

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NIANTIC, INC.,
Petitioner,

v.

NANT HOLDINGS IP, LLC,
Patent Owner.

IPR2021-01119
Patent 10,664,518 B2

Before SALLY C. MEDLEY, THOMAS L. GIANNETTI, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. Background

Niantic, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–9, 11–20, 23–32, and 34–36 (the “challenged claims”) of U.S. Patent No. 10,664,518 B2 (Ex. 1001, “the ’518 patent”). Paper 2 (“Pet.”). Nant Holdings IP, LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 7 (“Prelim. Reply”).

The Board has authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the petition and the preliminary response “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons stated below, we determine that Petitioner has not established a reasonable likelihood that it would prevail with respect to any challenged claim. We therefore do not institute *inter partes* review as to any of the challenged claims of the ’518 patent.

B. Related Proceedings

The parties identify the following district court proceeding concerning the ’518 patent: *NantWorks LLC and Nant Holdings IP, LLC v. Niantic, Inc.*, No. 3:20-cv-06262 (N.D. Cal.). Pet. 1; Paper 4, 1.

C. Real Party-in-Interest

The Petition identifies Niantic, Inc., as the real party-in-interest. Pet. 1. Patent Owner in its Preliminary Response does not contest this

identification. Patent Owner identifies Nant Holdings IP, LLC, as the real party-in-interest. Paper 4, 1.

D. The '518 Patent

The '518 patent relates to systems and methods that provide augmented reality (“AR”) content to one or more user devices based on at least one of location identification and object recognition. Ex. 1001, 2:15–18. The user device is auto-populated with AR content objects based on a location, and the AR content objects are instantiated based on object recognition within the location. *Id.* at 2:18–22. AR content objects are data objects including content that is to be presented via a suitable computing device (*e.g.*, smartphone, AR goggles, tablet) to generate an augmented-reality or mixed-reality environment. *Id.* at 7:16–19. This involves overlaying the content on real-world imagery (preferably in real-time) via the computing device, such that the user of the computing device sees a combination of the real-world imagery with the AR content seamlessly. *Id.* at 7:20–23.

Figure 5, reproduced below, illustrates a generation of a tessellated area map.

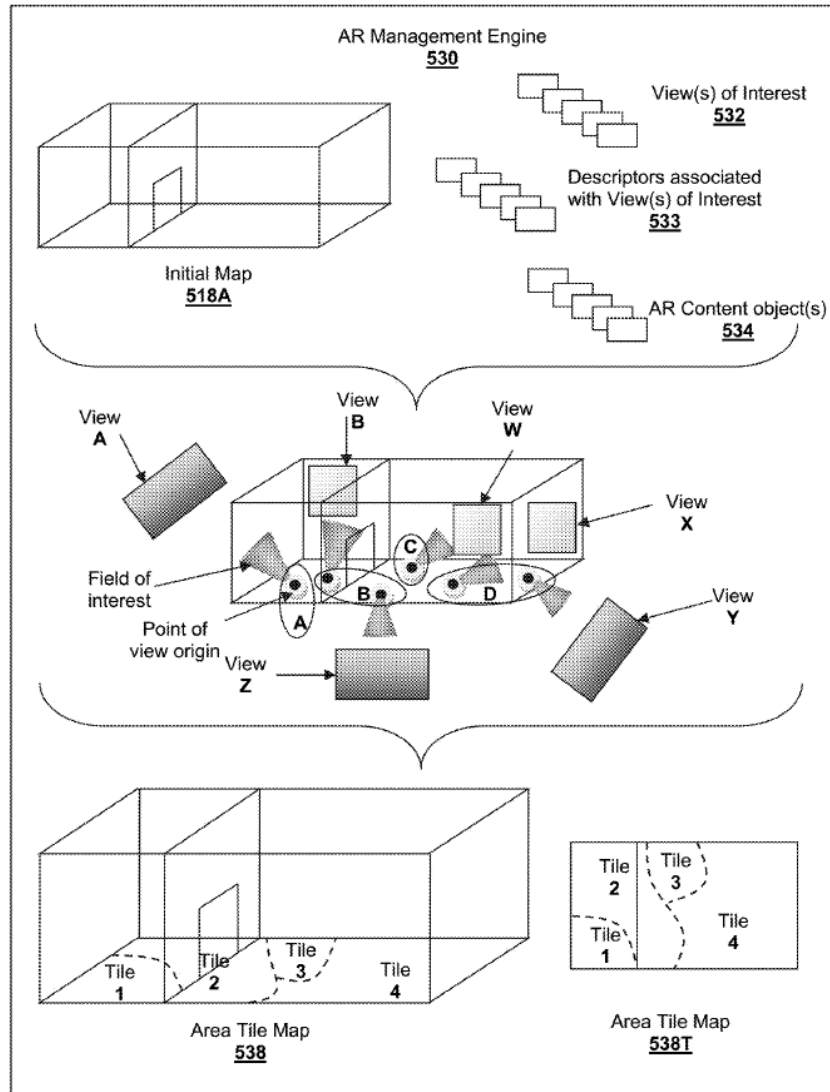


Figure 5

Figure 5 of the '518 patent is a schematic of AR management engine 530 generating area tile maps 538 and 538T. *Id.* at 17:57–58. AR management engine 530 includes, among other things, initial map 518A, view(s) of interest 532 (*e.g.*, point of view origin data, field of interest data), descriptors associated with view(s) of interest 533, and AR content object(s) 534. *Id.* at 17:58–62. Based on area data and optional other data (*e.g.*, signal data), AR management engine 530 establishes AR experience clusters A, B, C, and D

within the initial map 518A as a function of the set of AR content objects 534 and the views of interest 532. *Id.* at 17:62–67.

In the example shown in Figure 5, cluster A includes a first point of view origin having a first field of interest leading to view A. *Id.* at 17:67–18:2. Clusters B, C, and D include other point of view origins having other corresponding fields of interest and other views including objects of interest. *Id.* at 18:13–20. Based at least in part on the AR clusters, area tile maps 538 and 538T (perspective view and top view, respectively) are generated. *Id.* at 19:36–38. The area tile maps include a plurality of tessellated tiles, regular or non-regular (*e.g.*, semi-regular, aperiodic), covering at least some of the area of interest. *Id.* at 3:36–38, 18:38–40.

Figure 6, reproduced below, illustrates an area tile map based on view of interest clusters.

