

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM SERVICES LLC,

Petitioner,

v.

SMART SPEAKER LLC,

Patent Owner.

Patent No. 12,401,721

Filing Date: May 8, 2025

Issue Date: August 26, 2025

Inventors: Yehuda Binder and Benjamin Maytal

Title: SYSTEM AND METHOD FOR SERVER BASED CONTROL

PATENT OWNER'S RESPONSE

Case No. IPR2026-00276

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LIST OF EXHIBITS

Exhibit No.	Description of Document
2001	Memorandum from John A. Squires, Director of USPTO, entitled “Additional Discretionary Institution Considerations – U.S. Manufacturing and Small Business Use of AIA Proceedings,” dated March 11, 2026
2002	Plaintiff’s Disclosure of Asserted Claims and Infringement Contentions in <i>Smart Speaker LLC v. Amazon.com Servs. LLC</i> , Case No. 2:25-cv-00707-JRG (E.D. Tex.), dated September 16, 2025
2003	Photograph of the underside of an Amazon Echo Dot sold in the United States
2004	Article entitled “Watchdog criticizes conditions at Chinese factory that builds Amazon Echo speakers” by Matt Day, The Seattle Times, published June 9, 2018
2005	Article entitled, “Alexa is Infecting All Electronic Devices Near You,” dated June 25, 2018
2006	Article from Amazon Jobs entitled “Devices Operations and Supply Chain,” accessed May 4, 2026
2007	Second Amended Docket Control Order (Dkt. 33) in <i>Smart Speaker LLC v. Amazon.com Servs. LLC</i> , Case No. 2:25-cv-00707-JRG (E.D. Tex.), dated October 29, 2025
2008	Defendant’s Invalidity and Subject Matter Eligibility Contentions in <i>Smart Speaker LLC v. Amazon.com Servs. LLC</i> , Case No. 2:25-cv-00707-JRG (E.D. Tex.), dated December 9, 2025
2009	Appeal Statistics, Patent Trial and Appeal Board, dated October 31, 2025
2010	Patent Trial and Appeals Board (PTAB) data at a glance December 2025
2011	Declaration of Michael Shamos

I. INTRODUCTION

On February 28, 2026, Amazon.com Services LLC (“Petitioner”) filed a petition (Paper 2, “Petition” or “Pet.”) for *inter partes* review of Claims 1–15, 17–31, and 33 (the “Challenged Claims”) of U.S. Patent No. 12,401,721 (the “’721 Patent”). The Petition asserts sixteen grounds of obviousness, all resting on two prior-art foundations: Lim (EX1005) alone or with secondary references (Grounds 1–8), and the combination of Williams (EX1006) and Lim, alone or with the same secondary references (Grounds 9–16). Pet. at 7. Trial has been instituted on all grounds. Patent Owner Smart Speaker LLC (“Patent Owner”) submits this Response, supported by the Declaration of Dr. Michael Shamos (Ex. 2011), and respectfully requests that the Board issue a final written decision confirming the patentability of all Challenged Claims.

First, Petitioner’s case fails at the foundation. Claim 1 requires a first device that receives, “*from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data,*” that sounds “*digital audio content in response to the received first message,*” and that sends, “*to a second device over the WLAN, a control message*” comprising “*control data for controlling a first actuator in the second device*” “*in response to the received second message.*” For Grounds 1–8, the Petition maps these limitations to Lim, but Lim’s server is a speech-recognition

engine: it processes voice input and returns recognition results that Lim’s controlling device uses in its own pre-programmed workflow. Lim discloses no server-generated “*first message*” in response to which the first device sounds digital audio content, and no server-generated “*second message*” in response to which the first device sends a control message. The Petition’s alternative mapping of the “*second message*” to Lim’s command code data fares no better: the codeset is a static library entry retrieved from a database, not a message generated in response to captured human voice data. Ex. 2011, ¶¶ 47-54.

Second, for Grounds 9–16, the Petition adds Williams, but Williams’s “services 218” are the delivery of informational content—*e.g.*, grocery lists, song information, answers to questions—to the user, not control messages to a first device. The passage the Petition principally invokes, paragraph [0051], is aspirational: it says an application “might also be designed” to control on-premises devices, without disclosing **how**. Further, the Petition’s own mapping sends the purported “*second message*” to Williams’s media and application devices—not to the first device. The Petition concedes the resulting gaps, relying on Lim to purportedly fill the gaps. The proposed combination, in which Williams’s server abandons its direct delivery path so that an interface device can relay control commands it is never described as sending, is supported only by generic benefits

contrary to the references' own architectures, and further supported by references outside the stated ground. Ex. 2011, ¶¶ 55-62.

Third, the grounds directed to the dependent claims, Grounds 2–8 and 10–16, each fail for additional and independent reasons. None of the **seven** secondary references is cited for or remedies the failures of the two grounds directed at independent Claim 1. The Petition repeatedly reaches outside its stated grounds to purportedly supply claimed elements—*e.g.*, the claimed sensor types from Fraden, the claimed locally stored and typed addresses from Doherty, Roberts, and Yadav, the claimed cellular connectivity from Wang. Additionally, the motivations to combine are merely generic assertions, *e.g.*, “obvious to try,” “expanding the capabilities,” “improve the usability,” without the articulated, reference-grounded reasoning the law requires. Ex. 2011, ¶¶ 63-74. And several of the mappings do not address the actual claim language at all, *e.g.*, Claim 3’s requirement that “*the first message is further responsive to the sent sensor data*,” or Claim 8’s requirement that the combined system has an array “*operative to estimate*” the recited signal parameters. *Id.*

As every ground rests on one of these two defective foundations, because the missing limitations are common to every Challenged Claim, and because the grounds directed to the dependent claims independently fail, Petitioner has not proven that any Challenged Claim is unpatentable.

II. THE '721 PATENT

The '721 Patent, titled “System and Method for Server Based Control,” issued on August 26, 2025, from an application filed on May 8, 2025, and claims priority through a chain of continuations to a provisional application filed on January 9, 2012. '721 Patent, 1; Pet. at 3. Independent Claim 1 recites “[a] *first device for use with a Wireless Local Area Network (WLAN) in a building,*” comprising “*a WLAN transceiver for communicating over the WLAN,*” “*a microphone for capturing human voice data,*” “*a sounder for converting an electrical energy to audible sound waves,*” and one or more processors programmed with computer program instructions. '721 Patent, Claim 1; Ex. 2011, ¶¶ 26-28.

The programmed instructions define a sequence: the first device captures, using the microphone, first and second human voice data (Element 1[E]); sends the captured first and second human voice data over the Internet via the WLAN to a server device (Element 1[F]); receives, “*from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data*” (Element 1[G]); sounds, “*using the sounder, digital audio content in response to the received first message*” (Element 1[H]); and sends, “*to a second device over the WLAN, a control message that comprises a control data for controlling a first actuator in the second device,*” “*to directly or indirectly affect, change, or produce a first physical phenomenon,*” “in

response to the received second message” (Element 1[I]). Each of the first and second devices is addressable in the WLAN and in the Internet using a respective IP address (Element 1[J]). ’721 Patent, Claim 1. The claim thus places the first device at the center of a server-driven architecture: the server generates and sends distinct messages in response to distinct voice commands, and those messages cause the first device both to sound digital audio content through its own sounder and to relay a control message to a separate second device. Ex. 2011, ¶¶ 29-30.

