Trials@uspto.gov
571-272-7822

Paper: 48
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SNAP INC.,
Petitioner,

v.

PALO ALTO RESEARCH CENTER LLC,
Patent Owner.

IPR2021-00987
Patent 8,489,599 B2

FACEBOOK, INC.,
Petitioner,

v.

PALO ALTO RESEARCH CENTER LLC,
Patent Owner.

IPR2021-01294
Patent 8,489,599 B2

TWITTER, INC.,
Petitioner,

v.

PALO ALTO RESEARCH CENTER LLC,
Patent Owner.

IPR2021-01458
Patent 8,489,599 B2

Before KARL D. EASTHOM, SHEILA F. McSHANE, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

McSHANE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motions to Amend
Consolidating IPR2021-00987, IPR2021-01294, and IPR2021-01458
35 U.S.C. §§ 315(d), 318(a); 37 C.F.R. §§ 42.121, 42.122(a)

I. BACKGROUND

We have jurisdiction to hear these *inter partes* reviews under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). As discussed in more detail below, this Final Written Decision addresses challenges to U.S. Patent No. 8,489,599 B2 (Ex. 1001, "the '599 patent") raised in three different proceedings: *Snap Inc. v. Palo Alto Research Center LLC*[1], IPR2021-00987 ("Snap IPR" or "987 IPR"); *Facebook, Inc. v. Palo Alto Research Center LLC,* IPR2021-01294 ("Facebook IPR" or "1294 IPR"), and *Twitter, Inc. v. Palo Alto Research Center LLC*, IPR2021-01458 ("Twitter IPR" or "1458 IPR").

On November 23, 2021, we instituted trial in the Snap IPR, in which Snap Inc. ("Snap") challenges claims 1–25 of the '599 patent, assigned to Patent Owner, Palo Alto Research Center LLC ("Patent Owner" or "PARC"). *See* Snap IPR, Papers 1, 13. Approximately two months later, on January 25, 2022, we instituted trial in the Facebook IPR in which Facebook, Inc. ("Facebook") challenges claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent. *See* Facebook IPR, Papers 2, 13. Approximately three months later, on April 6, 2022, we instituted trial in the Twitter IPR in which Twitter, Inc. ("Twitter") challenges claims 1, 4, 6, 7, 9–12, 15, 17, and 18 of the '599 patent, and consolidated the 1458 IPR with IPR2021-01459 ("1459 IPR"), which challenges claims 19, 22, 24, and 25 of the '599 patent.[2] *See* Twitter IPR, Papers 3, 11, 12, 14. In each case, the different petitioners use different prior art as the basis for the invalidity

[1] Palo Alto Research Center LLC is formerly Palo Alto Research Center Inc. Snap IPR, Paper 48.
[2] The 1459 IPR was terminated upon consolidation with the 1458 IPR. Twitter IPR, Paper 12.

challenges to the '599 patent claims in the respective petitions. 987 IPR, Paper 1, 2; 1294 IPR, Paper 2, 3; 1458 IPR, Paper 3, 12; 1459 IPR, Paper 3.

On February 25, 2022, in the Snap IPR, Patent Owner filed a Contingent Motion to Amend to substitute claims 26–40 to replace original claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent. Snap IPR, Paper 22. Patent Owner filed similar Contingent Motions to Amend in the Facebook and Twitter IPRs that seek to substitute the same proposed substitute claims as those proposed in this case. That is, on April 15, 2022, in the Facebook IPR, Patent Owner filed a Contingent Motion to Amend to substitute claims 26–40 to replace claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent. Facebook IPR, Paper 20. On July 7, 2022, in the Twitter IPR, Patent Owner filed a Contingent Motion to Amend to substitute claims 26–40 to replace claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent. Twitter IPR, Paper 24. The proposed substitute claims in each of the cases are identical. *See* Snap IPR, Paper 22; Facebook IPR, Paper 20; Twitter IPR, Paper 24.

The Chief Administrative Patent Judge determined that good cause existed to extend the one-year period for issuing a Final Written Decision in the Snap and Facebook IPRs. *See* Snap IPR, Paper 47; Facebook IPR, Paper 40.

II. CONSOLIDATION OF IPR2021-00987, IPR2021-01294, AND IPR2021-01458

"Where another matter *involving the patent* is before the Office, the Board may during the pendency of the inter partes review enter any appropriate order regarding the additional matter including providing for the stay, transfer, consolidation, or termination of any such matter." 37 C.F.R. § 42.122(a) (2019) (emphasis added); *see also* 35 U.S.C. § 315(d). Under

this Rule, the Board has the authority to consolidate proceedings, even absent a motion from the parties. *See id.*

As discussed *supra* Section I, the respective petitioners challenge many of the same claims of the '599 patent, including all of the patent's independent claims, in each of the respective cases. Additionally, Patent Owner's Contingent Motions to Amend seek to substitute the *same proposed substitute claims* for the *same original claims* of the '599 patent.

In view of the same proposed substitute claims being at issue in all the cases, we find that good cause exists for the consolidation of 987, 1294, and 1458 IPRs. Consolidation of the cases allows the Board to more efficiently and consistently address issues in a consolidated Final Written Decision. Thus, we order the consolidation of the 987, 1294, and 1458 IPRs.

Petitioners should continue to file any future papers in each of Petitioner's respective IPR. The respective Petitioner's challenges to the original claims remain specific to the Petitioner bringing the challenge.

Accordingly, we address the petitioners' respective challenges to the original claims separately and, in view of the overlap of issues, we will address Patent Owner's Contingent Motions to Amend in a combined manner.

III. SNAP'S CHALLENGES TO CLAIMS 1–25 OF THE '599 PATENT

A. Procedural Background

Snap filed a Petition for *inter partes* review of claims 1–25 of the '599 patent, along with the Declaration of Steve Smoot. Snap IPR, Paper 1 ("Snap Pet."); Snap IPR, Ex. 1002. Patent Owner filed a Preliminary Response. Snap IPR, Paper 11 ("Snap Prelim. Resp."). Pursuant to

35 U.S.C. § 314(a), on November 23, 2021, we instituted *inter partes* review on the following grounds:

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1, 2, 4–7, 10–13, 17–20, 22–25	102(e)[3]	Rosenberg[4]
4, 5, 15, 16, 19, 20, 22–25	103(a)	Rosenberg
3, 8, 9, 14, 21	103(a)	Rosenberg, Suzuki[5]

Snap Pet. 2; Snap IPR, Paper 13 ("Snap Inst. Dec." or "Snap Dec.").

Patent Owner filed a Patent Owner Response ("Snap PO Resp."). Snap IPR, Paper 28. Patent Owner also filed a Declaration of David Martin, Ph.D., with the Response to support its positions. Snap IPR, Ex. 2003. Petitioner filed a Reply ("Snap Pet. Reply") to the Patent Owner Response, along with the Declaration of Kevin Almeroth, Ph.D. Snap IPR, Paper 25; Ex. 1022. Patent Owner filed a Sur-reply to Petitioner's Reply ("Snap PO Sur-reply"). Snap IPR, Paper 34.

An oral hearing was held on August 24, 2022. A transcript of the hearing is included in the record. Snap IPR, Paper 44 ("Snap Tr.").

[3] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103, and was effective on March 16, 2013. Because the '599 patent has a filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

[4] US 7,577,522 B2, filed June 28, 2006, issued August 18, 2009 (Snap IPR, Ex. 1005, "Rosenberg").

[5] US 6,680,675 B1, filed June 21, 2000, issued January 20, 2004 (Snap IPR, Ex. 1006, "Suzuki").

B. Related Matters

The parties indicate this Petition is related to the district court litigations, *Palo Alto Research Center Inc. v. Snap Inc.*, No. 2:20-CV-10755-AB-MRW (C.D. Cal.), *Palo Alto Research Center Inc. v. Twitter, Inc.*, No. 2:20-CV-10754-AB-MRW (C.D. Cal.) and *Palo Alto Research Center Inc. v. Facebook, Inc.*, No. 2:20-CV-10753-AB-MRW (C.D. Cal.). Snap Pet. 1; Snap IPR, Paper 4, 2–3.

As discussed above, claims of the '599 patent are also challenged in the Facebook and Twitter IPRs.

C. The '599 Patent

The '599 patent is titled "Context And Activity-Driven Content Delivery And Interaction" and issued on July 16, 2013, from an application filed on December 2, 2008. Snap IPR, Ex. 1001, codes (22), (45), (54).

The '599 patent is directed to "a computing device that delivers personally-defined context-based content to a user." Snap IPR, Ex. 1001, code (57). The '599 patent states that

> [t]his computing device receives a set of contextual information with respect to the user, and processes the contextual information to determine whether some aspect of the current context can be associated with a probable activity being performed by the user. The computing device then determines whether either or both the context and current activity of the user satisfy a trigger condition which has been previously defined by the user. If so, the computing device selects content from a content database, based on the context or activity, to present to the user, and presents the selected content.

Snap IPR, Ex. 1001, 1:52–62. Figure 1, reproduced below, illustrates a content management system in accordance with the invention. *Id.* at 2:54–55.

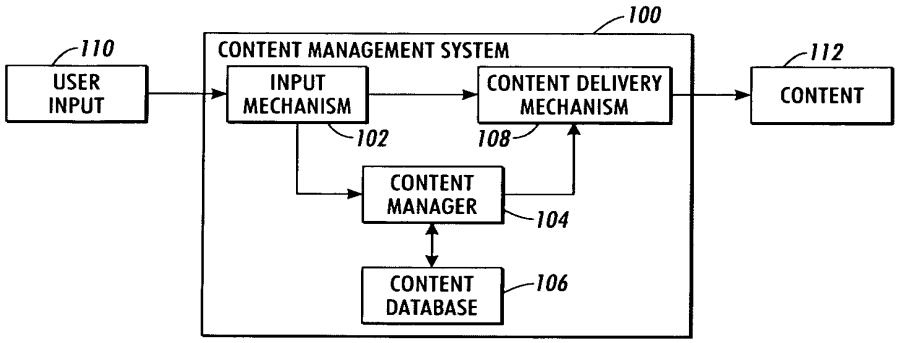


FIG. 1

As depicted in Figure 1, above, content management system 100 presents content 112 to a user. Snap IPR, Ex. 1001, 5:18–19. Content 112 can be presented in response to actions being performed by the user, or in accordance with other information associated with the user. *Id.* at 5:18–21. Content management system 100 allows a user to create and store content, and associate the content with a given user-defined context. *Id.* at 5:21–23. For instance, content management system 100 can remind a user to buy groceries as the user is driving past a grocery store after work or can read specific items on a grocery list to a user when walking across a specific grocery store aisle. *Id.* at 5:28–32. Input mechanism 102 receives user input 101, content manager 104 controls how content 112 is stored in content database 106 and how it is selected for playback, and content delivery mechanism 108 controls how content 112 is presented to a user. *Id.* at 5:36–57.

D. Illustrative Claim

Snap challenges claims 1–25 of the '599 patent. Claims 1, 12, and 19 are the only independent claims, and claim 1, which is illustrative, is reproduced below, with bracketed letters added to the limitations for reference purposes.

> 1. [a] A method for delivering context-based content to a first user, the method comprising:
>
> > [b] receiving at least one content package, wherein the content package includes at least one content piece and a set of rules associated with the content package, wherein the set of rules includes a trigger condition and an expected response, and wherein the trigger condition specifies a context that triggers a presentation of the content piece;
> >
> > [c] receiving a set of contextual information with respect to the first user;
> >
> > [d] processing the contextual information to determine a current context for the first user;
> >
> > [e] determining whether the current context satisfies the trigger condition;
> >
> > [f] in response to the trigger condition being satisfied, presenting the content piece to the first user;
> >
> > [g] receiving a response from the first user corresponding to the presented content piece;
> >
> > [h] determining whether the received response matches the expected response; and
> >
> > [i] performing an action based on an outcome of the determination.

Snap IPR, Ex. 1001, 23:20–41.

E. Analysis

1. The Parties' Arguments

In our Decision on Institution, we concluded that the arguments and evidence advanced by Snap demonstrated a reasonable likelihood that claims 1–25 of the '599 patent would have been unpatentable as anticipated under 35 U.S.C. § 102 or rendered obvious under 35 U.S.C. § 103. Snap Inst. Dec. 9–24. Here, we determine whether Snap has established by a preponderance of the evidence that the challenged claims are anticipated or obvious. 35 U.S.C. § 316(e). We previously instructed Patent Owner that "Patent Owner is cautioned that any arguments not raised in the response may be deemed waived." Snap IPR, Paper 14, 9; *see also* 37 C.F.R. § 42.23(a) ("Any material fact not specifically denied may be considered admitted."); *In re NuVasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding patent owner waived an argument addressed in the preliminary response by not raising the same argument in the patent owner response). Additionally, the Board's Trial Practice Guide states that the patent owner response "should identify all the involved claims that are believed to be patentable and state the basis for that belief." Consolidated Trial Practice Guide, 66 (November, 2019).[6]

On the record before us, we note that we have reviewed arguments and evidence advanced by Snap to support its unpatentability contentions, whereas Patent Owner chose not to address certain limitations in its Patent Owner Response. In this regard, the record contains persuasive arguments and evidence presented by Snap regarding the manner in which the prior art

[6] Available at https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf.

discloses or teaches the corresponding limitations of claims 1–25 of the '599 patent, as well as a rationale to combine the prior art references.

2. Level of Ordinary Skill in the Art

Snap proposes that a person of ordinary skill in the art at the time of the '599 patent would have possessed "an undergraduate degree in electrical engineering, computer engineering, computer science or a related field along with at least two years of work experience in the field of content presentation and context-based systems/processes." Snap Pet. 3 (citing Snap IPR, Ex. 1002 ¶¶ 30–32); Snap IPR, Ex. 1022 ¶ 32. Snap further asserts that additional "education can supplement practical experience and vice versa." *Id*. In the Decision on Institution, we determined that Snap's proposed description of the qualifications of a person of ordinary skill in the art aligned with the technology and claims of the '599 patent. Snap Inst. Dec. 6–7. For this proceeding, Patent Owner and Dr. Martin apply this level of skill in the art. Snap PO Resp. 11–12; Snap IPR, Ex. 2003 ¶¶ 48–50. Accordingly, for the reasons given in the Decision on Institution, we adopt Snap's proposed level of ordinary skill in the art. Snap Inst. Dec. 6–7.

Patent Owner asserted that "it is unclear if Petitioner's [Snap's] expert . . . is a person of ordinary skill in the art." Snap PO Resp. 12. We note that this comment was directed to Snap's expert, Mr. Smoot (*see* Snap IPR, Ex. 1002). Snap also relies upon the Declaration provided by Dr. Almeroth, who reviewed the Declaration of Mr. Smoot and agreed with Mr. Smoot's assertions and opinions. Snap IPR, Ex. 1022. Patent Owner presents no arguments relating to the qualifications of Dr. Almeroth as a person of ordinary skill in the art. *See generally* Snap PO Sur-reply.

3. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2021). Under the principles set forth by our reviewing court, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Patent Owner asserts that the limitation "determining whether the received response matches the expected response," recited in independent claims 1, 12, and 19, requires the possibility of expected and unexpected responses in view of the claim terms, Specification, and prosecution history. Snap PO Resp. 13–26. More specifically, Patent Owner asserts that "each independent claim requires an ability to determine whether a received response is an expected response (e.g., correct or desired) or an unexpected response (e.g., incorrect or undesired)." *Id.* at 13. Patent Owner argues that the Board's determination in the Decision on Institution that "there is no

recited limitation requiring that there be a determination made for an *unexpected* response" is in error. *Id*. at 14 (citing Snap Inst. Dec. 18).

Patent Owner relies on the claim language itself and, more specifically, the language in limitations 1[b] and 1[g]–1[i], stating that these recitations mean that "a content package must include content and a set of rules, and the set of rules must include at least one expected response related to the content," and "requires receiving a response to presented content, determining [] that [the] response matches at least one expected response, and then performing some action based on the determination." Snap PO Resp. 16. Patent Owner argues that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to presented content must be possible. There would be no need for the determination limitation if no unexpected responses were possible; the claim would simply require performing an action associated with the received (and expected) response." *Id*. Patent Owner cites to cases law in support of its assertion that interpretation of terms that render parts of claims superfluous is disfavored. *Id*. at 16–17 (citing *e.g.*, *Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1375 (Fed. Cir. 2005)). Patent Owner further contends that the claim language dictates that the determining step "requires the possibility of an unexpected (e.g., incorrect or undesired) response being received—to give meaning to the 'determin[e/ing] whether' language." *Id*. at 17 (citing Snap IPR, Ex. 2003 ¶¶ 72–78). Dr. Martin testifies that "the system must determine whether the received response matches the expected response, or as the alternative demanded by the 'determining whether' clause, that the received response is unexpected." Snap IPR, Ex. 2003 ¶ 75.

Patent Owner asserts that the Specification of the '599 patent requires the possibility of expected and unexpected responses. Snap IPR, PO Resp.

17–20. Patent Owner refers to Tables 1 and 2 of the Specification in support of the contention that there are actions specified "when a user response is expected or correct" or "when a user response is unexpected or incorrect." *Id*. at 18–19 (citing Snap IPR, Ex. 1001, 13:1–7, Tables 1, 2).

Patent Owner additionally refers to the prosecution file history of the '599 patent. Snap PO Resp. 21–26. Patent Owner contends that the original claims do not refer to expected responses, determining if responses matched expected responses, or performing actions based on that determination. *Id.* at 21 (citing Snap IPR, Ex. 1004, 56–64). After continued prosecution, including further amendments, a May 23, 2012, amendment was submitted that included limitations directed to determining if responses matched expected responses, or performing actions based on that determination, which are the same as those in the issued '599 patent. *Id*. at 22–24 (citing Snap IPR, Ex. 1004, 348–362). Patent Owner refers to an agenda for applicant's May 9, 2012, interview with the examiner that states:

> the system receives a response from the user corresponding to the presented content, determines whether the response matches the pre-defined expected response, and performs an action based on the outcome of the determination (see instant application, pars. [0062]- [0064]). For example, ***if the user fails to mimic the played audio signal correctly***, the system replays the audio file for the user (see instant application, par. [0056]).

Snap IPR, Ex. 1004, 346 (quoted Snap PO Resp. 24–25). Patent Owner contends that because the "applicant specifically called out handling unexpected responses (failure to mimic an audio signal) when discussing the relevance of the determination limitation," a person of skill in the art would have understood this to require the possibility of both expected and

unexpected responses. Snap PO Resp. 25 (citing Snap IPR, Ex. 2003 ¶¶ 87–90).

We do not agree with Patent Owner's assertion that the claim language requires an ability to determine whether a received response is an expected response or an unexpected response. Limitation 1[h] does not recite this restriction, nor is the limitation required to give meaning to the claim. Patent Owner's view is inconsistent with limitation 1[b], which recites that the content package with a set of rules includes "an expected response," with no mention that an unexpected response as part of the content package. Patent Owner's expert, Dr. Martin, testifies that the plain meaning of the claim language requires that there be a determination that a received response matches an expected response, which "requires the system being able to determine whether the received response does not match the expected response." Snap IPR, Ex. 1021, 31:19–32:2. We agree that the claim requires making a determination, but this determination is only as to "the expected response." Patent Owner asserts that the claim also requires determining whether a received response matches an unexpected response—but that is not recited or implied by the claim language itself. *See* Snap PO Resp. 16–17; Snap IPR, Ex. 2003 ¶ 75. In sum, the claim language requires determining whether there is a match of a received response with the expected response; however, the claim does not require determining whether there is a match of a received response with an unexpected response.

Turning to the Specification, Table 1 of the '599 patent is instructive and is reproduced below.

TABLE 1

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpI.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHello.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHowDoYouDo.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend

TABLE 1-continued

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpGoodnight.mp3	>21:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend
JpGoodmorning.mp3	<10:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend

Snap IPR, Ex. 1001, 10:57–11:9. The '599 patent explains that Table 1, above, presents an exemplary set of rules that correspond to a number of audio clips in Japanese for practicing pronunciations of a number of words. *Id*. at 11:11–15. The time column allows a user to specify a time of day when content can be presented, the location column to specify a location for where content can be presented, and the state column to specify an action that the user can be performing when content is presented. *Id*. at 11:15–21. As an example, a user learning Japanese can program the content management system 240 to play "good morning" in Japanese when the user is moving around the bedroom before 10 AM, and to play "goodnight" in

Japanese when the user is entering or moving around the bedroom after 9 PM. Of note, the '599 patent explains that

> [t]he response column *allows a user to specify an expected response* to the presentation of content 253. The action correct column allows a user to specify actions that content management system 240 can perform if the user provides a correct response. The action incorrect column allows a user to specify actions that content management system 240 can perform if the user does not provide a correct response (Ex. 1001, 11:27–33 (emphasis added)).
>
> An *action correct column entry* can obtain a value that specifies an action to be performed by content management system 240 in the event that the *user provides an expected response.* Furthermore, an *action incorrect column entry* can obtain a value that specifies an action to be performed by content management system 240 on the occasion that t*he user does not provide an expected response*. (*id*. at 13:1–7 (emphasis added)).

These descriptions are consistent with the language of limitations 1[b] and 1[h] as recited, and as discussed above. We further note that the Specification only discloses determining whether a received response is *expected* — and the received response may or may not be the expected response. *See* Snap IPR, Ex. 1001, 11:27–33; 12:50–13:10; 13:67–14:11. Patent Owner does not identify in the Specification, nor do we discern, any disclosure of determining whether a received response is an "*unexpected* response." *See generally* Snap PO Resp.; Snap PO Sur-Reply.

As Dr. Almeroth testifies, "a person of ordinary skill in the art would have understood that the 'action correct column entry' specifies an action to be performed when the user's response matches the expected response, whereas the 'action incorrect column entry' specifies an action to be performed when the user's response does not match the expected response, consistent with the plain language of the claims." Snap IPR, Ex. 1022 ¶ 54.

Dr. Martin also provides consistent testimony on this issue. Snap IPR, Ex. 2003 ¶¶ 81–82. Put simply, the Specification's disclosure is that the set of rules for multiple content packages includes an expected response, and actions are then performed based on whether an expected response is or is not provided. Moreover, as Dr. Almeroth testifies, neither the claims nor the Specification use the term "unexpected response"—rather the Specification only identifies an "expected response." Snap IPR, Ex. 1022 ¶ 42. Accordingly, the disclosures in Table 1 and the Specification support Dr. Almeroth's testimony that a person of ordinary skill would have understood that "the claimed 'determin[e/ing]' limitation requires what it plainly recites: 'determin[e/ing] whether the received response matches the expected response[]'. . . . [i]t does not require an unexpected response not known to the system." Snap IPR, Ex. 1022 ¶ 51.

Although Patent Owner asserts that there is support in the Specification for its interpretation of the "determining" limitation, we are not persuaded. More specifically, Patent Owner contends that Tables 1 and 2 of the Specification "show actions to be taken when a user response is correct/expected and incorrect/unexpected." Snap PO Resp. 18–19. Dr. Martin testifies Table 2 presents an example "where an expected response of 'OK' is considered correct and other responses are unexpected and considered incorrect." Snap IPR, Ex. 2003 ¶ 83. We do not agree with Patent Owner's contentions on this issue because they are premised on the characterization of the claimed "received response" as either "expected response" or "unexpected" which is "considered incorrect." This is not what is claimed—instead, as discussed above, the "*received response*" is checked

to determine if it matches the "*expected response*," and an action is performed based upon that determination.

Patent Owner also asserts that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to presented content must be possible," otherwise, "[t]here would be no need for the determination limitation if no unexpected responses were possible." Snap PO Resp. 16. In opposition, Snap contends that the claim recites receiving "at least one content package" which "includes at least one content piece and a set of rules associated with the content package, wherein the set of rules includes . . . an expected response." *See* Snap Pet. Reply 4. Dr. Almeroth testifies that, according to the claim language, there are "a plurality of 'expected response[s]' – one expected response for each content package, where multiple content packages are possible." Snap IPR, Ex. 1022 ¶ 48. Dr. Almeroth further testifies that the claim language explains that the determining limitation requires a determination as to "whether 'the received response matches ***the*** expected response' included in the set of rules associated with a particular content package, and not whether the received response matches ***any*** of a plurality of expected responses." *Id.* In further support, Dr. Almeroth testifies, and we agree, that in view of Table 1 and the Specification an expected response of mimicking the content presented (e.g., "good morning" or "good night" in Japanese) is specific to the context, so that a received response could match the expected response for one content piece, but nonetheless would not match the expected response for different content presented to the user (e.g., mimicking "good morning" in Japanese in response to being presented "good night" in Japanese). *Id.* ¶ 50 (citing Snap IPR, Ex. 1001, 11:11–41, Table 1). Snap then asserts, and we agree, that "unexpected responses" are not required to

give meaning to the limitation because an expected response associated with a different content package does not necessarily match the expected response associated with another content package and the presented content piece. Snap Pet. Reply 5; Snap IPR, Ex. 1022 ¶¶ 49–50.

In response to Snap's assertions on this issue, Patent Owner argues that Snap's view that there is only one expected response allowed per content package is incorrect under a proper reading of the claim language, the '599 patent Specification, and Dr. Martin's testimony that there is more than one way to mimic a phrase. Snap PO Sur-reply 7–11. But this does not address Snap's assertion that these can be more than one content package which has rules which include an expected response. This situation is reflected in Table 1, wherein, as Dr. Almeroth testifies, "a content piece of a content package is presented to a user (e.g., Table 1 JPGoodnight.mp3), and the system determines whether a received response to that presented content piece . . matches an expected response for the presented content piece (e.g., Table 1 'Mimic' Goodnight in Japanese), even when the received response could be a response that is known to the system for another content piece in another set of rules of a content package." Snap IPR, Ex. 1022 ¶ 52. This evidence supports that there may be a different "expected response" for different content packages with different rules, triggers, and a presented content piece, where an "expected response" for different content would be determined not to match the expected response for content presented to a user. Whether there may be multiple "expected responses," as Patent Owner contends, does not undermine Snap's demonstration that there can be different expected responses for different contents which requires the

determination of a match of the received response with the expected response *for the content piece presented to a user*.

Patent Owner additionally argues that the prosecution history supports the inclusion of "unexpected response" into the claim. We do not agree. During prosecution of the '599 patent, the independent claims were amended to add "determining whether the received message matches the expected response." Snap IPR, Ex. 1004, 348–362. The amendments are directed to a limitation of matching the "expected response" — there is no mention or suggestion of an "unexpected response" that is considered or determined. Patent Owner also refers to applicant's statement that "the system receives a response from the user corresponding to the presented content, [and] determines whether the response matches the *defined expected response*," and then "if the user fails to mimic the played audio signal correctly, the system replays the audio file for the user." Snap IPR, Ex. 1004, 346. This statement does not mention any consideration or determination of an unexpected response, but rather only identifies an action taken based only on a determination of whether there is a match of the received response and the expected response. *See id*. ("the system receives a response from the user corresponding to the presented content, determines whether the response matches the predefined expected response, and performs an action based on the outcome of the determination.").

In view of the evidence and arguments as discussed above, Patent Owner's assertions that "unexpected response" should be included in the clam term amounts to impermissibly attempting to write a limitation into the claim. Accordingly, we decline to adopt Patent Owner's proposed interpretation of the "determin[e/ing] whether the received response

matches the expected response" to require the possibility of expected and unexpected response and instead adopt the plain meaning of the claim term.

We determine that we need not expressly construe any other claim terms to resolve the parties' disputes on the current record. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

4. Principles of Law

A claim is unpatentable under 35 U.S.C. § 102 if a prior art reference discloses each and every limitation of the claimed invention, either explicitly or inherently. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir. 1995); *see MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) ("To anticipate, a claim a prior art reference must disclose every limitation of the claimed invention;" any limitation not explicitly taught must be inherently taught and would be so understood by a person experienced in the field); *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991) (the dispositive question is "whether one skilled in the art would reasonably understand or infer" that a reference teaches or discloses all of the limitations of the claimed invention).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying

factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of obviousness or nonobviousness.[7] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

5. Asserted Anticipation of Claims 1, 2, 4–7, 10–13, 17–20, and 22–25 by Rosenberg

Snap contends that claims 1, 2, 4–7, 10–13, 17–20, and 22–25 are unpatentable under 35 U.S.C. § 102 as anticipated by Rosenberg. Pet. 5–50. Patent Owner argues that Rosenberg does not teach all the limitations of claim 1. Snap PO Resp. 26–30.

We begin our discussion with summary of Rosenberg, and then address the evidence and arguments presented.

a. Rosenberg (Snap IPR, Ex. 1005)

Rosenberg is directed to a system and method for users to create spatially associated personal reminders. Snap IPR, Ex. 1005, code (57). Rosenberg discloses providing a location-based personal reminder system with features, such as triggering a reminder upon the user entering or exiting a specific area associated with that reminder (*id*. at 2:4–12, 2:18–22) or providing users with options to choose when a spatially-associated reminder is triggered (*id*. at 2:32–49).

In Rosenberg's system, users may create personal digital reminders that include "information such as text, audio, images, graphics, and/or video, that describes or otherwise indicates one or more pending tasks that the user

[7] The parties present no evidence relating to objective indicia of nonobviousness.

intends to perform in the future." Snap IPR, Ex. 1005, 5:16–20. The personal digital reminders include "a relational association to one or more physical areas in the real physical world" called "trigger areas" (*id.* at 5:41–50), and can also include other "parameters such as flags and variables that describe how and when the reminder should be triggered as well as the current status of the reminder" (*id.* at 5:62–65). In Rosenberg, a user can author a personal digital reminder either on a portable computing device, which is any mobile computing device that may be carried about or on another device, such as a personal computer, and a portable computing device can download the reminder. *Id.* at 8:4–11, 9:5–19. An example portable computing device, with personal digital reminders displayed, is depicted in Figure 3, reproduced below.

