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Paper 53
Entered: December 9, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,

v.

QUANTUM IMAGING LLC,
Patent Owner.

IPR2023-00996
Patent No. 10,991,165 B2

Before SCOTT A. DANIELS, KEVIN W. CHERRY, and JAMES J. MAYBERRY, *Administrative Patent Judges.*

DANIELS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

ORDER
Dismissing Patent Owner's Motion to Exclude (Paper 42)
37 C.F.R. § 42.64(c)

I. INTRODUCTION

Sony Interactive Entertainment LLC ("Sony" or "Petitioner") filed a petition to institute *inter partes* review of claims 1–3, 5–8, 10–12, and 18 of U.S. Patent No. 10,991,165 B2 (Ex. 1001, "the '165 patent"). Paper 1 ("Pet."). Quantum Imaging LLC ("Quantum" or "Patent Owner") filed a Preliminary Response. Paper 9 ("Prelim. Resp.").

Following our Institution Decision (Paper 11, "Inst. Dec."), Patent Owner filed a Response. Paper 24 ("PO Resp."). Petitioner filed a Reply. Paper 31 ("Pet. Reply"). Patent Owner filed a Sur-Reply. Paper 34 ("PO Sur-Reply"). Patent Owner also filed a Motion to Exclude (Paper 42, "PO MTE"), Petitioner filed an Opposition (Paper 43, "Pet MTE Opp."), and Patent Owner filed a Reply (Paper 46, "PO MTE Reply"). An oral hearing was held on September 13, 2024. A transcript of the hearing has been entered as Paper 51. ("Tr.").

We have jurisdiction pursuant to 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the challenged claims. Petitioner bears the burden of proving unpatentability of the Challenged Claims. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2024).

Having reviewed the arguments and the supporting evidence, we determine that Petitioner has not shown, by a preponderance of the evidence, that the challenged claims are unpatentable. We dismiss Patent Owner's Motion to Exclude as moot.

A. Real Parties in Interest

Petitioner identifies Sony Interactive Entertainment Inc., Bluepoint Games, Inc., Sony Group Corporation, and Sony Corporation of America as the real parties-in-interest. Pet. 1. Patent Owner identifies Quantum Imaging LLC as the real party in interest. Paper 5, 2.

B. Related Matters

The parties identify the following district court proceeding involving the '165 patent and related patents: *Quantum Imaging LLC v. Sony Group Corporation, et al.*, Case No. 6:22-cv-00573-ADA-DTG (W.D. Tex., filed June 3, 2022). Pet. 2; Paper 5, 1 (Patent Owner's Mandatory Notices).

The parties also indicate that patents related to the '165 patent are at issue in *Barbaro Technologies, LLC v. Niantic, Inc.*, No. 3:18-cv-02955 (N.D. Cal.) ("*Niantic*" and "*Niantic* Court").[1] Pet. 10–11; PO Reply 6.

C. The '165 Patent (Ex. 1001)

The '165 patent is entitled "Interactive Virtual Thematic Environment," and "relates to an interactive software application platform which can be used in entertainment, business, publishing, and other applications to provide a virtual and real world experience to the user by integrating audio, video, two dimensional (2D), and three dimensional (3D) technology, and other applications or services." Ex. 1001, code (54), 1:28–33. The patent states "virtual environments, especially those present on the internet, for example, have not provided the user with a real world experience." *Id.* at 1:44–46. The patent is thus "directed to an interactive software application platform which can be used in entertainment, business,

[1] The '165 Patent is a child of U.S. Patent No. 7,373,377 at issue in the *Niantic* proceeding by divisionals and continuations.

publishing, and other applications to provide a virtual and real world experience to the user by integrating audio, video, two dimensional (2D), and three dimensional (3D) technology, and other applications or services." *Id.* at 1:52–57.

Figure 1, reproduced below, "is a schematic showing one embodiment of the six-level logical architecture of an interactive software platform consistent with the present invention." *Id.* at 6:41–43.

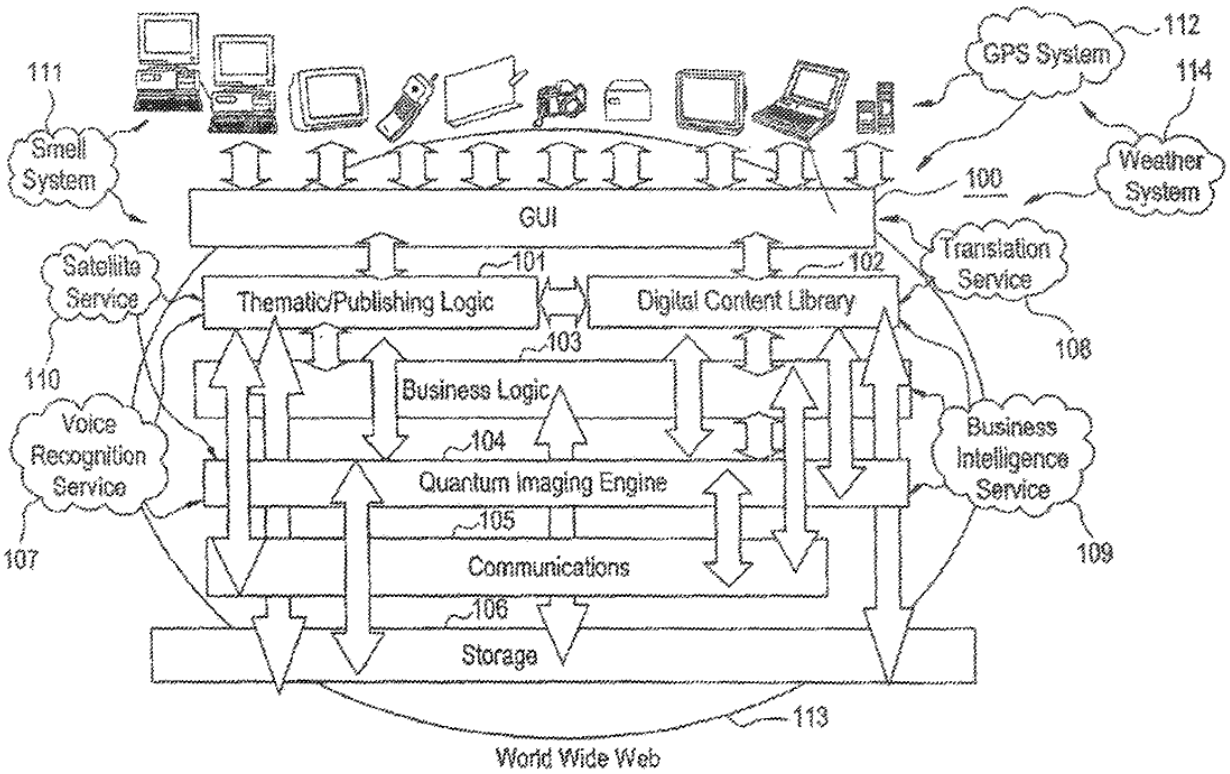


Figure 1 illustrates:

> The six layers of the virtual platform include 1) a graphical user interface (GUI) 100, 2) a Thematic/Publishing Logic 101 and a Digital Content Library 102, 3) a Business Logic 103, 4) a thematic or zone application builder and interpreter (i.e., a Quantum Imaging Engine 104), 5) Communications 105, and 6) a Data Storage 106.

Id. at 11:62–67. The software program of the '165 patent is "in a Quantum Imaging Environment (QIE)," where the logical architecture "is

implemented on a 6-tier modular system (i.e., six layers), and at least six (6) service area modules, which are fully distributed across the internet." *Id.* at 11:56–61. Along with Figure 2, as annotated by the Board and reproduced below, the '165 patent explains that

> [t]he QIE 202/211 is both part of the client and the server components in the embodiment of FIG. **2.** The QIE 202/211 includes an interpreter that will allow data to be transmitted to any device, and is the basis for the design structure and layout for applications. The QIE 202/211 allows developers to develop objects and applications from the interpreter. For gaming or other thematic environments, the representation of the layout and design may be in the representation of "zones", and the layout and design may be set up as zones and content, for medical, retail, educational purposes, etc. The QIE 202/211 pertains to the most common denominator—the application architecture, and the content. QIE 202/211 is an interpreter that will take all of the rich content, interpret the information into objects to be manipulated and accessed via any device and place these objects or information in the appropriate format that is designed or will be designed by the developer.

Id. at 15:54–16:3.

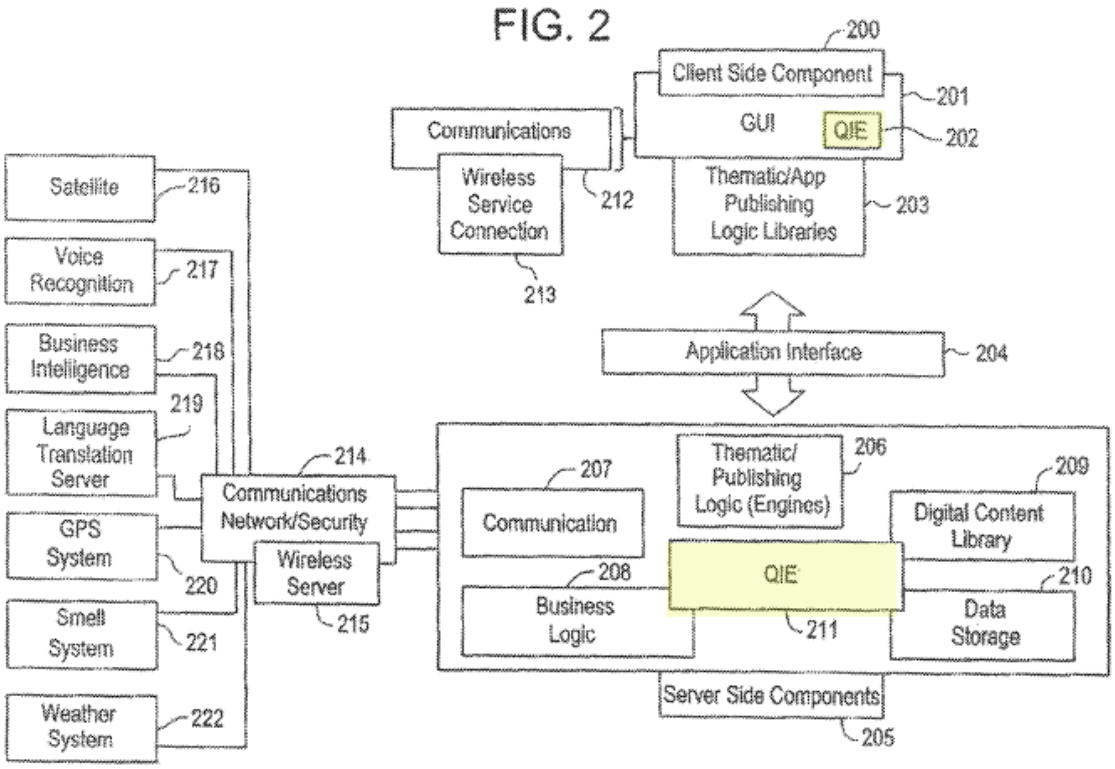


Figure 2 of the '165 patent illustrates schematically an embodiment of the interactive software application platform including server side components 205 communicating across application interface 204 with client side component 200. In this embodiment both the server side and client side include the QIE 202/211. *Id.* at 15:54–55.

