UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD. and SAMSUNG ELECTRONICS AMERICA, INC.
Petitioners

v.

VB ASSETS, LLC,
Patent Owner

IPR2025-00866
U.S. Patent No. 8,073,681

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF EXHIBITS

I. INTRODUCTION 1

II. LEGAL PRINCIPLES 1

III. LEVEL OF ORDINARY SKILL IN THE ART 2

IV. CLAIM CONSTRUCTION 3

V. ARGUMENT 3

A. GROUND 1 – The Petition Fails to Demonstrate a Reasonable Likelihood that the Challenged Claims are Unpatentable as Obvious over SmartKom and Kobsa 3

1. The SmartKom + Kobsa Combination Fails to Describe a Coherent System that Includes all the Elements of the '681 Patent Claims 4

a. The Petition Fails to Explain How the Identified Disclosures from the Combination of SmartKom and Kobsa would Result in the Claimed Invention 5

b. The Petition Fails to Explain How Multiple Possible Alternative Disclosures Interact to Satisfy the Claim Limitations 13

c. The Petition Relies on the Disclosure of Unasserted Prior Art References 16

2. A POSITA Would Not be Motivated to Combine SmartKom and Kobsa to Reach the Claimed Invention 18

3. The Petition Fails to Show that the SmartKom + Kobsa Combination Discloses or Teaches "short-term shared knowledge" 22

B. GROUNDS 2-4 – The Petition Fails to Demonstrate a Reasonable Likelihood that the Challenged Claims are Unpatentable as Obvious over Barbara, Ross, O'Neill, and Franco 24

A. The Barbara + Ross Combinations Fails to Disclose or Teach "determining an intended meaning" because Barbara is based on human assistance 25

B. A POSITA Would Not Be Motivated to Combine Barbara and Ross to Reach the Claimed Invention 29

VI. CONCLUSION.....33

TABLE OF EXHIBITS

Exhibit Number	Description
Ex. 2001	Declaration of Andrew J. Ligotti
Ex. 2002	https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf ("Acting Director Memo")
Ex. 2003	https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management ("FAQs")
Ex. 2004	*VB Assets, LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:24-cv-00828 (E.D. Tex. Oct. 9, 2024), Dkt. 1 ("Complaint")
Ex. 2005	Prosecution History of U.S. Patent No. 8,626,490
Ex. 2006	Excerpts of Prosecution History of U.S. Patent No. 10,891,968
Ex. 2007	*VB Assets, LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:24-cv-00828, Dkt. 22 (E.D. Tex. Jan. 14, 2025) ("Samsung EDTX Litigation Answer")
Ex. 2008	Prosecution History of U.S. Patent No. 10,276,162
Ex. 2009	*VB Assets, LLC v. Amazon.com Servs. LLC*, No. 1:19-cv-01410-MN, Dkt. 291 (D. Del. Nov. 8, 2023) ("Amazon Delaware Litigation Jury Verdict")
Ex. 2010	*VB Assets, LLC v. Amazon.com Servs. LLC*, No. 1:19-cv-01410-MN, Dkt. 352 (D. Del. June 9, 2025) ("Amazon Notice of Appeal")
Ex. 2011	*VB Assets, LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:24-cv-00828, Dkt. 42 (E.D. Tex. Apr. 4, 2025) ("EDTX Litigation Amended Docket Control Order")
Ex. 2012	*Samsung Electronics Ltd. et al. v. VB Assets, LLC*, IPR 2025-00870, Paper 6 ("Notice According Filing Date in IPR2025-00870")
Ex. 2013	Docket Navigator Statistics
Ex. 2014	*VB Assets, LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:24-cv-00828, Samsung Elecs. Co., Ltd. and Samsung Electronics America Inc.'s Invalidity and Subject Matter Eligibility Contentions (April 29, 2025) ("Samsung EDTX Litigation Invalidity Contentions")
Ex. 2015	Exhibit G-1, Subject Matter Eligibility Contentions for '681 Patent
Ex. 2016	Samsung Notice of Deposition Subpoena to Carnegie Mellon University (May 14, 2025)
Ex. 2017	Samsung Notice of Documents Subpoena to Carnegie Mellon University (May 14, 2025)

Exhibit Number	Description
Ex. 2018	Samsung Notice of Deposition Subpoena to Mavenir Systems, Inc. (May 14, 2025)
Ex. 2019	Samsung Notice of Documents Subpoena to Mavenir Systems, Inc. (May 14, 2025)
Ex. 2020	Samsung Notice of Deposition Subpoena to Xura, Inc. (May 14, 2025)
Ex. 2021	Samsung Notice of Documents Subpoena to Xura, Inc. (May 14, 2025)
Ex. 2022	Samsung Notice of Documents Subpoena to AT&T Communications, LLC (June 12, 2025)
Ex. 2023	Plaintiff's Rule 30(B)(1) Notice of Oral and Videotaped Deposition of Ho-Jung Ahn (July 18, 2025)
Ex. 2024	Rule 30(B)(1) Notice of Oral and Videotaped Deposition of Roger Kibbe (June 20, 2025)
Ex. 2025	Declaration of Houman Homayoun, Ph.D. in Support of Patent Owner's Preliminary Response
Ex. 2026	*Curriculum vitae* of Houman Homayoun, Ph.D.

TABLE OF AUTHORITIES

Cases **Page(s)**

In re Kahn,
441 F.3d 977 (Fed. Cir. 2006).....15

In re Magnum Oil Tools Int'l, Ltd.,
829 F.3d 1364 (Fed. Cir. 2016).....8

In re Oetiker,
977 F.2d 1443 (Fed. Cir. 1992).....13

InTouch Techs., Inc. v. VGo Communs., Inc.,
751 F.3d 1327 (Fed, Cir. 2014).....17

Juniper Networks, Inc. et al. v. Core Optical Techs., LLC,
IPR2020-01664, Paper 9 (P.T.A.B. Apr. 16, 2021) 19

Microsoft Corp. v. Secure Web Conf. Corp.,
IPR2014-00745, Paper 12 (P.T.A.B. Sept. 29, 2014).....8

Orthopedic Equip. Co., Inc. v. United States,
702 F.2d 1005 (Fed. Cir. 1983).....13