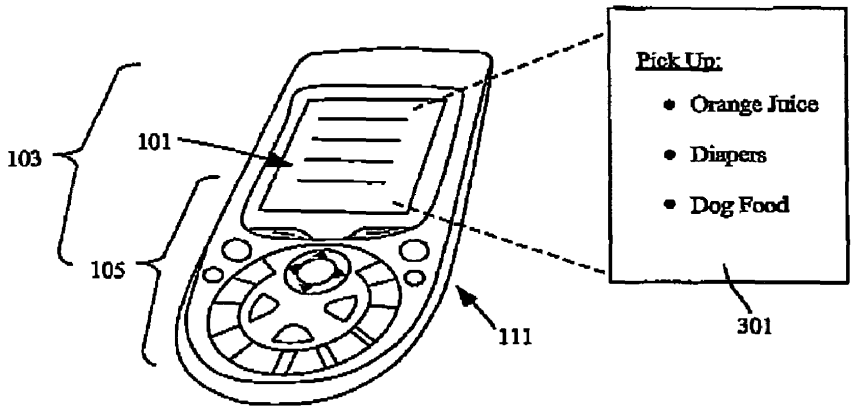


FIG. 3

As shown in Figure 3, above, portable computing device 111 includes user interface 103, with display 101 and user input devices 105. Snap IPR, Ex. 1005, 15:18–20. The portable computing device 111 also includes a

"locative sensor," such as a GPS transducer, that provides locative sensor data that indicates the current physical location of portable computing device 111 within the physical world. *Id*. at 8:29–40. The reminder circuitry of portable computing device 111 reads locative sensor data, accesses a reminder database, and determines whether the user is entering or exiting a trigger area associated with any active personal digital reminders. *Id*. at 13:50–54, 21:38–50, 21:47–22:2. Rosenberg discloses that the determination on whether a user is entering a trigger area may be made by comparing the boundary of the trigger area with the user's current and prior location (*id*. at 21:57–67), or by an enhanced method where a different boundary can be used for entry that is different from the exit boundary of a trigger area (*id*. at 7:47–59). If a trigger event occurs, the portable computing device display will show the associated reminder to the user. *Id*. at 8:19–23.

Rosenberg discloses that personal digital reminders may be presented alongside "reminder option[s]," which are response options presented to a user with the reminder. Snap IPR, Ex. 1005, 6:65–7:28. Figure 5 of Rosenberg, reproduced below, illustrates a portable computing device with reminders and reminder options displayed.

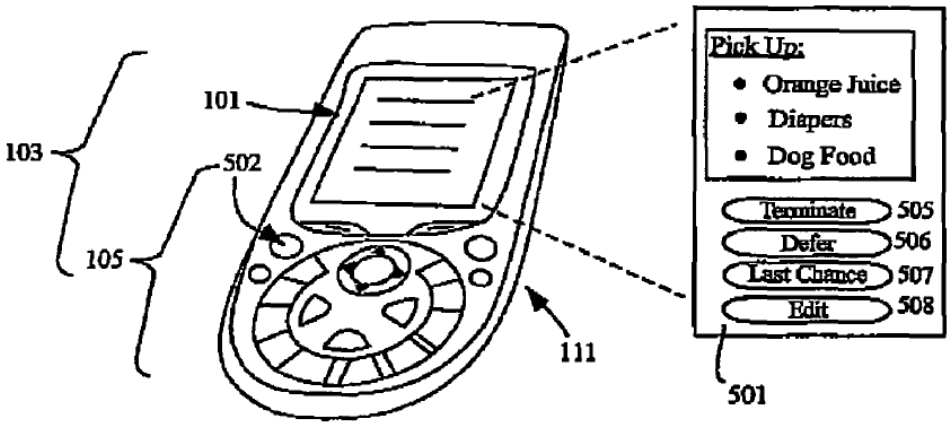


FIG. 5

As depicted in Figure 5, above, portable computing device 111 may display various reminder options, including a "terminate reminder option," a "defer reminder option," a "last chance reminder option," and an "edit reminder option." Snap IPR, Ex. 1005, 17:58–18:28, 19:24–21:27.

b. Discussion

i. Claim 1

Snap's Petition asserts that Rosenberg discloses all the limitations of claim 1. Snap Pet. 5–17. Below we consider the claim 1 limitations in turn.

(1) Preamble 1[a] and Limitation 1[b]

Snap asserts that Rosenberg discloses a method for delivering context-based content to a first user because Rosenberg discloses a method for delivering personal digital reminders to a user based on a user satisfying a location-based trigger event. Snap Pet. 5 (citing Snap IPR, Ex. 1005, code (57), 2:59–3:32, 4:45–6:4; Ex. 1002 ¶¶ 51–56). Snap contends that in the '599 patent "content" includes digital reminders, similar to those

described in Rosenberg, and "context" includes "user activity" informed by "contextual information," such as location. *Id*. (citing Snap IPR, Ex. 1001, 3:60–64, 5:63–65, 20:30–34, 2:47–50, 8:45–46, 13:25–28, 13:59–14:16, 4:7–11, 6:23–39). Snap argues that Rosenberg's "trigger events" include a "user physically entering the trigger area [and/or] exiting the trigger area" and are user activities informed by user location, and, thus, Rosenberg discloses delivering context-based content, that is, a reminder delivered when a user enters or exits a trigger area. *Id*. at 5–6 (citing Snap IPR, Ex. 1005, 5:62–6:3; Snap IPR, Ex. 1002 ¶¶ 57–66).

Snap further contends that Rosenberg discloses the use of reminders which contain reminder content, the associated trigger area, and other parameters, including flags and variables associated with how and when a reminder should be triggered and status information about the reminder. Snap Pet. 6. Snap asserts that when a user creates a reminder, it includes this collection of information, and is a "content package." *Id*. at 7. More specifically, Snap contends that in Rosenberg a reminder includes content and rules associated with the package, where trigger area and trigger event parameters specifies a context (entering and/or exiting a trigger area) that triggers the reminder associated with the event. *Id*. (citing Snap IPR, Ex. 1002 ¶¶ 61–65). Snap argues that the trigger event and trigger area define the claimed trigger condition rule associated with the content piece. *Id*. (citing Snap IPR, Ex. 1002 ¶ 62). Snap also asserts that Rosenberg discloses that reminders may be presented with reminder options that allow a user to provide responses related to the reminder, and this provides the claimed "expected response." *Id*. at 7–8.

Patent Owner provides no arguments specifically related to the preamble or limitation 1[b]. *See generally* Snap PO Resp.; Snap PO Sur-reply.

We have reviewed the record and determine that Petitioner has demonstrated that Rosenberg discloses the preamble and limitation 1[b] of claim 1.[8]

(2) Limitations 1[c]–1[g]

Snap asserts that Rosenberg discloses receiving a set of contextual information for a first user, as recited in limitation 1[c]. Snap Pet. 9 (citing Snap IPR, Ex. 1002 ¶¶ 67–71). Snap relies upon Rosenberg's disclosure of a portable computing device reading locative sensor data indicating "spatial coordinates representing where within the physical environment the user is currently residing." *Id*. (citing Snap IPR, Ex. 1005, 21:39–45).

Snap asserts that Rosenberg discloses processing the contextual information to determine a current context for a user as recited in limitation 1[d]. Snap Pet. 9–10 (citing Snap IPR, Ex. 1002 ¶¶ 72–78). For support, Snap refers to Rosenberg disclosure that the device processes the received user contextual information, that is, the location information, to determine whether the user is currently entering/exiting a trigger area. *Id*. at 10 (citing Snap IPR, Ex. 1005, 6:34–47, 3:16–27, 7:47–59).

Snap contends that Rosenberg discloses determining whether a current context satisfies the trigger condition as recited in limitation 1[e]. Snap Pet. 10–11 (citing Snap IPR, Ex. 1002 ¶¶ 79–83). Snap argues that Rosenberg discloses determining whether the current context of the user (user's

[8] We need not determine whether the preamble of claim 1 is limiting because Snap has shown that Rosenberg discloses the preamble. *See Nidec*, 868 F.3d at 1017.

location) satisfies the trigger condition, that is, whether user is entering/exiting a trigger area. *Id*. at 11.

Snap contends that Rosenberg discloses that in response to the trigger condition being satisfied, the content piece is presented to a user, as recited in limitation 1[f]. Snap Pet. 11–13 (citing Snap IPR, Ex. 1002 ¶¶ 79–88). Snap asserts that Rosenberg discloses that the device includes "software adapted to automatically trigger the personal reminder based upon the defined parameters such that the reminder is displayed to the user when the user enters and/or exits the trigger area." *Id*. at 11 (citing Snap IPR, Ex. 1005, 6:58–61).

Snap contends that Rosenberg discloses receiving a response from a user corresponding to the presented content piece as recited in limitation 1[g]. Snap Pet. 13–14 (citing Snap IPR, Ex. 1002 ¶¶ 89–94). Snap argues that Rosenberg discloses reminder options to a user along with the presented reminder content, that is, a content piece. *Id*. at 13. Snap asserts that the reminder options, such as terminate, defer, last chance, and edit, are presented to a user, and the user provides input through the user interface to respond. *Id*. at 14; *see* Snap IPR, Ex. 1005, Fig. 5.

Patent Owner presents no arguments specifically related to these claim limitations. *See generally* Snap PO Resp.; Snap PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Snap has demonstrated that Rosenberg discloses limitations 1[c]–1[g] of claim 1.

(3) Limitations 1[h] and 1[i]

Snap asserts that Rosenberg discloses determining whether the received response matches the expected response as recited in limitation 1[h]. Snap Pet. 14–15 (citing Snap IPR, Ex. 1002 ¶¶ 95–100).

Snap contends that Rosenberg discloses receiving a response from a user via a selection of a reminder option button and the device determines whether, for instance, a user response matches an expected response of the "defer reminder" response button. *Id*. (citing Snap IPR, Ex. 1005, 19:34–41, 19:61–20:48; Snap IPR, Ex. 1002 ¶¶ 96–98). Snap further contends that Rosenberg states that that "[d]epending upon what reminder options are selected by the user," actions occur, including updating the reminder database "to reflect any terminations, edits, resets, or deferments, of reminders." *Id*. at 15 (citing Snap IPR, Ex. 1005, 22:20–23, 22:65–23:1, Fig. 6).

Snap argues that Rosenberg discloses performing an action based on an outcome of the determination as recited in limitation 1[i]. Snap Pet. 16–17 (citing Snap IPR, Ex. 1002 ¶¶ 101–106). Snap asserts that Rosenberg discloses whether a user has chosen a "defer reminder" response or not and taking different actions responsive to this determination. *Id*. at 16. For instance, "[i]f a user selects the 'defer reminder' response, 'the reminder circuitry clears the screen of the displayed reminder and sets a flag such that the reminder will be displayed again after a certain amount of time has elapsed.'" *Id*. (citing Snap IPR, Ex. 1005, 19:61–65).

Patent Owner argues that Rosenburg fails to disclose limitations 1[h] and [i] because the claim requires "an ability to determine whether the response is an 'expected response,' which necessarily requires the option for a user to provide an unexpected (e.g., incorrect or undesired) response." Snap PO Resp. 26–27. Patent Owner asserts that Rosenberg does not teach a method or system that allows for unexpected responses because it only discloses receiving expected responses. *Id*. at 27 (citing Snap IPR, Ex. 2003 ¶¶ 93–97). Patent Owner contends that Petitioner never suggests that any of

Rosenberg's reminder options are unexpected so that a determination is necessary. *Id*. at 28. Patent Owner argues that because Rosenberg fails to teach limitation 1[h], it also does not teach the "perform[ing] an action based on an outcome of the determination" limitation. *Id*. at 29.

We do not agree with Patent Owner's arguments because all of these arguments rely on Patent Owner's proposed claim construction related to the term "expected response" (*supra* Section III.D.3), and we have not adopted that proposed construction.

We have reviewed the evidence and argument and on this record we determine that Snap has demonstrated that Rosenberg discloses limitations 1[h] and 1[i] of claim 1.

(4) Conclusion

Accordingly, having considered Snap's and Patent Owner's arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claim 1 of the '599 patent.

ii. Independent Claims 12 and 19

Claim 12 claims a computer-readable storage medium storing instructions that when executed by a computer performs the method with the same steps as those recited in claim 1. Snap IPR, Ex. 1001, 24:40–63. Claim 19 claims an apparatus with components that perform similar steps to those recited for claim 1. *Id*. at 25:52–26:14. For the challenges to claims 12 and 19, Snap relies on similar evidence and argument to that presented for claim 1. Snap Pet. 33–44.

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, and for the reasons we discuss above for claim 1, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 12 and 19 of the '599 patent.

iii. Dependent Claims 2, 13, and 20

Claim 2 recites:

> 2. The method of claim 1, wherein the method further comprises creating the content package for the first user, wherein creating the content package involves:
>
> > recording the content piece that is provided by the first user;
> >
> > creating an entry in a content database for the recorded content piece, wherein the entry includes one or more trigger conditions; and
> >
> > associating the one or more trigger conditions for the entry with a user-defined context; and
> >
> > wherein the method further comprises:
> >
> > > continuously comparing previously defined trigger conditions for the entry with the ongoing context of the first user; and
> > >
> > > in response to the one or more trigger conditions being met, retrieving the content piece, and presenting the retrieved content piece to the first user.

Snap IPR, Ex. 1001, 23:42–58. Claims 13 and 20 contain similar limitations.

Snap presents evidence and argument in support of its contentions that dependent claims 2, 13, and 20 are anticipated by Rosenberg. Snap Pet. 17–24, 36, 44–45. For claim 2, Snap asserts that Rosenberg discloses creating a content package for a first user comprising reminder content ("content piece") and associated trigger event. *Id.* at 17–18. Snap contends that Rosenberg discloses that creating a reminder containing the content package involves recording a content piece provided by the first user, with the user

recording the reminder content by authoring a text file or recording an audio file or video. *Id*. at 18 (citing Snap IPR, Ex. 1005, 5:16–30, 5:31–40). Snap argues that Rosenberg discloses creating an entry in a reminder database for the personal digital reminder, and the reminder content may also be stored in the reminder database. *Id*. at 18–20 (citing Snap IPR, Ex. 1005, 2:63–3:4, 11:8–18; Ex. 1002 ¶¶ 116–117). Snap further asserts that Rosenberg discloses a trigger condition that includes whether a user enters or exits from an area, which is defined by a trigger event and a trigger area, which is user-defined. *Id*. at 20–21 (referencing Snap Pet., Section IX.A.1; citing Snap IPR, Ex. 1002 ¶¶ 118–121). Snap contends that Rosenberg discloses comparing previously defined trigger conditions with a user's current context. *Id*. at 21–23 (referencing Snap Pet., Sections IX.A.1, IX.A.2; Snap IPR, Ex. 1002 ¶¶ 122–127). Snap argues that Rosenberg discloses continuously comparing previously defined trigger conditions associated with reminder content with the user's context to determine whether the trigger condition has been satisfied, and if it has been satisfied, the reminder content is presented to the user. *Id*. at 23–24 (referencing Snap Pet., Sections IX.A.2, IX.A.1; Snap IPR, Ex. 1002 ¶¶ 128–131).

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 2, 13, and 20 of the '599 patent.

iv. Dependent Claims 4 and 22

Claim 4 recites:

> 4. The method of claim 1, wherein the method further comprises defining a context by:

> creating one or more context entries in a context manager; and
>
> associating a respective context entry with a set of contextual information.

Snap IPR, Ex. 1001, 24:4–9. Claim 22 contains similar limitations.

Snap presents evidence and argument in support of its contentions that dependent claims 4 and 22 are anticipated by Rosenberg. Snap Pet. 24–27, 48. For claim 4, Snap asserts that Rosenberg discloses defining a context by creating a trigger area (context entry) on the graphical user interface of the portable computing device. *Id*. at 24 (citing Snap IPR, Ex.1005, 24:52–54; Snap IPR, Ex. 1002 ¶ 131). Snap contends that the user-defined trigger area entries are presented to the user via, for example, by a menu on the device's user interface, which allows a user to select this trigger area to be associated with a reminder. *Id*. at 24–25 (citing Snap IPR, Ex. 1005, 24:4–23, 24:53–26:20; Snap IPR, Ex. 1002 ¶ 131).

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 4 and 22 of the '599 patent.

v. Dependent Claims 5 and 23

Claim 5 depends from claim 4, and further recites "wherein the method further comprises updating entries in the content database and updating the context entries in the context manager responsive to actions performed by the first user." Snap IPR, Ex. 1001, 24:10–14. Claim 23 contains similar limitations.

Snap presents evidence and argument in support of its contentions that dependent claims 5 and 23 are anticipated by Rosenberg. Snap Pet. 27–29,

48–49. For claim 5, Snap asserts that Rosenberg discloses updating reminder database responsive to actions performed by a user. *Id*. at 27–28 (citing Snap IPR, Ex.1002 ¶¶ 142–147). Snap relies on the Rosenberg example where a user may be presented with a reminder and may choose to defer it so it is presented later, and then may terminate it. *Id*. (citing Snap IPR, Ex. 1005, 20:40–42). Snap further contends that in response the reminder may be removed from the reminder database or set to an inactive state. *Id*. at 28 (citing Snap IPR, Ex. 1005, 19:42–46). Snap asserts that these actions are updates to the entry in the reminder database.

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 5 and 23 of the '599 patent.

vi. Dependent Claims 6 and 7

Claim 6 depends from claim 1 and further recites "wherein the context is defined as a combination of at least a high-level abstraction which corresponds to one or more low-level contextual information values, wherein the low-level contextual information values can correspond to one or more measurable parameters." Snap IPR, Ex. 1001, 24:15–19. Claim 7 depends from claim 1 and further recites "wherein a respective rule is defined with one or more high-level abstractions." *Id*. at 24:20–21.

Snap presents evidence and argument in support of its contentions that dependent claims 6 and 7 are anticipated by Rosenberg. Snap Pet. 29–31. For claim 6, Snap asserts that Rosenberg discloses the claimed context as specified by the trigger conditions that may include trigger areas and trigger events as well as other parameters such as "further restricting the conditions

under which the reminder will trigger," including a temporal trigger condition and a directional trigger condition. *Id*. at 30 (citing Snap IPR, Ex. 1005, 12:12–23, 12:40–60). Snap further contends that the context is a high-level abstraction, such as a user entering/exiting a trigger area during a certain time, which corresponds to one or more low-level contextual information values, such as the time of day or series of GPS traces. *Id*. at 31. For claim 7, Snap relies on the same arguments and evidence as that presented for claim 6. *Id*.

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 6 and 7 of the '599 patent.

vii. Dependent Claims 10, 17, and 24

Claim 10 depends from claim 1 and further recites "wherein the contextual information includes one or more of: time, date, location, proximity to a system-detectable tag, device orientation, velocity, direction, distance, vibration, altitude, temperature, pressure, humidity, sound, luminous intensity, camera image, and video stream." Snap IPR, Ex. 1001, 24:29–34. Claims 17 and 24 contain similar limitations.

Snap presents evidence and argument in support of its contentions that Rosenberg anticipates dependent claims 10, 17, and 24. Snap Pet. 32, 36–37. For claim 10, Snap asserts that Rosenberg discloses the claimed user contextual information that includes at least GPS location data. *Id*. at 32 (citing Snap IPR, Ex. 1002 ¶¶ 157–158).

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 10, 17, and 24 of the '599 patent.

viii. Dependent Claims 11, 18, and 25

Claim 11 depends from claim 1 and further recites "wherein the content piece includes one or more of: audio clip, image, video stream, language lesson, e-mail, weather report, calendar reminder, news feed, rich site summary (RSS) feed, information update from a Web 2.0 application, and Internet blog." Snap IPR, Ex. 1001, 24:35–39. Claims 18 and 25 contain similar limitations.

Snap presents evidence and argument in support of its contentions that dependent claims 11, 18, and 25 are anticipated by Rosenberg. Snap Pet. 32–33, 36–37, 49–50. For claim 11, Snap asserts that Rosenberg discloses that the claimed content piece, which is reminder content, may include "text, audio, images, graphics, and/or video." *Id*. at 32 (citing Snap IPR, Ex. 1005, 5:17–20; Figs. 1, 7).

Patent Owner does not present any arguments specific to these claims. *See generally* PO Resp.; PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg anticipates claims 11, 18, and 25 of the '599 patent.

6. Asserted Obviousness of Claims 4, 5, 15, 16, 19, 20, and 22–25 Over Rosenberg

Snap contends that claims 4, 5, 15, 16, 19, 20, and 22–25 are unpatentable under 35 U.S.C. § 103(a) as obvious over Rosenberg. Snap Pet. 50–56. Because we have determined that Rosenberg anticipates claims

4, 5, 19, 20, and 22–25, we need not reach this other ground for unpatentability of these proposed substitute claims. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that "[t]he Board has the discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

We have not previously addressed claims 15 and 16, which Snap asserts are obvious. Snap Pet. 32–33, 36–37, 49–50.

Claim 15 follows:

> 15. The computer-readable storage medium of claim 12, wherein the method further comprises defining a context by:
>
> > creating one or more context entries in a context manager; and
> >
> > associating a respective context entry with a set of contextual information.

Snap IPR, Ex. 1001, 25:29–35. Claim 16 depends from claim 15, and further recites "wherein the method further comprises updating entries in the content database and updating the context entries in the context manager responsive to actions performed by the first user." *Id.* at 25:36–39.

Snap presents evidence and argument in support of its contentions that dependent claims 15 and 16 would have been obvious over Rosenberg. Snap Pet. 32–33, 36–37, 49–50. For claim 15, Snap asserts that Rosenberg teaches the limitations of defining a context and associating a context entry with a set of contextual data for similar reasons to those provided for claim 4. Snap Pet. 52 (referencing Snap Pet., Sections IX.A.9, IX.A.3.a, IX.B.1.a; citing Snap IPR, Ex. 1002 ¶ 239). For claim 16, Snap asserts that

Rosenberg teaches the limitations of updating entries in the content database and updating the context entries in the context manager responsive to actions performed by the first user for reasons similar to those provided for claim 5. *Id*. at 52–53 (referencing Snap Pet., Sections IX.A.9, IX.A.4, IX.B.2; citing Ex. 1002 ¶ 241).

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that Rosenberg renders obvious claims 15 and 16 of the '599 patent.

7. Asserted Obviousness of Claims 3, 8, 9, 14, and 21 Over Rosenberg and Suzuki

Snap contends that claims 3, 8, 9, 14, and 21 are unpatentable under 35 U.S.C. § 103(a) as obvious over Rosenberg and Suzuki. Pet. 56–65. We begin our discussion with a brief summary of Suzuki.

a. Suzuki (Snap IPR, Ex. 1006)

Suzuki describes a "system and method for alerting a user of an item on a to-do list if the user is detected to be close to the item's performance location." Snap IPR, Ex. 1006, code (57). Suzuki discloses that individuals may share the location-based to-do list items. *Id*. at 3:50–53, 4:3–5. The to-do list items are stored with "one or more user IDs" that "indicate the individuals who are responsible for accomplishing the indicated task[s]." *Id.* at 4:21–26. Suzuki discloses that this information is stored in a database, which is depicted in Figure 3, reproduced below. *See id*. at 6:12–16.

FIG. 3

TASK (30a)	LOCATION ENTERED (30b)	LOCATION ADDRESS (30c)	USER ID (30d)	STATUS (30e)
BUY ITEM X	AAA DISCOUNT STORE 111 MAIN STREET LOS ANGELES	111 MAIN STREET LOS ANGELES	001	CONFIRMED
BUY ITEM Y	BBB SUPERMARKET FIRST STREET	222 FIRST STREET LOS ANGELES	002,003	COMPLETED
PICK-UP DRY-CLEAN	CCC DRY-CLEANERS	333 STATE STREET LOS ANGELES	001	NOT NOTIFIED
⋮	⋮	⋮	⋮	⋮

30

As shown in Figure 3 of Suzuki, above, the to-do list database includes task 30a listings and User ID 30d listing fields. Snap IPR, Ex. 1006, 6:12–46. A user may create the database by user entries on a mobile device. *Id*. at 6:16–17. Figure 7, reproduced below, illustrates a screen display for entering a to-do list. *Id*. at 8:1–3.

FIG. 7

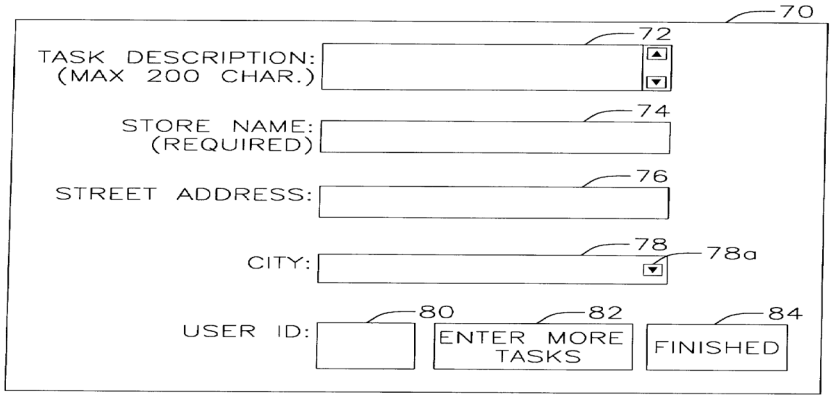


Figure 7, above, depicts an illustration of a screen display for entering a to-do list to Suzuki's system. Snap IPR, Ex. 1006, 3:14–15, 8:1–3.

b. Discussion

Claims 3, 8, 9, 14, and 21 include limitations directed to shareable content pieces or rules. *See* Snap IPR, Ex. 1001, 23:60–24:3, 24:20–28, 25:16–29, 26:32–43.

Snap argues that claims 3, 8, 9, 14, and 21 would have been obvious over the combination of Rosenberg and Suzuki. Snap Pet. 56–65. Snap asserts that Suzuki's location-based reminder system discloses reminders that can be shared by multiple users. *Id*. at 56–57 (citing Snap IPR, Ex. 1005, 4:3–5). Snap contends that a person of ordinary skill in the art would have been motivated to configure Rosenberg's system to provide for sharable reminders in view of Suzuki. *Id*. at 57 (citing Snap IPR, Ex. 1002 ¶ 251). Snap contends that a person of ordinary skill in the art would have been motivated to make the modifications because it "would have recognized that sharing reminders among individuals would have increased efficiencies in the use of, and the versatility of, Rosenberg's system." *Id*. (citing Snap IPR, Ex. 1002 ¶ 252).

Claims 3, 14, and 21 contain similar limitations, with Snap asserting that although Rosenberg's reminder content (content piece) is not expressly disclosed as being sharable, it would have been obvious to implement such features in view of Suzuki. Snap Pet. 56. Snap relies on Suzuki's disclosure of a location-based reminder system like Rosenberg's where reminders can be "shared by multiple users," and are stored with IDs reflecting individuals responsible for indicated tasks. *Id*. at 56–57 (citing Snap IPR, Ex. 1006, code (57), 3:22–33, 3:50–53, 4:3–5, 5:8–22, 8:46–11:23, 4:21–26, 4:57–64, 6:12–45, 8:1–30, Figs. 3, 7; Snap IPR, Ex. 1002 ¶ 250). Snap asserts that Rosenberg discloses creating a content package for the recorded content piece, which includes trigger conditions. *Id*. at 59–60. Snap further argues

that Rosenberg also discloses allowing a recipient of the content package to at least "insert, modify, and/or remove content" from the package. *Id*. at 60 (citing Snap IPR, Ex. 1002 ¶ 258).

For claim 8, which is directed to allowing a first user to share the rules with a second user, Snap asserts that Rosenberg discloses allowing the recipient of a reminder to redefine the rules associated with a reminder, where the user updating the rules is the second user with whom the reminder was shared. Snap Pet. 61–62 (citing Snap IPR, Ex. 1002 ¶ 259). For claim 9, which is directed to sharing the content piece with a remote device, Snap contends it would be obvious to modify Rosenberg, which presents content pieces, with Suzuki, which discloses sharing from a "central host computer 14" to "multiple mobile terminals." *Id*. at 62–63 (citing Snap IPR, Ex. 1002 ¶ 260; Snap IPR, Ex. 1006, 4:3–9).

Patent Owner does not present any arguments specific to these claims. *See generally* Snap PO Resp.; Snap PO Sur-reply.

Having considered the arguments and evidence, we determine that Snap has shown by a preponderance of the evidence that the combination of Rosenberg and Suzuki teaches the limitations of claims 3, 8, 9, 14, and 21 and has presented articulated reasoning with rational underpinning to support the combination of prior art which renders these claims obvious.

