No. 2021-1990

United States Court of Appeals
for the Federal Circuit

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WORLDS INC.,
Plaintiff-Appellant,

v.

ACTIVISION BLIZZARD INC., BLIZZARD ENTERTAINMENT, INC., ACTIVISION PUBLISHING, INC.,
Defendants-Appellees

On Appeal from the United States District Court for the District of Massachusetts in Case No. 1:12-cv-10576-DJC, Judge Denise J. Casper

OPENING BRIEF FOR APPELLANT

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AUGUST 2, 2021

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CERTIFICATE OF INTEREST

In accordance with Federal Circuit Rule 47.4(a) and (b), counsel for

Appellant Worlds Inc. certifies the following:

1. Represented Entities (Fed. Cir. R. 47.4(a)(1)): Worlds Inc.

2. The real party in interest (Fed. Cir. R. 47.4(a)(2)): None/Not

Applicable

3. Parent Corporations and Stockholders (Fed. Cir. R. 47.4(a)(3)):

None/Not Applicable

4. Legal Representatives (Fed. Cir. R. 47.4(a)(4)):

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    Joel R. Leeman, Jack C. Schecter, Meredith L. Ainbinder of

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5. Related Cases (Fed. Cir. R. 47.4(a)(5)):

    Worlds Inc. v. Bungie, Inc., Case Nos. 2017-1481, 2017-1546, and

    2017-1583 (consolidated), reported as *Worlds Inc. v. Bungie, Inc.*,

903 F.3d 1237 (Fed. Cir. 2018)

Worlds Inc. v. Microsoft Corporation, 6:20-cv-00872 (W.D. Tex.)

Microsoft Corporation v. Worlds Inc., IPR2021-00277 (PTAB)

6. Organizational Victims and Bankruptcy Cases (Fed. Cir. R. 47.4(a)(6)): None/Not Applicable

August 2, 2021   */s/ wayne m. helge*

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STATEMENT OF RELATED CASES

In accordance with Federal Circuit Rule 47.5(a) and (b), Appellant states:

A prior appeal was taken by Worlds Inc. from adverse decisions related to the Patents-In-Suit from the United States Patent and Trademark Office, Patent Trial Appeal Board in IPR2015-01264, IPR2015-01319, and IPR2015-01321, and heard by this Court in *Worlds Inc. v. Bungie, Inc.*, Case Nos. 2017-1481, 2017-1546, and 2017-1583 (consolidated). The panel included Chief Judge Prost, Circuit Judge O'Malley, and Circuit Judge Taranto. This Court issued its decision on September 7, 2018. The decision was reported in the Federal Reporter as *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237 (Fed. Cir. 2018).

There are no other pending cases pending before this Court that will directly affect or be directly affected by this Court's decision in this appeal.

The following pending cases in the lower court or agency will directly affect or be directly affected by this Court's decision in this appeal:

- *Worlds Inc. v. Microsoft Corporation*, 6:20-cv-00872 (W.D. Tex.)
- *Microsoft Corporation v. Worlds Inc.*, IPR2021-00277 (PTAB)

I. JURISDICTIONAL STATEMENT

(a) The statutory basis for jurisdiction of the trial court was 28 U.S.C. § 1338(a).

(b) The statutory basis for jurisdiction of this Court to hear the appeal is 28 U.S.C. § 1295(a)(1).

(c) This appeal was timely filed in accordance with 28 U.S.C. § 2107 and Federal Rule of Appellate Procedure 4(a), as the District Court entered a final Judgment on April 30, 2021, and Worlds timely filed its Notice of Appeal on May 28, 2021.

II. STATEMENT OF THE ISSUES

1. Whether the District Court erred in concluding that the representative claim of the Patents-In-Suit was directed to an abstract idea under Step One of *Alice,* instead of patent-eligible under 35 U.S.C. § 101, where that claim solves a specific problem in the field of computer-based virtual worlds—how to enable a server and a client to implement the virtual world for an increased number of users, each with equipment having different capabilities—and is directed to a solution having a specific computer network architecture with requirements on how the server provides avatar position information to a client and how the client uses that position information to render the virtual world.