The specification describes this architecture, including a router, a first device “operative to transmit a digital data corresponding to the sensed voice to the router,” a second device that “may be operative to execute actuator commands received from the router,” and a control server that “may be operative to produce actuator commands in response to [a] voice processor output.” ’721 Patent, 32:25–38, 32:57–33:13; see Pet. at 2–3. FIG. 19 depicts a “controller involving voice processing.” ’721 Patent, 55:64–65. The specification identifies a display as an exemplary actuator: “[a]n actuator may be a display for presentation of visual data or information, commonly on a screen.” *Id.*, 25:33–38; see Pet. at 38; Ex. 2011, ¶ 31.

III. THE CITED PRIOR ART

A. Lim (EX1005)

Lim describes methods for the setup and configuration of “controlling devices such as universal remote controls.” EX1005, [0007]. To that end, “a controlling

device may be provisioned with means to receive voice input from a user, e.g., a microphone,” so that in a setup mode the device “may solicit spoken appliance descriptive information, for example brand and model number,” to be matched to command data. *Id.* In the FIG. 4 setup workflow, “at step 402 the controlling device may prompt the user to speak the brand name of the appliance,” and “[t]his and subsequent prompts for voice input may take the form of an illuminated LED and/or ‘speak’ symbol, a displayed text or image, a synthesized spoken message” and the like. *Id.*, [0027]. “The resulting spoken syllables may be digitized and presented to a speech recognition means for processing,” and “all or part of said speech recognition processing . . . may be performed by programming resident on a remote server 500 accessible via a network 502 such as the Internet or PSTN,” to which “access . . . may be . . . via a local network connection 508, such as WiFi or Bluetooth, through a gateway device such as a router (not illustrated).” *Id.* Ex. 2011, ¶¶ 32-33.

Once an appliance has been identified, the corresponding “command code data”—“data which serves to define the necessary control protocols and command values for use in transmitting command signals to controllable appliances”—may be provisioned to the controlling device, including by “downloading of a complete set of command code data into the controlling device from an off-platform database of codesets located” for example “on a remote server 500.” EX1005, [0020], [0030].

In use, “the controlling device 100 may be capable of transmitting commands to the appliances, using any convenient IR, RF, Point-to-Point, or networked protocol 120, to cause the appliances to perform operational functions.” *Id.*, [0017]. Lim’s FIG. 6 operational workflow is discussed in Section VI.A below. Ex. 2011, ¶¶ 34-35.

B. Williams (EX1006)

Williams describes an audio-based system for a home in which an interface device 116 captures audio and conveys audio-based information over a network 114, which “may thus include” the Internet, to an application engine 118 and cloud-based applications 120 that may be implemented by a server 400. EX1006, [0015], [0021]–[0022], [0052]. The applications “may use the information from the event notifications 216 to initiate or customize services 218 on behalf of users,” and “[s]uch services may be provided through any of the media devices 106 located in the home, as well as through other application devices 220.” *Id.*, [0036]. Williams’s examples of services 218 are the provision of information or content to the user—*e.g.*, interpreting a spoken grocery order, identifying a song and offering related content, or answering a question such as “What’s the recipe for deviled eggs?” *Id.*, [0044]–[0050]. Williams’s only reference to controlling devices is the single sentence pair of paragraph [0051], discussed below, and Williams does not disclose how that potential control is accomplished. Ex. 2011, ¶¶ 36-39.

C. Wittenberg (EX1008)

Wittenberg, U.S. Patent No. 7,529,677, is cited only in Grounds 2 and 10, against dependent Claim 2. Pet. at 6-7. According to the Petition, Wittenberg's remote processor "analyzes audio signals received at the remote processor to determine whether the person issuing the voice command is authorized to issue the command," and its processing "involves comparing the characteristics . . . of the audio signal to stored voice information to determine whether the audio signal voice matches that of an authorized user." Pet. at 52-53 (quoting EX1008, 5:61-6:6). Wittenberg thus adds an authorization check to voice-command processing.

D. Gruber (EX1009)

Gruber, U.S. Patent Pub. No. 2012/0265528, is cited in Grounds 3 and 11, against dependent Claims 3-4 and 11. Pet. at 6-7. Gruber describes a virtual assistant that "uses context information to supplement natural language or gestural input from a user." EX1009, Abstract. Gruber's example sources of context include device sensors and "signatures of connected networks," such as "MAC addresses of network access points." EX1009, [0218]-[0225]. In Gruber, context serves the interpretation of the user's input.

E. Benesty (EX1010)

Benesty, which includes excerpts of the *Springer Handbook of Speech Processing*, is cited in Grounds 4 and 13, against dependent Claims 7-8. Pet. at 6-7.

The Petition quotes Benesty’s survey observations that “microphone arrays have the ability to offer directional gains that can significantly improve the quality of signal pickup in reverberant and noisy environments,” and its description of “microphone array beam scanning and time delay estimation (TDE)-based localization methods,” which can involve “estimate of the direction of an active speech source.” Pet. at 58 (quoting EX1010, 1021, 1044).

F. Goldsmith (EX1040)

Goldsmith, which includes excerpts of the textbook *Wireless Communications*, is cited in Grounds 6 and 15, against dependent Claims 13–15. Pet. at 6-7. The Petition quotes Goldsmith’s introduction of the IEEE 802.11 standards, including the “802.11a wireless LAN standard” and “802.11g,” its showing that 802.11b WLANs use ISM-band frequencies, and its descriptions of cellular standards, including that “[t]he third generation (3G) cellular systems are based on a wideband CDMA standard,” also referred to as “UMTS,” and the conventional use of “GSM” and “EDGE.” Pet. at 62–64 (quoting EX1040, 16, 22–23, 12–13, 599–600).

G. Chatterjee (EX1012)

Chatterjee, U.S. Patent Pub. No. 2013/0052946, is cited in Grounds 7 and 16, against dependent Claims 18–20 and 23. Pet. at 6-7. Chatterjee describes “a system and method for providing home automation using a mobile device,” in which “home

automation systems provide centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliances (such as refrigerators and dishwashers), and similar systems,” including “controlling the temperature of a HVAC or toggling the light system on and off.” Pet. at 64–65 (quoting EX1012, Abstract, [0001], [0012]).

H. Rosenberg (EX1013)

Rosenberger, U.S. Patent No. 8,340,975, is cited in Grounds 8 and 12. Ground 8 challenges dependent Claims 26–28; Ground 12 challenges dependent Claims 5–6 and 26–28. Pet. at 6-7. Rosenberger relates to “improvements in speech-recognizing control devices,” whose device includes “a multi-colored LED status light 34 for visually indicating various device states and modes” and prompts the user to say commands “from a known vocabulary or grammar stored in the speech pattern memory 14.” Pet. at 67–68 (quoting EX1013, 1:7–13, 8:8–16, 8:20–32).