F. Conclusion As To Snap's Challenges To Claims 1–25 of the '599 Patent

For the foregoing reasons, we conclude that Snap has shown by a preponderance of the evidence that claims 1–25 of the '599 patent are unpatentable. In summary:

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 4–7, 10–13, 17–20, 22–25	102	Rosenberg	1, 2, 4–7, 10–13, 17–20, 22–25	
4, 5, 15, 16, 19, 20, 22–25	103(a)	Rosenberg	15, 16[9]	
3, 8, 9, 14, 21	103(a)	Rosenberg, Suzuki	3, 8, 9, 14, 21	
Overall Outcome			1–25	

IV. FACEBOOK'S CHALLENGES TO CLAIMS 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, AND 25 OF THE '599 PATENT

A. Procedural Background

Facebook filed a Petition for *inter partes* review of claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent, along with the Declaration of Christopher M. Schmandt. Facebook IPR, Paper 2 ("Facebook Pet."); Facebook IPR, Ex. 1002. Patent Owner filed a Preliminary Response. Facebook IPR, Paper 12 ("Facebook Prelim. Resp."). Pursuant to 35 U.S.C. § 314(a), on January 25, 2022, we instituted *inter partes* review on the following grounds:

[9] As explained above, because we determine challenged claims 4, 5, 19, 20, and 20–25 are anticipated by Rosenberg, we need not address the obviousness ground for these claims.

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont[10], Wolfe[11], Wang[12]
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis[13]
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont, Wolfe, Wang, Meyers[14]
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis, Meyers

Facebook Pet. 3; Facebook IPR, Paper 13 ("Facebook Inst. Dec." or "Facebook Dec.").

Patent Owner filed a Patent Owner Response ("Facebook PO Resp."). Facebook IPR, Paper 23.[15] Patent Owner also filed a Declaration of David Martin, Ph.D., with the Response to support its positions. Facebook IPR, Ex. 2010. Facebook filed a Reply ("Facebook Pet. Reply") to the Patent Owner Response, along with the Reply Declaration of Christopher M. Schmandt. Facebook IPR, Paper 25; Ex. 1016. Patent Owner filed a Sur-reply to Petitioner's Reply ("Facebook PO Sur-reply"). Facebook IPR, Paper 31.

[10] US 7,652,594 B2, filed April 7, 2006, issued January 26, 2010 (Facebook IPR, Ex. 1003, "Lamont").
[11] US 8,428,614 B2, filed July 10, 2007, issued April 23, 2013 (Facebook IPR, Ex. 1004, "Wolfe").
[12] Wallace Wang, BEGINNING PROGRAMMING FOR DUMMIES, 1999 (Facebook IPR, Ex. 1006, "Wang").
[13] US 9,467,530 B2, filed April 11, 2006, issued October 11, 2016 (Facebook IPR, Ex. 1007, "Belimpasakis").
[14] Scott Meyers, THE DOWNLOADER'S COMPANION FOR WINDOWS, 1995 (Facebook IPR, Ex. 1008, "Meyers").
[15] This is a Corrected Patent Owner Response.

An oral hearing was held on October 28, 2022. A transcript of the hearing is included in the record. Facebook IPR, Paper 41 ("Facebook Tr.").

B. Related Matters

The parties indicate this Petition is related to the district court litigations *Palo Alto Research Center Inc. v. Facebook, Inc.*, No. 2:20-CV-10753-AB-MRW (C.D. Cal.), *Palo Alto Research Center Inc. v. Snap Inc.*, No. 2:20-CV-10755-AB-MRW (C.D. Cal.), and *Palo Alto Research Center Inc. v. Twitter, Inc.*, No. 2:20-CV-10754-AB-MRW (C.D. Cal.). Facebook Pet. 1; Facebook IPR, Paper 4, 2–3.

As discussed above, claims of the '599 patent are also challenged in the Snap and Twitter IPRs.

C. The '599 Patent

As indicated above in the Snap IPR, the '599 patent is titled "Context And Activity-Driven Content Delivery And Interaction" and issued on July 16, 2013, from an application filed on December 2, 2008. Facebook IPR, Ex. 1001, codes (22), (45), (54).

The '599 patent is directed to "a computing device that delivers personally-defined context-based content to a user." Facebook IPR, Ex. 1001, code (57). The '599 patent states that

> [t]his computing device receives a set of contextual information with respect to the user, and processes the contextual information to determine whether some aspect of the current context can be associated with a probable activity being performed by the user. The computing device then determines whether either or both the context and current activity of the user satisfy a trigger condition which has been previously defined by the user. If so, the computing device selects content from a content

> database, based on the context or activity, to present to the user, and presents the selected content.

Facebook IPR, Ex. 1001, 1:52–62. Figure 1, reproduced below, illustrates a content management system in accordance with the invention. *Id.* at 2:54–55.

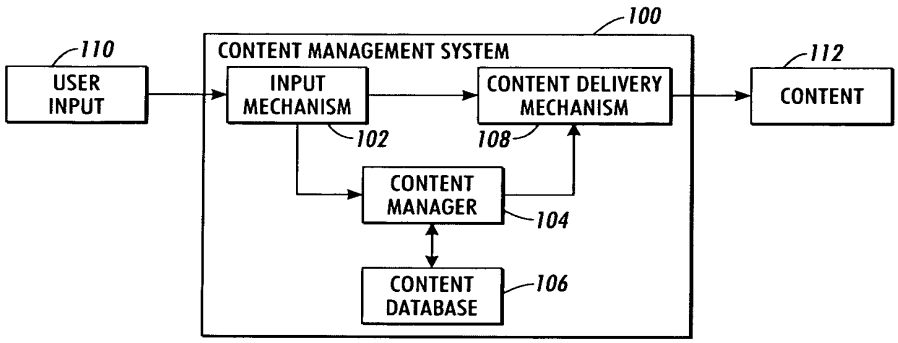


FIG. 1

As depicted in Figure 1, above, content management system 100 presents content 112 to a user. Facebook IPR, Ex. 1001, 5:18–19. Content 112 can be presented in response to actions being performed by the user, or in accordance with other information associated with the user. *Id.* at 5:18–21. Content management system 100 allows a user to create and store content, and associate the content with a given user-defined context. *Id.* at 5:21–23. For instance, content management system 100 can remind a user to buy groceries as the user is driving past a grocery store after work or can read specific items on a grocery list to a user when walking across a specific grocery store aisle. *Id.* at 5:28–32. Input mechanism 102 receives user input 101, content manager 104 controls how content 112 is stored in content database 106 and how it is selected for playback, and content delivery

mechanism 108 controls how content 112 is presented to a user. *Id*. at 5:36–57.

D. Illustrative Claim

Facebook challenges claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent. Claims 1, 12, and 19 are the only independent claims, and claim 1, which is illustrative, is reproduced below, with bracketed letters added to the limitations for reference purposes.[16]

> 1. [a] A method for delivering context-based content to a first user, the method comprising:
>
> > [b] receiving at least one content package, wherein the content package includes at least one content piece and a set of rules associated with the content package, wherein the set of rules includes a trigger condition and an expected response, and wherein the trigger condition specifies a context that triggers a presentation of the content piece;
> >
> > [c] receiving a set of contextual information with respect to the first user;
> >
> > [d] processing the contextual information to determine a current context for the first user;
> >
> > [e] determining whether the current context satisfies the trigger condition;
> >
> > [f] in response to the trigger condition being satisfied, presenting the content piece to the first user;
> >
> > [g] receiving a response from the first user corresponding to the presented content piece;
> >
> > [h] determining whether the received response matches the expected response; and

[16] Note that the lettering for the references to the claim limitations varies from that used in the Decision of Institution and from the parties' references to the in the briefing in this case. The lettering has been changed herein to conform the references between the Snap and Facebook cases, which have now been consolidated.

> [i] performing an action based on an outcome of the determination.

Facebook IPR, Ex. 1001, 23:20–41.

E. Analysis

1. The Parties' Arguments

In our Decision on Institution, we concluded that the arguments and evidence advanced by Facebook demonstrated a reasonable likelihood that claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent would have been unpatentable as obvious under 35 U.S.C. § 103. Facebook Inst. Dec. 13–30. Here, we determine whether Facebook has established by a preponderance of the evidence that the challenged claims are obvious. 35 U.S.C. § 316(e). We previously instructed Patent Owner that "Patent Owner is cautioned that any arguments not raised in the response may be deemed waived." Facebook IPR, Paper 14, 8 *see also* 37 C.F.R. § 42.23(a) ("Any material fact not specifically denied may be considered admitted."); *In re NuVasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding patent owner waived an argument addressed in the preliminary response by not raising the same argument in the patent owner response). Additionally, the Board's Trial Practice Guide states that the patent owner response "should identify all the involved claims that are believed to be patentable and state the basis for that belief." Consolidated Trial Practice Guide, 66 (November, 2019).[17]

On the record before us, we note that we have reviewed arguments and evidence advanced by Facebook to support its unpatentability

[17] Available at https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf.

contentions, whereas Patent Owner chose not to address certain limitations in its Patent Owner Response. In this regard, the record contains persuasive arguments and evidence presented by Facebook regarding the manner in which the prior art teaches the corresponding limitations of claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent, as well as a rationale to combine the prior art references.

2. Level of Ordinary Skill in the Art

Relying on the testimony of Mr. Schmandt, Petitioner proposes that a person of ordinary skill in the art at the time of the '599 patent would have possessed "at least a bachelor's degree in electrical engineering or computer science, and two years of work experience in multimedia data communications and user interfaces." Facebook Pet. 5 (citing Facebook IPR, Ex. 1002 ¶¶ 17–22). Petitioner further asserts that additional education, but less work experience, and vice versa may also qualify. *Id*. In the Decision on Institution, we determined that Facebook's proposed description of the qualifications of a person of ordinary skill in the art aligned with the technology and claims of the '599 patent. Facebook Inst. Dec. 12. For this proceeding, Patent Owner and Dr. Martin apply this level of skill in the art. Facebook PO Resp. 12; Facebook IPR, Ex. 2003 ¶¶ 48–50. Accordingly, for the reasons given in the Decision on Institution, we adopt Facebook's proposed level of ordinary skill in the art. Facebook Inst. Dec. 12.

3. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2021). Under the principles set forth by our reviewing court, the "words of a claim 'are

generally given their ordinary and customary meaning,'" as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Patent Owner makes similar arguments to those made in the Snap case, discussed above. More specifically, Patent Owner asserts that the limitation "determin[ing/e] whether the received response matches the expected response," recited in independent claims 1, 12, and 19, requires the possibility of expected and unexpected responses in view of the claim terms, Specification, and prosecution history. Facebook PO Resp. 13–26. More specifically, Patent Owner asserts that "each independent claim requires an ability to determine whether a received response is an expected response (e.g., correct or desired) or an unexpected response (e.g., incorrect or undesired)." *Id.* at 14. Patent Owner argues that the Board's determination in the Decision on Institution that "there is no recited limitation requiring that there be a determination made for an *unexpected* response" is in error. *Id.* at 14 (citing Facebook Inst. Dec. 25).

Patent Owner relies on the claim language itself and, more specifically, limitations 1[b] and 1[g]–1[i], stating that these recitations mean that "a content package must include content and a set of rules, and the set of rules must include at least one expected response related to the

content," and "requires receiving a response to presented content, determining [] that [the] response matches at least one expected response, and then performing some action based on the determination." Facebook PO Resp. 16. Patent Owner argues that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to [presented] content must be possible. There would be no need for the determination limitation if no unexpected responses were possible; the claim would simply require performing an action associated with the received (and expected) response." *Id*. at 16–17. Patent Owner cites to cases law in support of its assertion that interpretation of terms that render parts of claims superfluous is disfavored. *Id*. at 16–17 (citing e.g., *Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1375 (Fed. Cir. 2005)). Patent Owner further contends that the claim language dictates that the determining step "requires the possibility of an unexpected (e.g., incorrect or undesired) response being received—to give meaning to the 'determin[e/ing] whether' language." *Id*. at 17 (citing Facebook IPR, Ex. 2010 ¶¶ 73–79). Dr. Martin testifies that "the system must determine whether the received response matches the expected response or as the alternative demanded by the 'determining whether' clause, that the received response is unexpected" (Facebook IPR, Ex. 2010 ¶ 76).

Patent Owner asserts that the Specification of the '599 patent requires the possibility of expected and unexpected responses. Facebook IPR, PO Resp. 18–21. Patent Owner refers to Tables 1 and 2 of the Specification in support of the contention that there are actions specified "when a user response is expected or correct" or "when a user response is unexpected or

incorrect." *Id*. at 18–19 (citing Facebook IPR, Ex. 1001, 13:1–7, Tables 1, 2).

Patent Owner additionally refers to the prosecution file history of the '599 patent. Facebook PO Resp. 21–26. Patent Owner contends that the original claims do not refer to expected responses, determining if responses matched expected responses, or performing actions based on that determination. *Id.* at 22 (citing Facebook IPR, Ex. 2014, 57–65). After continued prosecution, including further amendments, a May 23, 2012 amendment was submitted that included limitations directed to determining if responses matched expected responses, or performing actions based on that determination, which are the same as those in the issued '599 patent. *Id.* at 22–24 (citing Facebook IPR, Ex. 2014, 364–378). Patent Owner refers to an agenda for applicant's May 9, 2012, interview with the examiner that states

> the system receives a response from the user corresponding to the presented content, determines whether the response matches the pre-defined expected response, and performs an action based on the outcome of the determination (see instant application, pars. [0062]- [0064]). For example, ***if the user fails to mimic the played audio signal correctly***, the system replays the audio file for the user (see instant application, par. [0056]).

Facebook IPR, Ex. 2014, 362 (quoted at Facebook PO Resp. 25). Patent Owner contends that because the "applicant specifically called out handling unexpected responses (failure to mimic an audio signal) when discussing the relevance of the determination limitation," that a person of skill in the art would have understood this to require the possibility of both expected and

unexpected responses. Facebook PO Resp. 25–26 (citing Facebook IPR, Ex. 2010 ¶¶ 88–91).

We do not agree with Patent Owner's assertion that the claim language requires an ability to determine whether a received response is an expected response or an unexpected response. Limitation 1[h] does not recite this restriction, nor is the limitation required to give meaning to the claim. Patent Owner's view is inconsistent with limitation 1[b], which recites that the content package with a set of rules includes "an expected response," but there is no mention that an unexpected response is part of the content package. Although Patent Owner asserts that the claim also requires the inclusion of a determination of whether a received response matches an unexpected response, that is not recited or suggested by the claim language itself. *See* Facebook PO Resp. 15–17; Facebook IPR, Ex. 2010 ¶ 76. In sum, the claim language indicates it determines whether there is a match of a received response with the expected response; however, the claim does not require determining whether there is a match of a received response with an unexpected response.

Turning to the Specification, Table 1 of the '599 patent is instructive and is reproduced below.

TABLE 1

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpI.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHello.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHowDoYouDo.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend

TABLE 1-continued

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpGoodnight.mp3	>21:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend
JpGoodmorning.mp3	<10:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend

Facebook IPR, Ex. 1001, 10:57–11:9. The '599 patent explains that Table 1, above, presents an exemplary set of rules that correspond to a number of audio clips in Japanese for practicing pronunciations to a number of words. *Id*. at 11:11–15. The time column allows a user for specifying a time of day when content can be presented, the location column is for specifying a location for where content can be presented, and the state column is for specifying an action that the user can be performing when content is presented. *Id*. at 11:15–21. As an example, a user learning Japanese can program the content management system 240 to play "good morning" in Japanese when the user is moving around the bedroom before 10 AM, and to

play "goodnight" in Japanese when the user is entering or moving around the bedroom after 9 PM. Of note, the '599 patent explains that

> [t]he response column *allows a user to specify an expected response* to the presentation of content 253. The action correct column allows a user to specify actions that content management system 240 can perform if the user provides a correct response. The action incorrect column allows a user to specify actions that content management system 240 can perform if the user does not provide a correct response (Ex. 1001, 11:27–33 (emphasis added)).
>
> An *action correct column entry* can obtain a value that specifies an action to be performed by content management system 240 in the event that the *user provides an expected response.* Furthermore, an *action incorrect column entry* can obtain a value that specifies an action to be performed by content management system 240 on the occasion that t*he user does not provide an expected response* (*id*. at 13:1–7 (emphasis added)).

These descriptions are consistent with the language of limitations 1[b] and 1[h] as recited, and as discussed above. We further note that the Specification only discloses determining whether a received response is *expected* — and the received response may or may not be the expected response. *See* Facebook IPR, Ex. 1001, 11:27–33; 12:50–13:10; 13:67–14:11. Patent Owner does not identify in the Specification, nor do we discern, any disclosure of determining whether a received response is an "*unexpected* response." *See generally* Facebook PO Resp.; Facebook PO Sur-Reply.

Although Patent Owner asserts that there is support in the Specification for its interpretation of the "determining" limitation, we are not persuaded. More specifically, Patent Owner contends that Tables 1 and 2 of the Specification "show actions to be taken when a user response is correct/expected and incorrect/unexpected." Facebook PO Resp. 18–20. Dr.

Martin testifies that "references to 'action correct' and 'action incorrect' indicate that the system being described will determine whether the received response is correct or incorrect." Facebook IPR, Ex. 2010 ¶ 81. We do not agree with Patent Owner's assertions because they are premised on the characterization of the claimed "received response" as either "expected response" or "unexpected" which is "considered incorrect." This is not what the Specification discloses and what is claimed—instead, as discussed above, the "*received response*" is checked to determine if it matches the "*expected response*," and an action is performed based upon that determination.

Patent Owner also asserts that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to [presented] content must be possible," otherwise, "[t]here would be no need for the determination limitation if no unexpected responses were possible." Facebook PO Resp. 16. As Facebook points out, however, and we agree, the system, however, may have multiple expected responses, such as expected responses other than those received from the "content package" as claimed. Facebook Pet. Reply 5; Ex. 1016 ¶ 7. Patent Owner further argues Facebook's arguments on expected responses fail under the plain language of the claims because "[a] response that does not match the particular expected response (or one of the expected responses) in the content package for a given content piece is an unexpected response for the claim's purposes." Facebook PO Sur-reply 17. We do not agree with that assertion based on the evaluation of the claim language and Specification disclosures, as discussed above.

Patent Owner additionally argues that the prosecution history supports the inclusion of "unexpected response" into the claim. We do not agree.

During prosecution of the '599 patent, the independent claims were amended to add "determining whether the received message matches the expected response." *See* Facebook IPR, Ex. 2014, 365. The amendments are directed to matching the "expected response"–there is no mention or suggestion of an "unexpected response" that is considered or determined. Patent Owner also refers to a statement made by the applicant that states that "the system receives a response from the user corresponding to the presented content, [and] determines whether the response matches the *pre-defined expected response*," and then "if the user fails to mimic the played audio signal correctly, the system replays the audio file for the user." Facebook IPR, Ex. 2014, 362 (emphasis added). This discussion does not mention any consideration or determination of an unexpected response, but rather only identifies an action taken based only on the determination of whether there is a match of the received response and the expected response. *See id.* ("the system receives a response from the user corresponding to the presented content, determines whether the response matches the pre-defined expected response, and performs an action based on the outcome of the determination.").

In view of the evidence and argument as discussed above, our view is that Patent Owner's assertions that "unexpected response" should be included in the clam term amounts to impermissibly attempting to write a limitation into the claim. Accordingly, we decline to adopt Patent Owner's proposed interpretation of the "determin[e/ing] whether the received response matches the expected response " to require the possibility of

expected and unexpected response and instead adopt the plain meaning of the claim term.

We determine that we need not expressly construe any other claim terms to resolve the parties' disputes on the current record. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.,* 200 F.3d 795, 803 (Fed. Cir. 1999))).

4. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of obviousness or nonobviousness.[18] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

5. Asserted Obviousness of Claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 Over Lamont, Wolfe, and Wang

Petitioner contends that claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 are unpatentable under 35 U.S.C. § 103 as obvious over Lamont,

[18] The parties present no evidence relating to objective indicia of nonobviousness.

Wolfe, and Wang. Facebook Pet. 10–56. In support, Petitioner also relies upon the Schmandt Declarations. Facebook IPR, Ex. 1002; Ex. 1016. Patent Owner argues that the prior art does not teach all the limitations of the claims and insufficient rationale to combine the references has been provided. Facebook IPR, PO Resp. 27–61. In support, Patent Owner also relies on the Martin Declaration. Facebook IPR, Ex. 2020.

We begin our discussion with brief summaries of Lamont, Wolfe, and Wang, and then address the evidence and arguments presented.

a. Lamont (Facebook IPR, Ex. 1003)

Lamont discloses a system to construct a software-based tour "of a village, town, city, region or country employing locationally-sensitive information." Facebook IPR, Ex. 1003, 1:16–19, 1:44–49. Lamont's software architecture enables a designer "to create, edit, manage, and organize a matrix of trigger points that are situated in geographical space and are tagged with dynamic content" which are relay to a mobile device. *Id*. at 1:44–49. More specifically, the "tour script" contains "trigger points," that specify a particular geographical space and the conditions for presenting particular audio and/or visual content to the user. *Id*. at 2:1–6, 3:38–48. The conditions can include, for instance, a user location, direction, and velocity, as well as the time of day. *Id*. at 4:4–13, 14:56-62, 17:15–18. Content, including media clips, are presented to the user if the trigger point conditions are satisfied. *Id*. at 2:24–29, 4:4–13, 5:18–20, 14:29–37. Lamont's system, with its tour guide, may be used, for instance, for "an automated guided tour, a treasure hunt, a real estate tour, architectural overview, a line of approach/instruction for trainee pilots, and distribution of targeted sales and marketing information." *Id*. at 2:27–29.

b. Wolfe (Facebook IPR, Ex. 1004)

Wolfe is directed to "a location-based mobile phone application for providing a treasure hunt game consisting of puzzles solved at specific physical locations." Facebook IPR, Ex. 1004, 1:14–16. A mobile phone provides location data to a server, which then may provide puzzle information to a mobile phone based on the mobile phone's location and/or orientation. *Id*. at 3:35. For instance, there may be hints or clues provided to assist a user in finding an object or treasure in or around the user's location such as a monument. *Id*. at 3:35–37. In Wolfe, the system may provide a puzzle challenge or question to the user to verify that a site, object, or treasure has been found. *Id*. at 3:32–39. Figure 4F and 4G, reproduced below, show screenshots of a mobile phone device.

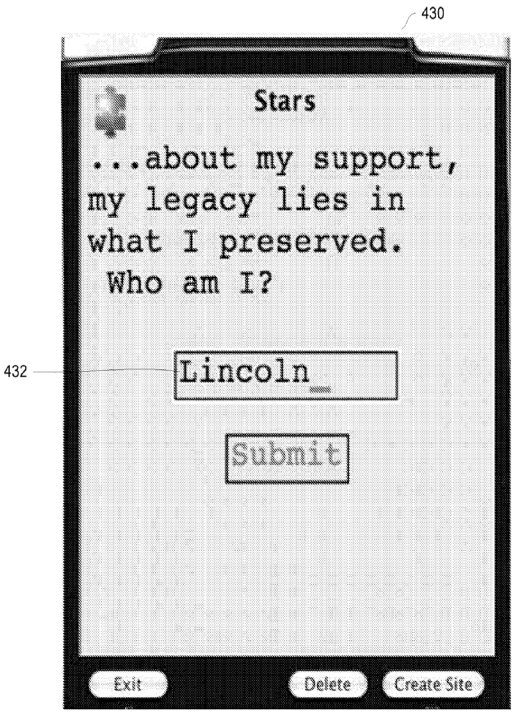


FIG. 4F

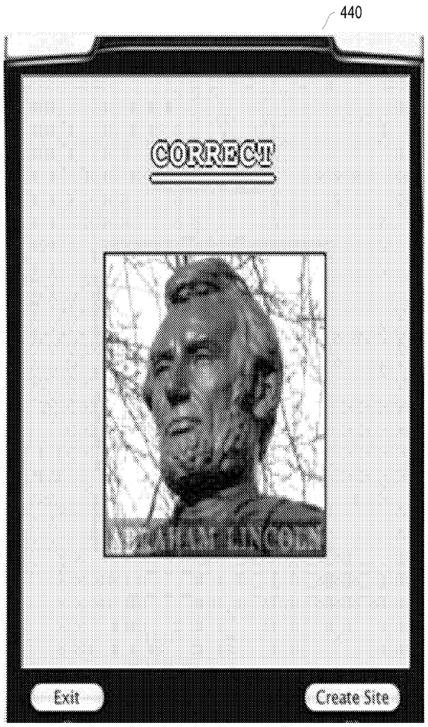


FIG. 4G

As shown in Figure 4G, above, the mobile phone screen includes a question presented to the user (e.g. "Who am I?") and receiving the user's correct response ("Lincoln"), results in the display shown in Figure 4G. Ex. 1004, 5:50–56.

c. Wang (Facebook IPR, Ex. 1006)

Wang is a book that is an introductory guide about computer programming. Facebook IPR, Ex. 1006, 14–17. Wang includes a description of how computers evaluate Boolean expressions. *Id*. at 23–40.

d. Discussion

i. Claim 1

The Petition asserts that Lamont, Wolfe, and Wang render claim 1 obvious. Facebook Pet. 10–42. Below we consider the claim 1 limitations in turn.

(1) Preamble 1[a]

For the teachings of the preamble 1[a], Facebook asserts that Lamont discloses a method for delivering context-based content to a first user because Lamont discloses a tour script that is used for a guided tour that can deliver context-based content to a user. Facebook Pet. 10–11 (citing Facebook IPR, Ex. 1003, 1:17–19, 2:67–3:6). Facebook asserts that Lamont teaches several types of context information including user location and "direction, temporal state, velocity, rate of incline or decline, or any other variable." *Id*. at 11 (citing Facebook IPR, Ex. 1003, 2:12–14, 4:58–61, 4:66–5:2, 5:18–19).

Patent Owner presents no arguments specifically related to the preamble. *See generally* Facebook PO Resp.; Facebook PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Facebook has demonstrated that Lamont teaches preamble 1[a] of claim 1.[19]

(2) Limitation 1[b]

For limitation 1[b], Facebook contends that Lamont's "content package" consists of a tour guide and the audio and/or visual content associated with the tour script. Facebook Pet. 12–15. Facebook asserts that Lamont discloses "a set of rules associated with the content package" by its disclosure of trigger points in the tour guide which may contain certain conditions. *Id*. at 15–17. Facebook contends that the claimed trigger condition is a trigger point, with conditions (context) associated with the trigger point "such as direction, time, velocity, as explained, which trigger presentation of the content." *Id*. at 18 (citing Facebook IPR, Ex. 1003, 2:67–3:6, 17:15–18; Facebook IPR, Ex. 1002 ¶ 92). Facebook refers to Lamont's disclosure that trigger points may be grouped together that are assessed using Boolean operators to determine if a preset string of conditions has been met as an example of "rules." *Id*. at 16–17 (citing Facebook IPR, Ex. 1002 ¶ 90; Facebook IPR, Ex. 1003, 3:65–4:13, 17:15–18). Facebook further refers to a "content piece," which include items in a media list such as multimedia items that can be played to the user, which are presented upon a trigger. *Id*. at 14–15 (citing Facebook IPR, Ex. 1003, 5:5–7, 16:53–56).

Facebook further contends that Lamont discloses the ability to receive feedback from the user and to respond to that feedback, but Lamont does not

[19] We need not determine whether the preamble of claim 1 is limiting because Facebook has shown that Lamont discloses the preamble. *See Nidec*, 868 F.3d at 1017.

provide detail regarding the feedback type a user can provide. Facebook Pet. 18 (citing Facebook IPR, Ex. 1003, code (57), 20:56–61). Facebook then refers to Wolfe for the teaching of the limitation "wherein the set of rules includes . . . an expected response." *Id*. Facebook argues that Wolfe discloses prompting a user for a response when it reaches a particular listing for a destination that has been reached, where, for example, the prompt may ask a user to solve a puzzle or answer a question. *Id*. at 18–19 (citing Facebook IPR, Ex. 1002 ¶ 57; Ex. 1004, 5:3–9, 5:28–29, 5:47–58, Fig. 4F). Facebook further refers to Wolfe's disclosure that a user who answers a question correctly may receive textual content or multimedia feedback and, if the response is not correct, the request for input is again repeated. *Id*. at 19–20 (citing Facebook IPR, Ex. 1002 ¶ 96; Facebook IPR, Ex. 1004, 5:56–60, Figs. 3 (steps 311, 315), 4F, 4G).

Facebook asserts that a person of ordinary skill in the art would have been motivated to combine Lamont and Wolfe because the references fall within the same field of endeavor as the claims at issue. Facebook Pet. 20–21. Facebook argues that Lamont discloses that its tour system can be used for treasure hunt games, the use described in Wolfe, and Mr. Schmandt testifies that a person of ordinary skill in the art would have been motivated to include the question/response aspects of Wolfe in Lamont to provide the advantage of enhanced game play. *Id*. at 21; Facebook IPR, Ex. 1002 ¶ 99. Facebook also contends that Wolfe's features would have benefitted Lamont's system because a response provided directly from a user under Wolfe would have "provided a clear and unequivocal indication that the user has reached a particular point in the tour—and that the user is aware of this fact." Facebook Pet. 21. Facebook argues that the combination of Lamont and Wolfe would have been straightforward and a person of ordinary skill

would have had a reasonable expectation of success. *Id*. at 22 (citing Facebook IPR, Ex. 1002 ¶ 101). In support, Mr. Schmandt testifies that it would have been trivial to modify Lamont because of its teaching delivery of content which is based on any number of variables and triggers. Facebook IPR, Ex. 1002 ¶ 101 (citing Facebook IPR, Ex. 1003, 2:12–14, 2:67–3:3). Mr. Schmandt also testifies that, although it is not clear in Wolfe whether the server or mobile device is responsible for receiving and processing user input, in the view of one of ordinary skill, the expected response would have been incorporated into the tour script of Lamont and executed locally on the client device. *Id*.