2.   Whether the District Court erred by granting summary judgment under 35 U.S.C. § 101 despite Step Two evidence demonstrating that the combination recited in the Representative Claim of the Patents-In-Suit was not well-known, routine, and conventional, and the PTAB found the Representative Claim to be patentable under 35 U.S.C. §§ 102 and 103 in an *inter partes* review in which Activision was a real-party-in-interest.

III. STATEMENT OF THE CASE

A. Preliminary Statement

This is an appeal from a summary judgment ruling entered in favor of

Appellees Activision Blizzard Inc., Blizzard Entertainment, Inc., and Activision

Publishing, Inc. (collectively, "Activision") that each Asserted Claim of the Patents-

In-Suit is directed to patent-ineligible subject matter under 35 U.S.C. § 101.

Appellant Worlds Inc. ("Worlds") seeks a *de novo* review of the District Court's

ruling because it is predicated on legal error, fails to account for this Court's

jurisprudence regarding the patent-eligibility of improvements to technology that

exist specifically in the realm of computer networks, and overlooks evidence that

clearly establishes a disputed material fact on Step Two in Worlds' favor.

B. The Development of Virtual World Technology By Worlds Led to the Innovations Disclosed in its Patents

In the mid-1990s, Worlds' business involved the creation of computer

software enabling players to interact via internet-based, multiplayer, three-

dimensional virtual worlds. Appx1492-1500; Appx1501, Appx1543-1545. Two

computer programs developed by Worlds—*Worlds Chat* and *AlphaWorld*—enabled

remote users to chat and interact, over the internet, in graphically-rich three-

dimensional virtual environments. Appx1489. Released in 1995, *Worlds Chat* was

acclaimed in the press as "the hottest innovation the Internet will see this year," and

it was deemed noteworthy for "the potential it brings to cyberspace." Appx1496-

1497. The *San Francisco Examiner* called *Worlds Chat* "one of the first examples of virtual reality on the Internet." Appx1492-1495. Worlds also drew the attention of Steven Spielberg, who announced a partnership with Worlds and other entities to "create a 3-D environment where hospitalized children can play and socialize with each other." *Id.*

In connection with the development of these products, four Worlds employees explored how to make interactive three-dimensional virtual worlds operate more efficiently across a network and discovered specific, novel network architecture solutions that allowed many users to interact without the bottlenecks and restrictions present in prior computer network architectures in that field.[1] These specific improvements in network architecture solutions—previously unknown to the virtual world industry—are the focus of the Patents-In-Suit, which were and are assigned to Worlds, Inc.

C. Problems with Prior Computer Network Architectures for Three-Dimensional Virtual Worlds

Prior to Worlds' technical innovations, computer network architectures for game systems included conventional peer-to-peer architectures, where a copy of data common to all avatars—or three-dimensional graphical representations of the

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[1] A "computer network architecture" can be defined as the "logical structure and the operating principles, including those concerning services, functions, and protocols, of a computer network." Appx1552.

users[2]—populating the virtual world was maintained by each player's own client device. Appx0145 at 1:56-59. Each client device would broadcast its gameplay information, such as its corresponding avatar's position in the game, to all other client devices over their shared network connection. *Id*. As discussed in the specification of the Patents-In-Suit, the technical problem with such a conventional peer-to-peer architecture was that it "limits the number of clients which can be connected to the network, because the number of messages passing between clients is on the order of the square of the number of clients." *Id*. at 1:60-2:3.

An alternative to the conventional peer-to-peer architecture was a client-server architecture, which can alleviate some limitations of conventional peer-to-peer architectures. *Id*. at 1:42-55. In a conventional client-server architecture, the server running a server process[3] maintains global state information of all avatars moving and interacting in the virtual world, and serves as a data server to receive and distribute state information updates via messages exchanged with individual client processes[4] as the game progresses. *Id*. at 1:48-55. In a conventional client-

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[2] Appx0047 (construing "avatar" to mean "a graphical representation of the user in three-dimensional form.").

