | Stephanie Seneff et al. | "Seneff VII" |
| "TINA: A Natural Language System for Spoken Language Applications" | 1992[22] | Stephanie Seneff | "Seneff VIII" |
| "Orion: From On-line Interaction to Off-line Delegation" | 2000[23] | Stephanie Seneff et al. | "Orion" |
| "Jupiter: A Telephone-Based Conversational Interface for Weather Information" | 2000[24] | Victor Zue et al. | "Zue" |

[18] Published in Sixth International Conference on Spoken Language Processing (ICSLP 2000). Available at https://www.isca-archive.org/icslp_2000/seneff00b_icslp.pdf.

[19] Published by the Spoken Language Systems Group, Laboratory for Computer Science, MIT (1998). Available at https://sls.csail.mit.edu/publications/1998/icslp98-galaxy.pdf.

[20] Published by the Spoken Language Systems Group, Laboratory for Computer Science, MIT (1999). Available at https://sls.csail.mit.edu/publications/1999/eurospeech99-seneff.pdf.

[21] Published in Fourth International Conference on Spoken Language Processing (ICSLP 96). Available at https://www.isca-archive.org/icslp_1996/seneff96b_icslp.pdf.

[22] Published by Association for Computational Linguistics (1992). Available at https://aclanthology.org/J92-1004.pdf.

[23] Published in Proceedings of ICSLP'00, Vol. II, pp. 142-145 (2000). Available at http://www.ai.mit.edu/projects/oxygen/oxygen-book2001/Section4-Perceptual-Interfaces/PI-02.pdf.

[24] Published in IEEE Transactions on Speech and Audio Processing, Vol. 8, No. 1 (January 2000). Available at https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=817460.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "A Context Resolution Server for the Galaxy Conversational Systems" | 2002[25] | Edward A. Filisko | "Filisko" |
| "A Context Resolution Server for the Galaxy Conversational System" | 2003[26] | Edward A. Filikso et al. | "Filisko Publ." |
| "Recognition Confidence Scoring and Its Use in Speech Understanding Systems" | 2002[27] | Timothy J. Hazen et al. | "Hazen I" |
| "FST-Based Recognition Techniques for Multi-Lingual and Multi-Domain Spontaneous Speech" | 2001[28] | Timothy J. Hazen et al. | "Hazen III" |
| "A Language Generation Module for Conversational Systems" | 2000[29] | Lauren M. Baptist | "Baptist" |
| "ASR Dependent Techniques for Speaker Recognition" | 2002[30] | Alex S. Park | "Park" |
| "Word and Phone Level Acoustic Confidence Scoring for Speech Understanding Systems" | 1999[31] | Simo O. Kamparri | "Kamparri" |

[25] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Edward A. Filisko, June 2002. Available at

[26] Published in Eurospeech 2003 – Geneva. Available at https://www.isca-archive.org/eurospeech_2003/filisko03_eurospeech.pdf.

[27] Published in Computer Speech and Language 16, pp. 49-67 (2002). Available at https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=129000c04e7dc2f12d994e2dc2b07155b9028ac5.

[28] Published in Eurospeech 2001 – Scandinavia (2001). Available at https://sls.csail.mit.edu/archives/root/publications/2001/Hazen_FST.pdf.

[29] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Lauren M. Baptist, September 2000. Available at https://dspace.mit.edu/bitstream/handle/1721.1/81547/48252381-MIT.pdf.

[30] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Alex S. Park, May 2002. Available at https://dspace.mit.edu/bitstream/handle/1721.1/87287/51589209-MIT.pdf.

[31] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Simo O. Kamppari, September 1999. Available at https://sls.csail.mit.edu/publications/1999/msthesis-kamppari.pdf.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Towards multi-domain speech understanding using a two-stage recognizer" | 1999[32] | Grace Chung et al. | "Chung" |
| "Towards Multi-Domain Speech Understanding with Flexible and Dynamic Vocabulary" | 2001[33] | Grace Chung | "Chung Thesis" |
| "Context-dependent Probabilistic Hierarchical Sub-lexical Modelling Using Finite State Transducers" | 2001[34] | Xiaolong Mou et al. | "Mou" |
| "SLLS: An Online Conversational Spoken Language Learning System" | 2003[35] | Tien-Lok Jonathan Lau | "Lau" |
| "A Framework for Multi-Modal Input in a Pervasive Computing Environment" | 2002[36] | Shalini Agarwal | "Agarwal" |
| "Laboratory for Computer Science Spoken Language Systems: Summary of Research, 10th Anniversary Issue" | 1999[37] | Laboratory for Computer Science Spoken Language Systems | "SLS Summary" |

[32] Published in Sixth European Conference on Speech Communication and Technology (EUROSPEECH'99). Available at https://www.isca-archive.org/eurospeech_1999/chung99_eurospeech.pdf.

[33] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Grace Chung, June 2001. Available at https://sls.csail.mit.edu/publications/2001/GraceChungPhDThesis.pdf.

[34] Published in Eurospeech 2001 – Geneva. Available at https://sls.csail.mit.edu/archives/root/publications/2001/mou-sublex.pdf.

[35] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Tien-Lok Jonathan Lau, May 2003. Available at https://sls.csail.mit.edu/publications/2003/lau_thesis.pdf

[36] This is a Thesis in the Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Shalini Agarwal, May 2002. Available at https://dspace.mit.edu/bitstream/handle/1721.1/16825/51072241-MIT.pdf.

[37] Published in Laboratory for Computer Science Spoken Language Systems, Massachusetts Institute of Technology, Tenth Anniversary Issue – Summary of Research covering July 1, 1998 – June 30, 1999 (July 1999).

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "MIT Voyager Spoken Language Video" | 1989[38] | MIT | "MIT Voyager Video" |
| "MIT Galaxy Spoken Language Video" | 1994[39] | MIT | "MIT Galaxy Video" |
| "Orion: Spoken Language Task Delegation Video" | 2004[40] | MIT | "Orion Video" |
| "MIT Galaxy Source Code - Galaxy v.1.8 implementation" | 1999 - 2000[41] | MIT | "Galaxy1.8" |

[38] MIT Voyager Spoken Language Video (1989). Available at https://www.youtube.com/watch?v=zS3baF8KHSE.

[39] MIT Galaxy Spoken Language Video (1994). Available at https://www.youtube.com/watch?v=GuIMTw6QQsc.

[40] Orion: Spoken Language Task Delegation Video (2004). Available at https://www.youtube.com/watch?v=-rvWoI05hdc.

[41] The Galaxy v.1.8 implementation, which includes, for example, at least the files located at the following paths, the files identified in the MIT001.zip\Galaxy\v1.8.tar archive file, and any other files reflecting the functionality of the Galaxy v.1.8 implementation (collectively "Galaxy1.8")

- Hub.c (last modified 10/26/1999), builtin.c (12/14/1999), hub_init.c (10/26/1999), read_hub_program.c (1/6/2000), Path: Galaxy\v1.8\galaxy\src\hub\, server intialization and control
- Audio.c (1/14/2000), Path: Galaxy\v1.8\galaxy\src\audio\, audio server functions
- Nl.c (1/14/2000), genesis.c (1/6/2000), Path: Galaxy\v1.8\galaxy\src\nl\, Natural Language server functions
- Functions.c (12/14/1999), Path: Galaxy\v1.8\galaxy\src\database\, database functions
- Domain.c (12/14/1999), Path: Galaxy\v1.8\galaxy\src\libgalaxy, domain selection and processing functions
- Best_first_parser.c (11/10/1999), recognizer_interface.c (11/30/1999), spell_checker.c (10/12/1999), access_prob.c (11/30/1999), allocate.c (11/30/1999), new_words.c (2/24/1999), train_models.c (11/30/1999), load_models.c (10/21/1999), Path: Galaxy\v1.8\nl\src\libtina\parser\, Parser and natural language functions, model training, etc.
- Functions.c (11/30/1999), tiny_special_functions.c (11/30/1999), discourse_history.c (11/30/1999), update_history.c (11/30/1999), Path: Galaxy\v1.8\nl\src\libtina\semframe, generating and maintaining semantic frames, tracking discourse history, etc.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "MIT Galaxy Source Code - Jupiter implementation" | 1998[42] | MIT | "Jupiter" |
| MiPad[43] | | | |
| “MiPad Demo Video I” | 2001[44] | Microsoft | “MiPad Demo Video I” |

- Frame_to_response.c (1/2/2000), get_responses.c (9/25/1998), proc_access.c (6/26/1998), Path: Galaxy\v1.8\nl\src\appls, functions for generating responses, extracting and storing structures for museums, hotels, restaurants, etc.
- Gather.c (10/26/1999), Path: Galaxy\v1.8\galaxy\src\gather, collecting nbest and computing confidence scores
- Catalog.c (1/6/2000), message.c (1/7/2000), paraphrase.c (1/19/2000), Path: Galaxy\v1.8\nl\src\libgenesis, functions relating to domains, domain catalogs, etc.
- Functions.c (1/31/2000), process_flights.c (12/14/1999), util.c (1/6/2000), Path: Galaxy\v1.8\galaxy\src\mercury, Mercury server functions
- Functions.c (12/14/1999), util.c (12/14/1999), Path: Galaxy\v1.8\galaxy\src\pegasus, Pegasus server functions
- Functions.c (10/26/1999), Path: Galaxy\v1.8\galaxy\src\tiny_pegasus, Pegasus server functions
- Voyager.c (10/26/1999), Path: Galaxy\v1.8\galaxy\src\voyager, Voyager server functions
- Functions.c (12/20/1999), Util.c (12/30/1999), parse.c (12/14/1999), Path: Galaxy\v.1.8\galaxy\src\jupiter, Jupiter server functions
- Functions.c (12/14/1999), Path: Galaxy\v1.8\galaxy\src\evaluate\, intent evaluation of utterances, tracking failed intentions, etc.
- Travelocity.pl (10/26/1999), Path: Galaxy\v1.8\galaxy\src\travelocity, functions for interfacing with Travelocity

[42] The Jupiter implementation, which includes, for example, at least the files located at the following paths, the files identified in the MIT001.zip\Jupiter\jupiter.tar archive file, and any other files reflecting the functionality of the Jupiter implementation (collectively “Jupiter”)

- dialogue.c (6/2/1998), Path: Jupiter\dialogue.c
- functions.c (6/8/1998), Path: Jupiter\functions.c
- geography.c (5/5/1998), Path: Jupiter\geography.c
- parse.c (4/14/1998), Path: Jupiter\parse.c
- util.c (6/1/1998), Path: Jupiter\util.c

[43] Documents under this section relate to the MiPad System identified below.

[44] Available at https://www.youtube.com/watch?v=iZH5bbOHPOU.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "MiPad Demo Video II" | 2004[45] | Microsoft | "MiPad Demo Video II" |
| "MiPad: A Next Generation PDA Prototype" | 2000[46] | Xuedong Huang et al. | "Huang I" |
| "MiPad: A Multimodal Interaction Prototype" | 2000[47] | Xuedong Huang et al. | "Huang II" |
| "Microsoft Windows Highly Intelligent Speech Recognizer: Whisper" | 1995[48] | X. Huang et al. | "Huang IV" |
| "Distributed Speech Processing in MiPad's Multimodal User Interface" | 2002[49] | L. Deng et al. | "Deng I" |
| "A Speech-Centric Perspective for Human-Computer Interface" | 2002[50] | L. Deng et al. | "Deng II" |
| "Large-Vocabulary Speech Recognition Under Adverse Acoustic Environments" | 2000[51] | L. Deng et al. | "Deng III" |
| "Speech and Language Processing for Multimodal Human-Computer Interaction" | 2000[52] | L. Deng et al. | "Deng IV" |
| "Forum 2000: Introducing NGWS" | 2000[53] | Microsoft | "Forum 2000" |
| Dr. Who V2 | 2001[54] | Microsoft | "Dr. Who" |

[45] Available at https://web.archive.org/web/20051019220306/http://research.microsoft.com/srg/videos/MipadDemo_2Mbit.wmv.

[46] Published in International Conference on Spoken Language Processing (2000).

[47] Published in IEEE International Conference on Acoustics, Speech, and Signal Processing (2001).

[48] Presented at International Conference on Acoustics, Speech, and Signal Processing (1995).

[49] Published in IEEE Transactions on Speech and Audio Processing (2002).

[50] Published in IEEE Workshop on Multimedia Signal Processing (2002).

[51] Presented at ICSLP (2000).

[52] Published in VLSI Signal Processing Systems (2004), reprinted in Real World Speech Processing (Kluwer Academic Publishers) (2004).

[53] Publicly demonstrated and commercialized by Microsoft in 2002 and earlier.

[54] Authored before December 2001 and publicly demonstrated and commercialized by Microsoft in 2002 and earlier.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Semantic Modeling for Dialog Systems in a Pattern Recognition Framework" | 2001[55] | Kuansan Wang | "Wang I" |
| "Semantic Object Synchronous Understanding in SALT for Highly Interactive User Interface" | 2003[56] | Kuansan Wang | "Wang II" |
| "A Detection Based Approach to Robust Speech Understanding" | 2004[57] | Kuansan Wang | "Wang III" |
| "Implementation of a Multimodal Dialog System Using Extended Markup Language" | 2000[58] | Kuansan Wang | "Wang IV" |
| "A Plan-based Dialog System with Probabilistic Inferences" | 2000[59] | Kuansan Wang | "Wang V" |
| "Use and Acquisition of Semantic Language Model" | 2004[60] | Kuansan Wang | "Wang VI" |
| "Mathematical Foundation of User Intent Recognition in NUI" | 2004[61] | Kuansan Wang | "Wang VII" |
| "Semantics Synchronous Understanding for Robust Spoken Language Applications" | 2003[62] | Kuansan Wang | "Wang VIII" |
| "Improved Name Recognition with User Modeling" | 2003[63] | Yu et al. | "Yu" |
| U.S. Patent No. 8,301,436 | 2003[64] | Kuansan Wang et al. | "'436 patent" |

[55] Presented at IEEE Workshop on Automatic Speech Recognition and Understanding (2001).

[56] Presented at 16th Annual Symposium on User Interface Software and Technology (2003).

[57] Presented at International Conference on Acoustics, Speech, and Signal Processing (2004).

[58] Presented at International Conference on Spoken Language Processing (2000)

[59] Presented at Sixth International Conference on Spoken Language Processing (2000).

[60] Presented at NAACL/HLT (Short Paper), Association for Computational Linguistics (2004).

[61] Publicly demonstrated and commercialized by Microsoft in 2004 and earlier.

[62] Presented at IEEE Workshop on Automatic Speech Recognition and Understanding (2003).

[63] Presented at Eurospeech Conference (2003).

[64] Filed in 2003 and published in 2012.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Microsoft Speech Application SDK Beta" | 2004[65] | Microsoft | "MiPad SDK" |
| "Remarks by Bill Gates, Chairman, and Chief Software Architect, Microsoft Corporation" | 2004[66] | Microsoft | "Remarks by Bill Gates" |
| "Developing Seamless Computing Experiences" | 2004[67] | Microsoft | "Seamless Computing Experiences" |
| "Voice Technology Goes Mainstream with Release of Microsoft Speech Server 2004" | 2004[68] | Microsoft | "Release of Microsoft Speech Server" |
| "Microsoft Speech SDK SAPI 5.1" | 2000[69] | Microsoft | "SAPI" |
| "A Unified Context-Free Grammar and N-Gram Model for Spoken Language Processing" | 2000[70] | Ye-Yi Wang et al. | "YWang I" |
| "Robust Language Understanding in MiPad" | 2001[71] | Ye-Yi Wang | "YWang II" |
| "A Robust Parser for Spoken Language Understanding" | 1999[72] | Ye-Yi Wang | "YWang III" |
| Nuance[73] | | | |
| "Nuance Voice Platform – Getting Started" | 2005 | Nuance | "Getting Started" |
| "Nuance Voice Platform – Administrator's Guide" | 2005 | Nuance | "Administrator's Guide" |

[65] Published on Microsoft's website (2004).

[66] Presented at VSLive! Conference (2004).

[67] Presented at VSLive! Conference (2004).

[68] Published on Microsoft's website (2004).

[69] Available at https://documentation.help/sapi-5/documentation.pdf (2000).

[70] Presented at IEEE International Conference on Acoustics, Speech, and Signal Processing (2000).

[71] Presented at EUROSPEECH (2001).

[72] Presented at EUROSPEECH (1999).

[73] Documents under this section relate to the NVP System identified below.

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Nuance Voice Platform – Computer Telephony Integration Guide" | 2005 | Nuance | "Computer Telephony Integration Guide" |
| "Nuance Voice Platform – Application Developer's Guide" | 2005 | Nuance | "Application Developer's Guide" |
| "Nuance Voice Platform – Grammar Developer's Guide" | 2005 | Nuance | "Grammar Developer's Guide" |
| "Nuance Voice Platform – VoiceXML Developer's Reference" | 2005 | Nuance | "VoiceXML Developer's Reference" |
| "Nuance Voice Platform – Vocalizer Developer's Guide" | 2005 | Nuance | "Vocalizer Developer's Guide" |

**c. Additional Prior Art Systems/Services That Anticipate or Render Obvious One or More Asserted Claims of the 758 Patent**

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| MIT Galaxy System[74] | 2003 | MIT designed, developed, used, advertised, published, and also offered for sale and/or sold this system to its customers, potential customers, and other third parties as evidenced at least by the documents identified herein. | "MIT Galaxy" |
| Microsoft MiPad System[75] | 1995-2004 | Microsoft designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "MiPad" |

[74] The MIT Galaxy System includes, but is not limited to, the documents identified above in Section 0 under footnote 12.

[75] The Microsoft MiPad System includes, but is not limited to, the documents identified above in Section 0 under footnote 43.