D. Illustrative Claim

Claims 1 and 18 are independent. Claim 1, reproduced below with limitations of particular interest highlighted in italics, is illustrative of the subject matter recited in the challenged claims.[2]

> 1[P]. *A method of integrating real-time information into a virtual thematic environment using a computer system including a client and a server, comprising:*

[2] For consistency, we refer to specific claim limitations with the same bracketed lettering format as in the Petition.

> [a] providing a graphics user interface (GUI) module for use in the client system;
>
> [b] *providing a quantum imaging environment (QIE) module in one of the client or the server system;*
>
> [c] providing a thematic/publishing logic module in one of the client or the server system;
>
> [d] providing a primary application in the client system;
>
> [e] providing a first user interface that is associated with the primary application;
>
> [f] *sending a request for first real-time information via the QIE module to the world wide web;*
>
> [g] obtaining the first real-time information via the world wide web;
>
> [h] downloading the first real-time information from the world wide web into the primary application;
>
> [i] providing access to the first real-time information within the virtual thematic environment via the first user interface;
>
> [j] providing at least one secondary application within the primary application at the client system;
>
> [k] *sending a request for second real-time information via the QIE module;*
>
> [l] obtaining the second real-time information via the world wide web;
>
> [m] downloading the second real-time information into the secondary application;
>
> [n] enabling a user to access the at least one secondary application through the first user interface; and
>
> [o] enabling the user to control the at least one secondary application through a second user interface.

Ex. 1001, 43:37–44:2 (emphases added). Claims 2, 3, 5–8, and 10–12 depend directly or indirectly from claim 1. *Id.* at 44:3–41. Independent

claim 18 is quite similar to claim 1 but additionally recites "at least one non-transitory memory device containing at least one program comprising the steps of." *See id.* at 45:24–25.

E. Prior Art and Other Evidence

Petitioner relies upon the references listed below:

Evidence	Exhibit No.
Pisanich, WO 02/062436 A2 (published Aug. 15, 2002, filed Feb. 6, 2002) ("Pisanich")	1007
Phantasy Star Online Manual ("PSO Manual")[3]	1008

Petitioner also relies on pre-institution declarations of Mr. David Crane (Ex. 1004), Mr. Alexander Harry (Ex. 1011), and Mr. Nathaniel E Frank-White. Patent Owner submits a post-institution declaration of Dr. Nenad Medvidović (Ex. 2005) and a post-institution declaration of Mr. Marc A. Brockhaus (Ex. 2010). The parties have also submitted deposition transcripts for Mr. Crane (Exs. 2011–12), Mr. Harry (Ex. 2013), and Dr. Medvidović (Ex. 1023).

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–3, 5–8, 10–12, and 18	103(a)[4]	Pisanich

[3] Petitioner contends the PSO Manual "was distributed publicly at least as early as []March 31, 2001." Pet. 4–5. Patent Owner disputes that the PSO manual is a printed publication. PO Resp. 49–53.

[4] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103. The '165 patent claims benefit of a Mar. 22, 2004, filing date, which is before the effective date of the applicable AIA amendments. Ex. 1001, code (60). Petitioner states that "the earliest priority date of the '165 Patent should be Mar. 22, 2004." Pet.

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–3, 5–8, 10–12, and 18	103(a)	PSO Manual

Pet. 4. Patent Owner disputes Petitioner's asserted grounds of unpatentability. *See generally* PO Resp.

II. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). "[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 50–51 (1966)). The question of obviousness is resolved based on 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 non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).[5]

8. Thus, we refer to the pre-AIA version of 35 U.S.C. § 103. Our decision would be the same were we to apply the AIA version of the statute.

[5] Patent Owner does not present any evidence relating to objective indicia of nonobviousness.

B. Level of Ordinary Skill in the Art

Factors pertinent to a determination of the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art: (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology, and (6) educational level of workers active in the field. *Envt'l. Designs, Ltd. v. Union Oil Co*., 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.,* 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or more of these or other actors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. Ltd, Inc. v. Apotex, Inc*., 501 F.3d 1254, 1256 (Fed. Cir. 2007).

In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Additionally, the Supreme Court informs us that "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421.

Relying on the declaration testimony of Mr. Crane, Petitioner contends that an ordinarily skilled artisan

> would have had a bachelor degree in computer engineering, computer science, or a similar discipline, and/or two years of professional experience in the fields of networking and network-based systems or applications, such as client-server and web-based systems, in the specific context of console and gaming or an equivalent level of skill, knowledge, and experience. A POSITA[6] would have at least a general knowledge of online and

[6] "POSITA" is a "person of ordinary skill in the art."

> in-game advertising methods prevalent in the field, as well as at least a general knowledge of 3D rendering and virtual reality.

Pet. 8–9 (citing Ex. 1004 ¶ 43). Patent Owner's asserted level of ordinary skill in the art mirrors Petitioner's except that Patent Owner contends that "a general knowledge of advertising and virtual reality . . . do not specifically apply to the '165 Patent." PO Resp. 5.

The '165 patent claims and describes a "virtual thematic environment" in detail. Indeed, the '165 patent describes in one embodiment "a method of integrating holographic images into a virtual thematic environment using a computerized system" and "that the computer system of the present invention provides product placement in a virtual thematic environment." *Id.* at 3:32–33, 40–45. Although virtual reality and advertising are not claim elements in this case and do not play a specific role in our analysis below, because the '165 patent specifically contemplates the integration of advertising and virtual environments we adopt Petitioner's articulation of the level of ordinary skill in the art, which is consistent with the '165 patent and the asserted prior art, and we apply it in our obviousness evaluations below. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art, itself, can reflect appropriate level of ordinary skill in art). We note that we would reach the same conclusions applying either Petitioner's or Patent Owner's definition of the level of skill in the art.

C. Claim Construction

We interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." *See* 37 C.F.R. § 42.100(b). Under this standard, we construe the claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution

history pertaining to the patent." *Id.* Furthermore, "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner indicates it "believes that no express constructions of the claims are necessary to assess whether the prior art reads on the Challenged Claims." Pet. 9. Both Patent Owner and Petitioner explain that the following terms from other patents related to the '165 patent were construed in an earlier district court proceeding. According to Petitioner, in the *Niantic* lawsuit in the Northern District of California terms were construed as follows:

> "*graphics user interface (GUI) module*" — "software that provides a graphical display and processes user inputs to allow a user to interact with the graphical display."
> "*quantum imaging environment (QIE) module*" — "a software layer which receives and interprets content such that the content is manipulated so as to be accessible on different types of devices for use within the virtual thematic environment."
> "*virtual thematic environment*" — "a theme-based virtual computer interface."

Id. at 11. Patent Owner notes that the U.S. District Court for the Western District of Texas adopted the *Niantic* Court's constructions. PO Resp. 7. Patent Owner also urges "that the Board consider and expressly adopt the district courts' claim construction for the following terms: graphics user interface (GUI) module, quantum imaging environment (QIE) module, and virtual thematic environment." *Id*. at 8. For its part, Petitioner indicates that

although it does not acquiesce to the district courts' constructions, "the asserted prior art references in Grounds 1 and 2 meet the Niantic court's construction of the claim terms." Pet. 11.

In its Preliminary Response, Patent Owner pointed out that the *Niantic* Court construed additional terms as follows:

> "*secondary application within the primary application*" — "secondary computer program within the primary computer program"
>
> "*world wide web*" — "an aspect of the internet using web-based protocols such as HTTP and HTTPS"

Prelim. Resp. 6.

Patent Owner also requests that we construe the term "type" as used by the *Niantic* Court in its construction of the QIE module. *Id*. at 9. More specifically, Patent Owner argues that "[i]n the context of the phrase 'different types of devices,' this refers to at least two devices, with the first device being of a first kind, group, or class (e.g., a PC) and the second device being of a second kind, group, or class (e.g., a mobile terminal)." *Id.*

Given the *Niantic* Court's claim construction for QIE module including "a software layer," Patent Owner also argues that "[a] software layer is used to guide the partitioning of a system's functionality into modules, where the modules assigned to one layer interact only with those that are assigned to adjacent layers." *Id.* (citing Ex. 2005 ¶ 63; Ex. 2006, 199, 203; Ex. 2010 ¶ 3). Finally, Patent Owner argues that "[t]he terms 'client' and 'server' refer to a client-server computer architecture." *Id.* at 10.

Petitioner does not specifically dispute the *Niantic* Court's claim constructions and Patent Owner's additional constructions, and argues that we need not determine a specific construction for the additional terms

because "as demonstrated in the Petition and herein, the claims are obvious even under Patent Owner's proposed constructions." Pet. Reply 2.

Having considered the complete record now before us, and where both parties have deferred to the District Court's constructions, there is no actual dispute as to the meaning of any specific claim terms in this proceeding and we determine that no express additional claim construction is necessary for any particular claim term. Like the parties, for purposes of this Decision we adopt, and where appropriate refer to, the District Court's claim constructions and also to Patent Owner's additional interpretations of "client" and "server." We note that neither "software layer" nor "types," as set forth in the District Court's construction of the QIE module is recited in the claims of the '165 patent. To the extent necessary, we address the terms "types," "software layer," "client," and "server" in our analysis below in the context of the claims and written description of the '165 patent. *See, e.g.*, Ex. 1001, 12:34–37 (The '165 patent describing that "[i]n a client-server environment, at least one client and at least one server are each connected to a network such as a Local Area Network (LAN), Wide Area Network (WAN), and/or the Internet, over a communication link.").