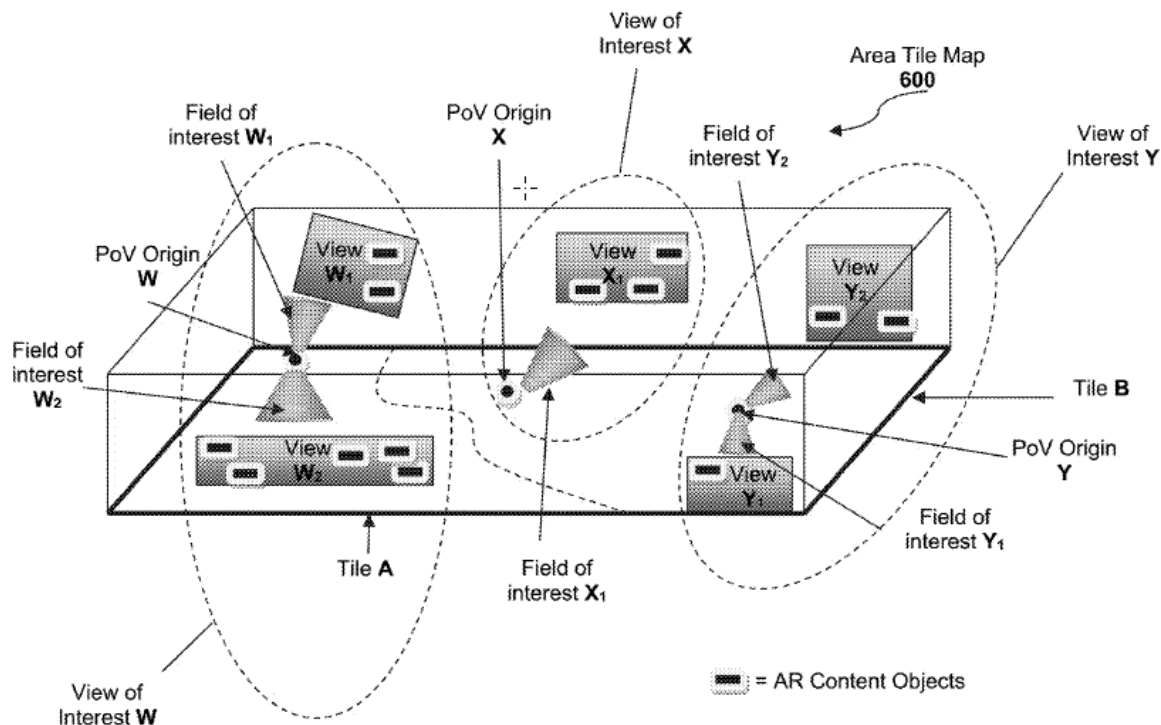


Figure 6

Figure 6 of the '518 patent is a schematic showing area tile map 600 having been generated on experience clusters. *Id.* at 19:25–26. As shown in Figure 6, a portion of an area of interest is divided into tiles A and B. *Id.* at 19:26–28. These tiles are generated based on experience clusters established based on the number of AR content objects associated with each view of interest in the portion. *Id.* at 19:28–30. As an example, when a user navigating the real world of interest gets close enough to a portion represented by tile A, the user's device can be auto-populated with the seven AR content objects bound to view of interest W. *Id.* at 19:55–60.

E. Illustrative Claims

The '518 patent has 39 claims, of which claims 1–9, 11–20, 23–32, and 34–36 are challenged in the Petition. Claims 1 and 34 are independent.

Claim 1 is representative of the claims. Claim 1 recites:¹

1. [preamble] A device capable of rendering augmented reality (AR), the device comprising:

[1[a]] at least one sensor, including a location sensor;

[1[b]] a display;

[1[c]] a non-transitory computer readable memory storing software instructions; and

[1[d]] at least one processor coupled with the non-transitory computer readable memory, the at least one sensor, and the display; and, upon execution of the software instructions, is configurable to:

[1[d][i]] obtain sensor data from the at least one sensor wherein the sensor data includes a device location obtained from the location sensor;

¹ Paragraph numbering provided by Petitioner has been added.

[1[d][ii]] obtain an area of interest via an area database based on at least the device location within the sensor data;

[1[d][iii]] access an area tile map of the area of interest, the area tile map represented by a set of tile subareas that includes one or more tessellated tiles from a tessellated tile map;

[1[d][iv]] identify a tile subarea from the set of tile subareas based at least in part on the device location relative to one or more locations of tile subareas from the set of tile subareas, wherein the identified tile subarea covers at least a portion of the area of interest, and wherein one or more tessellated tiles within the identified tile subarea are associated with one or more AR content objects;

[1[d][v]] populate the non-transitory computer readable memory with at least one of the one or more AR content objects associated with the one or more tessellated tiles corresponding with the identified tile subarea; and

[1[d][vi]] render the at least one of the one or more AR content objects that is associated with the identified tile subarea on the display based on a view of interest.

Ex. 1001, 26:41–27:8.

F. References and Other Evidence

The Petition relies on the following references:

U.S. Patent App. Pub. No. 2008/0132251 A1 (Ex. 1003, “Altman”).

U.S. Patent App. Pub. No. 2013/0178257 A1 (Ex. 1006, “Langseth”).

U.S. Patent App. Pub. No. 2013/0124563 A1 (Ex. 1004, “CaveLie”).

U.S. Patent App. Pub. No. 2008/0268876 A1 (Ex. 1005, “Gelfand”).

U.S. Patent No. 8,762,047 B2 (Ex. 1007, “Sterkel”).

In addition, Petitioner submits the Declaration of Dr. Michael Zyda (Ex. 1002, “Zyda Decl.”).

G. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §²	Reference(s)
1–9, 11–14, 18–20, 23–32, 34–36	103	Altman, Langseth
1–9, 11–14, 18–20, 23–32, 34–36	103	Altman, Langseth, CaveLie
1–9, 11–20, 23–32, 34–36	103	Altman, Langseth, CaveLie, Gelfand
1–8, 11–14, 18–20, 23, 24, 26–32, 34–36	103	Sterkel

Pet. 4.

II. PRELIMINARY MATTERS

A. Level of Ordinary Skill

Petitioner contends a person of ordinary skill in the art “as of October 2013 would have possessed at least a Master’s of Science in the areas of electrical engineering or computer science, with a working knowledge of augmented reality, mobile mapping, and the associated technologies; or, alternatively, a Bachelor’s of Science in computer science with at least two years of experience in the aforementioned areas (or equivalent degree or experience).” Pet. 7 (citing Zyda Decl. ¶¶ 11–15).

At this stage, Patent Owner does not provide a description of the person of ordinary skill.

² Because the application from which the ’518 patent issued was filed after March 16, 2013, the AIA (“America Invents Act”) version of § 103 applies. Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011).

