

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

AUTONOMOUS DEVICES, INC.,
Patent Owner

Case IPR2023-01169
Patent 10,607,134

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141(c), 142, and 319, 37 C.F.R. § 90.2(a), notice is hereby given that Petitioner Tesla, Inc. (“Tesla”) appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision, entered January 6, 2025 (Paper 44) (“Final Written Decision”) (attached), in Case No. IPR2023-01169 by the Patent Trial and Appeal Board (“the Board”), and from all underlying orders, decisions, rulings, and opinions related thereto and included therein that are adverse to Tesla. This appeal is timely under 35 U.S.C. § 142, 37 C.F.R. § 90.3, Federal Rule of Appellate Procedure 15(a)(1), and Federal Circuit Rule 15(a)(1).

For the limited purpose of providing the Director with the information required by 37 C.F.R. § 90.2(a)(3)(ii) and Federal Rule of Appellate Procedure 15(a)(2)(C), the issues on appeal may include, but are not limited to:

1. The Board’s judgment that Petitioner has not established by a preponderance of the evidence that claim 3 of U.S. Patent No. 10,607,134 (the “’134 patent”) would have been unpatentable, including any underlying questions of law or fact, including at least (1) findings or conclusions regarding anticipation by or obviousness over U.S. Patent No. 8,142,268 (Thomas), and (2) findings regarding anticipation by U.S. Patent No. 9,434,072 (Buehler).

2. The Board's failure to consider evidence of record fully and properly; the Board's findings that conflict with the evidence of record and/or are not supported by substantial evidence; and the Board's reliance on conclusory and insufficient expert testimony.
3. Any other Board and/or Director finding, determination, decision, ruling, judgment, or order on any issue decided adversely to Tesla.

Petitioner further reserves the right to challenge any finding or determination supporting or relating to the issues above and reserves the right to address any issues that may arise on appeal or that Patent Owner may raise on appeal.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a)(1), this notice is being filed with the Director of the U.S. Patent and Trademark Office, and a copy is also being filed with the Board. In addition, pursuant to Federal Circuit Rule 15(a)(1) and 37 C.F.R. § 90.2(a)(2), Petitioner also is electronically filing this notice with the Clerk of the U.S. Court of Appeals for the Federal Circuit, and paying the fee set forth in Federal Circuit Rule 52.

Respectfully submitted,

Date: March 10, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on March 10, 2025, a complete and entire copy of this Petitioner's Notice of Appeal was provided via email to the Patent Owner by serving the correspondence address of record as follows:

Arvind Jairam Reg. No. 62,759
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Pursuant to 37 C.F.R. §§ 90.2(a)(1), I hereby certify that in addition to being filed electronically through the Board's P-TACTS System, this Petitioner's Notice of Appeal is being provided to the Director of the USPTO on March 10, 2025, by electronically filing to the email address as follows:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
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I hereby certify that on March 10, 2025, a true and correct a copy of the foregoing Petitioner's Notice of Appeal, along with a copy of the Final Written

Decision, was filed electronically with the Clerk's Office of the United States

Court of Appeals for the Federal Circuit, at the following address:

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Suite 401
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Date: March 10, 2025

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
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v.

AUTONOMOUS DEVICES, LLC,
Patent Owner.

IPR2023-01169
Patent 10,607,134 B1

Before BARBARA A. PARVIS, ROBERT J. WEINSCHENK, and
RUSSELL E. CASS, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
Denying Patent Owner's Motion to Amend
35 U.S.C. § 318(a)

I. INTRODUCTION

We instituted an *inter partes* review of claims 1–20 (“challenged claims”) of U.S. Patent No. 10,607,134 B1 (Ex. 1001, “the ’134 patent”) owned by Autonomous Devices, LLC (“Patent Owner”). Paper 19 (“Institution Decision” or “Inst. Dec.”). Following institution of the trial, among other papers, Patent Owner filed a Motion to Amend requesting that “to the extent the Board finds any of original claims 2–5, 7, and 9–19 unpatentable in this proceeding, [Patent Owner] respectfully requests that the Board grant this motion with respect to each corresponding substitute claim [proposed substitute claims 21–36].” Paper 25 (“Motion to Amend” or “MTA”) 1.

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. For the reasons we discuss below, we determine that Tesla, Inc. (“Petitioner”) has proved by a preponderance of the evidence that claims 1, 2, and 4–20 of the ’134 patent are unpatentable. We determine that Petitioner has not proved by a preponderance of the evidence that claim 3 is unpatentable. We also determine that Petitioner has shown by a preponderance of the evidence that proposed substitute claims 22–36 are unpatentable and, therefore, we deny Patent Owner’s request in its Motion to Amend to issue substitute claims 22–36. We do not reach Patent Owner’s request to issue proposed substitute claim 21 because Patent Owner proposes that claim 21 is a substitute for claim 3.

A. Background

Petitioner filed a Petition (Paper 1 (“Pet.”)) requesting *inter partes* review of claims 1–20 of the ’134 Patent. Pet. 4. We determined that the

Petition established a reasonable likelihood that Petitioner would prevail with respect to at least one claim. Inst. Dec. 42. We instituted as to claims 1–20 of the ’134 patent on all grounds stated in the Petition. *Id.*

Thereafter, Patent Owner filed a Response. (Paper 24, “PO Resp.”), Petitioner filed a Reply (Paper 29, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 32, “PO Sur-reply”). Patent Owner also filed a Motion to Amend. MTA 1. In its Motion to Amend, Patent Owner requested Preliminary Guidance. *Id.* Petitioner filed an Opposition to Patent Owner’s Motion to Amend. Paper 30 (“Opp. MTA”). We provided Preliminary Guidance. Paper 31 (“PG”). Patent Owner filed a Reply in support of its Motion to Amend. Paper 33 (“Reply MTA”). Petitioner filed a Sur-reply to Patent Owner’s Motion to Amend. Paper 38 (“Sur-reply MTA”). A hearing was held October 2, 2024. A transcript of the hearing is part of the record. Paper 43 (“Hearing Tr.”). Following the hearing, Patent Owner filed a Sur-sur-reply in support of its Motion to Amend. Paper 42 (Sur-sur-reply MTA).

B. Real Parties-in-Interest

Petitioner names itself as the sole real party-in-interest. Pet. 1. Patent Owner names itself as the real party-in-interest. Paper 4, 1.

C. Related Matters

The parties inform us that the ’134 patent was asserted in *Autonomous Devices LLC v. Tesla, Inc.*, No. 22-cv-1466 (MN) (D. Del.). Pet. 1; Paper 4, 1.

D. The ’134 Patent

The ’134 patent is titled “Artificially Intelligent Systems, Devices, and Methods for Learning and/or Using an Avatar’s Circumstances for Autonomous Avatar Operation.” Ex. 1001, code (54). The ’134 patent

relates to “learning an avatar’s or an application’s operation in various circumstances, storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, etc.), and/or enabling autonomous operation of the avatar or the application.” *Id.* at code (57).

Figure 2 of the ’134 patent is depicted below.

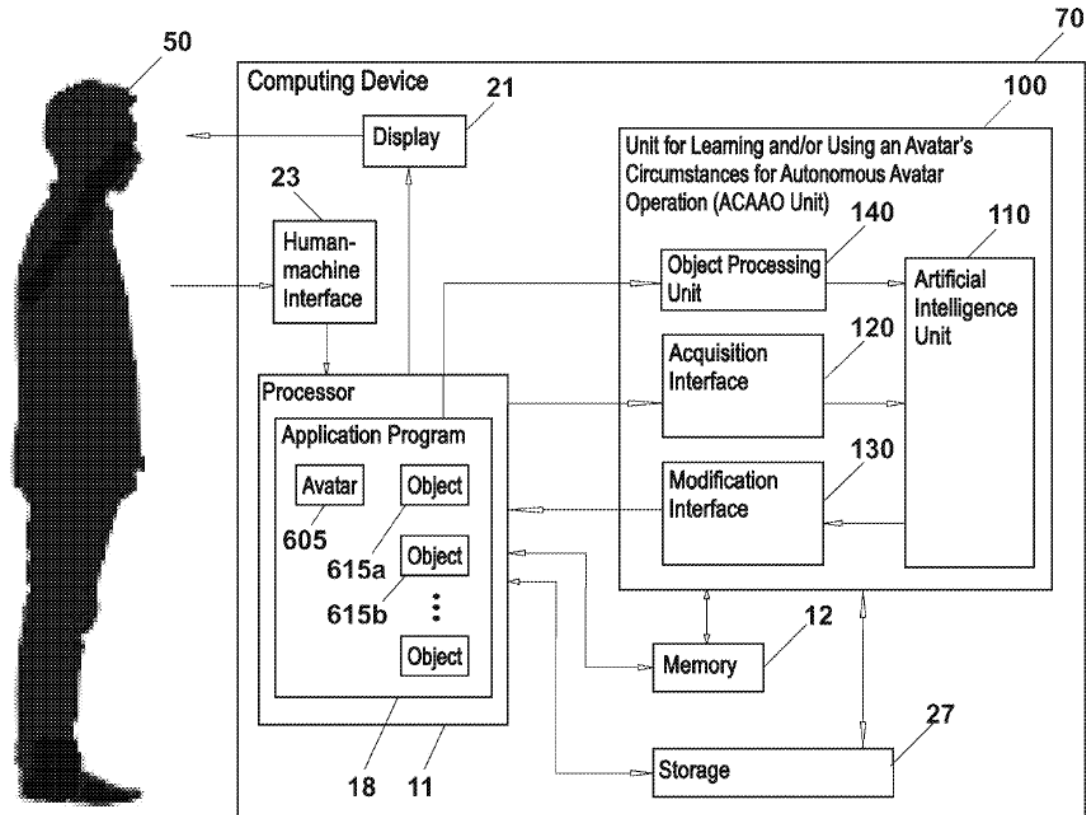


FIG. 2

Figure 2 illustrates an embodiment of computing device 70 comprising “Unit for Learning and/or Using an Avatar’s Circumstances for Autonomous Avatar Operation” (ACAAO Unit) 100, processor 11, human-machine interface 23, memory 12, and storage 27. *Id.* at 66:61–64.

Processor 11 is configured to execute instruction sets for operating the device. *Id.* at 67:9–11. User 50 issues an operation direction to application program 18 responsive to which application program 18’s instructions or

instruction sets are executed by processor 11 to perform a desired operation.

Id. at 67:65–68:7. Examples of application program 18 include the following:

a computer game, a virtual world application, a graphics application, a media application, a word processing application, a spreadsheet application, a database application, a web browser, a forms-based application, a global positioning system (GPS) application, a 2D application, a 3D application, an operating system, a factory automation application, a device control application, a vehicle control application, and/or other application or program.

Id. at 61:11–20.

Avatar 605 comprises an object of application program 18. *Id.* at 68:22–23. Avatar 605 may be a representation of user 50. *Id.* at 68:29–31. Avatar 605 performs operations within application program 18 such as moving, maneuvering, jumping, running, and shooting. *Id.* at 68:36–40.

ACAAO Unit 100 comprises artificial intelligence unit 110, acquisition interface 120, modification interface 130, and object processing unit 140. *Id.* at 66:67–67:2. Artificial intelligence unit 110 is “configured to receive a first collection of object representations” that include “one or more object representations representing one or more objects of the application.” *Id.* at 67:15–20.

Figure 5A of the '134 patent is depicted below.

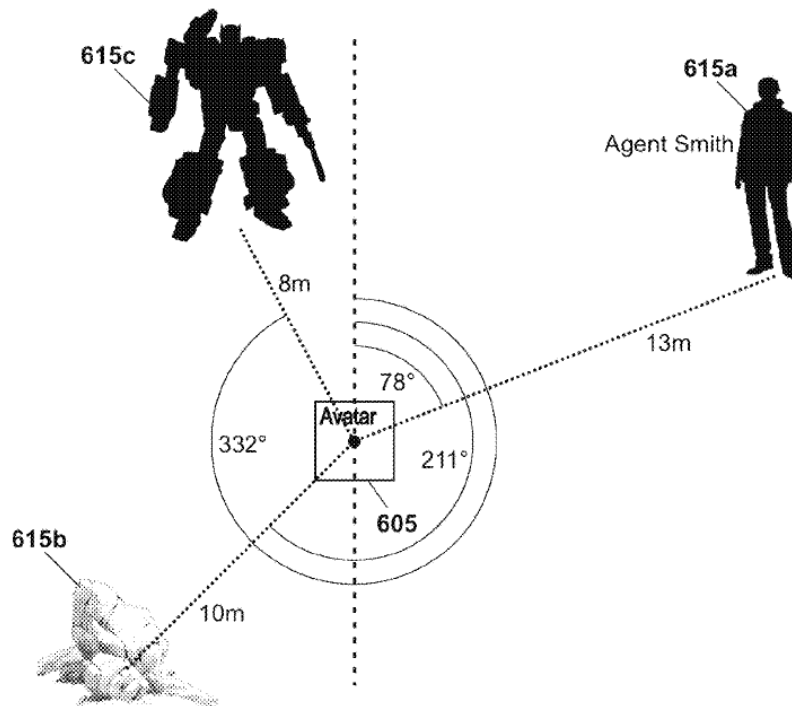


Figure 5A, above, illustrates the surrounding for Avatar 605, which includes Objects 615a, 615b, and 615c. *Id.* at 81:4–16. The patent further discloses that “Object Processing Unit 140 can be used to obtain objects and/or their properties in Avatar’s 605 surrounding within Application Program 18.” *Id.* at 68:48–51.

E. Illustrative Claim

Petitioner challenges claims 1–20 of the '134 patent. Pet. 1. Claims 1, 10, and 19 are independent claims. Claims 2–9 and 11–18 depend directly from claim 1. Claim 20 depends directly from claim 19. Independent claim 1, reproduced below, with Petitioner’s annotations, is illustrative of the claimed subject matter.

1. [1.1] A system comprising:

one or more processors; and

[1.2] one or more non-transitory machine readable media storing machine readable code that, when executed by the one or

more processors, causes the one or more processors to perform at least:

- [1.3] accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;
- [1.4] generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;
- [1.5] determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and
- [1.6] at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application.

Ex. 1001, 171:42–172:2.

F. Evidence

Petitioner relies on the patent document references summarized in the table below.

Name	Patent Document	Exhibit
Thomas	US 8,142,268 B2	1005
Buehler	US 9,434,072 B2	1006

Petitioner also relies on the Declaration of Jason Janet, Ph.D. (Ex. 1003) and the Supplemental Declaration of Dr. Janet (Ex. 1022). Patent Owner relies on the Declaration of Eli Saber, Ph.D. (Ex. 2007).

G. Asserted Grounds

Petitioner asserts that the challenged claims of the '134 patent are unpatentable based on the following grounds summarized in the table below:

Claims Challenged	35 U.S.C. § ¹	References/Basis
1–20	102	Thomas
3, 5, 12–14	103	Thomas
1, 3, 17	102	Buehler

II. ANALYSIS—CHALLENGED CLAIMS

A. Legal Standards

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). To establish anticipation, “all of the elements and limitations of the claim must be shown in a single prior reference, arranged as in the claim.” *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001).

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 claimed invention, as a whole, would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is

¹ Because the challenged claims of the '134 patent have an apparent effective filing date of December 19, 2016 (Ex. 1001, code (22)), the 35 U.S.C. §§ 102 and 103 provisions of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, §§ 3(b)–3(c), 3(n)(1), 125 Stat. 284, 285–87, 293 (2011) apply. Our determinations and findings herein would not change if the pre-AIA provisions applied.

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 evidence of nonobviousness, i.e., secondary considerations.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts a person having ordinary skill in the art:

would have had at least (1) a bachelor’s degree in electrical engineering, computer engineering, computer science, systems engineering, or equivalent course work with two to three years of work experience in computer vision, image/video processing, and/or machine learning; or (2) a master’s degree in any of those fields with a focus in computer vision, image/video processing, and/or machine learning.

Pet. 4 (citing Ex. 1003 ¶¶ 37–39). Patent Owner “adopts” Petitioner’s definition of a person of ordinary skill in the art. PO Resp. 5.

Considering the subject matter of the ’134 patent, the background technical field, and the asserted prior art, we agree with Petitioner’s proposed qualifications for an ordinary level of skill, except we decline to adopt “at least” as that language is vague and open-ended. Otherwise, Petitioner’s proposed definition is consistent with the level of skill reflected in the specification of the ’134 patent and the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Accordingly, except as noted above, we adopt Petitioner’s assessment of the level of skill for one of ordinary skill in the art.

² Patent Owner does not present objective evidence of nonobviousness.

C. Claim Construction

We construe the challenged claims by applying the standard used in federal courts, in other words, “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b),” which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2020). Under this standard, the words of a claim generally are given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips*, 415 F.3d at 1312–13. “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).

We address the parties’ arguments regarding claim construction below.³

1. Means-Plus-Function Terms

For “means for generating or receiving . . . ,” “means for determining . . . ,” and “means for executing . . . ” recited in claim 19, Petitioner contends the “specification describes that a corresponding structure for performing

³ In the Institution Decision, we declined to adopt Patent Owner’s proposal that the term “object representation” should be construed as “a ‘data structure that includes an object property generated by object processing.’” Inst. Dec. 21 (citing Prelim. Resp. 8). Patent Owner does not dispute our determination. *See generally* PO Resp; PO Sur-reply. Based on the complete trial record now before us, we maintain that determination discussed at the institution stage.

these functions is one or more processor circuits or processors.” Pet. 5 (citing, e.g., Ex. 1001, 17:19–18:8; Ex. 1003 ¶¶ 64–66). Patent Owner does not dispute Petitioner’s proposed construction. PO Resp. 13. We adopt Petitioner’s proposed construction for purposes of this Decision.

2. “*connection*”

The term “connection” is recited in claim 4, which depends directly from claim 1. Specifically, the term “connection” is recited in element [4.4], which recites “wherein the first correlation is connected with the third correlation by a *connection*” (emphasis added).

Petitioner does not provide an express construction for the term “connection” in the Petition. Pet. 4–5. In the Patent Owner Response, Patent Owner argues that “a ‘connection’ should be construed as a ‘relationship that includes a link.’” PO Resp. 9 (citing Ex. 2007 ¶¶ 54–60). In the Reply, Petitioner argues that Patent Owner’s proposed construction is too narrow, and that the “meaning that most closely aligns with the breadth of this term in the intrinsic record is ‘an association or a relationship.’” Pet. Reply 7, 10. In the Sur-reply, Patent Owner maintains that its proposed construction for “connection” is correct. PO Sur-reply 8–11.