[3] Appx0051 (construing "server process" to mean "a program executed, stored, or accessible by one or more computers that provide one or more services to users of computers across a network.").

[4] Appx0051 (construing "client process" to mean "a program executed, stored, or accessible on a user's computer to provide access to a server.").

server architecture for a virtual world, the positions and actions of each avatar need to be communicated to all the other client processes. *Id.* But where the server process is receiving and reporting real-time updates to all the client processes accessing the virtual world, communication can still overtax the network capacity, especially because in such virtual worlds the information can include high-bandwidth data such as audio streams, graphic images and image streams. *Id.* at 1:38-41, 1:42-48.

While it would be conceptually possible for the limitations of these architectures to be mitigated, such as by limiting the number of players who could play at a given time or by ensuring that each client and server has sufficient processing capabilities to communicate and process updates for all players who could enter the virtual world at a single time, such mitigation strategies placed practical limits on the growth potential of a virtual world.

The purpose of Worlds' invention was to improve the capability, efficiency, and scalability of a client-server network architecture for a three-dimensional virtual world. Appx0138 at Abst. ("The present invention provides a highly scalable architecture for a three-dimensional graphical, multi-user, interactive virtual world system."); Appx0145 at 1:10-13; 2:17-20; 2:24-38.

D.   The Patents-In-Suit Disclose and Claim a Novel Client-Server Architecture

The Worlds Patents-In-Suit are U.S. Patent Nos. 7,181,690 (the "'690 Patent"); 7,493,558 (the "'558 Patent"); 8,082,501 (the "'501 Patent"); and 8,145,998 (the "'998 Patent") (collectively, the "Patents-In-Suit").[5] These patents share a common specification and are all titled "System and Method for Enabling Users to Interact in a Virtual Space." Per the specification, these patents address the disclosed problem present in implementing networked three-dimensional virtual worlds: how to enable interaction among an uncertain number of remote users in a three-dimensional world, given the restrictions in network capacity and varying processing capabilities of client computers. Appx0145 at 1:14–2:20 ("While such a system may have only one server, it typically has many clients."); Appx0147 at 5:41-45 (disclosing that a user may use "a computer with less computer power than the average machine" such that "tracking N avatars would make processing and rendering of the virtual world too slow.").[6]

The improvements disclosed in the Patents-In-Suit were directed to a client-server architecture for a virtual world and provided a more efficient and scalable

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[5] U.S. Patent No. 7,945,856 (the "'856 Patent") was dropped as an asserted patent from the District Court lawsuit on February 25, 2021. Appx1716-1719.

[6] While all Patents-In-Suit share a common specification, citations to the specification will be limited to the '690 Patent, as the District Court focused its § 101 analysis on claim 4 of the '690 Patent. *See* § III.F, *infra*.

system for communication where many client systems are able to access the virtual world simultaneously. Appx0138 at Abst. ("The present invention provides a highly scalable architecture for a three-dimensional graphical, multi-user, interactive virtual world system."); Appx0145 at 2:17-20. Through the disclosed architecture, the server communicates game information updates to user's client devices on a restricted basis to avoid both overloading the network with updates, and to avoid overloading individual client devices, which process those updates to render a view of the virtual world. *See, e.g.*, Appx0146 at 3:41-44 (indicating that scalability to "a large number of clients" requires the server to be "much more discriminating as to what data is provided to each client[]"); Appx0147 at 5:41-45 (discussing measures to allow "a computer with less computing power than an average machine" to participate in the virtual world). These mechanisms improved the capabilities of the virtual world's client-server architecture, and permitted the number of virtual world occupants to increase relative to a prior art architecture that provided all game updates to all client devices connected to the server.

In particular, the Patents-In-Suit allowed for increased participation in the virtual world by, counterintuitively, placing restrictions at key locations in the network architecture. Appx0146 at 3:44-46 ("In the example of FIG. 1, although a status panel 17 indicates that six other avatars are present, **many other avatars are in the room**, but are filtered out for crowd control.") (emphasis added); Appx0147

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at 5:31-35 (discussing a "crowd control" function to ensure that a client and user do not "get overwhelmed by the crowds of avatars likely to occur in a popular virtual world."). In the novel network architecture disclosed in the specification, a server sends a client fewer than all positions of the other clients' avatars (*id*. at 5:36-37), and a client can choose conditions for which positions of other clients it will process when playing the game and rending the virtual world (*id*. at 5:36-41).