We make another observation regarding the claimed "quantum imaging environment (QIE) module" referenced as 202/211 in Figure 2 of the '165 patent. A QIE is discussed throughout the specification as relating to both a "QIE engine" and a "(QIE) module." *Id.* at 6:6, 16:47. Apart from the broad description that QIE 202/211 is a software layer, and includes "an interpreter" which "allows developers to develop objects and applications from the interpreter," and that the "interpreter [] will take all of the rich content, interpret the information into objects to be manipulated and accessed via any device and place these objects or information in the

appropriate format," there is little if any explanation in the '165 patent as to the software architecture of the QIE itself and how it actually handles, manipulates, or converts information or content into specific formats. *Id.* at 15:55–59.[7]

Apart from adopting the District Court's claim constructions, we need not further expressly construe any claim terms to resolve the parties' disputes. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Ground 1: Claims 1–3, 5–8, 10–12, and 18 – Obviousness over Pisanich (Ex. 1007)

Upon consideration of Petitioner's explanations and supporting evidence in this record, and Patent Owner's arguments and supporting evidence, we are not persuaded that Petitioner has demonstrated by a

[7] The lack of substantive explanation, technical or otherwise, from the parties regarding the precise software structure and function of the QIE has been a challenge. Yet it is not impossible to resolve the patentability dispute in this case. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021) (The Federal Circuit explaining that "the indefiniteness of a limitation . . . precludes a patentability determination only when the indefiniteness renders it logically impossible for the Board to reach such a decision."). This is true in large part because the parties and the Board rely on the *Niantic* Court's claim construction. We make no determination as to the indefiniteness of any term or claim. *See Samsung Electronics America, Inc. v. Prisua Eng'g Corp.*, 948 F.3d 1342, 1351–53 (Fed. Cir. 2020) (noting that Section 311(b) does not permit institution of an *inter partes* review based on indefiniteness and holding that the Board cannot "cancel . . . claims as indefinite on its own accord").

preponderance of the evidence that claims 1–3, 5–8, 10–12, and 18 would have been obvious over Pisanich.

In our analysis below, following an initial assessment of Petitioner's and Patent Owner's arguments as framed by the *Graham* analysis, our obviousness analysis focuses on claim elements 1[P] ("[a] method of integrating real-time information into a virtual thematic environment using a computer system including a client and a server"); and 1[b] ("providing a quantum imaging environment (QIE) module in one of the client or the server system;").

As we discuss *infra*, independent claim 18, specifically 18[c] contains recitations that are similar, if not identical, to disputed limitations 1[b]. The dispositive issue relating to these specific limitations is whether Pisanich discloses a "QIE module" defined by the District Court as "a software layer which receives and interprets content such that the content is manipulated so as to be accessible on different types of devices for use within the virtual thematic environment." Ex. 1009, 7.

1. Pisanich (Ex. 1007)

Pisanich is a published international patent application entitled "Integration of Real-Time Data into a Gaming Application." Ex. 1007, code (54). Pisanich relates "to games using real world data to simulate game play." *Id.* at 1:2–3. Pisanich explains that prior to the invention, "in a flight simulator game, the player typically chooses different weather conditions, traffic conditions, and other features of the gaming environment," and the "application generates a simulated environment which then conforms to those parameters." *Id.* at 1:14–16. "As such, conventional flight simulators may 'simulate' external data but this data does not reflect actual current weather or traffic conditions." *Id.* at 1:16–18. Therefore, according to

Pisanich, "a new gaming architecture is needed in which real world events, environments, actors, and objects can be incorporated during a gaming experience, providing a player with the true simulation of a real world experience, and also the added excitement of taking part in actual real world events as they occur." *Id.* at 2:11–14. Thus, in Pisanich, "real world information is incorporated into a virtual environment provided for a game." *Id.* at 2:17–18.

Pisanich explains that:

> For a flight simulator game, the real world information includes weather information such as cloud cover, precipitation, wind, fog, as well as air traffic data, including the location of other planes near the player, altered routes of other planes, and airport conditions, for the selected location, at a time period at or near to the time the information is requested.

Id. at 2:22–3:3. Pisanich's Figure 1 is reproduced below.

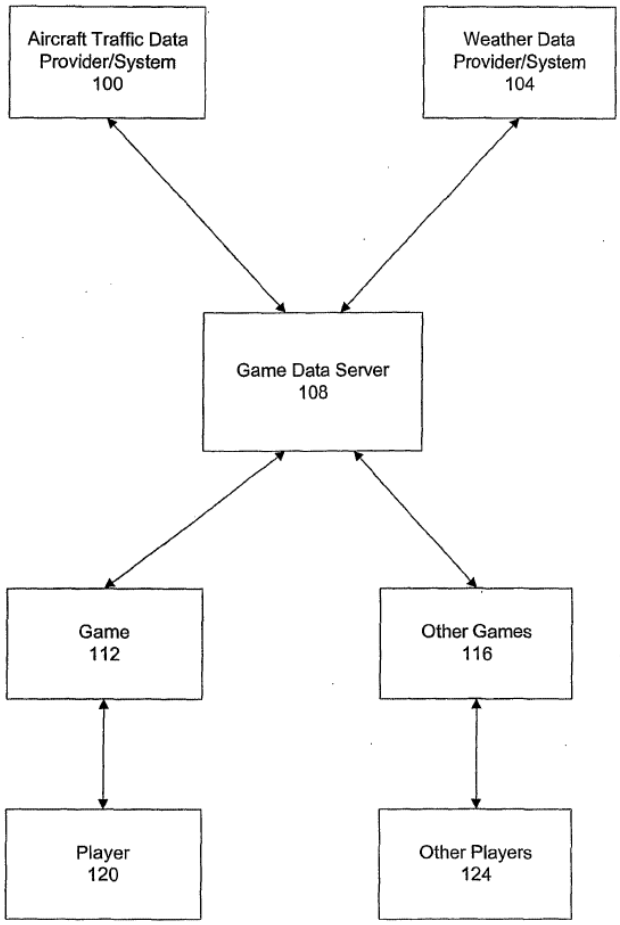
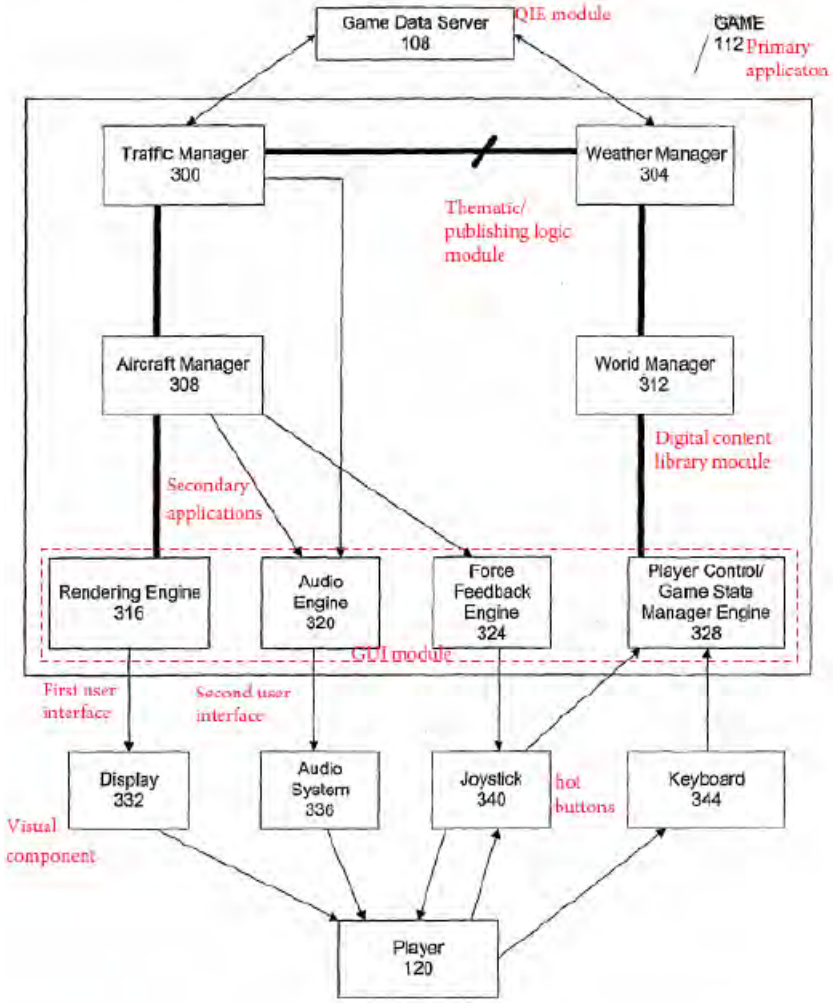


Figure 1

Figure 1 illustrates in a block diagram real time Aircraft Traffic Data 100 and Weather Data 104 made available to Game Data Server 108, which disseminate the real time data to Game 112, Other Games 116 and Players 120, 124 respectively.

Pisanich explains that "[a]fter receiving the real world information the application module generates simulated real world constructs responsive to the real world information." *Id.* at 3:3–4. Figure 3, reproduced below, is a block diagram of Pisanich's game system, annotated by Petitioner to show the corresponding claim terms.



Annotated Figure 3 shows game server 108, game 112, traffic manager 300, weather manager 304, aircraft manager 308, world manager 312, rendering engine 316, audio engine 320, force feedback engine 324, and player control 328. *Id.* at 5:13–15, 10:1–8. Traffic manager 300 maintains an internal database of the real-time traffic in the world that the user experiences and simulates the movement of the traffic and its control by air traffic controllers. *Id.* at 10:9–11. Rendering engine 316 requests air traffic data position from traffic manager, and uses this data to display the aircraft within the world on the game display. *Id.* at 10:17–20. Weather manager 304 maintains an internal database of the real-time weather in the world that

the user experiences, and simulates realistic, changing weather based on the real time weather feed. *Id.* at 11:5–18.

2. Whether the Petition Provides an Adequate Showing of Obviousness Under the Graham Factors

Patent Owner initially argues that the Petition, and more so the credibility of Petitioner's declarant, Mr. Crane, is compromised because he failed to properly evaluate whether there were "any differences between the claimed subject matter and the prior art" under the *Graham* factors. PO Resp. 11 (citing *Graham* 383 U.S. 1, 17– 18). Petitioner argues specifically that "Crane did not analyze the differences between the claims and the cited references; rather, he only analyzed similarities between the challenged claims and the prior art references." *Id.* (citing Ex. 2011, 156:2–7).