Personal-Web Techs., LLC v. Apple, Inc.,
848 F.3d 987 (Fed. Cir. 2017).....10

Power-One, Inc. v. Artesyn Techs., Inc.,
599 F.3d 1343 (Fed. Cir. 2010).....12

Sirona Dental Sys. GmbH v. Institut Straumann AG,
892 F.3d 1349 (Fed. Cir. 2018).....8

Synopsys, Inc. v. Mentor Graphics Corp.,
IPR2012-00041, Paper 16 (P.T.A.B. Feb. 22, 2013).....8

Statutes

35 U.S.C. § 312(a)(3).....22

Regulations

37 C.F.R. § 42.104(b).....22
37 C.F.R. § 42.108(c).....39

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Petitioners" or "Samsung") filed a petition for *inter partes* review of claims 1-36 of U.S. Patent No. 8,073,681 (the "'681 Patent") (the "Challenged Claims"), which is owned by VB Assets, LLC ("Patent Owner" or "VB Assets"). The Petition asserts four grounds: (i) Ground 1 challenges claims 1-9, 11-21, 23-33, and 35-36 as obvious over SmartKom (Ex. 1005) and Kobsa (Ex. 1006); (ii) Ground 2 challenges claims 1, 5-8, 11-13, 17-20, 23-25, 29-32, and 35-36 as obvious over Barbara (Ex. 1007) and Ross (Ex. 1008); (iii) Ground 3 challenges claims 2-4, 9, 14-16, 21, 26-28, and 33 as obvious over Barbara, Ross, and O'Neill (Ex. 1090), and (iv) Ground 4 challenges claims 10, 22, and 34 as obvious over Barbara, Ross, and Franco (Ex. 1010).

For the reasons set forth herein, Petitioners failed to meet their burden to show a reasonable likelihood of unpatentability of any of the Challenged Claims. *See* 37 C.F.R. § 42.108(c). Accordingly, Patent Owner requests that the Board deny institution of *inter partes* review.

II. LEGAL PRINCIPLES

The Petition must both "clearly point out the differences between the claimed invention and [the prior art]" and "explain why a person of ordinary skill in the art would have found the claimed subject matter obvious in spite of those differences."

Synopsys, Inc. v. Mentor Graphics Corp., IPR2012-00041, Paper 16, 14 (P.T.A.B. Feb. 22, 2013). Petitioners must recite where the challenged limitation is found in the reference(s) and explain why a POSITA would have modified the primary reference with the recited limitation from the secondary reference(s). *Microsoft Corp. v. Secure Web Conf. Corp*., IPR2014-00745, Paper 12, 11-13 (P.T.A.B. Sept. 29, 2014).

The Petition must establish, ***with particularity***, the grounds and evidence that support invalidating the patented claims. 35 U.S.C. §312(a)(3). In addition, the Board institutes based on what the Petition *actually presents* and not what it could have reasonably contained. *In re Magnum Oil Tools Int'l, Ltd.,* 829 F.3d 1364, 1381 (Fed. Cir. 2016). The Board cannot "deviate from the grounds in the petition and raise its own" theories of invalidity. *Sirona Dental Sys. GmbH v. Institut Straumann AG,* 892 F.3d 1349, 1356 (Fed. Cir. 2018).

III. LEVEL OF ORDINARY SKILL IN THE ART

Each of the arguments below should be considered from the standpoint of a POSITA in the field of the '681 Patent. For purposes of this POPR, Patent Owner adopts the definition proposed by Petitioners. Petition, 3. Patent Owner reserves all rights to challenge Petitioners' definition and/or further address the level of ordinary skill in the art if this proceeding is instituted.

IV. CLAIM CONSTRUCTION

Petitioners note that the parties agreed the term "speech recognition engine" (claims 7/10/19/22/31/24) means "software or hardware that recognizes the words or phrases in the natural language utterance." Petition, 5.[1] Patent Owner applies this construction for the purposes of this POPR. The failure of the Petition to render obvious the Challenged Claims is clear in view of the arguments below without construing any other specific claim term.

V. ARGUMENT

A. GROUND 1 – The Petition Fails to Demonstrate a Reasonable Likelihood that the Challenged Claims are Unpatentable as Obvious over SmartKom and Kobsa

The Petition fails to demonstrate a reasonable likelihood that the Challenged Claims are obvious over the combination of SmartKom (Ex. 1005) and Kobsa (Ex. 1006) for several key reasons set forth in detail below. First, the Petition is based on a cherry-picking of incongruous disclosures from SmartKom and Kobsa and a corresponding failure to explain how those disparate disclosures would work to meet the Challenged Claims. Second, Petitioners fail to show that a POSITA would have been motivated to combine SmartKom and Kobsa to reach the claimed invention.

[1] Patent Owner reserves the right to later address constructions.

And third, Petitioners have not shown that the combined SmartKom-Kobsa system satisfies the claimed "short-term knowledge."

In view of these deficiencies, Petitioners have failed to demonstrate a reasonable likelihood of prevailing on its challenge based on the combination of SmartKom and Kobsa.

1. The SmartKom + Kobsa Combination Fails to Describe a Coherent System that Includes all the Elements of the '681 Patent Claims

First, Petitioners' argument that the combination of SmartKom and Kobsa renders the Challenged Claims obvious is based on a patchwork of cherrypicked pieces of SmartKom and Kobsa that, together, do not demonstrate a coherent system that includes all the elements of the claimed invention. Petitioners fail to provide the required "clear, evidence-supported account of the contemplated workings of the combination," and fail to show how the combination meets all the claim elements. *Personal-Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). A clear, evidence-supported account of the contemplated workings of the combination is a prerequisite to "adequately explaining and supporting a conclusion that a relevant skilled artisan would have been motivated to make the combination and reasonably expect success in doing so." *Id*. With respect to Ground 1, the Petition does not present such a clear account.

a. The Petition Fails to Explain How the Identified Disclosures from the Combination of SmartKom and Kobsa would Result in the Claimed Invention

The Petition's failure to identify a clear account of the contemplated workings of the combination is due, in part, to the broad-ranging nature of the SmartKom and Kobsa themselves. SmartKom is a textbook that "present the theoretical and practical foundations of multimodal dialogue systems using the results of [the] large-scale project SmartKom as the background for [the] discussion." Ex. 1005, IX – XIV, 5. SmartKom does so in 38 different subparts based on the work of 70 different contributors. Ex. 1005, XV-XVIII; Ex. 2025, ¶50.