Petitioner’s definition is consistent with the prior art and patent specification before us and is supported by credible expert testimony. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (prior art itself may reflect an appropriate level of skill). For the purpose of our decision, we adopt Petitioner’s proposal.

B. Claim Construction

In an *inter partes* review, the claims of a patent shall be construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2020); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe claim terms only as relevant to the parties’ contentions and only to the extent necessary to resolve the issues in dispute. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner contends that the parties have agreed to construe “tessellated tiles” as “tiles fitted together to cover an area without gaps” in the “underlying litigation,” and further contends any other claim

construction disputes “need not be resolved by the Board as the prior art would satisfy all proposed constructions.” Pet. 7. Patent Owner contends “the Board should construe the phrase ‘augmented reality’ to mean the presentation of virtual objects in a scene alongside of real-world elements,” and further contends that “[f]or all other terms, the plain and ordinary meaning of those terms is sufficient.” Prelim. Resp. 8–10. In its Reply, Petitioner disagrees with Patent Owner’s proposed construction of “augmented reality,” but does not offer its own proposed construction, and instead contends “‘augmented reality’ . . . has a plain meaning and can take multiple forms.” Prelim. Reply 1–3.

For purposes of this decision, we adopt the agreed construction of “tessellated tiles” as “tiles fitted together to cover an area without gaps.” Further constructions are not necessary to resolve disputed issues for this decision.

C. Description of the Prior Art References

1. Altman

Altman describes a location-based social network manager process executed on a server coupled to mobile communication devices over a wireless network. Ex. 1003 ¶ 6. The process determines the geographic location of a mobile communication device operated by a user within an area, displays a map representation of the area around the mobile communication device on a graphical user interface of the mobile communication device, and superimposes on the map the respective locations of other users of mobile communication devices coupled to the mobile communication device over the network. *Id.*

Altman further describes a map database included in the server that provides background maps displayed on the graphical user interface of the

mobile communication device. *Id.* ¶ 43. The map images comprise map tiles that are image files of maps with varying degrees of granularity. *Id.* Figure 2A, reproduced below, illustrates an example of a map displayed on a mobile communication device. *Id.* ¶ 11.

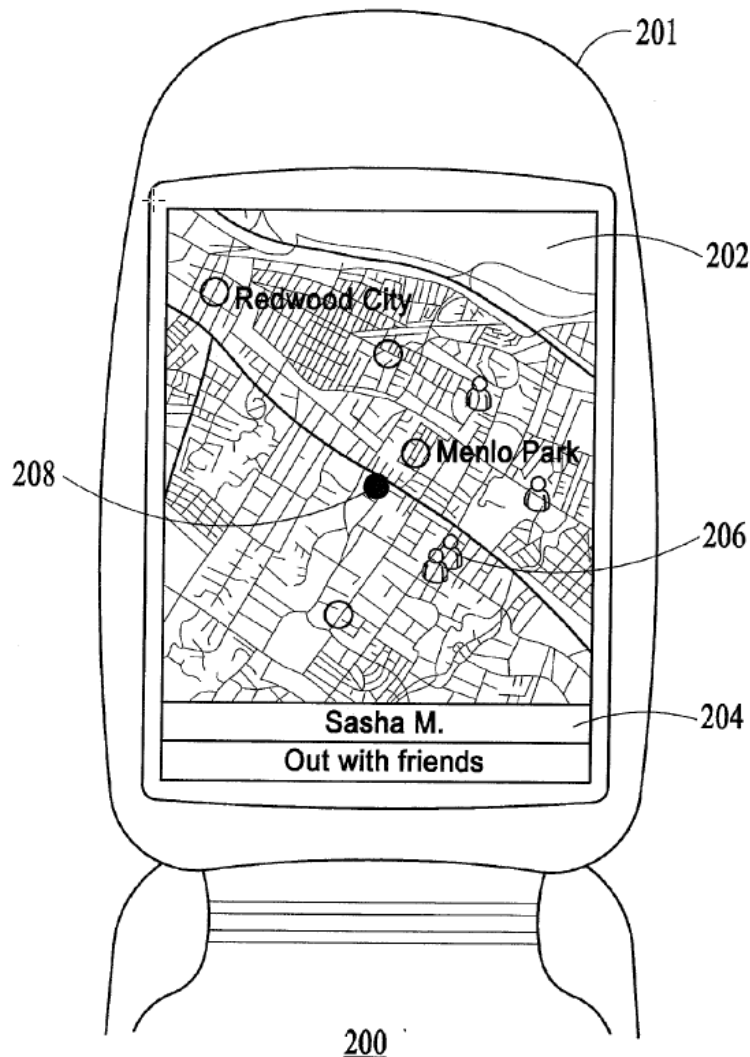


FIG.2A

Figure 2A of Altman illustrates an example of a map displayed on a mobile communication device. *Id.* ¶ 51. As shown in Figure 2A, a mobile communication device, such as cellular phone 200, has a display screen 202. *Id.* The map generator displays a map on the display. Certain icons

denoting the location of certain friends or places of interest to the user are superimposed on the map being displayed. *Id.* For example, large circular icon 208 denotes the location of the user of the mobile device, while smaller icons 206 indicate the location of the user's friends. *Id.* The display area can be divided into a number of different sub-display areas displaying information relating to the items displayed. *Id.* Thus, as shown in Figure 2A, display area 204 displays certain information relating to the user, such as name, and status information. *Id.*

2. *Langseth*

Langseth describes a system and method that support interacting with virtual objects in augmented realities on mobile devices (*e.g.*, a smartphone, augmented reality glasses, augmented reality contact lenses, head-mounted displays, and augmented realities directly tied to the human brain). Ex. 1006 ¶ 4. The system and method enable users to create and deploy virtual objects having custom visual designs and embedded content or other virtual items that can be shared with other users to any suitable worldwide location. *Id.* Figure 9 of Langseth, reproduced below, illustrates a user interface that supports interacting with virtual objects in augmented realities. *Id.* ¶ 15.