Patent Owner presents no arguments specifically related to limitation 1[b]. *See generally* Facebook PO Resp.; Facebook PO Sur-reply. Patent Owner makes arguments related to the motivation to combine Lamont and Wolfe, which we address below in Section IV.E.5.d.(5), and which do not undermine Petitioner's showing of a rationale to combine the references.

We have reviewed the evidence and argument and on this record we determine that Facebook has demonstrated that the combination of Lamont and Wolfe teaches limitation 1[b] and sufficient rationale to combine the references has been demonstrated.

(3) Limitations 1[c]–1[e]

(a) Petitioner's Assertions

For limitation 1[c], Petitioner asserts that Lamont discloses components that receive notifications of changes to the location, velocity, and time with respect to users as the claimed "receiving . . . contextual information." Facebook Pet. 24–26.

For limitation 1[d], Petitioner argues that the "current context for the first user" is the current activity or status of a user based on processing the

contextual information of a user relating to location, speed, or time. Facebook Pet. 27 (citing Facebook IPR, Ex. 1002 ¶ 106). Petitioner refers to Lamont's disclosure that "[w]hen the condition monitor 220 detects that conditions 330 relevant to a tour have changed, it sends a signal containing an indication of the type of condition and a measurement of that condition to each of the elements of the relevant tour." *Id*. at 27 (citing Facebook IPR, Ex. 1003, 15:1–23). Petitioner asserts that processing of contextual information may describe an activity in which a user may be engaged like "IF T1 Speed>30 mph AND T2 Direction is North Easterly OR T3 Direction is North westerly." *Id*. at 28 (citing Facebook IPR, Ex. 1003, 4:4–13). Petitioner contends that the claimed context could be an event where the user travels in a particular direction at a certain time and speed. *Id*. at 28–29. Petitioner additionally refers to other exemplary conditions disclosed in Lamont, such as "traveling over 35 miles per hour," or "between 10 am and 11:30 am," or "heading within 30 degrees of due east." *Id*. at 29 (citing Facebook IPR, Ex. 1003, 17:18–21). Petitioner asserts that Lamont discloses determining a current context for a user as part of a process where the software evaluates whether the individual trigger point conditions are satisfied. *Id*. at 28. Petitioner additionally relies upon Wang, which discloses details of software evaluation using Boolean operations, such as those in Lamont. *Id*. at 30–33.

Petitioner contends that Lamont discloses determining whether a current context satisfies a trigger condition as recited in limitation 1[e]. Facebook Pet. 35–36 (citing Facebook IPR, Ex. 1002 ¶ 121). Petitioner argues that Lamont discloses comparing the current activity or status of a user "against preset conditions 330 associated with various trigger points 100," to determine "what conditions 330, as may be required by the trigger

point 100, are satisfied." *Id*. at 35 (citing Facebook IPR, Ex. 1003, 14:29–37).

(b) Patent Owner's Assertions

Patent Owner argues that Petitioner has not sufficiently demonstrated that the prior art teaches "current context" as claimed. Facebook PO Resp. 27–32. Patent Owner asserts that the '599 patent uses "context" differently than "contextual information." *Id*. at 28. Patent Owner contends that the claims and the Specification differentiate between the terms. *Id*. at 28–32. Patent Owner argues that the Specification defines "context" by stating that "A context is a set of data that describes an event or environmental factor associated with a user or the operational environment of content management system 100." *Id*. at 29 (citing Facebook IPR, Ex. 1001, 7:29–39). Patent Owner asserts that it applies the plain meaning of the terms. *Id*. at 28 n.7, *see also id.* at 32.

Patent Owner argues that Facebook "wrongly treats 'context' and 'contextual information' as the same thing." Facebook PO Resp. 33 (citing Facebook IPR, Ex. 2010 ¶ 103). Patent Owner asserts that this is contrary to Facebook's expert's admission "that 'some sort of processing' must be done on 'contextual information' to determine 'context.'" *Id*. (citing Facebook IPR, Ex. 2017, 33:4–8). Patent Owner contends that "Facebook compares Lamont's conditions (what Facebook points to as 'contextual information') to Lamont's trigger points (what Facebook points to as 'trigger conditions') and reads out the use of the claimed "context" in these limitation[s]." *Id*. (citing Facebook IPR, Ex. 1002 ¶ 112). Patent Owner also asserts that Facebook fails to show that Lamont teaches a set of data for the claimed context that is determined from contextual information, and the claimed

context is used in determining whether a trigger condition is met. *Id*. at 34 (citing Facebook IPR, Ex. 2010 ¶¶ 107–109).

Patent Owner asserts that Facebook "point[s] to a Lamont event—such as going in a specific direction at a specific speed—as the 'context,' but the 'event' they describe is the circumstance where a set of conditions has been detected." Facebook PO Resp. 35 (citing Facebook IPR, Ex. 2010 ¶ 109 (citing Facebook Pet. 28; Facebook IPR, Ex. 1002 ¶ 111)). Patent Owner argues that this conflates "context" and "contextual information." *Id*. Patent Owner also contends that this does not show that Lamont determines a set of data that describes an event or environmental factor, but instead relates to the use of Boolean operators for conditions that are not the set of data aspect of the context. *Id*. Patent Owner asserts that Lamont's trigger points are configured in terms of basic conditions that activate when basic information satisfies a constraint or when a string of conditions that are met. *Id*. at 36–37. Patent Owner argues that this does not "result in 'a set of data that describes an event or environmental factor associated with a user or the operational environment of.'" *Id*. at 37 (citing Facebook IPR, Ex. 2010 ¶ 106). Patent Owner contends that "Lamont . . . instead directly compares its own trigger points (what Facebook alleges are 'trigger conditions,' Petition at 35–36) to conditions (what Facebook alleges is 'contextual information,' Petition at 25–26)." *Id*. at 38 (citing Facebook IPR, Ex. 2010 ¶ 107).

Patent Owner further argues that Facebook's use of Wang to imply that Lamont's Boolean expressions involve creating a set of data is wrong. Facebook PO Resp. 39. Patent Owner contends that Petitioner asserts that Lamont's Boolean expressions produce true or false values, but Dr. Martin testifies that "[w]hile a single bit of information is enough information for

Lamont to decide whether to 'trigger now' or 'don't trigger now', it is not a set of data that describes an event or environmental factor associated with a user or operational environment as used in the '599 Patent." *Id*. at 40–41; Facebook IPR, Ex. 2010 ¶ 114. Patent Owner also asserts that Wang does not support Facebook's positions because it discloses that a value may be stored in a variable, but the creation of a value is not automatic, and a person of ordinary skill in art would only require a comparison, and not the creation of a value. Facebook PO Resp. 40–45 (citing Facebook IPR, Ex. 2010 ¶ 124).

In Sur-reply, Patent Owner asserts that the '599 patent claims a tripartite structure: 1) receiving a set of contextual information; 2) processing the contextual information to determine a current context; and 3) determining whether the current context satisfies the trigger condition. Facebook PO Sur-reply 3. Patent Owner argues that Lamont uses only two steps, "receiving data and comparing that data to a trigger point condition," and does not use the "intermediate 'current context.'" *Id*. Patent Owner argues that in Facebook's analysis and its expert's testimony, "[t]here is no processing of any data into an intermediate 'current context,' or any explanation of what the results of that processing would be." *Id*. at 3–6. Patent Owner asserts that "Facebook points to nothing from Lamont or Wang describing any single bit that does 'characterize an event or environmental factor associated with a user.'" *Id*. at 8. Patent Owner further contends that Facebook does not show that a single bit of data can be a "set" of data that can be used to identify the user's current context. *Id*. at 8–9. Patent Owner disputes Petitioner's contention that a collection of true and false values in compound Boolean expressions is a current context because the value is only a single bit of information. *Id*. at 10. Patent

Owner also does not agree with Petitioner's comparison with Table 2 of the '599 patent because Table 2 does not show context or current context. *Id*. at 11. Patent Owner additionally argues that Petitioner presents new impermissible arguments in its Reply such as "each of the 'true' or 'false' values obtained from evaluation of the individual Boolean expressions within in a multipart Boolean expression in Lamont could have been stored in program variables" and "Lamont discloses a logging subsystem" that would allegedly "store the results of individual Boolean expressions in variables." *Id*. at 13–14.

(c) Analysis

As the Petition states, and we agree, Lamont teaches that its components receive notifications of changes to the location, velocity, and time with respect to users, which is the claimed "receiving a set of contextual information with respect to a first user." Facebook Pet. 24–26 (citing Facebook IPR, Ex. 1003, 14:32–35, 14:64–67, 13:61–64, 15:1–10, Fig. 2).

As the Petition states, and we agree, Lamont teaches that the received contextual information is processed. Facebook Pet. 26–35. Lamont states that

> [t]he tour script may operate as follows: IF T1 Speed>30 mph AND T2 Direction is North Easterly OR T3 Direction is North westerly, THEN Trigger "You may be going to[o] fast to make the right turn on Acacia Avenue (T2), so you may want to take right on Beverly Blvd (T3)."

Facebook IPR, Ex. 1003, 4:5–10. Petitioner asserts, and we agree, that the processing of contextual information includes an activity in which a user may be engaged like "IF T1 Speed>30 mph AND T2 Direction is North Easterly OR T3 Direction is North westerly." Facebook Pet. 28 (citing

Facebook IPR, Ex. 1003, 4:4–13). Petitioner contends, and we agree, that in this instance, the claimed context is an event where the user travels in a particular direction at a certain time and speed. *Id*. at 28–29. Petitioner additionally relies upon Wang, which discloses details of software evaluation using Boolean operations, such as those described in Lamont, to demonstrate that the prior art performs processing on the contextual information to determine the current context of a user. *Id*. at 30–33. Referring to Wang, and using Lamont as an example, Petitioner asserts, and we agree, that as an example, "'T1 Speed>30 mph' is an example of a Boolean expression that compares a variable ('T1 Speed') against a fixed value ('30 mph') [and] [t]his expression will generate a Boolean value of 'true' if T1 Speed is above 30 mph, and a value of 'false' otherwise." *Id*. at 30–31 (citing Facebook IPR, Ex. 1006 ¶¶ 24–25, Table 9-1; Facebook IPR, Ex. 1002 ¶ 113). Petitioner refers to Lamont's string of conditions and asserts, and we agree, that under Wang, "the computer will first obtain a 'true' or 'false' value with respect to the three component Boolean expressions (such as whether 'T1 Speed > 30 mph') and will then obtain a 'true' or 'false' value for the larger expression that includes the connecting Boolean AND/OR operators." *Id*. at 32 (citing Facebook IPR, Ex. 1002 ¶ 115). Mr. Schmandt testifies that "[t]he collection of these 'true' or 'false' values provides specific information generated by the computer that defines 'a current context for the first user,' because these 'true' and 'false' values describe the presence (or absence) of a current activity or event associated with that user." Facebook IPR, Ex. 1002 ¶ 116.

We do not find that Patent Owner's arguments undermine Petitioner's showing of the teaching of limitations 1[c] and 1[d]. We agree with Patent Owner that the terms "contextual information" and "context" for a user are

different, but we also find that Petitioner has demonstrated that the prior art teaches both "contextual information" and "context." Petitioner asserts that in Lamont, user contextual information, such as location, speed, or time, is received, with the "condition monitor . . . send[ing] a signal containing an indication of the type of condition and a measurement of that condition." Facebook Pet. 26 (citing Ex. 1003, 15:1–4). Petitioner contends that the "current context" is the user's "current activity or status, e.g. whether the first user is traveling in a particular area, at a particular speed, in a particular direction, at a particular time, etc." *Id*. at 28. Petitioner also contends the contextual information is processed in Lamont to determine whether certain conditions are satisfied, such as determining whether the user is traveling faster than 30 mph and is travelling in one of two directions. *Id*. We agree with Petitioner that in Lamont a user "context" is, for instance, an event in which user travels in a particular direction, at a certain rate of speed, and at a particular time. *Id*. at 28–29.

Although Patent Owner argues that Facebook's arguments that a Lamont event, such as going in a specific direction at a specific speed, is the context, and the event is the circumstance where a set of conditions has been detected, conflate the terms "context" and "contextual information," we do not agree. *See* Facebook PO Resp. 35. As discussed, Facebook asserts that Lamont teaches that by parameters like changes to the location, velocity, and time, the user "contextual information," are received. Further, Petitioner contends that, and Lamont's disclosures show, that this contextual information is *processed* by one or more operations to determine the user "context," that is, to determine a user's location and velocity at some time, for instance. Although Patent Owner makes several arguments, which we discuss below, as to why Lamont does not teach a "set of data" that

conforms with the meaning of "context," we find that the evidence supports that Lamont's determinations fall within the '599 patent Specification's description of "context" as "a set of data that describes an event or environmental factor associated with a user." Facebook IPR, Ex. 1001, 7:36–39.

Patent Owner argues that the '599 patent requires "context" to "describe an event or environmental factor" and are not just "GPS coordinates or other 'basic information associated with the user' (as for 'contextual information'), but instead 'characterizations of events or environments of the user or operational environment as a whole,'" such as, for example, "sitting down, watching TV, asleep, alert, talking, typing at the computer in the home study or at the office, walking around the house," etc. Facebook IPR, PO Resp. 29–31. Patent Owner requires too much. The '599 patent Specification's description, however, identifies context as a set of data that describes an environmental factor associated with a user, so Facebook's evidence in Lamont of processing contextual information with a determination of a user's location and velocity supports the teaching of the limitation.

Further, although Patent Owner argues, with Dr. Martin's supporting testimony, that "a set of data" has to be more than a single value in order to "describe an event or environmental factor," the evidence indicates that the term should not be so restricted. Facebook PO Resp. 31; Facebook IPR, Ex. 2010 ¶ 101. As Petitioner points out, claim 6, which depends from claim 1, recites "context . . . defined as . . . a high-level abstraction which corresponds to *one* or more low-level contextual information values." Facebook Pet. 45; Facebook IPR, Ex. 1001, 24:15–19 (emphasis added). Accordingly, as Petitioner argues, context may correspond to one contextual

information value. *See* Facebook Pet. Reply 9. Dr. Martin also testifies that he thinks "of a context as being a set of data, so it[']s a collection of zero or more unordered elements." Facebook IPR, Ex. 1017, 26:25–27:4. Dr. Martin further testifies, albeit stating that it is dependent on the details of the system, that "[i]t seems possible to me that you could have a system where a *single piece of data would be adequate to characterize an event or environmental factor associated with a user*." *Id*. at 62:16–2 (emphasis added). Accordingly, we credit Mr. Schmandt's testimony in view of this evidence, as well as other disclosures in the Specification directed to a context based on single or limited data. Facebook IPR, Ex. 1016 ¶¶ 25–26 (citing Facebook IPR, Ex. 1001, 4:11– 12 ("context can be based on or include *one* or more user activities"), *id*. at 4:22–26 (context based on "walking to work," "walking around the mall").

Patent Owner further argues, with Dr. Martin testifying, that "[e]ven though the system described in Lamont does monitor conditions and activate triggers, these logic steps do not determine a 'set of data' that 'describes an event or environmental factor.'" Facebook PO Resp. 37; Facebook IPR, Ex. 2010 ¶ 106. Patent Owner argues, with Dr. Martin's supporting testimony, that "the Lamont system mechanically applies the expressly configured logic, and fires appropriate trigger actions when necessary," and is limited to comparing its own trigger points to conditions. Facebook PO Resp. 37 (citing Facebook IPR, Ex. 2010 ¶ 106). Patent Owner's arguments attempt to miscast Lamont's teachings to suggest more is required in the claim than what is recited. As discussed above, limitations 1[c] and [d] merely require that there is a *receipt* of user contextual information and that information is *processed* to determine user context, which Petitioner has demonstrated.

Whether Lamont's system employ expressly configured logic is not relevant to the teaching of the claim limitations.

Similarly, Patent Owner asserts that "Lamont includes no processing of 'contextual information' to determine 'context' such that the 'context' can be used to see if a 'trigger condition' is satisfied, but instead directly compares its own trigger points." Facebook PO Resp. 38. We do not agree. As discussed above, Lamont discloses the use of Boolean operators to determine the context of a user's relative speed and direction of travel. Further, as discussed below, Lamont also determines whether this context satisfies the trigger condition.

Patent Owner additionally argues that in Lamont the single bit of information indicating whether a value is true or false is not a "set of data that describes an event or environmental factor associated with a user or operational environment as used in the '599 Patent." Facebook PO Resp. 40–41 (citing Facebook IPR, Ex. 2010 ¶ 114). Further, Patent Owner asserts, computers evaluating multi-part Boolean expressions do not keep records of operations over time. *Id*. at 41 (citing Facebook IPR, Ex. 2010 ¶¶ 114–115). Patent Owner discusses Wang and its operation to argue that there is no value produced, but even if there is a value in a variable, the creation of the value is not automatic, and a person of ordinary skill in the art would write programs to minimize the use of needless variables. *Id*. at 41–45.

Patent Owner's argument on the single bit of information again argues limitations that do not appear in the claim limitations. Limitation 1[d] requires processing the contextual information to determine a current context. As Petitioner asserts, Lamont receives contextual information, such as the speed a user is travelling, and processes the information to *make a*

determination that a user, for instance, is travelling at or not travelling at a rate over 30 miles per hour, as well as making determinations on user travel direction. Facebook IPR, Ex. 1003, 4:4–13. Lamont's determination falls within Dr. Martin's testimony that a single piece of data (the bit of information indicating true or false in specific programming) would be adequate to characterize an event or environmental factors associated with a user, which includes determinations in Lamont such as whether a user is traveling faster or slower than some speed which is used in the determination of context, with Mr. Schmandt providing supporting testimony. Facebook IPR, Ex. 1017, 62:16–2; Facebook IPR, Ex. 1002 ¶ 70 ("the computer first obtains a 'True' or 'False' value with respect to the three component Boolean expressions (such as whether 'T1 Speed > 30 mph')"), ¶ 116 ("if the Boolean expression 'T1 Speed > 30 mph' produces a value of 'true,' that value reflects the fact that the system processed the contextual information relating to the user's velocity and now knows that the user has entered trigger point T1 at a speed exceeding 30 miles per hour"), ¶ 111 ("in the context of Lamont, an exemplary 'context' could be an event in which the user travels in a particular direction and/or at a particular rate of speed at a particular time."). Additionally, in Lamont, the results of the three component Boolean expressions are further processed using the AND/OR operators to determine user context, that is, the user is travelling slower or faster than 30 miles per hour and is or is not travelling in a certain direction. Facebook Pet. 32–33 (citing Facebook IPR, Ex. 1005 ¶¶ 115–116). Moreover, the claim does not require that the data from the evaluation multi-part Boolean expressions be stored and logged over time; instead the claim limitation requires only that the contextual information be processed

to determine user context, and, as discussed, Lamont's disclosures provide support of this teaching.

Patent Owner additionally asserts that the claims require a tripartite structure: 1) receiving a set of contextual information; 2) processing the contextual information to determine a current context; and 3) determining whether the current context satisfies the trigger condition. Facebook PO Sur-reply 3. Patent Owner argues that in Facebook's analysis and its expert's testimony, "[t]here is no processing of any data into an intermediate 'current context,' or any explanation of what the results of that processing would be." *Id*. at 3–6. Patent Owner asserts that Facebook contends that "Lamont's raw location, time, and direction data is compared to Lamont's 'trigger point conditions.'" *Id*. at 4. Patent Owner points to Mr. Schmandt's testimony that

> I explained that in Lamont, <u>location, speed and time information</u> ("**contextual information**") is processed by condition monitor **220** in order to determine the current activity or status of the user ("**context**") as part of the process of evaluating whether or not <u>trigger point conditions</u> are satisfied—for example, that the user is in fact currently <u>traveling at speed above 30mph and in one of two directions</u>.

Facebook PO Sur-reply 5 (quoting Ex. 1016 ¶ 22). Based on this testimony, Patent Owner argues that "[a]s Facebook's expert admits, Lamont evaluates whether a trigger (e.g., 'traveling at a speed above 30mph and in one of two directions') is met by what he calls contextual information ('location, speed and time information')." Facebook PO Sur-reply 5–6.

We do not agree with Patent Owner's argument. As Mr. Schmandt's testimony explains: "[t]he step of determining 'a current context for the first user' in Lamont occurs when the system evaluates whether the individual Boolean conditions within this IF-THEN statement are satisfied," and

"'determining whether the current context satisfies the trigger condition' occurs when the system determines *whether or not all* of the Boolean conditions for the trigger point have been satisfied." Facebook IPR, Ex. 1002 ¶ 121 (emphasis added). That is, Lamont determines context by Boolean operations, which is that the user is or is not travelling at some speed and direction, but there is also a determination as to whether a trigger condition is met. We credit this testimony because it is supported by Lamont's disclosures of the determination of speed and direction, which is the context, and a check is performed on the context to determine "IF" the context meets the conditions, "THEN" if the conditions are met, there is a trigger. Facebook IPR, Ex. 1003, 4:6–10.

Accordingly, we determine that Facebook has demonstrated that the combination of Lamont, Wolfe, and Wang teaches limitations 1[c]–1[e] and sufficient rationale to combine the references has been demonstrated.

(4) Limitation 1[f]

Petitioner contends that Lamont discloses that, in response to the trigger condition being satisfied, the content piece is presented to a user, as recited in limitation 1[f]. Facebook Pet. 37–38. Petitioner refers to Lamont's disclosure that "IF T1 Speed>30 mph AND T2 Direction is North Easterly OR T3 Direction is Northwesterly, THEN Trigger 'You may be going to [sic; too] fast to make the right turn on Acacia Avenue (T2), so you may want to take right on Beverly Blvd (T3).'" *Id.* at 37 (citing Facebook IPR, Ex. 1003, 4:6–10). Petitioner asserts that this is an example of the presentation of content in response to a trigger condition being satisfied. *Id.*

Patent Owner presents no arguments specifically related to limitation 1[f]. *See generally* Facebook PO Resp.; Facebook PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Facebook has demonstrated that Lamont teaches limitation 1[f] of claim 1.

(5) Limitations 1[g]–1[i]

Petitioner contends that the combination of Lamont and Wolfe teaches receiving a response from a user corresponding to the presented content piece as recited in limitation 1[g]. Facebook Pet. 39–41. Petitioner argues that Lamont discloses a user feedback monitor that receives input from a user with respect to the presented content piece, such as the content specified in a media list. *Id*. at 39 (citing Facebook IPR, Ex. 1003, 20:56–59). Petitioner further refers to the proposed combination with Wolfe, where under the proposed combination, Lamont's client device is adapted to receive an answer to a puzzle or question from a user presented during a treasure hunt, and then determines if the answer was correct. *Id*. (citing Facebook IPR, Ex. 1004, 5:47–58).

Petitioner asserts that Wolfe discloses determining whether the received response matches the expected response as recited in limitation 1[h]. Facebook Pet. 41. Petitioner contends that step 311 of Figure 3 of Wolfe is the step "Correct input?" *Id*. (citing Facebook IPR, Ex. 1004, Fig. 3). Petitioner further contends that in Wolfe, "[i]f the answer is correct, the user may receive text feedback (step 311–313)," and "may also receive multimedia feedback that relates to the puzzle (i.e. sound, images, video, etc[.])." *Id*. (citing Facebook IPR, Ex. 1004, 5:55–58).

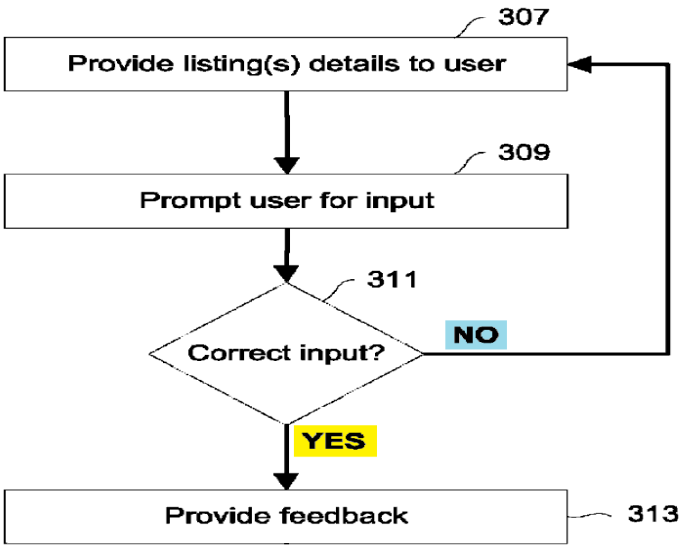
Petitioner argues that the combination of Lamont and Wolfe teaches performing an action based on an outcome of the determination as recited in limitation 1[i]. Facebook Pet. 41–42 (citing Facebook IPR, Ex. 1002 ¶¶ 101–106). Petitioner asserts that under the combination, "a

treasure hunt implemented as a guided tour would perform the action of allowing the user to proceed to the next step in the tour upon determining that the user provided the correct answer (the 'expected response')." *Id*. at 42 (citing Facebook IPR, Ex. 1002 ¶ 130).

Patent Owner argues that Facebook's assertions fail for limitations 1[g]–[i] for the following reasons: (a) the claim requires the ability to provide an unexpected response; (b) a person of ordinary skill in the art would not have been motivated to modify Lamont with Wolf; and (c) Facebook uses differing evidence for the required "content piece" in different limitations. Facebook PO Resp. 46–61. We do not find that Patent Owner's arguments undermine Facebook's showing of the teaching of limitations 1[g]–[i].

As to the first issue, that is, that the claim requires the ability to provide an unexpected response. Facebook PO Resp. 46. We do not agree with Patent Owner's argument because it relies on Patent Owner's proposed claim construction for limitation 1[h] (*supra* Section IV.E.3), and we have not adopted that proposed construction.

Moreover, Petitioner asserts that, even under Patent Owner's proposed claim construction, Wolfe discloses not only determining whether a correct response has been received, but also determining whether an incorrect answer has been received. *See* Facebook Pet. Reply 2–3. We agree. As discussed in the Petition, consistent with Figure 3 of Wolfe, "if a user does not provide the correct response, it may be asked again to provide input and prevented from proceeding to the next listing until the user provides the correct response." Facebook Pet. 20 (citing Facebook IPR, Ex. 1004, Fig. 3, step 311). Petitioner's annotated portion of Wolfe's Figure 3 is reproduced below.



As depicted in Petitioner's annotated version of Wolfe's Figure 3, above, the step of "determining whether the received response matches the expected response" is reflected in step 311, but if it that response is not received, the action shown in on the "NO" pathway. Facebook Pet. Reply 2–3; Facebook Pet. 20.

As to the second issue, Patent Owner asserts that Lamont's disclosure on its user feedback is limited, and Petitioner never addresses its limited disclosure. Facebook PO Resp. 47–48. Patent Owner also contends that Facebook's rationale for combining Wolfe with Lamont lacks merit. *Id*. at 48–57. More specifically, Patent Owner asserts that Petitioner's rationale that Lamont provides express motivation to combine with Wolfe because of a common treasure hunt is flawed because the treasure hunt in each reference are not the same. *Id*. at 48–49. Patent Owner argues that "Lamont teaches a treasure hunt as a mandatory sequence of trigger points" ("hunt for the required locations," "but Wolfe's 'treasure hunt game' consists of 'puzzles solved at specific physical locations'" ("a series of separate puzzles at the physical locations"). *Id*. at 49 (emphasis omitted). Patent Owner asserts that a person of ordinary skill in the art would not understand either

references' "notion" of treasure hunt to be superior to the other. *Id*. (citing Facebook IPR, Ex. 2010 ¶ 141). Patent Owner contends that Facebook's alleged motivation to adopt Wolfe in combination because "a response provided directly from a user would have provided a clear and unequivocal indication that the user has reached a particular point in the tour—and that the user is aware of this fact," disregards Lamont's purpose to deliver location-specific content and a person of ordinary skill in the art "would not be motivated to transform a system designed to deliver locationally-specific information to a user into one that instead quizzes the user." *Id*. at 51–52 (citing Facebook IPR, Ex. 2010 ¶ 142). Patent Owner argues that because "Lamont and Wolfe provide complete and fully independent disclosures of their own different systems," a person of ordinary skill in the art would not be motivated to combine the references. *Id*. at 52 (citing Facebook IPR, Ex. 2010 ¶ 140).

Patent Owner additionally asserts that even if Lamont and Wolfe were combined, Facebook does not provide details on how the combination would receive user input. Facebook PO Resp. 53 (citing Facebook IPR, Ex. 2010 ¶ 155). Patent Owner refers to Lamont's limited user feedback, and "Facebook never identifies any Lamont/Wolfe combination component that receives Wolfe-style user input feedback." *Id*. (citing Facebook IPR, Ex. 2010 ¶ 157). Patent Owner argues that it is not arguing bodily incorporation and is instead arguing that Facebook has "left a meaningful — and fatal — gap in their analysis" in view of the differences in the prior art references. *Id*. at 56 (citing Facebook IPR, Ex. 2010 ¶ 163). Patent Owner also argues that Dr. Martin has provided rebuttal evidence on the reasonable expectation of success of the combination, with Dr. Martin testifying "that the user input components identified in Lamont and Wolfe are substantially

different," and Petitioner does not reconcile these "into a coherent system" and avoided related analysis. *Id*. at 56–57; Facebook IPR, Ex. 2010 ¶ 163.