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| Nuance Voice Platform System[76] | 2005 | Nuance designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "NVP System" |
| SemanticEdge[77] | 2002 | On information and belief, SemanticEdge GmbH designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "SemanticEdge" |

### 3. Identification of Invalidity Due to Obviousness

The attached claim charts in Exhibits A-1 through A-27 demonstrate that each prior art reference disclosed in the preceding sections, either alone or in combination with other prior art, or in combination with the knowledge of one skilled in the art, also renders the Asserted Claims invalid as obvious.

#### a. Motivation for Combining Prior Art

The combinations of references provided in the accompanying prior art reference charts for each asserted claim of each asserted patent, are examples and are not intended to be exhaustive.

[76] The NVP System includes, but is not limited to, the documents identified above in Section 0 under footnote 73. The NVP System documents were produced in the first case by Microsoft as confidential under the governing protective order. Amazon is in the process of obtaining authorization from Microsoft to produce the same documents in this case.

[77] The SemanticEdge system includes, but is not limited to, Dabiri and Aretoulaki, which have been charted separately.

Additional obviousness combinations of the references identified here are possible, and Amazon may rely on such combination(s) in this litigation. Amazon is currently unaware of VB Assets' allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by Amazon as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would have been known to persons of skill in the art. And Amazon does not yet know how the Court will construe terms in the Asserted Claims. Amazon also will conduct third-party discovery and is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and additional third parties that may have information about those systems. Amazon reserves the right to supplement these contentions to identify other prior art and combinations that would have made such limitations obvious.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, and/or reasons to combine them for at least the following reasons.[78]

The 758 patent is obvious in view of any combination of references related to interactive speech technology (which includes speech recognition, interpreting natural language inputs, and generating responses), including, for example, MIT Galaxy, MiPad, Kennewick II, NVP System,

[78] In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418.

Aretoulaki, Stillman, Roy, Zsigmond, Hao, Ramer I, Partovi, Carriere, Chiu, Dabiri, Dicker, Byford, Garate, Sloane, Fan, and Lamel.

A person having ordinary skill in the art would have been motivated to combine any of these interactive speech prior art references because the art describes several benefits that were known to persons of skill in the art. For instance, they disclose identifying the context of the user's utterance to allow users to interact with a system in a natural way that is consistent with how they already interact with others using speech to direct or control the system. This eliminates the need to train the system or memorize commands, and enables the system to access and retrieve information, perform tasks, complete transactions and present information to the user in a way that reduces the number of interactions between the user and the system. For example, Kennewick II discloses that its "speech based natural language query and response environment" "improv[es] the reliability of determining the context and presenting the expected results for a particular question or command." Kennewick II, Abstract; *see also, e.g.*, *id.* at ¶ 32 ("The invention may determine the mostly likely context or domain for a user's question or command, for example, by using a real-time scoring system or other techniques."), ¶ 160 ("The parser 118 may use a scoring system to determine the mostly likely context or domain for a user's question or command."); Aretoulaki at 11:31-36 ("The ASCII text representation 215 of the user input 205 is processed lexically, syntactically, and semantically by NLP Manager 110 at block 220 in order to acquire a representation of the user's requirements as a domain semantic representation 225 (or some of these requirements) about the desired product, service or information."), 11:42-45 ("Lexical and semantic analyses are closely coupled, so that individual words can already point to domain specifications. This is achieved by means of a mapping lexicon that translates application-specific words into the corresponding relevant concepts in the domain ontology."); Glass I, Abstract, § 1

(disclosing "a real-time telephone-based speech recognizer as part of a conversational system in the weather information domain"); Glass II, Abstract, § 1 (disclosing "a telephone-based speech recognizer as part of a conversational system in the weather information domain"); Seneff I, Abstract, pp. 284, 290-291 (disclosing a "mixed-initiative spoken dialogue system that supports both voice-only interaction and multimodal interaction"); Seneff II, Abstract, § 1 (disclosing "the dialogue module of the Mercury system" that manages "complex dialogue interactions" to allow "users to plan and price itineraries between major airports worldwide"); Seneff III, §§ 2, 2.1 (disclosing a "spoken dialogue system that allows users to plan air travel"); using a "language understanding component"); Zue, pp. 101, 109 (disclosing the "GALAXY conversational system architecture" and "speech-based interfaces that combines several human language technologies to help users access information using a conversational paradigm"); Lau, Abstract, pp. 14, 21, 22, 25, 37 (disclosing "a conversational system that would be able to interact with the user dynamically"); Filisko, pp. 22, 23, 30, 31 (disclosing the multimodal GALAXY conversational system that "captures a user's speech," "sends it to the speech recognizer," performs context resolution to interpret the speech, and provides "an appropriate reply to the user"); Baptist, pp. 10, 38, 39, 80 (disclosing "the GALAXY conversational systems" that "produces a meaning representation in response to a user query" and generates responses to the queries); Kennewick II, Abstract ("achiev[ing] a natural environment for one or more users making queries or commands in multiple domains. . . . speech based natural language query and response environment" "improv[es] the reliability of determining the context and presenting the expected results for a particular question or command"); Stillman at [0033] ("The verbal request is interpreted at the voice services node to produce instruction data that represents the words spoken by the customer at recognition operation 210. This data is representative of the words spoken by the individual that are obtained within a

window of time provided by the VoiceXML document for receiving verbal requests so that the application server can determine from keywords of the instruction data what the customer wants the service to do. The instruction data is transferred from the voice services node over the data network to the application server at exchange operation 212.").

Persons having ordinary skill in the art were aware of the use of contextual knowledge in interactive speech technology. *See, e.g.*, Kennewick II, ¶ 143 ("Commands and questions are interpreted, queries formulated, responses created and results presented can be based on the user's personal or user profile values," including "history of commands and queries."), ¶¶157, 160, 164; Seneff III, §1 (disclosing complex, multi-variable dialog system for making flight reservations), §2.2 (determining the intended meaning of the user utterance by singling out the most promising hypothesis, and then determining if that hypothesis "is consistent with the prior dialogue"); Seneff I, p.289-290, 292 (disclosing maintaining a "detailed history of the dialogue plan, including a user model…and detailed records of previous responses, all of which may become pertinent to preparing the response for the current turn"); Seneff III, § 1, 2, 4 (disclosing "relevant information is retained from prior turns" for hypothesis selection and retention of history in a "user model which is continually augmented as the dialogue progresses through the itinerary plan"); Filisko, p.53, 62, 87, 102 (disclosing the Context Resolution server "remembers the context-resolved frame from the previous utterance" and a "history record" that stores context-resolved semantic frames from which "subsequent user utterances will inherit information").

The interactive speech prior art teaches that the known systems could incorporate these benefits (e.g., using contextual knowledge) by disclosing improvements to interactive speech technology. *See, e.g.,* Kennewick II, Abstract ("a complete speech-based natural language query and response environment" . . . [that] makes significant use of context, prior information, domain

knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains"); Glass II, Abstract, § 1 (disclosing "a telephone-based speech recognizer as part of a conversational system in the weather information domain"); Seneff I, Abstract, p.284, 290-291 (disclosing a "mixed-initiative spoken dialogue system that supports both voice-only interaction and multimodal interaction"); Seneff II, Abstract, § 1 (disclosing "the dialogue module of the Mercury system" that manages "complex dialogue interactions" to allow "users to plan and price itineraries between major airports worldwide"); Seneff III, § 2, 2.1 (disclosing a "spoken dialogue system that allows users to plan air travel" using a "language understanding component"); Zue, p.85, 86, 94 (disclosing the "GALAXY conversational system architecture" and "speech-based interfaces that combines several human language technologies to help users access information using a conversational paradigm"), Lau, Abstract, 14, 21, 22, 25, 37 (disclosing "a conversational system that would be able to interact with the user dynamically"), Filisko, p.22, 23, 30, 31 (disclosing the multimodel GALAXY conversational system that "captures a user's speech," "sends it to the speech recognizer," performs context resolution to interpret the speech, and provides "an appropriate reply to the user"); Baptist, p.10, 38, 39, 80 (disclosing "the GALAXY conversational systems" that "produces a meaning representation in response to a user query" and generates responses to the queries).

Accordingly, the disclosed interactive speech prior art was known work in the field of computer technology, and design incentives or other market forces such as improving the ability of speech systems to understand context would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to solve problems with improving human interaction with spoken language understanding systems. These combinations would (1) involve the combination of known methods (e.g., speech recognition, interpretation, and generating a

response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve the use of these known techniques (e.g., improving interactive speech through recognition of context) to improve similar computer systems in the same way.

The 758 patent is also rendered obvious in view of the disclosed combination of references that disclose similar architectures for implementing interactive speech systems, which include components such as a voice input device to receive a natural language utterance (such as a microphone), a component for automatic speech recognition to recognize the words of the utterance, a component for natural language understanding to interpret the recognized words, a component for performing an action based on the interpretation, and an output device that presents a response to the user, including, for example, Kennewick II, MiPad, MIT Galaxy, NVP System, and Aretoulaki.

These prior art references describe several architectures that were known to persons of skill in the art. A person of skill would have understood the benefits of these architectures and would have been motivated to combine features of different architectures in designing and building a speech application, including each of the components listed above. From a functional perspective, for example, a person of skill would have found incorporating components such as those for automatic speech recognition and natural language understanding modules to be beneficial for at least the reasons identified above regarding interactive speech technology. From a more technical perspective, as a well-known design pattern for building interactive speech systems was to construct them modularly so that functionality could be distributed across various components, a person of skill would have been able to incorporate these components into different systems. *See* Aretoulaki at Abstract, 4:9-5:11 (describing the modular architecture); Kennewick II at [0013] (the interactive speech "software can be distributed in any way between" a variety of hardware

components "without altering the function, features, scope, or intent of the invention"); Cooper at 4:50-5:11 (describing a componentized server system that can be "ported to other computing platforms" or "clustered together"); Seneff II, § 1 (disclosing the "GALAXY architecture" as consisting of "of a number of specialized servers that communicate with one another via a central programmable hub"); Zue, 101 (disclosing the "GALAXY architecture" with a "programmable" hub that "communicates with the various servers via a standardized protocol," enabling "multiple system developers to experiment with different domains, components, and control strategies"); MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding").

Persons having ordinary skill in the art were aware of various architectures for interactive speech systems, which could perform speech recognition on natural-language voice inputs and act on the recognized speech. *See, e.g.*, Aretoulaki at 3:51-53 ("Disclosed is a system architecture and methodology for intuitive natural language dialogue-based electronic commercial transactions and information exchanges"); Seneff III, § 2.1 (disclosing "the GALAXY architecture" that includes an "audio server [that] captures the user's speech, a "speech recognizer," a "language understanding component," a "discourse component," a "dialogue manager," a "generation component," and a "speech synthesizer" that "transmits a waveform to the audio server which then relays the spoken response to the user over the telephone"); Huang I at Abstract ("MiPad is one of the application prototypes in a project codenamed Dr Who. As a wireless Personal Digital Assistant (PDA), MiPad fully integrates continuous speech recognition (CSR) and spoken

language understanding (SLU) to enable users to accomplish many common tasks using a multimodal interface and wireless technologies"); Huang III, Fig. 1.4 (illustrating a "basic system architecture of a spoken language understanding system" with blocks representing "Access Device," "Speech Recognizer," "Sentence Interpretation," "Dialog Manager," "Application," and "Database").

Accordingly, because the interactive speech architecture prior art was known in the same field of computer technology, design incentives or other market forces such as incorporating speech interfaces into existing computer systems would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to improve the functionality of or mitigate problems associated with interactive speech systems. Combinations with this prior art would (1) involve the combination of known components for performing various functions (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve a simple substitution of one known element (e.g., a monolithic client-server system) for another (e.g., a distributed computer system) to obtain predictable results (e.g., the prior system function enhanced by a scalable architecture).

The 758 patent is further rendered obvious in view of any combination of references related to electronic commerce, including for example: Ramer I, Partovi, Aretoulaki, Dicker, Malhotra, Chiu, Dabiri, Hao, Kennewick II, Byford, Garate, Sloane, Fan, Lamel, Roy, Zsigmond, Desai, Chai III, Omae, and Carriere. These prior art references describe a number of benefits that were known to persons of skill in the art, such as tracking interaction patterns associated with purchase opportunities, building user profiles based on such information, and making recommendations based on user profiles. *See, e.g.*, Ramer I at 10:41-46 ("Users may implicitly register a preference

through activity such as purchasing a product online, visiting a site on line, making a phone call from a mobile communication facility, making a phone call from another facility, viewing content, or engaging or not engaging in other activities."), 124:13-21 ("The tracked on-line information may include tracking clicks, clickthroughs, queries, clicks following queries, WAP sites visited, WAP portals visited, information reviewed from a DEC directory (e.g., a carrier's catalog), information reviewed from a billing history associated with a user, information about payment methods, purchases, payment timing, timing of online interactions and/or the location, and speed and direction of the mobile communication facility 102 at the time of the online interaction."); Partovi at 6:25-29 ("…implicit selections come about through the conduct and behavior of the user. For example, if the user repeatedly asks for the weather in Palo Alto, Calif., the system may automatically provide the Palo Alto weather report without further prompting."), 11:66-12:3 ("The profile can be updated throughout the call based on the user's behavior and actions—implicit preferences—as well as explicit requests from the user to customize the voice portal 110."), Aretoulaki at 9:47-10:5 ("The user model contains data about the general preferences and assumptions of individual users, as well as whole user groups . . . User models can be both fixed, as in the case of user classes such as senior citizens, singles, or students, and evolving, as in the case of users whose behavior is being monitored by the system in the course of the interaction."); Kennewick II at [0031] ("The system may use profile data in interpreting questions, formulating queries, interpreting results of queries and presenting answers to the user. Examples of information in a user profile includes, history of questions asked…"), [0143] ("User profile data can be manually entered by the user and/or can be learned by the system based on user behavior."); Dicker at [0063] ("These external components 40 include, for example, a search engine and associated database (not shown) for enabling users to interactively search the catalog for particular items.

Also included within the external components 40 are various order processing modules (not shown) for accepting and processing orders, and for updating the purchase histories of the users."); Sloane at 7:38-46 ("Whether or not a recommended brand of bread crumbs would be based on cost or on fat content, or both, for example, can depend upon the shopper's personal profile if no pertinent criteria are included in the query. If sufficient criteria are not available in the personal profile or in the query, the AIU 406 can make the selection based on default rules, for example, based on the shopper's choices of articles already selected during shopping."); Ramer I at 12:14-24 ("A recommendation system may use information from a user's profile to make predictions regarding other information/products that might interest the user. Data used in the recommendation system may be obtained through the use of explicit and implicit data collection. Explicit collection refers to data collected from users who, for example, are directly rating items, ranking products, stating preferences, listing favorites or least favorites, etc. Implicit collection refers to data collected as, for example, a byproduct of user behavior, such as products viewed in an online store or products purchased.")

Accordingly, such prior art directed to e-commerce was known work in the same field of computer technology and interactive speech technology. Design incentives or other market forces such as increasing the efficiency and ease with which a user may engage in online shopping would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to integrate such e-commerce techniques into existing e-commerce and interactive speech systems. Combinations with the above interactive speech technology prior art would (1) involve the combination of known methods (e.g., electronic commerce and interactive speech systems) to yield predictable results (e.g., completing internet transactions using interactive speech systems); (2) involve applying a known technique (e.g., shopping and product recommendation) to a known

device, method, or product (e.g., a device that is connected to the internet) ready for improvement to yield predictable results (e.g., shopping and product recommendation on the internet); and/or (3) involve the use of these known techniques (e.g., using interactive speech technology for known e-commerce techniques) to improve similar computer systems in the same way.

**4. Invalidity Under § 112**

The Asserted Claims are invalid under 35 U.S.C. § 112. The Asserted Claims lack a written description and enabling disclosure commensurate with the alleged scope of the claims, are unduly vague and indefinite, and contain purely functional language. The 758 patent, read in light of the specification and prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). The 758 patent does not enable one of skill in the art to practice the full scope of the inventions claimed without undue experimentation. The 758 patent does not enable one of skill in the art to practice the scope of the inventions set forth in VB Assets' preliminary infringement contentions.

Because expert disclosures are not yet due, including those in connection with claim construction, Amazon reserves the right to raise any additional issues from the perspective of one skilled in the art at the appropriate time in the case.

The following identification of claims/claim elements are preliminary and only exemplary; and Amazon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, to the extent an element identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112. Amazon reserves the right to identify additional claims and claim elements that do not comply

with the requirements of 35 U.S.C. § 112 during claim construction or after the Court construes the claims. Furthermore, this identification of claims/claim elements is preliminary and should not be interpreted as reflecting Amazon's position on the proposed construction of any claim/claim element.

At least the following claims are invalid for failing to meet the requirements of 35 U.S.C. § 112:[79]

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| receiving, by the one or more processors, words or phrases, recognized from the natural language utterance, as an output of the speech recognition engine; | 758 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the one or more processors, a context for the natural language utterance based on the recognized words or phrases; | 758 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| selecting, by the one or more processors, a purchase opportunity based on the determined context; | 758 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| tracking, by the one or more processors, an interaction pattern associated with the purchase opportunity delivered to the electronic device, wherein the tracked interaction pattern associated with the purchase opportunity includes information associated with a subsequent request in which the electronic device interacts | 758 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

[79] Each dependent claim depending from an identified independent claim is invalid under § 112 at least for the same reasons identified for the corresponding independent claim. For the sake of brevity, § 112 invalidity grounds identified for each independent claim are not repeated for claims depending therefrom.