This thrust of this argument contends that Mr. Crane did not consider the basic factual inquiries of *Graham* and expressly describe in his declaration the "differences between the prior art and the claims at issue." *Graham* 383 U.S. 1, 17– 18. Mr. Crane is, however, entitled to leeway when comparing the prior art and the challenged claims. He is not required in his declaration to literally set forth, for instance, a section entitled "Differences Between the '165 Patent and Pisanich." Perhaps there are none. *See* Pet. Reply 30 (Petitioner arguing that "as demonstrated by the Petition, there are no differences between the claimed subject matter and the prior art in view of the POSITA's knowledge.").

In his declaration, Mr. Crane devotes significant time and effort to a detailed comparison of Pisanich with the claims of the '165 patent. Ex. 1004 ¶¶ 122–225. For example, considering the preamble of claim 1, although Pisanich does not use the specific term "virtual thematic environment," Mr. Crane testifies that Pisanich describes "an exemplary Flight Simulator

computer game (i.e., the claimed **virtual thematic environment**)." Ex. 1004 ¶ 122. Mr. Crane further testifies that "[a] POSITA would understand that an electronic game has a theme and is thus theme-based and it provides a virtual computer interface such as a graphical user interface to a player of the game so that the user can interact with the game." *Id.* Similarly, Pisanich does not expressly recite "a client and a server" as also recited in the preamble of claim 1. Ex. 1001, 43:39. To address this difference, Mr. Crane testifies that in Pisanich

> "Game 112" was connected to the "Game Data Server 108," which integrates real-time information into the game . . . [a] POSITA would have understood that a computer game that received information from an external server (commonly referred to as a client/server game system) included a **client** (the computer system upon which the game was played) and a **server**.

Id. ¶ 123. Mr. Crane need not spell out explicitly that these are differences between Pisanich and the '165 patent claims where it is evident to an ordinary reader in the context of his declaration that he is addressing these differences, such as they are. This is true even as Mr. Crane, based on his experience and knowledge, characterizes these differences as similarities, which they in fact appear to be, as neither Patent Owner nor its declarant have offered evidence or testimony to the contrary.

In support of this argument Patent Owner's counsel asked Mr. Crane during his deposition if he considered *differences* between the Pisanich and the '165 patent. Ex. 2012, 156:4. We find this line of questioning—that is differences versus similarities, a bit misleading. In order to determine if two things are the same, one must logically determine the two things are not different. Observing two apples, one can determine that the apples are the same fruit and not oranges. As posed to Mr. Crane in his deposition, this

question is an exercise in misdirection because, of course, Mr. Crane explained in his declaration that the literal differences between Pisanich and the claims at issue were in fact similarities when considered by a person of ordinary skill in the art. To his credit, when pressed further, Mr. Crane explained his logical analysis of the differences and similarities to Patent Owner's counsel:

> Q. Again, I'll just turn you back to paragraph 27 at page 9 of your declaration, those obviousness factors. You were instructed and you understood that you were to evaluate obviousness, second one, the difference or differences between each claim of the patent, and the prior art.
>
> Are you -- is it your testimony that you did not perform that step?
>
> . . .
>
> [MR. CRANE]: My testimony is that I looked for similarities. Similarities are the opposite of differences. So to that extent, if I'm analyzing similarities, I'm analyzing differences at the same time, just not documenting them as differences.

Ex. 2012, 159:13–160:2. Accordingly, we do not agree with Patent Owner that Mr. Crane's credibility or testimony is undermined by his obviousness analysis or that the Petition fails to properly evaluate obviousness under the appropriate *Graham* factors.

3. Differences Between the Prior Art and the Claims - Independent claim 1

Petitioner asserts that claim 1 would have been obvious over Pisanich and provides an element-by-element analysis referencing Mr. Crane's declaration testimony. Pet. 12–28; Ex. 1004 ¶¶ 122–164. In our Institution Decision, we discussed each of those contentions. *See* Inst. Dec. 15–39. Here, after addressing the preamble 1[P], we conclude that Petitioner has

failed to show by a preponderance of the evidence that Pisanich accounts for the claimed QIE module recited in claim limitation 1[b].

a) 1[P] – A method of integrating real-time information into a virtual thematic environment using a computer system including a client and a server, comprising:

(1) Petitioner's Arguments

Petitioner argues that "[a] POSITA would have understood that an electronic game has a theme and is thus theme-based and it provides a virtual computer interface such as a graphical user interface to a player of the game so that the user can interact with the game." Pet. 15 (citing Ex. 1004 ¶ 122). Petitioner's declarant, Mr. Crane, testifies that Pisanich discloses "the 'Game Data Server 108,' which integrates real-time information into the game . . .[a] POSITA would have understood that a computer game that received information from an external server (commonly referred to as a client/server game system) included a **client** (the computer system upon which the game was played) and a **server**." Ex. 1004 ¶ 123.

(2) Patent Owner's Arguments

Patent Owner argues that "Petitioner appears to have mischaracterized Pisanich, [] as Pisanich never uses the term 'client' or 'client computer.'" PO Resp. 34. Patent Owner argues specifically that Mr. Crane's testimony identifying Pisanich's player's game computer with the claimed "client" or "client computer" is conclusory and impermissibly "provide(s) an element (i.e., client or client computer) entirely missing from Pisanich." *Id.* at 35 (quoting *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 16 (PTAB Aug. 24, 2022) (precedential))). Patent Owner's declarant Dr. Medvidović testifies that "[a] person of ordinary skill in the art would

not assume that any object communicating with a server is necessarily a client system. For example, other objects can communicate with a server, such as another server." Ex. 2005 ¶ 115. Dr. Medvidović testifies that "[a] POSITA, for example, would likely believe that game 112 was another server communicating with the game server 108 to provide the simulation." *Id.*

(3) Analysis

We credit Mr. Crane's testimony here because it most closely aligns, and is generally consistent—, with a plain reading of Pisanich. It is true that Pisanich does not expressly describe game 112/116 and player 120/124 as a "client." For instance, Pisanich describes that in "Figure 1, a Game Data Server 108 continually gathers 'real time' data from traffic 100 and a weather 104 data provider systems. *On request*, the Game Data Server 108 permits data available to a game 112, 116 and players 120, 124." Ex. 1007, 5 (emphasis added). Pisanich further describes that "[a]s a player 120 controls a gaming unit within a game 112, for example, an aircraft, a car, or the like, the game 112 *requests* data from the Game Data Server 108 as required to provide a realistic environment for the game." *Id.* at 6 (emphasis added).

It is a fundamental characteristic of a client-server computer network that the client device requests—and then receives—data from the server which is tasked with handling, compiling, storing, and distributing data to various requesting client devices. *See* Microsoft Computer Dictionary 5th Ed. (2002) ("**client** n. . . . 3. On a local area network or the Internet, a computer that accesses shared network resources provided by another computer (called a *server*)."); *see id.* ("**client/server architecture** n. . . . [t]he client component is a complete, standalone personal computer (not a

'dumb' terminal), and it offers the user its full range of power and features for running applications . . . [t]he client portion of the application is typically optimized for user interaction, whereas the server portion provides the centralized, multiuser functionality."). This is exactly what Pisanich describes and illustrates in Figures 2 and 3, Game Data Server 108 distributing, upon request by the client, i.e., game 112, real-time weather and real-time aircraft traffic data to game 112, which in turn processes the real-time data for incorporation into the thematic environment of the game for the user's benefit, for example, via traffic manager 300 and weather manager 304. Ex. 1007, 10–12, Fig. 3,

Given Mr. Crane's testimony that is consistent with a plain reading of Pisanich we do not find Dr. Medvidović's testimony compelling that a person of ordinary skill in the art "would likely believe that [Pisanich's] game 112 was another server communicating with the game server 108 to provide the simulation." *Id.* Moreover, even if Pisanich's game 112 could be characterized as a server, neither Patent Owner nor Dr. Medvidović explains why such a server could not be a client of game server 108. In fact, reading the '165 patent written description it is clear that "client" as recited in claim 1 can be many different devices. For instance, the '165 patent describes that

> the client may be a PC, mobile terminal, such as a mobile computing device, a mobile phone, or a mobile data organizer (PDA), operated by the user accessing the program remotely from the client (see FIG. 1), or any other digital device that has a screen and storage.

Ex. 1001, 13:9–14. The '165 patent describes further that the client can be a server:

> In another embodiment consistent with the present invention, the client side system can be a server which, instead of having all the libraires etc. on a component such as the Thematic/Application Publishing Logic Libraries 203 of FIG. 2, instead are all placed on a GUI 250 of client side server 240. (see FIG. 3).

Id. at 19:25–30. Accordingly, based on the testimony of Mr. Crane, the evidence before us in Pisanich, as well as a plain and ordinary reading of the written description of the '165 patent, we are persuaded that a person of ordinary skill in the art would have understood that Pisanich discloses the recitations in 1[P] including "a computer system including a client and a server" as recited in claim 1.[8] Pet. 12–28.

b) [1b] providing a quantum imaging environment (QIE) module in one of the client or the server system

The parties' arguments and evidence here zero in on the District Court's claim construction of "quantum imaging environment (QIE) module" which is:

> a software layer which receives and interprets content such that the content is manipulated so as to be accessible *on different types of devices* for use within the virtual thematic environment.

Ex. 1009, 4–7 (emphasis added).

(1) Petitioner's Arguments

Petitioner argues that in accordance with the District Court's construction of "QIE module" in *Niantic*, "Pisanich discloses that Game Data Server 108 receives, interprets, and manipulates content, i.e., real world information, in real time so as to be accessible on different types of devices

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[88] We make no final determination here as to whether or not the preamble 1[P] is limiting. Regardless of whether the preamble is limiting, Petitioner has shown that Pisanich satisfies the recitations in the preamble.

for use within the game." Pet. 19–20 (citing Ex. 1007, 5:13–15). Considering the limitation that the QIE module is "in one of the client or the server system," Petitioner argues that for the client side, i.e., game 112, "at least the rendering engine 316 acted as a QIE module in the client system." *Id.* at 20.

Considering, as an example the server side, we reproduce Petitioner's annotated Figure 3 from Pisanich, below, where Petitioner equates Game Data Server 108 and the QIE module.