We do not find that Patent Owner's arguments undermine Petitioner's persuasive showing of rationale to combine Lamont and Wolfe, as well as the demonstration of reasonable expectation of success of the combination. On the issue of the rationale to combine based on the treasure hunt, although Patent Owner argues that differences in the prior art makes the art uncombinable, the evidence supports otherwise. Lamont discloses that its system can be used in location-based treasure hunts (Facebook IPR, Ex. 1003, 2:24–28, 15:56–59), and Wolfe is directed to treasure hunt games with puzzles presented specific physical locations (Facebook IPR, Ex. 1004, 1:14–16). The evidence supports that there are advantages associated with the combination. As Mr. Schmandt testifies, the enhancement of game play of Lamont in Wolfe would provide greater enjoyment to tour customers. Facebook IPR, Ex. 1002 ¶ 99. Dr. Martin does not rebut that Lamont offers the potential for enhancement of game play. Facebook IPR, Ex. 2010 ¶¶ 136–145. Also, Lamont offers that advantage of an "indication that the user has reached a particular point in the tour – and that the user is aware of this fact," as Mr. Schmandt testifies. Facebook IPR, Ex. 1002 ¶ 99. Dr. Martin argues that Mr. Schmandt offers no need in Lamont for to confirm that a "user is aware" that they have reached a location, but even if this was a need, this could be accomplished by Lamont's GPS-driven system triggering a display of content and receiving a response leading to the next stop. Facebook IPR, Ex. 2010 ¶¶ 142–143. We agree with Mr. Schmandt that a direct indication from a user that they have reached a particular point in a tour and the user has awareness of that fact offers the potential advantage of specific user knowledge to a tour operator. Facebook IPR, Ex.

1002 ¶ 99. As Petitioner points out, GPS information alone may not be indicative of user awareness, as a user may be facing away from a landmark or may not have noticed it. Facebook Pet. Reply 22. These advantages offered by Wolfe to Lamont support the rationale to combine the references. *See KSR,* 550 U.S. at 417 ("[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.").

The evidence also supports Petitioner's showing that the prior references are combinable with advantages and a reasonable expectation of success. Rather than having limited user feedback as Patent Owner argues, the Petition indicates, and the reference supports, that Lamont discloses that its client device may be a mobile phone or a mobile PC client device 200. Facebook Pet. 51 (citing Facebook IPR, Ex. 1003, 8:54–55; Facebook IPR, Ex. 1002 ¶ 159). Wolfe also discloses the use of mobile phones that "include[e] a display or graphical user interface and internet accessibility." Facebook Pet. Reply 18–19 (citing Facebook IPR, Ex. 1004, 3:4–7; Facebook IPR, Ex. 1002 ¶ 57). Contrary to Patent Owner's arguments, the evidence thus indicates that the prior art references use similar devices. So although Patent Owner argues that under an embodiment in Lamont there is only limited user feedback provided (*see* Facebook PO Resp. 47–48 (citing Facebook IPR, Ex. 1003, 20:55–62), this argument does not take into account Lamont's enhanced user capabilities with a mobile phone. Patent Owner does not point to evidence that the techniques of Wolfe could not have been incorporated into Lamont, and Mr. Schmandt provides testimony that the incorporation would have offered advantages, as discussed above, and would have been implementable. Facebook IPR, Ex. 1002 ¶¶ 99, 101.

Further, we credit the testimony of Mr. Schmandt that a skilled artisan would have had a reasonable expectation of success of the combination of Lamont and Wolfe where "[f]rom an implementation standpoint, [Wolfe's] functionality could have been readily incorporated into the 'tour scripts' executed at the client device in Lamont," in view of the similarity of the user devices. Facebook IPR, Ex. 1002 ¶ 101.

As to the third issue, Patent Owner alleges that Facebook uses differing evidence for the required "content piece" in different limitations. Facebook PO Resp. 57–61. Patent Owner contends that Petitioner relies on Lamont's "media clip" for its assertions of a "content piece" for its assertions for part of limitations 1[b] and 1[f]. *Id*. at 58 (citing Facebook Pet. 14–15, 37). Patent Owner argues that Facebook then refers to Wolfe's disclosures for some of the language of limitations 1[b] and 1[g]. *Id*. at 58–59 (citing Facebook Pet. 18; Facebook IPR, Ex. 2010 ¶ 149). Patent Owner contends that although Petitioner discusses Lamont, Petitioner discusses the "expected response" "in the context of Wolfe's treasure hunt games with a 'content piece' presented by a 'trigger condition' in a 'set of rules' and a 'content package' that all come from one of Wolfe's treasure hunt games." *Id*. at 59 (citing Facebook Pet. 18–20; Facebook IPR, Ex. 2010 ¶ 150). Patent Owner argues that "Lamont's treasure hunts (hunts for the required locations) are not the same as Wolfe's treasure hunt games (puzzles at physical locations), so any such alleged 'content packages'—including the constituent 'content piece'—would not be identical." *Id*.

The evidence supports that Facebook consistently relies on the "media clip" of Lamont as the claimed "content piece." Facebook Pet. 14, 15, 17, 18, 37, 38, 41. Moreover, Facebook relies on Wolfe to teach the "expected response" in the claim limitations. *See id.* at 18. We do not discern

inconsistencies in the Petition on this issue; instead Patent Owner is relying on an incorrect assumption that Facebook's argument relies on bodily incorporating Wolf into Lamont's disclosure.

Accordingly, we determine that Facebook has demonstrated that the combination of Lamont, Wolfe, and Wang teaches limitations 1[g]–1[i] and sufficient rationale to combine the references has been demonstrated.

(6) Conclusion

Having considered the arguments and evidence, we determine that Facebook has shown by a preponderance of the evidence that the combination of Lamont, Wang, and Wolfe renders obvious claim 1 of the '599 patent.

ii. Independent Claims 12 and 19

For the challenges to claims 12 and 19, Facebook relies on similar evidence and argument to that presented for claim 1. Facebook Pet. 49, 50–55. Patent Owner presents the same arguments for these claims as those presented for claim 1, which we address above. *See* Facebook PO Resp. 27–61.

We have reviewed the evidence and argument and on this record we determine that Facebook has shown by a preponderance of the evidence that the combination of Lamont, Wang, and Wolfe renders obvious claims 12 and 19 of the '599 patent.

iii. Dependent Claims 4, 6, 7, 10, 11, 15, 17, 18, 22, 24, and 25

Facebook presents evidence and argument in support of its contentions that dependent claims 4, 6, 7, 10, 11, 15, 17, 18, 22, 24, and 25 are rendered obvious by Lamont, Wolfe, and Wang. Facebook Pet. 42–56. For claim 4, Facebook asserts that Lamont discloses "how a tour designer

can create a guided tour specifying content that to present based on certain conditions relating to contextual information." *Id*. at 42. Facebook further contends that "[t]he step of 'creating one or more context entries in a context manager,' occurs in Lamont when the tour designer uses the tour script software to create a tour script trigger point that specifies conditions." *Id*. at 43. For claim 6, Facebook argues that Lamont teaches a "high-level abstraction" by two pieces of information that are contained in a trigger point. *Id*. at 45. For claim 7, Facebook asserts that Lamont teaches that rules determine the tour which include a trigger component associated with a high-level abstraction. *Id*. at 48. For claim 10, Facebook contends that in Lamont "contextual information" can include time information, velocity, direction and other parameters. *Id*. For claim 11, as asserted for claim 1, Facebook contends that in Lamont the "content piece" can be a video or audio clip. *Id*. at 49. For claims 15, 17, 18, and 22, Facebook asserts that these claims are not materially different than claim 4, and are obvious for the same reasons. *Id*. at 50, 55–56. For claims 24 and 25, Facebook asserts that these claims are not materially different than claim 10, and are obvious for the same reasons. *Id*. at 56.

Patent Owner presents no arguments specific to these claims. *See* Facebook PO Resp. 27–61.

We have reviewed the evidence and argument and on this record we determine that Facebook has shown by a preponderance of the evidence that the combination of Lamont, Wang, and Wolfe renders obvious claims 4, 6, 7, 10, 11, 15, 17, 18, 22, 24, and 25 of the '599 patent.

6. Asserted Obviousness of Claim 9 Over Lamont, Wolfe, Wang, and Belimpasakis

Petitioner contends that claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Lamont, Wolfe, Wang, and Belimpasakis. Facebook Pet. 56–61. In support, Petitioner also relies upon the Schmandt Declarations. Facebook IPR, Ex. 1002, 1016.

We begin our discussion with a brief summary of Belimpasakis and then address the evidence and arguments presented.

a. Belimpasakis (Facebook IPR, Ex. 1007)

Belimpasakis is generally directed to methods and systems for content sharing. Facebook IPR, Ex. 1007, code (57). In particular, Belimpasakis describes a method of a user sharing content by the user selecting one to share the content with and the device will determine all necessary protocols and configuration for sharing the content. *Id*. at code (57), 4:56–5:1.

b. Analysis

Claim 9 recites the method of claim 1, "wherein presenting the content piece comprises sharing the content piece with a remote device." Facebook IPR, Ex. 1001, 24:26–28. Facebook contends that claim 9 would have been obvious over the combination of Lamont, Wolfe, and Wang in further view of Belimpasakis. Facebook Pet. 56–61. Facebook asserts that Belimpasakis describes several techniques for sharing content with a remote device, including sending content through email or instant messaging using a mobile phone. *Id*. at 57 (citing Facebook IPR, Ex. 1002 ¶ 176, n.6; Facebook IPR, Ex. 1007, 1:27–50). Facebook also refers to Belimpasakis's disclosure of content sharing using a personal resource file that allows a sender to share content by selecting a recipient and the device obtains the content and sends it. *Id*. (citing Facebook IPR, Ex. 1007, 4:34–55, 7:22–28,

7:37–39). Facebook asserts that a person of ordinary skill in the art would have been motivated to combine Belimpasakis with Lamont, Wolfe, and Wang because Belimpasakis provides an express motivation, stating, "[p]eople want to be able to share their content on many different levels with others including, for example, their family, friends and colleagues." *Id*. at 59 (citing Facebook IPR, Ex. 1007, 1:19–23). Facebook asserts that a person of ordinary skill would have been motivated "to allow guided tour users to share the content with which they are presented during a tour." *Id*. (citing Facebook IPR, Ex. 1002 ¶ 181).

Patent Owner presents no arguments specifically related to this claim. *See generally* Facebook PO Resp.; Facebook PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Facebook has shown by a preponderance of the evidence that the combination of Lamont, Wang, Wolfe, and Belimpasakis renders obvious claim 9 of the '599 patent.

7. Asserted Obviousness Grounds With Meyers

Petitioner contends that claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 are unpatentable under 35 U.S.C. § 103(a) as obvious over Lamont, Wolfe, Wang, and Meyers and claim 9 as obvious over Lamont, Wolfe, Wang, Belimpasakis, and Meyers. Facebook Pet. 61–66. Petitioner relies on Meyers as an additional ground for the teaching of the "content package" recited in the independent claims. *Id*. at 61.

Because we have determined that claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 are rendered obvious over Lamont, Wolfe, Wang, and Meyers and claim 9 is rendered obvious over Lamont, Wolfe, Wang, and Belimpasakis, we need not reach these other grounds for unpatentability of these claims. *See SAS,* 138 S. Ct. at 1359.

F. Conclusion As To Facebook's Challenges To Claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 Patent

For the foregoing reasons, we conclude that Facebook has shown by a preponderance of the evidence that claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 of the '599 patent are unpatentable. In summary:

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont, Wolfe, Wang	1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis	9	
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont , Wolfe, Wang, Meyers[20]		
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis, Meyers[21]		
Overall Outcome			1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	

[20] As explained above, because we determine challenged claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 are rendered obvious by Lamont, Wolfe, and Wang, we need not address the obviousness ground for these claims.
[21] As explained above, because we determine challenged claim 9 is rendered obvious by Lamont, Wolfe, Wang, and Belimpasakis, we need not address the obviousness ground for this claim.

V. TWITTER'S CHALLENGES TO CLAIMS 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, AND 25 OF THE '599 PATENT

A. Procedural Background

Twitter filed two petitions challenging claims of the '599 patent; one in IPR2021-01458 ("Twitter IPR" or "1458 IPR"), and one in IPR2021-01459 ("1459 IPR"). The Petition in the 1458 IPR (1458 IPR, Paper 3, "Twitter Pet.") challenges claims 1, 4, 6, 7, 9–12, 15, 17, and 18 of the'599 patent, and the Petition in the 1459 IPR (1459 IPR, Paper 3, "Twitter2 Pet.") challenges claims 19, 22, 24, and 25 of the '599 patent. The 1459 IPR was consolidated with the 1458 IPR. *See* Twitter IPR, Papers 11, 12, 14.

Pursuant to 35 U.S.C. § 314(a), on April 6, 2022, in the consolidated case, we instituted *inter partes* review on the following grounds:

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1, 6, 7, 9–12, 17–19, 24, 25	103(a)[22]	PALLAS[23]
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Yau[24]
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Kim[25]
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Yau, Kim

Twitter Pet. 12; Twitter2 Pet. 12; Twitter IPR, Paper 11 ("Twitter Inst. Dec."); Paper 14 (Twitter2 Inst. Dec.").

Patent Owner filed a Patent Owner Response ("Facebook PO Resp."). Twitter IPR, Paper 25. Patent Owner also filed a Declaration of David Martin, Ph.D. with the Response to support its positions. Twitter IPR, Ex. 2013. Twitter filed a Reply ("Twitter Pet. Reply") to the Patent Owner Response. Twitter IPR, Paper 28. Twitter also filed a Declaration and Reply Declaration of Dr. Don Turnbull. Twitter IPR, Ex. 1003, Ex. 1025.

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[22] 35 U.S.C. § 103 (2006), amended by Leahy–Smith America Invents Act, Pub. L. No. 112-29 § 103, sec. (n)(1), 125 Stat. 284, 287, 293 (2011) (effective Mar. 16, 2013). This version of § 103 applies because the effective priority date of the '599 patent is before the effective date of the AIA amendments. *See* Twitter, Ex. 1001, code (22) (filing date of December 2, 2008).

[23] Sobah Abbas Petersen & Jan-Kristian Markiewicz, *PALLAS: Personalized Language Learning on Mobile Devices*, 5th IEEE Int'l Conf. Wireless, Mobile & Ubiquitous Tech. Educ. 52 (Mar. 23–26, 2008) (Twitter, Ex. 1004).

[24] Jane Yau & Mike Joy, *A Context-aware and Adaptive Learning Schedule Framework for Supporting Learners' Daily Routines*, 2d Int'l Conf. Sys. (2007) (Twitter, Ex. 1005).

[25] InSu Kim et al., *CAST$_{middleware}$, Security Middleware of Context-Awareness Simulation Toolkit for Ubiquitous Computing Research Environment*, 344 Lecture Notes Control & Info. Sci. 506 (2006) (Ex. 1006).

Patent Owner filed a Sur-reply to Petitioner's Reply ("Twitter PO Sur-reply"). Twitter IPR, Paper 36.

An oral hearing was held on January 11, 2023. A transcript of the hearing is included in the record. Twitter IPR, Paper 49 ("Twitter Tr.").

B. Related Matters

Both parties are involved in the following related U.S. district court case that involves the '599 patent: *Palo Alto Research Center Inc. v. Twitter, Inc.*, No. 2-20-cv-10754-AB (C.D. Cal. filed Nov. 25, 2020). Twitter Pet. 10; Twitter IPR, Paper 4, 2. The parties also identify the following related matters: *Palo Alto Research Center Inc. v. Facebook, Inc.,* No. 2:20-cv-10753-AB (C.D. Cal. filed Nov. 25, 2020); *Palo Alto Research Center Inc. v. Snap Inc.*, No. 2:20-cv-10755-AB (C.D. Cal. filed Nov. 25, 2020). Twitter Pet. 10–11; Twitter IPR, Paper 4, 2–3.

As discussed above, claims of the '599 patent are also challenged in the Snap and Facebook IPRs.

C. The '599 Patent

The '599 patent is titled "Context And Activity-Driven Content Delivery And Interaction" and issued on July 16, 2013, from an application filed on December 2, 2008. Twitter IPR, Ex. 1001, codes (22), (45), (54).

As indicated above, the '599 patent is directed to "a computing device that delivers personally-defined context-based content to a user." Twitter IPR, Ex. 1001, code (57). The '599 patent states that

> [t]his computing device receives a set of contextual information with respect to the user, and processes the contextual information to determine whether some aspect of the current context can be associated with a probable activity being performed by the

> user. The computing device then determines whether either or both the context and current activity of the user satisfy a trigger condition which has been previously defined by the user. If so, the computing device selects content from a content database, based on the context or activity, to present to the user, and presents the selected content.

Facebook IPR, Ex. 1001, 1:52–62. Figure 1, reproduced below, illustrates a content management system in accordance with the invention. *Id.* at 2:54–55.

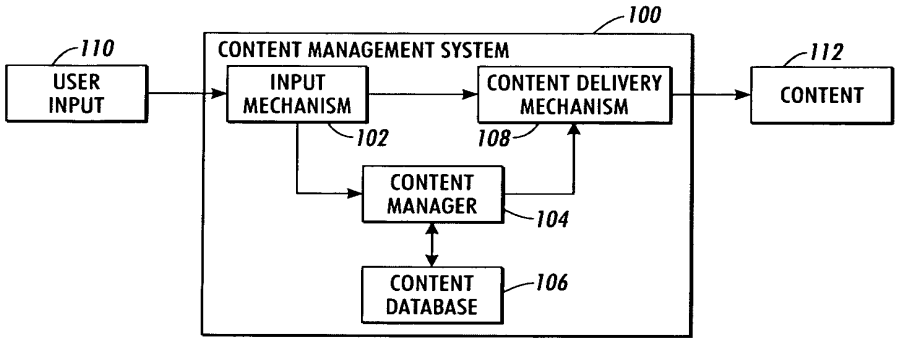

FIG. 1

As depicted in Figure 1, above, content management system 100 presents content 112 to a user. Twitter IPR, Ex. 1001, 5:18–19. Content 112 can be presented in response to actions being performed by the user, or in accordance with other information associated with the user. *Id.* at 5:18–21. Content management system 100 allows a user to create and store content, and associate the content with a given user-defined context. *Id.* at 5:21–23. For instance, content management system 100 can remind a user to buy groceries as the user is driving past a grocery store after work or can read specific items on a grocery list to a user when walking across a specific grocery store aisle. *Id.* at 5:28–32. Input mechanism 102 receives user input

101, content manager 104 controls how content 112 is stored in content database 106 and how it is selected for playback, and content delivery mechanism 108 controls how content 112 is presented to a user. *Id*. at 5:36–57.

D. Illustrative Claim

Twitter challenges claims 1, 4, 6, 7, 9–12, 15, 17, 18, 19, 22, 24, and 25 of the '599 patent. Claims 1, 12, and 19 are the only independent claims, and claim 12 is reproduced below, with bracketed reference notations added to the limitations for reference purposes.[26]

12. A computer-readable storage medium storing instructions that when executed by a computer cause the computer to perform a method for delivering context-based content to a first user, the method comprising:

> [12.1] receiving at least one content package, wherein the content package includes at least one content piece and a set of rules associated with the content package, wherein the set of rules includes a trigger condition and an expected response, and wherein the trigger condition specifies a context that triggers a presentation of the content piece;
>
> [12.2] receiving a set of contextual information with respect to the first user;
>
> [12.3] processing the contextual information to determine a current context for the first user;
>
> [12.4] determining whether the current context satisfies the trigger condition;
>
> [12.5] in response to the trigger condition being satisfied, presenting the content piece to the first user;
>
> [12.6] receiving a response from the first user corresponding to the presented content piece;
>
> [12.7] determining whether the received response matches the expected response; and

[26] We use Twitter's reference notations.

> [12.8] performing an action based on an outcome of the determination.

Twitter IPR, Ex. 1001, 24:40–63.

E. Analysis

1. The Parties' Arguments

In our Decision on Institution, we concluded that the arguments and evidence advanced by Twitter demonstrated a reasonable likelihood that claims 1, 4, 6, 7, 9–12, 15, 17, 18, 19, 22, 24, and 25 of the '599 patent would have been unpatentable as obvious under 35 U.S.C. § 103. Twitter Inst. Dec. 14–30; Twitter2 Inst. Dec. 15–30. Here, we determine whether Twitter has established by a preponderance of the evidence that the challenged claims are obvious. 35 U.S.C. § 316(e). We previously instructed Patent Owner that "Patent Owner is cautioned that any arguments not raised in the response may be deemed waived." Twitter IPR, Paper 13, 8 *see also* 37 C.F.R. § 42.23(a) ("Any material fact not specifically denied may be considered admitted."); *In re NuVasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding patent owner waived an argument addressed in the preliminary response by not raising the same argument in the patent owner response). Additionally, the Board's Trial Practice Guide states that the patent owner response "should identify all the involved claims that are believed to be patentable and state the basis for that belief." Consolidated Trial Practice Guide, 66 (November, 2019).[27]

On the record before us, we note that we have reviewed arguments and evidence advanced by Twitter to support its unpatentability contentions,

[27] Available at https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf.

where Patent Owner chose not to address certain limitations in its Patent Owner Response. In this regard, the record contains persuasive arguments and evidence presented by Twitter regarding the manner in which the prior art teaches the corresponding limitations of claims 1, 4, 6, 7, 9–12, 15, 17, 18, 19, 22, 24, and 25 of the '599 patent, as well as a rationale to combine the prior art references.

2. Level of Ordinary Skill in the Art

Relying on Dr. Turnbull's testimony, Twitter argues that a person of ordinary skill in the art "would at minimum have a bachelor's in software, computer, or electrical engineering or computer science with at least two years' experience in software development, including with respect to context-aware devices and systems, or the equivalent." Twitter Pet. 13–14 (citing Twitter IPR, Ex. 1003 ¶ 24). Twitter also contends that "[a]dditional graduate education could substitute for professional experience, or significant experience in electronic messaging could substitute for formal education." *Id*. at 14 (citing Twitter IPR, Ex. 1003 ¶ 24).

For this proceeding, Patent Owner and Dr. Martin apply this level of skill in the art. Twitter PO Resp. 12; Twitter IPR, Ex. 2013 ¶ 25. Because it is consistent with the '599 patent and the asserted prior art, we adopt Twitter's proposed level of ordinary skill in the art. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

3. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2021). Under the

principles set forth by our reviewing court, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Patent Owner makes similar arguments to those made in the Snap and Facebook cases, discussed above. More specifically, Patent Owner asserts that the limitation "determin[ing/e] whether the received response matches the expected response," recited in independent claims 1, 12, and 19, requires the possibility of expected and unexpected responses in view of the claim terms, Specification, and prosecution history. Twitter PO Resp. 16–27. Patent Owner asserts that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to content must be possible." *Id.* at 17. Patent Owner argues that the Board's determination in the Decision on Institution was in error, and "[t]he 'determin[ing/e]'" limitation requires the possibility of an unexpected response (and the final 'perform[ing]' limitation relies on the result of the 'determin[ing/e] limitation." *Id.* at 15 (citing Twitter Inst. Dec. 26).

Patent Owner relies on the claim language itself and, more specifically, limitations 12.1 and 12.6–12.8, stating that these recitations mean that "a content package must include content and a set of rules, and the

set of rules must include at least one expected response related to the content," and "requires receiving a response to presented content, determining [] that [the] response matches at least one expected response, and then performing some action based on the determination." Twitter PO Resp. 17. Patent Owner argues that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to content must be possible. There would be no need for the determination limitation if no unexpected responses were possible; the claim would simply require performing an action associated with the received (and expected) response." *Id*. at 17. Patent Owner cites to case law in support of its assertion that interpretation of terms that render parts of claims superfluous is disfavored. *Id*. at 17–18 (citing e.g., *Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1375 (Fed. Cir. 2005)). Patent Owner further contends that the claim language dictates that the determining step "requires the possibility of an unexpected (e.g., incorrect or undesired) response being received—to give meaning to the 'determin[e/ing] whether' language." *Id*. at 18 (citing Twitter IPR, Ex. 2013 ¶¶ 116–122). Dr. Martin testifies that "the system must determine whether the received response matches the expected response, or as the alternative demanded by the 'determining whether' claim, that the received response is unexpected" (Twitter IPR, Ex. 2013 ¶ 119).

Patent Owner asserts that the Specification of the '599 patent requires the possibility of expected and unexpected responses. Twitter IPR, PO Resp. 19–22. Patent Owner refers to Tables 1 and 2 of the Specification in support of the contention that there are actions specified "when a user

response is expected or correct" or "when a user response is unexpected or incorrect." *Id*. at 19–20 (citing Twitter IPR, Ex. 1001, 13:1–7, Tables 1, 2).

Patent Owner additionally refers to the prosecution file history of the '599 patent. Twitter PO Resp. 22–27. Patent Owner contends that the original claims do not refer to expected responses, determining if responses matched expected responses, or performing actions based on that determination. *Id.* at 23 (citing Twitter IPR, Ex. 1002, 56–64). After continued prosecution, including further amendments, a May 23, 2012, amendment was submitted that included limitations directed to determining if responses matched expected responses, or performing actions based on that determination, which are the same as those in the issued '599 patent. *Id.* at 23–25 (citing Twitter IPR, Ex. 1002, 348–362). Patent Owner refers to an agenda for applicant's May 9, 2012, interview with the examiner that states:

> the system receives a response from the user corresponding to the presented content, determines whether the response matches the defined expected response, and performs an action based on the outcome of the determination (see instant application, pars. [0062]- [0064]). For example, ***if the user fails to mimic the played audio signal correctly***, the system replays the audio file for the user (see instant application, par. [0056]).

Twitter IPR, Ex. 1002, 346 (quoted at Twitter PO Resp. 26). Patent Owner contends that because the "applicant called out handling unexpected responses (failure to mimic an audio signal) when discussing the relevance of the determination limitation," that a person of skill in the art would have understood this to require the possibility of both expected and unexpected responses. Twitter PO Resp. 26–27 (citing Twitter IPR, Ex. 2014 ¶¶ 131–135).

We do not agree with Patent Owner's assertion that the claim language requires an ability to determine whether a received response is an

expected response or an unexpected response. Limitation 12.7 does not recite this limitation, nor is the limitation required to give meaning to the claim. Patent Owner's view is inconsistent with limitation 12.1, which recites that the content package with a set of rules includes "an expected response," but there is no mention that an unexpected response is part of the content package. Although Patent Owner asserts that the claim requires the inclusion of a determination of whether a received response matches an unexpected response, that is not recited or suggested by the claim language itself. *See* Twitter PO Resp. 17–18; Twitter IPR, Ex. 2013 ¶¶ 116–122. In sum, the claim language indicates it determines whether there is a match of a received response with the expected response; however, the claim does not require determining whether there is a match of a received response with an unexpected response.

Turning to the Specification, Table 1 of the '599 patent is instructive and is reproduced below.

TABLE 1

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpI.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHello.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend
JpHowDoYouDo.mp3	Any	Any	Moving	Mimic	7-day-suspend	5-min-suspend

TABLE 1-continued

Content	Time	Location	State	Response	Action Correct	Action Incorrect
JpGoodnight.mp3	>21:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend
JpGoodmorning.mp3	<10:00	Bedroom	Moving	Mimic	7-day-suspend	5-min-suspend

Twitter IPR, Ex. 1001, 10:57–11:9. The '599 patent explains that Table 1, above, presents an exemplary set of rules that correspond to a number of audio clips in Japanese for practicing pronunciations to a number of words. *Id*. at 11:11–15. The time column allows a user for specifying a time of day when content can be presented, the location column is for specifying a location for where content can be presented, and the state column is for specifying an action that the user can be performing when content is presented. *Id*. at 11:15–21. As an example, a user learning Japanese can program the content management system 240 to play "good morning" in Japanese when the user is moving around the bedroom before 10 AM, and to

play "goodnight" in Japanese when the user is entering or moving around the bedroom after 9 PM. Of note, the '599 patent explains that

> [t]he response column *allows a user to specify an expected response* to the presentation of content 253. The action correct column allows a user to specify actions that content management system 240 can perform if the user provides a correct response. The action incorrect column allows a user to specify actions that content management system 240 can perform if the user does not provide a correct response (Ex. 1001, 11:27–33 (emphasis added)).
>
> An *action correct column entry* can obtain a value that specifies an action to be performed by content management system 240 in the event that the *user provides an expected response.* Furthermore, an *action incorrect column entry* can obtain a value that specifies an action to be performed by content management system 240 on the occasion that t*he user does not provide an expected response* (*id*. at 13:1–7 (emphasis added)).

These descriptions are consistent with the language of limitations 12.1 and 12.7 as recited, and as discussed above. We further note that the Specification only discloses determining whether a received response is *expected* — and the received response may or may not be the expected response. *See* Twitter IPR, Ex. 1001, 11:27–33; 12:50–13:10; 13:67–14:11. Patent Owner does not identify in the Specification, nor do we discern, any disclosure of determining whether a received response is an "*unexpected* response." *See generally* Twitter PO Resp.; Twitter PO Sur-Reply.

Although Patent Owner asserts that there is support in the Specification for its interpretation of the "determining" limitation, we are not persuaded. More specifically, Patent Owner contends that Tables 1 and 2 of the Specification "show actions to be taken when a user response is correct/expected and incorrect/unexpected." Twitter PO Resp. 19–21. Dr. Martin testifies that "references to 'action correct' and 'action incorrect'

indicate that the system being described will determine whether the received response is correct or incorrect." Twitter IPR, Ex. 2013 ¶ 124. We do not agree with Patent Owner's assertions because they are premised on the characterization of the claimed "received response" as either "expected response" or "unexpected" which is "considered incorrect." This is not what the Specification discloses and what is claimed—instead, as discussed above, the "*received response*" is checked to determine if it matches the "*expected response*," and an action is performed based upon that determination.