Patent Owner argues its “construction is supported by the claims, specification, drawings, and intrinsic record as a whole.” PO Resp. 9–13 (citing, e.g., Ex. 1001, 16:8–10, 105:14–52, 107:48–53, 155:2–5, Figs. 12–16, 17A). In particular, Patent Owner argues that the ’134 patent’s Figure 17A shows connections between nodes that “may include or be associated with a value such as a symbolic label or numeric attribute (i.e. weight, cost, capacity, length, etc.).” *Id.* at 11 (citing Ex. 1001, 105:35–38, Fig. 17A). Patent Owner also argues that the ’134 patent’s Figure 17A shows connections between knowledge cells that “may include or be associated

with at least one of: an occurrence count, a weight, a parameter, or a data.” *Id.* at 12 (citing Ex. 1001, 107:48–53, Fig. 17A). Patent Owner further argues “several dictionaries confirm that ‘connection’ can be defined as a ‘relationship that includes a link.’” *Id.* at 13 (citing Ex. 2012; Ex. 2013; Ex. 2007 ¶ 60).

The parties appear to agree that the term “connection” refers to a relationship, but dispute whether it includes a link. PO Resp. 9; Pet. Reply 10. For the reasons given below, even if we assume for the purposes of this Decision that the term “connection” means a “relationship that includes a link,” as Patent Owner proposes, the asserted prior art still discloses the disputed claim limitation. We, therefore, need not make further determinations regarding the meaning of “connection” in order to resolve the parties’ disputes about the asserted grounds of unpatentability. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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))).

D. Anticipation of Claims 1, 2, 4, 6–11, and 15–20 under 35 U.S.C. § 102 by Thomas

Petitioner asserts that claims 1, 2, 4, 6–11, and 15–20 are anticipated by Thomas. Pet. 4. Patent Owner provides separate arguments disputing Petitioner’s assertion for claims 1, 4, 7, 16, and 17. PO Resp. 14–19, 22–28, 33–38.

We begin with an overview of Thomas. We then turn to the parties’ contentions.

1. Thomas

Thomas is titled “Systems and Methods for Simulating a Particular User in an Interactive Computer System.” Ex. 1005, code (54). Thomas relates to “simulating a particular user’s behavior in an interactive computer system.” *Id.* at 1:18–21.

Thomas notes that “a key component in the entertainment value of most videogames is that of competition between opponents, whereby each opponent vies against the competition to win and to become the best.” *Id.* at 1:25–28. Thomas describes that “research has demonstrated that for videogames, when players are not actively competing against other players, they spend time training and practicing in order to improve their skills and thereby become better, more capable competitors.” *Id.* at 1:52–56. Typically, according to Thomas, “human players who seek to practice their skills during the time they are not actively competing against other human players, would primarily do so by playing against the computer AI in the single-player videogame configuration.” *Id.* at 1:59–64. However, “[p]laying or practicing against a computer is simply not the same experience as playing or practicing against a human.” *Id.* at 2:10–12.

To address this, Thomas discloses “a simulator configured to simulate a user interacting with a computer program,” which “includes a learning mode of operation and a simulation mode of operation.” *Id.* at 2:22–26. Thomas’s system allows a user to compete against a computer system that simulates a particular user, such as one with superior game skills, where the computer system simulates that particular user’s decisions and tendencies. *Id.* at 3:36–39.

Figure 1 of Thomas is reproduced below.

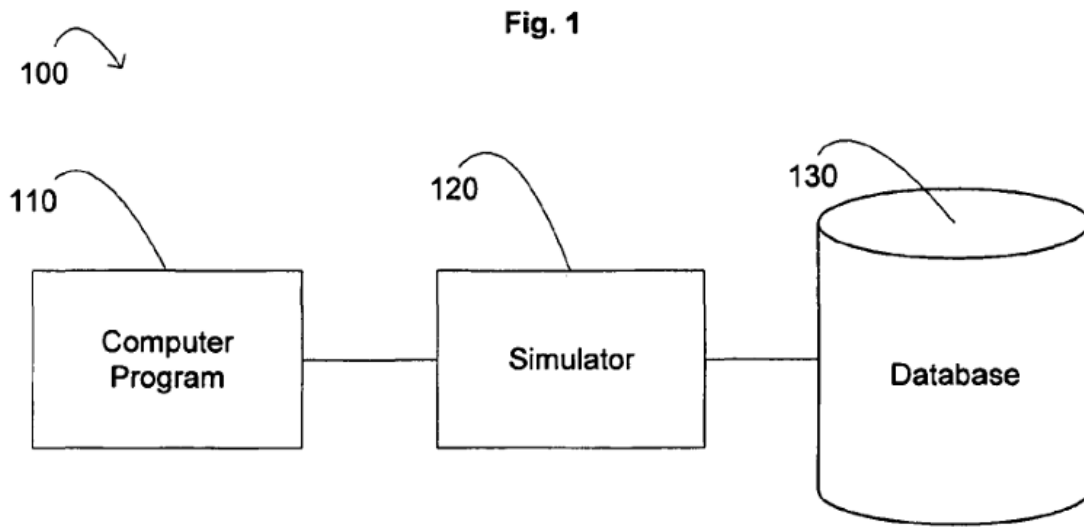


Figure 1 shows a diagram of interactive computer system 100 that includes interactive computer program 110, simulator 120 operatively coupled with interactive computer program 110, and database 130 coupled with simulator 120. *Id.* at 3:40–49. Interactive computer program 110 is configured to have a plurality of users interact with each other. *Id.* at 3:42–45. An example of interactive computer program 110 is a video game. *Id.* Simulator 120 is configured to simulate a particular user’s decisions and behavior. *Id.* at 3:43–46. Database 130 stores data used by the simulator 120 to calculate and generate the decisions and behavior. *Id.* at 3:46–48.

Simulator 120 generally operates in two modes: (1) learn, or record, mode and (2) simulation, or playback, mode. *Id.* at 3:49–51. During the learn mode, if a first user is using the computer program 110, the simulator 120 collects and evaluates data about the first user’s input when interacting with computer program 110. *Id.* at 3:53–56. The collected data is then stored in database 130. *Id.* at 3:56–57. The collected data is stored in a data structure, referred to as a user’s profile, corresponding to the first user. *Id.* at 3:57–59. The collected data is logically linked to an event, or situation, that initiated

the user's input. *Id.* at 3:59–61. “[W]hen the simulator 120 is in simulation mode, and a particular event and/or situation occurs, the simulator 120 can invoke a corresponding reaction based on the stored data, thereby simulating the user.” *Id.* at 5:25–29.

2. *Independent Claim 1*

a) *Element [1.1]*

The preamble of claim 1 recites “[a] system comprising: one or more processors.” Ex. 1001, 171:41–43. Petitioner relies on Thomas's disclosure of “simulating a particular user's behavior in an interactive computer system.” Pet. 9 (quoting Ex. 1005, code (57)). Petitioner also relies on Thomas's disclosure of a processor executing instructions. *Id.* (citing, e.g., Ex. 1005, 20:20–23).

Patent Owner does not dispute Petitioner's arguments or evidence regarding element [1.1]. *See generally* PO Resp.; PO Sur-reply. Petitioner's arguments are supported by the evidence cited in the Petition. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.1].

b) *Element [1.2]*

Element [1.2] recites “one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least.” Ex. 1001, 171:44–47. Petitioner relies on Thomas's disclosures of executing code stored on a computer-usable medium and a portable memory device. Pet. 10 (citing, e.g., Ex. 1005, 13:60–19:34, 19:35–46, 20:20–48, 22:21–24).

Patent Owner does not dispute Petitioner's arguments or evidence regarding element [1.2]. *See generally* PO Resp.; PO Sur-reply. Petitioner's

arguments are supported by the evidence cited in the Petition. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.2].

c) Element [1.3]

Element [1.3] recites “accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application.” Ex. 1001, 171:48–53. Petitioner argues Thomas’s data collected during learning mode and stored in database 130 “includes the user’s input for controlling an avatar in the computer program (i.e., an instruction set for operating an avatar object of an application program) in association with the surrounding circumstances or situation.” Pet. 11 (citing, e.g. Ex. 1005, 3:53–61, 4:67–5:5, 5:7–13). Petitioner argues Thomas describes current circumstances that are stored, such as the spatial position of avatars and the virtual road conditions, which are information related to an object, and comprise object representations. *Id.* at 12–13 (citing, e.g., Ex. 1005, 4:16–54, 7:65–8:1, 9:43–53; Ex. 1003 ¶ 234). Petitioner also argues “Thomas further describes that during simulation mode, the system accesses the stored correlations to simulate the user’s control of the avatars” and Thomas describes exemplary simulations including simulation of pump fake and pass events. *Id.* at 13–14 (citing, e.g. Ex. 1005, 5:30–61, 7:39–44, 7:55–64, 8:8–15, 10:56–11:3, 11:11–22, 12:63–13:1).

Petitioner’s arguments that Thomas describes “accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application” are supported by Thomas. For instance, Thomas describes

simulator 120 collecting and evaluating data “about the first user’s input when interacting with the computer program 110.” Ex. 1005, 3:54–55.

Thomas describes that (1) the “collected data is then stored in the database 130,” (2) the collected “data is stored in a data structure, generally referred to as a user’s profile,” and (3) the collected “data is logically linked to an event, or situation, that initiated the user’s input.” *Id.* at 3:56–61. Thomas describes events and situations that “are defined by a set of one or more parameters.” *Id.* at 4:23–24. Exemplary parameters described in Thomas are “spatial position[(s)] of avatars controlled by the user 665 on the interface screen.” *Id.* at 4:31–33.

Thomas describes creating or establishing a user profile by simulator 120 recording “the user’s decision/input” and storing “the user’s input in the field or sub-profile associated with the particular situation and/or event.” *Id.* at 4:67–5:5, Fig. 6. Then, during “simulation[] or playback mode,” if “the simulator 120 identifies the occurrence of a particular event that is linked to a field or sub-profile of the user’s profile,” “then the simulator 120 will check the value of the field or sub-profile.” *Id.* at 5:36–40. Thomas describes that “[t]he value represents the stored user input recorded during the learn mode 550 for the simulated user.” *Id.* at 5:40–42. Thomas describes “[i]f the response can differ given different situations during the occurrence of the event,” “then the simulator 120 also analyzes the current situation to determine the proper response.” *Id.* at 5:42–45. Thomas describes if “there is no value, i.e., stored user input, recorded for the given the event and/or situation, then the simulator 120 will generate a random or default response.” *Id.* at 5:54–57. Thomas also describes if “there is a stored user input value,” “then the simulator 120 will generate a response corresponding to that value.” *Id.* at 5:58–61.

Petitioner’s arguments that Thomas discloses “wherein the first one or more objects representations represent one or more objects of the application” are supported by Thomas. For instance, Thomas describes additional exemplary parameters including “spatial position(s) of the avatars controlled by one or more user opponents 675 of the game,” and “the archetype of the avatar,” “virtual weather,” and “road conditions.” *Id.* at 4:37–54.

Patent Owner does not dispute Petitioner’s arguments or evidence regarding element [1.3]. *See generally* PO Resp.; PO Sur-reply. Petitioner’s arguments are supported by the evidence cited in the Petition. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.3].

d) Element [1.4]

Element [1.4] recites “generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application.” Ex. 1001, 171:54–57. Petitioner argues “Thomas describes that during simulation/playback mode, the system generates a second one or more object representations, including representations of defensive players on the opposing team and their spatial position on the field or court.” Pet. 14 (citing Ex. 1005, 3:49–51, 7:39–8:15; Ex. 1003 ¶ 237). Petitioner argues “a POSITA^[4] would have understood that in Thomas’s system the second object representations (*e.g.*, spatial position of other avatars on the field/court, virtual weather, road conditions) are also received by Thomas’s processor to compare the situation/event generated during simulation mode

⁴ POSITA and POSA are used to refer to a person of ordinary skill in the art.

to the situation/event recorded during learning mode.” *Id.* at 15 (citing Pet. 15–16 (Section IX.A.1.e); Ex. 1003 ¶¶ 238–240).

Patent Owner does not dispute Petitioner’s arguments or evidence regarding element [1.4]. *See generally* PO Resp.; PO Sur-reply. Petitioner’s arguments are supported by the evidence cited in the Petition. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.4].

e) Element [1.5]

Element [1.5] recites “determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations.” Ex. 1001, 171:58–62. In the Petition, Petitioner relies on Thomas’s disclosure that “[t]he stored data enables the analysis of a user’s behavior, tendencies, and inclinations for a given event [and,] [t]hus . . . the simulator 120 can invoke a corresponding reaction based on the stored data, thereby simulating the user.” Pet. 15 (quoting Ex. 1005, 5:25–29; alterations in original). Petitioner argues

Thomas further discloses that during simulation mode the system compares the first object representations recorded during learning mode (*e.g.*, the spatial position of defenders) to the second object representations generated and received during simulation mode (*e.g.*, the spatial position of defenders), and determines instructions for operating the avatar of a simulated user in response to a match, such as determining that the same avatar that the user controlled during learning mode (*i.e.*, the first avatar) should pump fake.

Id. at 15–16 (citing Ex. 1005, 7:39–44, 7:65–8:15, 10:56–11:3, 11:11–22, 12:63–13:1; Ex. 1003 ¶¶ 241–242).

In the Patent Owner Response, Patent Owner argues that Thomas’s disclosure of analyzing differs from “based on at least partial match” recited in element [1.5]. *See, e.g.*, PO Resp. 15 (arguing “**‘analysis’ is different than ‘matching,’**”) (citing Ex. 2007 ¶¶ 69–71), *id.* (“Thomas never discloses comparing or matching the spatial positions of defenders and only provides that such positions are analyzed.”) (citing Ex. 1005, 8:8–15) (emphasis omitted), 15–16 (arguing that “‘Analysis’ in Thomas is a different concept than ‘matching’ in claim 1”), 17 (arguing that disclosures in Thomas relied on by Petitioner do not “disclose **comparing or matching object representations since ‘analyzing’ is a different concept than ‘matching’** as discussed in detail above”) (citing Ex. 2007 ¶¶ 70–74).

Patent Owner also argues that “second one or more object representations” and “first one or more object representations” recited in element [1.5] are not disclosed by Thomas. *See, e.g.*, PO Resp. 15 (arguing “**‘stored data,’ ‘user’s behavior,’ ‘tendencies,’ ‘inclinations,’ and ‘event’ are all different than ‘object representations’**”) (citing Ex. 2007 ¶¶ 69–70), 18 (arguing Dr. Janet’s declaration testimony is deficient because he “could not explain where specifically in his declaration he equated time and score to object representations”) (citing Ex. 2008, 24:17–27:21), 19 (“Thomas simply does not disclose ‘matching,’ let alone matching of object representations as required by claim 1.”).

In the Reply, regarding “based on at least partial match,” Petitioner argues that a person of ordinary skill in the art would have understood that because a “situation is ‘defined by a set of one or more parameters’” the “identification of similar situations involves identifying situations having at least some similar parameter values, *e.g.*, situations with a **match** between object representations.” Pet. Reply 2 (citing Ex. 1022 ¶ 9). Petitioner argues

that a “concrete example of Thomas’s reliance on a *match* between object representations is apparent in the context of the ‘pump fake event’” described in Thomas. *Id.* (citing, e.g., Ex. 1005, 8:8–15). Petitioner argues “in playback mode, the simulator ‘analyze[s] the location of . . . the defensive coverage,’ i.e., again, locations of opposing-team players (second object representations)” and “[i]f criteria is met,’ the simulator ‘invoke[s] a pump fake.’” *Id.* at 3 (citing Ex. 1005, 8:8–15). Petitioner argues another example is “Thomas’s ‘pass out of shot event.’” *Id.* at 3 (citing Ex. 1005, 7:55–64). Petitioner argues “in playback mode, the locations of opposing-team avatars (second object representations) are again considered: ‘the simulator 120 will analyze how well the passing avatar and the receiving avatar are covered’” and “‘if the current circumstances meet the criteria,’ a pass is invoked, where the criteria are ‘how much the passing and receiving avatars are covered.’” *Id.* at 4 (citing Ex. 1005, 7:59–64).

Regarding “second one or more object representations” and “first one or more object representations,” Petitioner argues that a “situation is ‘defined by a set of one or more parameters,’ at least some of which characterize objects of the application (e.g., parameters specifying locations or archetypes of avatars)—e.g., each situation is defined (at least in part) by object representations characterizing objects that form part of the situation.” *Id.* at 2 (citing Ex. 1005, 4:13–59). Petitioner argues, for example, “parameters specifying locations of opposing-team players” recorded in “learning mode” describe “first object representations” and “locations of opposing-team players” in “playback mode” describe “second object representations.” *Id.* at 2–3 (Ex. 1005, 8:8–11). Petitioner argues as another example “parameters indicating locations of opposing-team avatars . . . in the vicinity of the receiving and passing avatars” in “learning mode”

describe “first object representations” and “the locations of opposing-team avatars” in “playback mode” describe “second object representations.” *Id.* at 4 (citing Ex. 1005, 7:55–59).

In the Sur-reply, Patent Owner maintains its positions in its Patent Owner response and restates many of the same arguments. PO Sur-reply 1–2, 5. Patent Owner also argues that Petitioner’s argument that “Patent Owner fails to account for the ‘reasonable inferences that a POSITA would bring to bear in reviewing Thomas,’ is wrong.” PO Sur-reply 5 (citing Pet. Reply 5). Patent Owner argues that Thomas’s disclosure is “vague” and “[l]acks . . . explanation.” *Id.* Patent Owner also argues that certain of Petitioner’s descriptions of Thomas are Petitioner’s “own words,” and Petitioner’s argument is conclusory and unsupported by Thomas’s disclosure. *Id.* at 1–2, 4.

We start with “determining the first one or more instruction sets for operating the first avatar” recited in element [1.5]. The recitations of “the first one or more instruction sets” and “the first avatar” derive antecedent basis from element [1.3]. As discussed with respect to element [1.3] (*see* § II.D.2.c), Petitioner maps Thomas’s “user’s input for controlling an avatar in the computer program” to “an instruction set for operating an avatar.” Pet. 11 (citing, e.g., Ex. 1005, 3:53–61, 4:67–5:5, 5:7–13). As discussed with respect to element [1.3] (*see* § II.D.2.c), Petitioner’s argument is supported, for example, by Thomas’s description of creating or establishing a user profile by simulator 120 recording “the user’s decision/input” and storing “the user’s input in the field or sub-profile associated with the particular situation and/or event.” Ex. 1005, 4:67–5:5. Then, during “simulation[] or playback mode,” if “the simulator 120 identifies the occurrence of a particular event that is linked to a field or sub-profile of the

user's profile," "then the simulator 120 will check the value of the field or sub-profile." *Id.* at 5:36–40. Thomas describes further processing steps (*see* § II.D.2.c) and then, according to Thomas, if "there is a stored user input value," "then the simulator 120 will generate a response corresponding to that value." *Id.* at 5:58–61.