900

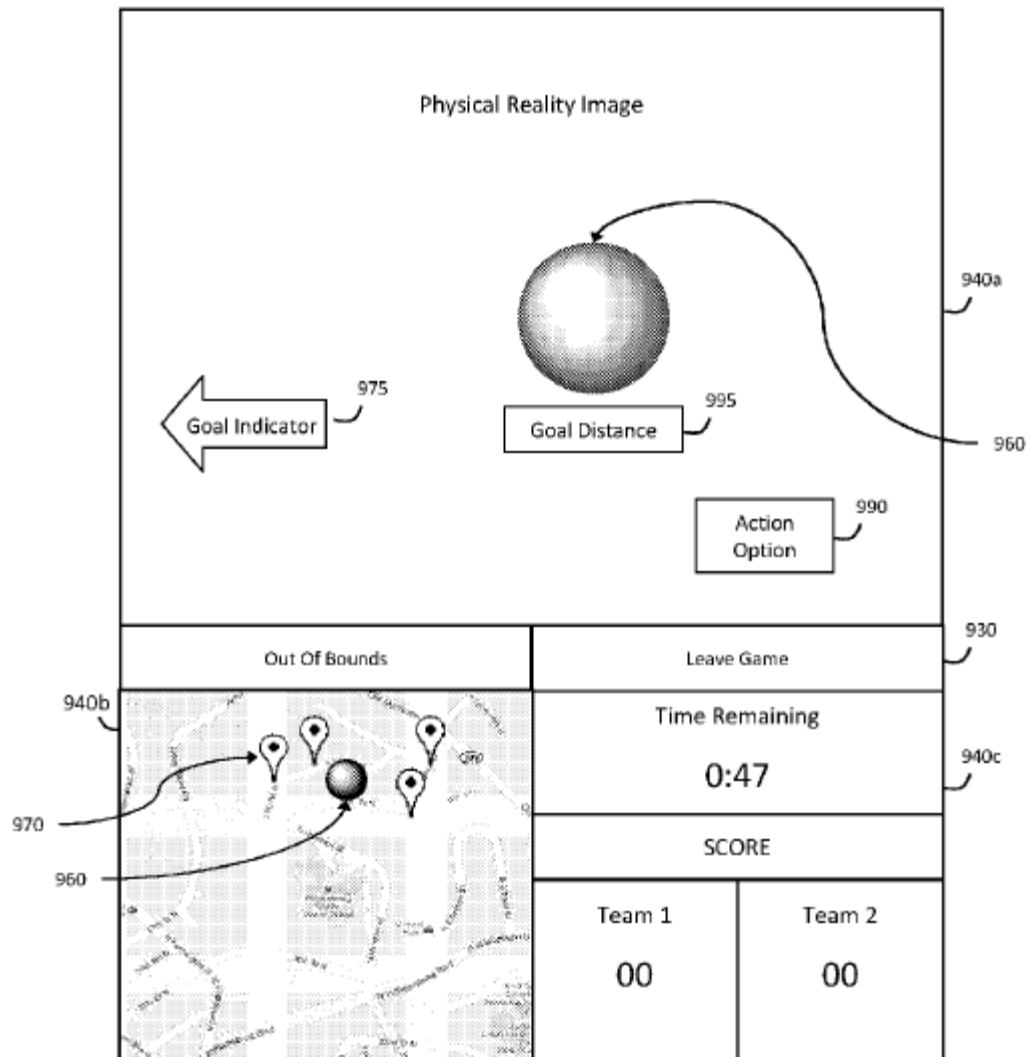


Figure 9

corresponding to a current viewpoint associated with a camera on the mobile device and map view 940b that shows a layout associated with roads and other features in a physical area encompassing a current location associated with the mobile device. *Id.* Live view 940a and map view 940b generally represent a virtual field where users interact with virtual object 960 and attempt to move virtual ball 960 into a virtual goal. *Id.*

3. *CaveLie*

CaveLie describes a system and method to pre-fetch map data from a remote map database. Ex. 1004 ¶ 1. More specifically, CaveLie describes techniques for fetching map data over a selected subset of the entire map data available by analyzing pre-fetch selection parameters. *Id.* ¶ 25. The map data is stored at a remote server in the form of map data “tiles.” *Id.* ¶ 26. The techniques rely upon analysis of these pre-fetch selection parameters to identify map data tiles as the pre-fetch map data. *Id.* Figure 3, reproduced below, illustrates a portion of a data structure for a map database.

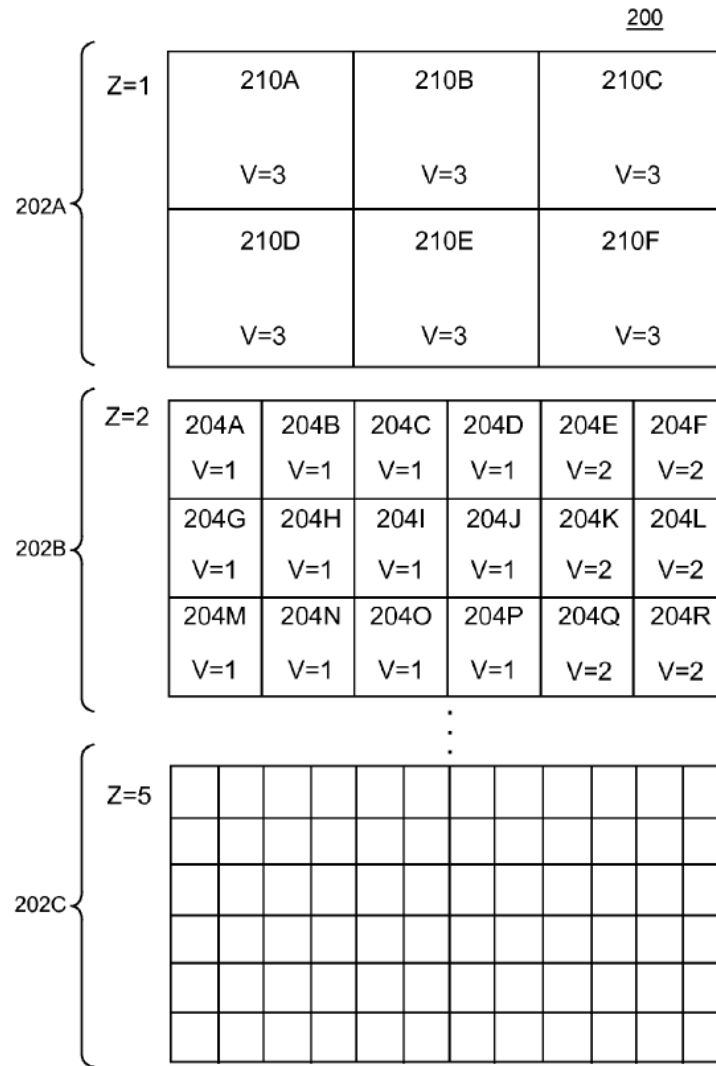


FIG. 3

Figure 3 of CaveLie illustrates a data structure 200 of a portion of map database 103. *Id.* ¶ 42. The map data is stored in n different zoom level structures (only three of which are shown in Figure 3) 202A, 202B, and 202C, where each data structure is formed by map data tiles. *Id.* As an example, data structure 202B shows the map data at zoom level $z=2$, and is formed of 18 map data tiles, 204A–204R. *Id.* The map tiles represent the basic building blocks for constructing a map display, where each map tile contains necessary map data to construct a portion of the map display,

including data identifying roads, buildings and geographic boundaries (*e.g.*, water lines, county lines, city boundaries, state lines, mountains, water parks, etc.). *Id.*

4. *Gelfand*

Gelfand describes a system, method, device, and computer program product relating to utilizing a camera of a mobile terminal as a user interface for search applications and online services to perform visual searching.