Patent Owner also asserts that "[f]or the determination limitation to have any meaning, both expected and unexpected user responses to content must be possible," otherwise, "[t]here would be no need for the determination limitation if no unexpected responses were possible." Twitter PO Resp. 17. We agree with Twitter, however, that even if Patent Owner were correct that "the claims could have accomplished the same ultimate results in a different way this does not change that, as drafted, the claims do not require unexpected responses." Twitter Pet. Reply 4. As discussed above, the claim and Specification only require a determination of whether a received response matches an *expected response*.

Patent Owner additionally argues that the prosecution history supports the inclusion of "unexpected response" into the claim. We do not agree. During prosecution of the '599 patent, the independent claims were amended to add "determining whether the received message matches the expected response." *See* Twitter IPR, Ex. 1002, 349. The amendments are directed to matching the "expected response" — there is no mention or suggestion of an "unexpected response" that is considered or determined. Patent Owner also refers to a statement made by the applicant that states that "the system

receives a response from the user corresponding to the presented content, [and] determines whether the response matches the *defined expected response*," and then "if the user fails to mimic the played audio signal correctly, the system replays the audio file for the user." Twitter IPR, Ex.1002, 346. This discussion does not mention any consideration or determination of an unexpected response, but rather only identifies an action taken based only on the determination of whether there is a match of the received response and the expected response. *See id*. ("the system receives a response from the user corresponding to the presented content, determines whether the response matches the predefined expected response, and performs an action based on the outcome of the determination.").

In view of the evidence and argument as discussed above, our view is that Patent Owner's assertions that "unexpected response" should be included in the clam term amounts to impermissibly attempting to write a limitation into the claim. Accordingly, we decline to adopt Patent Owner's proposed interpretation of the "determin[e/ing] whether the received response matches the expected response " to require the possibility of expected and unexpected response and instead adopt the plain meaning of the claim term.

We determine that we need not expressly construe any other claim terms to resolve the parties' disputes on the current record. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co*., 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and

only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.,* 200 F.3d 795, 803 (Fed. Cir. 1999))).

4. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of obviousness or nonobviousness.[28] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

5. Asserted Obviousness of Claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 Over PALLAS and Yau

Twitter contends that claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 are unpatentable under 35 U.S.C. § 103 as obvious over PALLAS and Yau. Twitter Pet. 14–100; Twitter2 Pet. 18–98. In support, Twitter also relies upon the Turnbull Declarations. *See* Twitter IPR, Ex. 1003; Twitter IPR, Ex. 1025. Patent Owner argues that the prior art does not teach all the limitations of the claims and hindsight has been employed in combining the prior art. *See* Twitter PO Resp. 27–49. In support, Patent Owner also relies on the Martin Declaration. Twitter IPR, Ex. 2013.

[28] The parties present no evidence relating to objective indicia of nonobviousness.

We begin our discussion with brief summaries of PALLAS and Yau, and then address the evidence and arguments presented.

a. PALLAS (Twitter IPR, Ex. 1004)

PALLAS is an article associated with the Fifth IEEE International Conference on Wireless, Mobile, and Ubiquitous Technology in Education, held from March 23–26, 2008. Twitter IPR, Ex. 1003 ¶ 70; Twitter IPR, Ex. 1004, 52; Twitter IPR, Ex. 1014 ¶ 11. According to Mr. MacPherson's testimony, copies of the article were "made available no later than the last day of the conference." Twitter IPR, Ex. 1014 ¶ 11. The article bears a copyright notice dated 2008 (Twitter IPR, Ex. 1004, 52) and Twitter argues that the article was available and searchable on the IEEE Xplore website on April 15, 2008. Twitter Pet. 14.

PALLAS describes a system that "enables real life language learning scenarios by providing personalized and contextualised access to learning resources via a mobile device." Twitter IPR, Ex. 1004, 52. The system includes a central server that communicates with students' mobile devices and with various providers of language-learning content (such as teachers or publishing houses). *Id.* at 55, 58, Fig. 2. The mobile device includes a "mobile smart client" that is responsible for presenting the learning content to the student. *Id.* at 56. Content modules for the mobile client may include "[Point of Interest] Info," "Task," "MP Quiz," "Word Fill-in," "Glossary Training," and "Text." *See id.* at Fig. 3. An example of the mobile client application is reproduced below in PALLAS's Figure 4:

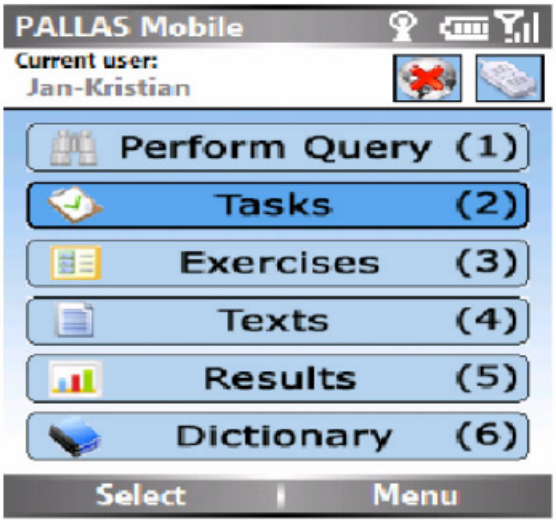

Figure 4. Mobile client: activities for the learner

Figure 4 of PALLAS, above, "shows the main window of the PALLAS mobile client." Twitter IPR, Ex. 1004, 57. It shows a menu with the following content items: "Perform Query," "Tasks," "Exercises," "Texts," "Results," and "Dictionary." Also, "[a] context bar is displayed on the top of the window, which displays the current learner." *Id.* Immediately to the right of the context bar is a world icon that "indicates if the current location is known" (shown here with a cross indicating that the location is unknown). *Id.*

The system allows the learning experience to be personalized based on the learner's context, "using the profile of the learner and environmental parameters." Twitter IPR, Ex. 1004, 54. "Environmental parameters include location, time and day and the mobile device that is used by the learner." *Id.*; *see also id.*, Fig. 1 (including weather as an environmental parameter). "The mobile client also displays triggers that are fired based on the context information." *Id.* at 57. For example, the system can include

"[c]ontext triggers [that] provide automatic notifications to the learner if the learner is in the vicinity of a point of interest." *Id*. This is illustrated below in Figure 6 of PALLAS, reproduced below:

Figure 6. Mobile client: context trigger

The illustration in reproduced Figure 6, above, shows an example mobile client screen in which "the learner is in the vicinity of an exhibition that fits the profile of the learner." Twitter IPR, Ex. 1004, 57. The world symbol next to the context bar is marked to indicate "that the location is known." *Id.* A notice on the screen tells the learner that they are "in the vicinity of the French art exhibition held at the ArtIt Gallery," and provides the address of the exhibit. *Id*. The notice also provides a "Read more" button and states, "Press 'Read More' for information about French artists." *Id.*

b. Yau (Twitter IPR, Ex. 1005)

Yau is entitled "A Context-aware and Adaptive Learning Schedule Framework for Supporting Learners' Daily Routines." Twitter IPR, Ex. 1005, 1. Twitter contends that the authors presented Yau to the Second

International Conference on Systems of IEEE in 2007, and that the article was published and searchable on the IEEE Xplore website on May 7, 2007. Twitter Pet. 19 (citing Twitter IPR, Ex. 1003 ¶¶ 78–82; Twitter IPR, Ex. 1016 (stating that the article was added to IEEE Xplore on May 7, 2007); Twitter IPR, Ex. 1017, 8, 24).

Yau's learning system "makes use of a learning schedule to support the students' daily routines, adapts the activities to the student's learning styles and then selects the appropriate activity for the learner based on their current learning context." Twitter IPR, Ex. 1005, 1. Learning activities may include "[f]ormal assessments" which Yau describes as a type of "compulsory activit[y]." *Id.* at 4.

In Yau, the contextual information comes from a "scheduled events database (such as the time available for learning and the type of location), and two sensors, namely GPS for location detection and a microphone for noise detection." Twitter IPR, Ex. 1005, 3, Fig. 1; *see also id.* at 5 (suggesting the use of other sensors to detect light levels and temperature). From this contextual information, Yau's system determines "the current context that the learner is situated in," such as "the actual physical address of the location," the type or category of location, the time available for learning based on the student's schedule, and the noise level. *Id.* at 5.

Yau's system also includes "context-triggered actions," in which actions are "invoked automatically when a contextual element or a mixture of contextual elements are fulfilled." Twitter IPR, Ex. 1005, 3.

c. Discussion

i. Claim 12

The Petition asserts that PALLAS and Yau render claim 12 obvious. Twitter Pet. 25–74. Below we consider the claim 12 limitations in turn.

(1) Preamble

The preamble of claim 12 recites "[a] computer-readable storage medium storing instructions that when executed by a computer cause the computer to perform a method for delivering context-based content to a first user." Twitter IPR, Ex. 1001, 24:40–43. Twitter contends that PALLAS discloses a computer-readable storage medium as recited, either as part of its server or its mobile device. *See* Twitter Pet. 25–30, n.7 (citing Twitter IPR, Ex. 1001, 3:24–33, 3:42–49; Twitter IPR, Ex. 1003 ¶¶ 78, 94–121; Twitter IPR, Ex. 1004, 52, 55–58, Figs. 1–6).

Patent Owner presents no arguments specifically related to the preamble. *See generally* Twitter PO Resp.; Twitter PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Twitter has demonstrated that PALLAS teaches the preamble of claim 12.[29]

(2) Limitation 12.1

Limitation 12.1 recites the step of "receiving at least one content package." Twitter IPR, Ex. 1001, 24:44. The content package must include "at least one content piece and a set of rules associated with the content package, wherein the set of rules includes a trigger condition and an

[29] We need not determine whether the preamble of claim 12 is limiting because Twitter has shown that PALLAS discloses the preamble. *See Nidec*, 868 F.3d at 1017.

expected response, and wherein the trigger condition specifies a context that triggers a presentation of the content piece." *Id*. at 24:44–49. Twitter contends that PALLAS discloses this limitation, at least in combination with Yau. *See* Twitter Pet. 31–45, nn.8–10 (citing Twitter IPR, Ex. 1001, 4:61–5:8, 5:57–58, 10:8–9; Twitter IPR, Ex. 1003 ¶¶ 122–186; Twitter IPR, Ex. 1004, 53–58, Figs. 1–4, 6; Twitter IPR, Ex. 1005, 2–5).

In PALLAS, Twitter contends that the recited "content package" is the "set of 'data' including, e.g., (a) 'context trigger,' (b) 'exercise,' 'test,' 'MP Quiz,' and (c) answers to 'exercise,' 'test,' or 'MP Quiz.'" Twitter Pet. 31. Twitter identifies exercises, tests, or quizzes as the recited "content piece," and identifies the recited "expected response" as the correct answers in response to an exercise, test, or quiz. Twitter Pet. 31, 38–39, 44–45.

Twitter also argues that Yau discloses a trigger condition with respect to its learning content (e.g., its formal assessments), and that such triggering occurs when the system presents the content "automatically when a contextual element . . . [is] fulfilled." Twitter Pet. 37 (alterations in original) (quoting Ex. 1005, 5) (citing Ex. 1003 ¶¶ 153–164; Ex. 1005, 2–5). Twitter contends that "Yau explicitly discloses displaying 'formal assessments' based on user context" citing Yau's disclosure that "Sarah is in the library whilst Amy is in the computer lab. They would all like to undertake . . . learning activities based on their current learning situation . . . [Formal assessments] has been selected for Sarah and Amy." *Id*. at 43 (citing Twitter IPR, Ex. 1005, 4). According to Twitter, a person of ordinary skill in the art "would have understood [Yau's disclosure of formal assessments] as a disclosure of tests with answers for comparing against learner's responses to assess knowledge/performance/skill (contrasting 'un-assessed' exercises whose responses are unchecked)." *Id*. at 43. Twitter argues that an

ordinarily skilled artisan would have had reason "to implement PALLAS's context-triggerbased content display using Yau's beneficial teachings of displaying assessments/questions based on context, and of particular context pattern triggers advantageously optimized for, e.g., quiz taking." *Id.* According to Twitter, this modification "would have been a routine implementation choice" for which there would have been a reasonable expectation of success. *Id.* (citing Twitter IPR, Ex. 1003 ¶¶ 178–180).

Patent Owner presents several arguments related to this limitation, which we discuss below. Twitter PO Resp. 28–49. We do not find that Patent Owner's arguments undermine Petitioner's showing of the teaching of limitation 12.1 by the prior art with articulated reasoning with rational underpinning to support the combination of prior art.

(a) Combination of PALLAS and Yau

We begin with Patent Owner's argument that the combination of PALLAS and Yau does not teach triggering exercises/tests/quizzes based on context. Twitter PO Resp. 39–44. Patent Owner argues that neither PALLAS nor Yau "trigger[s] (or render[s] obvious triggering) an exercise/test/quiz based on context." *Id.* at 39 (citing Twitter IPR, Ex. 2013 ¶¶ 82–83, 88, 142–151). Patent Owner asserts that "Yau discloses that the student indicates a desire to undertake a learning activity, but does not teach directly presenting anything like Yau's 'formal assessment.'" *Id.* at 39–40 (citing Twitter IPR, Ex. 1005, 4; Twitter IPR, Ex. 2013 ¶ 165). Patent Owner argues that "[o]nce the student decides to participate in a learning activity, Yau considers the student's learning style . . . and environment in order to determine what content to present to that student." *Id.* at 40 (citing Twitter IPR, Ex. 1005, 3; Twitter IPR, Ex. 2013 ¶¶ 161–162). Patent Owner also contends that Yau does not teach triggering the display of formal

assessments, nor triggering the display of PALLAS's exercises/tests/quizzes. *Id*. at 40 (citing Twitter IPR, Ex. 2013 ¶¶ 163–165). Dr. Martin testifies that "Yau only provides recommendations after a user has expressed interest in engaging in activity," and "Yau has no discussion of a contextual scenario that causes . . . a recommendation without being prompted by a user." Twitter IPR, Ex. 2013 ¶ 166 (citing Twitter Pet. 43; Twitter IPR, Ex. 1003 ¶ 178).

Patent Owner further asserts that "[t]he 'IF-THEN' and 'context-triggered approach'" "are not mentioned in the context of Yau's 'formal assessment[s],' but instead in the context of generic attributes Yau's designers wanted for their 'proposed system.'" Twitter PO Resp. 41 (citing Twitter IPR, Ex. 1005, 3, 5; Twitter IPR, Ex. 2013 ¶¶ 97–100).

We do not agree with Patent Owner's arguments. Yau discloses the following:

> Four users are considered in our sample scenario to illustrate our adaptation process: John – an active learner, Peter – a reflective
> learner, Sarah – a visual learner and Amy – a verbal learner. The activities will be adapted to the different learning styles, where appropriate. Some of the activities defined in our system are as follows –
>
> A. Formal assessments
> B. Un-assessed exercises
> C. Pre-lecture notes
> D. Learning from examples
> E. Review activity
> F. Discussion about work
>
> It is an hour prior to their lecture. John is commuting on a quiet train for an hour; Peter is commuting on a noisy bus also for an hour; Sarah is in the library whilst Amy is in the computer lab. They all would like to undertake some learning activities based on their current learning situation. B has been selected for

> John as it is considered quiet enough for John to concentrate on the quiet train; C has been selected for Peter; and A has been selected for Sarah and Amy. In addition, a visual version of A has been selected for Sarah whereas a verbal version has been selected for Amy.

Twitter IPR, Ex. 1005, 3–4. We agree with Petitioner that Yau discloses that the presentation of exercises/tests/quizzes, such as Yau's formal assessments, are triggered based on context. We do not discern any disclosure in Yau that the display of a learning exercise is only prompted by the student indication of a desire to undertake a learning activity, as Patent Owner argues. Although Yau makes the general statement that "[t]hey [Peter, Sarah, Amy, John] all would like to undertake some learning activities based on their current learning situation" (Twitter IPR, Ex. 1005, 4), Yau's discussion above indicates that the presentation of the learning exercise is prompted by the student's context, that is, where they are at a certain time such as Amy being in the computer lab in the hour prior to a lecture. In further support, Yau discloses that "[w]hen the context has been identified and a context pattern is inferred, this information is combined with the filtered learning activities according to the learner's preferred learning styles, ***and context-aware learning activities <u>are output</u>***." Twitter Pet. Reply 17 (quoting Twitter IPR, Ex. 1005, 5; citing Twitter Pet. 22; Twitter IPR, Ex. 1003 ¶¶ 162, 465). This supports Twitter's assertion that there is presentation of a "context-aware learning activity" when a certain context has been identified, such as the presentation of a formal assessment to Amy, as Yau describes above, and Twitter relies upon. Twitter IPR, Ex. 1005, 4–5.

Thus, as Twitter asserts and in view of these disclosures, we agree with Twitter that "Yau accounts for 'learner's schedule[d] events,' 'available

time,' 'type of location,' and other contextual information to ***automatically determine*** whether users would like to undertake learning activities." Twitter Pet. Reply 18 (citing Twitter IPR, Ex. 1005, 2 3, 5 ("A check . . . to see if the information from the database corresponds with the location sensor (i.e. a check on whether the learner is really keeping his/her schedule)."), Fig.1; Twitter IPR, Ex. 1025 ¶ 49; Twitter IPR, Ex. 1003 ¶¶ 85, 157–162, 238, 435, 451, 517; Twitter Pet. 20–21). Accordingly, the evidence of record support that Yau teaches that context triggers the display of a content piece, such as an exercise/test/quiz.

Patent Owner also argues that Twitter asserts that PALLES' content piece is "'exercise[s],' 'test[s],' and/or 'MP Quiz[zes],'" but also contends that Yau's "formal assessment" is the claimed content piece. Twitter PO Resp. 32. Patent Owner argues that "Twitter points back to its limitation 12.1 PALLAS evidence for the purported 'content piece'" and also does not mention Yau for limitation 12.5 and 12.6 and "only conclusorily states that 'PALLAS in view of Yau renders obvious triggering an exercise/test/quiz.'" *Id*.

Patent Owner's arguments overlook Twitter's assertion, with Dr. Turnbull's supporting testimony, that a person of ordinary skill in the art would have understood that Yau's formal assessments are "tests with answers for comparing against learner's responses to assess knowledge/performance/skill (contrasting with 'un-assessed' exercises whose responses are unchecked)." Twitter Pet. 43; Twitter IPR, Ex. 1003 ¶ 154. Further, Patent Owner overlooks Petitioner's assertion that it is implementing PALLAS's context-triggerbased content display using Yau's teachings of displaying assessments/questions based on context. Twitter Pet. 43.

Patent Owner also asserts that in the PALLAS-Yau combination, Twitter does not explain how a person of ordinary skill in the art would have combined the prior art in the manner Petitioner alleges. Twitter PO Resp. 42. Patent Owner argues that "PALLAS says nothing about forcing quizzes, tests, or exercises on its users without the users asking for such exercises," and a person of skill would understand that the combined system still requires that a student select a learning activity and that PALLAS's system should be unobtrusive because learners "may have small time slots to engage in learning." *Id*. (citing Twitter IPR, Ex. 2013 ¶ 168; Twitter IPR, Ex. 1004, 54). Patent Owner further contends that "Twitter's conclusory, hindsight-driven statements" do not suffice and PALLAS teaches away from the modifications suggested by Twitter. *Id*. at 42–43 (citing Twitter IPR, Ex. 2013 ¶ 144). Patent Owner argues that because a learner may not have time to complete a test, a person of ordinary skill in the art would not be motivated to change PALLAS to trigger exercises/tests/quizzes based on location or time. *Id*. at 43 (citing Twitter IPR, Ex. 2013 ¶¶ 142–144).

The evidence of record does not support Patent Owner's arguments. As discussed, Petitioner relies PALLAS's content display using Yau's teachings of display of the content piece based on context, and, in particular, context pattern triggering of the display. Twitter Pet. 43. Petitioner asserts, with Dr. Turnbull presenting supporting testimony, that the combination offers advantages that would have motivated a person of ordinary skill in the art to use PALLAS's context-trigger-based content display with Yau's teachings of displaying assessments/questions based on context pattern triggers because of its advantageous optimization for quiz taking. Twitter Pet. 43; Twitter IPR, Ex. 1003 ¶ 179. Dr. Martin concurs, testifying that "[a]

person of ordinary skill in the art combining PALLAS with Yau would see that Yau allows for a more informed decision as to what to recommend to a user than PALLAS alone." Twitter IPR, Ex. 2013 ¶ 161. Accordingly, Petitioner has presented articulated reasoning with rational underpinning to support the combination of prior art and the legal conclusion of obviousness. *KSR*, 550 U.S. at 418; *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

As to the alleged obtrusive nature of the Yau combination, Dr. Turnbull testifies that presenting learning resources in certain contexts is not obtrusive; rather it would allow "tailoring presentation of learning content to a user's context, including 'location,' 'date and time,' and 'leisure time,' by, e.g., only presenting content when the learner has sufficient 'time' to engage with it." Twitter IPR, Ex. 1025 ¶ 38. Dr. Martin concurs that the combination allows recognition of a user's schedule, testifying that "the person of skill in the art would understand that PALLAS + Yau may send different or *improved* notifications than PALLAS alone, as the choice of notification would consider aspects such as the user's learning style or *schedule*." Twitter IPR, Ex. 2013 ¶ 162 (emphasis added). As for Patent Owner's argument that Twitter does not explain how a person of ordinary skill in the art would have combined PALLAS and Yau, as Dr. Turnbull testifies, the combination is PALLAS's disclosure of triggering display of content based on context using Yau's teachings of particular context pattern, where it would be routine to do this implementation. Twitter IPR, Ex. 1003 ¶ 179. As Dr. Turnbull testifies, both PALLAS and Yau disclose such as environmental parameters such as "location, time and day" for PALLAS and GPS location detection and user time availability for Yau, and both systems use mobile user devices, so in view of the similarities of the prior art, we

credit Dr. Turnbull's testimony on implementation. Twitter IPR, Ex. 1003 ¶¶ 73, 76, 85; Twitter IPR, Ex. 1004, 57; Twitter IPR, Ex. 1005, 1.

Accordingly, the evidence of record supports that the combination of PALLAS and Yau teaches triggering an exercise/test/quiz based on context. The evidence further supports the rationale to combine the references.

(b) Teaching of "Set of Rules" With "Expected Response"

Patent Owner asserts that Twitter fails to show that the prior art teaches the limitation "receiv[ing/e] at least one content package" limitations because it points to no "set of rules" that "includes a trigger condition and an expected response." Twitter PO Resp. 28–32. Patent Owner argues that this is not taught by the prior art because the limitation requires "a set of rules" with both "a trigger condition" and "an expected response," and Twitter points to nothing in Yau related to an "expected response," and instead focuses on Yau's alleged teachings related to a "trigger condition" in a "set of rules." *Id.* at 30. Patent Owner also asserts that Twitter does not identify any PALLAS disclosure of receiving a "correct answer" or "correct response," and not one as part of a "content package." *Id.*

Patent Owner's arguments are premised on Yau teaching the "expected response" in the claim, but the Petition relies on PALLAS for disclosure of expected responses. *See* Twitter Pet. 44 ("Regarding 'expected response' in the content package received by PALLAS's mobile device, as discussed PALLAS discloses the importance of responding and updating skill levels when learner provides responses."). The Petition further states that PALLAS discloses "at least one content package (e.g., set of 'data' including, e.g., (a) 'context trigger,' (b) 'exercise,' 'test,' 'MP Quiz,' and (c) answers to 'exercise,' 'test,' or 'MP Quiz');" "a set of rules associated with

the content package, wherein the set of rules includes a trigger condition (e.g., show content depending on package's 'context triggers'". . ." "and an expected response (e.g., correct answers when user 'do[es] some tests or exercises'; correct 'learner response')." *Id*. at 31–32 (citing Twitter IPR, Ex. 1003 ¶¶ 122–133).

On the issue of whether the "expected response" includes a "correct response," the Petition explains that "[r]egarding 'expected response' in the content package . . . as discussed PALLAS discloses the importance of responding and updating skill levels when learner provides responses." Twitter Pet. 44. Dr. Turnbull identifies in PALLAS's disclosures that "[t]he PALLAS system is designed to provide active personalisation where personalisation is an ongoing process" and "the learner's skill level is automatically updated every time the learner completes an exercise and the learning content delivered to a learner at any time is matched against the learner's current personal data." Twitter IPR, Ex. 1003 ¶ 151 (citing Ex. 1004 ¶ 80). Dr. Turnbull refers to Figure 1 of PALLAS, reproduced below.

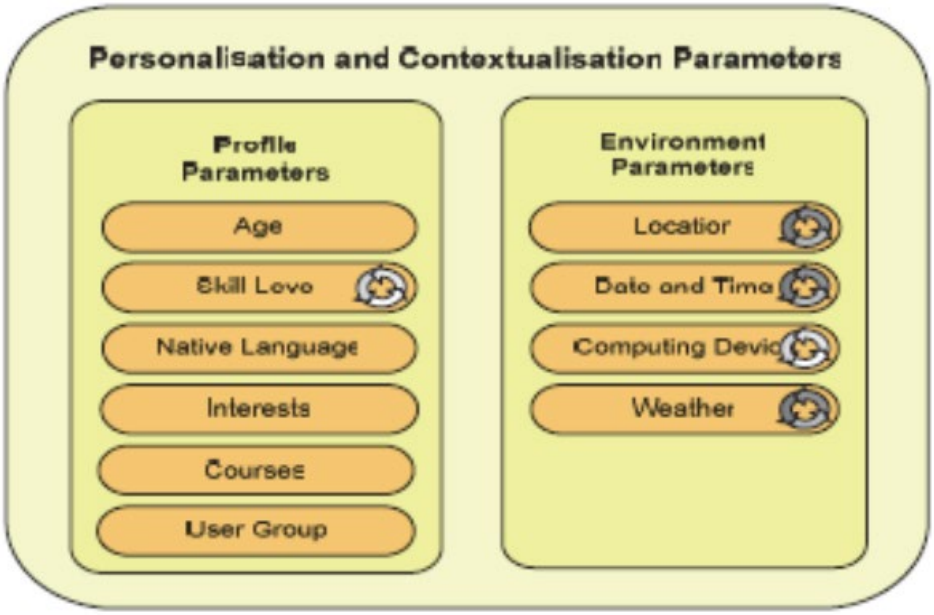

Figure 1. Dynamic personalisation and contextualisation parameters in PALLAS

Figure 1 of PALLAS, reproduced above, depicts a learner's profile including the skill level of a learner. Twitter IPR, Ex. 1004, 54–55.

Dr. Turnbull testifies that a person of ordinary skill in the art would have had knowledge that PALLAS's logging the results of completed exercises/tests and updating the learner's skill level is important. Twitter IPR Ex. 1003, 382. In the assessment, Dr. Turnbull testifies that PALLAS discloses that a student is notified to "practice more" if they score poorly. *Id.*, n.6 (referring to Twitter IPR, Ex. 1004, 54).

The evidence supports Petitioner's assertion that person of ordinary skill in the art would find that PALLAS teaches that the set of rules includes *expected responses* associated with a content package. PALLAS discloses, for instance, that when a student is at a farmer's market the student may select a "Glossary Test" on French names on vegetables in a mobile setting.

Twitter IPR, Ex. 1004, 53–54. After the test is completed the student may access the program via a desktop computer later in the day, and the student would be notified that "she should practice more on the vegetable glossary," which was the subject of the test. This notification indicates that PALLAS's program evaluated the expected responses compared to the answers provided and presents the assessment of the test to the student, therefore "expected responses" would be part of the set of rules.[30]

Moreover, we do not agree with Patent Owner that Twitter fails to show that in PALLAS the content package including a set of rules with an expected response is *received*. Twitter PO Sur-reply 1. PALLAS discloses that "[t]he learner's skill level is automatically updated every time the learner completes an exercise and the learning content delivered to a learner at any time is matched against the learner's current personal data" and "mobile learners engage in small chunks of learning and are likely to do this often, it is important that the personalisation data is updated after every time." Twitter IPR, Ex. 1004, 55. PALLAS discloses "[t]he mobile client also has local storage where data that is downloaded when a network connection is available can be cached." *Id*. at 56–57. Given the need for caching and importance of providing data updates, we agree that a person of ordinary skill in the art would have found it obvious to "combine and send the content piece (exercise/test/quiz, etc.), expected responses (correct answers), and set of rules (including the trigger condition) together to the mobile device as a content package." Twitter IPR, Ex. 1003, 381–382. Further, we agree with Dr. Turnbull's testimony that a mobile device would

[30] Note that, as discussed above, Twitter relies on Yau for the teaching of the context trigger for presentation of the test, in combination with PALLAS. *See* Twitter Pet. 37.

necessarily "receive[] correct answers in order to be able to, *e.g.*, respond to learner responses to exercises/tests/quizzes and update skill levels . . ." *See* Twitter Pet. Reply 10 (citing Twitter IPR, Ex. 1003 ¶¶ 166, 167, 172, 460, 465).

Accordingly, we agree that the evidence of record supports that the combination of PALLAS and Yau teaches receiving a content package that includes a set of rules that includes an expected response.

(c) Triggering the Presenting of the "Content Piece"

Patent Owner asserts that for limitation 12.1, Petitioner argues that the "content piece" is "exercise[s], test[s], and/or MP Quiz[zes]" of PALLAS, but then in response to the trigger condition being met, in limitations 12.5 and 12.6 a different "content piece" is presented. Twitter PO Resp. 22–23. We address this issue below in the discussion of limitation 12.5. As discussed below, we do not agree with Patent Owner's arguments on this issue.