These features are embodied in the Worlds claims, including dependent claim 4 of the '690 Patent, reproduced below along with its respective independent claim 1:

1. A method for enabling a first user to interact with other users in a virtual space, wherein the first user and the other users each have an avatar and a client process associated therewith, and wherein each client process is in communication with a server process, wherein the method comprises:
    (a) receiving a position of less than all of the other users' avatars from the server process; and
    (b) determining, from the received positions, a set of the other users' avatars that are to be displayed to the first user,
  wherein steps (a) and (b) are performed by the client process associated with the first user.

4. The method of claim 1, wherein step (1b) comprises
  (b)(1) determining from the received positions an actual number of the other users' avatars;
  (b)(2) determining a maximum number of the other users' avatars to be displayed; and
  (b)(3) comparing the actual number to the maximum number to determine which of the other users' avatars are to be displayed wherein steps (b)(1)–(b)(3) are performed by the client process associated with the first user.

Appx0154 at 19:31-43, 19:55-64. As recited in claim 1, step (a) is "performed by the client process associated with the first user" and recites "receiving a position of less than all of the other user' avatars from the server process." Step (b), also performed by the client process, involves determining "a set of the other users' avatars that are to be displayed to the first user." And through claim 4's steps, the determining step of step (b) also includes accounting for the client process's "maximum number of the other users' avatars to be displayed" and comparing

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this "maximum number" to the number of position updates received from the server process. Claims 13 and 16 of the '690 Patent, and claims 5 and 7 of the '558 Patent include substantially similar features as those described above, including the client process accounting for the "maximum number" of other users' avatars to display based on limited positions received from the server process.[7] Appx0155 at 21:6-19, 21:28-36, 21:43-22:23; Appx0176 at 21:58-22:51.

Through these steps, the Worlds patents claim a technique for managing network and processing loads on a client-server architecture to allow something more than merely restricting additional users from accessing the virtual world once a global limit is reached. Instead, the Worlds patents increase the number of users who can participate in the virtual world by placing restrictions on what position information is transmitted to each client process, and what position information is processed by each client to render a view of the virtual world. *Id.*

Take for example a virtual world where 100 players wish to participate. A server could provide position information regarding only ten of those 100 player avatars to any individual player's client device, such that sets of ten avatar

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[7] The asserted claims also cover other innovations, including: (1) avatar customization ('501 Patent, claim 14), Appx0225 at 20:32-51; and (2) client-set "conditions"/"participant conditions," which affect which avatar updates are selected by the server for transmission to client processes ('501 Patent, claim 14, '998 Pat., claim 18), Appx0225 at 20:32-51, Appx0247-0248 at 20:45-21:5.

positions can be sent to each of the other players' client devices. Through this

mechanism, the server process is not sending updates on all 100 player avatars to

all 100 of the client devices, and instead can reduce network traffic by 90%.

Further, under this scenario, should the processing load to render ten avatars

exceed a particular client device's processor capabilities, that client device's

processor could set a local maximum number of other user avatars to display to a

value below ten, and compare this local maximum number against the position

updates sent by the server.

As a result, even if the server's network limitations can support only ten

players in the game, and even if certain client devices can only render fewer than

ten updates, all 100 players can access the virtual world using Worlds' invention.

Everyone plays. These specific improvements in client-server architecture may

not guarantee that Player 1 will interact with Player 100 at all times, but Players 1

and 100 may still access the virtual world and interact with a subset of other

players. *Cf.* Appx0147 at 5:62-67 (discussing measures to allow players to play

with friendly avatars). Additionally, the disclosed and claimed client-side

measures allow a user to access the virtual world via a client computer with a

less-powerful processor, as the client-side protocols for receiving and processing

position updates can prevent it from being overburdened. Appx0147 at 5:41-45;

Appx0154 at 19:55-64.