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| with the purchase opportunity, wherein the subsequent request in which the electronic device interacts with the purchase opportunity includes the electronic device completing a transaction related to the purchase opportunity; | | |
| interpreting, by the one or more processors, a subsequent natural language utterance using the user-specific profile to select a subsequent purchase opportunity based on the subsequent natural language utterance. | 758 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the one or more processors, that the second natural language utterance comprises a request to purchase the item; and completing, by the one or more processors, a purchase transaction of the item based on the second natural language utterance. | 758 patent, claim 2 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the one or more processors, whether the interpretation of the natural language utterance was correct based on the indication; and interpreting, by the one or more processors, a subsequent natural language utterance based on the determination of whether the interpretation of the natural language utterance was correct. | 758 patent, claim 3 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| invoking, by the one or more processors, one or more system resources to select the | 758 patent, claim 11 | Lack of written description/enablement |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| purchase opportunity based on the determined context; wherein the one or more system resources include at least an agent comprising an autonomous executable, wherein the executable comprises a redistributable package of functionality for a specific application that receives, processes, and responds to user questions, queries, and/or commands. | | pursuant to pre-AIA § 112, para. 1 |
| updating the agent from a remote location over a network to provide new functionality. | | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| wherein the agent returns results of user questions, queries, and/or commands as responses to the user; and the responses are created using the results of information queries, system personality, and user preferences or other data in the user-specific profile. | 758 patent, claim 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| updating the agent from a remote location over a network to provide new functionality. | 758 patent, claim 13 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| the agent uses system resources and the services of other agents. | 758 patent, claim 14 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| the method is implemented on a network of devices using a common base of agents, data, information, user-specific profiles, and histories; the user can interact with, and receive the same services and applications from, any one of the devices | 758 patent, claim 17 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| on the network; and the location of a particular device addressed by the user is used as part of context for questions asked of the user. | | |
| providing a user interface allowing the user to modify the user-specific profile, questions, queries, data sources, preferences, or parameters. | 758 patent, claim 20 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

**5. Invalidity Under § 101**

The claims of the 758 patent are generally directed to an abstract idea, *e.g.*, processing natural language requests to select and deliver purchase opportunities based on user profiles. The claims do not recite any specific technological solution for accomplishing this goal, and instead only provide results-focused, functional claims that fail step 1 of the *Alice* test. *See IPA Techs. v. Amazon.com, Inc.*, 307 F. Supp. 3d 356, 363, 368-69 (D. Del. 2018) (claims reciting "receiving," "interpreting," and "translating" a spoken request were "aspirational in nature and devoid of [] implementation details or [] description . . . .").

The asserted patents do not claim any inventive concept necessary to transform their abstract idea into patent-eligible subject matter. Neither the claims nor the specification recites any new computer hardware or software for achieving the aspirational result. Instead, the claims recite admittedly generic and conventional voice processing technology behaving in expected ways to implement this dedication concept. *See, e.g.*, *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (finding that "well-understood, routine, and conventional activities commonly used in industry" cannot provide an inventive concept). Accordingly, the asserted patents fail step 2 of the *Alice* test.

Amazon identifies each asserted claim of the 758 patent as stating non-inventive variations of the claimed abstract idea. *See id*.

### B. The 249 Patent

#### 1. Preliminary Identification of Invalidity Grounds

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the asserted claims of the 249 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 249 patent invalidity charts attached as Exhibit B set forth, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Amazon reserves the right to amend its invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery continues including third party discovery. Amazon explicitly reserves the right to further narrow each ground by reducing the number of references in each ground as needed to continue streamlining this case for trial. The below identification of prior art invalidity grounds in no way limits Amazon from relying on additional prior art references to establish the state of the art and knowledge of one of skill in the art, nor does it limit Amazon's other invalidity defenses including under Section 101 or Section 112.

Defendants provide the following identification of preliminary invalidity grounds for the currently asserted claims of the 249 patent:

| Claim No. | Invalidity Grounds[80][81] under 35 U.S.C. §§ 102 and/or 103[82] |
|---|---|
| 1 | Kennewick II in combination with Fujimoto, Oviatt, Kvale, Aretoulaki, Huang III, Coffman II, Schoneburg, and Shimomura.<br><br>Kennewick II in combination with Huang III, Oviatt, Kvale, Aretoulaki, Coffman II, Schoneburg, and Shimomura.<br><br>Aretoulaki in combination with Fujimoto, Oviatt, Kvale, Huang III, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>Aretoulaki in combination with Huang III, Oviatt, Kvale, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>MiPad in combination with Fujimoto, Oviatt, Kvale, Huang III, Aretoulaki, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>MiPad in combination with Huang III, Oviatt, Kvale, Aretoulaki, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>MIT Galaxy in combination with Fujimoto, Oviatt, Kvale, Huang III, Aretoulaki, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>MIT Galaxy in combination with Huang III, Oviatt, Kvale, Aretoulaki, Coffman II, Kennewick II, Schoneburg, and Shimomura.<br><br>Huang III in combination with Fujimoto, Oviatt, Kvale, Aretoulaki, Coffman II, Kennewick II, Schoneburg, and Shimomura. |
| 2 | *See* Grounds of claim 1. |
| 7 | Grounds of claim 1 in combination with Coffman II, Schoneburg, Aretoulaki, and Matsuda. |
| 8 | Grounds of claim 1 in combination with Coffman II, Schoneburg, Aretoulaki, and Matsuda. |

[80] For brevity, each reference in this table is identified by its short cite, which is defined later in subsections below.

[81] To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

[82] Defendant contends that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified by itself as a ground invalidates the relevant asserted claim under 35 U.S.C. § 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under §103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

| Claim No. | Invalidity Grounds[8081] under 35 U.S.C. §§ 102 and/or 103[82] |
|---|---|
| 9 | Grounds of claim 1 in combination with Coffman II, Schoneburg, Aretoulaki, and Matsuda. |
| 10 | Grounds of claim 1 in combination with Cooper, Dabiri, and Schoneburg. |
| 11 | Grounds of claim 1 in combination with Cooper, Dabiri, and Schoneburg. |
| 12 | *See* Grounds of claim 1 |
| 13 | *See* Grounds of claim 1. |
| 14 | Grounds of claim 1 in combination with Kennewick II, Aretoulaki, Huang III, and Matsuda. |
| 15 | *See* Grounds of claim 1. |

The asserted claims of the 249 patent are invalid in view of the grounds identified above, A person having ordinary skill in the art would have naturally consulted each of these references and combined the teachings, for the reasons identified herein and the accompanying charts. Accordingly, a person of ordinary skill in the art at the time of filing of the asserted patents would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. One or more expert witnesses may further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid for obviousness in accordance with the case schedule.

The invalidity grounds provided above are preliminary. Additional or alternative grounds are possible, including grounds which include fewer references than identified in the above combinations or additional references, and Amazon may rely on such grounds in this litigation. Amazon is currently unaware of what claim constructions VB Assets may seek in this case. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of

the claims at issue are not disclosed in the prior art identified by defendants as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would not have been known to persons of skill in the art. Additionally, discovery is ongoing. Amazon is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Amazon may subpoena third parties for such information. VB Assets may also be in possession of prior art that defendants may receive during discovery in this case. Amazon reserves the right to amend and supplement these contentions to identify other prior art, invalidity grounds, and combinations rendering the asserted claims invalid.

**2. Identification of Prior Art**

In accordance with paragraph 4(d) of the Default Standard, the tables below list prior art references that anticipate or render obvious one or more of the Asserted Claims are listed in the tables below. The attached claim charts in Exhibits B-1 through B-16 demonstrate where each limitation of the claims is found in certain of the references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole is understood by a person having ordinary skill in the art. At least the following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

**a. Prior Art Patents and Patent Publications That Anticipate or Render Obvious One or More Asserted Claims of the 249 Patent**

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 6,757,362 | United States | March 6, 2000 | June 29, 2004 | "Cooper" |
| US Patent Publication No: 2001/0021909 | United States | December 28, 1999 | September 13, 2001 | "Shimomura" |

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| US Patent Publication No: 2002/0133347 | United States | December 29, 2000 | September 19, 2002 | "Schoneburg" |
| US Patent Publication No: 2004/0193420 | United States | July 15, 2002 | September 30, 2004 | "Kennewick II" |
| Japanese Patent Publication No: JP2004145025 | Japan | October 24, 2002 | May 20, 2004 | "Fujimoto" |
| Japanese Patent Publication No: JP2004334591 | Japan | May 8, 2003 | November 25, 2004 | "Matsuda" |
| US Patent Publication No: 2009/0216805 | United States | February 25, 2008 | August 27, 2009 | "Coffman II" |
| WO Patent Publication No: WO02/073331 | WIPO | February 20, 2001 | September 19, 2002 | "Aretoulaki" |

**b. Additional Prior Art Publications That Anticipate or Render Obvious One or More Asserted Claims of the 249 Patent[83]**

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Spoken Language Processing: A Guide to Theory, Algorithm, and System Development" | 2001[84] | Xuedong Huang et al. | "Huang III" |
| "A User-Sensitive Spoken Dialogue System Incorporating Emotional Responsiveness" | 2002[85] | Gloria Dabiri et al. | "Dabiri" |
| "Speech Centric Multimodal Interfaces for Mobile Communications" | 2003[86] | Knut Kvale et al. | "Kvale" |

[83] For brevity, Amazon incorporates by reference the MIT Galaxy and MiPad system publication documents identified above in Section 0.

[84] This is a book published by Prentice Hall (2001).

[85] Published in Methods and Applications of Artificial Intelligence, Springer (2002).

[86] Published in Telektronikk 2.2003 (2003).

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "Designing the User Interface for Multimodal Speech and Pen-<br>Based Gesture Applications: State-of-the-Art Systems and Future Research Directions" | 2000[87] | Lawrence Erlbaum Associates | "Oviatt" |
| "LINGUINI: Acquiring Individual Interest Profiles by Means of Adaptive Natural Language Dialog" | 2006[88] | Rosmary Stegmann | "Stegmann" |

**c. Additional Prior Art Systems/Services That Anticipate or Render Obvious One or More Asserted Claims of the 249 Patent**

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| MIT Galaxy System[89] | 2003 | MIT designed, developed, used, advertised, published, and also offered for sale and/or sold this system to its customers, potential customers, and other third parties as evidenced at least by the documents identified herein. | "MIT Galaxy" |
| Microsoft MiPad System[90] | 1995-2004 | Microsoft designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "MiPad" |

[87] Published in Human-Computer Interaction, Volume 15, Lawrence Erlbaum Associates, pp. 263-322 (2000).

[88] This is a Dissertation of the TUM School of Computation, Information and Technology, March 30, 2006. Available at https://mediatum.ub.tum.de/doc/601808/document.pdf.

[89] The MIT Galaxy System includes, but is not limited to, the documents identified above in Section 0 under footnote 12.

[90] The Microsoft MiPad System includes, but is not limited to, the documents identified above in Section 0 under footnote 43.

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| SemanticEdge[91] | 2002 | On information and belief, SemanticEdge GmbH designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "SemanticEdge" |

### 3. Identification of Invalidity Due to Obviousness

The attached claim charts in Exhibits B-1 through B-16 demonstrate that each prior art reference disclosed in the preceding sections, either alone or in combination with other prior art, or in combination with the knowledge of one skilled in the art, also renders the Asserted Claims invalid as obvious.

#### a. Motivation for Combining Prior Art

The combinations of references provided in the accompanying prior art reference charts for each asserted claim of each asserted patent, are examples and are not intended to be exhaustive. Additional obviousness combinations of the references identified here are possible, and Amazon may rely on such combination(s) in this litigation. Amazon is currently unaware of VB Assets' allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by Amazon as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the

[91] The SemanticEdge system includes, but is not limited to, Dabiri and Aretoulaki, which have been charted separately.

asserted patent specifications would have been known to persons of skill in the art. And Amazon does not yet know how the Court will construe terms in the Asserted Claims. Amazon is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and additional third parties that may have information about those systems. Amazon reserves the right to supplement these contentions to identify other prior art and combinations that would have made such limitations obvious.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, and/or reasons to combine them for at least the following reasons.[92]

The 249 patent is invalid as obvious in view of any combination of references related to interactive speech technology (which includes speech recognition, interpreting natural language inputs, and generating responses), including, for example, Kennewick II, MIT Galaxy, MiPad, Aretoulaki, Fujimoto, Huang III, Dabiri, Coffman II, Schoneburg, Matsuda, Shimomura, and Oviatt.

A person having ordinary skill in the art would have been motivated to combine any of these interactive speech prior art references as this prior art describes several benefits that were known to persons of skill in the art. For instance, the prior art references identified above disclose identifying the context of the user's utterance to allow users to interact with a system in a natural way that is consistent with how they already interact with others using speech to direct or control the system. This eliminates the need to train the system or memorize commands, and enables the

[92] In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418.

system to access and retrieve information, perform tasks, complete transactions and present information to the user in a way that reduces the number of interactions between the user and the system. For example, Kennewick II discloses that its "speech based natural language query and response environment" "improv[es] the reliability of determining the context and presenting the expected results for a particular question or command." Kennewick II at Abstract; *see also id.* at ¶ 160 (noting the possibility of different contexts for the same utterance); Huang III, p. 7 ("interpret[ing] utterances in context and carry[ing] out appropriate actions" are fundamental requirements of spoken language understanding and "[k]knowledge of the characteristic vocabulary, typical syntactic patterns, and possible actions in any given application context for both interpretation of user utterance and panning system activity are the heart and soul of any spoken language understanding system"); MiPad Demo Video I, 02:15-01:21 ("In this case, we've done full recognition. . . . being able to take the sentence apart and do the right things."); *id.*, 03:37-03:55 ("I'd like to walk in the house and say, play my music and because it's coming from the playlist on my computer").

Persons having ordinary skill in the art were aware of the use of contextual knowledge in interactive speech technology. *See, e.g.*, Kennewick II, ¶143 ("Commands and questions are interpreted, queries formulated, responses created and results presented can be based on the user's personal or user profile values," including "history of commands and queries."), ¶¶157, 160, 164; Seneff III, §1 (disclosing complex, multi-variable dialog system for making flight reservations), §2.2 (determining the intended meaning of the user utterance by singling out the most promising hypothesis, and then determining if that hypothesis "is consistent with the prior dialogue"); Seneff I, p.289-290, 292 (disclosing maintaining a "detailed history of the dialogue plan, including a user model…and detailed records of previous responses, all of which may become pertinent to

preparing the response for the current turn"); Seneff III, § 1, 2, 4 (disclosing "relevant information is retained from prior turns" for hypothesis selection and retention of history in a "user model which is continually augmented as the dialogue progresses through the itinerary plan"); Filisko, p.53, 62, 87, 102 (disclosing the Context Resolution server "remembers the context-resolved frame from the previous utterance" and a "history record" that stores context-resolved semantic frames from which "subsequent user utterances will inherit information"); Schoneburg, ¶188 (disclosing a "short-term memory device 4, organized in the form of a stack for the subsequent last-to-first analysis of the user's inputs and answers of the system" and a "long-term memory device 5 in the form of a user profile on the server side").

The prior art further discloses accumulating short-term and long-term knowledge to allow users to interact with a system in a natural way. *See, e.g.*, Matsuda at ¶¶ 15-17, 26-28, 31, 77-79 (describing, for example, handling conversation participant name data); Schoneburg at ¶¶7-8 ("The best answer is chosen by a sequential calling of different mechanisms with the calling being determined by predefined sets of rules of the central processing block. The method required for information processing in each mechanism is also determined by its own pre-defined set of rules. The best system answer from the viewpoint of history, correspondence of input/output types, goal, emotions and other parameters is presented to the user in response to his/her query."); Coffman II at 3:63-4:16 ("the term 'conversational application' refers to an application that supports multi-modal, free flow interactions (e.g., mixed initiative dialogs) within the application and across independently developed applications, preferably using short term and long term context (including previous input and output) to disambiguate and understand the user's intention. Preferably, conversational applications utilize NLU (natural language understanding).")

It further discloses using such information to identify a user's manner to promote appropriate interactions. *See, e.g.*, Cooper at Abstract ("A computer-based virtual assistant that also automatically adapts its behavior is disclosed, comprising a voice user interface for inputting information into and receiving information from the virtual assistant by speech, a communications network, a virtual assistant application running on a remote computer, the remote computer being electronically coupled to the user interface via the communications network, wherein the remote computer is programmed to automatically change the behavior of the virtual assistant responsive to input received by the virtual assistant."); Schoneburg at ¶¶7-8 ("The best answer is chosen by a sequential calling of different mechanisms with the calling being determined by predefined sets of rules of the central processing block. The method required for information processing in each mechanism is also determined by its own pre-defined set of rules. The best system answer from the viewpoint of history, correspondence of input/output types, goal, emotions and other parameters is presented to the user in response to his/her query."); Dabiri at 147 (describing "reasoning associated with emotional states").

The interactive speech prior art further teaches common techniques to filter voice inputs based on a comparison. *See, e.g.*, Fujimoto at ¶¶ 64-65 ("This cross correlation determiner 302 is connected to a noise canceling unit 304. This noise canceling unit 304 receives the main voice data supplied by the cross correlation determiner 302 and the extracted reference voice data, and by comparing them, corrects the main voice data and removes noise. Note that this noise canceling unit 304 corrects the differences between the main voice data and the extracted reference voice data . . . This noise canceling unit 304 is connected to a noise cancelled voice data memory 306. This noise-canceling voice data memory 306 records the main voice data after noise-canceling

processing has been applied to the main voice signals by the noise-canceling unit 304."); *see also* Oviatt at 295-296, 307; Kennewick II at ¶¶ 14, 38.

In addition, persons having ordinary skill in the art were aware of using multi-modal inputs to understand or interpret natural language utterances. *See, e.g.*, MiPad Demo Video II at 2:18-03:05 ("MiPad is capable of recognizing the meaning of the mouse click and integrated it with the rest of a natural understanding process"); Filisko at 63 (In "GALAXY's web-based graphical interface, a user may point and click on any list item or map location and accompany it with a verbal reference such as 'this one' or 'there.'"); Seneff I at 284 ("The interface supports clicking on a displayed flight and referring to it verbally: 'Book this flight'"); Seneff VI at 3 ("A mouse-click event is associated with a spoken sentence" by a hub program that "sets the clicked item specification within the session's state," where the "context-tracking server reads the clicked item session state as one of its inputs"); Aretoulaki at Abstract ("The inventive system is robust towards any type of multimodal input. The user requests are interpreted in the context of the current interaction and the dialogue flow is shaped dynamically by the current status of the application database, i.e. the product and service availability.").