I. Rossing (EX1014)

Rossing, which includes excerpts of the *Springer Handbook of Acoustics*, is cited in Grounds 5 and 14, against dependent Claims 9, 29, and 33. Pet. at 6-7. The Petition draws from Rossing the physics and conventional types of microphones and loudspeakers. Pet. at 59–61 (quoting EX1014, 757–759, 763, 309; citing *id.*, 765, 903).

IV. LEVEL OF ORDINARY SKILL IN THE ART

The Petition proposes that a person of ordinary skill in the art (“POSITA”) “would have a bachelor’s degree in electrical engineering, computer engineering, or equivalent, and two years of experience working on remote device control and/or networked devices,” and that “[a]n advanced graduate degree may make up for the work experience indicated above.” Pet. at 4 (citing EX1002, ¶¶ 56–58). For purposes of this Response, Patent Owner applies Petitioner’s definition. Dr. Shamos likewise applies Petitioner’s definition. Ex. 2011, ¶¶ 23-24.

V. CLAIM CONSTRUCTION

Petitioner contends that no claim construction is necessary and claim terms carry their plain and ordinary meaning. Pet. at 4–5. Patent Owner agrees that the Board need not construe any term to resolve this proceeding because, as demonstrated below, the Petition fails under any reasonable interpretation of the claims, including Petitioner’s own reading. Ex. 2011, ¶ 25.

VI. PETITIONER HAS NOT PROVEN BY A PREPONDERANCE OF THE EVIDENCE THAT ANY CHALLENGED CLAIM IS UNPATENTABLE

In an instituted *inter partes* review, “the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.” 35 U.S.C. § 316(e). “To satisfy its burden of proving obviousness, a petitioner cannot

employ mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) so-called secondary considerations where in evidence. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983). The Board has held that a failure to identify the differences between the claimed subject matter and the prior art is fatal to an obviousness challenge. *See Apple, Inc. v. Contentguard Holdings, Inc.*, IPR2015-00355, Paper 9 at 9–10 (P.T.A.B. June 26, 2015). The Board must sufficiently explain and support the conclusions that the prior-art references disclose all the elements recited in the challenged claims and that a skilled artisan not only could have made, but would have been motivated to make, the combination in the way the patent claims, with a reasonable expectation of success. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017); *Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1067 (Fed. Cir. 2017). The combinability determination requires a plausible rationale as to why the prior-

art references would have worked together. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). Absent some articulated rationale, a “common sense” finding is no different than a mere conclusory statement that a combination “would have been obvious.” *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017).

A. Grounds 1–8: Petitioner Has Not Shown that Lim Discloses “receive, from the server device via the WLAN over the Internet, first and second messages” (Element 1[G]), “sound, using the sounder, digital audio content in response to the received first message” (Element 1[H]), or “send, to a second device over the WLAN, a control message . . . in response to the received second message” (Element 1[I])

Claim 1 requires the first device to be configured to “*receive, from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data*”; to “*sound, using the sounder, digital audio content in response to the received first message*”; and to “*send, to a second device over the WLAN, a control message that comprises a control data for controlling a first actuator in the second device . . . in response to the received second message.*” ’721 Patent, Claim 1; *see* Pet. at 28, 35, 38, 44. Together, these limitations define a voice-command architecture in which the server generates and sends distinct “*messages*” to the first device in response to distinct voice commands, and those messages cause the first device both to sound digital audio content and to relay a “*control message*” to a separate second device. Lim does not disclose this architecture. Ex. 2011, ¶¶ 47-54.

1. Lim's Server Provides Recognition Data, Not Actuator-Directing "messages"

The Petition maps the "*first message*" to "speech processing result(s)" assertedly returned by Lim's remote server 500 during the FIG. 4 setup-and-configuration workflow. Pet. at 28–31. In that workflow, the user speaks a brand name at step 402, and "[t]he resulting spoken syllables may be digitized and presented to a speech recognition means for processing" that "may be performed by programming resident on a remote server 500." EX1005, [0027]. The Petition then asserts that the server returns "speech processing result(s)" to the first device, and that the first device sounds or displays the next prompt in the setup sequence. Pet. at 28–31, 35–37; EX1002, ¶¶118–120, 135–137.

But Lim does not disclose the server returning any "*message*" to the first device in the FIG. 4 workflow. Paragraphs [0027]–[0030] describe voice input being sent to the server for speech recognition and then proceed directly to what the first device does next—without identifying any data object or communication transmitted from server to first device in between. The Petition and Dr. Houh fill this gap by inference: "[i]t would have been obvious that speech processing result(s) (i.e., first message and second message) are sent from the server back to the client device." Pet. at 28 (citing EX1002, ¶¶118–120). What those "speech processing result(s)" are, the Petition can only guess: they may be "the recognized speech (e.g. text

strings), a result of analyzing the recognized speech . . . and/or information associated with the next prompt.” *Id.* at 29. Ex. 2011, ¶ 48.

Further, even assuming a result were returned that could be mapped to the claimed “*first message*,” Lim does not disclose sounding “*digital audio content in response to the received first message*,” as Element 1[H] requires. The first device’s next action—displaying or sounding the next prompt—is determined by its own pre-programmed app logic, not by any server message. The server’s contribution at each stage is, at most, a recognition outcome, and the first device’s local firmware then decides what to do with it: if recognition fails, step 402 may be repeated “in order to solicit additional identifying information from the user” (EX1005, [0028]); once a brand is identified, “at step 406 the user may be prompted to provide spoken appliance type and/or model number information” (*id.*, [0029]); and so on through the further prompts of blocks 410 and 414 (*id.*, [0029]–[0030]). Indeed, the Petition’s own theory for Element 1[H] is that “the speech processing result(s) is needed to determine if, when, and/or which next prompt should be sounded,” so the purported result is one input to the first device’s own determination. Pet. at 38 (citing EX1002, ¶¶ 136–137). A “*message*” the claim makes the cause of the sounding cannot be recast as raw data for the first device’s independent decision-making. In Lim, the server functions as a speech-recognition engine that returns recognition data, and the

first device's own software logic determines what actuator operation, if any, to perform. Ex. 2011, ¶ 48.

The Petition's candidates for the sounded "*digital audio content*" confirm the mismatch. The buzzer the Petition invokes is, on the Petition's own account, a local attention-getting indicator: "Lim certainly suggests that providing the prompts discussed above would include sounding a buzzer, for example, to get the user's attention to start listening to the questions." Pet. at 36–37 (citing EX1002, ¶135). And Lim's "synthesized spoken message" is one of the forms the controlling device's own setup prompts may take—generated by the device's local prompting routine, not received digital audio content sounded in response to a server message. EX1005, [0019], [0027]. Neither is disclosed to be sounded "*in response to*" any "*received first message*." Ex. 2011, ¶ 49.

2. Lim Does Not Disclose a "*second message*" from the Server in Response to "*second human voice data*"

The Petition offers two alternative mappings for the "*second message*," and neither satisfies the claim. Pet. at 30–34, 44–45; Ex. 2011, ¶¶ 50-51.