E.   The Six IPRs Filed Against the Patents-In-Suit and Activision's Role in Those IPRs

In May and June 2015, long after the expiration of Activision's statutory time bar to file an IPR against the Patents-In-Suit, third party Bungie, Inc. filed six IPR petitions challenging the validity of the asserted claims of the same Patents-In-Suit asserted against Activision. After uncovering a commercial agreement between Bungie and Activision, Worlds requested additional discovery from the PTAB into the Bungie-Activision relationship and asked the PTAB to terminate these IPRs under 35 U.S.C. § 315(b) based on Activision's status as a time-barred party. *See Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1239-40 (Fed. Cir. 2018). The PTAB refused to order the discovery, and instituted the IPRs despite Worlds' evidence of Activision's RPI status. *Id.*

Ultimately, Worlds prevailed on the merits in three of the IPRs. In an IPR challenging the '690 patent, the PTAB found that claim 4, which the District Court considered to be the representative claim for its § 101 inquiry (hereinafter, "Representative Claim"), and claims 8, 13, and 16 of the '690 patent were patentable. Appx1383-1384. Similarly, in an IPR concerning the '558 patent, Worlds demonstrated that claims 5 and 7 were patentable over Bungie's challenges. Appx1386-1387. In an IPR concerning the '998 patent, Worlds demonstrated that claims 2, 3, 7, 8, and 11-18 of the '998 patent were patentable over Bungie's challenges. Appx1389-1390. Neither Bungie nor Worlds appealed

these final written decisions, and these claims are included among the Asserted Claims at issue here.

Worlds also prevailed on the remaining three IPRs—one against the '856 Patent, one against the '501 Patent, and a second IPR against the '998 Patent. Although the PTAB initially issued final written decisions ruling challenged claims unpatentable, Worlds appealed those three final written decisions to this Court on both procedural grounds and the merits of the PTAB's decisions. Based on the evidence raised by Worlds at the PTAB regarding Bungie and Activision's commercial relationship, this Court held that "the Board was required to make any factual determinations necessary to evaluate whether Bungie had satisfied its burden to demonstrate that its petition was not time-barred based on the complaints served upon Activision, the alleged real party in interest." *Worlds*, 903 F.3d at 1246. Without addressing Worlds' merits arguments, this Court vacated and remanded the three appealed IPR decisions to the PTAB to consider, *inter alia*, the merits of Worlds' real-party-in-interest arguments. *Id*. at 1248.

On remand, the PTAB then ruled that Bungie's IPRs could not be maintained, as it found that Activision was a time-barred real-party-in-interest to the IPRs. Appx1392-1395, Appx1436-1437. Accordingly, the PTAB terminated the three remanded proceedings without issuing final written decisions. *Id*. Thus, claims in each of the five Patents-In-Suit survived the IPR proceedings.

Worlds' litigation with Activision was stayed pending the outcome of these IPRs. After the IPRs concluded and the stay was lifted by the District Court, Activision admitted to the District Court that it was a real-party-in-interest to Bungie's IPRs in lieu of producing discovery on this issue. Appx1720-1726.

F.   The District Court's Ruling on Patent-Ineligible Subject Matter

On April 30, 2021, the District Court issued its Memorandum and Order ("Order") granting Activision's motion for summary judgment and holding the Asserted Claims[8] of the Patents-In-Suit to be directed to patent-ineligible subject matter under § 101.

Initially the District Court recognized that "the Patents-In-Suit resolve bandwidth issues with multiplayer games through 'multi-criteria filtering of avatar position and state information, but at the client side and the server side,' i.e., 'crowd control.'" Appx0003. The District Court also observed that the Asserted Claims "achieve crowd control by some form of filtering of information, … but in slightly different ways: i.e., by 'fewer than all' in the '856 patent; a "maximum number" in the '690 patent and '558 patent; and by "condition" in the '501 patent and the '998 patent." *Id*.