Ex. 1005 ¶ 19. Gelfand describes that a user may point a camera at a point-of-interest such as a coffee shop and capture an image of the coffee shop.

Id. ¶ 62. The system then invokes a recognition scheme to recognize the coffee shop, find and locate other nearby coffee shops (or other points-of-interest), and display an overhead map of the surrounding area including superimposed visual tags corresponding to the other coffee shops (or other points-of-interest). *Id.* The visual tags show enlarged images relative to the points-of-interest and contain information about the image, displayed therein. *Id.* ¶ 65.

5. *Sterkel*

Sterkel describes techniques for generating a moving map that include a graphical representation of a vehicle, such as an airplane, and content relevant to a location of the vehicle as the vehicle is in transit. Ex. 1007, (57). The moving map displays the current location of the vehicle derived by modifying a delayed location of the vehicle to account for a speed, a heading, and an amount of delay. *Id.*

Content items are included on the moving map if they are within a bounded region around the location of the vehicle or in the vehicle, where the bounded region changes as the vehicle moves in transit. *Id.* Sterkel further describes that upon receiving information identifying the vehicle, a

moving map engine causes a user's device to display a moving map of the vehicle by generating map tiles around the current location of the vehicle.

Id. at 7:62–66.

In one embodiment, the map tiles may be tiles that are retrieved from a mapping service that provides satellite imagery, a road map, or any other geolocated information for a region that includes the vehicle's location or predicted location. *Id.* at 10:63–11:1. Figure 3, reproduced below, illustrates an example user interface. *Id.* at 2:29–30.

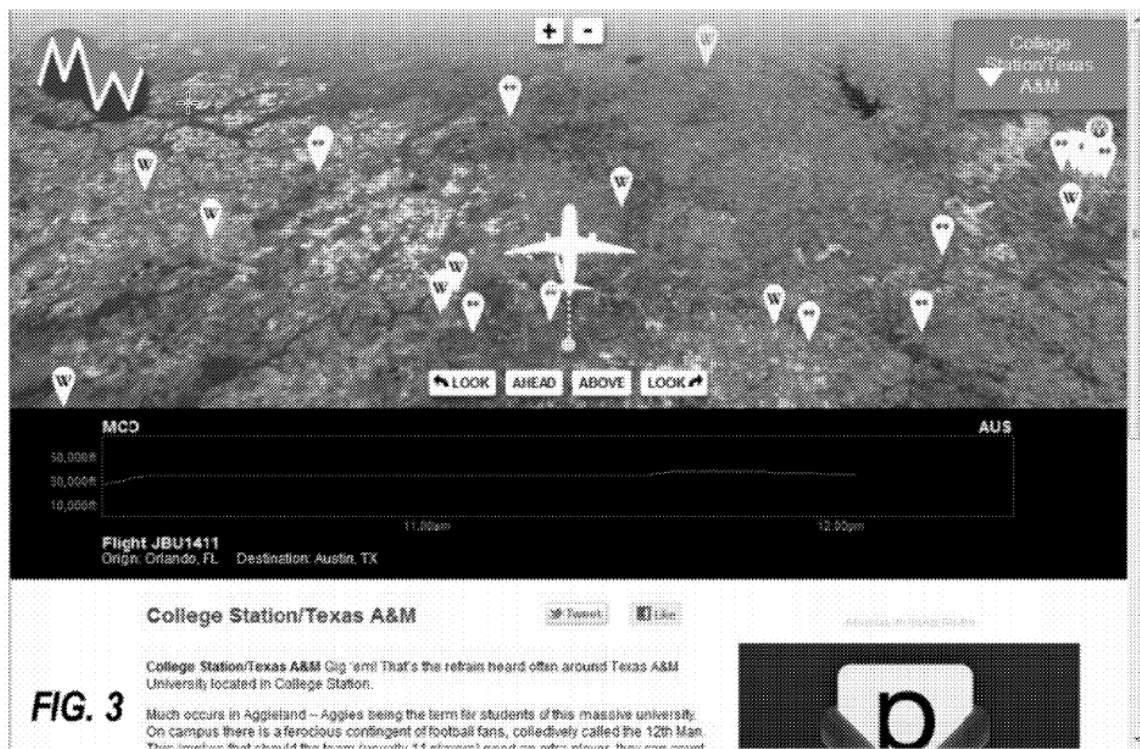


Figure 3 of Sterkel represents an example user interface. *Id.* at 19:37. The user interface includes a map region for displaying map tiles and visual representations, such as markers, of content items and/or location information. *Id.* at 19:38–40.

III. ANALYSIS OF THE CHALLENGED CLAIMS

The Petitioner challenges claims 1–9, 11–20, 23–32, and 34–36 of the ’518 patent. Petitioner asserts unpatentability of the claims based on obviousness.

A. Obviousness

A claim is unpatentable 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. 35 U.S.C. § 103.

The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) so-called “secondary considerations,” including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“the *Graham* factors”). Neither the Petition nor the Preliminary Response presents evidence on the fourth *Graham* factor. We therefore do not consider that factor in this decision.

B. Altman and Langseth Challenge

Petitioner contends that claims 1–9, 11–14, 18–20, 23–32, and 34–36 would have been obvious over Altman in combination with Langseth. Pet. 11. Of these claims, claims 1 and 34 are the independent claims. *See supra*. Petitioner contends claim 34 is “substantially identical” to claim 1, and, in its analysis of claim 34, relies on its analysis of claim 1. Pet. 50. Likewise, Patent Owner addresses claims 1 and 34 together. *See, e.g.*, Prelim. Resp. 16, 19. We initially focus our analysis on claim 1.

1. Claim 1

Petitioner contends each limitation of claim 1 is met by the combination of Altman and Langseth, and provides an element-by-element analysis. Pet. 11–31. Patent Owner disputes this assertion, and focuses its response on the “tessellated tiles” limitations in claim elements 1[d][iii] and 1[d][iv].³

a. Element 1[d]iii

Claim element 1[d][iii] recites that the processor recited in claim element 1[d] is configurable to “access an area tile map of the area of interest, the area tile map represented by a set of tile subareas that includes one or more *tessellated tiles* from a tessellated tile map.” Pet. 21 (emphasis added). As noted *supra*, the parties have agreed to construe “tessellated tiles” as “tiles fitted together to cover an area without gaps.” *Id.* at 7 (citing Ex. 1042, 002).