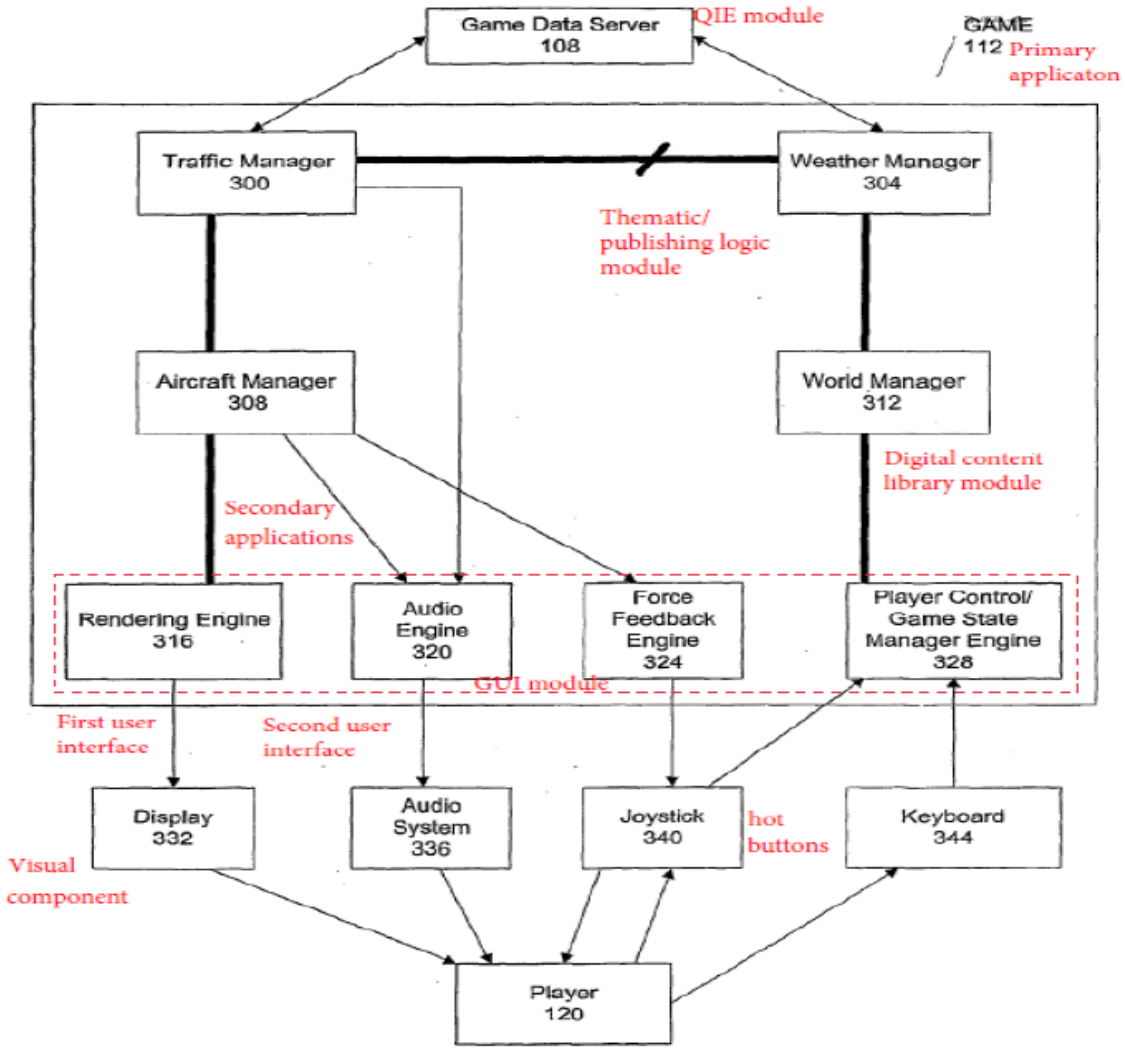

Figure 3 (Annotated)

Pisanich's Figure 3, as annotated by Petitioner, illustrates Game Data Server 108 interfacing with game 112 including various software modules such as traffic manager 300, weather manager 304, aircraft manager 308, each connected through rendering engine 316 to a player's, i.e., a client's, display 332.

Acknowledging that Pisanich does not expressly disclose that the real time data is manipulated for use on "different types of devices" as the Court's claim construction states, Petitioner relies on the testimony of Mr. Crane who testifies that Game Data Server 108 was "configured to interpret content such that the content was manipulated to be served into different games, presumably on different devices." Ex. 1004 ¶ 130. Mr. Crane testifies that because

> Pisanich taught that Game Data Server 108 could be connected to multiple devices playing different games, and said server interpreted and manipulated content to b[e] accessed by said multiple devices[,] [a] POSITA would understand that, for example, the players 120, 124 etc. may access such content on different types of devices for use with the game.

Id. ¶ 131. In other words, Mr. Crane's testimony is that where Pisanich expressly teaches multiple devices that can play the same, or differently themed games, it would have been obvious to a person of ordinary skill in the art to understand that those multiple devices could also be *different types* of devices as the District Court's claim construction requires. *Id.* ¶ 132.

(2) Patent Owner's Arguments

Patent Owner makes several arguments relating to the "QIE module" limitation. First, Patent Owner argues that Pisanich does not disclose a "software layer" as the District Court's claim construction requires. PO Resp. 17. Second, Patent Owner argues that Pisanich does not teach the QIE

module is accessible on different devices as the claim construction also requires. *Id.* at 19. Third, Patent Owner argues that Pisanich does not teach that the QIE module makes the content accessible "on different types of devices for use within the same virtual thematic environment." *Id.* at 22. Fourth, summarizing its previous arguments, Patent Owner contends that Petitioner has not met its burden to show that the claims as properly construed are obvious over Pisanich. Because at least Patent Owner's second argument relating to "different devices" is dispositive as to this limitation and claim 1, we focus our following analysis on these arguments.

(3) Analysis

Patent Owner's main point, articulated in its second, and also third argument, is that neither the Petition, nor Mr. Crane, sufficiently explain how or why a person of ordinary skill in the art would have understood Pisanich's disclosure of separate games, i.e., separate clients, for example game 112 and other games 116, teach that these separate games, or clients, are actually different types of devices as the claim construction requires. *See* PO Resp. 21 (Patent Owner arguing that Pisanich does not disclose "that the content is manipulated so as to be accessible on different types of devices for use within the virtual thematic environment.") (citing Ex. 2005 ¶ 95). For the reasons below, we agree.

Pisanich clearly discloses that game data server 108 can service multiple games 112/116 including providing to those games real time aircraft and weather data 100/104 as shown in Figure 1 reproduced below.

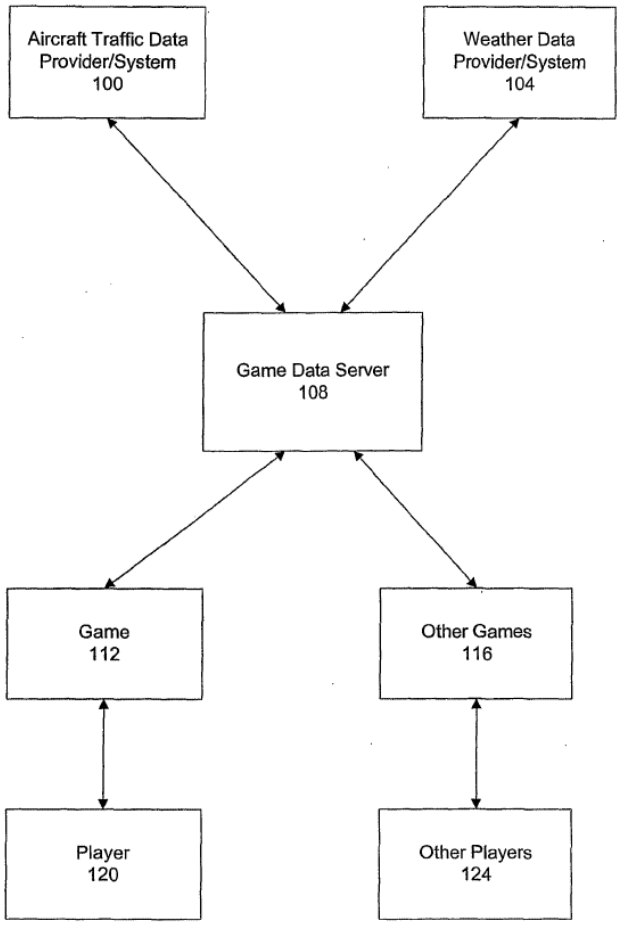

Figure 1

Pisanich's Figure 1 diagrammatically illustrates real time aircraft traffic data 100 and weather data 104 made available to game data server 108, which disseminates the real time data to game 112, other games 116, and players 120, 124 respectively. Pisanich explains that

> game data server 108 processes the data requests of the game 112 and provides [real time] data requested to the game 112 for rendering and simulation within the game 112. Multiple players 124 can play different copies of the game 116 and can access the game data server 108 for data responsive to some other area of the world or the same area of the world as the player 120. Moreover, a second player 124 may play an entirely different game 116 (for instance, a car racing game, or a football game) than the game 112 being played by the first player 120.

Ex. 1007, 7:5–11. Thus, Pisanich clearly describes multiple and different games, e.g., differently themed games, which can request and receive real time data.

However, nowhere does Pisanich describe that the real time data is manipulated and rendered by game data server 108 for different types of devices. This is even tacitly acknowledged by Mr. Crane who testifies that Pisanich teaches game data server 108 "configured to interpret content such that the content was manipulated to be served into different games, *presumably on different devices.*" Ex. 1004 ¶ 130 (emphasis added). Given that the "different types of devices" limitation is not disclosed by Pisanich's disclosure of different games, Mr. Crane then goes on to state that "[a] POSITA would understand that, for example, the players 120, 124 etc. may access such content on different types of devices for use with the game." *Id.* ¶ 131. Yet Mr. Crane's testimony on this point is entirely without support either in Pisanich or from any persuasive supporting reference or evidence that it was known, at the time of filing of the application which became the '165 patent, that the multiple devices could, in fact, be *different types* of devices.