Neither SmartKom, nor Kobsa describe a single working system. Ex. 2025, ¶58. Instead, SmartKom discloses both generalized principles that are applicable to *all* dialogue systems as well as a description of components developed by different contributors to the SmartKom project. Ex. 1005, 5 ("In this book, we present the theoretical and practical foundations of multimodal dialogue systems using the results of our large-scale project SmartKom as the background of our discussion.") Ex. 2025, ¶59. SmartKom describes the "results of [the] large-scale" SmartKom project in terms of discrete modules and concepts in its different sub-parts, which are authored by different contributors, and developed over time. *See* Ex. 1005, XV-XVIII. Kobsa also forms a collection of unintegrated conference papers from a

workshop on user modeling involving 25 different researchers and presents a survey of the field of user modeling through discussion of individual contributions within the topic of the respective subfield and cross-references other contributions to achieve this end. Ex. 1006, V-VI.

The Petition cobbles together cherry-picked pieces from the broad-ranging disclosure of both SmartKom and Kobsa without adequate explanation as to how these disclosures would work as intended by the challenged claims. *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1351 (Fed. Cir. 2010) (holding that obviousness requires some teaching of how the references could be combined to work together). Accordingly, the combination of SmartKom and Kobsa asserted by Petitioners fails to describe a coherent, working system that include all elements of the challenged claims.

For example, the Challenged Claims recite a specific cooperative conversation voice interface that requires "accumulating long-term knowledge about the user, wherein the long-term shared knowledge includes knowledge about one or more past conversations with the user," and "identifying . . . a context associated with the utterance from the short-term shared knowledge and the long-term shared knowledge." *See, e.g.*, cl. 1. Petitioners cherry pick individual components from separate systems and generalized principles broadly applicable to all dialogue

systems in the broad-ranging SmartKom and Kobsa references to reconstruct a system including these limitation using the benefit of hindsight. Ex. 2025, ¶¶58-61; *Orthopedic Equip. Co., Inc. v. United States*, 702 F.2d 1005, 1135 (Fed. Cir. 1983) (holding that it is improper to attempt to establish obviousness of a patent by using the patent as a guide to combining different prior art references to achieve the result of the claims); *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992) ("The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight is insufficient to present a prima facie case of obviousness.").

To illustrate this shortcoming in the Petition, for limitations directed to long-term shared knowledge," and "short-term shared knowledge," the Petition relies on disclosure from the following different chapters of SmartKom: (i) "In Context: Integrating Domain- and Situation-Specific Knowledge," authored by Robert Porzel, Iryna Gurevych, and Rainer Malaka (Ex. 1005, 269-284); (ii) "Discourse Modeling," authored by Jan Alexandersson and Norbert Pfleger (Ex. 1005, 236-253); (iii) "The Prosody Module," authored by Voktor Zeibler, Johann Adelhart, Anton Batliner, Carmen Frank, Elmar Nöth, Rui Ping Shi and Heinrich Niemann (Ex. 1005, 139-152); (iv) "Intention Recognition," authored by Jürgen te Vrugt and Thomas Portele (Ex. 1005, 285-299); and (v) "Overlay: The Basic Operation for

Discourse Processing," authored by Jan Alexanderson, Tilman Becker, and Norbert Pfleger (Ex. 1005, 254-267). Petition, Sections IV.B.5.a, IV.B.4. For "long-term" user models alone, the Petition relies on five different chapters of Kobsa: (i) User Models in Dialog Systems," authored by Wolfgang Whalster and Alfred Kobsa, Ex. 1006, 4-34; (ii) A Taxonomy of Beliefs and Golas for User Models in Dialog Systems authored by Alfred Kobsa, the research of which was "supported by the German Science Foundation in its Special Collaborative Research Program No. 314 on AI and Knowledge-Based Systems," and the development of the VIE-DPM system reported in this chapter was partly funded by Austrian Ministry of Science." (Ex. 1006, 52 n.1; see also Ex. 1006, 52-68); (iii) Introduction to Part III ("Exploiting User Models) (Ex. 1006, 195-199); (iv) The Use of Explicit User Models in a Generation System for Tailoring Answers to the User's Level of Expertise," authored by Cecile L. Paris (Ex. 1006, 200-232); and (v) "GUMS – A General User Modeling Shell," authored by Tomothy W. Finin (Ex. 2006, 411-430). *See* Petition at 20. These are merely exemplary to illustrate the broad range from which Petitioners select the disclosures relied upon by the Petition.

From a technical perspective, a POSITA would not have approached the problem solved by the '681 Patent by combining unrelated pieces of separate systems with separate functionality, interfaces, and connections due to the vast

possible potential design permutations. Ex. 2025, ¶61.[2] For example, to demonstrate the disclosure of "long-term shared knowledge" that includes "knowledge about one or more past conversations," the Petition identifies SmartKom's disclosure of a domain model that "hold[s] knowledge of the world that is talked about" as well as SmartKom's disclosure of a user model that provides "properties of the interlocutors," further modified by Kobsa's disclosure of "long-term" user models that "describe relatively static characteristics of users." Petition, 19-20. The identified domain model and user model in SmartKom do not refer to any component or module developed as part of the SmartKom project, but instead are generalized "broad categorization[s] of the types of context relevant to spoken dialogue systems" and their "content and respective knowledge stores." Ex. 1005, 274.

[2] Accordingly, even if the Petition demonstrates that the foundational principles that underly the '681 Patent (and all other dialogue systems) exist in the literature, the Petition fails to demonstrate how those principles would be organized, constrained, and functionally connected such that the proposed combination includes all the elements of the claimed invention. Ex. 2025, ¶61. *In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006) ("[M]ere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole.")