First, the Petition maps the "*second message*" to "the speech processing result(s) that allows the first/controlling device to determine whether to proceed to block 610" in FIG. 6. Pet. at 44. The Petition's own framing demonstrates why this cannot be the claimed "*second message*": a recognition result that merely allows the

first device to determine whether to proceed to block 610 is an **intermediate** processing step—the functional equivalent of a yes/no gate that the first device evaluates locally. That is not a server-generated “*message*” in response to which the first device is configured to “*send, to a second device over the WLAN, a control message,*” as Element 1[I] requires. Pet. at 44 (citing EX1002, ¶¶ 155–156). Ex. 2011, ¶ 50.

Second, the Petition maps the “*second message*” to the “command code data” downloaded from the server at block 610 of FIG. 6. Pet. at 31–32. That mapping fails for two reasons. The command code data is not received “*in response to the sending of the*” captured second human voice data, as Element 1[G] requires: it is a pre-existing, static codeset—drawn from “a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models”—that is merely retrieved from a database, whether by “downloading the data itself” or by “supply of a pointer to an entry in a local database.” EX1005, [0024], [0036]; *see id.*, [0020], [0022], [0030]. Lim’s system is, at bottom, an app-based universal remote control: the user configures which appliance to control through a setup dialogue, and the app downloads the appropriate codeset from a database. A database-retrieval operation delivering pre-packaged IR/RF codes is not the server generating and sending a “*message*” in response to processing voice data. The Petition’s gloss that “both the speech processing result(s)

and the command data/codesets are identified and sent based on server's processing of the user command" (Pet. at 33) concedes the point: identification and retrieval of a pre-existing library entry is a lookup, not the generation of a responsive "*message*." Ex. 2011, ¶ 50.

And FIG. 6—the workflow on which the Petition rests the "*second message*" mapping—does not itself disclose any server generating or sending messages at all. FIG. 6 depicts a workflow on the first device: solicit the function name (step 604), determine whether the function is uniquely identified (step 606), provision the "indicated command code data" (step 610), and transmit the command (step 614), and "at step 614 the provisioned data may be utilized to transmit the desired command to the target appliance." EX1005, [0035]–[0036]. The server's only roles in this workflow are as an off-screen speech-recognition engine and as a database from which codesets may be downloaded. There is no disclosure of the server generating or sending any "*message*" to the first device—let alone a "*second message*" received "*in response to*" the sending of "*second human voice data*." Ex. 2011, ¶ 51.

3. The Petition's Reliance on References Outside Ground 1 Cannot Carry Petitioner's Burden

The Petition's own citations confirm that Lim does not supply the claimed messages. To support the inference that results are "sent from the server back to the

client device,” the Petition asserts that “at the time of the invention, this was a routine operation by remote speech processing servers,” citing Gruber (EX1009), Chang (EX1036, 307), and Tu (EX1037, 2367)—none of which is a Ground 1 reference. Pet. at 28–29; EX1002, ¶¶ 118–121. To place the claimed “*first actuator*” in Lim’s appliances, the Petition reaches to Sinclair (EX1018, 175, 226–227, 280), Vedavarz (EX1020, 401), Abe (EX1025, FIG. 15), Rossing (EX1014, 763), the ’710 patent’s file history (EX1004, 396), and the ’721 Patent’s own admissions. Pet. at 38–40, 42–43. And to connect Lim’s “networked protocol 120” to WiFi-enabled appliances, the Petition asserts that “in 2012, home appliances that are WiFi-enabled were well-known,” citing Chatterjee (EX1012, [0018]) and Doherty (EX1007, 321)—again, references outside the ground. Pet. at 42. Ex. 2011, ¶ 52.

Ground 1, however, is based on Lim alone. Pet. at 7. Petitioner may not supply a missing limitation from references outside the ground, and the Board may not adopt a multi-reference theory that Petitioner did not raise. 37 C.F.R. § 42.104(b)(4); July 31, 2025 Stewart Memorandum; *Magnum Oil Tools*, 829 F.3d at 1380-81. Nor can generalized “common knowledge” or expert say-so substitute for the required disclosure. *Id.* at 1380. As framed, Ground 1’s showing for the “*message*” limitations is a multi-reference obviousness theory disguised as a single-reference § 103 ground. And even taken on its own terms it fails, because none of the outside references is asserted, much less shown, to disclose the claimed “*first message*” or “*second*

message” in combination with Lim. On this record, Petitioner has not shown that Lim discloses, or that Ground 1 renders obvious, at least Elements 1[G], 1[H], and 1[I]. Ex. 2011, ¶ 52.

4. Ground 1’s Showings for the Dependent Claims Repeatedly Rest on References Outside the Ground

The same defect pervades Ground 1’s dependent-claim showings. For Claims 10–12, the Petition supplies the locally stored IP address, the static/dynamic IPv4 typing, and the MAC-48/EUI-48/EUI-64 addressing from purported common knowledge supported by Doherty (EX1007, 211, Figure 10-44, 265, 277, 99, 166), Roberts (EX1029, 127), and Yadav (EX1026, 2:50–59). Pet. at 47–48. For Claims 13–15, the 802.11 variants, ISM-band operation, and cellular protocols come from Goldsmith (EX1040, 600–601, 22–23, 12–13), Rosenberger (EX1013, 7:48–51), and the iPhone User Guide (EX1053). Pet. at 48–49. For Claims 9, 29, 30, and 33, the assertion that Lim’s microphone, speaker, and buzzer “operate as claimed” rests on Rossing (EX1014, 757–758, 309, 763, 765) and Sinclair (EX1018, 122–123). Pet. at 47. For Claim 25, the benefits of an external cloud server are drawn from Wittenberg (EX1008, 8:26–32), Williams (EX1006), and Gruber (EX1009), and the premise that users carry smartphones at home from Howard (EX1021, 1:53–58, 2:19–26). Pet. at 14, 49–50. For Claims 26–27, the light-source showing leans on Sinclair (EX1018, 174). Pet. at 50. None of these references are part of Ground 1,

and the Petition nowhere shows that Lim itself discloses these features. Supplying these claimed features from references outside the ground is precisely what 37 C.F.R. § 42.104(b)(4) and the Stewart Memorandum prohibit, and the Board may not adopt the unraised theories on Petitioner's behalf. *Magnum Oil*, 829 F.3d at 1380–81. Ex. 2011, ¶ 53.

5. All Other Grounds Relying on Lim Fail for the Same Reasons

Claims 5–6, 10, 12, 16, 20–21, 23, and 29 are challenged in Ground 1 alongside Claim 1, and each incorporates all of Claim 1's limitations. Because Petitioner has not shown that Lim discloses at least the “*first message*,” “*second message*,” and “*control message*” limitations of Claim 1, Ground 1 fails as to every claim it challenges. Grounds 2–8 rely on Lim in combination with, respectively, Wittenberg (Claim 2), Gruber (Claims 3–4, 11), Benesty (Claims 7–8), Rossing (Claims 9, 29, 33), Goldsmith (Claims 13–15), Chatterjee (Claims 18–20, 23), and Rosenberger (Claims 26–28), to challenge dependent claims. Pet. at 7, 52–69. None of those secondary references is cited for, or remedies, Lim's failure to disclose the “*message*” limitations of independent Claim 1. Ex. 2011, ¶ 54. Grounds 1–8 therefore fail in their entirety.