We turn to "based on at least partial match between the second one or more object representations and the first one or more object representations" recited in element [1.5]. The recitations of "first" and "second" "object representations" derive antecedent bases from elements [1.3] and [1.4]. Petitioner's arguments for those elements are supported by Thomas's disclosures, for example, of additional exemplary parameters including "spatial position(s) of the avatars controlled by one or more user opponents 675 of the game," and "the archetype of the avatar," "virtual weather," and "road conditions." Ex. 1005, 4:37–54. Petitioner's arguments also are supported by Thomas's disclosures, for example, that the simulator operates in "two modes," which are "(1) learn, or record mode" and "(2) simulation, or playback mode." Ex. 1005, 3:49–51. Petitioner's arguments also are supported by Thomas's disclosure that during "playback mode 600, when an inbound event occurs, the simulator 120 will retrieve the recorded data associated with the inbound event and also analyze the current situation, such as time, score, and spatial positions of defensive avatars, to determine which action to invoke that represents the simulated user." *Id.* at 7:39–44. Thomas describes further details with respect to exemplary events such as "an offensive rebound event," "a pass out of shot event," "a catch and shoot event," and "a pump fake event." *Id.* at 7:45–8:15. Petitioner's arguments for elements [1.3] and [1.4] are not disputed by Patent Owner.

Regarding “based on at least partial match” recited in element [1.5], Thomas’s disclosures cited in the Petition support Petitioner’s argument. Ex. 1005, 5:25–29 (describing that simulator 120 invokes “a corresponding reaction based on the stored data”), 7:39–44 (describing that in playback mode 600, simulator 120 “will retrieve the recorded data associated with the inbound event and also analyze the current situation . . . to determine which action to invoke”), 7:65–8:15 (describing that simulator 120 “analyze[s] the simulated user’s location on the basketball court” to determine “[i]f the simulated user is located in the typical spot for catch and shoot”), 11:1–3 (describing “[w]hile the computer program 110 is running, the simulator 120 monitors the program to identify events or situations that may warrant a special move”), 11:11–22 (describing simulator 120 “evaluat[ing] whether behavior input is used for special moves,” “determin[ing] whether current situation requires a user profile 400 special move,” “generat[ing] a player control command for the computer program 110,” and “charg[ing] up appropriate avatars based on information in the user profile 400”), 12:63–13:1 (describing simulator 120 “examin[ing] where the closest two defending avatars 320 are in relation to the ball carrying avatar 320”). Thomas’s disclosures cited in the Reply provide further support. *See, e.g., id.* at 7:55–64 (describing for “a pass out of shot event” during playback 600 simulator 120 “will analyze how well the passing avatar and the receiving avatar are covered” and “will invoke a pass if the current circumstances meet the criteria, e.g., how much the passing and receiving avatars are covered”).

Patent Owner’s arguments are unavailing. We start with Patent Owner’s argument that Thomas’s disclosure of analyzing differs from “based on at least partial match” recited in element [1.5]. *See, e.g., PO Resp.*

15 (arguing “‘*analysis*’ is *different than ‘matching,’* and ‘*stored data,*’ ‘*user’s behavior,*’ ‘*tendencies,*’ ‘*inclinations,*’ and ‘*event*’ are all *different than ‘object representations*”)) (citing Ex. 2007 ¶¶ 69–70), *id.* (“Thomas never discloses comparing or matching the spatial positions of defenders and only provides that such positions are analyzed.”) (citing Ex. 1005, 8:8–15), 15–16 (arguing that “‘Analysis’ in Thomas is a different concept than ‘matching’ in claim 1”), 17 (arguing that disclosures in Thomas relied on by Petitioner do not “disclose *comparing or matching object representations since ‘analyzing’ is a different concept than ‘matching’* as discussed in detail above”) (citing Ex. 2007 ¶¶ 70–74).

Contrary to Patent Owner’s argument, Thomas describes simulator 120 collecting and evaluating data “about the first user’s input when interacting with the computer program 110.” Ex. 1005, 3:54–55. Thomas describes that (1) the “collected data is then stored in the database 130,” (2) the collected “data is stored in a data structure, generally referred to as a user’s profile,” and (3) the collected “data is logically linked to an event, or situation, that initiated the user’s input.” *Id.* at 3:56–61. Thomas describes that simulator 120 “generally operates in two modes: (1) learn, or record, mode and (2) simulation, or playback, mode.” *Id.* at 3:49–51. Thomas also describes that in playback mode 600, simulator 120 “will retrieve the recorded data associated with the inbound event and also analyze the current situation . . . to determine which action to invoke.” *Id.* at 7:39–44.

Patent Owner’s arguments that Thomas’s disclosures are “different” and that Thomas does not disclose element [1.5] are conclusory. PO Resp. 15–17. Also, contrary to Patent Owner’s arguments, we must consider what Thomas discloses rather than whether Thomas uses the exact claim term “partial match.” *Cf. In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (a

reference does not have to satisfy an *ipsis verbis* test to disclose a claimed element). Thomas discloses, for example, retrieving the recorded data associated with the inbound event and analyzing current data such as (1) “the simulated user’s location on the basketball court” to determine “[i]f the simulated user is located in the typical spot for catch and shoot” (*id.* 7:65–8:15), (2) the location of “the closest two defending avatars 320 . . . in relation to the ball carrying avatar 320” (*id.* at 12:63–13:1), and (3) “how well the passing avatar and the receiving avatar are covered” to “invoke a pass if the current circumstances meet the criteria, e.g., how much the passing and receiving avatars are covered” (*id.* at 7:55–64). Additionally, we must account for the reasonable inferences that a person of ordinary skill in the art would bring to bear in reviewing Thomas. *See, e.g., In re Preda*, 401 F.2d 825, 826 (CCPA 1968) (“[I]t is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.”); *Eli Lilly v. Los Angeles Biomedical Research Inst.*, 849 F.3d 1073, 1074–75 (Fed. Cir. 2017).

We turn to Patent Owner’s argument that “second one or more object representations” and “first one or more object representations” recited in element [1.5] are not disclosed by Thomas. *See, e.g.,* PO Resp. 15 (arguing “‘*stored data,*’ ‘*user’s behavior,*’ ‘*tendencies,*’ ‘*inclinations,*’ and ‘*event*’ *are all different than ‘object representations’*”) (citing Ex. 2007 ¶¶ 69–70), 18 (arguing Dr. Janet’s declaration testimony is deficient because he “could not explain where specifically in his declaration he equated time and score to object representations”) (citing Ex. 2008, 24:17–27:21), 19 (“Thomas simply does not disclose ‘matching,’ let alone matching of object representations as required by claim 1.”). Patent Owner does not dispute that Thomas teaches

“first one or more object representations” and “second one or more object representations” with respect to elements [1.3] and [1.4]. We find that Petitioner has shown that Thomas uses those “first one or more object representations” and “second one or more object representations” in the partial matches disclosed in Thomas, as described above.

We turn to Patent Owner’s arguments in the Sur-reply that:

(1) Thomas’s disclosure is “vague” and “[l]acks . . . explanation,” (2) certain of Petitioner’s descriptions of Thomas are Petitioner’s “own words,” and (3) Petitioner’s argument is conclusory and unsupported by Thomas’s disclosure. *Id.* at 1–5. Patent Owner’s arguments do not address Thomas’s specific disclosures relied on by Petitioner of the operation of computer program 110 collecting data and storing it in database 130 in a user profile data structure during learn or record mode and then simulator 120 retrieving the stored data and performing an analysis using the retrieved data and current data and invoking a response. *See, e.g.*, Ex. 1005, 3:49–51, 3:54–61, 7:39–44, 7:55–8:15, 10:56–11:3, 11:11–22, 12:63–13:1.⁵

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 14–19 (citing Ex. 2007 ¶¶ 69–75). Dr. Saber’s testimony is substantially the same as Patent Owner’s argument and does not provide further persuasive explanation or support. We find that Dr. Saber’s testimony does not undermine Petitioner’s showing for the same reasons given above.

⁵ Patent Owner arguments regarding Dr. Janet’s testimony (*see, e.g.*, PO Resp. 17–19) are unavailing for the same reasons given above. Furthermore, we arrive at the same determination for element [1.5] even without considering or relying on Dr. Janet’s testimony.

We find that Petitioner’s arguments are supported by the cited evidence and Patent Owner’s arguments do not undermine Petitioner’s showing. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.5].

f) Element [1.6]

Element [1.6] recites:

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application.

Ex. 1001, 171:63–172:2.

Petitioner argues “Thomas discloses invoking an action for an avatar in an application program in simulation mode based on stored data when a particular event or situation occurs.” Pet. 16 (citing, e.g., Ex. 1005, 5:25–29; Pet. 15–16; Ex. 1003 ¶ 243). Petitioner relies on Thomas’s disclosures of invoking a pump fake or a pass as examples. *Id.* at 16–17 (citing Ex. 1005, 7:55–64, 8:12–15; Ex. 1003 ¶ 244).

Patent Owner does not dispute Petitioner’s arguments or evidence regarding element [1.6]. *See generally* PO Resp.; PO Sur-reply. Petitioner’s arguments are supported by the evidence cited in the Petition. Based on the arguments and evidence in the complete record now before us, we find that Thomas discloses element [1.6].

g) Conclusion—Claim 1

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 1 is

unpatentable as anticipated by Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing.

3. *Dependent Claim 4*

Claim 4 depends directly from claim 1 and recites that in claim 1’s system “the first correlation is included in a knowledgebase.” Claim 4 recites additional features of the system of claim 1, including the disputed recitation, which is “wherein the first correlation is connected with the third correlation by a connection.” In the Petition, Petitioner relies on Thomas’s disclosures relating to database 130, which stores data used by simulator 120. Pet. 21–24 (citing Ex. 1005, 3:41–49, 3:56–61, 6:19–23, 6:28–30, 7:22–8:27; Ex. 1003 ¶¶ 253–260). Petitioner provides a detailed element-by-element analysis that is supported by the cited evidence.

In the Patent Owner Response, Patent Owner argues that “Thomas fails to disclose ‘wherein the first correlation is connected with the third correlation by a connection’ under the proper construction of ‘connection.’” PO Resp. 23 (citing Ex. 2007 ¶¶ 81–86). Patent Owner argues “values, labels, numeric attributes, weights, etc. in Petitioner’s argument *are not applicable to a connection since they may or may not be included or associated with the connection.*” *Id.* at 24 (citing Ex. 2007 ¶¶ 82–84).

In the Reply, Petitioner disputes Patent Owner’s construction of “connection.” Pet. Reply 7–10. Petitioner also argues that even using Patent Owner’s claim construction, Thomas discloses the disputed limitation. *Id.* at 11 (citing Ex. 1005, 6:19–30, Ex. 1022 ¶¶ 27–30).

In the Sur-reply, Patent Owner maintains its position that its proposed claim construction is correct and that Thomas does not disclose the disputed limitation using Patent Owner’s proposed construction. PO Sur-reply 8–11.

We find that Petitioner cites evidence that persuasively supports its arguments. For instance, Thomas discloses

FIG. 1 shows a diagram of an interactive computer system 100 that includes an interactive computer program 110 configured to have a plurality of users interact with each other, such as a video game, a simulator 120 operatively coupled with the program 110 that is configured to simulate a particular user's decisions and behavior, and a database 130 coupled with the simulator 120, which stores data used by the simulator 120 to calculate and generate the decisions and behavior.

Ex. 1005, 3:41–49. Thomas describes that “[t]he collected data is then stored in the database 130,” in “a data structure, generally referred to as a user’s profile” and “*the data is logically linked to an event, or situation, that initiated the user’s input.*” *Id.* at 3:56–61 (emphasis added). Thomas discloses that different instruction sets may be linked to the same event or situation. Specifically, Thomas describes “[i]n one hundred (100) occurrences of the event, if the user spun left twenty (20) times, right thirty (30) times, and juked fifty (50) times, the simulator 120 will assign values of twenty (20), thirty (30), and fifty (50) to the respective responses.” Ex. 1005, 6:19–23. Thomas also discloses “[d]uring simulation mode, the simulator 120 can randomly invoke a response to a situation and/or event based on weighted statistical values of the stored inputs.” *Id.* at 6:28–30. In other words, Thomas links specific different instructions based on weighted statistical values to a single situation or event. *Id.* at 6:19–23, 6:28–30; Ex. 1003 ¶¶ 253–260.

Patent Owner’s arguments are unavailing. As discussed above, Petitioner has shown that Thomas discloses “wherein the first correlation is connected with the third correlation by a connection” even using Patent Owner’s construction. Patent Owner’s arguments relating to inapplicability

of Thomas's disclosures of use of numeric attributes and weights are based on an incorrect characterization of Petitioner's arguments. PO Resp. 24–26 (citing Ex. 2007 ¶¶ 82–86). Petitioner relies on Thomas's disclosures of different responses being linked to the same situation or event and those different responses are distinguished based on weighted statistical values. More specifically, different responses are assigned different values, for example, twenty (20), thirty (30), and fifty (50). Ex. 1005, 6:19–23. Those different responses are then linked to the same event, specifically an avatar running down the sideline. Ex. 1005, 3:56–61, 6:19–23. As shown in Figure 4, the user profile stores data for each event 655, including circumstance data 680 and user input (not shown). Ex. 1005, Fig. 4; *see also id.* at 3:53–61 (describing collecting “the first user's input when interacting with the computer program 110” and “stor[ing the collected user input] in a data structure, generally referred to as a user's profile”). Thomas describes that during simulation mode, the simulator invokes a response, which may be based on the weighted statistical values of the stored inputs. *Id.* at 6:28–30. The invoked response is of “*data [that] is logically linked to an event, or situation, that initiated the user's input.*” *Id.* at 3:56–61.

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 22–26 (citing Ex. 2007 ¶¶ 81–86). Dr. Saber's testimony is substantially the same as Patent Owner's argument and does not provide further persuasive explanation or support. We find that Dr. Saber's testimony does not undermine Petitioner's showing for the same reasons given above.

For the reasons given, we determine that Petitioner demonstrates by a preponderance of the evidence that Thomas discloses the recitations in claim 4. Based on the arguments and evidence of record, we determine that

Petitioner has proved, by a preponderance of evidence, that claim 4 is unpatentable as anticipated by Thomas. We find that Patent Owner's arguments and evidence do not undermine Petitioner's showing.

4. *Dependent Claim 7*

Claim 7 depends directly from claim 1 and recites the “system of claim 1, wherein, to correlate the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, a determination is made that the first one or more instruction sets for operating the first avatar of the application *temporally correspond* to the first one or more object representations” (emphasis added). The parties' dispute pertains to the recitation of “temporally correspond.”

In the Petition, Petitioner argues the following:

Thomas discloses this limitation because it describes that during learning mode the user inputs commands that the user-controlled avatar executes (*i.e.*, the first instruction set) at the same time that the first object representations are generated on the video interface screen, such as when a user initiates a command in response to certain defensive coverage of opposing players. Ex. 1005, 7:55–59 (“[T]he simulator 120, during learn mode 550, records a shot type, which avatar passed, and which avatar was passed to. For current circumstances, the simulator 120 records how open the receiving avatar was and how covered the passing avatar was.”), 8:8–15 (recording object representations at the same time as pump fake command during learning mode); Ex. 1003, ¶ 270.

Thomas also discloses this limitation because it describes storing temporal information (*e.g.*, time left in the game when an instruction set is executed and the situation/event is generated) as part of the correlation between object representations (*e.g.*, the spatial position of the defenders) and instruction sets. *Id.*, 4:29 (“[o]ne common parameter that defines a situation may be time”); *see also id.* at 5:50–53 (describing that if “the time left on the play clock is less than two minutes . . . the simulator 120

will . . . determine whether the user would kick a field goal”); Ex.1003, ¶ 271.

Pet. 29–30 (emphasis omitted; alterations in original).

In the Patent Owner Response, Patent Owner argues that Thomas does not disclose “a determination” that one or more instruction sets “temporally correspond” to the first one or more object representations. PO Resp. 26 (citing Ex. 2007 ¶¶ 87–90). Patent Owner refers to this recitation as “an extra processing step of determining a temporal correspondence.” *Id.* at 27. Patent Owner argues “Thomas does not need such determination since Thomas simply associates situations and user commands at the same time when they happen to be received.” *Id.* (citing Ex. 2007 ¶ 89). Patent Owner also argues “storing temporal information as part of a correlation is a different concept than making a determination of temporal correspondence.” *Id.* at 28.

In the Reply, Petitioner argues that certain of Patent Owner’s arguments are based on unclaimed features. Pet. Reply 12. Petitioner argues that Thomas discloses the “determination of temporal correspondence” recited in claim 7 because Thomas describes that its “instruction to invoke a pump fake” “**temporally corresponds**” to the “locations of opposing-team avatars.” *Id.* at 12–13 (citing, e.g., Ex. 1005, 7:55–59, 8:8–15; Ex. 1022 ¶ 33). Petitioner argues that Thomas’s system “identifies (*e.g.*, **determines**) the current circumstances” and the determination is made “to ‘associate [correlate] the one or more data fields.” *Id.* at 13 (citing Ex. 1005, code (57), 7:55–59, 8:8–15; Ex. 1022 ¶ 34) (emphasis omitted; alteration in original).

In the Sur-reply, Patent Owner asserts that its argument is based on the “claim language” and not unclaimed features. PO Sur-reply 11. Patent Owner argues that the “portions of Thomas cited by Petitioner [(Pet. Reply

13)] only describe associating a game situation with *whatever user's commands happen to be executed at that time*, and do not mention any determination of temporal correspondence between the user's commands and the defensive coverage situation.” *Id.* at 12 (citing Ex. 2007 ¶¶ 87–90).

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. Patent Owner's arguments are unavailing because Patent Owner does not address all Thomas's disclosures relied on by Petitioner.

As an example of how Petitioner's argument is supported by Thomas's disclosures, Thomas describes “analyz[ing] the time left on the play clock and the score” and determining “[i]f the *time left on the play clock is less than two minutes*, and [the] simulated user is losing by 5 points.” Ex. 1005, 5:49–53 (emphasis added) (cited in Pet. 13, 30). If both conditions are satisfied “then the simulator 120 will analyze such situation to determine whether the user would kick a field goal or try to reach the end zone for a touchdown.” *Id.* at 5:51–54 (cited in Pet. 13 discussing “accessing a first correlation”). We find that Thomas's disclosure of performing an analysis to decide the next play if two conditions (the time left on the play clock and the simulated user is losing by 5 points) are satisfied discloses determining if those conditions are satisfied. We must consider what Thomas discloses rather than whether Thomas uses the exact claim term “determining.” *Cf. Gleave*, 560 F.3d at 1334.

We find that determining whether “the time left on the play clock is less than two minutes” describes “a determination . . . that the first one or more instruction sets for operating the first avatar of the application [that is instructions the user would kick a field goal or try to reach the end zone for a touchdown] temporally correspond to the first one or more object

representations [that is the time left on the play clock is less than two minutes].” *Id.* at 5:49–54 (cited in Pet. 13, 30). Thomas also describes that “[e]ach event 685 and situation 665 are defined by a set of one or more parameters” and a “common parameter that defines a situation may be time 660, e.g., time left in a particular session or game, and/or time played in a particular session or game.” *Id.* at 4:23–31 (cited in Pet. 12, 30).

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 26–28 (citing Ex. 2007 ¶¶ 87–90). Dr. Saber’s testimony is substantially the same as Patent Owner’s argument and does not provide further persuasive explanation or support. We find that Dr. Saber’s testimony does not undermine Petitioner’s showing for the same reasons given above.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 7 is unpatentable as anticipated by Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing.