(d) Conclusion

We have reviewed the evidence and argument and on this record we determine that Twitter has demonstrated that the combination of PALLAS and Yau teaches limitation 12.1 and has presented articulated reasoning with rational underpinning for the combination.

(3) Limitation 12.2

Limitation 12.2 recites "receiving a set of contextual information with respect to the first user." Twitter IPR, Ex. 1001, 24:50–51. Twitter contends that both PALLAS and Yau teach this limitation because both references disclose receiving GPS and other contextual data to determine the student's location. *See* Twitter Pet. 45–51 (citing Twitter IPR, Ex. 1003

¶¶ 187–213; Twitter IPR, Ex. 1004, 54–58, Figs. 1–3, 6; Twitter IPR, Ex. 1005, 2–5). Twitter also argues that a person of ordinary skill in the art would "have found it at minimum obvious to implement PALLAS's system using further contextual information including information about noise levels surrounding the first user, based on PALLAS in view of Yau." Twitter Pet. 51.

According to Twitter, this combination "would advantageously permit PALLAS's smartphone and server to additionally receive contextual information regarding user/learner's environmental noise level, and available learning time, enabling further-customized content most appropriate to learner's context." Twitter Pet. 51–52 (citing Twitter IPR, Ex. 1003 ¶¶ 214–218; Twitter IPR, Ex. 1005, 3, 4, Fig. 1).

Patent Owner presents no arguments specifically related to limitation 12.2. *See generally* Twitter PO Resp.; Twitter PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Twitter has demonstrated that the combination of PALLAS and Yau teaches limitation 12.2 and has presented articulated reasoning with rational underpinning for the combination.

(4) Limitations 12.3 and 12.4

Limitation 12.3 recites "processing the contextual information to determine a current context for the first user; [and] determining whether the current context satisfies the trigger condition." Twitter IPR, Ex. 1001, 24:52–55. Twitter alleges that PALLAS and Yau each disclose contextual information such as GPS location data, and that Yau discloses processing this data to "identif[y] the current context that the learner is situated in." Twitter Pet. 52–57 (quoting Twitter IPR, Ex. 1005, 5) (citing Twitter IPR,

Ex. 1003 ¶¶ 225–239; Twitter IPR, Ex. 1004, 54–58, Figs. 1–3; Twitter IPR, Ex. 1005, 2–3, 5, Fig. 1).

According to Twitter, a person of ordinary skill in the art would have had reason "to implement PALLAS's functions . . . using Yau's advantageous teachings of receiving additional contextual information (beyond that described in PALLAS), such as noise level, and using it in determining a current context." Twitter Pet. 63. Twitter argues that this would "permit PALLAS to determine more details (beyond those PALLAS already collects) about [the] learner's current context . . . and whether that context matches the specified trigger conditions to present, *e.g.*, tests/exercises/quizzes most relevant/appropriate for [the] learner's context." *Id.* (citing Twitter IPR, Ex. 1004, 54).

Patent Owner presents no arguments specifically related to limitations 12.3 and 12.4. *See generally* Twitter PO Resp.; Twitter PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Twitter has demonstrated that the combination of PALLAS and Yau teaches limitations 12.3 and 12.4 and has presented articulated reasoning with rational underpinning for the combination.

(5) Limitation 12.5

Limitation 12.5 recites the step of, "in response to the trigger condition being satisfied, presenting the content piece to the first user." Twitter IPR, Ex. 1001, 24:56–57. Twitter's arguments for this limitation mirror its arguments for limitation 12.1, which we discuss above. *See* Twitter Pet. 66–71 (citing Twitter IPR, Ex. 1003 ¶¶ 262–279; Twitter IPR, Ex. 1004, 55–57, Figs. 2, 3, 6). More specifically, Twitter asserts that "PALLAS discloses that in response to the trigger condition being satisfied

. . . presenting (*e.g.,* sending to be displayed/presented an 'exercise,' 'test,' or 'MP Quiz'; *see* cl. 12.1) the content piece." *Id.* at 66.

Patent Owner asserts that the "content piece" of PALLAS relied upon by Twitter for the teaching of limitation 12.1 is not the same as that relied upon in this limitation. Twitter PO Resp. 32–33. More specifically, Dr. Martin testifies that for limitation 12.1, Petitioner points to PALLAS's "'exercise[s],' 'test[s],' and/or 'MP Quiz[zes]'" as the "content piece." Twitter IPR, Ex. 2013 ¶ 139. Dr. Martin testifies that a problem is that "the only thing resembling a trigger condition disclosed in PALLAS is its 'context trigger' that leads to its Figure 6 notification," which is a notification that a learner is in the vicinity of an exhibit. *Id.* ¶ 140. As discussed above for limitation 12.1, however, the Petition explains that Yau considers the student's environment in order to determine what content to present to that student and "context-aware learning activities are output," including formal assessments. *See* Twitter Pet. 22; Twitter IPR, Ex. 1005, 4–5. Also as discussed for limitation 12.1, we agree with Petitioner's assertion that Yau's formal assessments are student tests. Accordingly, we do not discern an inconsistency in Petitioner's assertions.

Patent Owner presents no additional arguments specifically related to limitation 12.5. *See generally* Twitter PO Resp.; Twitter PO Sur-reply.

We have reviewed the evidence and argument and, for the reasons discussed above in the context of limitation 12.1, we determine that Twitter has demonstrated that the combination of PALLAS and Yau teaches limitation 12.5 and has presented articulated reasoning with rational underpinning for the combination.

(6) Limitations 12.6–12.8

Limitations 12.6–12.8 recite the following steps: "receiving a

response from the first user corresponding to the presented content piece; determining whether the received response matches the expected response; and performing an action based on an outcome of the determination." Twitter IPR, Ex. 1001, 24:58–63. Twitter contends that PALLAS discloses these limitations in light of the teachings of Yau, and in particular that PALLAS presents a test, exercise, or quiz to the learner and receives and determines whether the learner responses matches the expected responses, ultimately performing follow-up actions based on the results of the text, exercise, or quiz. *See* Twitter Pet. 66–74, n.12 (citing Twitter IPR, Ex. 1003 ¶¶ 280–294, 297; Twitter IPR, Ex. 1002, 360, 414, 450; Twitter IPR, Ex. 1004, 53–55, 57).

Patent Owner argues that the claims require the possibility of expected and unexpected results and Petitioner does not demonstrate that there is an unexpected response taught in PALLAS. Twitter PO Rep. 45–49. This argument fails because, as discussed *supra* Section V.E.3, we have not adopted Patent Owner's proposed claim construction requiring that the limitation requires both expected and unexpected responses. Moreover, we agree with Petitioner that, as discussed above in Section V.E.5.c.i.(b), PALLAS discloses that a learner's skill level will be updated every time a learner completes an exercise. Twitter Pet. 39–40; Twitter IPR, Ex. 1003 ¶ 290. Accordingly, we agree with Petitioner that a learner would respond with both expected responses (determined to be correct) and unexpected responses (determined to be incorrect). Twitter Pet. Reply 26–27; Twitter IPR, Ex. 1003 ¶¶ 30, 77, 151, 289–291, 445, 565–568; Twitter IPR, Ex. 1025 ¶ 58; Twitter IPR, Ex. 1004, 53–55 (disclosure of skill level determination and automatic updates, direction to learner to "practice more").

Accordingly, we agree that the evidence of record supports that the combination of PALLAS and Yau teaches limitations 12.6–12.8 and Petitioner has presented articulated reasoning with rational underpinning to support the combination of prior art.

(7) Conclusion

Having considered the arguments and evidence, we determine that Twitter has shown by a preponderance of the evidence that the combination of PALLAS and Yau renders obvious claim 12 of the '599 patent.

ii. Independent Claims 1 and 19

For the challenges to claims 1 and 19, Twitter relies on similar evidence and argument to that presented for claim 12. Twitter Pet. 84; Twitter2 Pet 29–89. Patent Owner presents the same arguments for these claims as those presented for claim 12, which we address above. *See* Twitter PO Resp. 27–49.

We have reviewed the evidence and argument and on this record we determine that Twitter has shown by a preponderance of the evidence that the combination of PALLAS and Yau renders obvious claims 1 and 19 of the '599 patent.

iii. Dependent Claims 4, 6, 7, 9–11, 15, 17, 18, 22, 24, and 25

Petitioner presents evidence and argument in support of its contentions that dependent claims 4, 6, 7, 9–11, 15, 17, 18, 22, 24, and 25 are rendered obvious by PALLAS and Yau. Twitter Pet. 42–56; Twitter2 Pet. 89–98.

Claims 15, 17, and 18 depend from independent claim 12. Claim 15 further recites "defining a context by: creating one or more context entries in a context manager; and associating a respective context entry with a set of

contextual information." Twitter IPR, Ex. 1001, 25:29–34. Twitter contends that PALLAS and Yau each teach creating a context entry in a context manager and associating it with contextual information. *See* Twitter Pet. 74–83, nn.13–15 (citing Twitter IPR, Ex. 1001, 7:30–58, 10:26–41, 11:11–26; Twitter IPR, Ex. 1002, 23–24, 415; Twitter IPR, Ex. 1003 ¶¶ 295–333; Ex. 1004, 54–58, Figs. 1–3; Ex. 1005, 4–5). This showing is similar to that discussed above for limitations 12.3 and 12.4. In particular, Twitter identifies the recited "context manager" in each of the three references as the "Context Engine" and "Adaptivity Engine" (Twitter IPR, Ex. 1004, Fig. 3) in PALLAS, and as the "Context Adaptation Module" (Twitter IPR, Ex. 1005, Fig. 1) in Yau. *See* Twitter Pet. 75–78. Twitter also argues that it would have been obvious to perform the functions of PALLAS's context and activity engine "using Yau's beneficial teachings of assigning context patterns, including ones appropriate for test-taking, to associate context with particular contextual information." Twitter Pet. 80. According to Twitter, this combination "would beneficially allow reuse of patterns for different content." *Id*. at 80–81 (citing Twitter IPR, Ex. 1003 ¶¶ 323–324).

Claim 17 recites "wherein the contextual information includes one or more of: time, date, location, proximity to a system-detectable tag, device orientation, velocity, direction, distance, vibration, altitude, temperature, pressure, humidity, sound, luminous intensity, camera image, and video stream." Twitter IPR, Ex. 1001, 25:40–45. Twitter contends that PALLAS discloses that contextual information may include time, date, location, distance, temperature, and humidity. *See* Twitter Pet. 83 (citing Twitter IPR, Ex. 1003 ¶¶ 334–343).

Claim 18 recites "wherein the content piece includes one or more of: audio clip, image, video stream, language lesson, e-mail, weather report,

calendar reminder, news feed, rich site summary (RSS) feed, information update from a Web 2.0 application, and Internet blog." Twitter IPR, Ex. 1001, 25:46–51. Twitter contends that PALLAS discloses that a content piece may include a language lesson in the form of a language-related exercise. *See* Twitter Pet. 83–84 (citing Twitter IPR, Ex. 1003 ¶¶ 344–352; Twitter IPR, Ex. 1004, 53–58, Fig. 4).

For claims 4, 10, and 11, Twitter relies on its showing for claims 15, 17, and 18, respectively. Twitter Pet. 84.

Claim 6 depends from claim 1 and further recites "wherein the context is defined as a combination of at least a high-level abstraction which corresponds to one or more low-level contextual information values, wherein the low-level contextual information values can correspond to one or more measurable parameters." Twitter IPR, Ex. 1001, 24:15–19. Similarly, claim 7 depends from claim 1 and further recites "wherein a respective rule is defined with one or more high-level abstractions." *Id.* at 24:20–21. For the recited "high-level abstraction," Twitter identifies the parameter of "Leisure Time" in PALLAS and the context pattern of "learner is at the university's computer lab, has 30 minutes, and is quiet" in Yau. *See* Twitter Pet. 84–95, nn.16–20 (citing Twitter IPR, Ex. 1001, 6:26–57, 10:41–55; Twitter IPR, Ex. 1002, 30, 416; Twitter IPR, Ex. 1003 ¶¶ 660–700; Twitter IPR, Ex. 1004, 53–58, Figs. 1, 6; Twitter IPR, Ex. 1005, 3–5).

Claim 9 depends from claim 1 and further recites "wherein presenting the context piece comprises sharing the content piece with a remote device." Twitter IPR, Ex. 1001, 24:26–28. Twitter contends that PALLAS discloses this limitation because its server communicates with mobile devices. *See* Twitter Pet. 95–100 (citing Twitter IPR, Ex. 1003 ¶¶ 701–720; Twitter IPR, Ex. 1004, 53–58, Figs. 2, 4, 6).

Claims 22, 24, and 25 depend from independent claim 19. Claim 22 recites similar limitations to that of claim 15. Twitter relies on similar evidence to that of claim 15 for the teaching of the claim 22 limitations. *See* Twitter2 Pet. 89–97. Claim 24 recites similar limitations to that of claim 17. Petitioner relies on similar evidence to that of claim 17 for the teaching of the claim 24 limitations. *See id.* at 97. Claim 25 recites similar limitations to that of claim 18. Twitter relies on similar evidence to that of claim 18 for the teaching of the claim 25 limitations. *See id.* at 97–98.

Patent Owner presents no arguments specifically related to these claims. *See generally* Facebook PO Resp.; Facebook PO Sur-reply.

We have reviewed the evidence and argument and on this record we determine that Twitter has shown by a preponderance of the evidence that the combination of PALLAS and Yau renders obvious claims 4, 6, 7, 9–11, 15, 17, 18, 22, 24, and 25 of the '599 patent.

6. Asserted Obviousness of Claims Over PALLAS, Over the Combination of PALLAS and Kim, and Over the Combination of PALLAS, Yau, and Kim

Petitioner contends that claims 1, 6, 7, 9–12, 17–19, 24, and 25 are unpatentable under 35 U.S.C. § 103(a) as obvious over PALLAS alone; claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 are unpatentable as obvious over PALLAS and Kim; and claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 are unpatentable as obvious over PALLAS, Yau, and Kim. Twitter Pet. 12; Twitter2 Pet. 12.

Because we have determined that claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 are rendered obvious over PALLAS and Yau, we need not reach these other grounds for unpatentability of these claims. *See SAS,* 138 S. Ct. at 1359.

F. Conclusion As To Twitter's Challenges To Claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 Patent

For the foregoing reasons, we conclude that Twitter has shown by a preponderance of the evidence that claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25 of the '599 patent are unpatentable. In summary:

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 6, 7, 9–12, 17–19, 24, 25	103(a)	PALLAS[31]		
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Yau	1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Kim[32]		
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Yau, Kim[33]		
Overall Outcome			1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	

[31] As explained above, because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.
[32] As explained above, because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.
[33] As explained above, because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.

VI. CONTINGENT MOTIONS TO AMEND

As discussed *supra* Section II, in view of the overlap of issues, we will address Patent Owner's Contingent Motions to Amend in a combined manner. Patent Owner proposes the same substitute claims in all the cases.

A. Background

In the Snap IPR, Patent Owner filed a Contingent Motion to Amend (Snap IPR, Paper 22, "Snap Mot."), which was opposed by Snap (Snap IPR, Paper 24, "Snap Pet. Mot. Opp."). In the Snap Motion, Patent Owner proposes substitute claims 26–40 to replace original claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25. *See* Snap Mot. At the request of Patent Owner (*id.* at 1), we issued Preliminary Guidance to Patent Owner's Motion to Amend (Snap IPR, Paper 32, "Snap Preliminary Guidance"). Patent Owner submitted a Reply in Support of its Motion to Amend (Snap IPR, Paper 33, "Snap PO Mot. Reply"). Snap filed a Sur-reply supporting its Opposition (Snap IPR, Paper 39, "Snap Pet. Mot. Sur-reply").

In the Facebook IPR, Patent Owner filed a Contingent Motion to Amend (Facebook IPR, Paper 20, "Facebook Mot."), which was opposed by Facebook (Facebook IPR, Paper 26, "Facebook Pet. Mot. Opp."). In the Facebook Motion, Patent Owner proposes substitute claims 26–40 to replace original claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25. *See* Snap Mot. At the request of Patent Owner (*id.* at 1), we issued Preliminary Guidance to Patent Owner's Motion to Amend (Facebook IPR, Paper 29, "Facebook Preliminary Guidance"). Patent Owner submitted a Reply in Support of its Motion to Amend (Snap IPR, Paper 30, "Facebook PO Mot. Reply"). Facebook filed a Sur-reply supporting its Opposition (Facebook IPR, Paper 34, Facebook Pet. Mot. Sur-reply").

In the Twitter IPR, Patent Owner filed a Contingent Motion to Amend (Twitter IPR, Paper 24, "Twitter Mot."), which was opposed by Twitter (Twitter IPR, Paper 30, "Twitter Pet. Mot. Opp."). In the Twitter Motion, Patent Owner proposes substitute claims 26–40 to replace original claims 1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, and 25. *See* Twitter Mot. At the request of Patent Owner (*id*. at 1), we issued Preliminary Guidance to Patent Owner's Motion to Amend (Twitter IPR, Paper 33, "Twitter Preliminary Guidance"). Patent Owner submitted a Reply in Support of its Motion to Amend (Twitter IPR, Paper 35, "Twitter PO Mot. Reply"). Twitter filed a Sur-reply supporting its Opposition (Twitter IPR, Paper 41, Twitter Pet. Mot. Sur-reply").

Although the proposed substitute claims must meet the requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121, Petitioner "bears the burden of persuasion to show, by a preponderance of the evidence, that any proposed substitute claims are unpatentable." 35 U.S.C. § 316(d); 37 C.F.R. § 42.121(d)(2); *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential) (citing *Aqua Prods. Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017); *Bosch Auto. Serv. Sols. LLC v. Iancu*, 878 F.3d 1027 (Fed. Cir. 2017)).

Before considering the patentability of any substitute claims, we first determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. Patent Owner is required to show that: (1) the amendment responds to a ground of unpatentability involved in the trial; (2) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter; (3) the amendment proposes a reasonable number of substitute claims; and

(4) the proposed claims are supported in the original disclosure. 37 C.F.R. § 42.121; *Lectrosonics*, Paper 15.

Patent Owner proposes amendments to claim 1 by substitute claim 26, which is representative, which recites as follows, with underlining designating added text and strikethrough indicating deleted text, and with letters in single brackets added to the limitations of proposed substitute claim 26 for reference purposes:

> 26. [a] A method for delivering context-based content to a first user of a first device, the method comprising:
>
> > [b] receiving at least one content package, wherein the content package includes at least one content piece and a set of rules associated with the content package ,wherein the set of rules includes a trigger condition and ~~an expected response~~ at least one predefined response, and wherein the trigger condition specifies a context that triggers a presentation of the content piece;
> >
> > [c] receiving a set of contextual information with respect to the first user and the first device, wherein the set of contextual information includes contextual information from two or more different types of input sources;
> >
> > [d] processing the contextual information to determine a current context for the first user and the first device;
> >
> > [e] determining whether the current context satisfies the trigger condition;
> >
> > [f] in response to the trigger condition being satisfied, presenting the content piece to the first user;
> >
> > [g] receiving a response from the first user corresponding to the presented content piece;
> >
> > [h] determining whether the received response ~~matches the expected response~~ is expected or unexpected, wherein the received response is expected if the received response matches one or more of the at least one predefined response, and wherein the received response is unexpected if the received

> response does not match any of the at least one predefined response; and
>
> [i] performing an action based on an outcome of the determination.

See Snap Mot., Appendix A, 1–2.

B. Requirements Under 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121

1. Reasonable Number of Substitute Claims; Responsive to Ground of Unpatentability

In the Snap, Facebook, and Twitter proceedings, Patent Owner asserts that its Motion to Amend proposes a reasonable number of substitute claims and is responsive to the grounds of unpatentability involved in the proceeding. *See, e.g.*, Snap Mot. 1–14. Patent Owner proposes one substitute claim for each of fifteen challenged claims and, therefore, meets the requirement for a reasonable number of proposed substitute claims because it is a reasonable number of substitute claims and there is a one-to-one relationship with the fifteen substitute claims. *See* 37 C.F.R. § 42.121(a)(3); *see also Lectrosonics*, Paper 15 at 4 ("There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.").

Patent Owner contends "this [M]otion conditionally seeks to amend those claims to address Petitioner's arguments," in order to overcome the grounds of unpatentability raised in the Petition. *See, e.g.*, Snap Mot. 3.

Snap and Facebook do not dispute Patent Owner's contentions as to these statutory and regulatory requirements. *See generally* Snap Pet. Mot. Opp.; Facebook Pet. Mot. Opp. Twitter contends the "Motion does not even attempt [to] assert that Petitioner's prior art does not disclose or render

obvious this proposed limitation, and should be denied." Twitter Pet. Opp. 7–8 (citing Twitter Mot. 19–23).

Under our rules, the requirement is for the amendment to be responsive to "a ground of unpatentability involved in the trial." 37 C.F.R. § 42.121(a)(2)(i). Patent Owner has met this requirement by proposing an amendment responding to Twitter's arguments in the Petition. For example, Patent Owner contends that "[e]ach substitute independent claim . . . requires an ability to determine whether the response to the presented content piece is an unexpected (e.g., incorrect or undesired) response. [Petitioner's] prior art fails as to these limitations." Twitter Mot. 21.

We determine that Patent Owner has met the statutory and regulatory requirements of proposing a reasonable number of substitute claims and responsiveness to the grounds of unpatentability for a motion to amend.

2. Enlarging Scope of Claims

Patent Owner asserts that it proposes narrowing limitations in direct response to the grounds of unpatentability involved in this proceeding. *See, e.g.*, Snap Mot. 3–4.

Facebook argues Patent Owner is "improperly attempting to enlarge the scope of the original claims." Facebook Pet. Opp. 1. Facebook asserts, "[i]f 'an expected response' means one or more expected responses, therefore, determining whether the received response 'matches the expected response' means that the received response must match [all of] the one or more previously-recited expected responses in the content package." *Id.* at 3 (emphasis omitted). Facebook then argues "the term 'predefined response' is broader than 'expected response,'" because "an 'expected response' does not include any conceivable or possible response; it is a response that is expected." *Id.* at 4–5 (emphasis omitted).

Twitter argues that "'predefined response' is broader than 'expected response' because a 'predefined response' can include any possible response as long as that response has been somehow defined in advance." Twitter Pet. Opp. 2.

We consider the amendments in view of the claim as a whole. Although the term "one predefined response" may be broader than "an expected response," we also consider the amended portion "wherein the received response is *expected* if the received response *matches* one or more of the at least *one predefined response*," and "the received response is *unexpected* if the received response *does not match* any of the at least *one predefined response*." Unless the response had been predefined within the content package, any "received response" could not be considered "expected" under the claims, and the additional clause requires a match of the response with the predefined response to be deemed "expected." This equates to an equivalent scope to the original claim. This is consistent with Dr. Martin's testimony, which we credit, that he is not aware of a situation where the substitute but not original claims are infringed because "[t]he substitute claims would only be satisfied when a 'predefined response' in the substitute claims is an 'expected response' in the original claims." Facebook IPR, Ex. 2023 ¶ 59.

Facebook also argues that Patent Owner is seeking broader coverage of the claim by replacing "matches the expected response" with "matches one or more of the at least one predefined response" by the introduction of "one or more of." Facebook Pet. Mot. Sur-reply 2. Although the substitute claim recites "one of more," the original claim recites "an expected response," which may be construed as "one or more," so the use of "one or more" for the predefined response is not broadening. *See Baldwin Graphic*

Sys., Inc. v. Siebert, Inc., 512 F.3d 1338, 1360 (Fed. Cir. 2008). Further, a predefined response would nevertheless have to be in a content package with a content piece and a set of rules.

Facebook further refers to a statement in the prosecution history distinguishing the Brandenberg reference, which has several possible rating responses, to support the argument that a predefined response is broader than an expected response. Facebook Pet. Mot. Sur-reply 4–5. We do not agree with Facebook's argument on this reference because, as Dr. Martin testifies, Bradenberg is soliciting an opinion, not whether a response that would be "expected" or "unexpected." *See* Facebook IPR, Ex. 2023 ¶ 73.

Twitter additionally argues that the '599 patent describes the "expected response" as a "correct" response, so while an "expected response" on a multiple choice test may be "predefined," it would not be "correct." Twitter Pet. Mot. Opp. 2. Here, Twitter asks too much of the substitute claim. As discussed above, the substitute claim requires a determination if a received response is "expected" by checking for a match with the predetermined response in a content package. And the original claim requires only that an expected response be a part of set of rules for a content package, that it be checked for a match with a received response, and then an action be performed based on the outcome of that determination — but there is no recited requirement that the expected response has to be a "correct" response. Because the original claim did not include this requirement, a more limited interpretation on the amended claim should not be imposed.

Twitter also asserts that the '599 patent does not use the term "predetermined response," but uses the term "predetermined" in different contexts that are limited to the meaning "defined in advance." Twitter Pet.

Mot. Opp. 3–5. This argument does not apply because, as discussed above, we consider the term "predefined response" in the context of the claim where it may be determined to be "expected" or "unexpected." Twitter has similar arguments to Facebook, which we do not agree with for the reasons discussed above.

Accordingly, we determine that Patent Owner has met its burden to demonstrate that the proposed substitute claims do not broaden the scope of the original claims.[34]

3. Adding New Subject Matter

As to whether the proposed substitute claims are supported by the original disclosure, Patent Owner asserts that several portions of Application Ser. No. 12/326,457 ("the '457 application") disclose the limitation "determining whether the received response is expected or unexpected . . . wherein the received response is unexpected if the received response does not match any of the at least one predefined response" of limitation 26[h]. Snap Mot. 6 (citing Ex. 1004).

Snap contends that the cited portions of the '457 application that are identified by Patent Owner do not mention "unexpected" responses, nor is there a description of features for determining whether the received user response to the presented content piece matches one or *more* of the one predefined response in the set of rules or whether it does not match *any* of

[34] The Preliminary Guidance provided in the Snap and Facebook cases preliminarily indicated that, at that stage of the trial, Patent Owner had not sufficiently established that the proposed claim language did not broaden the claim scope. *See* Snap Preliminary Guidance 5; Facebook Preliminary Guidance 5. Our determination here is based on the full record, and upon further consideration of the issues in view of the full view of the context of the language of the substitute claims.

the at least one predefined responses in the set of rules. *See* Snap Pet. Mot. Opp. 2. More specifically, Snap contends that the cited portions of the specification describe evaluating a response generally or in the context of a correct or incorrect response. *Id*. Snap asserts that there are no disclosed features for determining whether a received response to a presented content piece (e.g., "JpI.mp3") does not match a predefined response for any other of the content pieces of in the set of rules ((e.g., "JpHello.mp3" through "JpGoodmorning.mp3"). *Id*. at 4 (citing Snap IPR, Ex. 1022 ¶ 73). Further, Snap argues that the match of "any of the at least one predetermined response" requires a comparison of the received responses to *each* of the predetermined responses before concluding that there is no match, which is contrary to the '457 application's disclosures. *Id*. at 3 (citing Snap IPR, Ex. 1022 ¶¶ 71–72). Similarly, Snap asserts that the application does not provide support for a determination that a presented content piece matches more than one predefined responses in a set of rules, as the amendments claim. *Id*. at 4 (citing Ex. Snap IPR, 1022 ¶¶ 74–75).

Snap also asserts that the proposed substitute claims lack support under their plain language because the content includes "at least one content piece" and a set of rules associated with the content package, so the "at least one predefined response" must be for the entire content package and not the "at least one content piece." Snap Pet. Mot. Sur-reply 9. As such, Snap argues, the determining limitation requires that the received response be compared to "one or more of the at least predefined response," which encompasses every "predefined response" in the content package, which include predefined responses for each content piece in the content package. *Id*. at 9–10. Snap contends that the claim language requires a comparison of

all predetermined responses in the content package, which is not disclosed in the specification of the application. *Id*. at 10–11.

Snap also asserts that, even if the claims were interpreted in the manner that Patent Owner argues, the claimed "one or more" is unsupported because the specification of the application consistently describes a content piece having a single expected response. Snap Pet. Mot. Sur-reply 11 (citing Snap IPR, Ex. 1004 ¶¶ 56, 62–63, Tables 1, 2). Snap argues that the '457 application disclosure of a list of allowable values for entries of a given column in Table 1, which includes "response columns," (Snap IPR, Ex. 1004 ¶ 59), fails to explain how this feature is implemented. Snap Pet. Mot. Sur-reply 11–12. Snap contends that this disclosure "at best discloses that a single expected response can be described or otherwise defined by 'a list of allowable values,'" so an entry in the response column corresponds to a particular content piece which has a list of values as described, but which "remains a single predefined response for that particular content piece." *Id*. at 12.

As discussed above, although the '457 application does not use the term "expected response," the proposed substitute claim language for limitations 1[b] and 1[h] essentially conforms with its description, with some recasting of the language. That is, the '457 application discloses a "received response" is checked to determine if it matches a predetermined response (which includes an expected response) and an action is performed based upon that determination, with a received response being expected (action correct) if there is a match and being unexpected (action incorrect) if there is no match. *See* Snap IPR, Ex. 1004 ¶¶ 56, 63, Tables 1, 2. Exact claim terms need not be used "in *haec verba* . . . [but] the specification must contain an equivalent description of the claimed subject matter"—and here we find that

the description is equivalent to the language of the proposed substitute claim. *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

As to the issue of whether there is support for the limitation "determining whether the received response is expected or unexpected . . . wherein the received response is unexpected if the received response does not match any of the at least one predefined response," we agree with Patent Owner that there is. Snap's arguments are premised on the position that the claim language requires that the received response be compared with every one of the predetermined responses in the content package, which is not disclosed in the specification of the application. Limitation 26[b] states that the content package(s) include content piece(s) and a set of rules, with the set of rules including a trigger condition. As the claim limitation recites, however, "the trigger condition specifies a context that triggers a presentation of the content piece." Accordingly, in context, this indicates that the set of rules includes the trigger condition and the at least one predetermined response associated with a content piece; that is, the conditions of the trigger conditions associated with predetermined response apply.