A POSITA would have known that interactive speech technology can use non-speech inputs to improve accuracy of natural language understanding of spoken inputs. *See, e.g.*, Kvale at p. 104 ("Natural conversational man-machine interfaces should support multimodal interaction. Generally, a multimodal system combines natural input modes such as speech, touch, manual gestures, gaze, head and body movements, and searches for the meaning of these combined inputs. The response can be presented by a multimedia system."); Filisko at 39 ("researchers recognized the insufficiency of unimodal input (i.e., text or speech) in dealing with reference," and developed systems where "mouse clicks and gesture were combined with natural language systems"); Seneff

I at 284 (“The interface supports clicking on a displayed flight and referring to it verbally: ‘Book this flight’”); Seneff VII at 3 (“set[ting] context for non-speech interaction, allow[s] mouse clicks to be interpreted in a domain-specific context, for example clicking to get more information on a flight or to book a fare”); Deng I at 605 (“we found a better user experience can be achieved by combining pen and speech inputs” and “selecting the ‘To: field’ on an e-mail application display indicates that the user is about to enter a name. This dramatically reduces the complexity of spoken language processing and cuts down the speech recognition and understanding errors”); YWang I at 2 (“With existing palmtop PDAs, it is very difficult to enter large amount of text, to fill a form, and to issue commands that contain multiple parameters. Multimodal interaction with speech and pen can help address these problems”).

The interactive speech prior art teaches that it can incorporate such benefits (i.e., multi-modal inputs, short and long-term knowledge, context and manner recognition) to improve understanding and interactive speech technology. *See, e.g.,* Kennewick II, Abstract (“a complete speech-based natural language query and response environment” . . . [that] makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains”); Cooper, 2:36-40 (disclosing “the present invention is a computer-based virtual assistant… comprising a voice user interface for inputting information into and receiving information from the virtual assistant by speech”); Schoneburg, ¶ 28 (disclosing “a universal dialog computer system for transforming a user's phrase presented in the form of a natural language utterance into an adequate response by the system which is also presented in natural language and accompanied by the performance of a number of required actions”); Huang III, p.28, 30 (describing the benefits of adopting “speech as a control modality” and explaining the operation of some spoken language

processing systems, which includes speech recognition); Glass I, Abstract, § 1 (disclosing "a real-time telephone-based speech recognizer as part of a conversational system in the weather information domain"); Glass II, Abstract, § 1 (disclosing "a telephone-based speech recognizer as part of a conversational system in the weather information domain"); Seneff I, Abstract, p.284, 290-291 (disclosing a "mixed-initiative spoken dialogue system that supports both voice-only interaction and multimodal interaction"); Seneff II, Abstract, § 1 (disclosing "the dialogue module of the Mercury system" that manages "complex dialogue interactions" to allow "users to plan and price itineraries between major airports worldwide"); Seneff III, § 2, 2.1 (disclosing a "spoken dialogue system that allows users to plan air travel" using a "language understanding component"); Zue, p.85, 86, 94 (disclosing the "GALAXY conversational system architecture" and "speech-based interfaces that combines several human language technologies to help users access information using a conversational paradigm"), Lau, Abstract, 14, 21, 22, 25, 37 (disclosing "a conversational system that would be able to interact with the user dynamically"), Filisko, p.22, 23, 30, 31 (disclosing the multimodel GALAXY conversational system that "captures a user's speech," "sends it to the speech recognizer," performs context resolution to interpret the speech, and provides "an appropriate reply to the user"); Baptist, p.10, 38, 39, 80 (disclosing "the GALAXY conversational systems" that "produces a meaning representation in response to a user query" and generates responses to the queries).

Accordingly, the disclosed interactive speech prior art was known work in the field of computer technology, design incentives or other market forces such as improving the ability of speech systems to understand context, retain short-term or long-term knowledge to determine an appropriate manner, seeking multimodal input, or would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to solve problems with improving human

interaction with spoken language understanding systems. These combinations would (1) involve the combination of known methods (e.g., speech recognition, filtering, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech and multimodal inputs) and/or (2) involve the use of these known techniques (e.g., improving interactive speech through recognition of context, short and long-term knowledge, manner, and multi-modal inputs) to improve similar computer systems in the same way.

The 249 patent is also obvious in view of the disclosed combination of references that disclose similar architectures for implementing interactive speech systems, which include components such as a voice input device to receive a natural language utterance (such as a microphone), a component for automatic speech recognition to recognize the words of the utterance, a component for natural language understanding to interpret the recognized words, a component for performing an action based on the interpretation, and an output device that presents a response to the user, including, for example, Kennewick II, Cooper, MIT Galaxy, MiPad, Huang III, Schoneburg, and Coffman II.

These prior art references describe several architectures that were known to persons of skill in the art. A person of skill would have understood the benefits of these architectures and would have been motivated to combine features of different architectures in designing and building a speech application, including each of the components listed above. From a functional perspective, for example, a person of skill would have found incorporating components such as those for automatic speech recognition and natural language understanding modules to be beneficial for at least the reasons identified above regarding interactive speech technology. From a more technical perspective, as a well-known design pattern for building interactive speech systems was to construct them modularly so that functionality could be distributed across various components, a

person of skill would have been able to incorporate these components into different systems. See Kennewick II at [0013] (the interactive speech "software can be distributed in any way between" a variety of hardware components "without altering the function, features, scope, or intent of the invention"); Cooper at 4:50-5:11 (describing a componentized server system that can be "ported to other computing platforms" or "clustered together"); Seneff II, § 1 (disclosing the "GALAXY architecture" as consisting of "of a number of specialized servers that communicate with one another via a central programmable hub"); Zue, 101 (disclosing the "GALAXY architecture" with a "programmable" hub that "communicates with the various servers via a standardized protocol," enabling "multiple system developers to experiment with different domains, components, and control strategies"); MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding").

Persons having ordinary skill in the art were aware of various architectures for interactive speech systems, which could perform speech recognition on natural-language voice inputs and act on the recognized speech. *See, e.g.*, Seneff III, § 2.1 (disclosing "the GALAXY architecture" that includes an "audio server [that] captures the user's speech, a "speech recognizer," a "language understanding component," a "discourse component," a "dialogue manager," a "generation component," and a "speech synthesizer" that "transmits a waveform to the audio server which then relays the spoken response to the user over the telephone"); Schoneburg at Fig. 1 (illustrating an "architecture of the system for interactive dialog management").

Accordingly, because the interactive speech architecture prior art was known in the same field of computer technology, design incentives or other market forces such as incorporating speech interfaces into existing computer systems would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to improve the functionality of or mitigate problems associated with interactive speech systems. Combinations with this prior art would (1) involve the combination of known components for performing various functions (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve a simple substitution of one known element (e.g., a monolithic client-server system) for another (e.g., a distributed computer system) to obtain predictable results (e.g., the prior system function enhanced by a scalable architecture).

**4. Invalidity Under § 112**

The Asserted Claims are invalid under 35 U.S.C. § 112. The Asserted Claims lack a written description and enabling disclosure commensurate with the alleged scope of the claims, are unduly vague and indefinite, and contain purely functional language. The 249 patent, read in light of the specification and prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). The 249 patent does not enable one of skill in the art to practice the full scope of the inventions claimed without undue experimentation. The 249 patent does not enable one of skill in the art to practice the scope of the inventions set forth in VB Assets' preliminary infringement contentions.

Because expert disclosures are not yet due, including those in connection with claim construction, Amazon reserves the right to raise any additional issues from the perspective of one skilled in the art at the appropriate time in the case.

The following identification of claims/claim elements are preliminary and only exemplary; and Amazon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, to the extent an element identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112. Amazon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 during claim construction or after the Court construes the claims. Furthermore, this identification of claims/claim elements is preliminary and should not be interpreted as reflecting Amazon's position on the proposed construction of any claim/claim element.

At least the following claims are invalid for failing to meet the requirements of 35 U.S.C. § 112:[93]

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| comparing, by the computer system, the first voice input with the second voice input; | 249 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| filtering, by the computer system, sound from the first voice input and the second voice input based on the comparison; | 249 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the computer system, based on the first context, an interpretation of | 249 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

[93] Each dependent claim depending from an identified independent claim is invalid under § 112 at least for the same reasons identified for the corresponding independent claim. For the sake of brevity, § 112 invalidity grounds identified for each independent claim are not repeated for claims depending therefrom.

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| the first natural language utterance | | |
| determining, by the computer system, based on the short-term knowledge, whether the second natural language utterance corresponds to the first context; | 249 patent, claim 2 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| expiring, by the computer system, one or more items of short-term knowledge that are based on one or more natural language utterances received during conversations occurring prior to the first conversation. | 249 patent, claim 7 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| accumulating, by the computer system, long-term knowledge, wherein the long-term knowledge is accumulated based on one or more natural language utterances received during conversations occurring prior to the first conversation, wherein the first context is determined based on the short-term knowledge and the long-term knowledge. | 249 patent, claim 9 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the computer system, based on the short-term knowledge, a manner in which the first natural language utterance is spoken, wherein the first response is generated based on the determined manner and the interpretation of the first natural language utterance. | 249 patent, claim 10 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

#### 5. Invalidity Under § 101

In addition to the grounds identified above, Amazon provides notice to VB Assets that the asserted claims of the 249 patent do not comply with the requirements of 35 U.S.C. § 101.

The claims of the 249 patent are generally directed to an abstract idea, *e.g.*, processing natural language utterances and non-voice inputs to generate responses based on short term and long-term knowledge. The claims do not recite any specific technological solution for accomplishing this goal, and instead only provide results-focused, functional claims that fail step 1 of the *Alice* test. *See IPA Techs. v. Amazon.com, Inc.*, 307 F. Supp. 3d 356, 363, 368-69 (D. Del. 2018) (claims reciting "receiving," "interpreting," and "translating" a spoken request were "aspirational in nature and devoid of [] implementation details or [] description . . . .").

The asserted patents do not claim any inventive concept necessary to transform their abstract idea into patent-eligible subject matter. Neither the claims nor the specification recites any new computer hardware or software for achieving the aspirational result. Instead, the claims recite admittedly generic and conventional voice processing technology behaving in expected ways to implement this dedication concept. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (finding that "well-understood, routine, and conventional activities commonly used in industry" cannot provide an inventive concept). Accordingly, the asserted patents fail step 2 of the *Alice* test.

Amazon identifies each asserted claim of the 249 patent as stating non-inventive variations of the abstract idea. *See id*.

### C. The 025 Patent

#### 1. Preliminary Identification of Invalidity Grounds

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the asserted claims of the 025 patent

invalid under 35 U.S.C. §§ 102 and/or 103. The 025 patent invalidity charts attached as Exhibits C-1 through C-17 set forth, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Amazon reserves the right to amend its invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery continues including third party discovery. Amazon explicitly reserves the right to further narrow each ground by reducing the number of references in each ground as needed to continue streamlining this case for trial. The below identification of prior art invalidity grounds in no way limits Amazon from relying on additional prior art references to establish the state of the art and knowledge of one of skill in the art, nor does it limit Amazon's other invalidity defenses including under Section 101 or Section 112.

Amazon provides the following identification of preliminary invalidity grounds for the currently asserted claims of the 025 patent:

| Claim No. | Invalidity Grounds[94][95] under 35 U.S.C. §§ 102 and/or 103[96] |
|---|---|
| 1 | Kennewick II in combination with Gold and Coffman II.<br>Kennewick II in combination with Gold and Weider.<br>Kennewick II in combination with Gold, Brachman and Weider.<br>Kennewick II in combination with Gold, Brachman and Coffman II.<br>Weider in combination with Svendsen.<br>Weider in combination with Svendsen and Coffman II.<br>Marx in combination with Kennewick II, and Weider.<br>Marx in combination with Kennewick II, Gold, and Coffman II<br>MiPad in combination with Kennewick II, Gold, and Weider.<br>MiPad in combination with Kennewick II, Gold, and Coffman II. |
| 2 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Svendsen.<br>Grounds of claim 1 in combination with Caine.<br>Grounds of claim 1 in combination with Anderson.<br>Grounds of claim 1 in combination with Dara-Abrams. |
| 3 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Mahajan.<br>Grounds of claim 1 in combination with Weider.<br>Grounds of claim 1 in combination with Coffman II.<br>Grounds of claim 1 in combination with Svendsen. |
| 4 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Gold.<br>Grounds of claim 1 in combination with Bobbert. |
| 5 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Ginter.<br>Grounds of claim 1 in combination with Barton.<br>Grounds of claim 1 in combination with Svendsen. |

[94] For brevity, each reference in this table is identified by its short cite, which is defined later in subsections below.

[95] To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

[96] Defendant contends that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified by itself as a ground invalidates the relevant asserted claim under 35 U.S.C. § 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under §103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

| Claim No. | Invalidity Grounds[9495] under 35 U.S.C. §§ 102 and/or 103[96] |
|---|---|
| | Grounds of claim 1 in combination with Bobbert. |
| 6 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Svendsen.<br>Grounds of claim 1 in combination with Bobbert. |
| 7 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Barton.<br>Grounds of claim 1 in combination with Bobbert. |
| 8 | *See* grounds of claim 1. |
| 9 | *See* grounds of claims 1, 2, and 8. |
| 10 | *See* grounds of claims 1, 3, and 8. |
| 11 | *See* grounds of claims 1, 4, and 8. |
| 12 | *See* grounds of claims 1, 5, and 8. |
| 13 | *See* grounds of claims 1, 6, and 8. |
| 14 | *See* grounds of claims 1, 7, and 8. |
| 15 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Barton.<br>Grounds of claim 1 in combination with Stefik.<br>Grounds of claim 1 in combination with Gold. |
| 16 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Barton.<br>Grounds of claim 1 in combination with Stefik. |
| 17 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Caine.<br>Grounds of claim 1 in combination with Gold.<br>Grounds of claim 1 in combination with Svendsen. |
| 19 | *See* grounds of claim 1.<br>Grounds of claim 1 in combination with Gold.<br>Grounds of claim 1 in combination with Svendsen. |

The asserted claims of the 025 Patent are invalid in view of the grounds identified above, A person having ordinary skill in the art would have naturally consulted each of these references and combined the teachings, for the reasons identified herein and the accompanying charts. Accordingly, a person of ordinary skill in the art at the time of filing of the asserted patents would

have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. One or more expert witnesses may further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid for obviousness in accordance with the case schedule.

The invalidity grounds provided above are preliminary. Additional or alternative grounds are possible, including grounds which include fewer references than identified in the above combinations or additional references, and Amazon may rely on such grounds in this litigation. Amazon is currently unaware of what claim constructions VB Assets may seek in this case. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by defendants as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would not have been known to persons of skill in the art. Additionally, discovery is ongoing. Amazon is continuing their investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Amazon may subpoena third parties for such information. VB Assets may also be in possession of prior art that Amazon may receive during discovery in this case. Amazon reserves the right to amend and supplement these contentions to identify other prior art, invalidity grounds, and combinations rendering the asserted claims invalid.

**2. Identification of Prior Art**

In accordance with paragraph 4(d) of the Default Standard, the tables below list prior art references that anticipate or render obvious one or more of the Asserted Claims are listed in the tables below. The attached claim charts in Exhibits C-1 through C-17 demonstrate where each limitation of the claims is found in certain of the references listed below, either expressly or

inherently in the larger context of the passage, or inherently as the reference as a whole is understood by a person having ordinary skill in the art. At least the following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

**a. Prior Art Patents and Patent Publications That Anticipate or Render Obvious One or More Asserted Claims of the 025 Patent**

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| US Patent No: 5,892,900 | United States | August 30, 1996 | April 6, 1999 | "Ginter" |
| US Patent No: 6,704,576 | United States | September 27, 2000 | March 9, 2004 | "Brachman" |
| US Patent No: 8,521,315 | United States | November 26, 2008 | August 27, 2013 | "Anderson" |
| US Patent Publication No: 2002/0032752 | United States | June 9, 2000 | March 14, 2002 | "Gold" |
| US Patent Publication No: 2004/0193420 | United States | July 15, 2002 | September 30, 2004 | "Kennewick II" |
| US Patent Publication No: 2004/0199387 | United States | July 31, 2000 | October 7, 2004 | "Barton" |
| US Patent Publication No: 2007/0050191 | United States | August 29, 2005 | March 1, 2007 | "Weider" |
| US Patent Publication No: 2008/0140385 | United States | December 7, 2006 | June 12, 2008 | "Mahajan" |
| US Patent Publication No: 2008/0301241 | United States | June 1, 2007 | December 4, 2008 | "Svendsen" |
| US Patent Publication No: 2009/0049074 | United States | August 15, 2007 | February 19, 2009 | "Dara-Abrams" |
| US Patent Publication No: 2009/0069912 | United States | September 10, 2007 | March 12, 2009 | "Stefik" |
| US Patent Publication No: 2009/0216805 | United States | February 25, 2008 | August 27, 2009 | "Coffman II" |

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| US Patent Publication No: 2010/0036967 | United States | August 5, 2008 | February 11, 2010 | "Caine" |
| WO Patent Publication No: WO2007/058522 | WIPO | November 15, 2005 | May 24, 2007 | "Bobbert" |

**b. Additional Prior Art Publications That Anticipate or Render Obvious One or More Asserted Claims of the 025 Patent[97]**

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "MailCall: Message Presentation and Navigation in a Nonvisual Environment" | 1996 | Matthew Marx et al. | "Marx" |
| "SimPhony: voice group communication" | 2004 | Vidya Lakshmipathy | "Lakshmipathy" |

**c. Additional Prior Art Systems/Services That Anticipate One or Render Obvious More Asserted Claims of the 025 Patent**

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| Microsoft MiPad System[98] | 1995-2004 | Microsoft designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "MiPad" |

[97] For brevity, Amazon incorporates by reference the MiPad system publication documents identified above in Section 0.