5. *Dependent Claim 16*

Claim 16 depends directly from claim 1 and recites

The method system of claim 1, wherein:
an element of the first correlation is deleted after the first correlation is generated,
an element of the first correlation is modified after the first correlation is generated,
an element of the first correlation is manipulated after the first correlation is generated, or
an element is inserted into the first correlation after the first correlation is generated.

Ex. 1001, 175:34–43.

Petitioner argues the following:

In particular, Thomas describes that if “there is existing data in the playbook profile,” i.e. after the first correlation is generated, the simulator will “evaluate whether the data is up to date” and elements of the data should “evolve as the user’s interaction evolves. In other words, data recorded thirty games ago may have a lesser impact on the total data available.” Ex. 1005, 10:27–32; Ex. 1003, ¶ 315. Thomas further describes that for correlations comprising the same situation/event (i.e., situations that have the same one or more object representations) correlated with different instruction sets, “each different type of user input” is “associate[d with] one or more values...based on the *statistical occurrence of each input* compared to other inputs.” Ex. 1005, 6:13–27; *see id.* at 6:16–25 (“In one hundred (100) occurrences of the event, if the user spun left twenty (20) times, right thirty (30) times, and juked fifty (50) times, the simulator 120 will assign values of twenty (20), thirty (30), and fifty (50) to the respective responses.”); Ex. 1003, ¶ 316.

Pet. 47–48.

Patent Owner argues that Petitioner has not shown that Thomas’s “value or numerical weight associated with user input” is an “element of the first correlation.” PO Resp. 34. Patent Owner argues that “***the only elements of the first correlation are the first instruction set and the first object representation.***” *Id.* (citing Ex. 2007 ¶¶ 98–100). Patent Owner argues that Thomas’s “association of a value or numerical weight with a user input” is not either “***the first one or more object representations***” or “***the first one or more instruction sets of the first correlation.***” *Id.* Regarding the recitation that “an element is inserted,” Patent Owner argues “that ‘associating’ and ‘inserting’ are different concepts with different meanings.” *Id.* at 35.

In the Reply, Petitioner argues “[c]laim 1 (from which claim 16 depends) recites ‘a first correlation ***including*** a first one or more object representations correlated with a first one or more instruction sets.’” Pet.

Reply 16. Petitioner argues that “[i]t is well-established that the term ‘including’ is an open-ended phrase, and thus [Patent Owner’s] assertion that the first correlation cannot include further elements is simply not accurate.” *Id.* at 16–17 (citing *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1214 (Fed. Cir. 2008); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1344–45 (Fed. Cir. 2003); *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1361 (Fed. Cir. 2007)).

In the Sur-reply, Patent Owner maintains its position and restates arguments made in the Patent Owner Response. PO Sur-reply 16–17. Patent Owner provides further clarification arguing that “only those elements [recited in claim 1] can be deleted, modified, manipulated, or inserted into in claim 16.” *Id.* at 17. Patent Owner argues “Petitioner cannot create an additional element of a correlation not recited in claim 16 and then assert that Thomas’s use of the additional unrecited element somehow reads on the claimed invention.” *Id.*

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. Patent Owner’s arguments are unavailing because Patent Owner does not address that Petitioner’s arguments pertain to one of four alternatives recited in claim 16. Claim 16 recites four alternatives, specifically, that an element of the first correlation is deleted, modified, or manipulated, after the first correlation is generated, *or* an element is inserted into the first correlation after the first correlation is generated. Patent Owner’s arguments are not consistent with claim 16’s recitation of alternatives including “an element is inserted into the first correlation after the first correlation is generated.”

The term “including” means that the listed elements are essential but other elements may be added. *Lucent Techs.*, 525 F.3d at 1214 (“This court

has consistently interpreted ‘including’ and ‘comprising’ to have the same meaning, namely, that the listed elements (i.e., method steps) are essential but other elements may be added.”); *see also Amgen*, 314 F.3d at 1344–45; *CIAS*, 504 F.3d at 1361. Thus, even assuming that Patent Owner correctly argues that “the only elements of the first correlation are the first instruction set and the first object representation” (PO Resp. 34), that does not limit the term “an element” in the recitation “an element is inserted into the first correlation after the first correlation is generated.”

Petitioner’s arguments are supported by Thomas’s disclosures. For instance, regarding “after the first correlation is generated,” Thomas describes “check[ing] if one or more user inputs have already been recorded for the current situation and/or event.” Ex. 1005, 6:11–13. Thomas describes “[i]f so” simulator 120 will associate “one or more values with each different type of user input based on the statistical occurrence of each input compared to other inputs.” *Id.* at 6:13–16. Thomas, more specifically, describes “a player’s avatar” encountering an opposing player’s avatar and assigning values for each response based on actions by the user. *Id.* at 6:16–27. Petitioner’s argument also is supported by Thomas’s disclosure that “the simulator 120 will evaluate whether the data is up to date” because “[p]referably, data should evolve as the user interaction evolves.” Ex. 1005, 10:27–32. Patent Owner’s arguments do not address persuasively that Thomas’s disclosures describe the fourth alternative recited in claim 16, which is “an element is inserted into the first correlation after the first correlation is generated.”

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 33–35 (citing Ex. 2007 ¶¶ 98–100). Dr. Saber’s testimony is substantially the same as Patent Owner’s argument and does not

provide further persuasive explanation or support. We find that Dr. Saber's testimony does not undermine Petitioner's showing for the same reasons given above.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 16 is unpatentable as anticipated by Thomas. We find that Patent Owner's argument and evidence do not undermine Petitioner's showing.

6. *Dependent Claim 17*

Claim 17 depends directly from claim 1 and further recites, among other recitations, "modifying: the first one or more instruction sets for operating the first avatar of the application, or a copy of the first one or more instruction sets for operating the first avatar of the application."

Petitioner relies on Thomas's disclosure relating to "kick profile 420," which stores information regarding how a user kicks a ball during play. Pet. 49–51 (citing, e.g., Ex. 1005, 12:42–54). Petitioner argues "Thomas discloses that the system modifies the kick profile, including the instruction set comprising the kick distance/power range, when the system records data during learning mode associated with how the user performed the kicking function (e.g., the power used to kick)." *Id.* at 49.

Patent Owner argues that "***“modifying’ recited in claim 17 is of instruction sets that are already correlated with object representations,”*** that is "***“after they are learned or stored*** as recited in claim 1," which is "***“not ‘when recording data’ (i.e. during learning).”*** PO Resp. 36 (citing Ex. 2007 ¶¶ 101–104). Patent Owner argues that Petitioner relies on Thomas's disclosure of adding power "when recording data," which Patent Owner argues is "inapplicable." *Id.* Patent Owner also argues that Thomas's "adding power to the total kick power accumulated" is not "modifying an

instruction set” as Thomas does not “mention instruction sets” or “anything related to an instruction set.” *Id.*; *see also id.* at 37 (“Thomas does not disclose that any actual instruction set” or “anything related to an instruction set” is “modified.”) (citing Ex. 2007 ¶¶ 103–104). Patent Owner also argues that Thomas’s “determining the power for kick” does not disclose “executing” modified instruction sets because (1) “***determining is a different concept than executing***,” and (2) the “executing” recited in claim 17 occurs “***after the instruction sets are already (i) correlated and learned/stored (as recited in claim 1 and discussed above) and (ii) determined in the autonomous operation process*** (as recited in claim 17[]).” *Id.* at 37. Patent Owner also argues that Thomas’s “kicker kicking the football” does not disclose an operation “defined by: the modified the first one or more instruction sets.” *Id.* (citing Ex. 2007 ¶ 104).

In the Reply, Petitioner argues that Patent Owner “attempts to read a temporal limitation into claim 17.” Pet. Reply 17 (citing PO Resp. 36). Petitioner argues that “the Petition’s identification of ‘modif[ying] the kick profile’ during learning mode is sufficient to demonstrate Thomas’s disclosure of modifying the one or more instruction sets.” *Id.* (citing Pet. 49–51; Ex. 1005, 10:29–30, 12:42–51; Ex. 1022 ¶¶ 44–45).

In the Sur-reply, Patent Owner maintains its position and restates arguments made in the Patent Owner Response. PO Sur-reply 17. For example, Patent Owner argues “Thomas ***merely discloses adding power to the total kick power accumulated, not modifying any instruction set, especially not one that is correlated with an object representation***, as required by claim 17.” *Id.* (citing PO Resp. 35–38).

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. Patent Owner’s

arguments are unavailing. We start with Patent Owner’s argument that Petitioner relies on “inapplicable” disclosure in Thomas of recording data associated with how the user performed the kicking function because the data is recorded during learning mode. PO Resp. 36; PO Sur-reply 17. Thomas describes “[w]hen recording data for a kick profile 420, the simulator 120 may check to see if the user’s power has exceeded the minimum or maximum, increment the kick count, and add the power to the total power accumulated.” Ex. 1005, 12:42–51 (cited in Pet. 49–50; Pet. Reply 17). Thomas describes “[w]hen the simulator 120 is in simulation mode, based on the user’s profile 400, and the simulated user is in a kick situation, the simulator 120 may determine the power for kick based on the corresponding kick profile 420,” which includes considering “the average” computed using the kick count and total power accumulated. *Id.* at 12:51–54 (cited in Pet. 49–50; Pet. Reply 17). We, therefore, find that adding power to the total power accumulated during learning mode is modifying an instruction set at least because it changes “the average,” which is part of an instruction to determine power for a simulated kick. Petitioner’s argument also is supported by Thomas’s disclosure that “data should evolve as the user’s interaction evolves” during learning mode. Ex. 1005, 10:29–30 (cited in Pet. 49; Pet. Reply 17).

We turn to Patent Owner’s argument that Thomas does not “mention instruction sets” or “anything related to an instruction set.” PO Resp. 36–37; PO Sur-reply 17. The recitation of “the first one or more instruction sets for operating the first avatar of the application” derives antecedent basis from element [1.3]. As discussed above with respect to element [1.3] (*see* § II.D.2.c), we find that Petitioner’s argument is supported by the evidence cited in the Petition. For instance, Thomas describes simulator 120

collecting and evaluating data “about the first user’s input when interacting with the computer program 110.” Ex. 1005, 3:54–55. Thomas describes that (1) the “collected data is then stored in the database 130,” (2) the collected “data is stored in a data structure, generally referred to as a user’s profile,” and (3) the collected “data is logically linked to an event, or situation, that initiated the user’s input.” *Id.* at 3:56–61. Thomas describes creating or establishing a user profile by simulator 120 recording “the user’s decision/input” and storing “the user’s input in the field or sub-profile associated with the particular situation and/or event.” *Id.* at 4:67–5:5, Fig. 6. Patent Owner does not dispute Petitioner’s showing for element [1.3]. Also, contrary to Patent Owner’s arguments, we must consider what Thomas discloses rather than whether Thomas uses the exact claim term “instruction sets.” *Cf. Gleave*, 560 F.3d at 1334 (a reference does not have to satisfy an *ipsis verbis* test to disclose a claimed element). For these reasons, we are not persuaded by Patent Owner’s argument that Thomas does not “mention instruction sets” or “anything related to an instruction set.” PO Resp. 36–37; PO Sur-reply 17.

We turn to Patent Owner’s argument that Thomas’s “determining the power for kick” does not disclose “executing” modified instruction sets because (1) “***determining is a different concept than executing***,” and (2) the “executing” recited in claim 17 occurs “***after the instruction sets are already (i) correlated and learned/stored (as recited in claim 1 and discussed above) and (ii) determined in the autonomous operation process***.” PO Resp. 37. Petitioner relies on Thomas’s disclosure of determining “the power for kick based on the corresponding kick profile 420” to show that the modification, that is “add[ing] power to the total power accumulated” is used “[w]hen the simulator 120 is in simulation

mode.” Ex. 1005, 12:50–54. For this reason, we are not persuaded by Patent Owner’s arguments that “*determining is a different concept than executing*” or that Thomas’s “kicker kicking the football” does not disclose an operation “defined by: the modified the first one or more instruction sets.” PO Resp. 37.

With respect to Patent Owner’s argument that the “executing” recited in claim 17 occurs “*after the instruction sets are already (i) correlated and learned/stored (as recited in claim 1 and discussed above) and (ii) determined in the autonomous operation process*” (PO Resp. 37), the term “executing” recited in claim 17 derives antecedent basis from “executing the first one or more instruction sets for operating the first avatar of the application” recited in element [1.6]. For the reasons discussed above (*see* § II.D.2.f), we find that Petitioner cites evidence that persuasively supports its arguments. Ex. 1005, 5:25–29 (describing that “[w]hen the simulator 120 is in simulation mode, and a particular event and/or situation occurs, the simulator 120 can invoke a corresponding reaction based on the stored data, thereby simulating the user”), 7:55–64 (describing that “[t]he simulator 120 will invoke a pass if the current circumstances meet the criteria, e.g., how much the passing and receiving avatars are covered”), 8:12–15 (describing “[i]f criteria is met, then simulator 120 will invoke a pump fake”). Patent Owner does not dispute Petitioner’s arguments for element [1.6]. We find that Petitioner has shown that Thomas describes executing the modified instruction set correlated with kick profile 420 to determine the power for a kick. Ex. 1005, 12:42–54.

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 35–38 (citing Ex. 2007 ¶¶ 101–104). Dr. Saber’s testimony is substantially the same as Patent Owner’s argument and does not

provide further persuasive explanation or support. We find that Dr. Saber's testimony does not undermine Petitioner's showing for the same reasons given above.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 17 is unpatentable as anticipated by Thomas. We find that Patent Owner's argument and evidence do not undermine Petitioner's showing.

7. *Independent Claim 10*

Independent claim 10 is similar to independent claim 1, except claim 10 is written as a method claim. Ex. 1001, 174:19–43. Petitioner's analysis of claim 10 is the same as the analysis of claim 1. Pet. 36–37.

Patent Owner does not argue claim 10 separately. For the reasons presented by Petitioner, based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 10 is unpatentable as anticipated by Thomas.

8. *Dependent Claims 2, 6, 8, 9, 11, 15, and 18*

Each of claims 2, 6, 8, 9, 11, 15, and 18 depend directly from claim 1. Petitioner supports its arguments for dependent claims 2, 6, 8, 9, 11, 15, and 18 with specific citations to Thomas. Pet. 17–19, 26–28, 30–36, 38–40, 47, 51–52 (citing, e.g., Ex. 1005, 3:57–61, 4:29–31, 4:45–51, 4:64–5:7, 5:13–18, 5:26–29, 7:2–4, 7:22–8:15, 7:39–44, 7:50–8:15, 8:55–59, 8:67–9:3, 10:19–32, 12:25–29, 12:42–54, 19:35–42). Petitioner's arguments are supported by the evidence cited in the Petition.

Above, we discussed why we find unavailing Patent Owner's arguments disputing Petitioner's showing for claim 1. Patent Owner does not separately dispute Petitioner's showing for claims 2, 6, 8, 9, 11, 15, and 18.

For the reasons presented by Petitioner, based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claims 2, 6, 8, 9, 11, 15, and 18 are unpatentable as anticipated by Thomas.

9. *Independent Claim 19 and Dependent Claim 20*

Independent claim 19 is similar to independent claim 1, except it is written as a system claim in “means for” form. Ex. 1001, 176:20–43. Claim 20 depends directly from claim 19. Petitioner’s analysis of claims 19 and 20 is the similar to its analysis of claim 1. Pet. 52–55. Petitioner argues that Thomas describes a processor performing the functions of the recitations in “means for” form. *Id.* Petitioner’s arguments are supported by the evidence cited in the Petition.

Patent Owner does not argue claims 19 and 20 separately. Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claims 19 and 20 are unpatentable as anticipated by Thomas.

E. *Unpatentability of Claims 3, 5, and 12–14 under 35 U.S.C. § 102 or § 103(a) over Thomas*

Petitioner asserts that claims 3, 5, and 12–14 are unpatentable as anticipated by or alternatively obvious over Thomas. Pet. 4. Patent Owner provides separate arguments disputing Petitioner’s assertions for claims 3, 12, and 14. PO Resp. 19–22, 28–33, 38–48.

1. *Dependent Claim 3*

Claim 3 depends directly from claim 1 and recites that element [1.5] further includes

determining that a number of at least partially matching portions
of the second one or more object representations and

portions of the first one or more object representations exceeds a threshold number, or
determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage.

Ex. 1001, 172:23–31.

Petitioner argues the following:

A POSITA would have understood that determining whether the criteria is met (i.e., whether there is at least a partial match) would involve determining whether the matching portions exceed a numerical threshold, such as the number of defenders and the distance of the defenders from the simulated avatar (i.e., the first avatar), as described in the pump fake (i.e., the criteria) and pass out of shot (i.e., how much the avatars are covered) examples. Ex. 1005, 7:62–64 (“The simulator 120 will invoke a pass if the current circumstances meet the criteria, e.g., *how much* the passing and receiving avatars are covered.”), 8:13–15 (“[T]he simulator 120 will . . . *analyze the location of the simulated user and the defensive coverage. If criteria is met*, then simulator 120 will invoke a pump fake.”); *see also* Ex. 1003, ¶ 251. Moreover, it would have been obvious to use a threshold number or percentage to determine whether the criteria regarding defensive coverage is met in order to invoke the simulated action (i.e., a threshold number or percentage regarding how much the avatars are covered). Ex. 1003, ¶ 251.

Pet. 20–21.

Regarding anticipation, Patent Owner argues that Thomas does not disclose “determining that a number of at least partially matching portions” of the object representations “exceeds a threshold number” or “exceeds a threshold percentage.” PO Resp. 19–22 (citing Ex. 2007 ¶¶ 77–80). Patent Owner argues that Thomas does not disclose “any matching,” as discussed with respect to claim 1, or “any threshold,” as recited in claim 3. *Id.* Patent Owner argues “the *word ‘threshold’ cannot be found in Thomas*” and a person of ordinary skill in the art would not have understood that a

“threshold” was used in Thomas’s matching. *Id.* at 21. Patent Owner also argues that “the matching process of claim 3” involves “***counting the portions and determining whether this counted number of portions exceeds a numerical threshold***” or “***counting the portions to compute the percentage and determining whether this computed percentage of portions exceeds a percentage threshold***” and Thomas does not disclose “such counting portions,” “computation,” a “numeric threshold,” or a “percentage threshold.” *Id.* at 22.

Regarding obviousness, Patent Owner argues that Thomas in view of the knowledge of a person of ordinary skill in the art does not teach or suggest the disputed recitations. *Id.* at 39–42 (citing Ex. 2007 ¶¶ 107–112). Patent Owner argues that “Petitioner’s argument is conclusory” and does not explain why the disputed recitations would have been obvious. *Id.* at 40. Patent Owner also restates the arguments it made with respect to anticipation. *Id.* at 40–41. Patent Owner also argues that Petitioner “failed to perform a proper obviousness analysis” because Petitioner did not “identify any gaps in Thomas’s disclosure.” *Id.* at 41. Patent Owner also argues that Petitioner improperly relies on “common knowledge” of a person of ordinary skill in the art, which “may only be used to supply a missing claim limitation when that limitation is ‘unusually simple and the technology particularly straightforward.’” PO Resp. 42 (citing *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016)).