This is important because the Challenged Claims do not merely require "long-term shared knowledge" that includes "knowledge about one or more past conversations," but also recite the additional limitations of "accumulating long-term shared knowledge about the user," "identify[ing]" "a context associated with the utterance . . . ***from the*** . . . long-term shared knowledge" and "establishing an intended meaning within the identified context." Ex. 1001, cl. 1, 13, 25 (emphasis added). For each of the limitations related to "long-term shared knowledge," Petitioners' rely on disparate sections of SmartKom. Specifically, the Petition identifies SmartKom's disclosure of an "interaction model" in the SmartKom project is a technique that meets the "accumulating long-term shared knowledge" limitation, and additionally argues that the separate intention recognizer in the SmartKom project that engages a context modeler and discourse modeler meet the limitations requiring "identify[ing]" "a context" "from the long-term shared knowledge." Petition, 23.

The Petition fails, however, to explain or show how information collected as part of the interaction modeling in SmartKom that Petitioners rely on for "accumulating long-term shared knowledge," is used to build a user model or a domain model that Petitioners rely on for "long-term shared knowledge" from which the SmartKom system uses in discourse or context modeling for its intention

recognition process that Petitioners rely on for "identify[ing]" "a context" "from the long-term shared knowledge." Petition, 33 ("In the combination of SmartKom-Kobsa, a hypothesis is enriched with "*long-term shared knowledge*" from the user model such as the user's preferences or expertise in the identified context-domain.") (emphasis in original). Petitioners do not cite any disclosure that interaction preferences used to adapt to the interaction style (as performed by the interaction model) are used to identify the appropriate context for an utterance. Ex. 2025, ¶68. Thus, Petitioners failed to demonstrate how these disparate disclosures cherry-picked to satisfy different claim limitations relate to one another such that the asserted combination teaches a system that includes each and every claim limitation. Ex. 2025, ¶68; *InTouch Techs., Inc. v. VGo Communs., Inc.*, 751 F.3d 1327, 1348 (Fed, Cir. 2014) (holding that substantial evidence did not support a finding of obvious where the supporting expert "testimony was nothing more than impermissible hindsight; she opined that all of the elements of the claims disparately existed in the prior art, but failed to provide the glue to combine these references.")

Petitioners' reliance on multiple unintegrated components of SmartKom further demonstrates that the Petition has not identified a system or method that includes all elements of the claims. The Petition identifies SmartKom's intention recognizer as satisfying certain claim limitations, and SmartKom's action planner as

satisfying other claim limitations. Ex. 2025, ¶¶62-63; Petition, 23 ("In the SmartKom architecture, the intention recognizer establishes the intended meaning of an utterance within the identified context—i.e., disambiguates an intent that the user had in speaking the one or more words that have different meanings in different contexts."); at 39 ("The action planner '*generates a response to the utterance*' through development of an action plan 'specify[ing] a possible course of subsequent communicative acts to reach' a goal articulated by the user in the utterance.").

These individual components, however, were developed and described by different researchers, appear in different chapters authored by different contributors in SmartKom, and are described based on different implementations. Ex. 2025, ¶63. The intention recognizer is described in terms of a user request for "Is there a move with Nicole Kidman?" incites alternative intention hypotheses that the user is requesting information about the current TV program versus requesting information about the current cinema program. Ex. 2025, ¶63; Ex. 1005, 263-65. Entirely different implementations are used to describe the functionality of the action planner, including coming up with an action plan for a user request for sending a fax, and an action plan for an utterance to provide TV listings to a user where the response is based on whether a TV program broadcast was found or not found. Petition, 41-42;

Ex. 2025, ¶¶63-64. There simply is no connection between the implementations described for these components. Ex. 2025, ¶¶63-64.

For the foregoing reasons, the Petition fails to identify a coherent system that includes all the elements of the claimed invention.

b. The Petition Fails to Explain How Multiple Possible Alternative Disclosures Interact to Satisfy the Claim Limitations

Next, the Petition does not demonstrate a coherent system that includes all the elements of the Challenged Claims because Petitioners present multiple possible alternatives for the same claim limitations and do not explain with particularity how those multiple alternatives would interact to reach the claimed invention. *Juniper Networks, Inc. et al. v. Core Optical Techs., LLC*, IPR2020-01664, Paper 9, 11-12 (P.T.A.B. Apr. 16, 2021) (denying institution where petitioner presented "multiple alternatives without sufficient explanation as to how the multiple alternatives interact.").

For example, the Petition argues that both SmartKom and Kobsa disclose techniques for "accumulating long-term shared knowledge" as required by the claims based on three separate and distinct alternatives techniques, but fails to explain how the alternative possible techniques from SmartKom and Kobsa would work together in the proposed combination to reach the claimed invention. Ex. 2025, ¶69. Specifically, the Petition asserts that both SmartKom's "interaction model" ***and***

Kobsa's "General User Modeling System," which can be "persistent," disclose or teach "accumulating long-term shared knowledge." Petition, at 23. For this same limitation, Petitioners further identify the "implicit acquisition" of knowledge about a user by "eavesdropping on the user-system interaction" as disclosed in Kobsa. Petition, 22 (quoting Ex. 1006, 416).

The Petition fails to explain how these three possible alternatives would fit, either alone or together, in the proposed combination in accordance with the claims. Worse, any explanation would fail because the three possible alternatives teach different functionality. Ex-2025, ¶¶70-71. SmartKom's interaction model functions to "compute information on the user" to be used for example, "to adapt the interaction style of the system to the interaction style of the user." Ex. 1005, 287. Contrarily, Kobsa's General User Modeling System for building long term models does not function to compute interaction preferences of the user. Instead, Kobsa's General User Modeling System is aimed at representing the "knowledge and beliefs of individuals." Ex. 1006, 417; Ex. 2025, ¶71. Importantly, the system architecture for Kobsa's General User Modeling System requires that the user modeling system does not have access to the interaction between the application and the user, which stands in contrast to the architecture of the interaction model in SmartKom. Ex. 1005, 285, Ex. 2025, ¶71. Moreover, Kobsa's General User Modeling System relies

on an initial selection of a user stereotype by the application for the which the user model is built and used, a feature that is not present in SmartKom's interaction modeling, or in any other component. Ex. 2025, ¶71.