We acknowledge Mr. Crane's explanation that it was well-known in the art that "games were often made available for multiple devices. This allowed for players to enjoy a game regardless of what game system they had in their home or pocket." *Id.* ¶ 81. Mr. Crane testifies that different screen size and resolution between client devices was a problem and that "the conventional method . . . involved creating a different version of the game for each device or at least different size and resolution images." *Id.* ¶ 82. Mr. Crane provides six examples of the SubLOGIC Flight Simulator, circa 1984-1987, played on different devices, for example, Apple II

computer (1984) and Commodore 64 (1984). *Id.* ¶ 83. Considering these examples, Mr. Crane testifies that "as of the earliest priority date of the '165 Patent (Mar. 22, 2004) the concept of interpreting and manipulating content such that the content is accessible on different types of devices was well known." *Id.* ¶ 84.

In response, Patent Owner argues that

> Mr. Crane is referring to the conventional rendering technology (i.e., different versions of each game created for use with each device) that could be used to create the six different versions of the same flight simulator game referenced in paragraphs 82 and 83 (Ex-1004) of Crane's declaration, and the graphic that Crane created.

PO Resp. 27 (citing Ex. 2011, 131:24–133:7). Patent Owner's point here is persuasive. Mr. Crane testifies that different versions of the SubLOGIC flight simulator game were played on different devices, and during cross-examination he explained that these versions essentially constitute different programs:

> Q. Okay. And for paragraph 84, that conventional rendering technology, would it require a different version of the game for each display?
>
> A. Yeah, it's hard to explain that to a nontechnical person. But every time rendering technology is written, it uses the same procedures, the same concepts, the same techniques, but it's never the same program.

Ex. 2011, 132:25–134:2. Mr. Crane was then asked if his explanation in his declaration described a QIE:

> Q. . . . The concept in the – in the end of paragraph 84: "The concept of – of interpreting and manipulating content such that the content is accessible on different types of devices was well known."
>
> Do you see that –

A. Yes.

Q. – sentence?

Is that referring to the QIE that we discussed in paragraph 66?

A. It's just a generic statement of what a person of ordinary skill in the art would have known.

Ex. 2011, 133:12–134:2.

We find Mr. Crane's testimony that Pisanich discloses or teaches a QIE because "[a] POSITA would understand that, for example, the players 120, 124 etc. may access such content on different types of devices for use with the game" to be without sufficient factual support. *See* Ex. 1004 ¶ 131. Although it may have been known in the art to create different versions or programs of a game for different devices, Mr. Crane points to no disclosure in Pisanich that explains or discloses a QIE consistent with the District Court's claim construction. He points to no textbook, technical disclosure, or other independent evidence that would have led a person of ordinary skill considering Pisanich to implement a "software layer" that receives real time data and manipulates this data "so as to be accessible on different types of devices for use within the virtual thematic environment." *See, e.g.*, *Xerox*, IPR2022-00624, Paper 9 at 15–17 (holding an expert's declaration testimony is entitled to little weight when it "is conclusory and unsupported, [and] adds little to the conclusory assertion for which it is offered to support"). Our Trial Practice Guide cautions against crediting unsupported testimony:

> The Board has broad discretion to assign weight to be accorded expert testimony. *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010). However, the testimony must be based on sufficient facts and data. Fed. R. Evid. 702(b). "Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight." 37 C.F.R. § 42.65(a).

Patent Trial and Appeal Board Consolidated Trial Practice Guide 35 (Nov. 2019). [9]

Having considered Mr. Crane's testimony, including the evidence of the different versions of the SubLOGIC flight simulator games for different computer systems, and his cross-examination testimony, we are not persuaded to extend Mr. Crane's testimony regarding different programs, to encompass the claimed QIE and a software layer that provides the manipulated real time data to different types of devices. Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight. 37 C.F.R. § 42.65(a). We credit Dr. Medvidović's testimony that at the time of filing of the '165 patent

> a POSITA would understand that each version of the game was required to be written for the unique hardware and software of each computer in order to be run. See also Ex-2011 at 129:1-17. This does not teach any type of interpreter (software layer) which receives and interprets content such that the content is manipulated so as to be accessible on different types of devices.

Ex. 2005 ¶ 85. Accordingly, based on the conventional technology as Mr. Crane explains it we find Dr. Medvidović's testimony persuasive that Pisanich's Game 112 and Other Games 116, receiving real time content via Game Play Server 108 "shows, if anything, that content may be accessible on different games, but does not show that content is accessible 'on different types of devices for use within the virtual thematic environment,' as required by claim 1[b]." *Id.* ¶ 87. Dr. Medvidović summarizes his testimony on this point stating

> there is nothing in Pisanich or in Crane's declaration that explains why a POSITA would presume that the different games of Pisanich were on different types of devices. A POSITA would

[9] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

> not presume that the different games of Pisanich were necessarily on different types of devices . . . Different games in Pisanich could be played on the same type of device. Pisanich is silent on this issue and a POSITA would understand that the disclosure of playing different games in Pisanich would be on the same type of device and not on different types of devices.

Id. ¶ 94.

A plain reading of Pisanich's disclosure relating to data used in different games, as opposed to different devices, is more consistent with Dr. Medvidović's testimony that "a POSITA would understand that Pisanich in view of the common knowledge identified by Mr. Crane does not teach a software layer that receives, interprets, and manipulates the second content to be accessible on different types of devices." *Id.* ¶ 85.

With respect to "software layer" as provided in the District Court's claim construction, Petitioner disputes Patent Owner's contention that Pisanich does not disclose such a "software layer" as the claim construction of QIE requires. Pet. Reply 3 (citing PO Resp. 9–10, 17–19). Petitioner also disagrees with Patent Owner's definition that a "software layer is used to guide the partitioning of a system's functionality into modules, where the modules assigned to one layer interact only with those that are assigned to adjacent layers." *Id.* at 4 (citing Ex. 1001, Fig. 1). Patent Owner, in contrast, contends that "Pisanich's game data server 108 is constructed of separate objects using an object-oriented architecture, not a 'software layer.'" PO Resp. 17 (citing Ex. 2005 ¶¶ 74–75). Even if Pisanich's game data server 108 is considered a software layer, we find Petitioner's analysis and Mr. Crane's testimony to be deficient in explaining how Pisanich teaches or suggests to a person of ordinary skill in the art a software layer that makes the games "accessible on different types of devices" as the claim

construction requires. Thus, we do not need to decide whether Pisanich discloses a "software layer" as Petitioner argues.

Nor do we find it necessary for this Decision to address Patent Owner's argument based on Dr. Medvidović's testimony that "Pisanich does not teach the QIE module . . . such that the content is manipulated so as to be accessible on <u>different types</u> of devices for use within <u>the</u> virtual thematic environment," in other words, *the same* virtual thematic environment. Ex. 2005 ¶ 81. Whether or not the District Court's claim construction can be interpreted such that "the virtual thematic environment" refers to *the same* virtual thematic environment as recited in the preamble, even if it is improper to read such a limitation into the Court's claim construction itself, it does not change our conclusion that Petitioner has failed to show by a preponderance of evidence that Pisanich teaches or suggests to a person of ordinary skill in the art a software layer that makes the games "accessible on different types of devices" as the Court's claim construction requires.

In summary, we find that Pisanich discloses to a person of ordinary skill in the art a computer game system that incorporates real world data into multiple games, and even games with different themes, but not a QIE for accomplishing these tasks for different devices. Ex. 1004 ¶ 17. We find insufficient evidence by Petitioner and Mr. Crane that a person of ordinary skill in the art, considering Pisanich, would have understood that multiple games included multiple games on different devices as required by the District Court's claim construction of a "QIE module"—that is "a software layer which receives and interprets content such that the content is manipulated so as to be accessible *on different types of devices* for use within the virtual thematic environment." Ex. 1009, 4–7 (emphasis added).

(4) Independent Claim 18

Independent claim 18 recites the same limitation of "providing a quantum imaging environment (QIE) module in one of the client or the server system" as in claim 1[b]. Consequently, our analysis of the corresponding limitations of claim 1[b] applies also to claim 18. For the reasons given for claim 1, we find that Petitioner has failed to show by a preponderance of the evidence that claim 18 would have been obvious over Pisanich.

(5) Claims 2, 3, 5–8, and 10–12

Claims 2, 3, 5–8, and 10–12 depend from claim 1. These dependent claims incorporate the limitations of the claims from which they depend, including those addressed in connection with our analysis of claim 1, *supra*. For the reasons given for claim 1 we find that Petitioner has failed to show by a preponderance of the evidence that claims 2, 3, 5–8, and 10–12 would have been obvious over Pisanich.

E. Ground 2: Claims 1–3, 5–8, 10–12, and 18 – Obviousness over PSO Manual (Ex. 1008)

Petitioner contends that the PSO Manual would have rendered the subject matter of claims 1–3, 5–8, 10–12, and 18 obvious to one of ordinary skill in the art at the time of the invention. Pet. 37–59. Patent Owner opposes. PO Resp. 36–48. For the reasons below, we are not persuaded that Petitioner has shown a preponderance of evidence that the challenged claims would have been obvious over the PSO Manual.[10]

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[10] Patent Owner also argues that Petitioner has failed to authenticate or show that the PSO Manual is a printed publication under 35 U.S.C. 102 and available as prior art. PO Resp. 49–53. Because we determine that the PSO Manual does not render the challenged claims obvious we need not

1. PSO Manual (Ex. 1008)

PSO Manual is a user guide for an electronic game, "Phantasy Star Online," which is a role-playing online multiplayer video game. Pet. 38. The manual "discloses . . . various functions of the *Phantasy Star Online* video game, where players interact with a graphical user interface on their screen to access and select real-time information in the form of quest missions, items, player positions, and Guild Cards." Pet. 39 (citing Ex. 1008, 10, 14, 15, 21, 25).

The cover of the PSO Manual is reproduced below.

The manual cover shows it is a manual for an online multi-player game for the Sega Dreamcast game console. Ex. 1008, 1.