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[8] The claims subject to the District Court's Order are identified at Appx0003. However, Worlds reduced the "Asserted Claims" on February 25, 2021. Appx1716-1719. For the purposes of this appeal, the "Asserted Claims" include claims 4, 13, and 16 of the '690 Patent, claims 5 and 7 of the '558 Patent, claims 14, 15, and 16 of the '501 Patent, and claim 18 of the '998 Patent. *Id*.

The District Court then recounted details concerning the five Patents-In-Suit (Appx0003-0007) before turning to the outcomes of the six IPRs attributable to Bungie and Activision. Addressing the IPRs, the District Court acknowledged that "[t]he PTAB determined that the petitioner did not demonstrate by a preponderance of evidence that claims 4, 8, 13 and 16 of the '690 patent and claims 5 and 7 of the '558 patent were invalid based on the evidence and arguments presented in the proceedings." Appx0007. The District Court also noted that "the PTAB issued a Termination Vacating Institutions and Dismissing Proceedings on Remand in IPR2015-01264 (related to '856 patent), IPR2015-01319 (related to '501 patent) and IPR2015-01321 (related to '998 patent)." *Id*.

The District Court cited to cases issued from other district courts and the U.S. Court of Federal Claims for its belief that "although not bound by its findings or rulings, this Court may consider the PTAB findings as persuasive authority in determining whether the Patents-In-Suit are patent eligible." Appx0008. Despite its earlier acknowledgement of the PTAB decisions affirming patentability of the Representative Claim and other Asserted Claims, the District Court was persuaded by and cited only to the PTAB's **vacated** rulings, stating "[a]lthough now vacated, the substance of the PTAB's prior rulings serves to support the Court's analysis below that the client-side and server-side filtering of position information is not inventive." *See* Appx0008-0009 (citing Appx0538-

0540 (PTAB's Final Written Decision on the '856 patent); Appx0656-0657

(PTAB's Final Written Decision on the '501 patent); Appx0721-0722 (PTAB's

Final Written Decision on the '998 patent)); *see also* Appx0014 (identifying

claim 4 of the '690 Patent as a "representative claim" and focusing on this claim

for its analysis).

The District Court acknowledged First Circuit law that states "[i]n

resolving a motion for summary judgment, the Court scrutinizes the record in the

light most favorable to the summary judgment opponent and draws all reasonable

inferences to that party's advantage." Appx0010 (citing *Alliance of Auto. Mfrs. v.*

Gwadosky, 430 F.3d 30, 34 (1st Cir. 2005)). Despite this standard and its prior

recounting of the outcomes in the six IPRs, the District Court stated that its

conclusion of patent ineligibility was based on an "undisputed record."

Appx0011.

At Step One of the two-step framework of *Alice*/*Mayo*, the District Court

asked "whether World's patents are directed to patent-ineligible concepts, namely

the abstract idea of 'filtering' … which amounts to 'crowd control'" or whether

"the claims are 'directed to a novel client-server computer network architecture

for 3-D virtual worlds,'" as Worlds contended. Appx0015. Without closely

analyzing the language of the representative claim, the District Court held that

being directed to "'a novel client-server computer network architecture for 3-D

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virtual worlds' . . . alone does not convert the patents into patent-eligible inventions." *Id*.

Citing to Worlds' prior discussions of "filtering" as an aspect of the Asserted Claims, the District Court cited to *Bascom Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1348 (Fed. Cir. 2016) and concluded that "the claims do nothing more than recite a general client-server computer architecture to perform routine functions of filtering information to address the generic problem of crowd control." Appx0015-0016 (quotation and citation omitted).

Though the District Court did not account for this Court's § 101 precedent holding inventions "directed to" specific asserted improvements in computer capabilities patent eligible under Step One, it did cite to older cases from district courts involving "filtering." The District Court noted that in *Fuzzysharp Techs. Inc. v. Intel Corp.*, No. 12-cv-4413, 2013 WL 5955668, at *13 (N.D. Cal. Nov. 6, 2013), a case that pre-dated *Alice*, "the court there held that the claims were directed to an abstract idea as the patent purported to cover all applications of such filtering in the field of 3D computer graphics." Appx0016-17. Similarly, the District Court looked to *Intellectual Ventures II LLC v. JP Morgan Chase & Co.*, No. 13-cv-3777, 2015 WL 1941331, at *8 (S.D.N.Y. Apr. 28, 2015),

involving "a method for filtering a packet of information based upon the contents of two or more such packets." Appx0017 (citation omitted).