In the Reply, Petitioner argues a person of ordinary skill in the art “would have understood that ‘how much’ an avatar is covered refers to how many opposing-team players are within the vicinity of that avatar.” Pet. Reply 6 (citing Ex. 1022 ¶ 16). Petitioner also argues that a person of ordinary skill in the art “further would have understood that determining

whether that coverage ‘meet[s] the criteria’ is a threshold question of whether the avatar is open or sufficiently covered to justify invoking a pass action—*e.g.*, whether the number of opposing-team players within the vicinity of that avatar ***exceeds a threshold*** to warrant invoking the pass.” *Id.* at 6–7 (citing Ex. 1022 ¶ 16). Petitioner argues a person of ordinary skill in the art “would have reached a similar understanding regarding the ‘criteria’ for the ‘defensive coverage’ in Thomas’s pump fake example.” *Id.* at 7 (citing Ex. 1022 ¶ 17). Petitioner argues in the alternative “the Petition asserted that ‘it would have been obvious to use a threshold number or percentage to determine whether the criteria . . . is met.’” *Id.* (citing *e.g.*, Pet. 21; Ex. 1022 ¶ 18).

In the Sur-reply, Patent Owner argues that “the matching process of claim 3” and “using the percentage of at least partially matching portions in the matching process in claim 3” both inherently involve “***counting the portions***.” PO Sur-reply 6 (citing PO Resp. 19–22). Patent Owner argues that “Petitioner’s argument that the claimed determining can be performed without counting is wrong.” *Id.* (citing Pet. Reply 6). Patent Owner also restates arguments made in its Patent Owner Response. *Id.* at 6–7.

Based on the full trial record, we find that Petitioner has failed to sufficiently prove that Thomas anticipates or renders obvious claim 3. First, we agree with Patent Owner that using the number of at least partially matching portions in the matching process of claim 3 involves counting the matching portions and determining whether this counted number of portions exceeds a numerical threshold. *See* PO Resp. 19–22; PO Sur-reply 5–7. This understanding reflects the ordinary meaning of the claim language and, without such a counting, it is unclear (and Petitioner does not persuasively explain) how the number of matching portions could be determined.

Petitioner’s argument (Pet. Reply 6) and Dr. Janet’s testimony (Ex. 1022 ¶ 15) that the claimed “condition can be determined even without an affirmative counting step,” such as by estimating or adding up items in sub-groups, are not persuasive because estimating is imprecise and does not meet the claim limitation and adding up items in sub-groups is not the same as counting. Similarly, we agree with Patent Owner that using the percentage of at least partially matching portions in the matching process as recited in claim 3 involves counting the portions to compute the percentage and determining whether this percentage exceeds a percentage threshold. *Id.*

We also agree with Patent Owner that Thomas’s disclosures relied on by Petitioner (Pet. 18; Pet. Reply 6–7) of invoking a pass or pump fake do not include a description of any counting of portions as part of the matching process. Ex. 1005, 7:62–64 (“The simulator 120 will invoke a pass if the current circumstances meet the criteria, e.g., how much the passing and receiving avatars are covered.”), 8:13–15 (“[T]he simulator 120 will . . . analyze the location of the simulated user and the defensive coverage. If criteria is met, then simulator 120 will invoke a pump fake.”).

Additionally, Petitioner’s obviousness analysis is deficient for the same reasons given above and Petitioner does not provide a reason to modify Thomas to address the deficiency. Pet. 18; Pet. Reply 7. Also, Petitioner’s reliance on Dr. Janet’s testimony does not resolve the deficiency because Dr. Janet’s testimony (Ex. 1003 ¶¶ 250–251; Ex. 1022 ¶¶ 13–18) does not address that either (1) the matching process of claim 3 must be met, which involves counting the portions and determining whether this counted number of portions exceeds a numerical threshold, or (2) the percentage of at least partially matching portions must be used in the matching process, which involves counting the portions to compute the percentage and

determining whether this computed percentage of portions exceeds a percentage threshold.

Based on the arguments and evidence of record, we determine that Petitioner has not proved, by a preponderance of evidence, that claim 3 would have been unpatentable as anticipated by Thomas or obvious over Thomas.

2. *Dependent Claim 12*

Claim 12 depends directly from claim 1 and recites that in claim 1's system "the first correlation is included in a knowledgebase." Claim 12 recites additional features of the system of claim 1, including the disputed recitation, which is "wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user."

Petitioner relies on its arguments for claims 4 and 11. Pet. 40. Petitioner also argues "Thomas describes that the system stores multiple profiles, each of which stores situations/events (*i.e.*, object representations) correlated with instruction sets for simulating operation of an avatar by different users." *Id.* at 41 (citing Ex. 1005, 19:57–62; Ex. 1003 ¶ 296). Petitioner further argues the following:

A POSITA would have understood, and it would have been obvious, that when a second user plays with the same team and avatars as a first user (*e.g.*, different users playing with the Los Angeles Lakers), the object representations and instruction sets (*i.e.*, including first, second, and third object representations correlated with first, second, and third instruction sets) for operating the same player on the same team (*i.e.*, the first avatar) would be learned in another learning process that includes operating the first avatar of the application at least partially by another user. Ex. 1003, ¶ 297.

Pet. 41.

Regarding anticipation, Patent Owner argues “Thomas fails to disclose the claimed ‘the knowledgebase further includes a third correlation . . . wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user.’” PO Resp. 29 (citing Ex. 2007 ¶¶ 91–94). Patent Owner argues that Thomas’s “[u]sers’ ability to upload and download user profiles in Thomas is a different concept” than the disputed recitation in claim 12. *Id.* Patent Owner also argues that Thomas discloses only “***one user operating an avatar during a learning process and simulating that one user in the simulation mode***” and Thomas does not disclose a system that “store[s] mixed knowledge of different users in a single user profile.” *Id.* at 30.

Regarding obviousness, Patent Owner argues that Thomas in view of the knowledge of a person of ordinary skill in the art does not teach or suggest the disputed recitation. PO Resp. 43–45 (citing Ex. 2007 ¶¶ 113–115). Patent Owner argues that Petitioner’s argument is conclusory and lacks explanation. *Id.* at 43. Patent Owner also restates the arguments it made with respect to anticipation. *Id.* at 43–44.

Patent Owner also argues that Petitioner improperly relies on “common knowledge” of a person of ordinary skill in the art, which “may only be used to supply a missing claim limitation when that limitation is ‘unusually simple and the technology particularly straightforward.’” *Id.* at 44 (citing *Arendi*, 832 F.3d at 1361). Patent Owner argues as follows:

Using different users with an avatar in different learning processes to learn mixed knowledge into a single knowledgebase would not have been straightforward or unusually simple to a POSA ***due to the complexities of combining the mixed knowledge*** into a single knowledgebase. Ex. 2007, ¶115. For

example, this approach may involve combining the learned knowledge into a coherent knowledge structure, robustly fusing the learned knowledge from many different users, and/or other issues not found in Thomas and not obvious to a POSA. *Id.*

PO Resp. 44–45.

Patent Owner also argues that Petitioner “failed to perform a proper obviousness analysis” because Petitioner did not identify any gaps in Thomas’s disclosure. *Id.* at 45.

In the Reply, Petitioner argues Thomas discloses claim 12 because “Thomas allows ‘any participating users’ to ‘download or access any user profile available in the database.’” Pet. Reply 13 (citing Ex. 1005, 19:57–62). Petitioner argues that access by “‘any participating users’” is described “in the context of ‘learning and/or simulation mode.’” *Id.* at 14 (citing Ex. 1005, 19:55–60) (emphasis omitted). Petitioner argues the “correlations between object representations and instruction sets are learned during learning mode” so a person of ordinary skill in the art would have understood that Thomas discloses the features recited in claim 12. *Id.* (citing Ex. 1005, 3:53–61, 4:67–5:13, 7:39–44, 8:8–15; Ex. 1022 ¶ 37). Petitioner also argues “the identity of the user operating an avatar during a learning process is an expression of intended use that is non-limiting on the structural elements of the system of claim 12 and thus should be afforded no patentable weight.” *Id.*

In the Sur-reply, Patent Owner argues “***Thomas mentions nothing about multiple users sharing a profile in Thomas’s learning mode.***” PO Sur-reply 12. Patent Owner argues “Thomas only discloses ***one user operating an avatar during a learning process and simulating that one user in the simulation mode.***” *Id.* at 13 (citing Ex. 1005, code (57)). Patent Owner argues, therefore, “Thomas’s system does not store mixed knowledge

of different users in a single user profile” as required by claim 12. *Id.* (citing Ex. 2007 ¶¶ 93–94). Patent Owner also argues that Petitioner’s argument is conclusory and lacks support. *Id.* at 13–14. Patent Owner also disputes Petitioner’s argument regarding non-limiting intended use on the basis that the argument is new and impermissible and also incorrect “as having different users operate an avatar in different learning processes to learn mixed knowledge into a single knowledgebase is technically complex and innovative.” *Id.* (citing Ex. 2007 ¶ 115).

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. Patent Owner’s arguments are unavailing. Importantly, Petitioner’s argument that access by “any participating users” is described “in the context of ‘learning and/or simulation mode’” (Pet. 41; Reply 14) is supported by Thomas. Ex. 1005, 19:55–60 (describing that simulator 120 “can operate in learning and/or simulation mode” and “any participating users can download or access any user profile available in the database 130”); *see also id.* at Ex. 1005, 3:53–61 (describing collecting and storing data when a user interacts with computer program 110 and logically linking the user input data to an event or situation that initiated the user’s input), 4:67–5:13 (describing recording user input “such as a pressed button, combination of buttons, or joystick move of a controller”), 7:39–44 (describing retrieving stored data to decide which action to invoke), 8:8–15 (describing learning mode 550 in which the simulator records how often a user pump fakes and current circumstances associated with pump fakes).

We start with Patent Owner’s argument that Thomas’s “[u]sers’ ability to upload and download user profiles in Thomas is a different concept” than “the knowledgebase further includes a third correlation . . .

wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user” recited in claim 12. PO Resp. 29. Patent Owner, similarly, argues that Thomas discloses only “***one user operating an avatar during a learning process and simulating that one user in the simulation mode***” and Thomas does not disclose a system that “store[s] mixed knowledge of different users in a single user profile.” PO Resp. 30.

Petitioner argues that a person of ordinary skill in the art would have found obvious another user accessing a first user’s profile and operating the first user’s avatar in learning mode. Pet. Reply 14 (citing Ex. 1022 ¶ 37); *see also* Pet. 41 (citing Ex. 1003 ¶ 297) (arguing that “a second user play[ing] with the same team and avatars as a first user” during the learning process would have been obvious). Petitioner’s argument is supported by Thomas’s disclosure that if simulator 120 is on “a server 710, the simulator 120 *can operate in learning and/or simulation mode* as long as the simulator is communicatively coupled with a copy of the interactive computer program 110” and “[i]n the case where the simulator 120 and database 130 resides on a server 710 . . . *any participating users can download or access any user profile available in the database 130.*” Ex. 1005, 19:55–62 (emphases added). Additionally, Thomas describes that “[d]uring learn mode” simulator 120 “collects and evaluates data about the first user’s input when interacting with computer program 110” and the data “is then stored in the database 130” in “a data structure, generally referred to as a user’s profile, corresponding to the first user.” *Id.* at 3:53–61. Although storing the user profile in learning mode is described with respect to “the first user” (*id.*), we find persuasive Petitioner’s argument that another user operating the first user’s avatar in learning mode would have been obvious (Pet. Reply 14; Pet.

41) in view of Thomas’s disclosure of “*any participating users*” downloading or accessing “*any user profile*” where database 130 resides on a server. Ex. 1005, 19:55–62 (emphases added). Also consistent with Petitioner’s argument is Thomas’s disclosure of recording user input “such as a pressed button, combination of buttons, or joystick move of a controller,” which straightforwardly would have been performed by a different human or computer user. *Id.* at 4:67–5:13.

We turn to Patent Owner’s argument that Petitioner’s obviousness argument is conclusory and lacks explanation. PO Resp. 43. We disagree. As discussed above, Petitioner provides a detailed explanation along with the supporting disclosures in Thomas.

We turn to Patent Owner’s argument that Petitioner improperly relies on “common knowledge” of a person of ordinary skill in the art, which “may only be used to supply a missing claim limitation when that limitation is ‘unusually simple and the technology particularly straightforward.’” PO Resp. 44 (citing *Arendi*, 832 F.3d at 1361); *see also id.* at 45 (describing alleged complexities of combining the mixed knowledge of different users into a single knowledgebase). We find Patent Owner’s argument unavailing. Petitioner relies on the teachings of Thomas, including an embodiment in which simulator 120 and database 130 resides on server 710. Ex. 1005, 19:57–62 (cited in Pet. 41). Thomas expressly discloses “*any participating users*” downloading or accessing “*any user profile*” where database 130 resides on a server. *Id.* at 19:55–62 (emphases added). Also, in light of Thomas’s disclosure of recording user input “such as a pressed button, combination of buttons, or joystick move of a controller” (*id.* at 4:67–5:13), we find that recording such input by a different human or computer user

would have been an unusually simple and technologically straightforward modification.

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 28–31 (citing Ex. 2007 ¶¶ 91–94). Dr. Saber’s testimony is substantially the same as Patent Owner’s argument and does not provide further persuasive explanation or support. We find that Dr. Saber’s testimony does not undermine Petitioner’s showing for the same reasons given above.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 12 would have been obvious over Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing.⁶

3. *Dependent Claim 14*

Claim 14 depends directly from claim 1 and recites that in claim 1’s system “the first correlation is included in a knowledgebase.” Claim 14 recites additional features of the system of claim 1, including the disputed recitation, which is

wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application, and wherein the third one or more object representations represent one or more objects of the another application.

Ex. 1001, 175:23–29.

Petitioner relies on its contentions for claims 4 and 13. Pet. 45. Petitioner argues “Thomas also describes that users are able to play

⁶ In view of our obviousness determination, we need not reach Petitioner’s argument that claim 12 is anticipated by Thomas.

computer programs/games on multiple different ‘client console(s)’ including ‘workstation 750’ and ‘video game console 760, such as an Xbox or Playstation.” Pet. 45 (citing Ex. 1005, 19:35–43; Ex. 1003 ¶ 309). Petitioner also argues “Thomas further discloses storing profiles for ‘any participating user’ that any other user can ‘download or access’ to use in simulation mode on the same or a different video game console.” *Id.* at 46 (citing Ex. 1005, 19:57–62; Ex. 1003 ¶ 310). Petitioner further argues the following:

[W]hen a second user (*e.g.*, User B) downloads a profile from the server to simulate another user’s control of the avatars for a particular team, the third one or more object representations stored in the user’s profile would represent one or more objects of another application when implemented on User B’s game console, such as the defensive players in the game on User B’s game console.

Id. at 46–47 (citing Ex. 1003 ¶¶ 310–312).

Regarding anticipation, Patent Owner argues that

Thomas fails to disclose “wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application, and wherein the third one or more object representations represent one or more objects of the another application.”

PO Resp. 32 (citing Ex. 2007 ¶¶ 95–97). Patent Owner argues that Petitioner relies on “storing profiles for ‘any participating user’ that any other user can ‘download or access’ to use in simulation mode on the same or different video console,” but that describes profiles “***learned in instances of one application (i.e., basketball video game) used in instances of the same application (i.e., the same basketball video game).***” *Id.*

Regarding obviousness, Patent Owner argues that Thomas in view of the knowledge of a person of ordinary skill in the art does not teach or suggest the disputed limitation. *Id.* at 46–48 (citing Ex. 2007 ¶¶ 116–119).

Patent Owner also restates the arguments it made with respect to anticipation. *Id.* at 46–47. Patent Owner also argues that Petitioner improperly relies on “common knowledge” of a person of ordinary skill in the art, which “may only be used to supply a missing claim limitation when that limitation is ‘unusually simple and the technology particularly straightforward.’” *Id.* at 47 (citing *Arendi*, 832 F.3d at 1361). Patent Owner argues that Thomas does not disclose “a knowledgebase including mixed knowledge . . . learned involving multiple different applications to be used across different applications” and that “concept” would have been understood to be “unconventional” and “sophisticated.” *Id.* (citing, e.g., Ex. 2007 ¶ 119). Patent Owner also argues that Petitioner “failed to perform a proper obviousness analysis” because Petitioner did not identify any gaps in Thomas’s disclosure. *Id.* at 48.

In the Reply, Petitioner argues the following:

Thomas describes that the user can play games on different “video game console[s].” Thomas, 19:35–42; *see* Petition, 45–47. In this context, Thomas’s stored instruction sets (*e.g.*, the actions learned based on user inputs in learning mode) are for operating an avatar in various applications, *e.g.*, for operating an avatar in an instance of a basketball video game on “an Xbox” (one ***application***) or for operating an avatar in an instance of the game on a “Playstation” (***another application***). TESLA-1005, 19:35–42; TESLA-1022, ¶40. For instance, instances of the game running on different consoles can be considered different applications because, *e.g.*, the game must be adapted to the specific instruction set architectures, constraints, and interfaces of the respective consoles. And the corresponding object representations likewise represent objects in various applications, *e.g.*, objects in an Xbox instantiation or objects in a Playstation instantiation of the game. TESLA-1022, ¶40.

Pet. Reply 15–16 (citing Ex. 1005, 19:35–42).

In the Sur-reply, Patent Owner argues “Petitioner’s contention that ‘[t]he claim places no constraint on where the third correlation was learned,’ is . . . misleading, because, in the third correlation, the object representation represents an object of *another application* and the instruction set is for operation of an avatar of *another application*.” PO Sur-reply 15. Patent Owner argues that Thomas does not “disclose a knowledgebase including mixed knowledge of instruction[] sets and object representations learned involving multiple different applications to be used across different applications.” *Id.* Patent Owner also disputes Petitioner’s reliance on Thomas’s disclosure of playing games on different “video game console[s].” *See, e.g.*, PO Sur-reply 15–16 (citing Ex. 1005, 19:35–42). More specifically, Patent Owner argues Petitioner “*describes learning from instances of one application (i.e. basketball video game) on different game consoles*,” which is different than the recitation in claim 14. *Id.* (citing Ex. 2007 ¶¶ 96–97).

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. Patent Owner’s arguments are unavailing. We start with Patent Owner’s argument that Petitioner relies on Thomas’s description of profiles “*learned in instances of one application (i.e., basketball video game) used in instances of the same application (i.e., the same basketball video game)*.” PO Resp. 32; *see also* PO Sur-reply 15 (arguing Petitioner’s showing is deficient because claim 14 requires “the object representation represents an object of another application and the instruction set is for operation of an avatar of another application” (emphasis omitted); *id.* at 15–16 (arguing Thomas’s playing games on different “video game console[s]” “*describes learning from*

instances of one application (i.e. basketball video game) on different game consoles”).