[98] The Microsoft MiPad System includes, but is not limited to, the documents identified above in Section 0 under footnote 43.

### 3. Identification of Invalidity Due to Obviousness

#### a. Obviousness Combinations

The attached claim charts in Exhibits C-1 through C-17 demonstrate that each prior art reference disclosed in the preceding sections, either alone or in combination with other prior art, or in combination with the knowledge of one skilled in the art, also renders the Asserted Claims invalid as obvious.

#### b. Motivation for Combining Prior Art

The combinations of references provided in the accompanying prior art reference charts for each asserted claim of each asserted patent, are examples and are not intended to be exhaustive. Additional obviousness combinations of the references identified here are possible, and Amazon may rely on such combination(s) in this litigation. Amazon is currently unaware of VB Assets' allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by Amazon as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would have been known to persons of skill in the art. And Amazon does not yet know how the Court will construe terms in the Asserted Claims. Amazon also with conduct third-party discovery and is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and additional third parties that may have information about those systems. Amazon reserves the right to supplement these contentions to identify other prior art and combinations that would have made such limitations obvious.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, and/or reasons to combine them for at least the following reasons.[99]

The 025 patent is invalid in view of any combination of references related to interactive speech technology (which includes speech recognition, interpreting natural language inputs, and generating responses), including, for example, Kennewick II, MiPad, Coffman II, Weider, Brachman, Svendsen, Marx, and Stefik.

A person having ordinary skill in the art would have been motivated to combine any of these interactive speech prior art references as this prior art describes several benefits that were known to persons of skill in the art. For instance, the prior art references identified above disclose receiving utterances and natural language processing in a "query and response environment." Kennewick II at ¶ 18. For example, Kennewick II, discloses a system for "processing of commands through a speech interface in a vehicle environment" including "a fully integrated environment allowing mobile users to ask natural language speech questions or give natural language commands in a wide range of domains." Kennewick II at ¶ 2; *see also* Weider at ¶¶ 14, 130 (disclosing a system that "include[s] a speech unit interface device that receives spoken natural language requests, commands and/or other utterances from users, and a computer device or system that receives input from the speech unit and processes the input and responds to the user with a natural language speech response" for use in a "complete speech-based command generation, information query, retrieval, processing and presentation environment or a combination of speech-

[99] In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418.

based and non-speech-based command generation, information query, retrieval, processing and presentation environment for telematic applications"); Marx at 166-167, 170; MiPad Demo Video I, 02:15-01:21 ("In this case, we've done full recognition. . . . being able to take the sentence apart and do the right things."); *id.*, 03:37-03:55 ("I'd like to walk in the house and say, play my music and because it's coming from the playlist on my computer"); Huang III, p. 7 ("interpret[ing] utterances in context and carry[ing] out appropriate actions" are fundamental requirements of spoken language understanding and "knowledge of the characteristic vocabulary, typical syntactic patterns, and possible actions in any given application context for both interpretation of user utterance and planning system activity are the heart and soul of any spoken language understanding system").

A person of ordinary skill in the art would have been familiar with state of the art of natural language processing technologies described in the above references and would have been motivated to combine those disclosures with prior art pertaining to user interface and content retrieval and dedication technologies in Gold, Brachman, Marx, Bobbert, Weider, and Stefik to provide for delivering content to a desired recipient. *See, e.g.*, Gold at Abstract ("sender contacts a musical jukebox Web site and selects a song to dedicate and enters a recipient's electronic mail (email) address."); *see also*, Brachman at 4:21-26 (disclosing a method and system that allows a user to request content using "a natural language search," which can be performed by "voice means"); Marx at 166-167 (receiving first and second utterances "using speech recognition and synthesis" and sending messages to a recipient); Bobbert at 10-12 (describing dedicating multimedia files); Stefik at ¶ 53 ("The improved ease of use and convenience afforded in music recommendation through the foregoing method is best illustrated through the following scenario. Suppose a listener is exercising at a gym and is listening to a tune on his digital media player. He

realizes that his son might be interested in the tune to which he is presently listening. To send a music recommendation, he taps a button on his digital media player and speak a message into his player, such as 'Message for Morgan. Check out this piece, The River Sings, by Enya, which reminds me of Orinoco Flow.'") Further, a POSITA would have been familiar with the general state of the art of content retrieval and dedication and would look to combine these teachings disclosures with Weider, Coffman II, Svendsen, Mahajan, Caine, Anderson, or Dara-Abrams in order to provide for any desired annotation or tagging with metadata via interactive speech technology. *See, e.g.*, Weider at ¶ 120 (disclosing that its system "may be configured to allow speech annotations of objects stored thereon," where a mobile device "may transcribe the speech annotations to textual annotations and store the textual annotations with the object"); *id.* at ¶ 123 (disclosing "textual annotations… that are associated with the object may be stored as metadata"); Coffman II at ¶ 23 (describing "textual, audio, or audio/visual" annotations that "may be modified," e.g., "the content of an audible annotation may be transformed into legible text through the use of an automatic speech recognition engine."); Svendsen at ¶¶ 55-56, Fig. 4 (disclosing that a user may "record the media item annotation" for a recommendation, such as a "voice recording" that "provides an introductory salutation to the recipient.").

Accordingly, the disclosed interactive speech prior art was known work in the field of computer technology, design incentives or other market forces such as implementing user interface and content retrieval and dedication concepts disclosed in Gold, Brachman, Marx, Weider, Coffman II, or Svendsen. These combinations would (1) involve the combination of known methods (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve the use

of these known techniques (e.g., retrieving, sharing, and annotating content) to improve similar computer systems in the same way.

The 025 patent is also invalid in view of the disclosed combination of references that disclose similar architectures for implementing interactive speech systems, which include components such as a voice input device to receive a natural language utterance (such as a microphone), a component for automatic speech recognition to recognize the words of the utterance, a component for natural language understanding to interpret the recognized words, a component for performing an action based on the interpretation, and an output device that presents a response to the user, including, for example, Kennewick II and MiPad.

These prior art references describe several architectures that were known to persons of skill in the art. A person of skill would have understood the benefits of these architectures and would have been motivated to combine features of different architectures in designing and building a speech application, including each of the components listed above. From a functional perspective, for example, a person of skill would have found incorporating components such as those for automatic speech recognition and natural language understanding modules to be beneficial for at least the reasons identified above regarding interactive speech technology. From a more technical perspective, as a well-known design pattern for building interactive speech systems was to construct them modularly so that functionality could be distributed across various components, a person of skill would have been able to incorporate these components into different systems. See Kennewick II at [0013] (the interactive speech "software can be distributed in any way between" a variety of hardware components "without altering the function, features, scope, or intent of the invention"); MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and

calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding").

Persons having ordinary skill in the art were aware of various architectures for interactive speech systems, which could perform speech recognition on natural-language voice inputs and act on the recognized speech. *See, e.g.*, MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding"); Kennewick II, [0013] (the interactive speech "software can be distributed in any way between" a variety of hardware components "without altering the function, features, scope, or intent of the invention"). And POSITAs were aware of various architectures for interactive speech systems, which could capture natural-language voice inputs, perform speech recognition on the captured natural-language voice inputs, and act on the recognized speech to perform a variety of tasks. *See, e.g.*, Huang I at Abstract ("MiPad is one of the application prototypes in a project codenamed Dr Who. As a wireless Personal Digital Assistant (PDA), MiPad fully integrates continuous speech recognition (CSR) and spoken language understanding (SLU) to enable users to accomplish many common tasks using a multimodal interface and wireless technologies"); Huang III, Fig. 1.4 (illustrating a "basic system architecture of a spoken language understanding system" with blocks representing "Access Device," "Speech Recognizer," "Sentence Interpretation," "Dialog Manager," "Application," and "Database").

Accordingly, because the interactive speech architecture prior art was known in the same field of computer technology, design incentives or other market forces such as incorporating user interface and content retrieval and dedication technologies would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to improve the functionality associated with interactive speech systems. Combinations with this prior art would (1) involve the combination of known components for performing various functions (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve a simple substitution of one known element (e.g., a monolithic client-server system) for another (e.g., a distributed computer system) to obtain predictable results (e.g., the prior system function enhanced by a scalable architecture).

The 025 patent is further rendered obvious in view of any combination of references related to electronic commerce including interactive voice technology, including for example: Gold, Ginter, and Barton. These prior art references describe a number of benefits that were known to persons of skill in the art, such as describing transactions with a person's voice to facilitate the purchase of goods and services and that persons having ordinary skill in the art were aware of using speech technology for e-commerce. *See, e.g.*, Gold at ¶ 9 ("The dedication service provided by the invention may be used in any one of a number of different ways including various commercial transactions involving the Internet. As one example, senders may use the invention to purchase and send a dedication for a fee."); Ginter at 215:7-17 (describing different purchase options); Barton at ¶ 12 ("Employing an interactive voice response unit ("IVR"), the service enables the user to immediately purchase a recording of the identified song. The present invention thus takes advantage of the impulse purchase phenomenon by providing a mechanism that guarantees that the user is at the height of interest in the particular music.").

Accordingly, such prior art directed to e-commerce was known work in the same field of computer technology. Design incentives or other market forces such as increasing the efficiency and ease with which a user may engage in online shopping would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to integrate e-commerce into existing e-commerce and interactive speech systems. Combinations with the above interactive speech technology prior art would (1) involve the combination of known methods (e.g., electronic commerce and interactive speech systems) to yield predictable results (e.g., completing internet transactions using interactive speech systems); (2) involve applying a known technique (e.g., shopping) to a known device, method, or product (e.g., a device that is connected to the internet) ready for improvement to yield predictable results (e.g., shopping on the internet); and/or (3) involve the use of these known techniques (e.g., using interactive speech technology for e-commerce) to improve similar computer systems in the same way.

**4. Invalidity Under § 112**

The Asserted Claims are invalid under 35 U.S.C. § 112. The Asserted Claims lack a written description and enabling disclosure commensurate with the alleged scope of the claims, are unduly vague and indefinite, and contain purely functional language. The 025 patent, read in light of the specification and prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). The 025 patent does not enable one of skill in the art to practice the full scope of the inventions claimed without undue experimentation. The 025 patent does not enable one of skill in the art to practice the scope of the inventions set forth in VB Assets' preliminary infringement contentions.

Because expert disclosures are not yet due, including those in connection with claim construction, Amazon reserves the right to raise any additional issues from the perspective of one skilled in the art at the appropriate time in the case.

The following identification of claims/claim elements are preliminary and only exemplary; and Amazon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, to the extent an element identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112. Amazon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 during claim construction or after the Court construes the claims. Furthermore, this identification of claims/claim elements is preliminary and should not be interpreted as reflecting any Amazon's position on the proposed construction of any claim/claim element.

At least the following claims are invalid for failing to meet the requirements of 35 U.S.C. § 112:[100]

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| determine, based on processing of the first utterance by a speech recognition engine, one or more words or phrases of the first utterance | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

[100] Each dependent claim depending from an identified independent claim is invalid under § 112 at least for the same reasons identified for the corresponding independent claim. For the sake of brevity, § 112 invalidity grounds identified for each independent claim are not repeated for claims depending therefrom.

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| interpret the first utterance, at the conversational language processor, based on the one or more words or phrases | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identify, based on the interpretation of the first utterance, content to dedicate to a recipient | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| initiate, based on the identified content, a dedication to the recipient | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determine, based on a processing of the second utterance by the speech recognition engine, one or more words or phrases of the second utterance | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| send information to enable the recipient to access the content and the second utterance | 025 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| wherein the executable instructions, when executed by the one or more processors, cause the one or more processors to purchase the content from a content provider to enable the recipient to access the content | 025 patent, claim 4 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| wherein the executable instructions, when executed by the one or more processors, cause the one or more processors to: send, to the recipient, an electronic link to access the content as the information to enable the recipient to access the content; and send, to the recipient, the second utterance in an encoded audio format as the information to | 025 patent, claim 15 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| enable the recipient to access the second utterance | | |
| determining, by the one or more processors, one or more words or phrases of the first utterance based on processing of the first utterance by a speech recognition engine; | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| interpreting, by the one or more processors, the first utterance, at the conversational language processor, based on the one or more words or phrases; | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identifying, by the one or more processors, content to dedicate to a recipient based on the interpretation of the first utterance; | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| initiating, by the one or more processors, a dedication to the recipient based on the identified content; | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the one or more processors, one or more words or phrases of the second utterance based on a processing of the second utterance by the speech recognition engine; | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| sending, by the one or more processors, information to enable the recipient to access the content and the second utterance | 025 patent, claim 8 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| annotating the content with the second utterance | 025 patent, claim 10 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| purchasing the content from a content provider to enable the recipient to access the content. | 025 patent, claim 11 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| sending, to the recipient, an electronic link to access the content as the information to enable the recipient to access the content; and sending, to the recipient, the second utterance in an encoded audio format as the information to enable the recipient to access the second utterance. | 025 patent, claim 13 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

**5. Invalidity Under § 101**

In addition to the grounds identified above, Amazon provides notice to VB Assets that the asserted claims of the 025 patent do not comply with the requirements of 35 U.S.C. § 101.

The claims of the 025 patent are generally directed to an abstract idea, *e.g.*, the concept of dedicating content by processing user utterances. The claims do not recite any specific technological solution for accomplishing this goal, and instead only provide results-focused, functional claims that fail step 1 of the *Alice* test. *See IPA Techs. v. Amazon.com, Inc.*, 307 F. Supp. 3d 356, 363, 368-69 (D. Del. 2018) (claims reciting "receiving," "interpreting," and "translating" a spoken request were "aspirational in nature and devoid of [] implementation details or [] description . . . .").

The asserted patents do not claim any inventive concept necessary to transform their abstract idea into patent-eligible subject matter. Neither the claims nor the specification recites any new computer hardware or software for achieving the aspirational result. Instead, the claims recite admittedly generic and conventional voice processing technology behaving in expected ways to implement this dedication concept. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (finding that "well-understood,

routine, and conventional activities commonly used in industry" cannot provide an inventive concept). Accordingly, the asserted patents fail step 2 of the *Alice* test.

Amazon identifies each asserted claim of the 025 patent as stating non-inventive variations of the claimed abstract idea. *See id*.

**D. The 385 Patent**

**1. Preliminary Identification of Invalidity Grounds**

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the asserted claims of the 385 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 385 patent invalidity charts attached as Exhibits D-1 through D-19 set forth, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Amazon reserves the right to amend its invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery continues including third party discovery. Amazon explicitly reserves the right to further narrow each ground by reducing the number of references in each ground as needed to continue streamlining this case for trial. The below identification of prior art invalidity grounds in no way limits Amazon from relying on additional prior art references to establish the state of the art and knowledge of one of skill in the art, nor does it limit Amazon's other invalidity defenses including under Section 101 or Section 112.

Amazon provides the following identification of preliminary invalidity grounds for the currently asserted claims of the 385 patent:

| Claim No. | Invalidity Grounds[101][102] under 35 U.S.C. §§ 102 and/or 103[103] |
|---|---|
| 1 | Li alone or in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br><br>Chen II in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br><br>MiPad in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br><br>MIT Galaxy in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell. |
| 2 | *See* grounds for claim 1. |
| 3 | *See* grounds for claim 1. |
| 4 | *See* grounds for claim 1. |
| 5 | *See* grounds for claim 1. |
| 6 | *See* grounds for claims 1. |
| 7 | *See* grounds for claims 1. |
| 8 | *See* grounds for claims1. |
| 9 | *See* grounds for claims1. |
| 10 | *See* grounds for claims1. |
| 11 | *See* grounds for claim 1. |
| 12 | *See* grounds for claims1. |

[101] For brevity, each reference in this table is identified by its short cite, which is defined later in subsections below.

[102] To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

[103] Defendant contends that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified by itself as a ground invalidates the relevant asserted claim under 35 U.S.C. § 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under §103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

| Claim No. | Invalidity Grounds[101][102] under 35 U.S.C. §§ 102 and/or 103[103] |
|---|---|
| 13 | *See* grounds for claims1. |
| 14 | *See* grounds for claim 1. |
| 15 | *See* grounds for claim 1. |
| 31 | Li alone or in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br>Chen II in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br>MiPad in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell.<br>MIT Galaxy in combination with Barnes, Partovi, Kennewick II, Lee I, Desai, Dabiri, Aretoulaki, Barton, and Tidwell. |
| 32 | *See* grounds for claim 31. |
| 33 | *See* grounds for claim 31. |
| 34 | *See* grounds for claim 31. |

The asserted claims of the 385 Patent are invalid in view of the grounds identified above, A person having ordinary skill in the art would have naturally consulted each of these references and combined the teachings, for the reasons identified herein and the accompanying charts. Accordingly, a person of ordinary skill in the art at the time of filing of the asserted patents would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. Amazon's one or more experts may further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid for obviousness in accordance with the case schedule.

The invalidity grounds provided above are preliminary. Additional or alternative grounds are possible, including grounds which include fewer references than identified in the above combinations or additional references, and Amazon may rely on such grounds in this litigation.

Amazon is currently unaware of what claim constructions VB Assets may seek in this case. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by defendants as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would not have been known to persons of skill in the art. Additionally, discovery is ongoing. Amazon is continuing their investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Amazon may subpoena third parties for such information. VB Assets may also be in possession of prior art that Amazon may receive during discovery in this case. Amazon reserves the right to amend and supplement these contentions to identify other prior art, invalidity grounds, and combinations rendering the asserted claims invalid.