Petitioner contends that Altman discloses tessellated tiles that meet this limitation. Pet. 22–25. Petitioner first argues the Altman discloses map tiles. *Id.* at 22 (“Altman further discloses that background map data can be stored as ‘map tiles.’”). Next, Petitioner asserts “[a person of ordinary skill] would have understood that these map tiles, which each constitutes an image of a small region or ‘tile’ subdivision of a real-world area, constitute an area tile map.” *Id.* Petitioner also asserts that “Altman further discloses that the area tile map is represented by a set of tile subareas that includes one or more tessellated tiles.” *Id.* (emphasis omitted). Finally, Petitioner contends

³ Patent Owner also contests Petitioner’s construction of AR. *See* discussion in Section II.B, *supra*.

that “Altman further discloses that the map tiles can be tessellated tiles.” *Id.* at 23 (citing Ex. 1003 ¶¶ 37, 43).

Citing Altman’s Figure 2A, *supra*, Petitioner reasons that the figure “shows a large geographic area covering multiple towns with no gaps in map coverage.” *Id.* Petitioner explains, “By storing tiles that can be used to ‘display a regional street level map for any area in the U.S.,’ Altman discloses that the tessellated tiles are from a tessellated tile map.” *Id.* at 24 (quoting Ex. 1003 ¶ 43). Further, Petitioner asserts that “[a person of ordinary skill] would have understood that each layer or the area tile map as a whole (considering all layers collectively) constitutes a tessellated tile map.” *Id.* (citing Zyda Decl. ¶¶ 160–162). Addressing the requirement in claim 1 for “subareas,” Petitioner asserts, “A [person of ordinary skill] would have understood that Altman’s system uses ‘subsets’ of map tiles in order to display a map covering an area of interest larger than the size of any one tile.” *Id.* at 25 (citing Zyda Decl. ¶ 162).

Patent Owner responds that Petitioner fails to demonstrate that Altman meets this limitation. Prelim. Resp. 16–19. Patent Owner argues that “Altman . . . never mentions ‘tessellated tiles’ or a ‘tessellated tile map.’ The Petition glosses over this deficiency.” *Id.* at 16. Patent Owner points out that in paragraph 37 of Altman, relied on by Petitioner to support its argument, “[t]he nature of the map tiles and how they are used is not described in this paragraph at all.” *Id.*

Patent Owner discusses the other portions of Altman relied on by Petitioner, including Figure 2A, and concludes, “Nothing in any of these disclosures requires that Altman’s map inherently is made up of ‘tessellated tiles’ within identified tile subareas that cover particular areas of interest as in ’518 Patent claims 1 and 34.” *Id.* at 17–18 (citing, *inter alia*, *Cont’l Can*

Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1269 (Fed. Cir. 1991) (inherency not “established by probabilities or possibilities”). Patent Owner sums up this argument by asserting that “contrary to the ’518 Patent, Altman teaches the use of a voluminous, highly detailed map that can be expanded instead of multiple, smaller tessellated tiles relating to the area of interest near the mobile device.” *Id.* at 18.

b. Element 1[d][iv]

Separately, Patent Owner contends that Altman fails to teach or suggest the portions of claim element 1[d][iv]] reciting “identify[ing] a tile subarea” and “one or more *tessellated tiles* within the identified tile subarea . . . associated with one or more AR content objects.” Prelim. Resp. 19–22 (emphasis added). In addition to its argument that Altman does not disclose tessellated tiles, Patent Owner asserts that “at most” Altman teaches “associating icons with specific physical locations and displaying icons on a map at those locations.” *Id.* at 21. “There simply is no teaching of using ‘one or more tessellated tiles within the identified tile subarea are associated with one or more AR content objects’ as in ’518 Patent claims 1 and 34.” *Id.*

Patent Owner challenges Petitioner’s assertion that Langseth provides this teaching: “[T]he Petition does not provide any citation to support its contention that ‘it would have been obvious to a [person of ordinary skill] to implement the combination wherein tessellated tiles are associated with one or more AR content objects.’” *Id.* at 21–22.

c. Analysis

We are not persuaded that Petitioner has demonstrated sufficiently that Altman and Langseth meet the “tessellated tiles” limitations of claim 1. Specifically, we are not persuaded that Petitioner has demonstrated that

Altman teaches or suggests “access[ing] an area tile map of the area of interest, the area tile map represented by a set of tile subareas that includes one or more tessellated tiles from a tessellated tile map” or “identify[ing] a tile subarea . . . wherein one or more tessellated tiles within the identified tile subarea are associated with one or more AR content objects.” As Patent Owner points out, there is no discussion in Altman of tessellated tiles.

Prelim. Resp. 16. While it is true that Altman discusses map tiles, there is no disclosure in Altman of how those tiles are arranged, much less whether they are “tiles fitted together to cover an area without gaps.” *Id.* at 18–19.

The portions of Altman relied on by Petitioner do not support its argument that Altman discloses tessellated tiles. Thus, for example, paragraph 37 of Altman, cited by Petitioner, mentions “map tiles” but provides no description of what they are or how they are arranged. Ex. 1003 ¶ 37. Similarly, paragraph 43 of Altman, also cited by Petitioner, describes the map tiles as “image files of maps with varying degrees of granularity,” but does not provide any description of how the tiles are arranged. *Id.* ¶ 43. Nor does Figure 2A of Altman or its description in the text demonstrate that Altman’s map is made up of tessellated tiles. Prelim. Resp. 17.

Petitioner does not support its argument that because Altman’s Figure 2A shows “a large geographic area covering multiple towns with no gaps in map coverage” that “a person of ordinary skill would have understood that each layer or the area map as a whole . . . constitutes a tessellated tile map.” Pet. 24. As Patent Owner points out, individual map tiles can be used to display certain areas of a map without being sets of tessellated tiles. Prelim. Resp. 18. And even if individual tiles were used in Altman’s maps, nothing in Altman discloses or suggests that there are no gaps between the tiles. *Id.* at 18–19.

Nor does the testimony of Dr. Zyda convince us that Altman meets the “tessellated tiles” limitations. Dr. Zyda’s testimony tracks the arguments in the Petition closely. *See* Zyda Decl. ¶¶ 160–162. As support for his conclusion (*id.* ¶ 160) that “Altman discloses that the map tiles can be tessellated tiles,” Dr. Zyda cites the same disclosures from Altman (Ex. 1003 ¶¶ 37, 43, and Fig. 2A) as does the Petition. *See* Pet. 23 (citing Ex. 1003 ¶¶ 37, 43). As just discussed, those disclosures do not describe how the tiles in Altman are arranged and do not support the contention that they are tessellated tiles.