Thomas discloses an embodiment in which computer program 110, simulator 120, and database 130 reside on server 710 and are accessible by one or more client consoles and an alternate embodiment in which computer program 110 resides on one or more client consoles and simulator 120 and database 130 reside on server 710. Ex. 1005, 19:39–46. Thomas describes that exemplary video game consoles include “Xbox or Playstation.” *Id.* at 19:38–39. Petitioner submits Dr. Janet’s testimony that it would have been obvious to a person of ordinary skill in the art “that two users playing on different devices” would have downloaded “the same profile,” where the different devices include a PlayStation and a Personal Computer (PC). Ex. 1003 ¶¶ 310–311; *see also id.* ¶ 312 (testifying that “the first application could be a PC game, and the another application could be a game played by another user on a PC or a Playstation”). Dr. Janet also testifies that “instances of the game running on different consoles can be considered different applications because, *e.g.*, the game must be adapted to the specific instruction set architectures, constraints, and interfaces of the respective consoles.” Ex. 1022 ¶ 40.

We agree with Petitioner’s arguments, and we credit and give significant weight to the testimony of Dr. Janet (Ex. 1003 ¶¶ 308–312; Ex. 1022 ¶ 40) over the testimony of Dr. Saber (Ex. 2007 ¶¶ 95–97) because Petitioner’s contentions and Dr. Janet’s testimony are supported by and consistent with the evidence of record and include supportive reasoning and explanation. In particular, Dr. Janet’s testimony that “instances of the game running on different consoles can be considered different applications because, *e.g.*, the game must be adapted to the specific instruction set

architectures, constraints, and interfaces of the respective consoles” (Ex. 1022 ¶ 40) explains why games running on different consoles are considered to be different applications, specifically because the game must be adapted to the specific instruction set architectures, constraints, and interfaces of the respective consoles. Also, Dr. Janet’s testimony that instruction sets for different consoles need to be adapted to architectures, constraints, and interfaces of the respective consoles is consistent with the evidence of record that the different consoles are made by different manufacturers. Ex. 1005, 8:61–65 (describing that computer program 110 may be executed on “Microsoft’s Xbox[] or Sony’s Playstation[]”). In contrast, we find that Dr. Saber’s testimony that Thomas “only describes profiles learned in instances of one application (i.e. basketball video game) used in instances of the same application (i.e. the same basketball video game) on different game consoles” (Ex. 2007 ¶ 96) is conclusory and lacking in explanation and support.

We turn to Patent Owner’s argument that Petitioner improperly relies on “common knowledge” of a person of ordinary skill in the art, which “may only be used to supply a missing claim limitation when that limitation is ‘unusually simple and the technology particularly straightforward.’” *Id.* at 47 (citing *Arendi*, 832 F.3d at 1361). Patent Owner argues that Thomas does not disclose “a knowledgebase including mixed knowledge . . . learned involving multiple different applications to be used across different applications” and that “concept” would have been understood to be “unconventional” and “sophisticated.” *Id.* (citing, e.g., Ex. 2007 ¶ 119); *see also* PO Sur-reply 15 (arguing that Thomas does not “disclose a knowledgebase including mixed knowledge of instructions sets and object representations learned involving multiple different applications to be used

across different applications”). In light of the disclosures above, we find that Thomas teaches the disputed recitation. Petitioner properly relies on expert testimony to explain that the software programs residing on a Playstation console and Xbox console would have been understood by a person of ordinary skill in the art to be different applications because “the game must be adapted to the specific instruction set architectures, constraints, and interfaces of the respective consoles.” Ex. 1022 ¶ 40.

We turn to Patent Owner’s argument that Petitioner “failed to perform a proper obviousness analysis” because Petitioner did not identify any gaps in Thomas’s disclosure. PO Resp. 48. We find that Petitioner’s obviousness analysis is proper and, furthermore, includes an element-by-element analysis with detailed explanations.

Patent Owner submits the testimony of Dr. Saber in support of its position. PO Resp. 31–33 (citing Ex. 2007 ¶¶ 95–97). To the extent not already discussed above, we find that Dr. Saber’s testimony is substantially the same as Patent Owner’s argument, is conclusory, and lacks explanation. We, therefore, find that Dr. Saber’s testimony does not undermine Petitioner’s showing for the same reasons given above.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 14 would have been obvious over Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing.⁷

⁷ In view of our obviousness determination, we need not reach Petitioner’s argument that claim 14 is anticipated by Thomas.

4. *Dependent Claims 5 and 13*

Each of claims 5 and 13 depends directly from claim 1. Petitioner supports its arguments for dependent claims 5 and 13 with specific citations to Thomas and Dr. Janet’s Declaration. Pet. 24–26, 42–45 (citing, e.g., Ex. 1005, 4:14–16, 4:45–52, 5:54–58, 7:39–44, 7:50–54, 8:2–7, 8:11–15, 8:38–40; Ex. 1003 ¶¶ 261–263, 299–306). Petitioner’s arguments are supported by the evidence cited in the Petition.

Above, we discussed why we find unavailing Patent Owner’s arguments disputing Petitioner’s showing for claim 1. Patent Owner does not separately dispute Petitioner’s showing for claims 5 and 13. For the reasons presented by Petitioner, based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claim 5 and 13 are unpatentable as anticipated by and obvious over Thomas.

F. *Anticipation of claims 1, 3, and 17 under 35 U.S.C. § 102 by Buehler*

Petitioner asserts that claims 1, 3, and 17 are anticipated by Buehler. Pet. 4, 55. Patent Owner provides separate arguments disputing Petitioner’s assertion for claims 1, 3, and 17. PO Resp. 50–60.

We begin with an overview of Buehler. We then turn to the parties’ contentions.

1. *Buehler*

Buehler is titled “Vision-Guided Robots and Methods of Training Them.” Ex. 1006, code (54). Buehler provides methods for robot learning and training that “involve two-way communication between a vision-guided robot and a human trainer.” *Id.* at 1:64–67.

Buehler describes training a robot with a machine-vision system for capturing images within a camera field of view to complete a specified task.

Id. at 6:28–30. Buehler, more specifically, describes that the robot selects an object in the field of view, displays the selection (including the camera view of the selected object) on a robot-controlled visual display, overlays a representation of an end-effector onto the camera view, and displays performance of an action on the object by the end-effector. *Id.* at 6:31–37. Based on the display, feedback is provided to the robot, indicating whether the action is performed correctly. *Id.* at 6:37–39.

Buehler also describes a robot manipulating objects based on visual recognition. *Id.* at 7:4–6. Buehler, more specifically, describes the robot selecting an object in a camera field of view, using a visual model to computationally identify the object based on a stored representation thereof associated with the model, determining whether an object-specific manipulation routine is stored in association with the stored representation, and, if so, executing the object-specific manipulation routine. *Id.* at 7:6–13. If no manipulation routine is stored, the robot executes a generic manipulation routine. *Id.* at 7:13–14.

2. *Claims 1, 3, and 17*

Petitioner has shown that claims 1 and 17 are unpatentable on grounds based on Thomas, but Petitioner has not shown that claim 3 is unpatentable as anticipated by or obvious over Thomas. For the reasons given below, we find that Buehler has a similar deficiency to that discussed with respect to Thomas and, therefore, Petitioner has not shown that claim 3 is anticipated by Buehler even assuming that claim 1 is anticipated by Buehler.

Our analysis below is for the purposes of showing that Petitioner has not proven claim 3 is unpatentable. We do not make any determination regarding independent claim 1, from which claim 3 depends. More specifically, because Petitioner has shown that claims 1 and 17 are

unpatentable on grounds based on Thomas, we do not reach Petitioner’s ground that claims 1 and 17 are anticipated by Buehler. *See Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

Petitioner argues that Buehler discloses the recitation in claim 3 because its system “uses a threshold metric or score (i.e., a threshold number) to assess whether there is a match.” Pet. 61–62 (quoting Ex. 1006, 18:3–7, 18:54–57; Ex. 1003 ¶¶ 343–344). Petitioner, more specifically, relies on Buehler’s disclosure of an algorithm that provides “an error metric or confidence metric.” *Id.* Buehler’s algorithm “run[s] a normalized cross-correlation of the stored image template with a presently acquired image, resulting in a score for each pixel” and then clusters pixel scores above a threshold to determine a potential location of the image. *Id.* at 18:54–60.

Based on the full trial record, we find that Petitioner has failed to sufficiently prove that Buehler anticipates claim 3. First, as discussed above with respect to the Thomas grounds (*see* § II.E.1), we agree with Patent Owner that using the number of at least partially matching portions in the matching process of claim 3 involves counting the matching portions and determining whether this counted number of portions exceeds a numerical threshold. *See* PO Resp. 19–22, 55; PO Sur-reply 5–7. This understanding reflects the ordinary meaning of the claim language and, without such a counting, it is unclear (and Petitioner does not persuasively explain) how the number of matching portions could be determined. Similarly, we agree with

Patent Owner that using the percentage of at least partially matching portions in the matching process in claim 3 involves counting the portions to compute the percentage and determining whether this percentage exceeds a percentage threshold. *Id.*

We also agree with Patent Owner that Buehler's disclosure of an error metric or confidence metric (Pet. 61–62) does not include a description of any counting of portions as part of the matching process or counting of portions to compute a percentage. Ex. 1006, 18:3–7 (“The learning algorithm may also provide an error metric or confidence metric that indicate how closely the object can be fitted with an ellipse. In general, if the error exceeds a specified threshold, the representation is deemed invalid.”). Petitioner also has not explained sufficiently (Pet. 61–62) how Buehler's detection algorithm discloses these features of claim 3. *Id.* at 18:51–60 (describing that “the detection algorithm may run a normalized cross-correlation of the stored image template with a presently acquired image, resulting in a score for each pixel” and pixel scores above a set threshold are then clustered”).

We also find that Dr. Janet's testimony (Ex. 1003 ¶¶ 342–344; Ex. 1022 ¶¶ 55–57) does not resolve the deficiency. Dr. Janet's testimony does not address that either (1) the matching process of claim 3 must be met, which involves counting the portions and determining whether this counted number of portions exceeds a numerical threshold, or (2) the percentage of at least partially matching portions must be used in the matching process, which involves counting the portions to compute the percentage and determining whether this computed percentage of portions exceeds a percentage threshold.

Based on the arguments and evidence of record, we determine that Petitioner has not proved, by a preponderance of evidence, that claim 3 would have been unpatentable as anticipated by Buehler.

III. ANALYSIS—PROPOSED SUBSTITUTE CLAIMS

Patent Owner filed a Contingent Motion to Amend. Patent Owner's Motion to Amend requests that, if "the Board finds any of original claims 2–5, 7, and 9–19 unpatentable, [Patent Owner] requests that the Board grant this motion to amend and issue the corresponding substitute claims [among 21–36] presented herein," and further requests that "[t]he Board should not consider this motion for each of original claims 2–5, 7, and 9–19 found patentable." MTA 1, 23, App. A 1–36 (Substitute Claims Listing). Patent Owner submitted a Declaration of Eli Saber, Ph.D. (Ex. 2007) in support of the Motion. Petitioner filed an opposition on June 24, 2024. Opp. MTA. Petitioner submitted a second Declaration of Jason Janet, Ph.D. (Ex. 1022) in support of the Opposition.

For the reasons discussed above, we have determined that Petitioner has proved, by a preponderance of evidence, that claims 1, 2, and 4–20 of the '134 patent are unpatentable. We, therefore, proceed to address Patent Owner's Motion to Amend with respect to substitute claims 22–36. We determined that Petitioner has not proved, by a preponderance of evidence, that claim 3 of the '134 patent is unpatentable. We, therefore, do not address Patent Owner's Motion to Amend with respect to substitute claim 21.

Patent Owner proposes to substitute claim 22 for claim 4. Proposed substitute claim 22 is illustrative⁸ and is reproduced below with Patent

⁸ The parties agree that proposed substitute claims 23–36 were amended to add the same amended features recited in claim 22. *See* MTA 21–22, App. A; Opp. MTA App. A.

Owner's annotations showing in underlined language subject matter added to the corresponding original claim, and bracketed text added at the beginning of each claim element to correspond with designation of claim elements.

[22.pre] A system comprising:

[22.a] one or more processors; and

[22.b] one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

[22.c] accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

[22.d] generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

[22.e] determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

[22.f] at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

[22.g] wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating: the first avatar of the application, the second avatar of the application, a third avatar of the application, or an avatar of another application, and wherein the third one or more object representations represent one or more objects of: the application, or the another application, and wherein the first

correlation is connected with the third correlation by a connection;

[22.h] wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

[22.i] wherein the first object representation includes a first data structure that:

[22.j] is generated at least in response to processing a type and a location of the first 3D object, and

[22.k] comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

[22.l] wherein the second object representation includes a second data structure, and

[22.m] wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

MTA App. A 3–5.

A. Legal Standard

Petitioner bears the burden of persuasion to show that any proposed substitute claim is unpatentable by a preponderance of the evidence.

Lectrosonics, Inc. v. Zaxcom, Inc., IPR2018-01129, Paper 15 (PTAB Feb. 15, 2019) (precedential); 37 C.F.R. § 42.121(d)(2). “Before considering the patentability of any substitute claims, however, the Board first must 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.”

Lectrosonics, Paper 15 at 4–8. Patent Owner bears the burden of persuasion to show by a preponderance of the evidence that the motion to amend complies with these requirements. 37 C.F.R. § 42.121(d)(1). Specifically, a

patent owner must make an initial showing to demonstrate the following: (1) that a “reasonable number of substitute claims” have been proposed for each challenged claim (35 U.S.C. § 316(d)(1)(B)); (2) that the proposed amendments respond to a ground of unpatentability involved in the trial (37 C.F.R. § 42.121(a)(2)(i)); and (3) that the amendments do not seek to enlarge the scope of the claims and do not introduce new matter (35 U.S.C. § 316(d)(3)). *Lectrosonics*, Paper 15 at 4–8.

B. Compliance with the legal requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121

Patent Owner bears the burden to ensure that its Motion to Amend complies with the legal requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. *Lectrosonics*, Paper 15 at 4–5, 7–8. For the reasons that follow, we determine that Patent Owner has satisfied that burden.

1. Proposal of a Reasonable Number of Substitute Claims

A motion to amend must “propose a reasonable number of substitute claims.” 35 U.S.C. § 316(d)(1)(B); *see also* 37 C.F.R. § 42.121(a)(3) (“A motion to amend may cancel a challenged claim or propose a reasonable number of substitute claims.”). “There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.” *Lectrosonics*, Paper 15 at 4; *see also* 37 C.F.R. § 42.121(a)(3). Here, Patent Owner proposes no more than one substitute claim for each challenged claim. MTA 1–2, App. A 3–36. Petitioner does not argue otherwise. *See generally* Opp. MTA; Sur-reply MTA. We determine that this requirement is met.

2. Amendments Responsive to a Ground of Unpatentability

“A motion to amend may be denied where. . . [t]he amendment does not respond to a ground of unpatentability involved in the trial.” 37 C.F.R.

§ 42.121(a)(2)(i). Upon review of Patent Owner’s arguments, we agree that proposed substitute dependent claims 22–36 recite new limitations, and new combinations of limitations, that directly respond to the grounds of unpatentability involved in the trial. *See* MTA 2, App. A 3–36. Petitioner does not argue otherwise. *See generally* Opp. MTA; Sur-reply MTA. We determine that this requirement is met.

3. *No Enlargement of the Scope of the Claims*

An amendment may not seek to enlarge the scope of the claims of the patent. 35 U.S.C. § 316(d)(3); 37 C.F.R. §§ 42.121(b)(1), 42.121(b)(2). Proposed substitute claims 22–36 (i) retain all limitations of their original corresponding claims 2, 4, 5, 7, and 9–19 (including the original dependent and independent claims from which claims 2, 4, 5, 7, and 9–19 depend), and (ii) further include additional limitations as compared to respective claims 2, 4, 5, 7, and 9–19.⁹ Proposed substitute claims 22–36 do not enlarge the scope of the claims of the challenged patent. *See* MTA 3–4, App. A 3–36. Petitioner does not argue otherwise. *See generally* Opp. MTA; Sur-reply MTA. We determine that this requirement is met.

4. *No Introduction of New Matter*

An amendment may not introduce new matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. §§ 42.121(b)(1), 42.121(b)(2). New subject matter is any addition to the claims that lacks sufficient support in the subject patent’s original disclosure. *See TurboCare Div. of Demag Delaval Turbomach. Corp. v. Gen. Elec. Co.*, 264 F.3d 1111, 1118 (Fed. Cir. 2001) (“When [an] applicant

⁹ The correspondence is not consecutive. For instance, claim 36 is a proposed substitute for claim 2 and claim 22 is a proposed substitute for claim 4. *See generally* MTA App. A.

adds a claim . . . , the new claim[] . . . must find support in the original specification.”). Patent Owner also is required to show written description support in “the original disclosure of the patent for each claim that is . . . amended,” and in “an earlier-filed disclosure for each claim for which benefit of the filing date of the earlier filed disclosure is sought.” 37 C.F.R. §§ 42.121(b)(1), 42.121(b)(2).

Patent Owner has identified adequate written description support for proposed substitute claims 22–36. *See* MTA 4–16. Petitioner does not argue otherwise. *See generally* Opp. MTA; Sur-reply MTA. We determine that each proposed substitute claim is supported by the original disclosure of the ’134 patent and does not seek to add new matter. We determine that this requirement is met.

C. Indefiniteness

Petitioner argues that proposed substitute claims 22–36 are indefinite. Opp. MTA 25. Petitioner argues that it is unclear whether the “second object representation” of [22.l] refers to the “second one or more object representations” of [22.d] or the “second object representation” of [22.h]. *Id.*

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). We are unpersuaded by Petitioner’s contentions because it appears that the proposed substitute claims inform, with reasonable certainty, those skilled in the art about the scope of the invention. For example, with respect to the claimed “second object representation,” claim 22 clearly states that the “second object representation” (including a second data structure) is included in “the first one or more object representations.” *See* Mot. App. A

3–5. Claim 22 also clearly states that “the first one or more object representations” (of which the “second object representation” is a part) is a *distinct* claim element from the claimed “second one or more object representations”—because claim 22 indicates that “the second one or more object representations” and “the first one or more object representations” are compared to each other to determine if there is a “partial match.” *See id.*

In view of the express language in claim 22, one having ordinary skill in the art would understand that the “second object representation”—which is a part of the set identified by “the first one or more object representations”—is distinct from the set identified by “the second one or more object representations.” We, therefore, find no lack of clarity in these claim limitations.

On this record, Petitioner has not established that the phrases “the second one or more object representations” and “the second object representation” (of “the first one or more object representations”) recited in proposed substitute claim 22 render the claim unclear and indefinite. Thus, on this record, Petitioner has not shown that proposed substitute claim 22, and proposed substitute claims 23–36 reciting similar pertinent language, fail to comply with the definiteness requirement.

D. Unpatentability of Proposed Substitute Claims

Proposed substitute claim 21 is a proposed substitute for claim 3, if claim 3 is found unpatentable. MTA App. A 1. For the reasons given above, we determine that Petitioner has not shown that claim 3 is unpatentable. We, therefore, do not address Patent Owner’s Motion to Amend with respect to proposed substitute claim 21, including that we do not make a determination regarding whether proposed substitute claim 21 is unpatentable.