**2. Identification of Prior Art**

In accordance with paragraph 4(d) of the Default Standard, the tables below list prior art references that anticipate or render obvious one or more of the Asserted Claims are listed in the tables below. The attached claim charts in Exhibits D-1 through D-19 demonstrate where each limitation of the claims is found in certain of the references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole is understood by a person having ordinary skill in the art. At least the following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

**a. Prior Art Patents and Patent Publications That Anticipate or Render Obvious One or More Asserted Claims of the 385 Patent**

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 7,376,586 | United States | October 22, 1999 | May 20, 2008 | "Partovi" |

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 9,922,364 | United States | November 18, 2013 | March 20, 2018 | "Chen II" |
| United States Patent No: 10,232,408 | United States | December 10, 2004 | March 19, 2019 | "Zsigmond" |
| US Patent Publication No: 2003/0078779 | United States | January 4, 2001 | April 24, 2003 | "Desai" |
| US Patent Publication No: 2004/0193420 | United States | July 15, 2002 | September 30, 2004 | "Kennewick II" |
| US Patent Publication No: 2009/0259561 | United States | April 15, 2008 | October 15, 2009 | "Boys" |
| US Patent Publication No: 2012/0096358 | United States | May 23, 2002 | April 19, 2012 | "Barnes" |
| US Patent Publication No: 2012/0284105 | United States | October 13, 2009 | November 8, 2012 | "Li" |
| US Patent Publication No: 2014/0344106 | United States | May 15, 2013 | November 20, 2014 | "Lee I" |
| US Patent Publication No: 2015/0095188 | United States | October 2, 2013 | April 2, 2015 | "Lee II" |
| US Patent Publication No: 2015/0302498 | United States | April 21, 2014 | October 22, 2015 | "Barton" |
| Canadian Patent Application No: 2304080 | Canada | March 8, 2000 | September 8, 2001 | "Tidwell" |
| WO Patent Publication No: WO02/073331 | WIPO | February 20, 2001 | September 19, 2002 | "Aretoulaki" |

### b. Additional Prior Art Publications That Anticipate or Render Obvious One or More Asserted Claims of the 385 Patent[104]

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "The Role of a Natural Language Conversational Interface in Online Sales: A Case Study" | 2001[105] | Joyce Chai et al. | "Chai III" |
| "A User-Sensitive Spoken Dialogue System Incorporating Emotional Responsiveness" | 2002[106] | Gloria Dabiri et al. | "Dabiri" |
| "A Hybrid Dialogue Strategy for Speech-enabled Mobile Commerce" | 2005[107] | Yangdong Fan et al. | "Fan" |
| "LINGUINI: Acquiring Individual Interest Profiles by Means of Adaptive Natural Language Dialog" | 2006[108] | Rosmary Stegmann | "Stegmann" |

### c. Additional Prior Art Systems/Services That Anticipate or Render Obvious One or More Asserted Claims of the 385 Patent

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| MIT Galaxy System[109] | 2003 | MIT designed, developed, used, advertised, published, and also offered for sale and/or sold this system to its customers, potential customers, and other third | "MIT Galaxy" |

[104] For brevity, Amazon incorporates by reference the MiPad system publication documents identified above in Section 0.

[105] Published in International Journal of Speech Technology 4, pp. 285-295 (2001).

[106] Published in Methods and Applications of Artificial Intelligence, Springer (2002).

[107] Published in Proceedings of the 2005 IEEE International Conference on e-Business Engineering (ICEBE'05).

[108] This is a Dissertation of the TUM School of Computation, Information and Technology, March 30, 2006. Available at https://mediatum.ub.tum.de/doc/601808/document.pdf.

[109] The MIT Galaxy System includes, but is not limited to, the documents identified above in Section 0 under footnote 12.

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| | | parties as evidenced at least by the documents identified herein. | |
| Microsoft MiPad System[110] | 1995-2004 | Microsoft designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "MiPad" |
| SemanticEdge[111] | 2002 | On information and belief, SemanticEdge GmbH designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "SemanticEdge" |

### 3. Identification of Invalidity Due to Obviousness

The attached claim charts in Exhibits D-1 through D-19 demonstrate that each prior art reference disclosed in the preceding sections, either alone or in combination with other prior art, or in combination with the knowledge of one skilled in the art, also renders the Asserted Claims invalid as obvious.

#### a. Motivation for Combining Prior Art

The combinations of references provided in the accompanying prior art reference charts for each asserted claim of each asserted patent, are examples and are not intended to be exhaustive.

[110] The Microsoft MiPad System includes, but is not limited to, the documents identified above in Section 0 under footnote 43.

[111] The SemanticEdge system includes, but is not limited to, Dabiri and Aretoulaki, which have been charted separately.

Additional obviousness combinations of the references identified here are possible, and Amazon may rely on such combination(s) in this litigation. Amazon is currently unaware of VB Assets' allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by Amazon as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would have been known to persons of skill in the art. And Amazon does not yet know how the Court will construe terms in the Asserted Claims. Amazon also with conduct third-party discovery and is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and additional third parties that may have information about those systems. Amazon reserves the right to supplement these contentions to identify other prior art and combinations that would have made such limitations obvious.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, and/or reasons to combine them for at least the following reasons.[112]

The 385 patent is invalid in view of any combination of references related to interactive speech technology (which includes speech recognition, interpreting natural language inputs, and generating responses), including, for example, MIT Galaxy, MiPad, Kennewick II, Li, Aretoulaki, Chen II, and Barnes.

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[112] In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418.

A person having ordinary skill in the art would have been motivated to combine any of these interactive speech prior art references as this prior art describes several benefits that were known to persons of skill in the art. For instance, the prior art references identified above disclose identifying the context of the user's utterance to allow users to interact with a system in a natural way that is consistent with how they already interact with others using speech to direct or control the system. This eliminates the need to train the system or memorize commands, and enables the system to access and retrieve information, perform tasks, complete transactions, and present information to the user in a way that reduces the number of interactions between the user and the system. For example, Kennewick II discloses that its "speech based natural language query and response environment" "improv[es] the reliability of determining the context and presenting the expected results for a particular question or command." Kennewick II at Abstract; *see also id.* at ¶ 160 (noting the possibility of different contexts for the same utterance); MiPad Demo Video I, 02:15-01:21 ("In this case, we've done full recognition. . . . being able to take the sentence apart and do the right things."); *id.*, 03:37-03:55 ("I'd like to walk in the house and say, play my music and because it's coming from the playlist on my computer"); Guo, 1:13-16, 2:4-5 (noting that "there is an ongoing need to improve dialog systems used in computer interfaces" where systems "the computer interfaces do not adapt to the manner in which the user wishes to interact with the computer, but instead force the user to interact through a specific set of interfaces."); Aretoulaki at 11:31-45 ("The ASCII text representation 215 of the user input 205 is processed lexically, syntactically, and semantically by NLP Manager 110 at block 220 in order to acquire a representation of the user's requirements as a domain semantic representation 225 (or some of these requirements) about the desired product, service or information . . . Lexical and semantic analyses are closely coupled, so that individual words can already point to domain specifications.

This is achieved by means of a mapping lexicon that translates application-specific words into the corresponding relevant concepts in the domain ontology."); Chen at Abstract, Figs. 5-8, 1:52-53; Barnes at ¶¶ 381, 418; Li at ¶¶ 222-223.

Persons having ordinary skill in the art were aware of the use of contextual knowledge in interactive speech technology. *See, e.g.*, Kennewick II, ¶143 ("Commands and questions are interpreted, queries formulated, responses created and results presented can be based on the user's personal or user profile values," including "history of commands and queries."), ¶¶157, 160, 164; Seneff III, §1 (disclosing complex, multi-variable dialog system for making flight reservations), §2.2 (determining the intended meaning of the user utterance by singling out the most promising hypothesis, and then determining if that hypothesis "is consistent with the prior dialogue"); Aretoulaki at 11:31-36 ("The ASCII text representation 215 of the user input 205 is processed lexically, syntactically, and semantically by NLP Manager 110 at block 220 in order to acquire a representation of the user's requirements as a domain semantic representation 225 (or some of these requirements) about the desired product, service or information."), at 11:42-45 ("Lexical and semantic analyses are closely coupled, so that individual words can already point to domain specifications. This is achieved by means of a mapping lexicon that translates application-specific words into the corresponding relevant concepts in the domain ontology."), Barnes at ¶¶ 23, 0381; Li at ¶¶ 222-223.

The interactive speech prior art teaches that it can incorporate these benefits by disclosing improvements to interactive speech technology. *See, e.g.,* Kennewick II, Abstract ("a complete speech-based natural language query and response environment" . . . [that] makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains"); Glass I,

Abstract, § 1 (disclosing "a real-time telephone-based speech recognizer as part of a conversational system in the weather information domain"); Glass II, Abstract, § 1 (disclosing "a telephone-based speech recognizer as part of a conversational system in the weather information domain"); Seneff I, Abstract, p.284, 290-291 (disclosing a "mixed-initiative spoken dialogue system that supports both voice-only interaction and multimodal interaction"); Seneff II, Abstract, § 1 (disclosing "the dialogue module of the Mercury system" that manages "complex dialogue interactions" to allow "users to plan and price itineraries between major airports worldwide"); Seneff III, § 2, 2.1 (disclosing a "spoken dialogue system that allows users to plan air travel" using a "language understanding component"); Zue, p.85, 86, 94 (disclosing the "GALAXY conversational system architecture" and "speech-based interfaces that combines several human language technologies to help users access information using a conversational paradigm"), Lau, Abstract, 14, 21, 22, 25, 37 (disclosing "a conversational system that would be able to interact with the user dynamically"), Filisko, p.22, 23, 30, 31 (disclosing the multimodel GALAXY conversational system that "captures a user's speech," "sends it to the speech recognizer," performs context resolution to interpret the speech, and provides "an appropriate reply to the user"); Baptist, p.10, 38, 39, 80 (disclosing "the GALAXY conversational systems" that "produces a meaning representation in response to a user query" and generates responses to the queries).

Accordingly, the disclosed interactive speech prior art was known work in the field of computer technology, design incentives or other market forces such as improving the ability of speech systems to understand context or retain short-term or long-term knowledge to determine an appropriate manner would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to solve problems with improving human interaction with spoken language understanding systems. These combinations would (1) involve the combination of known methods

(e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve the use of these known techniques (e.g., improving interactive speech through recognition of context and manner) to improve similar computer systems in the same way.

The 385 patent is also rendered obvious in view of the disclosed combination of references that disclose similar architectures for implementing interactive speech systems, which include components such as a voice input device to receive a natural language utterance (such as a microphone), a component for automatic speech recognition to recognize the words of the utterance, a component for natural language understanding to interpret the recognized words, a component for performing an action based on the interpretation, and an output device that presents a response to the user, including, for example, Kennewick II, MIT Galaxy, MiPad, Li, Chen II, and Barnes.

These prior art references describe several architectures that were known to persons of skill in the art. A person of skill would have understood the benefits of these architectures and would have been motivated to combine features of different architectures in designing and building a speech application, including each of the components listed above. From a functional perspective, for example, a person of skill would have found incorporating components such as those for automatic speech recognition and natural language understanding modules to be beneficial for at least the reasons identified above regarding interactive speech technology. From a more technical perspective, as a well-known design pattern for building interactive speech systems was to construct them modularly so that functionality could be distributed across various components, a person of skill would have been able to incorporate these components into different systems. *See* Kennewick II at [0013] (the interactive speech "software can be distributed in any way between"

a variety of hardware components "without altering the function, features, scope, or intent of the invention"); Seneff II, § 1 (disclosing the "GALAXY architecture" as consisting of "of a number of specialized servers that communicate with one another via a central programmable hub"); Zue, 101 (disclosing the "GALAXY architecture" with a "programmable" hub that "communicates with the various servers via a standardized protocol," enabling "multiple system developers to experiment with different domains, components, and control strategies"); MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding"); Li at ¶¶ 130-133, 163; Barnes at ¶ 35; Chen II at 8:36-46 ("voice input 202 may be received by a transcription module 204, which applies a speech-to-text process to generate text corresponding to the voice input 202. Further, transcription module 204 may analyze whether the corresponding text is an accurate transcription of the voice input 202. Further, transcription module 204 may analyze whether the corresponding text is an accurate transcription of the voice input 202 ... If the translation confidence measure exceeds a threshold, then the transcription module 204 may send the generated text to a categorization module 206.").

Persons having ordinary skill in the art were aware of various architectures for interactive speech systems, which could perform speech recognition on natural-language voice inputs and act on the recognized speech. *See, e.g.*, Seneff III, § 2.1 (disclosing "the GALAXY architecture" that includes an "audio server [that] captures the user's speech, a "speech recognizer," a "language understanding component," a "discourse component," a "dialogue manager," a "generation component," and a "speech synthesizer" that "transmits a waveform to the audio server which then

relays the spoken response to the user over the telephone"); Li at ¶¶ 130-133, 163; Barnes at ¶ 35; Chen II at 8:36-46; Aretoulaki at 9:39-49 ("Dialogue Manager 120 employs a series of models that help it interpret the user input and decide on the next system action . . . The user model contains data about the general preferences and assumptions of individual users, as well as whole user groups.").

Accordingly, because the interactive speech architecture prior art was known in the same field of computer technology, design incentives or other market forces such as incorporating speech interfaces into existing computer systems would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to improve the functionality of or mitigate problems associated with interactive speech systems. Combinations with this prior art would (1) involve the combination of known components for performing various functions (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve a simple substitution of one known element (e.g., a monolithic client-server system) for another (e.g., a distributed computer system) to obtain predictable results (e.g., the prior system function enhanced by a scalable architecture).

The 385 patent is further rendered obvious in view of any combination of references related to electronic commerce in the field of interactive speech technology, including for example: Li, Chen, Barnes, Kennewick II, Aretoulaki, Partovi, Tidwell, Lee I, and Barton. These prior art references describe a number of benefits that were known to persons of skill in the art, such as determining a product or service to be purchased, completing a purchase transaction and using profile information to facilitate a purchase. *See, e.g.*, Aretoulaki at 9:47-10:5 ("The user model contains data about the general preferences and assumptions of individual users, as well as whole

user groups . . . User models can be both fixed, as in the case of user classes such as senior citizens, singles, or students, and evolving, as in the case of users whose behavior is being monitored by the system in the course of the interaction."); Kennewick II at [0031] ("The system may use profile data in interpreting questions, formulating queries, interpreting results of queries and presenting answers to the user. Examples of information in a user profile includes, history of questions asked…"), [0143] ("User profile data can be manually entered by the user and/or can be learned by the system based on user behavior."); Partovi at 20:57-63 ("the system could access the user profile to determine that the user prefers to fly Southwest Airlines. That preference may be derived from either an implicit, or explicit, personalization, see above. As a result, the recommendation generated at line 25 may be based on that preference and as a result Southwest Airlines flights might be suggested first."); Barnes at [0178] ("In response, the device 101 communicates with vender at step 375 using the determined communication parameters and transmits a request to purchase the desired product. Thus, the device 101 transmits product identifying information, which may include a product number, name, model, quantity, size, color, duration (e.g., in the event of a rental), dates (in the case of travel tickets or reservations), and/or other product information. In addition, after receiving a request from the VCS, or at some other point in time (as determined by the protocol and format for the VCS) the device 101 exchanges payment information as described above. At the end of the transaction, the device 101 informs the user of the success of the transaction at step 380, which may take the form of, or additionally include, information of the total amount of the transaction, a delivery/pickup location, a delivery/pickup time, and/or other data."); Chen II at 1:52-2:65; Li at ¶¶ 5, 10, 109.

Accordingly, such prior art directed to e-commerce was known work in the same field of computer technology and interactive speech technology. Design incentives or other market forces

such as increasing the efficiency and ease with which a user may engage in online shopping would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to integrate such e-commerce techniques into existing e-commerce and interactive speech systems. Combinations with the above interactive speech technology prior art would (1) involve the combination of known methods (e.g., electronic commerce and interactive speech systems) to yield predictable results (e.g., completing internet transactions using interactive speech systems); (2) involve applying a known technique (e.g., shopping) to a known device, method, or product (e.g., a device that is connected to the internet) ready for improvement to yield predictable results (e.g., shopping on the internet); and/or (3) involve the use of these known techniques (e.g., using interactive speech technology for e-commerce) to improve similar computer systems in the same way.

**4. Invalidity Under § 112**

The Asserted Claims are invalid under 35 U.S.C. § 112. The Asserted Claims lack a written description and enabling disclosure commensurate with the alleged scope of the claims, are unduly vague and indefinite, and contain purely functional language. The 385 patent, read in light of the specification and prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). The 385 patent does not enable one of skill in the art to practice the full scope of the inventions claimed without undue experimentation. The 385 patent does not enable one of skill in the art to practice the scope of the inventions set forth in VB Assets' preliminary infringement contentions.

Because expert disclosures are not yet due, including those in connection with claim construction, Amazon reserves the right to raise any additional issues from the perspective of one skilled in the art at the appropriate time in the case.

The following identification of claims/claim elements are preliminary and only exemplary; and Amazon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, to the extent an element identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112. Amazon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 during claim construction or after the Court construes the claims. Furthermore, this identification of claims/claim elements is preliminary and should not be interpreted as reflecting Amazon's position on the proposed construction of any claim/claim element.

At least the following claims are invalid for failing to meet the requirements of 35 U.S.C. § 112:[113]

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| obtaining, by the computer system, one or more words or phrases recognized from the natural language utterance as an output of the speech recognition engine; | 385 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| selecting, by the computer system, without further user input other than the single first user input, a product or service from the database to be purchased based on the search; | 385 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

[113] Each dependent claim depending from an identified independent claim is invalid under § 112 at least for the same reasons identified for the corresponding independent claim. For the sake of brevity, § 112 invalidity grounds identified for each independent claim are not repeated for claims depending therefrom.