For these same limitations directed to "accumulating long-term shared knowledge," the Petition further identifies Kobsa's disclosure of implicit acquisition of information on the user or eavesdropping. Petition, 22. A closer review of this disclosure reveals that Kobsa describes four different possible aspects of eavesdropping or implicit acquisition: (i) presuppositions, (ii) misconception recognition, (iii) stereotype selection, (iv) use of default rules. Ex. 1006, 416. The Petition fails to even address these four possible aspects of implicit acquisition, let alone explain how Kobsa's disclosure of implicit acquisition could be implemented in a component used to build long-term user models in SmartKom. Ex. 2025, ¶71.

None of these three alternatives identified for the "accumulating long-term knowledge" limitations describe the same functionality, and the Petition does not attempt to reconcile their inconsistencies or explain how, for example, the four possible methods for implicit knowledge acquisition would be implemented with the General User Modeling System of Kobsa or SmartKom's interaction model such that the proposed combination would satisfy the challenged claims. Nor does the Petition explain, for example, how Kobsa's General User Modeling System

("GUMS") where the user modeling component does not have access to the interaction between the application and the user would be implemented to interact with SmartKom's interaction modeling, which computes information on the users based on interactions. Ex. 2025, ¶71. Petitioners' presentation of multiple alternatives without sufficient explanation as to how the multiple alternatives interact improperly shifts the burden of deciphering Petitioners' arguments onto Patent Owner and the Board. *See* 35 U.S.C. § 312(a)(3) (A petition may be considered only if it "identifies, in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim."); *see also* 37 C.F.R. § 42.104(b) (Listing certain elements that a petition must satisfy in the "statement of the precise relief requested for each claim challenged.").

c. The Petition Relies on the Disclosure of Unasserted Prior Art References

Finally, the Petition's identification of disparate and broad-ranging disclosures untethered to a single, coherent system is illuminated by Petitioners' critical reliance on a reference that is not asserted as part of the combination in Ground 1. While the claims require the specific recited processing of an utterance that includes "one or more words that have different meanings in different contexts," SmartKom merely discloses lexical ambiguities of word that can be mapped to

multiple ontological concepts, using "kommen" as an example. *See, e.g.*, Ex. 1005, 607 ("Due to lexical ambiguity of individual words, each SRH can be mapped to a set of possible interpretations called *conceptual representations* (CR). E.g., the German word *kommen* can be mapped to either the ontological concept MotionDirectedProcess or to the concept WatchPerceptualProcess."); at 280 ("[t]he evaluation of the contextual coherence scoring in terms of its disambiguation performance meant calculating how often contextual coherence picks the appropriate reading, given an ambiguous lexicon entry such as kommen associated in the lexicon with both MotionDirectedProcess and WatchPerceptualProcess."). Due to the lack of explicit explanation of words having different meanings in different contexts in SmartKom, the Petition relies on another article ("Porzel") cited in SmartKom (Ex. 1014) that is not part of the asserted ground to explain two example input utterances using "kommen." Petition, 15. But Porzel alone does not address the shortcomings in Petitioners' theory.

Petitioners must further rely on Porzel to attempt to tie the action planning in SmartKom that Petitioners rely on for the limitations requiring "generat[ing] a grammatically or syntactically adapted response" to an utterance that has different meanings in different contexts to try to establish that the alleged response is "grammatically or syntactically adapted" "based on the intended meaning

established within the identified context" as recited in the Challenged Claims. Petition, 38, 42-43. Specifically, because the action plan for sending a fax message that Petitioners rely on for these limitations do not include an action plan related to an utterance that includes word(s) that have different meanings in different contexts, Petitioners argue that one could consider the phrase "was für Spielfilme kommen heute Abend" from Porzel "which includes the word 'kommen' meaning either 'showing on' or 'to come'" for an action planner preparing a responsive plan to provide a film listing. Petition, 42. This is one of two instances where Petitioners rely on Porzel to provide an example that simply does not appear in SmartKom. Petition, 42-43 ("Associating this example with the response to the 'kommen' utterance, if the movie database finds no results for films showing tonight, the system response is 'I have not found any data for your request' and if the system finds movies, the results are provided.").

Petitioners' reliance on a reference not asserted as a part of the Ground further highlights the reliance on disparate disclosures or individual pieces of different prior art systems that underlies Ground 1.

2. A POSITA Would Not be Motivated to Combine SmartKom and Kobsa to Reach the Claimed Invention

Not only does the Petition fail to show that the proposed combination of SmartKom and Kobsa demonstrates a coherent system in accordance with all the

elements of the claimed invention, but the Petition also does not demonstrate that a POSITA would have been motivated to combine SmartKom and Kobsa in the manner that Petitioners suggest to reach the claimed invention.

As set forth above, the Petition admits that SmartKom mentions user models or user profiles/preferences, but does not disclose further details about these user models. Specifically, the Petition relies on the generalized disclosure of a user model in SmartKom (Petition, 18, 20) and the interaction model in SmartKom for its disclosure of "comput[ing] information on the user" to satisfy the claim limitations requiring "long-term shared knowledge." Petition, 23 ("SmartKom describes an interaction model that 'computes information on the user'[.]"). The Petition turns to Kobsa's teachings regarding user models to fill the gap of SmartKom's lack of disclosure of the details of user models or preferences. Petition, 8. The Petition argues that Kobsa describes techniques for "accumulating long-term shared knowledge" based on its teaching of the "user modeling component" as "part of the dialog system whose function is to incrementally construct a user model; to store, update, and delete entries; to maintain the consistency of the model; to supply other components of the system with assumptions about the user." Petition, 23 (citing Ex. 1006, 6). Further, Petitioners allege that Kobsa's General User Modeling System ("GUMS") satisfies the claim requirements for "accumulating long-term shared

knowledge" because GUMS "is designed for building long term models of individual users," and the user model is persistent, because "at the end of a dialog session," the system "records all information about the user inferred from his/her dialog behavior in a corresponding file." Petition, 23 (citing Ex. 1006, 10-11).

The Petition does not, however, explain how, in the proposed combination, a POSITA would incorporate Kobsa's persistent GUMS with the SmartKom's interaction model or the generalized user model the Petition alleges is part of SmartKom's context modeling process. Instead, the Petition merely states that a "POSITA would therefore have been motivated to add Kobsa's teachings into SmartKom to improve the user experience by providing user-specific and tailored responses." Petition, 9. This alleged motivation falls short because it fails to address the implementation of user model information in SmartKom, and how Kobsa's teaching could accordingly be "added" to SmartKom to reach the claimed invention.