Proposed substitute claim 22 is illustrative, so we begin by addressing the parties’ disputes regarding whether proposed substitute claim 22 would have been obvious over Thomas alone or over the combination of Thomas and Hirai,¹⁰ as asserted by Petitioner. *See* Opp. MTA 1.

1. Obviousness of Proposed Substitute Claim 22

Proposed substitute claim 22 includes amendments to original claim 4. Original claim 4 depends directly from independent claim 1. For the reasons given above (*see* Sections II.D.2–3), based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that claims 1 and 4 are unpatentable as anticipated by Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing. Below we address the parties’ disputes regarding proposed substitute claim 22 and the features recited in Patent Owner’s amendments.

a) Petitioner’s Reasons to Modify Thomas

Petitioner argues a person of ordinary skill in the art would have made Petitioner’s proposed combination (1) “to achieve the benefit expressly noted in Hirai of ‘bring[ing] the movements of non-player characters,’ *e.g.*, opposing-team avatars, ‘closer to those of actual soccer athletes for heightening the reality of a soccer game’”; (2) to supply “details” not provided in Thomas for “implementing data structures for storage of avatar-specific parameters”; and (3) to apply “known techniques (*e.g.*, player-specific parameters stored in player-specific data structures) to a known system (*e.g.*, Thomas’s user profile) to yield predictable results (*e.g.*, a user profile in which parameters characterizing opposing-team avatars are stored

¹⁰ U.S. Patent No. 7,399,224 B2 issued July 15, 2008 (Ex. 1025, “Hirai”).

in avatar-specific data structures).” Opp. MTA 7–9 (citing Ex. 1025, 2:20–23; Ex. 1022 ¶¶ 70–73). Petitioner also argues that a person of ordinary skill in the art would have reasonably expected success in pursuing Petitioner’s proposed combination because “Thomas and Hirai are both in the field of video game technology,” “both specifically address problems related to the realistic computer control of video games,” and “implementation of data structures by the relatively late time of the ’134 Patent was conventional and predictable.” *Id.* at 9 (citing Ex. 1022 ¶ 74).

Patent Owner does not dispute the aforementioned arguments provided by Petitioner. *See generally* Reply; Sur-sur-reply. We find that Petitioner’s argument and Dr. Janet’s testimony (Ex. 1022 ¶¶ 70–74) are supported by the evidence of record. Importantly, Petitioner’s first reason is supported by Hirai’s express statement that its disclosure “bring[s] the movements of the non-player characters closer to those of actual soccer athletes for heightening the reality of a soccer game.” Ex. 1025, 2:20–23. Petitioner’s reason is specifically tailored to the disclosure relied on in Hirai, which is Hirai’s description of “athlete character information 732,” which includes “kind of movement 732c,” “movement target point coordinates 732d,” and “position coordinates 732e on the present pitch Fp.” *Id.* at 13:44–55, Fig. 9. We also find that Petitioner’s second and third reasons provide additional persuasive argument supporting that a person of ordinary skill in the art would have made Petitioner’s proposed combination.

Based on the complete record before us, we are persuaded by a preponderance of the evidence that Petitioner provides sufficiently articulated reasoning with rational underpinning to support Petitioner’s modifications of Thomas for Patent Owner’s proposed substitute claims. For the reasons given herein, we find that Petitioner also has shown that a person

of ordinary skill in the art would have had a reasonable expectation of success. We find that Patent Owner’s arguments and evidence do not undermine Petitioner’s showing.

b) Element [22.h]

Element [22.h] recites “wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application.” MTA App. A 4–5. In the Opposition, Petitioner argues that Thomas’s stored data comprising parameters characterizing avatars teaches “***the first one or more object representations.***” Opp. MTA 10–11 (citing Ex. 1005, 4:17–19, 4:32–39, 4:46–51, 8:37–42, 9:43–53, 10:33–42; Pet. 12–14; Ex. 1022 ¶¶ 76–81). Petitioner also argues that a person of ordinary skill in the art would have understood “that Thomas’s avatars are ***three dimensional (3D) object[s] of the application***, e.g., given the implementation of Thomas’s video game in the context of the ESPN NFL 2K5 game (which has ‘3D’ characters).” *Id.* at 10 (citing Ex. 1022 ¶¶ 78–79; Ex. 1027).

We find that Petitioner provides a persuasive detailed analysis and cites evidence that persuasively supports its arguments. For instance, the recitation of “the first one or more object representations” derives antecedent basis from element [22.c], which recites the same subject matter as element [1.3], and we are persuaded by Petitioner’s arguments and evidence for element [1.3]. *See* § II.D.2.c. As discussed above (*id.*), Thomas describes that (1) the “collected data is then stored in the database 130,” (2) the collected “data is stored in a data structure, generally referred to as a user’s profile,” and (3) the collected “data is logically linked to an event, or

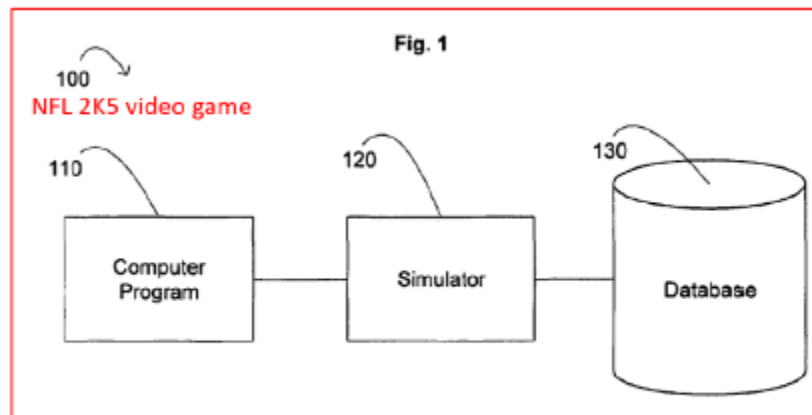
situation, that initiated the user's input." Ex. 1005, 3:56–61 (cited in Pet. 11). Thomas describes events and situations that "are defined by a set of one or more parameters." *Id.* at 4:23–24 (cited in Pet. 12). Exemplary parameters described in Thomas are "spatial position[(s)] of the avatars controlled by one or more user opponents 675." *Id.* at 4:37–39 (cited in Pet. 12; Opp. MTA 10). Another additional exemplary parameter includes "the archetype of the avatar." *Id.* at 4:46–51 (cited in Pet. 12; Opp. MTA 11). Exemplary archetypes include "whether the avatar is a true point guard, a slasher, a shooter, a pure shooter, a low post shooter, a midrange shooter, and role player." *Id.* at 8:37–42 (cited in Opp. MTA 11). "[I]n the case of NFL 2K5, a pre-snap state can define a situation established by current circumstances, such as the score and spatial location on the football field." *Id.* at 9:43–53 (cited in Pet. 12; Opp. MTA 11).

Patent Owner does not dispute Petitioner's arguments or evidence regarding element [1.3]. *See generally* PO Resp.; PO Sur-reply. For the reasons discussed above (*see* Section II.D.2.c), we find that Thomas discloses element [1.3]. As discussed here, we are further persuaded by Petitioner's argument and evidence provided with respect to element [22.h] including, for example, NFL 2K5. Ex. 1005, 4:37–39, 4:46–51, 8:37–42, 9:43–53.

Regarding "a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application," in the Preliminary Guidance, we stated that "we observe that the ESPN NFL 2K5 video game resides in Thomas's computer program 110, while (i) Thomas's simulator 120 (which generates the user's profile including sub-profiles 665 and 675) does not reside in computer program

110, and (ii) Thomas’s database 130 (which stores the user’s profile including sub-profiles 665 and 675) does not reside in computer program 110, either.” PG 12 (citing Ex. 1005, 3:40–4:12, 8:55–64, Fig. 1). We stated “[t]hus, Petitioner’s alleged objects and object representations in Thomas’s user profile (including sub-profiles 665 and 675) are not described by Thomas as representing 3D player avatars of the ESPN NFL 2K5 game (which resides in computer program 110).” *Id.* at 13 (citing Ex. 1005, Fig. 1). In the Reply, Patent Owner agrees with our preliminary findings and determinations. Reply MTA 4–6.

In the Sur-reply, Petitioner argues that the Preliminary Guidance and Patent Owner Reply rely on an incorrect characterization of Petitioner’s mapping. Sur-reply MTA 2–4. Petitioner argues “the player avatars in the NFL 2K5 application are three dimensional” and, thus, “Thomas’s three dimensional player avatars in the NFL 2K5 video game properly correspond to **3D objects of the application**.” *Id.* at 4 (citing Opp. MTA 14; Ex. 1005, 8:55–65; Ex. 1022 ¶¶ 78–79). Petitioner also argues that Thomas describes “the NFL 2K5 video game as an example of its computer system 100,” which includes as elements computer program 110, simulator 120, and database 130. *Id.* at 5–6 (citing Ex. 1005, Fig. 1); *see also* Tr. 18:23–20:9. Petitioner provides an annotated version of Figure 1 of Thomas, which is reproduced below.



Thomas, FIG. 1 (annotated)

Figure 1 of Thomas, includes Petitioner’s annotations of (1) a red box drawn around the entirety of Figure 1 illustrating computer system 100, which includes computer program 110, simulator 120, and database 130; and (2) a red textual annotation of “NFL 2K5 video game.” Sur-reply MTA 5.

Regarding “a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application,” in the Preliminary Guidance, we also stated “Petitioner relies on a rendered player image that appears at page 3 in Exhibit 1027, to infer that the ESPN NFL 2K5 video game renders 3D player avatars.” PG 12 n.5 (citing Opp. MTA Opp. 10; Ex. 1022 ¶¶ 78–79; Ex. 1027, 3). We explained, based on our observation, that it “appears that the version of Alex Navarro’s article provided by Petitioner at Ex. 1027 was downloaded from the GameSpot website after July 21, 2004 (i.e., was downloaded at a later time, when the price of the NFL 2K5 game was no longer \$19.99).” *Id.*

In its Sur-reply, Petitioner no longer relies on Exhibit 1027. Sur-reply MTA 4 (citing Opp. MTA 14; Ex. 1005, 8:55–65; Ex. 1022 ¶¶ 78–79) (arguing “the player avatars in the NFL 2K5 application are three

dimensional” and, thus, “Thomas’s three dimensional player avatars in the NFL 2K5 video game properly correspond to 3D objects of the application”); Tr. 21:18–21. Petitioner, instead, relies solely on the testimony of Dr. Janet. Dr. Janet testifies the “NFL 2K5 video game depicted the players (e.g., avatars) as 3D avatars.” Ex. 1022 ¶ 78. Dr. Janet also testifies “the implementation of Thomas’s video game in the NFL 2K5 context confirms that its avatars are three-dimensional objects.” *Id.* ¶ 79. Importantly, Petitioner’s declarant’s testimony is unrebutted. Tr. 20:11–21:17; 43:9–44:4.

Based on the complete record now before us, we find Petitioner’s arguments and evidence persuasive. Regarding the deficiency we noted in the Preliminary Guidance, specifically, our observation that “the ESPN NFL 2K5 video game resides in Thomas’s computer program 110, while (i) Thomas’s simulator 120 (which generates the user’s profile including sub-profiles 665 and 675) does not reside in computer program 110, and (ii) Thomas’s database 130 (which stores the user’s profile including sub-profiles 665 and 675) does not reside in computer program 110, either” (PG 12), Petitioner’s additional explanations resolve the concerns we noted regarding the statement “computer program 110 in the form of a video game.” Ex. 1005, 8:61. More specifically, Petitioner explains that this statement should be considered in the context of the entirety of Thomas’s disclosures, including Thomas’s disclosure that NFL 2K5 is an exemplary embodiment of computer system 100. *See, e.g.*, Sur-reply MTA 5 (citing Ex. 1005, 8:55–60, Fig. 1). Petitioner’s explanation is supported by Thomas’s disclosure that “[a]nother example embodiment of a computer system 100 is a video game system that simulates an American football game,” “which is embodied in Visual Concepts’ ESPN NFL 2K5” video

game. Ex. 1005, 8:55–60. As shown by Petitioner’s annotated version of Figure 1 above, computer system 100 illustrated in Figure 1 embodies not just computer program 110, but also simulator 120 and database 130, which stores Thomas’s user profiles including data collected about the user’s input that is logically linked to an event or situation. Ex. 1005, Fig. 1, 3:53–62 (cited in Pet. 11); Sur-reply MTA 5.

Petitioner’s other arguments also are supported by the evidence cited by Petitioner. For example, because Thomas expressly refers to NFL 2K5 (Sur-reply MTA 5), Thomas itself prompts a person of ordinary skill in the art to combine Thomas’s disclosures with NFL 2K5. *See SightSound Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1318–19 (Fed. Cir. 2015) (affirming the Board’s obviousness determination that was based on the “[f]inding that the reason to combine was manifested by the references themselves”).

Regarding whether Thomas teaches three dimensional (3D) objects, Dr. Janet testifies the “NFL 2K5 video game depicted the players (e.g., avatars) as 3D avatars” and “the implementation of Thomas’s video game in the NFL 2K5 context confirms that its avatars are three-dimensional objects.” Ex. 1022 ¶¶ 78–79. Importantly, Petitioner’s declarant’s testimony is un rebutted. *See generally* Reply MTA; Sur-sur-reply MTA; Tr. 20:11–21:17.

In its Sur-sur-reply, Patent Owner argues that Petitioner presents “impermissible new argument” in its Sur-reply. Sur-sur-reply MTA 1–2. Patent Owner argues that “Petitioner spent only a single sentence on NFL 2K5 in its Opposition.” *Id.* at 1.

Upon consideration of the arguments and evidence of both parties, we disagree with Patent Owner that Petitioner presents “impermissible new argument” in its Sur-reply. Sur-sur-reply MTA 1–2. We agree with Patent

Owner to the extent that Petitioner provided a single-sentence argument in its Opposition in support of its position that “Thomas’s avatars are ***three dimensional (3D) object[s] of the application.***” Opp. MTA 10. Petitioner’s explanations in its Sur-reply, however, pertain to arguments and evidence cited entirely in the Petition or Opposition. *Compare* Sur-reply 2–6 (citing, e.g., Ex. 1005, 3:40–60, 8:55–65, Fig. 1), *with* Pet. 11–16 (citing, e.g., Ex. 1005, 3:49–61), Opp. MTA 1–11 (citing, e.g., Ex. 1005, code (57), 5:36–61; Ex. 1022 ¶¶ 78–79), and Ex. 1022 ¶¶ 78–79 (citing, e.g., Ex. 1005, 8:55–60). In its Opposition, for instance, Petitioner specifically argues that it relies on Thomas’s disclosure of “simulating a particular user’s behavior in an interactive computer system” and, more specifically, simulating a user’s behavior in the “ESPN NFL 2K5” embodiment of that interactive computer system. Opp. MTA 1, 10.

We, therefore, do not find that any arguments presented by Petitioner in its Sur-reply are impermissible. Instead, we determine Petitioner’s Sur-reply argument and evidence are proper. *See* 37 C.F.R. § 42.121(e)(3) (“The petitioner may file a sur-reply that is limited to responding to the preliminary guidance and/or arguments made in the patent owner’s reply brief”). We find Petitioner’s Sur-reply arguments simply provide further details to support that arguments and evidence in the Opposition are persuasive. Petitioner’s Sur-reply does no more than fairly and directly respond to the Preliminary Guidance and Patent Owner’s Reply. Furthermore, Patent Owner was authorized to file and has filed a Sur-sur-reply responding to Petitioner’s arguments and evidence in its Sur-reply. Our analysis and determinations herein reflect our consideration of Patent Owner’s arguments in its Sur-sur-reply in their entirety.

In its Sur-sur-reply, Patent Owner also disputes Petitioner’s argument on the basis that Thomas “only shows 2D avatars” and “***never mentions 3D objects at all.***” Sur-sur-reply MTA at 2; *see also id.* at 3 (arguing “the 3D avatars that Petitioner imports from NFL 2K5 are entirely unsupported by Thomas” and “Thomas makes no mention of 3D objects”). Patent Owner, however, does not address Petitioner’s full argument and evidence, including the unrebutted testimony of Dr. Janet. We must consider what Thomas discloses rather than whether Thomas uses the exact claim term “three dimensional.” *Cf. Gleave*, 560 F.3d at 1334 (a reference does not have to satisfy an *ipsis verbis* test to disclose a claimed element).

Patent Owner also argues that “***Thomas does not disclose or suggest anything about, NFL 2K5 itself,***” “Petitioner would have needed to analyze the source code of the NFL 2K5,” and “Petitioner appears to be trying to incorporate NFL 2K5 by reference.” Sur-sur-reply at 2. Patent Owner’s arguments are unavailing. Dr. Janet testifies the “NFL 2K5 video game depicted the players (e.g., avatars) as 3D avatars” and “the implementation of Thomas’s video game in the NFL 2K5 context confirms that its avatars are three-dimensional objects.” Ex. 1022 ¶¶ 78–79. Importantly, Petitioner’s declarant’s testimony is unrebutted. Tr. 20:11–21:17.

We find that Petitioner’s arguments are supported by the cited evidence and Patent Owner’s arguments do not undermine Petitioner’s showing. Based on the arguments and evidence in the complete record now before us, we find that Thomas teaches element [22.h].

c) Elements [22.i]–[22.k]

Elements [22.i]–[22.k] are reproduced below.

[22.i] wherein the first object representation includes a first data structure that:

[22.j] is generated at least in response to processing a type and a location of the first 3D object, and
[22.k] comprises label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and.

MTA App. A 5.

Petitioner first argues that Thomas alone renders obvious elements [22.i]–[22.k]. More specifically, Petitioner argues that Thomas’s field/additional sub-profile 675 storing parameters characterizing opposing-team avatars teaches “a first data structure.” Opp. MTA 11–13 (citing, e.g., Ex. 1005, code (57), 3:57–59, 4:8–12, 4:23–24, 4:37–39, 9:38–42, Fig. 4). Petitioner argues that Thomas teaches generating the first data structure in response to processing a location of the first 3D object by describing analyzing “one or more current circumstances during the occurrence of the event” and storing “parameters specifying ‘the spatial position(s) of the avatars’ controlled by one or more user opponents 675 of the game.” *Id.* at 14–16 (citing, e.g., Ex. 1005, 4:23–24, 4:37–39, 9:57–59). Petitioner argues that Thomas describes exemplary spatial positions including “the position of players on the football field” or “how covered the user was,” which is a parameter stored during a “pump fake event.” *Id.* at 14–15 (citing, e.g., Ex. 1005, 4:19–21, 7:56–59, 8:8–11). Petitioner argues that Thomas teaches generating the first data structure in response to processing a type of the first 3D object by describing that stored parameters indicate “the team affiliation of the avatars,” such as “whether they are ‘avatars controlled by . . . user opponents’ or ‘avatars controlled by the user.’” *Id.* at 16 (citing, e.g., Ex. 1005, 4:23–24, 4:31–39, 7:55–64, 8:8–11). Petitioner alternatively relies on Thomas’s disclosure of “the archetype of the avatar” for teaching

generating the first data structure in response to processing a type of the first 3D object. *Id.* at 17 (citing Ex. 1005, 4:31–39, 4:46–51, 8:33–40, 9:57–59).