Dr. Zyda’s conclusion that “[a] person of ordinary skill in the art would have understood that these map tiles are tessellated tiles” cites paragraph 43 of Altman for support. *See* Zyda Decl. ¶ 161. For the reasons given *supra*, that paragraph in Altman does not support this conclusion. Moreover, Dr. Zyda’s conclusion that “[a] person of ordinary skill in the art would have understood that each layer or [sic] the area tile map [in Altman] as a whole (considering all layers collectively) constitutes a tessellated tile map” (Zyda Decl. ¶ 161) cites no supporting evidence.

Our Trial Practice Guide cautions that “[e]xpert testimony . . . cannot take the place of a disclosure in a prior art reference, when that disclosure is required as part of the unpatentability analysis.” Patent Trial and Appeal Board Consolidated Trial Practice Guide 36 (November 2019), available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>. We are not persuaded by Dr. Zyda’s speculations on what persons of ordinary skill would have known (including those discussed *supra*) because either they are not properly supported by the cited evidence, or they do not cite any evidentiary support at all.

Petitioner identifies Altman, rather than Langseth, to meet the “tessellated tiles” limitation. Pet. 21. Thus, Petitioner cannot rely on Langseth to provide the disclosure missing from Altman.

To summarize, for the reasons given, Petitioner has failed to demonstrate that Altman discloses tessellated tiles as those have been defined by the parties. Prelim, Resp. 16–19. Because both claim elements 1[d][iii] and 1[d][iv] recite tessellated tiles, Petitioner has not presented sufficient evidence of a reasonable likelihood of prevailing on this challenge to claim 1.

2. Claim 34

As noted, Petitioner asserts that claim 34 “is substantially identical to claim 1, with . . . immaterial differences,” and further provides an analysis of the differences in relation to Altman and Langseth. Pet. 42–43. Patent Owner does not dispute this. For the reasons discussed above with respect to claim 1, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge to claim 34.

3. Claims 2–9, 11–14, 18–20, 23–32, 35, 36

Claims 2–9, 11–14, 18–20, and 23–32 depend from claim 1, and claims 35 and 36 depend from claim 34. For the reasons discussed above with respect to claims 1 and 34, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge to claims 2–9, 11–14, 18–20, and 23–32.

C. Altman, Langseth, and CaveLie Challenge

Petitioner asserts that claims 1–9, 11–14, 18–20, 23–32, and 34–36 would have also been obvious over Altman, Langseth, and CaveLie. Pet. 43. Specifically, Petitioner contends “[t]o the extent there is any question whether Altman’s map tiles satisfy the ’518 Patent’s map tile limitations,

including those of claim elements 1[d][iii]-[vi] and 34[c]-[f], CaveLie provides implementation details which could be applied to Altman's map tiles." *Id.* Petitioner further contends "to the extent there is any question whether Altman renders claim 23 obvious, it would have been obvious over the combination of Altman and CaveLie." *Id.*

Petitioner argues that "it would have been . . . obvious to combine Altman with CaveLie." Pet. 46 (citing Zyda Decl. ¶¶ 305–311). Petitioner explains that "[a person of ordinary skill] would have naturally looked to CaveLie for further implementation details on *the tessellated tiles already disclosed in Altman.*" *Id.* at 46–47 (emphasis added). Patent Owner responds that "there is no citation to anything in these references themselves to support this argument, which is apparently based on hindsight." Prelim. Resp. 36.

We agree with Patent Owner that Petitioner has failed to demonstrate a sufficient motivation to combine Altman with CaveLie, other than hindsight. As indicated in the argument from the Petition just quoted, Petitioner's rationale for combining Altman and CaveLie proceeds on the assumption that Altman discloses tessellated tiles, for which CaveLie allegedly provides "further implementation details." Pet. 46–47. However, in our analysis of Altman, we conclude that Petitioner has not demonstrated sufficiently that Altman teaches or suggests tessellated tiles. *See supra*, Section III.B.1.c.

Patent Owner also contends adding CaveLie does not "alleviate known deficiencies" identified by Patent Owner with respect to the ground involving Altman and Langseth. Prelim. Resp. 29–38. Among these is the argument that "despite the Petition's conclusory language, the tiles of CaveLie are not described as fitted together, covering an entire area, or

without gaps as the Petition defines tessellation.” *Id.* at 32. However, because we conclude that Petitioner has not demonstrated a sufficient rationale for combining the teachings of the references asserted in this challenge, we do not address this issue.

Taking into account the Petition and Patent Owner’s response, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge to claims 1–9, 11–14, 18–20, 23–32, and 34–36.

D. Altman, Langseth, CaveLie, and Gelfand Challenge

Petitioner asserts that claims 1–9, 11–20, 23–32, and 34–36 would have also been obvious over Altman, Langseth, CaveLie, and Gelfand. Pet. 51. Specifically, with respect to claims 1–9, 11–14, 18–20, 23–32, and 34–36, Petitioner relies on its contentions based on the combination of Altman, Langseth, and CaveLie. *Id.* As to claims 15–17, Petitioner relies on the combination of Altman, Langseth, and CaveLie, further combined with Gelfand. *Id.* at 51–55. Petitioner relies on Gelfand for its teaching of “us[ing] stored images to determine if a mobile phone camera is pointed at a recognized object.” *Id.* at 51.

Patent Owner contends Gelfand does not address the deficiencies identified by Patent Owner with respect to Altman, Langseth, and CaveLie. Prelim. Resp. 38. We agree. The addition of Gelfand does not provide the teaching or suggestion of tessellated tiles, or provide a persuasive motivation to combine the teachings of Altman and CaveLie.

Patent Owner also contends the Petition does not provide a proper motivation to incorporate particular features of Gelfand into the combination of Altman, Langseth, and CaveLie. *Id.* at 38–39. However, because Petitioner has not demonstrated that even if combined, the references would meet all the elements of the claims, we do not address this issue.

Taking into account the Petition and Patent Owner's response, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

E. Sterkel Challenge

Petitioner asserts that claims 1–8, 11–14, 18–20, 23, 24, 26–32, and 34–36 would have been obvious over Sterkel. Pet. 55.