However, SmartKom explicitly discloses that "general user model information is supplied via external sources, e.g., via a user's *SmartCard*," while the SmartKom system only "actively monitors" "interaction preferences of the users." Ex. 1005 at 276 (emphasis in original). Ex. 2025, ¶78. This external plug-in user model in SmartKom, with no active monitoring of user information other than interaction preferences, is entirely inconsistent with the "persistent" user model in

Kobsa, which "records ***all information*** about the user inferred from his/her dialog behavior" "at the end of a dialog session." Petition, 23; Ex. 1006, 10-11; Ex. 2025, ¶78. A plug-in, *e.g.*, *removable*, SmartCard inherently cannot be persistent such that it would store, update, and maintain entries in a user model because it is external to the system and the user must be able to plug it in to supply the system with the user model, and remove it therefrom. Ex. 2025, ¶78.

Petitioners have not identified any disclosure in SmartKom showing that, when plugged in, the SmartCard would engage in "incrementally construct[ing]; to store, update, and delete entries; to maintain the consistency of the model," as Kobsa's "persistent" user model requires. Instead, SmartKom says, to the contrary, there is no active monitoring or updating of user model information. Ex. 1005 at 276 Accordingly, SmartKom's plug-in user model is inconsistent with incorporating the persistent user model of Kobsa. Ex. 2025, ¶¶78-80. Petitioners do not even address SmartKom's disclosure of an external plug-in user model, let alone explain how the persistent user model of Kobsa could be incorporated into a SmartCard, for example, to be used in SmartKom's system.

3. The Petition Fails to Show that the SmartKom + Kobsa Combination Discloses or Teaches "short-term shared knowledge"

Next, the Petition fails to demonstrate a reasonable likelihood of success that the proposed SmartKom-Kobsa combination discloses or renders obvious the Challenged Claims because the Petition fails to show that the combination discloses, teaches, or suggests "accumulat[e]/[ing] short-term shared knowledge about the current conversation, wherein the short-term shared knowledge includes knowledge about the utterance received [at the voice] during the current conversation." Ex. 1001, cl. 1, 13, 25.

Petitioners fail to show that SmartKom's discourse model discloses or suggests that "short-term shared knowledge" that "includes knowledge about the utterance received [at the voice] during the current conversation" and "accumulat[ing]/[e] short-term shared knowledge about the current conversation" . Petition, 20-21; Ex. 2025, ¶¶81-86. Petitioners only argue that these limitations directed to the "current conversation" are met because SmartKom's discourse model "is dynamically updated as system output progresses". Petition, 21 (quoting Ex. 1005, 61). However, the fact that the discourse model (which includes the dialog history) is dynamically updated as system output progresses does not tell a POSITA whether the knowledge that is stored in a dynamically updated dialog history

includes any distinction between utterances or knowledge during the current conversation, or any prior conversation. Ex. 2025, ¶84.

Moreover, while the Petition identifies the "dynamically updated" discourse model, Petitioners ignore that SmartKom also discloses management of the discourse state relies on a type of default unification process called overlay, where old structure is overwritten with new information, but at the same time, the old information is still kept if consistent with the new information. Ex. 2025, ¶85; Ex. 1005, 246. Petitioners' reliance on one high level disclosure that the discourse model be dynamically updated while *ignoring* other, more detailed disclosure in SmartKom regarding the management of the discourse state highlights how Petitioners carefully selected disclosures that are favorable to the Petition's reconstruction of the claims without considering the claimed invention as a whole.

The Petition alternatively identifies SmartKom's disclosure of generating a user state lattice such as a type of short-term shared knowledge accumulated about the current conversation during the current conversation. Pet. at 19. The Petition does not, however, identify any disclosure regarding whether the internal state, such as "hesitant" is accumulated during the current conversation. Ex. 2025, ¶86.

B. GROUNDS 2-4 – The Petition Fails to Demonstrate a Reasonable Likelihood that the Challenged Claims are Unpatentable as Obvious over Barbara, Ross, O'Neill, and Franco

The remaining Grounds 2-4 of the Petition rely on combinations of Barbara (Ex. 1007) and Ross (Ex. 1008). Specifically, Ground 2 challenges Claims 1, 5-8, 11-13, 17-20, 23-25, 29-32, as obvious over Barbara and Ross; Ground 3 challenges claims 2-4, 9, 14-16, 21, 26-28, and 33 as obvious over Barbara, Ross, and O'Neill; and Ground 4 challenges claims 10, 22, and 34 as obvious over Barbara, Ross, and Franco. As set forth in detail below, because the Petition fails to demonstrate a reasonable likelihood that the independent claims challenged in Ground 2 over Barbara and Ross are unpatentable, the same failure applies to Ground 3 and 4, which challenge claims that depend from independent claims 1, 13, and 25.

The Petition fails to demonstrate a reasonable likelihood that the Challenged Claims are obvious over the combinations based on Barbara and Ross for several key reasons set forth in detail below. First, Petitioners have not shown that the grounds based on Barbara and Ross disclose, teach, or suggest the claim limitations requiring determining an "intended meaning." Second, any combination based on Barbara and Ross does not demonstrate obviousness of the Challenged Claims because the Petition fails to establish that a POSITA would be motivated to combine Barbara and Ross to reach the claimed invention. For at least these reasons,

Petitioners have not demonstrated a reasonable likelihood that the Challenged Claims are obvious over Barbara and Ross.

A. The Barbara + Ross Combinations Fails to Disclose or Teach "determining an intended meaning" because Barbara is based on human assistance

Petitioners assert that the Barbara and Ross combination renders obvious the Challenged Claims. However, the Petition fails to demonstrate that the combination of Barbara and Ross disclose or render obvious the claim limitations requiring "determining an intended meaning" because Barbara's automatic recognition process that Petitioners rely on in its obviousness challenge is fundamentally based on manual interpretation by human operators. Ex. 2025, ¶¶91-92, 107-113. Manual interpretation by a human to determine the intended meaning of an utterance is inconsistent with the Challenged Claims. Ex. 2025, ¶¶108-109. Manual interpretation is inconsistent with both the disclosure in both the specification and confirmed by the prosecution history.