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| completing, by the computer system, without further user input after the receipt of the second user input, a purchase transaction of the selected product or service. | 385 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the computer system, a context based at least on the one or more words or phrases, wherein the product or service is selected based at least on the determined context. | 385 patent, claim 2 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| obtaining, by the computer system, payment information with which to pay for the selected product or service, wherein the purchase transaction is completed based on the payment information without receiving confirmation of the payment information by the user. | 385 patent, claim 3 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| recognizing, by the computer system, one or more words or phrases from the natural language utterance; | 385 patent, claim 31 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| causing, by the computer system, a set of search results to be presented to a user based on the search, the search results indicating one or more products or services from the database available for purchase; | 385 patent, claim 31 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| receiving, by the computer system, a second user input comprising a selection from the set of search results, the selection identifying one or more products or services from the database to be purchased on behalf of the | 385 patent, claim 31 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| user based on the second user input; | | |
| completing, by the computer system, without further user input after identifying the payment information and the shipping information, a purchase transaction of the identified one or more products or services. | 385 patent, claim 31 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| wherein recognizing the one or more words or phrases from the natural language utterance comprises: providing, by the computer system, the natural language utterance as an input to a speech recognition engine; and obtaining, by the computer system, the one or more words or phrases recognized from the natural language utterance as an output of the speech recognition engine. | 385 patent, claim 32 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

### 5. Invalidity Under § 101

The claims of the 385 patent are generally directed to an abstract idea, *e.g.*, processing natural language requests to search, select, and purchase products or services without further user input. The claims do not recite any specific technological solution for accomplishing this goal, and instead only provide results-focused, functional claims that fail step 1 of the *Alice* test. *See IPA Techs. v. Amazon.com, Inc.*, 307 F. Supp. 3d 356, 363, 368-69 (D. Del. 2018) (claims reciting "receiving," "interpreting," and "translating" a spoken request were "aspirational in nature and devoid of [] implementation details or [] description . . . .").

The asserted patents do not claim any inventive concept necessary to transform their abstract idea into patent-eligible subject matter. Neither the claims nor the specification recites any new computer hardware or software for achieving the aspirational result. Instead, the claims recite admittedly generic and conventional voice processing technology behaving in expected ways to implement this dedication concept. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (finding that "well-understood, routine, and conventional activities commonly used in industry" cannot provide an inventive concept). Accordingly, the asserted patents fail step 2 of the *Alice* test.

Amazon identifies each asserted claim of the 385 patent as stating non-inventive variations of the claimed abstract idea. *See id*.

**E. The 699 Patent**

**1. Preliminary Identification of Invalidity Grounds**

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the asserted claims of the 699 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 699 patent invalidity charts attached as Exhibit E set forth, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Amazon reserves the right to amend its invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery continues including third party discovery. Amazon explicitly reserves the right to further narrow each ground by reducing the number of references in each ground as needed to continue streamlining this case for trial. The below identification of prior art invalidity grounds in no way limits Amazon from relying on additional prior art references to establish the state of

the art and knowledge of one of skill in the art, nor does it limit Amazon's other invalidity defenses including under Section 101 or Section 112.

Defendants provide the following identification of preliminary invalidity grounds for the currently asserted claims of the 699 patent:

| Claim No. | Invalidity Grounds[114][115] under 35 U.S.C. §§ 102 and/or 103[116] |
|---|---|
| 1 | Kennewick II in combination with Matsuda, Cooper, Gadd, Mitsuyoshi, Dabiri, Strubbe, Schoneburg, Guo, and Blass.<br><br>Kennewick II in combination with Mitsuyoshi, Cooper, Gadd, Dabiri, Strubbe, Schoneburg, Guo, and Blass.<br><br>Kennewick II in combination with Portele, Cooper, Gadd, Mitsuyoshi, Strubbe, Schoneburg, Guo, and Blass.<br><br>MiPad in combination with Matsuda, Mitsuyoshi, Portele, Cooper, Gadd, Strubbe, Schoneburg, Dabiri, Guo, and Blass.<br><br>MIT Galaxy in combination with Matsuda, Mitsuyoshi, Portele, Cooper, Gadd, Strubbe, Schoneburg, Dabiri, Guo, and Blass.<br><br>Huang III in combination with Matsuda, Mitsuyoshi, Portele, Cooper, Gadd, Strubbe, Schoneburg, Dabiri, Guo, and Blass;<br><br>Schoneburg in combination with Kennewick II, Gadd, Portele, Matsuda, Mitsuyoshi, Cooper, Strubbe, Dabiri, Guo, and Blass.<br><br>Strubbe in combination with Kennewick II, Gadd, Portele, Matsuda, Mitsuyoshi, Cooper, Schoneburg, Dabiri, Guo, and Blass. |
| 2 | *See* grounds of claim 1. |

[114] For brevity, each reference in this table is identified by its short cite, which is defined later in subsections below.

[115] To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

[116] Defendant contends that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified by itself as a ground invalidates the relevant asserted claim under 35 U.S.C. § 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under §103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

| Claim No. | Invalidity Grounds[114][115] under 35 U.S.C. §§ 102 and/or 103[116] |
|---|---|
| 3 | *See* grounds of claim 1. |
| 4 | *See* grounds of claim 1. |
| 5 | *See* grounds of claim 1. |
| 6 | *See* grounds of claim 1. |
| 7 | *See* grounds of claim 1. |
| 8 | *See* grounds of claim 1. |
| 9 | *See* grounds of claim 1. |
| 10 | *See* grounds of claim 1. |
| 12 | *See* grounds of claim 1. |
| 13 | *See* grounds of claim 1. |
| 14 | *See* grounds of claim 1. |
| 15 | *See* grounds of claim 1. |
| 16 | *See* grounds of claim 1. |
| 17 | *See* grounds of claim 1. |
| 18 | *See* grounds of claim 1. |
| 19 | *See* grounds of claim 1. |
| 20 | *See* grounds of claim 1. |
| 21 | *See* grounds of claim 1. |

The asserted claims of the 699 patent are invalid in view of the grounds identified above, A person having ordinary skill in the art would have naturally consulted each of these references and combined the teachings, for the reasons identified herein and the accompanying charts. Accordingly, a person of ordinary skill in the art at the time of filing of the asserted patents would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. One or more expert witnesses may

further explain the motivation to combine prior art and why the asserted claims of the 699 patent are invalid for obviousness in accordance with the case schedule.

The invalidity grounds provided above are preliminary. Additional or alternative grounds are possible, including grounds which include fewer references than identified in the above combinations or additional references, and Amazon may rely on such grounds in this litigation. Amazon is currently unaware of what claim constructions VB Assets may seek in this case. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by defendants as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would not have been known to persons of skill in the art. Additionally, discovery is ongoing. Amazon is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and third parties that may have information about those systems. Amazon may subpoena third parties for such information. VB Assets may also be in possession of prior art that defendants may receive during discovery in this case. Amazon reserve the right to amend and supplement these contentions to identify other prior art, invalidity grounds, and combinations rendering the asserted claims invalid.

**2. Identification of Prior Art**

In accordance with paragraph 4(d) of the Default Standard, the tables below list prior art references that anticipate or render obvious one or more of the Asserted Claims are listed in the tables below. The attached claim charts in Exhibits E-1 through E-19 demonstrate where each limitation of the claims is found in certain of the references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole is understood by a person having ordinary skill in the art. At least the following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

**a. Prior Art Patents and Patent Publications That Anticipate or Render Obvious One or More Asserted Claims of the 699 Patent**

| Patent Number | Country of Origin | Filing or Priority Date | Date of Issue or Publication | Short Cite |
|---|---|---|---|---|
| United States Patent No: 6,731,307 | United States | October 30, 2000 | May 4, 2004 | "Strubbe" |
| United States Patent No: 6,757,362 | United States | March 6, 2000 | June 29, 2004 | "Cooper" |
| US Patent Publication No: 2002/0133347 | United States | December 29, 2000 | September 19, 2002 | "Schoneburg" |
| US Patent Publication No: 2003/0137537 | United States | December 28, 2001 | July 24, 2003 | "Guo" |
| US Patent Publication No: 2003/0182123 | United States | September 13, 2000 | September 25, 2003 | "Mitsuyoshi" |
| US Patent Publication No: 2004/0193420 | United States | July 15, 2002 | September 30, 2004 | "Kennewick II" |
| US Patent Publication No: 2004/0193421 | United States | March 25, 2003 | September 30, 2004 | "Blass" |
| US Patent Publication No: 2005/0033582 | United States | February 28, 2002 | February 10, 2005 | "Gadd" |
| Japanese Patent Publication No: 2002-123289 | Japan | October 13, 2000 | April 26, 2002 | "Kanai" |
| Japanese Patent Publication No: 2004-334591 | Japan | May 8, 2003 | November 25, 2004 | "Matsuda" |
| WO Patent Publication No: WO02/073331 | WIPO | February 20, 2001 | September 19, 2002 | "Aretoulaki" |
| WO Patent Publication No: WO2000/11571 | WIPO | August 24, 1998 | March 2, 2000 | "Hartono" |
| WO Patent Publication No: WO2006/016307 | WIPO | August 6, 2004 | February 16, 2006 | "Portele" |

### b. Additional Prior Art Publications That Anticipate or Render Obvious One or More Asserted Claims of the 699 Patent[117]

| Title | Date of Publication | Author/Publisher | Short Cite |
|---|---|---|---|
| "A Multi-modal Dialog System for Business Transactions" | 2000[118] | Joyce Chai | "Chai II" |
| "A User-Sensitive Spoken Dialogue System Incorporating Emotional Responsiveness" | 2002[119] | Gloria Dabiri et al. | "Dabiri" |
| "Spoken Language Processing: A Guide to Theory, Algorithm, and System Development" | 2001[120] | Xuedong Huang et al. | "Huang III" |
| "LINGUINI: Acquiring Individual Interest Profiles by Means of Adaptive Natural Language Dialog" | 2006[121] | Rosmary Stegmann | "Stegmann" |

### c. Additional Prior Art Systems/Services That Anticipate or Render Obvious One or More Asserted Claims of the 699 Patent

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| MIT Galaxy System[122] | 2003 | MIT designed, developed, used, advertised, published, and also offered for sale and/or sold this system to its customers, potential customers, and other third parties as evidenced at least by the documents identified herein. | "MIT Galaxy" |

[117] For brevity, Amazon incorporates by reference the MiPad system publication documents identified above in Section 0.

[118] Presented at the Sixth International Conference on Spoken Language Processing (ICSLP 2000). Available at https://www.isca-archive.org/icslp_2000/chai00_icslp.pdf.

[119] Published in Methods and Applications of Artificial Intelligence, Springer (2002).

[120] Book published by Prentice Hall (2001).

[121] This is a Dissertation of the TUM School of Computation, Information and Technology, Rosmary Stegmann, March 30, 2006. Available at https://mediatum.ub.tum.de/doc/601808/document.pdf.

[122] The MIT Galaxy System includes, but is not limited to, the documents identified above in Section 0 under footnote 12.`

| System/Service | Relevant Dates | Persons/Entities Involved in Prior Use, Sale, and/or Offers for Sale | Short Cite |
|---|---|---|---|
| Microsoft MiPad System[123] | 1995-2004 | Microsoft designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "MiPad" |
| SemanticEdge[124] | 2002 | On information and belief, SemanticEdge GmbH designed, developed, used, advertised, published, and also offered for sale and/or sold to its customers, potential customers, and other third parties this system as evidenced at least by the documents identified herein. | "SemanticEdge" |

### 3. Identification of Invalidity Due to Obviousness

The attached claim charts in Exhibits E-1 through E-19 demonstrate that each prior art reference disclosed in the preceding sections, either alone or in combination with other prior art, or in combination with the knowledge of one skilled in the art, also renders the Asserted Claims invalid as obvious.

#### a. Motivation for Combining Prior Art

The combinations of references provided in the accompanying prior art reference charts for each asserted claim of each asserted patent, are examples and are not intended to be exhaustive. Additional obviousness combinations of the references identified here are possible, and Amazon

[123] The Microsoft MiPad System includes, but is not limited to, the documents identified above in Section 0 under footnote 43.

[124] The SemanticEdge system includes, but is not limited to, Dabiri and Aretoulaki, which have been charted separately.

may rely on such combination(s) in this litigation. In particular, Amazon is currently unaware of VB Assets' allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Amazon is also unaware of the extent, if any, to which VB Assets may contend that limitations of the claims at issue are not disclosed in the prior art identified by Amazon as anticipatory, and the extent to which VB Assets will contend that elements not disclosed in the asserted patent specifications would have been known to persons of skill in the art. And Amazon does not yet know how the Court will construe terms in the Asserted Claims. Amazon is continuing its investigation of the large universe of prior art to identify potential prior art systems, publications related to those systems, and additional third parties that may have information about those systems. Amazon reserves the right to supplement these contentions to identify other prior art and combinations that would have made such limitations obvious.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, and/or reasons to combine them for at least the following reasons.[125]

The 699 patent is invalid in view of any combination of references related to interactive speech technology (which includes speech recognition, interpreting natural language inputs, and generating responses), including, for example, Kennewick II, MIT Galaxy, MiPad, Huang III, Schoneburg, Strubbe, Gadd, Portele, Matsuda, Mitsuyoshi, Cooper, Blass, Gadd, Kanai, Guo, and Hartono.

[125] In *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418.

A person having ordinary skill in the art would have been motivated to combine any of these interactive speech prior art references as this prior art describes several benefits that were known to persons of skill in the art. For instance, the prior art references identified above disclose identifying the context of the user's utterance to allow users to interact with a system in a natural way that is consistent with how they already interact with others using speech to direct or control the system. This eliminates the need to train the system or memorize commands, and enables the system to access and retrieve information, perform tasks, complete transactions and present information to the user in a way that reduces the number of interactions between the user and the system. For example, Kennewick II discloses that its "speech based natural language query and response environment" "improv[es] the reliability of determining the context and presenting the expected results for a particular question or command." Kennewick II at Abstract; *see also id.* at ¶ 160 (noting the possibility of different contexts for the same utterance); Gadd at [0133], ("By analysing what the users say, which is returned by the ASR, and combining this with what the DM knows about the current context of the conversation, based on current state of dialogue structure, workflow structure, and application & system notifications, the DM determines its next contribution to the conversation or action to be carried out by the AMs."); Portele at 10:16-20 (describing a "detailed way how a current user speech command may be integrated with the dialogue history"); Huang III, p. 7 ("interpret[ing] utterances in context and carry[ing] out appropriate actions" are fundamental requirements of spoken language understanding and "[k]knowledge of the characteristic vocabulary, typical syntactic patterns, and possible actions in any given application context for both interpretation of user utterance and panning system activity are the heart and soul of any spoken language understanding system"); MiPad Demo Video I, 02:15-01:21 ("In this case, we've done full recognition. . . . being able to take the sentence apart

and do the right things."); *id.*, 03:37-03:55 ("I'd like to walk in the house and say, play my music and because it's coming from the playlist on my computer"); Guo, 1:13-16, 2:4-5 (noting that "there is an ongoing need to improve dialog systems used in computer interfaces" where systems "the computer interfaces do not adapt to the manner in which the user wishes to interact with the computer, but instead force the user to interact through a specific set of interfaces."). Further, the prior art teaches that using contextual knowledge may decrease the error rate in interpretations or allow for correct interpretations to be made more precise, based on user habit information and learning from the system's mistakes in earlier dialog. *See, e.g.*, Gadd ¶¶ 34, 57 (disclosing that because the "system can adapt to individual user requirements and habits," it can "evolve as it gets to know a user, with the stored speech data being modified to adapt to each user" and therefore, for example, "remember[] that a given user always sends flowers to their partner on a given date"), ¶179 (explaining that a benefit of "applications being aware of the 'context' in which they were called" is that a user has "the ability to switch easily between different applications in the system" and therefore "perform their tasks quickly and efficiently").

Persons having ordinary skill in the art were aware of the use of contextual knowledge in interactive speech technology. *See, e.g.*, Kennewick II, ¶143 ("Commands and questions are interpreted, queries formulated, responses created and results presented can be based on the user's personal or user profile values," including "history of commands and queries."), ¶¶157, 160, 164; Seneff III, §1 (disclosing complex, multi-variable dialog system for making flight reservations), §2.2 (determining the intended meaning of the user utterance by singling out the most promising hypothesis, and then determining if that hypothesis "is consistent with the prior dialogue"); Mitsuyoshi, ¶¶16, 60 (disclosing a continually-updated knowledge database "for storing situation information" permitting the system to output "sensibility more akin to that of a human"); Seneff I,

p.289-290, 292 (disclosing maintaining a "detailed history of the dialogue plan, including a user model…and detailed records of previous responses, all of which may become pertinent to preparing the response for the current turn"); Seneff III, § 1, 2, 4 (disclosing "relevant information is retained from prior turns" for hypothesis selection and retention of history in a "user model which is continually augmented as the dialogue progresses through the itinerary plan"); Filisko, p.53, 62, 87, 102 (disclosing the Context Resolution server "remembers the context-resolved frame from the previous utterance" and a "history record" that stores context-resolved semantic frames from which "subsequent user utterances will inherit information"); Portele, 8:27-36, 9:33-11:33 (disclosing a "dialogue history" that "integrates collected information with the recent user input" and that "existing knowledge in the discourse knowledge storage can be updated"); Schoneburg, ¶188 (disclosing a "short-term memory device 4, organized in the form of a stack for the subsequent last-to-first analysis of the user's inputs and answers of the system" and a "long-term memory device 5 in the form of a user profile on the server side"); Gadd, ¶¶467-469, 105-106 (disclosing a "Session Manager" that saves "session information" and a profile of "individual user preferences" that include data such as "phrase usage" to "amplify those sets of utterances over those utterances less likely to be employed").