2. Differences Between the PSO Manual and the Claimed Invention – Claims 1 and 18

Petitioner provides a mapping of claims 1–3, 5–8, 10–12, and 18 to the disclosure of the PSO Manual and contends that a person of ordinary skill in the art would understand that the PSO Manual teaches or suggests

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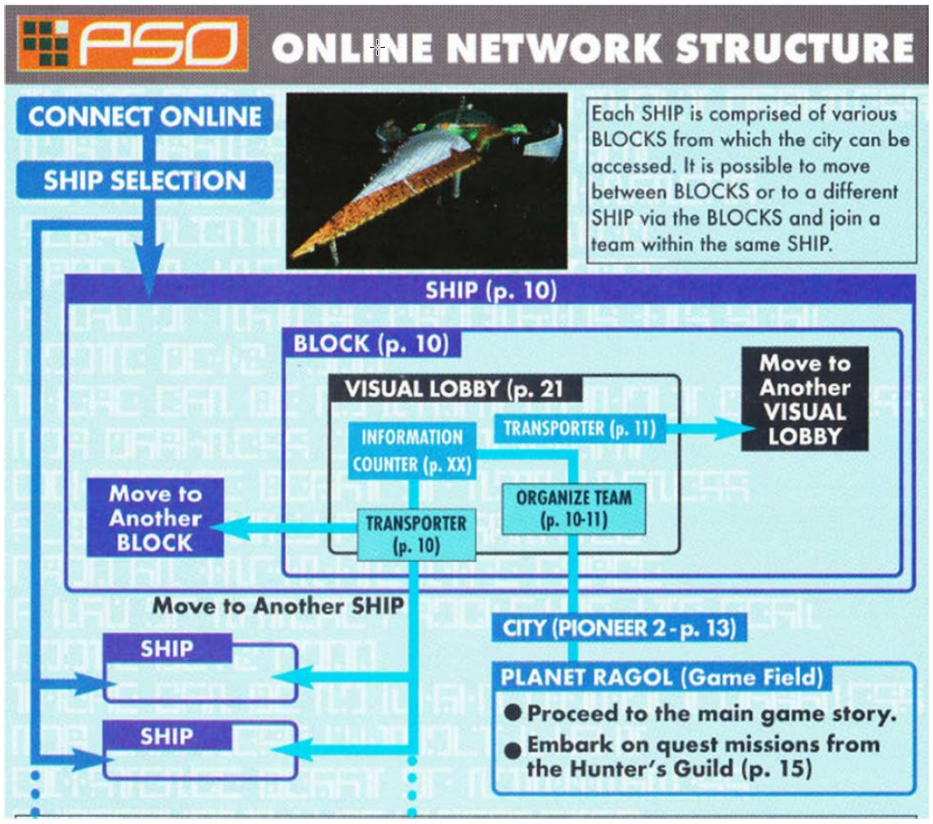
determine whether it has been properly authenticated or is prior art to the '165 patent.

the limitations of the challenged claims. Pet. 40–59. As in Pisanich, we focus here only on one of the disputed limitations—the "quantum imaging environment (QIE) module"— as recited in claim 1, because it is dispositive for all of the challenged claims.

Specifically, Petitioner points to the screenshot of the *Phantasy Star Online* network structure, (Pet. 45), arguing that "[t]hrough this diagram, PSO Manual discloses that the *Phantasy Star Online* video game receives, interprets, and manipulates the second content, *i.e.*, real world information, in real time so as to be accessible on a player's Dreamcast game console for use while playing the *Phantasy Star Online* video game." *Id.* at 45. We reproduce below the online network structure diagram from the PSO manual to which Petitioner refers.



Above is reproduced a block diagram showing the "PSO Online Network Structure." Ex. 1008, 9. The online network structure illustrates, for example, diagrammatically how a player moves from one BLOCK or SHIP to another BLOCK or SHIP via TRANSPORTER. *Id.*

Petitioner also relies on Mr. Crane's testimony to support its contention "that game systems sold into different countries were different systems, including the use of different voltage sources, different language operating systems, and compatible with different television standards." Pet. 45 (citing Ex. 1004 ¶¶ 102, 236–239). Petitioner argues that "PSO Manual discloses that a *Phantasy Star Online* player uses various game displays and menus shown on their screen to access and select, using arrows and buttons on a controller, *first* real-time information ("All menu operations take place in REAL TIME") such as player positions within the *Phantasy Star Online* world." *Id.* at 52 (citing Ex. 1008, 21 ("Item Pack: Use the item pack menu to . . . view a map of the area you are currently in . . .")). Petitioner contends that the "PSO Manual further described the 3D game view showing other players' positions on the 'Radar Map,' *i.e.*, providing access," *id.* at 48 (citing Ex. 1004 ¶¶ 253–254.), and that "PSO Manual discloses communications (chat or mail), *i.e.*, second real-time information, between remote players over the Internet," *id.* at 50 (citing Pet. 42–46; Ex. 1004 ¶¶ 262–64).

Petitioner argues that the "Word Select" feature described in the PSO Manual is a feature "players could use to chat with speakers of different languages, which acted as a QIE." Pet. 44 (citing Ex. 1004 ¶ 238). Mr. Crane testifies that the "PSO Manual taught this limitation, disclosing that one could play with people from all over the world played on different devices." Ex. 1004 ¶ 237. Mr. Crane explains that "[t]he 'Word Select'

system at the destination receive, interpret, and manipulate that content for any device, translated into the language of the recipient." *Id.* ¶ 238.

Patent Owner disputes Petitioner's contention that the PSO Manual teaches or suggests the "quantum imaging environment module" as claimed, and for the reasons that follow, we agree. PO Resp. 37–47; Sur-reply 15–18. Importantly, and as Patent Owner persuasively explains, the PSO Manual describes how to play a game, but there is no identified disclosure about how the game is implemented in either hardware or software architecture. *See* PO Resp. 37 (citing Ex. 2005 ¶¶ 118, 119, 122); *see also* Ex. 2005 ¶ 118 ("As an instruction manual for end-user video game players, the Manual offers little, if any, technical information regarding the specification of the game itself or its execution by the console. The Manual does not delineate which functions are provided by software or hardware—it is silent as to this information.").

Importantly, the challenged claims require the presence of "a quantum imaging environment (QIE) module, the QIE module being a software layer that receives, interprets, and manipulates the second content so as to be accessible on different types of devices for use within the virtual thematic environment." Section II.C. But the PSO Manual provides no description of how the PSO Online Network Structure performs the functions Petitioner identifies from the PSO Manual. As Patent Owner and Dr. Medvidović persuasively explain, a person of ordinary skill in the art would recognize that many other architectural layouts were possible at the time of the priority date of the challenged patent. *See* PO Resp. 38; Ex. 2005 ¶¶ 122–123 (citing Ex. 2006, 199, 203; Ex. 2008, 22, 372, 373); *see also* Ex. 2005 ¶ 119 ("[A person of ordinary skill in the art] would not be able to ascertain from the Manual what type of architecture is used, e.g., whether there is a multi-tiered

architecture or other architecture between the server and the consoles used by the players in the online version of the game. Furthermore, the user would not be able to ascertain what components are readily identifiable in the architecture, whether layers are used anywhere and for any reason, what the organization and flow of data and control is, etc.”). Here, it is impossible to ascertain from the disclosure provided in the PSO Manual what type of software and programming structure is used, and Petitioner provides no explanation of what structure is used or how the PSO Online Network Structure is a “software layer” under any construction of that term.

We agree with Patent Owner that Petitioner fails to adequately explain how the “Online Network Structure” diagram, reproduced above, accounts for the QIE Module. PO Resp. 38–39; Ex. 2005 ¶¶ 124–128. In the Petition, Petitioner simply asserts that the *Phantasy Star Online* performs the alleged functions of the QIE module, but it provides no explanation for why simply performing those functions necessarily means that the QIE module is present. *See* Pet. 44–46. In its Reply, Petitioner contends now that the “Online Network Structure” diagram is “akin to the modular structure in Fig. 2 of the ’165 patent.” Reply 23. Even considering this new argument, we disagree. Figure 2 of the challenged patent is reproduced below.

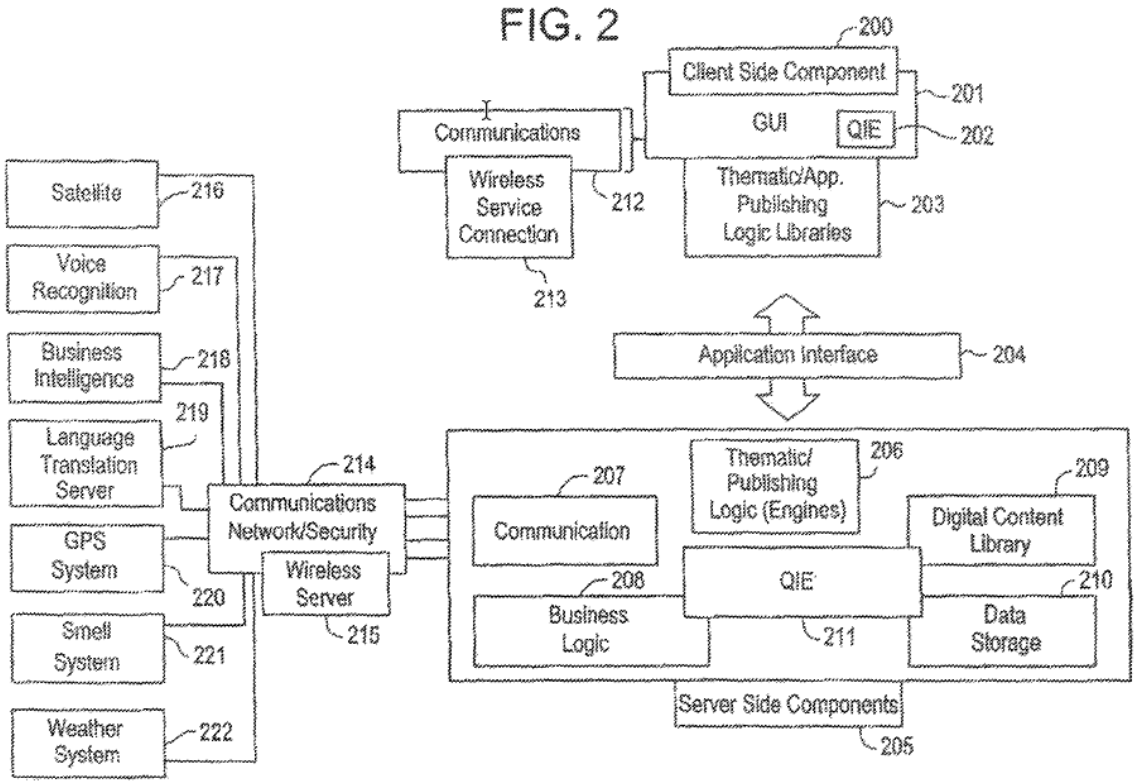


Figure 2 is a schematic showing one embodiment of the interactive software platform of the challenged patent. Ex. 1001, 6:43–45.