Specifically, as shown in Figure 7 below, Barbara's recognition process relies on manual interpretation of both the interpretation of the recognized text value of the utterance and for determining the intent of the user's utterance when the system cannot deduce it. Ex. 2025, ¶¶91-92; Ex. 1007, Fig. 7.

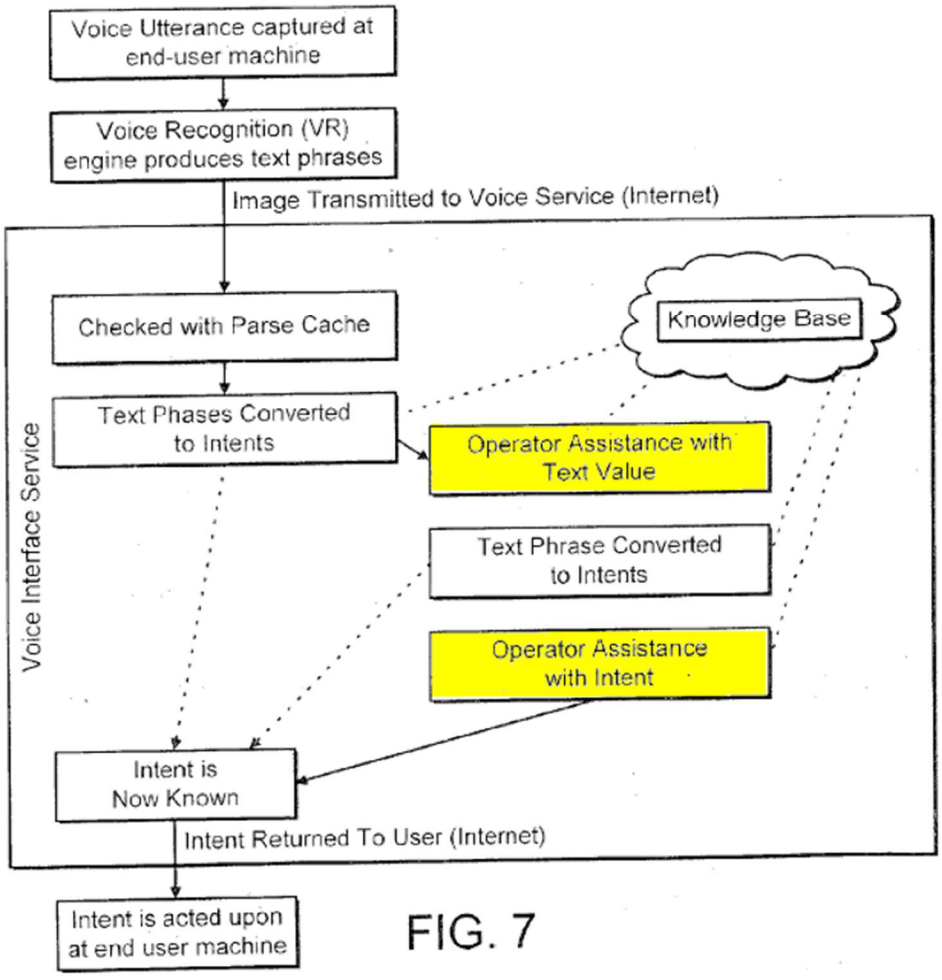

FIG. 7

Ex. 1007, Fig. 7 (annotated); Ex. 2025, ¶91.

Figure 7 shows that, before intent is known, Barbara's system requires operator assistance for manual interpretation with determining both the correct text value of the utterance, and the intent. Ex. 1007, ¶[0085], Fig. 7; Ex. 2025, ¶92.

Barbara's recognition process evaluates guesses as to what was said using the knowledge and information databases. Ex. 1007, ¶¶[0088], [0118]. These guesses are scored for likelihood that each is correct. Ex. 1007, ¶[0099]; Ex. 2025, ¶89.

However, if a text value cannot be determined by the system to a certain criteria of confidence, the audio file associated with the utterance is replayed for a human operator who performs manual interpretation and chooses the correct textual interpretation. Ex. 1007, ¶[0100]; Ex. 2025, ¶.

After the text value has been determined using this manual interpretation, Barbara's intention recognition process follows. However, if the system cannot automatically deduce what the user wanted to do despite knowing what they said, a second human operator is engaged to assist, who hears what was said and performs manual interpretation of the meaning of the utterance. Ex. 1007, ¶ [0104]-[0105]; Ex. 2025, ¶92. Thus, Barbara's voice interface system is designed such that human operators, not the system itself, is ultimately used for the utterance text recognition and the intention recognition.

Manual interpretation by a human to determine the intended meaning of an utterance is inconsistent with the Challenged Claims. Ex. 2025, ¶¶ 108-109. This is supported by the '681 Patent's intrinsic record, which evidences that, in the claimed cooperative conversational voice interface system, the *system* determines the intended meaning of an utterance, not a human performing *manual* interpretation by a human. Ex. 1001, 13:10-27; Ex. 2025, ¶111.

Embodiments of the ’681 Patent invention described in the specification explain that context domain agents and an intelligent hypothesis builder *of the system* are employed for context determination and determination of intended meaning. *See e.g., id*., 12:19-56, 15:35-16:23. The prosecution history of the ’681 Patent further confirms this.. For example, the applicant submitted remarks in response to an office action arguing that a prior art reference, Bielbly, failed to disclose or render obvious the claim limitations requiring determining an intended meaning because a user, not the system, would ultimately confirm or disconfirm whether the interpreted utterance was correct. Ex. 1002, 235. Specifically, the applicant argued that Bielbly did not “disclose, teach, or suggest that the system determines an ‘intended meaning’ for an utterance” because “rather than attempting to ***independently disambiguate or otherwise determine*** the intended meaning for the utterance, the system in Bielbly prompts the user to confirm or disconfirm whether certain words were correctly recognized.” Ex. 1002, 235 (emphasis added). Accordingly, the applicant argued that “because the system described in Bielbly relies upon user feedback to determine whether an utterance was correctly recognized, Bielbly does not disclose, teach, or suggest that the ***system*** determined an ‘intended meaning’ for an utterance.” Ex. 1002, 235 (emphasis added). These statements support the evidence in the claims

and the rest of the intrinsic record that manual interpretation is inconsistent with the Challenged Claims. Ex. 2025, ¶¶112-113.