The prior art further discloses accumulating short-term and long-term knowledge to allow users to interact with a system in a natural way. *See, e.g.*, Mitsuyoshi at ¶¶ 16-18, 27, 33 (describing handling present and long-term emotion change information); Matsuda at ¶¶ 15-17, 26-28, 31, 77-79 (describing, for example, handling conversation participant name data); Portele at 3:18-20 ("said processing said input, further comprises using a history based on previous input received and processed by said dialogue system and said applications"), 7:27:36 ("the dialogue history (Dial. Hist.) 207 integrates collected information with the recent user input"), 11:7-19

("The dialogue history and the hypothesis selection component rate each possible reading by computing a number of scores out of the features that can be derived from the interpretation and by taking into account scores of preceding processing stages (speech recognition, speech understanding1 new part in an interpretation vs. old parts, means ages), the existence of information (e.g. the occurrence of a special element in the resulting tree like 'task') and the relation of information newly provided by the user to the existing information . . .").

The interactive speech prior art further teaches using such information to identify a user's manner to promote appropriate interactions. *See, e.g.*, Cooper at Abstract ("A computer-based virtual assistant that also automatically adapts its behavior is disclosed, comprising a voice user interface for inputting information into and receiving information from the virtual assistant by speech, a communications network, a virtual assistant application running on a remote computer, the remote computer being electronically coupled to the user interface via the communications network, wherein the remote computer is programmed to automatically change the behavior of the virtual assistant responsive to input received by the virtual assistant."); Blass at ¶ 9 ("The method can include receiving a speech input, determining at least one prosodic characteristic contained within the speech input, generating a speech output including the extracted prosodic characteristic."); Schoneburg at ¶¶7-8 ("The best answer is chosen by a sequential calling of different mechanisms with the calling being determined by predefined sets of rules of the central processing block. The method required for information processing in each mechanism is also determined by its own pre-defined set of rules. The best system answer from the viewpoint of history, correspondence of input/output types, goal, emotions and other parameters is presented to the user in response to his/her query."); Strubbe at 8:47-61 ("According to an embodiment, this may be provided by supplying the interaction simulator with information about the particular user

and rules that constrain the behavior of the simulator in a manner that provides an appearance of being mannerly and by giving the conversation simulator a consistent pleasing personality."); Hartono at 32:13-25 ("As discussed above, the interface 100 of the present invention is an adaptive natural language interface 100. The output of the natural language agent 102 is preferably adaptive to the personality of the user 106 by first identifying the personality type, personality trait or characteristics of the user and utilizing that identification for responding to the user."); Kanai at ¶ 12, ("According to the voice interactive device having this configuration, it is determined that the user's emotion has changed when the user's emotion parameter has continuously changed for a predetermined number of times or when the user's emotion parameter has changed for a predetermined amount or more.").

The interactive speech prior art teaches that such systems can incorporate these techniques by through its disclosures of improvements to interactive speech technology. *See, e.g.,* Kennewick II, Abstract ("a complete speech-based natural language query and response environment" . . . [that] makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains"); Mitsuyoshi, ¶66 ("the invention further includes: a voice recognition unit for recognizing the voice inputted from the voice inputting unit, and for outputting character information; and a natural language processing unit for subjecting vocal information recognized by the voice recognition unit to natural language processing, and for generating meaning information expressing a meaning of the inputted voice"); Cooper, 2:36-40 (disclosing "the present invention is a computer-based virtual assistant… comprising a voice user interface for inputting information into and receiving information from the virtual assistant by speech"); Schoneburg, ¶ 28 (disclosing "a universal dialog computer system for transforming a user's phrase presented in

the form of a natural language utterance into an adequate response by the system which is also presented in natural language and accompanied by the performance of a number of required actions"); Gadd, Abstract (disclosing "a spoken language interface comprises an automatic speech recognition system and a text to speech system" that "provide[s] an interface to an application with which the user can converse"); Huang III, p.28, 30 (describing the benefits of adopting "speech as a control modality" and explaining the operation of some spoken language processing systems, which includes speech recognition); Glass I, Abstract, § 1 (disclosing "a real-time telephone-based speech recognizer as part of a conversational system in the weather information domain"); Glass II, Abstract, § 1 (disclosing "a telephone-based speech recognizer as part of a conversational system in the weather information domain"); Seneff I, Abstract, p.284, 290-291 (disclosing a "mixed-initiative spoken dialogue system that supports both voice-only interaction and multimodal interaction"); Seneff II, Abstract, § 1 (disclosing "the dialogue module of the Mercury system" that manages "complex dialogue interactions" to allow "users to plan and price itineraries between major airports worldwide"); Seneff III, § 2, 2.1 (disclosing a "spoken dialogue system that allows users to plan air travel" using a "language understanding component"); Zue, p.85, 86, 94 (disclosing the "GALAXY conversational system architecture" and "speech-based interfaces that combines several human language technologies to help users access information using a conversational paradigm"), Lau, Abstract, 14, 21, 22, 25, 37 (disclosing "a conversational system that would be able to interact with the user dynamically"), Filisko, p.22, 23, 30, 31 (disclosing the multimodel GALAXY conversational system that "captures a user's speech," "sends it to the speech recognizer," performs context resolution to interpret the speech, and provides "an appropriate reply to the user"); Baptist, p.10, 38, 39, 80 (disclosing "the GALAXY conversational systems" that "produces a meaning representation in response to a user query" and generates

responses to the queries); Gadd, ¶ 33 (disclosing an invention that provides "a spoken language interface for speech communications with an application running on a computer system, comprising: an automatic speech recognition system (ASR) for recognizing speech inputs from a user" and "a speech generation system for providing speech to be delivered to the user").

Accordingly, the disclosed interactive speech prior art was known work in the field of computer technology, design incentives or other market forces such as improving the ability of speech systems to understand context or retain short-term or long-term knowledge to determine an appropriate manner would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to solve problems with improving human interaction with spoken language understanding systems. These combinations would (1) involve the combination of known methods (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve the use of these known techniques (e.g., improving interactive speech through recognition of context and manner) to improve similar computer systems in the same way.

The 699 patent is also invalid in view of the disclosed combination of references that disclose similar architectures for implementing interactive speech systems, which include components such as a voice input device to receive a natural language utterance (such as a microphone), a component for automatic speech recognition to recognize the words of the utterance, a component for natural language understanding to interpret the recognized words, a component for performing an action based on the interpretation, and an output device that presents a response to the user, including, for example, Kennewick II, Cooper, MIT Galaxy, MiPad, Huang III, Schoneburg, and Strubbe.

These prior art references describe several architectures that were known to persons of skill in the art. A person of skill would have understood the benefits of these architectures and would have been motivated to combine features of different architectures in designing and building a speech application, including each of the components listed above. From a functional perspective, for example, a person of skill would have found incorporating components such as those for automatic speech recognition and natural language understanding modules to be beneficial for at least the reasons identified above regarding interactive speech technology. From a more technical perspective, as a well-known design pattern for building interactive speech systems was to construct them modularly so that functionality could be distributed across various components, a person of skill would have been able to incorporate these components into different systems. See Kennewick II at [0013] (the interactive speech "software can be distributed in any way between" a variety of hardware components "without altering the function, features, scope, or intent of the invention"); Cooper at 4:50-5:11 (describing a componentized server system that can be "ported to other computing platforms" or "clustered together"); Seneff II, § 1 (disclosing the "GALAXY architecture" as consisting of "of a number of specialized servers that communicate with one another via a central programmable hub"); Zue, 101 (disclosing the "GALAXY architecture" with a "programmable" hub that "communicates with the various servers via a standardized protocol," enabling "multiple system developers to experiment with different domains, components, and control strategies"); MiPad Demo Video I, 00:46-01:25, 01:32-1:45, 2:56-3:06 (showing voice input; disclosing "recognition" and "parsing" voice input to command such as composing emails and calendaring; connections to various devices); Deng IV at Fig. 2 (demonstrating MiPad's client-server (peer-to-peer architecture including "Continuous Speech Recognition" and "Spoken Language Understanding").

Persons having ordinary skill in the art were aware of various architectures for interactive speech systems, which could perform speech recognition on natural-language voice inputs and act on the recognized speech. *See, e.g.*, Seneff III, § 2.1 (disclosing "the GALAXY architecture" that includes an "audio server [that] captures the user's speech, a "speech recognizer," a "language understanding component," a "discourse component," a "dialogue manager," a "generation component," and a "speech synthesizer" that "transmits a waveform to the audio server which then relays the spoken response to the user over the telephone"); Mitsuyoshi at Fig. 1 (illustrating a multi-unit architecture with voice recognition unit); Schoneburg at Fig. 1 (illustrating an "architecture of the system for interactive dialog management"); Desai at Fig. 1 (illustrating a server architecture containing a speech recognition engine, natural language engine, query engine, and prompt generator); Hartono at 9:4-20, 11:4-12:20 (disclosing a "natural or spoken language interface" with "front-end natural language agent" with "automatic speech recognition system" and "natural language syntactic parser").

Accordingly, because the interactive speech architecture prior art was known in the same field of computer technology, design incentives or other market forces such as incorporating speech interfaces into existing computer systems would have motivated a POSITA to incorporate features taught by such prior art in predictable ways to improve the functionality of or mitigate problems associated with interactive speech systems. Combinations with this prior art would (1) involve the combination of known components for performing various functions (e.g., speech recognition, interpretation, and generating a response) to yield predictable results (e.g., a computer system that is accessible by interactive speech) and/or (2) involve a simple substitution of one known element (e.g., a monolithic client-server system) for another (e.g., a distributed computer

system) to obtain predictable results (e.g., the prior system function enhanced by a scalable architecture).

**4. Invalidity Under § 112**

The Asserted Claims are invalid under 35 U.S.C. § 112. The Asserted Claims lack a written description and enabling disclosure commensurate with the alleged scope of the claims and contain purely functional language. The 699 patent read in light of the specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *See Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). The 699 patent does not enable one of skill in the art to practice the full scope of the inventions claimed without undue experimentation. The 699 patent does not enable one of skill in the art to practice the scope of the inventions set forth in VB Assets' preliminary infringement contentions.

Because expert disclosures are not yet due, including those in connection with claim construction, Amazon reserves the right to raise any additional issues from the perspective of one skilled in the art at the appropriate time in the case.

The following identification of claims/claim elements are preliminary and only exemplary; and Amazon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, to the extent an element identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112. Amazon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 during claim construction or after the Court construes the claims. Furthermore, this identification of claims/claim elements is preliminary and should

not be interpreted as reflecting Amazon's position on the proposed construction of any claim/claim element.

At least the following claims are invalid for failing to meet the requirements of 35 U.S.C. § 112:[126]

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| generating natural language system responses adapted based on a user's manner of speaking, | 699 patent, claims 1, 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| recognizing, by the computer system, one or more words or phrases from the natural language utterance; | 699 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identifying, by the computer system, a context for the natural language utterance based on the one or more words or phrases recognized from the natural language utterance; | 699 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determining, by the computer system, an interpretation of the natural language utterance based on the identified context; | 699 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identifying, by the computer system, a manner in which the natural language utterance was spoken based on the short-term knowledge and the long-term knowledge; and | 699 patent, claim 1 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| generating the response based on the identified manner in which the natural language utterance was spoken comprises using the obtained | 699 patent, claim 4 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

[126] Each dependent claim depending from an identified independent claim is invalid under § 112 at least for the same reasons identified for the corresponding independent claim. For the sake of brevity, § 112 invalidity grounds identified for each independent claim are not repeated for claims depending therefrom.

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| contextual signifiers and/or grammatical rules to generate sentences for use as response sets to cooperate with the user. | | |
| adapting, by the computer system, the response based on a response format associated with the identified manner. | 699 patent, claim 6 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| adapting the response, by the computer system, to model a conversation, wherein adapting the response to model a conversation comprises adapting the response to have a personality by varying word use. | 699 patent, claim 10 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| recognize one or more words or phrases from the natural language utterance; | 699 patent, claim 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identify a context for the natural language utterance based on the one or more words or phrases recognized from the natural language utterance; | 699 patent, claim 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| determine an interpretation of the natural language utterance based on the identified context; | 699 patent, claim 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| identify a manner in which the natural language utterance was spoken based on the short-term knowledge and the long-term knowledge; and | 699 patent, claim 12 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |
| wherein to generate the response based on the identified manner in which the natural language utterance was spoken, the one or more physical processors are further configured to use the obtained contextual signifiers | 699 patent, claim 15 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

| Claim Element | Patent (Claims) | § 112 Grounds |
|---|---|---|
| and/or grammatical rules to generate sentences for use as response sets to cooperate with the user. | | |
| adapt the response based on a response format associated with the identified manner. | 699 patent, claim 17 | Lack of written description/enablement pursuant to pre-AIA § 112, para. 1 |

**5. Invalidity Under § 101**

In addition to the grounds identified above, Amazon provides notice to VB Assets that the asserted claims of the 699 patent do not comply with the requirements of 35 U.S.C. § 101.

The claims of the 699 patent are generally directed to an abstract idea, *e.g.*, processing natural language utterances to generate responses based on the user's speaking manner and context. The claims do not recite any specific technological solution for accomplishing this, and instead only provide results-focused, functional claims that fail step 1 of the *Alice* test. *See IPA Techs. v. Amazon.com, Inc.*, 307 F. Supp. 3d 356, 363, 368-69 (D. Del. 2018) (claims reciting "receiving," "interpreting," and "translating" a spoken request were "aspirational in nature and devoid of [] implementation details or [] description . . . .").

The asserted patents do not claim any inventive concept necessary to transform their abstract idea into patent-eligible subject matter. Neither the claims nor the specification recites any new computer hardware or software for achieving the aspirational result. Instead, the claims recite admittedly generic and conventional voice processing technology behaving in expected ways to implement this dedication concept. *See, e.g., Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (finding that "well-understood, routine, and conventional activities commonly used in industry" cannot provide an inventive concept). Accordingly, the asserted patents fail step 2 of the *Alice* test.

Amazon identifies each asserted claim of the 699 patent as stating non-inventive variations of the claimed abstract idea. *See id*.

## III. INVALIDITY CHARTS

Invalidity charts for each item of prior art, as required pursuant to paragraph 4(d) of the Default Standard, are attached to these contentions as Exhibits A–E. These invalidity charts identify where specifically in each alleged item of prior art each element of each Asserted Claim is found. While each element of each Asserted Claim is found in the prior art in multiple locations, the attached charts provide examples of citations sufficient to identify at least one such location where each claim limitation is found in each item of prior art. Accordingly, Amazon and its expert(s) may rely on uncited portions of the prior art references as the citations must be interpreted in light of the entire disclosure of each reference.

In addition, because persons of skill in the art generally would appreciate an item of prior art in the context of other publications, literature, products, and understanding, Amazon and its expert(s) may rely on other publications and expert testimony as aids in understanding and interpreting the cited portions, for providing context to the cited portions, and as additional evidence that the prior art discloses a claimed feature. Amazon may establish what was known to a person having ordinary skill in the art through other publications, products, and/or testimony, and reserve their right to rely on cited and uncited portions of the prior art references, other publications, and/or testimony to establish that a person of skill in the art would have been motivated to combine the references rendering the claims obvious.

Amazon may modify, amend, and/or change its interpretation of the prior art as constructions of the claim limitations may be provided by the Court, based on additional analysis by expert witnesses, and/or based on other circumstances that may affect the meaning or application of the claims.

The references discussed in the claim charts in Exhibits A–E, or elsewhere identified, may disclose the elements of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant timeframe. The suggested obviousness combinations are provided in the alternative to Amazon's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not itself anticipatory.

## IV. ADDITIONAL PRIOR ART

In addition to the prior art references charted, Amazon identified in Exhibit F, which is incorporated here in its entirety, additional prior art references that disclose or describe the general state of the art and knowledge of one skilled in the art at the time of the purported inventions and the filings of the Asserted Patents. These references may be used to show the state of the art and/or may be used as supporting references in an obviousness combination depending on how the Asserted Claims are ultimately construed by the Court.

Amazon also incorporates here by reference, whether or not cited in Exhibit F, all prior art cited in the Asserted Patents and all prior art cited in the prosecution histories of the Asserted Patents, reexaminations, *inter partes* or covered business method patent review proceedings, and any foreign counterparts.

## V. DOCUMENT PRODUCTION

Pursuant to paragraph 4(d) of the Default Standard, Amazon is concurrently producing a copy of each asserted prior art reference identified herein that is not in the file histories of the Asserted Patents or that has not already been disclosed.

## TABLE OF EXHIBITS

| Exhibit | Description |
|---|---|
| A | Invalidity Charts for the 758 Patent |
| B | Invalidity Charts for the 249 Patent |
| C | Invalidity Charts for the 025 Patent |
| D | Invalidity Charts for the 385 Patent |
| E | Invalidity Charts for the 699 Patent |
| F | Prior Art Reflecting the General State of the Art |

Dated: April 11, 2025

Respectfully submitted,

/s/ Geoffrey Miller

Steven J. Balick (#2114)
sbalick@ashbygeddes.com
Andrew C. Mayo (#5207)
amayo@ashbygeddes.com
ASHBY & GEDDES, P.A.
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888

*Counsel for Defendant*
*Amazon.com Services LLC*

*Of counsel:*

J. David Hadden, CSB No. 176148
dhadden@fenwick.com
Saina S. Shamilov, CSB No. 215636
sshamilov@fenwick.com
Ravi R. Ranganath, CSB No. 272981
rranganath@fenwick.com
Vigen Salmastlian, CSB No. 276846
vsalmastlian@fenwick.com
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
(650) 988-8500

Geoffrey Miller, NYSB No. 5597745
FENWICK & WEST LLP
902 Broadway, 18th Floor
New York, NY 10010
(212) 430-2600