In its Reply, Petitioner now explains that "[a]s shown on page 9 [of the PSO Manual], each ship is comprised of various 'blocks.'" Reply 24 (citing Ex. 1008, 9). Petitioner contends that "[a]s seen in the figure, ships and blocks are modular layers: 'It is possible to move between BLOCKS or to a different SHIP via the BLOCKS and join a team within the same SHIP.'" *Id.* (citing Ex. 1008, 9.). Petitioner argues that "[b]y moving between ship or block modules, *Phantasy Star Online* users can interact with users located in different lobbies of different modules." *Id.* at 25–26 (citing Ex. 1008, 9, 11). Petitioner asserts that "[t]his is an example of inter-module communication, such as shown above in Fig. 2 of the '165 patent." *Id.* at 26.

Even if this explanation was not a new argument, we do not find it persuasive for two inter-related reasons. First, although both the "Online

Network Structure" of the PSO Manual and Figure 2 of the '165 patent are schematic diagrams, they represent completely different levels of a game. As Patent Owner persuasively argues, the "Online Network Structure" diagram on page 9 of the PSO Manual represents how a player navigates within the *Phantasy Star Online* game, not the underlying software architecture of the game. Sur-reply 16; *see* Ex. 2005 ¶ 125 ("Dr. Medvidović explaining testifying that "the diagram simply explains to a user how to move the user's character between city blocks or ships within the game."). In contrast, Figure 2 of the '165 patent represents a client-server level relationship of a game, not how the game is played, but rather, how the underlying software that enables the game play is structured. Thus, Petitioner's effort to compare the diagrams is really an apples-to-oranges comparison, not an apples-to-apples comparison. This substantive difference between the two diagrams leads to the second fundamental problem with Petitioner's new argument—Petitioner provides no evidence to support why this comparison of two dissimilar diagrams is correct. Petitioner seems to suggest that because the game allows certain types of game play, the underlying, and frankly undisclosed, software structure in the PSO Manual must be consistent with Figure 2 of the '165 patent. Reply 24–26. However, without any additional evidence supporting why this interpretation of the "Online Network Structure" diagram is correct, we do not find this unsupported attorney argument to be sufficient to meet Petitioner's burden of proof. Moreover, as Dr. Medvidović credibly testifies, there are many possible software architectures for the *Phantasy Star Online* game considering the functional disclosure of the PSO Manual. *See* Ex. 2005 ¶¶ 122–123. Petitioner provides no persuasive evidence to the contrary.

As for the theory articulated in Mr. Crane's declaration that appears to advocate for the QIE functionality in the "Word Select" system, *see* Ex. 1004 ¶ 238, we do not find it persuasive. In its Reply, Petitioner expands on the argument presented in Mr. Crane's declaration arguing that

> [t]he PSO Manual explains how the information counter chat feature makes the second content accessible on different types of devices, thus "overcom[ing] language barriers" between "a variety of people from all over the world": *Phantasy Star Online*'s Word Select system *receives* input in a first language from a user; and *interprets* the input as a message for translation into a second language; such that the message is *manipulated* by presentation to a different user, on a different type of Dreamcast console, in the second language. (Petition, 44–46, 49–52; Ex. 1008, 2, 4, 10, 11). The PSO Manual explains that the Word Select menu is used to "create sentences that will be understood in five languages"; and that "all messages created and sent will be automatically translated into the language setting designated by each player." (Ex. 1008, 12, 31; Ex. 1004 ¶¶ 101, 104). This translation feature of the PSO Manual is consistent with an embodiment specifically disclosed in the '165 patent: "The program is also designed to provide real time translations into multiple languages within the virtual environment, so that the virtual environment is international in accessibility." (Ex. 1001, 10:15-18.)

Pet. Reply 27–28.

We find several problems with Mr. Crane's and Petitioner's reliance on the PSO Manual's Word Select feature. First, as we explained above with respect to Petitioner's discussion of the "Online Network Structure" diagram, the PSO Manual has insufficient detail about the underlying architecture, and Petitioner and Mr. Crane have provided insufficient explanation to account for the limitations as claimed. Second, neither Petitioner nor Mr. Crane ever attempt to explain how or why the "Word Select" feature meets *all* of the claim limitations. Petitioner and Mr. Crane

merely assert that the Word Select performs the functions of receiving, interpreting, and manipulating content, without providing any evidence or explanation of why a person of ordinary skill in the art would understand that Word Select meets the "software layer" requirement under any construction of that term. *See* Ex. 1004 ¶ 238.

Petitioner also argues that the PSO Manual teaches a QIE module that receives and manipulates content so as to be accessible on different types of devices because it was well-known that "multiple kinds, classes, or groups of Sega Dreamcast consoles were produced—for example, for use in different geographic regions having different technical requirements and language requirements—and that the *Phantasy Star Online* game was designed for use with those multiple kinds of Dreamcast consoles." Pet. Reply 25.

Even if it is true that there are different types of Sega Dreamcast consoles, and that this falls within the interpretation of "different types of devices," we find Patent Owner's evidence and explanation more persuasive. Patent Owner argues that Sega provided "separate software on each device creating an environment on that device, not other devices." PO Sur-Reply 17. Patent Owner also points to Mr. Crane's testimony, arguing that "Crane states that the 'Word Select' system shown in the Manual receives, interprets, and manipulates content 'at the destination[]'" and because of this "[a] POSITA would understand that the "destination" is a piece of hardware, i.e., the game console, however, and not the claimed QIE Module software layer." *Id.* (citing Ex-1004 ¶ 238).

We agree with Patent Owner that Petitioner has not adequately explained how "Word Select" makes content "accessible on different types of devices." As Patent Owner explains, "Word Select" is necessarily found

on each user's Sega Dreamcast console. *See* PO Resp. 45; Ex. 2005 ¶ 135. As Dr. Medvidović credibly testifies, any interpretation by "Word Select" takes place separately on each console, and only for that console. Ex. 2005 ¶¶ 126, 132. Indeed, this is confirmed by Mr. Crane who testifies that a person of ordinary skill in the art would understand that different Sega Dreamcast consoles would require different software version specifically written for each differing version of the Dreamcast console. *See* Ex. 2011, 147:11–22; Ex. 2005 ¶ 131.

Petitioner also argues that the PSO Manual's "Word Select" disclosure "is consistent with" the real time translation feature of some embodiments described in the '165 patent. Reply 28. However, as we explained above, the fact that the program described in the '165 patent performs similar ultimate functions as does *Phantasy Star Online* does not mean that they have the same underlying architecture. *See* Ex. 2005 ¶¶ 118–119. Moreover, the '165 patent does not equate the translation functionality to the QIE module as Petitioner contends. Instead, the '165 patent describes the translation service as one of the secondary applications that make use of the QIE. *See, e.g.*, Ex. 1001, 12:7–13 (describing "language translation services 108" as one of the "six service area modules"), 19:31–65 (describing the translation library as one of the libraries stored in the GUI module), 20:42–58 (describing how the libraries, such as the translation library, "process information . . . through the QIE, for display on the screen. . . ."), Figs. 1, 2, 4, 5 (showing QIE and translation as separate modules). Thus, we find that Petitioner's and Mr. Crane's contentions that the "Word Select" meets the claimed QIE module are not persuasive.

Accordingly, we find that Petitioner has failed to show by a preponderance of the evidence that the PSO Manual teaches or suggests the

claimed "quantum information environment module."[11] This limitation is found in both independent claims 1 and 18. Thus, we conclude that Petitioner has failed to show by a preponderance of the evidence that the PSO Manual accounts for all the limitations of claims 1 and 18.

3. Dependent claims 2–3, 5–8, and 10–12

Claims 2–3, 5–8, and 10–12 depend directly from claim 1. These dependent claims incorporate the limitations of the claims from which they depend, including those addressed in connection with our analysis of claims 1 and 18, *supra*. For the reasons given for claims 1 and 18, we find that Petitioner has failed to show by a preponderance of the evidence that claims 2–3, 5–8, and 10–12 would have been obvious over the PSO Manual.

4. Conclusion as to Obviousness Over the PSO Manual

Accordingly, for the reasons explained above, we find that Petitioner has failed to show by a preponderance of the evidence that the PSO Manual would have rendered the subject matter of claims 1–3, 5–8, 10–12 and 18 obvious to one of ordinary skill in the art at the time of the invention.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner seeks to exclude Exhibits 1004, 1008, 1011, 1017, and 1024. PO MTE 1; *see* PO MTE Reply. Petitioner opposes Patent Owner's Motion. PO MTE Opp.

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[11] We note that this finding is entirely independent of whether we were to adopt Patent Owner's or Petitioner's construction of "software layer." Patent Owner has presented evidence that many architectures for the game described in the PSO Manual are possible, and Petitioner has failed to show that any of these architectures are "software layers" under either parties' understanding of that term. Thus, Petitioner has failed to show that the PSO Manual teaches or suggests this limitation.

Exhibit 1004 is Mr. Crane's declaration; Exhibit 1008 includes pages 1–32 of the PSO Manual; Exhibit 1011 is the declaration of Alexander Harry; Exhibit 1017 includes excerpts from the Microsoft Computer Dictionary, 5th Ed.; and Exhibit 1024 is the declaration of Monika Hudgins. Because we determine that Petitioner has failed to show the challenged claims are unpatentable even if we consider Exhibits 1004, 1008, 1011, 1017, and 1024, we dismiss Patent Owner's Motion to Exclude as *moot*.

IV. SUMMARY

For the reasons discussed above, Petitioner *has not demonstrated*, by a preponderance of the evidence, that claims 1–3, 5–8, 10–12 and 18 of the '165 patent are unpatentable. Patent Owner's Motion to Exclude is dismissed as *moot*.

Our conclusions regarding the Challenged Claims are summarized below:

Claims	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not Shown Unpatentable**
1–3, 5–8, 10–12 and 18	103(a)	Pisanich		1–3, 5–8, 10–12 and 18
1–3, 5–8, 10–12 and 18	103(a)	PSO Manual		1–3, 5–8, 10–12 and 18
Overall Outcome				1–3, 5–8, 10–12 and 18

V. ORDER

For the reasons given, it is

ORDERED that Patent Owner's Motion to Exclude (Paper 42) is *dismissed as moot*;

FURTHER ORDERED that claims 1–3, 5–8, 10–12 and 18 of U.S. Patent No. 10,991,165 B2 are not determined to be unpatentable; and

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

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