Petitioner, alternatively, argues that the combination of Thomas and Hirai renders obvious elements [22.i]–[22.k]. Opp. MTA 13–14 (citing, e.g., Ex. 1005, 9:38–39, Fig. 4; Ex. 1025, 13:44–55, Fig. 9). Petitioner, more specifically, argues that Hirai’s “athlete character information 732” teaches “a data structure.” *Id.* Petitioner also argues that Hirai’s “athlete character information . . . includes ‘position coordinates 732e on the present pitch Fp,’” as well as “belonging team identification information” and “an ‘ability parameter[.]’” *Id.* at 20–21 (citing, e.g., Ex. 1025, 13:44–57, Fig. 9).

Patent Owner argues that neither Thomas nor Hirai teach or suggest element [22.j]. Reply MTA 6–8. Patent Owner argues that Petitioner has not shown that the generation is “in response to” the processing of type and location. *Id.* at 6–7. Patent Owner argues “***Petitioner ignores the clear causative relationship expressed in this claim limitation.***” *Id.* at 7. Patent Owner argues “Thomas does not disclose or suggest and Petitioner has not provided any proper obviousness rationale for a POSITA to have generated the spatial positions field 675 in response to processing both type and location.” *Id.* at 8. Patent Owner maintains its arguments in its Sur-sur-reply. Sur-sur-reply MTA 4–6 (arguing “Thomas’s user profile . . . is not generated ***in response to*** processing Thomas’s spatial positions and team affiliations/archetypes”).

Petitioner’s arguments that Thomas alone teaches elements [22.i]–[22.k] are supported by the cited evidence. Ex. 1005, code (57), 3:57–59, 4:8–12, 4:19–21, 4:23–24, 4:31–39, 4:46–51, 7:55–64, 8:8–11, 8:33–40, 9:38–42, 9:57–59, Fig. 4. For instance, Thomas’s field/additional sub-profile, user opponents 675, is included in user profile 650. Ex. 1005, Fig. 4,

4:37–39 (describing that a “parameter” of user profile 650 may be “the spatial position(s) of the avatars controlled by one or more user opponents 675 of the game”). Thomas describes expressly that collected data “is then stored in the database 130” and, more specifically, that the data “is stored in a *data structure*, generally referred to as a user’s profile.” Ex. 1005, 3:56–60 (emphasis added) (cited in Pet. 11; Opp. MTA 12); *see also id.* at 4:8–12 (describing that “the inputs for a user are stored in data structures herein referred to as user profiles, which may be individual *data structures* in database 130”) (emphasis added).

Regarding the phrase “is generated at least in response to processing a type and a location of the first 3D object” recited in element [22.j], Petitioner’s arguments that Thomas alone teaches elements [22.i]–[22.k] are supported by Thomas’s description that simulator 120 “collects and evaluates data about the *first user’s input when interacting with the computer program 110.*” Ex. 1005, 3:54–56 (cited in Pet. 11); *see also id.* at 9:38–42 (describing recording a user’s input in “user profiles 400 which . . . may be individual data structures in a database 130” and may include “sub-profiles, e.g., 410 each containing fields or additional sub-profiles that store the user’s inputs” such that it “is logically linked to an event and/or situation that initiated the user’s input”). Thomas generates the first data structure by storing data in a “sub-profile” in the user profile relating to “events 685 or situations 655 that occur within the computer program 110 during operation.” *Id.* at 3:57–59, 4:14–16 (cited in Pet. 11, 14; Opp. MTA 5). Thus, Thomas’s user profiles comprising stored data are generated in response to processing user input that is responsive to an event or situation, which includes type (opponent avatars) and location (spatial position(s) on the field) and the user’s input is stored such that it is logically linked to the

type and location information. *Id.* at 3:54–59, 4:14–16, 9:38–42. Thomas’s express disclosures support Petitioner’s position and arguments and are contrary to Patent Owner’s position and arguments. Reply MTA 6–8; Sur-sur-reply MTA 4–6.

Thomas includes additional disclosures that further support Petitioner’s arguments and are contrary to Patent Owner’s arguments. For instance, Thomas describes that an exemplary situation 655 is “the position of players on the football field.” *Id.* at 4:19–21 (cited in Opp. MTA 15). An exemplary spatial position is “the spatial position(s) of the avatars controlled by one or more user opponents 675 of the game.” *Id.* at 4:37–39 (cited in Opp. MTA 10, 13, 16). Thomas also describes recording “current circumstances” for “events,” which may include “record[ing] how open the receiving avatar was and how covered the passing avatar was.” Ex. 1005, 7:50, 7:57–59. For a “pump fake event,” simulator 120 “records how covered the user was and the user’s location.” *Id.* at 8:8–11. We are persuaded by Petitioner’s argument and evidence that recording “how open” a player is records location information of players on the field. *Id.* at 7:55–64, 8:8–11. Thomas’s disclosures above provide further support for Petitioner’s position and argument and are contrary to Patent Owner’s position and arguments that Petitioner failed to show the causal relationship of “in response to” recited in element [22.j]. Reply MTA 6–8; Sur-sur-reply MTA 4–6.

Petitioner’s argument and evidence regarding the combined teachings of Thomas and Hirai provide further support that elements [22.i]–[22.k] are taught by the asserted prior art. We find that Petitioner’s argument and evidence also support that the combination of Thomas and Hirai renders obvious elements [22.i]–[22.k].

For the reasons given herein, we find that Petitioner’s arguments are supported by the cited evidence. We also are persuaded by a preponderance of the evidence that Petitioner provides sufficiently articulated reasoning with rational underpinning to support Petitioner’s combination of Thomas and Hirai and Petitioner has shown that a person of ordinary skill in the art would have had a reasonable expectation of success. We further find that Patent Owner’s arguments do not undermine Petitioner’s showing. Based on the arguments and evidence in the complete record now before us, we find that Thomas alone or in combination with Hirai teaches elements [22.i]–[22.k].

d) Element [22.l]

Element [22.l] recites “wherein the second object representation includes a second data structure.” MTA App. A 5. Petitioner argues that Thomas renders element [22.l] obvious. More specifically, Petitioner argues that element [22.l] is taught by Thomas’s “second opposing team avatar” or, alternatively, by the “characterization of the user-controlled avatar.” Opp. MTA 22–23 (citing Ex. 1005, 4:31–33, Fig. 4; Ex. 1022 ¶¶ 108–111).

Petitioner, alternatively, argues that the combination of Thomas and Hirai teaches element [22.l]. *Id.* at 23–24. Petitioner, more specifically, argues that “[t]he ‘athlete character information’ characterizing a second opposing-team avatar” teaches element [22.l]. *Id.* (citing, e.g., Ex. 1025, 13:44–55, Fig. 9; Ex. 1005, Fig. 4; Ex. 1022 ¶¶ 112).

Petitioner’s arguments are supported by the cited evidence. Patent Owner does not dispute Petitioner’s arguments or evidence regarding element [22.l]. *See generally* Reply MTA; Sur-sur-reply MTA. Based on the arguments and evidence in the complete record now before us, we find that Thomas alone or in combination with Hirai teaches element [22.l].

e) *Element [22.m]*

Element [22.m] recites “wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.” MTA App. A 5. Petitioner argues the following:

The *first and second data structures* store parameters that define a situation/current circumstance corresponding to an event (see TESLA-1005, 4:23–24 (“Each event 685 and situation 655 are defined by a set of one or more parameters”), where the situation and/or event are *correlated with the instruction sets*, e.g., user inputs. See Petition, 28–31; TESLA-1005, Abstract, 5:9–13 (“when a user responds to an event, the user’s response, when recorded, is not only associated with the occurrence of that event, but also with the situation during the occurrence of that event, which is defined by one or more current circumstances”), FIG. 3a, 4:60–5:4; TESLA-1022, ¶¶113-114.

Opp. MTA 24.

In the Reply, Patent Owner argues that Petitioner’s arguments are conclusory. Reply MTA 9. Patent Owner also argues that none of the data structures that Petitioner relies on for the earlier-recited elements of claim 22 “*are correlated with the claimed instruction sets, nor is the user profile containing those fields.*” *Id.* at 10. Patent Owner argues “neither Thomas nor Thomas-Hirai disclose *any two data structures both correlated with any instruction sets.*” *Id.* at 11.

In the Sur-sur-reply, Patent Owner argues that “[t]he Sur-Reply points to discussion in the Petition (Paper 1) that was allegedly referenced in the Opposition,” but “under the Board’s Rules, a party cannot, in one paper, incorporate by reference arguments from another paper.” Sur-sur-reply MTA 6; see also *id.* at 8 (arguing that Petitioner’s reference “to the Petition is an improper incorporation by reference”). Patent Owner also argues that

substitute claim 22 recites “that ‘the first data structure and the second data structure are correlated with the first one or more instruction sets,’” which is “a narrower limitation than what is present in Claim 1.” *Id.* at 7. Patent Owner argues that Petitioner does not address the “narrower limitation” in its Opposition. *Id.* at 7–8. Patent Owner also argues “Petitioner’s assertion that Thomas’ user profile (rather than the situation) is correlated with user inputs is impermissible new argument” and is inconsistent with Petitioner’s prior mapping. *Id.* at 8–10. Patent Owner also argues that Petitioner relies on “an ‘event’ of Thomas as being the first one or more instruction sets,” but “the event in Thomas is fundamentally different” than the one or more instruction sets. *Id.* at 9–10.

Even assuming proposed substitute claim 22 requires an additional “new” correlation and recites “a narrower limitation than what is present in Claim 1” (Sur-sur-reply 7), Petitioner’s argument is supported by the cited evidence. Ex. 1005, code (57), 4:23–24, 4:60–5:4, 5:9–13, Fig. 3a. As described with respect to generating the first data structure recited in element [22.j], Petitioner relies on Thomas’s disclosure of storing “the position of players on the football field” (*id.* at 4:19–21 (cited in Opp. MTA 15)) and Thomas’s more specific example of “the spatial position(s) of the avatars controlled by one or more user opponents 675 of the game.” *Id.* at 4:37–39 (cited in Opp. MTA 10, 13, 16). With respect to the second data structure, Thomas describes storing the “spatial position of avatars controlled by the user.” Ex. 1005, 4:31–33, Fig. 4. Thomas also describes “record[ing] how open the receiving avatar was and how covered the passing avatar was.” Ex. 1005, 7:50, 7:57–59. For a “pump fake event,” simulator 120 “records how covered the user was and the user’s location.” *Id.* at 8:8–11.

In each of Thomas's aforementioned disclosures, the first and second data structures are stored such that they are logically linked with the user's input. In particular, Thomas describes recording a user's input in "user profiles 400 which . . . may be individual data structures in a database 130" and may include "sub-profiles, e.g., 410 each containing fields or additional sub-profiles that store the user's inputs" such that it "is logically linked to an event and/or situation that initiated the user's input." Ex. 1005, 9:38–42, *see also id.* at 3:54–56 (describing that simulator 120 "collects and evaluates data about the *first user's input when interacting with the computer program 110*") (emphasis added). Petitioner relies on Thomas's "stored data [that] includes the user's input for controlling an avatar in the computer program" for disclosing "an instruction set for operating an avatar object of an application program." Pet. 11 (citing Ex. 1005, 3:53–61, 5:7–13, 4:67–5:5); Opp. MTA 24 (stating "*instruction sets*, e.g., user inputs").

Turning to the assumption that proposed substitute claim 22 requires an additional "new" correlation and recites "a narrower limitation than what is present in Claim 1" (Sur-sur-reply 7), Petitioner's argument is supported by the cited evidence. In particular, Petitioner relies on Thomas's disclosure of recording data while playing the computer game, in which instruction sets evolve as the user's interaction evolves. Ex. 1005, code (57) (describing "learning mode" as monitoring "the user's interaction with the computer program for *one or more events and analyze one or more current circumstances during the occurrence of the one or more events*") (emphasis added), 4:60–5:4 (describing "[d]uring operation" simulator 120 "identifies a particular situation and/or event occurring" and "record[s] the user's decision/input, such as a pressed button, combination of buttons, or joystick move of a controller"), Fig. 3a (illustrating associating current user input

with field or sub-profile corresponding with current situation and/or event during game play (570) as well as illustrating ongoing monitor for a current situation or event (555)); *cf. id.* at 10:29–30 (describing that “data should evolve as the user’s interaction evolves”). Thus, even assuming that proposed substitute claim 22 requires an additional “new” correlation and recites “a narrower limitation than what is present in Claim 1” (Sur-sur-reply 7), Petitioner’s position is supported by Thomas’s express disclosures of multiple correlations of user input (instructions) with first and second data structures, which are field/additional sub-profiles storing parameters (1) characterizing opposing-team avatars 675 (“a first data structure”) and (2) characterizing the user-controlled avatar 665 (“a second data structure”). Opp. MTA 12–13, 22–23.

We find Patent Owner’s remaining arguments unavailing. For instance, we do not agree with Patent Owner’s argument that “[t]he Sur-Reply points to discussion in the Petition (Paper 1)” and such cross-referencing is improper. Sur-sur-reply 6. As an initial matter, we find that Petitioner’s position is fully supported in Petitioner’s Opposition and Petitioner’s Sur-reply is not needed. Nonetheless, we are persuaded that Petitioner’s Sur-reply provides additional argument and evidence supporting Petitioner’s position and the responsive argument is not improper. We also do not find an improper incorporation by reference as all argument and evidence necessary for Petitioner’s showing is in the Opposition. Furthermore, Petitioner’s mappings are consistent and, contrary to Patent Owner’s argument, Petitioner relies on arguments and evidence in the Opposition presented for prior recitations in claim 22. We also do not find that Petitioner presents impermissible new argument in its Sur-reply that is necessary for Petitioner to demonstrate unpatentability.

Petitioner's argument and evidence regarding the combined teachings of Thomas and Hirai provide further support that element [22.m] is taught by the asserted prior art. We find that Petitioner's argument and evidence also support that the combination of Thomas and Hirai renders obvious element [22.m].

For the reasons given herein, we find that Petitioner's arguments are supported by the cited evidence. We also are persuaded by a preponderance of the evidence that Petitioner provides sufficiently articulated reasoning with rational underpinning to support Petitioner's combination of Thomas and Hirai and that Petitioner has shown that a person of ordinary skill in the art would have had a reasonable expectation of success. We further find that Patent Owner's arguments do not undermine Petitioner's showing. Based on the arguments and evidence in the complete record now before us, we find that Thomas alone or in combination with Hirai teaches element [22.m].

f) Dr. Janet's Testimony

Patent Owner argues that "Dr. Janet has not added anything of substance to Petitioner's attorney arguments" and "his testimony basically parrots the opposition nearly verbatim." Reply MTA 11. Patent Owner argues that Dr. Janet's testimony "is thus of no probative value and should be rejected." *Id.*

We find Patent Owner's arguments unavailing. Dr. Janet states that his declarations set forth *his* analysis and opinions. *See, e.g.*, Ex. 1003 ¶ 2; Ex. 1022 ¶¶ 3–4, 6. Dr. Janet's statements are supported by the detailed explanations in his declarations and citation to supporting evidence. *See generally* Ex. 1003; Ex. 1022. We are not persuaded by Patent Owner's conclusory arguments to the contrary. For example, we are not persuaded that mere similarity in Petitioner's arguments in the papers and Dr. Janet's

testimony in his declarations provides evidentiary support that Dr. Janet “parrots” the opposition. Reply MTA 11. Instead, we find that Dr. Janet’s testimony provides further evidentiary support for Petitioner’s arguments.

g) Conclusion—Proposed Substitute Claim 22

For the reasons given, we determine that Petitioner demonstrates by a preponderance of the evidence that Thomas alone and the combination of Thomas and Hirai teaches the features recited in proposed substitute claim 22. For the reasons given, we also are persuaded by a preponderance of the evidence that Petitioner provides sufficiently articulated reasoning with rational underpinning to support Petitioner’s modifications of Thomas. We find that Patent Owner’s argument and evidence do not undermine Petitioner’s showing.

Based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that proposed substitute claim 22 is unpatentable as obvious over Thomas alone and the combination of Thomas and Hirai.

2. Obviousness of Proposed Substitute Claims 23–36

We turn to Petitioner’s argument that proposed substitute claims 23–36 would have been obvious over Thomas alone and the combination of Thomas and Hirai. Proposed substitute claims 23–36 include amendments to original claims 2, 5, 7, and 9–19.¹¹ Above, we provide the reasons for our determination that Petitioner has proved, by a preponderance of evidence,

¹¹ As noted above, the correspondence is not consecutive. For instance, claim 36 is a proposed substitute for claim 2 and claim 22 is a proposed substitute for claim 4. *See generally* MTA App. A.

that original claims 2, 5, 7, and 9–19 are unpatentable on grounds presented by Petitioner.

As discussed above, the parties agree that Patent Owner’s amendments to claims 23–36 recite the same amended features discussed with respect to proposed substitute claim 22. *See* MTA 21–22, MTA App 3–36; Opp. MTA App. A. For the same reasons given for proposed substitute claim 22, based on the arguments and evidence of record, we determine that Petitioner has proved, by a preponderance of evidence, that proposed substitute claims 23–36 would have been obvious over Thomas alone and the combination of Thomas and Hirai.

IV. CONCLUSION¹²

Petitioner has proved by a preponderance of the evidence that claims 1, 2, and 4–20 of the ’134 patent are unpatentable. Petitioner has not provided by a preponderance of the evidence that claim 3 is unpatentable. The outcome for the challenged claims is set forth in the table below. In summary:

¹² 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. 16,654 (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).

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–20	102	Thomas ¹³	1, 2, 4–11, 13, 15–20	3
3, 5, 12–14	103	Thomas	5, 12–14	3
1, 3, 17	102	Buehler ¹⁴		3
Overall Outcome			1–20	3

Motion to Amend Outcome	Claim(s)
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in Amendment	21–36
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	22–36
Substitute Claims: Determined Unpatentable	
Substitute Claims: Not Reached	21

¹³ We do not determine whether Petitioner has shown that claims 12 and 14 are anticipated by Thomas in light of our determination that Petitioner has shown by a preponderance of the evidence that claims 12 and 14 would have been obvious over Thomas.

¹⁴ We decline to reach the ground that claims 1 and 17 are anticipated by Buehler as claims 1 and 17 have been determined to be unpatentable as anticipated by Thomas.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1, 2, and 4–20 of the '134 patent are unpatentable;

FURTHER ORDERED that Petitioner has not shown by a preponderance of the evidence that claim 3 is of the '134 patent is unpatentable;

FURTHER ORDERED that Petitioner has shown by a preponderance of the evidence that proposed substitute claims 22–36 are unpatentable and Patent Owner's request to issue substitute claims 22–36 is *denied*;

FURTHER ORDERED that Patent Owner's request to issue substitute claim 21 is *denied* as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, 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.

IPR2023-01169
Patent 10,607,134 B1

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