In sum, Lim's server is a speech-recognition engine that returns recognition data upon which the first device's own app logic acts. Neither of the Petition's

“*second message*” mappings—a locally evaluated recognition gate and a static, database-retrieved codeset—satisfies the claim. Further, FIG. 6 discloses no server-sent message at all. And the Petition’s resort to references outside Ground 1 confirms the gaps those references cannot fill. Petitioner has not proven by a preponderance of the evidence that any claim challenged in Grounds 1–8 is unpatentable. The additional, ground-specific defects of Grounds 2–8 are addressed in Sections VI.C through VI.I, below.

B. Grounds 9–16: Petitioner Has Not Shown that the Williams-Lim Combination Discloses “receive, from the server device via the WLAN over the Internet, first and second *messages*” (Element 1[G]) or “send, to a second device over the WLAN, a control *message* . . . in response to the received second *message*” (Element 1[I])

Claim 1 requires the first device to be configured to “*receive, from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data,*” and to “*send, to a second device over the WLAN, a control message . . . in response to the received second message.*” ’721 Patent, Claim 1; *see* Pet. at 84–92. These limitations require two distinct, server-generated “*messages*” received by the first device—the second of which causes the first device to relay a “*control message*” to a separate second device over the WLAN. Williams discloses neither, and the Petition’s combination with Lim cannot supply what is missing. Ex. 2011, ¶¶ 55-62.

1. Williams’s “services 218” Are the Delivery of Informational Content, Not the Claimed “*second message*”

The Petition’s mapping rests on Williams’s disclosure that the server “processes” the audio-based information and as a result “may . . . initiate or customize services 218.” Pet. at 86 (quoting EX1006, [0027], [0036]). But in Williams, “services 218” are the substance of the service itself—content delivered to and experienced by the user—not “*messages*” received by the first device that cause the operations Claim 1 recites. Williams’s own examples confirm as much: interpreting a spoken grocery order and recording “a shopping list that the user can view on their smartphone” (EX1006, [0044]); identifying a song and “provid[ing] information about related articles, offer[ing] samples, suggest[ing] related music and playlists, or present[ing] information allowing the user to purchase individual music tracks” (*id.*, [0047]); and answering questions by “emailing or otherwise providing a recipe” (*id.*, [0048]). *See id.*, [0044]–[0050]. In each instance, what the system delivers is information content. “Such services may be provided through any of the media devices 106 located in the home, as well as through other application devices 220.” *Id.*, [0036]. Ex. 2011, ¶ 56.

FIG. 2 confirms the deficiency. Its arrows from applications 120 to media devices 106 and application devices 220 depict the general availability of services through home devices—the user experiences the service via a particular device—

not a distinct “*second message*” generated in response to a voice command and received by the first device so as to trigger a relayed “*control message*.” EX1006, [0036], FIG. 2; Ex. 2011, ¶ 56. Williams simply does not disclose any data object, communication, or signal satisfying the claimed “*second message*.”

2. Paragraph [0051] Is Aspirational and Discloses No Server-Generated Control “*message*”

The Petition asserts that Williams’s system “may accept spoken commands from a user regarding on-premises devices, and may respond by interacting with such devices through available network connections,” resting on paragraph [0051]. Pet. at 69-70, 85–86 (quoting EX1006, [0051]). Paragraph [0051], however, merely states that an application “might also be designed to allow a user to control various on-premises devices and equipment.” EX1006, [0051]. That passage tells the reader **what** the system might do—*i.e.*, accept voice commands and interact with devices—but says nothing about **how**. It is silent on whether the server generates any “*message*,” what form it would take, how the first device would receive it, or what “*control message*” would follow. Yet those are precisely the elements Claim 1 requires. A statement that a system “may respond by interacting with such devices through available network connections” identifies no message and provides nothing of the specific server-to-first-device-to-second-device sequence that Claim 1 requires. And tellingly, “interacting with such devices through available network

connections” describes the application—the server side—interacting with the on-premises devices, which is Williams’s direct server-to-device architecture, not the claimed relay through the first device. Ex. 2011, ¶ 57.

3. The Petition’s Mappings Send the “*second message*” to the Wrong Device and Concede the Gaps, Falling Back to Lim

The Petition’s Ground 9 mapping does not track Claim 1. For Element 1[G], which requires the first device to receive the “*second message*,” the Petition identifies “information related to the services 218,” which on Williams’s FIGs. 1 and 2 flows from the server 400 to the media devices 106 and application devices 220—not to the interface device 116 that the Petition maps as the first device. Pet. at 86–87. The Petition then concedes the gap: “To the extent that Williams does not disclose that the first device receives its second message, Lim discloses this element.” *Id.* at 87. The Petition makes the same concession at Element 1[I]: “To the extent that Williams does not disclose that the control message is sent from the first device, it would have been obvious to a POSITA that the Williams-Lim combination discloses this element.” *Id.* at 90. These concessions are dispositive of Williams’s own disclosure and they reduce Ground 9 to Lim. But Lim does not disclose those limitations for the reasons shown in Section VI.A. Ex. 2011, ¶ 58.

The concessions reflect Williams’s actual architecture. In Williams, services 218 flow directly from the cloud server (*i.e.*, applications 120 running on server 400)

to the media devices 106 and application devices 220. EX1006, [0023], [0036]–[0037], [0042], FIG. 2. The interface device 116, the purported first device, is a voice-capture and audio-playback endpoint. There is no arrow, no data flow, and no textual description in Williams of the interface device 116 relaying control commands to other home devices. Williams’s own design makes it unnecessary to route control through the first device, because the server already communicates with the home devices directly. Ex. 2011, ¶ 58.

4. The Petition’s Relay Rationale Rests on References Outside Ground 9 and on Conclusory Assertions, Not on the References

To bridge the gap between Williams’s “services” and a control “*message*,” the Petition inserts the parenthetical “(e.g., a control message)” and asserts that sending such information is consistent with common implementations, citing three references outside Ground 9, specifically, Van der Meulen (EX1019, 3:19–22, 6:23–27), Wittenberg (EX1008, Claim 1), and Chatterjee (EX1012, [0012]). Pet. at 86, 90–92. Dr. Houh’s Declaration does the same. EX1002, ¶¶ 385–386, 402–403. The first-to-second-device WLAN path is supported by Doherty (EX1007, 11, 100)—yet another reference outside the ground. Pet. at 91. Counting the outside references, Ground 9 is in actuality a five-reference obviousness combination disguised as a two-reference ground. Petitioner may not supply a missing limitation from references outside the ground, and the Board may not adopt the unraised multi-

reference theory on Petitioner’s behalf. 37 C.F.R. § 42.104(b)(4); July 31, 2025 Stewart Memorandum; *Magnum Oil*, 829 F.3d at 1380-81. Ex. 2011, ¶ 59.