Additionally, the '457 application supports that there may be more than one predefined response for a single content piece. It states that "[t]he *response* column allows a user to specify an expected response to the presentation of content 253" and that "a user can provide content management system 240 with a *list of allowable values* (e.g., names or tags, and corresponding 20 contextual information) for the entries of a given column (e.g., the time, location, state, or *response* columns presented in Table 1)." Snap IPR, Ex. 1004 ¶¶ 56, 59 (emphasis added). We agree with

Dr. Martin that this disclosure would reasonably inform one of ordinary skill in the art that more than one predefined response for a content piece is permissible. Snap IPR, Ex. 2008 ¶ 51. Snap's arguments that the disclosure does not explain how this feature is implemented and that the response column "remains a single predefined response for that particular content piece" ignore the express disclosure that there can be a *list* of values set in the response column.

Twitter additionally argues that none of the disclosures identified by Patent Owner show possession of the "predefined response" language. Twitter Pet. Opp. 6–7. As discussed above, the substitute claims have an equivalent scope to the original claims when the use of the term "predetermined response" is considered in context. Further, as also discussed, exact claim terms need not be used in *haec verba*, and the '457 application provides sufficient support for the substitute claim limitations.

Accordingly, having considered the arguments and evidence, we determine that there is sufficient written description support for the proposed substitute claims.

B. Patentability

1. § 103

Snap, Facebook, and Twitter all challenge the substitute amended claims on obviousness grounds. We address these challenges in turn.

a. Snap

Snap asserts that the proposed substitute claims are unpatentable as obvious under 35 U.S.C. § 103 in view of Rosenberg, Buck, and Suzuki. Snap Pet. Opp. 7–25. More specifically, Snap contends the combination of Rosenberg and Buck teaches limitation 26[h], "determining whether the received response is expected or unexpected, wherein the received response

is expected if the received response matches one or more of the at least one predefined response, and wherein the received response is unexpected if the received response does not match any of the at least one predefined response." *Id.* at 13–20 (emphasis omitted).

Buck discloses "a system and method . . . for a context menu interface," its "context menu pop-up interface . . . offers a plurality of selection choices, all of which can be selected by a user," and where its "client terminal 400 can be a computer, such as a . . . handheld device." Snap IPR, Ex. 1023, 4:34–37, 5:40–43, Fig. 5. Buck discloses that its "trading application 402 may also receive input signals from traders [i.e., users] via input device 412" and "a user can activate the context menu interface by simply pressing an input choice of an input means." *Id*. at 6:17–20, 8:1–3. Buck further discloses that "a user could define a number of desired actions to be taken in response to detecting an invalid selection" and "when an invalid selection choice is made, an audible or a visual warning may be triggered, and a user may be given an opportunity to select the intended item." *Id*. at 14:32–44.

Snap asserts that a person of ordinary skill in the art would have been motivated to implement Rosenberg in view of Buck's teaching of an invalid selection response, that is, an "unexpected result." Snap Pet. Opp. 16. Snap contends that "*Buck's* teachings/suggestions concerning techniques/technologies for handling unexpected user responses to defined options in a user interface are consistent with the knowledge in the art" of a person of skill at the time. *Id*. Snap argues that a person of skill would have appreciated potential operational issues could occur without

error/exception handling features and there would have been motivation to include a determination whether a user response match or do not match Rosenberg's presented reminder options. *Id*. at 17–18.

In its Sur-reply, Snap contends that the user input mechanisms in Rosenberg's device, such as "multiple buttons and/or touchscreen portions that do not correspond to the four displayed reminder options," should be considered in the combination. Snap Pet. Mot. Sur-reply 1–2. Snap refers to Rosenberg's disclosure of "multiple 'buttons,' and may include, e.g., 'a pointing device . . . such as a mouse, thumbwheel or trackball,' 'an optional touch screen,' 'one or more pushbuttons,' and/or 'one or more switches.'" *Id*. at 2. Snap also refers to Rosenberg's reset button 502 that can be pressed to engage reminder reset. *Id*. at 3. Snap argues that "*Rosenberg* discloses various ways a user may provide input, including selecting a button (or an area on the touchscreen) that does not correspond to any depicted functionality, or is otherwise unrecognized by the system," and a person of ordinary skill in the art "would have been motivated to implement functionality to handle such an occurrence." *Id*. at 3–4.

As discussed in the Snap Preliminary Guidance, Rosenberg discloses it presents a menu of four choices a user can select from: terminate 505, defer 506, last change 507, or edit 508. Ex. 1005, 19:34–38; *see* Snap Preliminary Guidance 7. There appears to be no "unexpected" or "invalid" responses displayed for selection in Rosenberg, so a user would not provide an invalid input to options presented on the user interface. Although Snap argues in its Opposition that a person of skill would have looked to Buck to handle "invalid/unrecognized" input, in the Preliminary Guidance, we did

not find that persuasive because there is no invalid responses displayed for selection in Rosenberg. *See* Snap Preliminary Guidance 8.

Snap's Sur-reply arguments concerning other buttons and other input methods that could be chosen constitute new arguments that proceed in a new direction with a new approach from that presented in the Opposition, which only discussed "the possibility of users providing incorrect/invalid/unrecognized input(s) to options presented on a user interface," with only four options presented on the interface. 37 C.F.R. § 42.23; Consolidated Trial Practice Guide, 74 (November, 2019); *see also* Snap Pet. Mot. 15. Even if we were to consider Snap's arguments made in the Sur-reply, we would not be persuaded by Snap's assertion that there would be motivation to combine the references because it appears that hindsight has been employed. Although Petitioner argues that potential operational issues could occur without error handling features, Petitioner does not identify the potential issues that could occur in Rosenberg, and Rosenberg does not identify that pressing another button would be considered incorrect or unexpected.

The other independent substitute claims, claims 33 and 37, require the determination of whether a received response is unexpected. Accordingly, we do not find that obviousness has been demonstrated by Snap for these proposed substitute claims. Additionally, the challenge to the dependent substitute claims fails by virtue of dependency on claims 26, 33, and 37, respectively.

In view of the foregoing, we conclude that Snap has not established by a preponderance of the evidence that proposed substitute claims 26–40 would have been unpatentable as obvious in view of Rosenberg, Buck, and Suzuki.

b. Facebook

Facebook asserts that the proposed substitute claims are unpatentable as obvious under 35 U.S.C. § 103 in view of Lamont, Wolfe, Wang, with or without Lynch or Wehrenberg. Facebook Pet. Opp. 14–25.

Facebook relies on the obviousness assertions presented in the Petition for the obviousness of the unmodified claim limitations. Facebook Pet. Opp. 14–25. For newly-added limitations in substitute claim 26, Facebook contends that Lamont discloses a "first device" corresponding to the new claim language, and "receiving a set of contextual information with respect to the first user and the first device," "[b]ecause the contextual information in Lamont is received while the first user is in physical possession of the client device, that information pertains to the 'first user and the first device.'" *Id*. at 15–16 (citing Facebook Pet. 24–35; Facebook IPR, Ex. 1002 ¶¶ 103–120). Petitioner also contends that Lamont discloses a "predetermined response," because Lamont's example answer, "Lincoln," "was defined beforehand and incorporated into the Lamont tour script provided to and executing on the client device." Facebook Pet. Opp. 16 (citing Facebook Pet. 18–24; Facebook IPR, Ex. 1016 ¶ 72). Additionally, Facebook contends that Wolfe discloses determining if a response is expected or unexpected, at least as to its Figure 3. Facebook Pet. Opp. 17–18.

As to "two or more different types of input sources," Facebook contends that "Lamont discloses receiving time information from a clock device and location information from a GPS receiver device." Facebook Pet. Opp. 18 (citing Facebook Pet. 25–26; Facebook IPR, Ex. 1003, 14:29–37, 14:56–62; Facebook IPR, Ex. 1002 ¶¶ 103, 104, 107). Facebook contends that the prior art discloses a first input source at either the "network

interface of the client device in Lamont, alone or in combination with the device's clock," or Lamont's internal clock device, or Lynch's "technique in which a mobile device can receive a signal from cellular base station that the mobile device can use to determine the correct local time." Facebook Pet. Opp. 18–20. Facebook additionally contends the prior art discloses a second input source at either Lamont's GPS component (*id*. at 18), or Wehrenberg's accelerometer (*id*. at 21).

Petitioner asserts that a person of ordinary skill in the art would have been motivated to include Lynch's feature of receiving time as it was a known technique which would have improved Lamont's system by automatically setting correct local times. Facebook Pet. Opp. 19–21. Petitioner also argues that it would have been obvious to combine Lamont with Wehrenberg as accelerometers were well-known in a broad range of applications and would have offered benefits, such as providing additional contextual information for trigger conditions. *Id*. at 21–23.

We have reviewed the evidence and arguments and determine that Facebook has presented persuasive evidence that the combination of Lamont, Wolfe, and Wang, with or without Lynch or Wehrenberg, teaches the limitations of proposed substitute claims 26–40. Facebook also has presented articulated reasoning with rational underpinning to support the combination of prior art.

Patent Owner contends there is no reason to combine Lamont's system "with a different complete system teaching an alternate and inconsistent understanding of 'treasure hunt' (Wolfe)." *See* Facebook Mot. 20; Facebook PO Mot. Reply 6–7. Patent Owner also argues that Lamont's presented media clip content piece would not teach some limitations. *See* Facebook PO Mot. Reply 7. These arguments are the same as those

presented for the original claims, which we do not find persuasive for the same reasons. *See* Section IV.E.5.d.i.(5).

Patent Owner also contends Lamont has "extremely limited feedback," and, for the determining and performing limitations, Petitioner relies on Wolfe, but the combination "results in an incomplete system with undescribed (and therefore unknown) input capabilities." *See* Facebook Mot. 17. Patent Owner further argues the Petition "never addresses Lamont's limited disclosure or how the combination would remedy Lamont's input capabilities," which "includes extremely limited feedback, such as just two keys or buttons." *Id*. These arguments are the same as those presented for the original claims, which we do not find persuasive for the same reasons. *See* Section IV.E.5.d.i.

Patent Owner further argues that the prior art does render the claimed tripartite structure obvious. Facebook PO Mot. Reply 4–6. These arguments are the same as those presented for the original claims, which we do not find persuasive for the same reasons. *See* Section IV.E.5.d.i.(5).

In view of the foregoing, we conclude that Facebook has established by a preponderance of the evidence that proposed substitute claims 26–40 would have been unpatentable in view of the combination of Lamont, Wolfe, and Wang, with or without Lynch or Wehrenberg.

c. Twitter

Twitter asserts that proposed substitute claims 26–40 are unpatentable as obvious under 35 U.S.C. § 103 in view of PALLAS or the combination of PALLAS and Yau. Twitter Pet. Opp. 9–20.

Twitter relies on the obviousness assertions presented in the Petition for the obviousness of the unmodified claim limitations. Twitter Pet. Opp.

9–20. As discussed *supra* Section V.E.5, we have determined that the combination of PALLAS and Yau renders obvious the original claims.

As discussed above, Twitter contends combination of PALLAS and Yau teaches the original independent claim limitations, even if an unexpected response is part of the limitations. Section V.E. For another newly-added limitation in substitute claim 26, as to the "contextual information" limitation, Twitter contends that PALLAS discloses "using the profile of the learner and environmental parameters," including, e.g., "location, time and day and the mobile device that is used by the learner," and that the "weather is considered as PALLAS is aimed to be used outside of the classroom and may help in suggesting appropriate activities for the learner." Twitter Pet. Opp. 19. Twitter also contends that "Yau discloses receiving a set of contextual information with respect to the 'first device' (e.g., 'learner's device') from two or more different types of input sources (e.g., 'Location' and 'Noise Level' from 'two sensors, namely GPS for location detection and a microphone for noise detection')." *Id*. (citing Twitter IPR, Ex. 1005, 3, 5, Fig. 1). According to Twitter, using data from a microphone, in addition to the GPS in PALLAS's mobile device, would have "allow[ed] presentation of learning content to be further customized" and it "would have been routine and straightforward to make such an implementation choice." Twitter Pet. Opp. 20 (citing Twitter IPR, Ex. 1025 ¶¶ 163–165).

We have reviewed the evidence and arguments and determine that Twitter has presented persuasive evidence that the combination of PALLAS and Yau teaches the limitations of proposed substitute claims 26–40. Twitter also has provided a persuasive rationale to combine the references.

Patent Owner argues that the combination of PALLAS and Yau do not teach some of the limitations of representative claim 26. Twitter PO Mot. Reply 4–7. These arguments are the same as those presented for the original claims, which we do not find persuasive for the same reasons. *See* Section V.5.i.(6).

In view of the foregoing, we conclude that Twitter has established by a preponderance of the evidence that proposed substitute claims 26–40 would have been unpatentable in view of the combination of PALLAS and Yau.

2. § 101

Facebook and Twitter assert that the substitute claims are unpatentable under 35 U.S.C. § 101. Facebook Pet. Opp. 9–14; Twitter Pet. Opp. 21–25. The issues presented in both cases overlap and we consider Twitter's contentions to be representative.

Twitter contends that the substitute claims fails both steps under the two-step framework of *Alice Corp. Pty. Ltd. v. CLS Bank International*, 573 U.S. 208 (2014). Twitter Pet. Opp. 21. For the first step, Twitter asserts that the "substitute claims are directed to the abstract idea of presenting content based on a user's context, collecting the user's response to that content, and performing an action based on the response—and provide no 'improvement[s] in computer capabilities.'" *Id.* Twitter argues that "[t]he substitute claims simply recite desired functional results—using "primitive computer operations found in any computer system . . . — for collecting ('receiving'), processing ('determining,' 'processing,' and 'performing') and transmitting information ('presenting'), which the Federal Circuit has repeatedly found are directed to abstract ideas." *Id.* at 22 (citing *In re*

Killian, 45 F.4th 1373 (Fed. Cir. 2022); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); and *Intell. Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1369-70 (Fed. Cir. 2015)). Twitter asserts that the proposed substitute claims "provide[] no specific technological solution or improvement to computer functioning, instead describing well-known, generic hardware, and merely catalog[] trivial implementation choices well understood by [a person of ordinary skill in the art]." *Id.* at 23.

Twitter also contends that the '599 patent Specification "confirms it provides no specific technological solution or improvement to computer functioning, instead describing well-known, generic hardware, and merely catalogs trivial implementation choices well understood" by a person of ordinary skill in the art. Twitter Pet. Opp. 23 (citing Twitter IPR, Ex. 1001, 3:24–33, 3:42–49; Twitter IPR, Ex. 1003 ¶¶ 29, 33, 53, 78). Twitter argues that "gathering and outputting data are 'insignificant extra-solution activity' insufficient to confer eligibility." *Id.*

Twitter further contends that under step 2 of the *Alice* analysis, "the substitute claims' 'additional features'—alone and as an ordered combination—do not recite an 'inventive concept' that is 'significantly more' than this patent-ineligible idea." Twitter Pet. Opp. 24 (citing *Alice*, 573 U.S. at 221–22). Twitter argues that the proposed substitute claims instead "recite well-known, routine, and conventional data manipulation using a general purpose computer." *Id.* (citing Twitter IPR, Ex. 1003 ¶¶ 29–50; Ex. 1025 ¶¶ 82–30, 132–166; *Intell. Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017)). Twitter contends that the '599 patent's "content package," "content piece," "trigger condition," "predefined response," "context," "contextual information from

two or more different types of input sources," and expected and unexpected user responses, are not new and rely on conventional, well-known techniques. *Id*. Twitter further enumerates the claimed features and argues that they were "well known, routine, and noninventive." *Id*. at 25.

An invention is patent eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g., Alice*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, the guide is the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). Under the framework, it is first determined what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

If the claim is "directed to" an abstract idea, the second step of the *Alice* and *Mayo* framework is evaluated, where "the elements of the claim" are evaluated "to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (citation and quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id*. (quoting *Mayo*, 566 U.S. at 77).

"[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id*.

Additionally, the USPTO has published guidance on the application of 35 U.S.C. § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 57 (Jan. 7, 2019) ("2019 Guidance"). Under 2019 Guidance, a claim is "directed to" an abstract idea if the claim recites any of (1) mathematical concepts, (2) certain methods of organizing human activity, and (3) mental processes—without integrating such abstract idea into a "practical application," i.e., without "apply[ing], rely[ing] on, or us[ing] the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." *Id*. at 52–55. A claim so "directed to" an abstract idea constitutes ineligible subject matter, unless it recites an additional element (or combination of elements) amounting to significantly more than the abstract idea. *Id*. at 56

Twitter asserts that representative claim 26 recites an abstract idea "of presenting content based on a user's context, collecting the user's response to that content, and performing an action based on the response." Twitter Pet. Opp. 21. Considering the steps of proposed substitute independent claim 26, it recites receiving data in a "content package," receiving data in "a set of contextual information . . . from two or more different types of input sources," "determin[ing] a current context for the first user and first device," "determining whether the current context satisfies the trigger condition," if the trigger condition is met, "presenting" content to a user, receiving a response from the user [if the content was presented], "determining" whether the received response "matches one or more of the at least one predefined response" or "does not match," and "performing an

action based on an outcome of the determination." Twitter Mot., App. A, 1–2. In view of the claim limitations, we agree with Twitter's characterization of the abstract idea of the claim. Further, substitute claim 26 involves steps – receiving data, making determinations, and performing an action based on the determinations – that can be performed mentally by a person using observation, evaluation, and judgment. Steps that may be performed in the mind, even if recited as being performed on a computer, are mental processes. *See Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016); 2019 Guidance, 52. Accordingly, we agree that proposed substitute independent claim 26 recites an abstract idea.

Patent Owner argues that the claims "are directed to improving mobile device functions." Twitter PO Mot. Reply 8. Patent Owner asserts that the "tripartite structure" "increase[s] system flexibility and scalability (and make content more shareable/reusable). *Id.* at 8. Patent Owner contends that the claimed features make mobile devices safer; conserve battery power and data resources; and facilitate family communications. *Id.* As an initial matter, we do not agree with Patent Owner's characterization of the claims. Patent Owner's characterization is at such a high level, that is, "improving mobile device functions," that it is dissociated from the claim itself. Instead, when considering what the claims are "directed to" the claim instead aligns with Twitter's characterization as "presenting content based on a user's context, collecting the user's response to that content, and performing an action based on the response." Patent Owner also alleges benefits directed to mobile devices, but these are not claimed. *See BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1286–88 (Fed. Cir. 2018) (benefits from "well-known database structure" in its "ordinary capacity" not improvement to database functionality); *Trading Techs. Int'l, Inc. v. IBG LLC*, 921 F.3d

1378, 1383 (Fed. Cir. 2019) ("merely providing a trader with new or different information in an existing trading screen is not a technical solution to a technical problem").

We also consider "the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application," in a "search for an 'inventive concept.'" *Alice*, 573 U.S. at 217 (2014). Twitter asserts that the proposed substitute claims "recite well-known, routine, and conventional data manipulation using a general purpose computer." Twitter Pet. Opp. 24.

We determine whether the judicial exception is integrated into a practical application. 2019 Guidance, 54–55. We agree that the steps of substitute claim 26 use generic data manipulation. *See McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314–15 (Fed. Cir. 2016) (distinguishing non-abstract claims from those that "use[] generic computer technology to perform data reception, transmission, and analysis."). Here, the "first device" may include mobile devices and laptop computers, which perform common data processing functions such as receiving, processing, and outputting data. *See* Twitter IPR, Ex. 1002 ¶¶ 2, 36, 37, 42.

We also consider the additional elements of the claim. Specifically, under the operations of an electronic device, data is received data by a first device under limitation 26[b]. According to Patent Owner, this step is described in the original '457 application. Twitter Mot. 9 (citing Twitter IPR, Ex. 1002 ¶¶ 6–8, 26, 27, 52, 54, 55, 67, Table 1, Table 2). This step is described as a computing device recording content and creating "a content entry in the content database for the recorded content, wherein the content entry can be associated with a number of trigger conditions." Twitter IPR,

Ex. 1002 ¶ 6. Further, "the computing device defines a context by creating a context or activity entry in a context manager, and associates the context or activity entry with a set of contextual information." *Id.* ¶ 8. Thus, this description supports that this step is merely directed to data receipt and data manipulation.

As to step 26[c], the "receiving a set of contextual information with respect to the first user and the first device" limitation, the claims do not specify details on the "input sources" and "contextual information" received. Further, the description in the '599 patent supports that this step relies on nothing more than conventional techniques, such as GPS, detection of motion, or downloaded Internet information. *See* Twitter IPR, Ex. 1001, 6:34–45, 6:58–65. Similarly, steps 26[d]–[h] are directed to data transmission, receipt, and manipulation. As to the last-recited limitation 26[i], "performing an action" is described in the original '457 application, according to Patent Owner. Twitter Mot. 10 (citing Ex. 1002 ¶¶ 9, 46, 48, 56, 62–64, 67, Tables 1, Table 2). There, "performing an action" is described as including "updating the content entries in the content database and updating the context or activity entries in the context manager" (¶ 9), "defin[ing] a delay period" (¶ 46), "present[ing] content" (¶ 48), "repeat[ing]" content (¶ 56), "delet[ing] or alter[ing] . . . the corresponding content entry" (¶ 64), and "delet[ing] the content entry" (¶ 67). These limitations encompass actions that are mere data manipulation or output operations. This is also true for the limitation "in response to the trigger condition being satisfied, presenting the content piece to the first user." We consider these claims as an ordered combination and do not discern that they do anything more collectively than performing the individual steps. Accordingly, these limitations constitute data gathering/receipt steps, data

transmission, or data manipulation operations. In view of this, we do not discern that the steps of substitute claim 26 recite additional elements that integrate the judicial exception into a practical application, such as an improvement in the way computers operate or to another technological improvement.

We now look to whether representative claim 26 contains any inventive concept or adds anything significantly more to transform the abstract concept into a patent-eligible application. *Alice*, 573 U.S. at 216; 2019 Guidance, 56. The steps of substitute claim 26 represent "well-known, routine, and conventional data manipulation using a general purpose computer," because the first device is a general-purpose computer or "mobile device," which performs common data processing functions such as receiving, processing, and outputting data. *See* Twitter Pet. Opp. 24; *see* Twitter IPR, Ex. 1002 ¶¶ 2, 36, 37, 42. All of these computer functions recited are generic and routine computer activities that are performed only for their conventional uses. *See Elec. Power*, 830 F.3d at 1353 (Fed. Cir. 2016); *see also In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) ("Absent a possible narrower construction of the terms 'processing,' 'receiving,' and 'storing,' . . . those functions can be achieved by any general purpose computer without special programming"). There is no evidence that these activities are used in some unconventional manner or produce some unexpected result. In short, each step does no more than require a generic computer device to perform generic computer functions. As to the data operated upon, "even if a process of collecting and analyzing information is 'limited to particular content' or a particular 'source,' that limitation does not make the collection and analysis other than abstract." *SAP America, Inc. v. InvestPic LLC*, 898 F.3d 1161,

1168 (Fed. Cir. 2018). The use of conventional computer components to perform conventional steps to implement an abstract idea has repeatedly been found to not make an abstract idea patent eligible. *See Alice*, 573 U.S. at 217–18 (Instructing one to "apply" an abstract idea and reciting no more than generic computer elements performing generic computer tasks does not make an abstract idea patent eligible.).

Patent Owner argues that the claims recite inventive concepts because they "provide for how content should be structured (e.g., 'content package'), how the system should handle presentation (e.g., tripartite structure), and how to handle responses (e.g., final three limitations)." Twitter PO Motion Reply 10 (citing Ex. 2021 ¶ 231). Patent Owner also refers to claims 31, 35, and 39, that are alleged to "deal[] with mobile specific contextual information input sources," and claims 32, 36, and 40, that are alleged to "deal[] with Web- and Internet-specific types of content pieces." *Id*. at 10–11 (citing Twitter IPR, Ex. 2021 ¶¶ 228–229). Patent Owner asserts that the features of the "receiv[ing/e]" a content package limitation, which "includes a detailed explanation of the content package itself: the rules and triggers necessary to invoke the presentation of content, and what kind of responses a user may provide," and which is alleged to not be an "insignificant receiving step." *Id*. at 11 (citing Twitter IPR, Ex. 2021 ¶¶ 226–227). Patent Owner also argues that "[t]he tripartite structure is a fundamental building block advancing the claims over the prior art's two-step processes (i.e., comparing contextual information to trigger conditions)." *Id*. (citing Twitter IPR, Ex. 2021 ¶¶ 211–222). Patent Owner asserts that the use of the tripartite structure allows for flexibility and scalability and adds shareability/reusability of content packages. *Id*. at 12 (citing Twitter IPR, Ex. 2021 ¶¶ 211–222, 225–234). Patent Owner further argues that the

Federal Circuit has recognized the patentability of claims despite their recitation of well-know components. *Id*.

We are not persuaded by Patent Owner's arguments. "[T]he relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea . . . on a generic computer." *Alice*, 573 U.S. at 225. Although the Patent Owner appears to argue that the received content package step and tripartite structure add something more to the claims, we do not agree. As discussed above, we determined that the claims recite an abstract idea. Further, we considered operations of the functions performed by the first device at each step of the process and found them to be generic in nature, and the ordered combination of steps add nothing more than the individual steps. Patent Owner's arguments allege advantages of the claims, but Patent Owner fails to explain how the steps of the claim do anything more than implement the abstract ideas using conventional electronic devices. We have also considered substitute claims 31, 32, 35, 36, 39, and 40, and even if these claims are specific to a certain applications, that does not make the claimed steps performed by a conventional computer anything "other than abstract." *See SAP*, 898 F.3d at 1168 (Fed. Cir. 2018).

In view of the foregoing, we conclude that Twitter and Facebook have established by a preponderance of the evidence that proposed substitute claims 26–40 are unpatentable under 35 U.S.C. § 101.

3. Conclusion As To Unpatentability

In view of the foregoing, we conclude that Petitioners collectively have established by a preponderance of the evidence that proposed substitute claims 26–40 are unpatentable. In summary:

Motion to Amend Outcome	Claim(s)
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	26–40
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	26–40
Substitute Claims: Not Reached	

VII. ORDER

Accordingly, it is

ORDERED that IPR2021-00987, IPR2021-01294, and IPR2021-01458 are consolidated;

FURTHER ORDERED that claims 1–25 of U.S. Patent 8,489,599 B2 have been shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Motions to Amend are denied as to proposed substitute claims 26–40; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.[35]

[35] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

VIII. CONCLUSION

In summary:[36]

Snap's Challenges

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 4–7, 10–13, 17–20, 22–25	102	Rosenberg	1, 2, 4–7, 10–13, 17–20, 22–25	
4, 5, 15, 16, 19, 20, 22–25	103(a)	Rosenberg	15, 16	
3, 8, 9, 14, 21	103(a)	Rosenberg, Suzuki	3, 8, 9, 14, 21	
Overall Outcome			1–25	

Facebook's Challenges

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont, Wolfe, Wang	1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis	9	
1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, 25	103(a)	Lamont , Wolfe, Wang, Meyers[37]		

[36] Note that these summary tables are separately presented above in each case section.

[37] Because we determine challenged claims 1, 4, 6, 7, 10–12, 15, 17–19, 22, 24, and 25 are rendered obvious by Lamont, Wolfe, and Wang, we need not address the obviousness ground for these claims.

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
9	103(a)	Lamont, Wolfe, Wang, Belimpasakis, Meyers[38]		
Overall Outcome			1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	

Twitter's Challenges

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 6, 7, 9–12, 17–19, 24, 25	103(a)	PALLAS[39]		
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Yau	1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS, Kim[40]		
1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	103(a)	PALLAS,		

[38] Because we determine challenged claim 9 is rendered obvious by Lamont, Wolfe, Wang, and Belimpasakis, we need not address the obviousness ground for this claim.
[39] Because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.
[40] Because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
		Yau, Kim[41]		
Overall Outcome			1, 4, 6, 7, 9–12, 15, 17–19, 22, 24, 25	

Proposed Substitute Claims

Motion to Amend Outcome	Claim(s)
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	26–40
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	26–40
Substitute Claims: Not Reached	

[41] Because we determine that these challenged claims are rendered obvious by PALLAS and Yau, we need not address this obviousness ground for these claims.

PETITIONERS:

Naveen Modi
Joseph Palys
PAUL HASTINGS LLP
naveenmodi@paulhastings.com
josephpalys@paulhastings.com

Heidi Keefe
Phillip Morton
Andrew Mace
Mark R. Weinstein
COOLEY LLP
hkeefe@cooley.com
pmorton@cooley.com
amace@cooley.com
mweinstein@cooley.com

J. Steven Baughman
Megan Raymond
Michael F. Milea
GROOMBRIDGE, WU, BAUGHMAN & STONE LLP
steve.baughman@groombridgewu.com
megan.raymond@groombridgewu.com
mike.milea@groombridgewu.com

PATENT OWNER:

James Quigley
Alexandra Easley
MCKOOL SMITH, P.C.
jquigley@mckoolsmith.com
aeasley@mckoolsmith.com