The Petition fails to address that determining the meaning of the utterance in Barbara's system is fundamentally based on the backstop provided by manual interpretation by a human, and even if Petitioners did address this shortcoming of Barbara, it is fatal to Petitioners' argument that the Barbara and Ross combination render disclose or render obvious the Challenged Claims.

B. A POSITA Would Not Be Motivated to Combine Barbara and Ross to Reach the Claimed Invention

Finally, any proposed combination of Barbara and Ross would fail because a POSITA would not be motivated to combine Barbara and Ross as Petitioners suggest since the proposed combination would not work. Ex. 2025, ¶¶96-105. The Petition asserts that a POSITA would have been motivated to combine Barbara and Ross such that the knowledge and/or information database in Barbara's voice interface system would be modified by Ross's conversational records for storing a dialog history. Petition, 65-66. This proposed combination relies on applying Ross's teaching that the information "is eventually purged from the conversational record when it is no longer relevant to active goals" to expire the dialog history contained in Barbara's knowledge and/or information database. Petition, 66; Ex. 1008, ¶[0057]. The Petition alleges that a POSITA would be so motivated because this

"data management approach improves storage efficiency and reduces need for extensive hardware storage." Petition, 66. However, any proposed benefit of this asserted combination is entirely undermined by the fact that Barbara's recognition process would not work if modified by Ross as Petitioners argue. Ex. 2025, ¶¶96-105.

The Petition relies on Barbara's automatic recognition process in the proposed combination as rendering obvious the Challenged Claims. Crucial to the function and purpose of Barbara's recognition process is the continual construction and maintenance of the information database and knowledge base disclosed therein. Barbara's information database is built up over time "by recording personal details or preferences from what has been said, or from the user directly entering information into the system," (Ex. 1007, ¶[0088]) and Barbara's knowledge base stores the correct utterance text and the correct intention. Ex. 1007, ¶[0106].

Barbara's recognition process works by generating a packet that comprises, in part, the best guesses as to what was said in a received utterance and an indication of the likelihood that the guesses are correct. Ex. 1007, ¶[0086]; Ex. 2025, ¶88-90. The guesses in the packet are evaluated by the system against the information database and the knowledge base. Ex. 1007, ¶¶[0088], [0106]; Ex. 2025, ¶88. Part of this process is mapping every sub-phrase from the sentence to a possible intention

until the whole phrase is mapped to a set of possible intentions for the utterance. Then, a heuristic calculation is done for the confidences of each possible intention based on the success of mapping rules in the history of the system. Ex. 1007, ¶[0118]; Ex. 2025, ¶90. Rule confidences are periodically calculated based on an analysis of the knowledge base, meaning that the knowledge base, and its history of correctly interpreted utterances, is continually used in the process for successfully recognizing utterances as the Barbara system is used. Ex. 1007, ¶[0118]; Ex. 2025, ¶¶98, 100.

Another part of evaluating the best guesses in Barbara's recognition process includes searching the information database for words that are similar to those that are being interpreted, and sending a message to the server if any word is identified along with its meaning and the confidence of the interpretation. Ex. 1007, ¶[0089]; Ex. 2025, ¶¶ 89, 101.

Thus, in order for Barbara's system to perform its process for recognizing the intention of an utterance, the history of the correct utterance text and correct intention in the knowledge base must be as "broadly applicable as possible" and continually maintained so that confidences for the intention of recognized utterance can continually be calculated by the system. Ex. 1007, ¶[0110]; Ex. 2025, ¶¶98, 100. Moreover, the function and purpose of Barbara's recognition process is also reliant

on a robustly maintained information database so that the best guesses can be effectively evaluated against the history of personal details based on what has been said overtime. Ex. 2025, ¶101.

The need for Barbara's databases to be continually maintained in order to continually calculate the confidence scores for each word for Barbara's system to work is entirely inconsistent with Ross's conversational record that purges the indexed utterances and results of its semantic analysis when it is no longer relevant and after a predetermined period of elapsed time. Ex. 1008, ¶[0057]; Ex. 2025, ¶104. Periodically purging the information stored in the knowledge base or information database from Ross is therefore incompatible with the function and purpose of the Barbara's recognition system because, if purged, Barbara's recognition process would be unable to successfully calculate the confidences of each interpreted utterance. In particular, there would not be history of prior, correct utterances recognition and intention in the knowledge base to calculated these confidences. Ex. 2025, ¶105. In addition, the proposed modification would also keep Barbara's recognition process from being functional because the history, "built up over time" based on what has been said is also analyzed in order to interpret the best guesses and confidences for utterances received by Barbara's system. Barbara simply would not function with Ross's purge requirement. Ex. 2025, ¶105.

Accordingly, a POSITA would not be motivated to modify either the information database or the knowledge base using Ross's periodic purge of information because Barbara's system simply would not work if modified in the way that Petitioners suggest.

VI. CONCLUSION

For at least the foregoing reasons, Petitioners failed to meet their burden to show a reasonable likelihood of unpatentability of any of the Challenged Claims. *See* 37 C.F.R. § 42.108(c). Accordingly, Patent Owner respectfully requests that the Board deny institution of *inter partes* review.

Dated: August 20, 2025

Respectfully submitted,

By: / Christopher TL Douglas /
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CERTIFICATION UNDER 37 C.F.R. §42.24

Pursuant to 37 C.F.R. §42.24(d), I certify that this brief complies with the type-volume limits of 37 C.F.R. §42.24 because it contains 6,846 words, according to the word-processing system used to prepare this brief, excluding the parts that are exempted by 37 C.F.R. §42.24 (including the table of contents, a table of authorities, a listing of facts which are admitted, a certificate of service or this certificate word count, and appendix of exhibits).

Dated: August 20, 2025

By: / Christopher TL Douglas /
Christopher TL Douglas

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §42.6(e), the undersigned hereby certifies that true and correct copies of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE and VB ASSETS EXHIBITS 2025-2026** were served in their entirety on August 20, 2025 by filing this document through Patent Trial and Appeal Case Tracking System (P-TACTS) as well as delivering true and correct copies by electronic mail on Petitioners' lead and backup counsel at the following email addresses (as agreed by counsel for Petitioners):

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