The proposed combination also lacks a coherent motivation. The Petition proposes restructuring Williams so that “the server only needs to establish and maintain connection with Williams’ first device, rather than maintaining numerous individual connections,” asserting that this would “predictably simplify network management and improve reliability and security,” make the system “easier to scale, troubleshoot, and manage,” and afford “easier and more secure firewall management.” Pet. at 71–72 (citing EX1002, ¶¶ 324–328). But Williams’s architecture achieves exactly the opposite of what the rationale assumes: the server’s already *direct* communication with the home devices *is* the simpler, more reliable architecture. Inserting the interface device 116 as an intermediary adds a hop, a failure point, and connection-management burdens that Williams’s design does not have—dismantling Williams’s existing server-to-device path and replacing it with a three-hop architecture found in neither reference. The Petition never explains why a POSITA, starting from Williams’s system, would take that step. Absent an articulated, reference-grounded rationale, the assertions of “predictable results” are no different than a mere conclusory statement that the combination “would have been obvious.” *In re Van Os*, 844 F.3d at 1361; *see Innogenetics, N.V. v. Abbott Lab’ys*, 512 F.3d 1363, 1373 (Fed. Cir. 2008); Ex. 2011, ¶¶ 60-61.

The Petition’s fallback—that it “would have been obvious to try combining communication techniques in Lim with Williams, as there is a finite number of identified, predictable solutions for transmitting information from a remote server to home appliances” (Pet. at 72)—fails on its own terms. Obvious-to-try requires “a design need or market pressure to solve a problem” and “a finite number of identified, predictable solutions.” *KSR*, 550 U.S. at 421. The Petition identifies no design need in Williams—whose delivery path already works—and never identifies the members of its supposed finite set. An unexplained invocation of the *KSR* formula is not an analysis. Ex. 2011, ¶ 61.

5. All Other Grounds Relying on the Williams-Lim Combination Fail for the Same Reasons

Ground 9 challenges Claims 1, 5–6, 9–15, 17, 21–22, 24–29, 31, and 33, each of which incorporates the limitations above. Grounds 10–16 rest on the same Williams-Lim foundation and add one secondary reference each—Wittenberg (Claim 2), Gruber (Claims 3–4, 11), Rosenberger (Claims 5–6, 26–28), Benesty (Claims 7–8), Rossing (Claims 9, 29, 33), Goldsmith (Claims 13–15), and Chatterjee (Claims 18–20, 23)—to address dependent-claim features. Pet. at 7, 98–103. None of those references is cited for, or remedies, the combination’s failure to disclose the “*first message*,” “*second message*,” and “*control message*” limitations of Claim 1. Ex. 2011, ¶ 62. Ground 9’s showings for Claims 10 and 12, moreover, incorporate

the same Doherty and Roberts material as Ground 1's and fail for the same outside-the-ground reason. Pet. at 93–94; *supra* § VI.A.4. Grounds 9–16 therefore fail in their entirety.

In sum, Williams's "services 218" are informational content, not the claimed "*second message*"; paragraph [0051] is aspirational and discloses no messaging path; the Petition maps the "*second message*" to the wrong device and concedes that Lim must supply the disputed limitations, which Lim does not disclose; and the relay rationale rests on references outside Ground 9 and on conclusory assertions. Thus, Petitioner has not proven by a preponderance of the evidence that any claim challenged in Grounds 9–16 is unpatentable. The additional, ground-specific defects of Grounds 10–16 are addressed in Sections VI.C through VI.I, below.

C. Grounds 2 and 10 Do Not Show That Claim 2 Is Unpatentable

Ground 2 challenges Claim 2 over Lim and Wittenberg (EX1008); Ground 10 challenges the same claim over Williams, Lim, and Wittenberg. Pet. at 52–53, 98. Claim 2 depends from Claim 1 and adds that "*the first device or the server device is configured for processing the first and second human voice data using a voice recognition algorithm for identifying a voice of a specific person.*" '721 Patent, Claim 2. Claim 2, however, is not further obvious over Wittenberg. Ex. 2011, ¶ 63.

Wittenberg does not disclose the limitation Claim 2 adds. The claimed algorithm is “*for identifying a voice of a specific person*”—determining who is speaking. Wittenberg’s voice recognition answers a different question: its function is “to determine whether the audio signal has been supplied by an authorized user.” EX1008, Abstract. The passage the Petition quotes describes the same authorized-or-not determination, “comparing the characteristics . . . of the audio signal to stored voice information to determine whether the audio signal voice matches that of an authorized user.” Pet. at 52–53 (quoting EX1008, 5:61-6:6). A match at most tells the system that the speaker is one of its authorized users, but it does not identify which specific person is speaking, and Wittenberg discloses no use or output of any speaker’s individual identity. Neither the Petition nor Dr. Houh explains how an authorized-or-not determination disclosed in Wittenberg performs the claimed identification. *Pers. Web Techs.*, 848 F.3d at 994. Ex. 2011, ¶ 63.

Further, the proffered motivation—“to achieve greater security”—does not bridge the gap. Pet. at 53, 98. On Wittenberg’s own disclosure, security is achieved by the authorization gate itself, so the rationale supplies no reason to build the claimed personal identification. *Magnum Oil*, 829 F.3d at 1380; *In re Van Os*, 844 F.3d at 1361. In sum, Wittenberg determines whether a speaker is authorized, not who the speaker is. Thus, Petitioner has not shown by a preponderance of the evidence that Claim 2, challenged in Grounds 2 and 10, is unpatentable.

**D. Grounds 3 and 11 Do Not Show That Claims 3–4 and 11
Are Unpatentable**

Ground 3 challenges Claims 3–4 and 11 over Lim and Gruber (EX1009);

Ground 11 challenges the same claims over Williams, Lim, and Gruber. Pet. at 7.

Grounds 3 and 11 each fail for the reasons discussed below.

1. The Petition Does Not Show that “*the first message is further responsive to the sent sensor data,*” as Claim 3 Requires

Claim 3 adds a sensor, requires the first device to send the sensor data to the server, and requires that “*the first message is further responsive to the sent sensor data.*” ’721 Patent, Claim 3. The Petition attempts to map the first two requirements and then stops. Pet. at 54. On the third requirement, the Petition offers only its own construct: in the proposed combination, the server “would then use the sensor data to improve its speech processing, as taught by Gruber, and transmit the speech processing result(s) (first message) back to the device.” *Id.* at 56 (citing EX1002, ¶ 216). Neither reference is cited for that sentence’s critical assertion. Using sensor context to assist interpretation of a voice input is not a disclosure that the responsive message is itself “*further responsive to*” the sensor data, and expert say-so cannot supply the required disclosure. *Magnum Oil*, 829 F.3d at 1380; Ex. 2011, ¶ 64.

2. Claim 4's Sensor Types Come from Fraden, a Reference Outside Both Grounds

Claim 4 requires that the sensor be “*a thermoelectric sensor that responds to a temperature or to a temperature gradient of an object using conduction, convection, or radiation,*” or “*a photoelectric sensor that responds to a visible or an invisible light or gamma rays.*” ’721 Patent, Claim 4. Gruber’s contribution is a generic list, *i.e.*, “an accelerometer, compass, GPS unit, . . . light sensor, thermometer, . . . and the like” providing “the current light level, temperature and other environmental measures.” Pet. at 56 (quoting EX1009, [0225], [0222]). A “thermometer” is not a disclosure of a “*thermoelectric*” sensor that operates “*using conduction, convection, or radiation,*” and a “light sensor” is not a disclosure of a “*photoelectric*” sensor responsive to “*invisible light or gamma rays.*” To bridge that gap, the Petition offers a single sentence: “A POSITA would have understood that photoelectric sensors and thermoelectric sensors are common light sensors and temperature sensors.” *Id.* at 56–57. That sentence, however, is not supported by Lim, Williams, or Gruber, but by Fraden (EX1030, 116, 466), a reference outside of both grounds. Pet. at 56–57. Under 37 C.F.R. § 42.104(b)(4) and the Stewart Memorandum, an outside reference and expert say-so may not supply the claimed sensor types, and the Board may not adopt a Lim-Gruber-Fraden (or Williams-Lim-

Gruber-Fraden) combination that the Petition never asserted. *Magnum Oil*, 829 F.3d at 1380-81. Ex. 2011, ¶ 65.