The District Court compared Worlds' claims to "real-world maximum capacity limits on elevators, at restaurants and other physical spaces typically open to the public." *Id*. And concluding its Step One analysis, the District Court held that the other Asserted Claims were not less abstract than the Representative Claim. Appx0017 n.1.

Turning to Step Two of the *Alice*/*Mayo* analysis, the District Court rejected Worlds' position that "the Patents-In-Suit teach a specific approach to a computer network architecture that includes an inventive concept." Appx0018. The District Court relied on the same two district court cases, *Fuzzysharp* and *Intellectual Ventures II*, that it looked to for Step One. The District Court contended that "the claims lack limitation to any specific application, do not add any steps other than conventional post-solution activity to the abstract formula described." Appx0018 (quotation and citation omitted). The District Court also noted "that the method is to be used on conventional computer components does not make the abstract formula patentable." *Id*. (citation omitted).

Concerning this Court's precedent, the District Court held that the Step-Two Compliance found in "*Bascom*, 827 F.3d at 1350, does not warrant another result here." Appx0019 n.2. First, the District Court stated that the necessary,

inventive concept in *Bascom* was "installation of a filtering tool at a specific

location, remote from the end-users, with customizable filtering features specific

to each end user" and then concluded that Worlds' Representative Claim "cannot

be said to be as specific." *Id.* The District Court reasoned *Bascom* was

distinguishable because, in the Worlds claims, "[w]hile the 'filtering' of the

maximum number of other users' avatars to be displayed involves the client

process associated with the first user, no language in the claim suggests that this

is done through any sort of 'customizable filtering features specific to each end

user,' but rather through a generically stated determination of the maximum

number of the other users' avatars to be displayed." *Id.*

The District Court also held that "[t]he steps of the claims here use only

'generic functional language to achieve the purported solution' of filtering of

position information for crowd control." Appx0019 (citing *Two-way Media, Ltd.

v. Comcast Cable Comms. LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017)).

Distinguishing *Two-way Media*, the District Court held that none of the Asserted

Claims "are limited to 'any specific form or implementation of filtering,' … and

involve generic computer components." Appx00019 (citing Appx1598,

Appx1604).

Without providing a direct citation of undisputed material facts for the

proposition and without noting the PTAB's determination of patentability for the

Representative Claim, the District Court held that "there is nothing in the ordering of the steps in the claims (i.e., receiving, determining, comparing) that make them inventive; the 'steps are organized in a completely conventional way.'" Appx0019 (citing *Two-way Media*, 874 F.3d at 1341 and *Glasswall Solutions Ltd. v. Clearswift Ltd.*, 754 F. App'x 996, 999 (Fed. Cir. 2018)).

The District Court then noted that "the restriction against patenting abstract concepts cannot be circumvented by attempting to limit the use of the formula to a particular technological environment," Appx0019 (quotation and citation omitted), and stated that where "the claims at issue relate and apply to the technological environment of a three-dimensional virtual world," it does not necessarily make the process inventive. Appx0020 (citing *Bascom*, 827 F.3d at 1349).

More specifically, the District Court held that "[c]lient-server networks, virtual worlds, avatars, or position and orientation information are not inventions of Worlds but rather, their patents seek to demonstrate their use in a technological environment." *Id.* (citing Appx0454 and *Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1338 (Fed. Cir. 2013)). Without citing to record evidence, the District Court held that the claims were not "inherently inventive or sufficient to 'transform' the claimed abstract idea into a patent-eligible application" because "Worlds' asserted claims use a general-purpose

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computer to employ well known filtering or crowd control methods and means that ultimately use same to display graphical results and generate a view of the virtual world." Appx0020.