1. Claim 1

Petitioner contends each limitation of claim 1 is met by Sterkel, and provides an element-by-element analysis. Pet. 55–65. As was the case for previously-discussed challenges, Patent Owner disputes this assertion, and focuses its response on the “tessellated tiles” limitations in claim elements 1[d][iii] and 1[d][iv]. Prelim. Resp. 44–49.

a. Claim element 1[d][iii]

Petitioner contends that “[i]t would have . . . been obvious to a [person of ordinary skill] that Sterkel's map tiles can be tessellated tiles.” Pet. 60. Referring to Sterkel's Figure 11, Petitioner continues, “A [person of ordinary skill] would have known that map tiles from mapping services commonly provide map tiles covering an area that fit together with no gaps.” *Id.* at 61.

Patent Owner responds that “Sterkel is silent as to the use of tessellated tiles from a tessellated tile map.” Prelim. Resp. 44. Patent Owner continues, “Sterkel discloses that ‘[m]ap elements (such as ‘tiles’) may be obtained from a third-party provider of ‘satellite imagery, road map, or any other geolocated information.’ The term ‘tessellated’ or its variants are completely absent from Sterkel.” *Id.* at 44–45 (alteration in original) (citation omitted). Referring to Figure 11 of Sterkel, Patent Owner argues that “even if Figure 11 depicts a ‘large geographic areas with no gaps,’

[citing Pet., 61], it does not disclose the use of multiple ‘tiles fitted together to cover an area without gaps.’” *Id.* at 45–46.

b. Claim element 1[d][iv]

Petitioner contends that “Sterkel satisfies this limitation because it discloses presenting one or more map tiles (tile subarea) covering an area surrounding the vehicle’s location (area of interest), and any map tiles can cover an area that is associated with the locations of various content items, which are displayed as AR content objects.” Pet. 62. Petitioner continues, “Sterkel further discloses that one or more tessellated tiles within the identified tile subarea are associated with one or more AR content objects.” *Id.* at 63 (emphasis omitted).

Patent Owner responds that “the Petition does not explain why it would have been obvious to associate Sterkel’s content markers with one or more tessellated tiles, instead of particular locations or regions as taught by Sterkel.” Prelim. Resp. 48–49. Patent Owner continues, “[n]or does the Petition explain what allegedly would have motivated a [person of ordinary skill] to change Sterkel’s location based content markers and to instead associate them with tessellated titles.” *Id.* at 49.

c. Analysis

We are not persuaded that Petitioner has demonstrated sufficiently that Sterkel meets the “tessellated tile” limitations of claim 1. Specifically, we are not persuaded that Petitioner has demonstrated that Sterkel teaches or suggests “access[ing] an area tile map of the area of interest, the area tile map represented by a set of tile subareas that includes one or more tessellated tiles from a tessellated tile map” or “identify[ing] a tile subarea . . . wherein one or more tessellated tiles within the identified tile subarea are associated with one or more AR content objects.”

We agree with Patent Owner that Sterkel is “silent as to the use of tessellated tiles from a tessellated tile map.” Prelim. Resp. 44. Moreover, Petitioner’s reliance on Sterkel’s Figure 11 is misplaced. As Patent Owner explains, “Sterkel never says that Figure 11 depicts more than a single map image.” *Id.* at 45 (citing Ex. 1007, 2:63–66). Thus, even if Sterkel’s map shown in Figure 11 depicts “a large geographic area with no gaps,” as Petitioner contends, it does not disclose the use of multiple tiles “fitted together to cover an area without gaps.” *See* Prelim. Resp. 46 (citing Pet. 61).

As Patent Owner points out, Petitioner’s argument regarding Sterkel relies almost entirely on the testimony of Dr. Zyda. *See, e.g.*, Pet. 60–61 (citing Zyda Decl. ¶¶ 378, 372). Dr. Zyda opines that “[i]t would have further been obvious to one of ordinary skill in the art that Sterkel’s map tiles can be tessellated tiles.” Zyda Decl. ¶ 378 (emphasis omitted); *see also* Zyda Decl. ¶ 375 (“Sterkel additionally discloses and renders obvious that the area tile map is represented by a set of tile subareas that includes one or more tessellated tiles.”) (emphasis omitted).

We are not persuaded by this testimony that Sterkel meets the tessellated tiles limitations. For many of his opinions, including those just quoted, Dr. Zyda does not provide sufficient citations to supporting evidence. *See also* Zyda Decl. ¶ 378 (“A person of ordinary skill in the art would have known that map tiles from mapping services such as those providing satellite imagery or road maps commonly provide map tiles covering an area that fit together with no gaps.”) (no authority cited); *id.* (“A person of ordinary skill in the art would have appreciated that such ‘smooth movement’ of the map would have been best facilitated by map tiles that fit together with no gaps, such that the moving map could be

rendered continuously.”) (no authority cited); *id.* (“Accordingly, the only reasonable inference is that Sterkel’s map tiles are implemented without gaps, i.e., they are tessellated tiles.”) (no authority cited). Under our rules, such opinions, presented without supporting citations, are entitled to “little or no weight.” 37 C.F.R. § 42.65 (a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

As noted *supra*, our Trial Practice Guide cautions that “[e]xpert testimony . . . cannot take the place of a disclosure in a prior art reference, when that disclosure is required as part of the unpatentability analysis.” Consolidated Trial Practice Guide 36. We are not persuaded by Dr. Zyda’s speculations on what persons of ordinary skill would have known (including those discussed *supra*). Either they are not properly supported by the cited evidence, or they lack any evidentiary support at all.

To summarize, for the reasons given, Petitioner has failed to demonstrate that Sterkel discloses tessellated tiles as those have been defined by the parties. Prelim. Resp. 45–47. Because both claim elements 1[d][iii] and 1[d][iv] recite tessellated tiles, Petitioner has not presented sufficient evidence of a reasonable likelihood of prevailing on this challenge to claim 1.

2. Claim 34

For the reasons discussed above with respect to claim 1, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge to claim 34.

3. Claims 2–8, 11–14, 18–20, 23, 24, 26–32, 35, 36

These claims depend from claim 1 or from claim 34. For the reasons discussed above with respect to claims 1 and 34, we are not persuaded by

Petitioner's analysis that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge to dependent claims 2–8, 11–14, 18–20, 23, 24, 26–32, 35, and 36.

IV. CONCLUSION

For the foregoing reasons, we have determined that Petitioner has not shown a reasonable likelihood that it would prevail with respect to any of the challenged claims.

V. ORDER

Upon consideration of the record before us, it is,
ORDERED that no *inter partes* review is instituted.

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FOR PETITIONER:

Heidi L. Keefe
Lauren J. Krickl
COOLEY LLP
hkeefe@cooley.com
lkrickl@cooley.com

FOR PATENT OWNER:

Matt Blackburn
mblackburn@diamondmccarthy.com

Evan Boetticher
eeb@nlaw.northwestern.edu