3. Claim 11’s Showing Rests on POSITA Assertion and References Outside the Grounds, Not on Gruber

Claim 11 requires the first device to be “*further addressed by*” a MAC-layer address of the recited MAC-48, EUI-48, or EUI-64 types. ’721 Patent, Claim 11. The Petition’s Gruber-based showing points to “signatures of connected networks,” including “MAC addresses of network access points.” Pet. at 57 (quoting EX1009, [0218]–[0225]). An access point’s MAC address, observed by the device as context about its surroundings, is not the first device being addressed by *its own* MAC-layer address of a recited type. And the parallel Ground 1 showing supplies the claimed addressing from purported common knowledge supported by Doherty (EX1007, 99, 166) and Yadav (EX1026, 2:50–59)—references outside the grounds. Pet. at 48. Supplying the claim element from purported generalized knowledge and references outside the grounds is precisely what 37 C.F.R. § 42.104(b)(4) and the Stewart Memorandum prohibit. *Magnum Oil*, 829 F.3d at 1380–81. And the Petition’s generic assertion that a POSITA would “look to Gruber for implementation details” (Pet. at 57, 99) identifies no reason grounded in the references. Ex. 2011, ¶ 66. In sum, Grounds 3 and 11 do not show that Claims 3–4 or 11 are unpatentable.

In sum, the Petition does not show Claim 3's sensor-responsive "*first message*"; it supplies Claim 4's sensor types from Fraden; and it supplies Claim 11's device-identifying MAC address from POSITA assertion, Doherty, and Yadav. Thus, Petitioner has not proven by a preponderance of the evidence that any claim challenged in Grounds 3 and 11 is unpatentable.

E. Grounds 4 and 13 Do Not Show that Claims 7–8 Are Unpatentable

Ground 4 challenges Claims 7–8 over Lim and Benesty (EX1010); Ground 13 challenges the same claims over Williams, Lim, and Benesty. Pet. at 57–59, 101. Claim 7 depends from Claim 1, and Claim 8 depends from Claim 7.

Claim 8 requires that the multiple microphones of Claim 7 be "*arranged as a microphone array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphone array.*" '721 Patent, Claim 8. The Petition quotes Benesty's survey statements that "microphone arrays have the ability to offer directional gains that can significantly improve the quality of signal pickup in reverberant and noisy environments," and its description of "microphone array beam scanning and time delay estimation (TDE)-based localization methods," which can involve "estimate of the direction of an active speech source." Pet. at 58 (quoting EX1010, 1021, 1044). What the Petition does not show is the claimed capability in the proposed combination: a first device

whose array is “*operative to estimate*” the recited parameters. The Petition goes no further than merely placing “multiple microphones as taught by Benesty” in the first device to “capture and process human voice data, yielding the predictable results of improved audio capturing and processing.” *Id.* at 59; *see id.* at 101 (Ground 13). While capturing voice data with multiple microphones is covered by Claim 7, Claim 8’s estimation capability is neither mapped to the combined system nor explained. The Board must be able to find that the combination discloses all the elements as claimed, and a “predictable results” assertion cannot supply the missing showing. *Pers. Web Techs.*, 848 F.3d at 994; *Magnum Oil*, 829 F.3d at 1380. Ex. 2011, ¶ 67.

The motivation offered, *i.e.*, that a POSITA would have looked to Benesty for microphone-related techniques to improve the audio capturing and processing of the primary references, at most describes consulting the handbook, but falls short of providing an actual reason to build the claimed estimating array into Lim’s controlling device or Williams’s interface device 116. Pet. at 57–59. Benesty surveys certain techniques that existed, but the Petition identifies no design need in Lim or Williams that the claimed directional array would answer, and no reason grounded in the references to select it. *In re Van Os*, 844 F.3d at 1361. In sum, Grounds 4 and 13 inherit the failures of Grounds 1 and 9 and never show Claim 8’s “*operative to estimate*” limitation in the proposed combination. Thus, Petitioner has not proven by

a preponderance of the evidence that either claim challenged in Grounds 4 and 13 is unpatentable.

F. Grounds 5 and 14 Do Not Show That Claims 9, 29, and 33 Are Unpatentable

Claims 9, 29, and 33 recite specific microphone constructions and operating principles, specific loudspeaker types, and specific sounder directionality patterns. ’721 Patent, Claims 9, 29, 33. The Petition’s premise is that these claims “recite standard acoustic devices (e.g., microphone, speaker, buzzer)” that Lim’s components satisfy, with Rossing invoked for the underlying physics. Pet. at 47, 59–62, 93. But neither Lim nor Williams discloses the construction of its microphone or speaker at all, and Rossing’s observations establish only that the recited constructions existed: “[c]ommon to virtually all microphones ever made is a diaphragm” (EX1014, 757); descriptions of ribbon, condenser, electret, carbon, and piezoelectric types (*id.*, 757–759); “an ordinary omnidirectional microphone” (*id.*, 309). The Petition’s stated rationale is to “look[] to Rossing for details and techniques of using microphones/speakers in Lim.” Pet. at 59. Consulting a reference book is not a reason to configure the device with any particular recited construction, and the Petition never identifies one. Ex. 2011, ¶ 68.

The Claim 29 showing makes the defect explicit. The Petition quotes Rossing’s observation that “many of the same transduction methods that have been

used in microphones have at least been tried for loudspeakers including magnetic (also known as dynamic), piezoelectric, and condenser” (EX1014, 763), and asserts that “there was a finite number of types of conventional speakers as taught by Rossing to try applying to Lim.” Pet. at 61. What has “at least been tried” in the art is not a disclosure supporting a specifically combined device configured with a recited loudspeaker type, and the obvious-to-try formula requires a design need and identified, predictable solutions—neither of which the Petition supplies. *KSR*, 550 U.S. at 421. For Claim 33, the Petition asserts that “given Rossing, a POSITA would have understood that the speaker operates by emitting audible sound waves that are of an omnidirectional, unidirectional, or bidirectional pattern.” Pet. at 61–62. That reads the limitation onto every loudspeaker ever made—an interpretation that would render the limitation meaningless—rather than showing the claimed sounder configured as recited. Ex. 2011, ¶ 69. In sum, Grounds 5 and 14 do not show that Claims 9, 29, or 33 are unpatentable.

G. Grounds 6 and 15 Do Not Show That Claims 13–15 Are Unpatentable

Ground 6 challenges Claims 13–15 over Lim and Goldsmith; Ground 15 challenges the same claims over Williams, Lim, and Goldsmith. Pet. at 62–64, 102. Each claim depends from Claim 1 and specifies the first device’s wireless connectivity, *e.g.*, a WLAN according to the enumerated IEEE 802.11 standards

(Claim 13), a WLAN using “*an unlicensed radio frequency band that is an Industrial, Scientific and Medical (ISM) radio band*” (Claim 14), and a first device “*further configured for communicating over a cellular telephone network*” of the recited types (Claim 15). ’721 Patent, Claims 13–15.

1. Goldsmith’s Protocol Survey Does Not Disclose the Configured Claimed System, and the “Obvious to Try” Assertion Is Unsupported

For Claim 13, the Petition quotes Goldsmith’s survey: the “IEEE 802.11a wireless LAN standard” and “802.11g.” Pet. at 62 (quoting EX1040, 16). For Claim 14, it points to Goldsmith’s showing that 802.11b WLANs operate in the ISM bands. *Id.* at 63 (citing EX1040, 22–23). For Claim 14, it reproduces Goldsmith’s table of “unlicensed radio frequency spectrum allocations in the U.S.” *Id.* (citing EX1040, 22–23). But Claim 1 requires more of the claimed WLAN than that its protocol exist: the WLAN is the network through which the first device sends captured voice data toward, and receives the claimed “*messages*” from, an Internet-connected server, and over which it sends the “*control message*” to the second device. A textbook survey establishing that 802.11a/b/g and the ISM bands existed does not show the claimed first device configured to perform those operations over any of them. The combination rationale is that “[i]t would have been obvious to try combining WLAN over IEEE 802.11a/b/g with Lim without undue effort and with a reasonable expectation of success” and, for Ground 15, that it would have been obvious to look

to Goldsmith’s wireless techniques for Williams-Lim. Pet. at 62-63, 102. “Obvious to try” has force only “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions.” *KSR*, 550 U.S. at 421. The Petition identifies no design need in Lim or Williams, nor a finite set of identified solutions, nor any reason to select any particular standard—it simply walks through the claims’ own lists. Ex. 2011, ¶ 70.

2. Claim 15’s Cellular Connectivity Comes from Wang, a Reference Outside Both Grounds

Claim 15 requires that the first device be “*further configured for communicating over a cellular telephone network*” of the recited types. ’721 Patent, Claim 15. The Petition quotes Goldsmith’s descriptions of W-CDMA, UMTS, GSM, and EDGE, and then, because nothing in Lim, Williams, or Goldsmith configures the claimed first device for cellular communication in the claimed system, adds that “[i]n 2012, home appliances with cellular connectivity were well-known,” citing Wang (EX1031, Claims 14–16, 18)—yet another reference outside both grounds. Pet. at 63–64; *see id.* at 6–7. Supplying the claimed cellular connectivity from an outside reference is what 37 C.F.R. § 42.104(b)(4) and the Stewart Memorandum prohibit. *Magnum Oil*, 829 F.3d at 1380-81. Ex. 2011, ¶ 71.

In sum, Goldsmith’s survey merely shows that the recited network types existed; it does not show the claimed system configured with any of them. And the

potentially relevant disclosure in the prior art—*i.e.*, cellular-connected home appliances—comes from a reference outside the grounds, under an “obvious to try” label that *KSR* does not permit on this record. Thus, Petitioner has not proven by a preponderance of the evidence that any claim challenged in Grounds 6 and 15 is unpatentable.

H. Grounds 7 and 16 Do Not Show that Claims 18–20 and 23 Are Unpatentable

Ground 7 challenges Claims 18-20 and 23 over Lim and Chatterjee (EX1012); Ground 16 challenges the same claims over Williams, Lim, and Chatterjee. Pet. at 64-67, 102–103. Claims 18–12 and 23 depend from Claim 17 and specify the appliance in which “*the controlled device*” is integrated, *e.g.*: food storage, handling, or preparation (Claim 18), heating food (Claim 19), refrigeration and kitchen appliances (Claim 20), and cleaning (Claim 23). ’721 Patent, Claims 17–20, 23.

Chatterjee, however, at most just discloses the existence of certain types of appliances. Pet. at 64-67, 102–103. But the Petition never explains how Chatterjee’s appliances would be integrated into Lim’s codeset-transmission architecture—or into Williams’s direct server-to-device delivery—so as to receive the first device’s WLAN control message and operate the first actuator as claimed. Its rationale—that the combination would “expand[] the capabilities of Lim” (Pet. at 66) or “improve/expand the capabilities of Williams-Lim in the same way” (Pet. at 102–

103)—states an aspiration, not a reason with rational underpinning. *In re Van Os*, 844 F.3d at 1361; Ex. 2011, ¶ 72. In sum, Grounds 7 and 16 do not show that Claims 18–20 and 23 are unpatentable.

I. Grounds 8 and 12 Do Not Show that Claims 5–6 and 26–28 Are Unpatentable

Claims 26–27 add an electric light source in the first device; Claims 5–6 add a second actuator in the first device. ’721 Patent, Claims 5–6, 26–27. The Petition already contends, in Grounds 1 and 9, that Lim’s own displays and LEDs satisfy these claims. Pet. at 46–47, 50, 93. Grounds 8 and 12 nevertheless add Rosenberger’s “multi-colored LED status light 34,” which “visually indicat[es] various device states and modes” in Rosenberger’s self-contained speech-recognizing device: “[u]pon receiving and recognizing a speech trigger phrase . . . the device beeps, changes its status light 34 or plays a prerecorded or synthesized audio message.” Id. at 67–68 (quoting EX1013, 8:8–16, 8:20–32). The proffered motivation—“to improve the usability of the device” (Pet. at 68; see Pet. at 100)—identifies no usability problem and no reason, grounded in the references, to add a further light indicator to a device the Petition contends already has displays and LEDs. *In re Van Os*, 844 F.3d at 1361. And Ground 12’s further assertion that the light “can be operated (e.g., turns on/off and/or changes color) to indicate device states and modes in response to information received from the server” (Pet. at 100) has no support in

Rosenberger, whose status light answers to the device’s own local recognition of a trigger phrase. Ex. 2011, ¶ 73.

Claim 28 fares no better. Its “*sounding*”—“*wherein the sounding comprises playing a digital audio content*” that is pre-recorded or synthesized—is the sounding of Claim 1, performed “*in response to the received first message.*” ’721 Patent, Claims 1, 28. Rosenberger is not cited for that sounding: the Ground 8 showing rests on Lim’s locally generated “synthesized spoken message” prompts (Pet. at 68–69), and the Ground 12 showing rests on Williams’s speech-synthesized audio 222 (Pet. at 100–101). Both accordingly rise and fall with the Petition’s failure to show the claimed “*first message*” and the responsive sounding. *Supra* §§ VI.A–VI.B; Ex. 2011, ¶ 74. In sum, Grounds 8 and 12 do not show that Claims 5–6 or 26–28 are unpatentable.

VII. CONCLUSION

For the foregoing reasons, Petitioner has not proven by a preponderance of the evidence that any of Claims 1–15, 17–31, and 33 of the ’721 Patent is unpatentable. Patent Owner respectfully requests that the Board confirm the patentability of all Challenged Claims.

Respectfully submitted,

Dated: July 29, 2026

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned PATENT OWNER'S RESPONSE has 9,877 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word for Office 365.

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