IV. SUMMARY OF THE ARGUMENT

The Patents-In-Suit claim patent-eligible improvements to computer network architectures for virtual worlds by using a unique architecture that enables many users to participate in a virtual world without overloading the network and by accommodating a user's choice to use less-powerful, legacy equipment or a more powerful system. The District Court, however, committed legal error in ruling that Worlds' claims are directed to an abstract idea, and also in holding that the claims did not add an inventive concept under Step Two of the *Alice* test despite undisputed evidence to the contrary.

Under Step One, the District Court incorrectly held that Worlds' claims are directed to the abstract idea of "filtering," comparing Worlds' invention to capacity limits in restaurants and elevators. But this comparison confirmed the District Court's misunderstanding of the Asserted Claims; rather than capping participation in a virtual world, the District Court failed to appreciate that Worlds' claims enable **more** players to enter the virtual world without overloading the network, while also permitting players to participate in the virtual world even if they use less-powerful,

legacy equipment. Viewed through the correct lens of this Court's post-*Alice*[9] jurisprudence, the Patents-In-Suit are directed to specific asserted improvements in computer capabilities, not an abstract idea, and thus are patent-eligible under Step One without needing to proceed to Step Two of *Alice*.

The District Court did proceed to Step Two of *Alice* and erred there as well because it overlooked evidence establishing that the Representative Claim is directed to subject matter that was not well-known, routine, or conventional in the virtual world industry. In particular, the District Court wrongly held that the evidentiary record was "undisputed" (Appx0011) that "there is nothing in the ordering of the steps in the claims … that make them inventive." Appx0019. But the evidentiary record on summary judgment included the *Inter Partes* Review Certificates for the three Patents-In-Suit that went to IPR final written decisions, confirming that numerous claims—including the Representative Claim—in each of those three patents were found patentable by the PTAB over IPR challenges in which Activision was a real-party-in-interest. Not only did this evidence contradict the Court's holding on Step Two of *Alice*, it also created a disputed material fact that should have been viewed in the light most favorable to nonmovant Worlds. The District Court's granting of summary judgment despite the disputed facts was legal error and should be reversed.

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[9] *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014).

V. ARGUMENT

Under this Court's § 101 jurisprudence, claims directed to specific improvements in the functionality of a computer are patent-eligible. As such, Worlds' claims are patent-eligible as they are directed to a specific network architecture for three-dimensional virtual worlds and provide improvements over previously-known computer network architectures. In holding the contrary, the District Court failed to follow this Court's jurisprudence on § 101. The District Court erred by ignoring the combination of claim elements designed to improve system performance through multi-criteria information management at both a server and a client, thus increasing the opportunities for participants and equipment to access the virtual world. The District Court also erred by misapprehending that improvements to legacy computer systems can be patent-eligible.

Additionally, the District Court incorrectly ruled that Worlds' claims were well-known, routine, and conventional without clear and convincing evidence to establish that fact, and without viewing the record evidence in the light most favorable to Worlds. This evidence demonstrated at minimum a disputed material fact concerning whether the Representative Claim recited well-known, routine, and conventional features previously unknown to the virtual world industry. Under the record evidence, the District Court should have denied

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Activision's motion for summary judgment. As such, Worlds respectfully asks that this Court reverse the District Court's ruling under § 101.

A. Standard of Review

This Court reviews a district court's determination of patent-eligibility under § 101 *de novo*, though the "patent eligibility inquiry may contain underlying issues of fact." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014); *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018). Summary judgment decisions are reviewed in accordance with the law of the appropriate regional circuit. *Ineos USA LLC v. Berry Plastics Corp.*, 783 F.3d 865, 868 (Fed. Cir. 2015). The First Circuit "afford[s] *de novo* review to the district court's grant of summary judgment." *Johnson v. Gordon*, 409 F.3d 12, 16 (1st Cir. 2005) and considers the facts "'in the light most favorable to the nonmoving party' to the extent that they are supported by competent evidence." *Ellis v. Fid. Mgmt. Tr. Co.*, 883 F.3d 1, 3 (1st Cir. 2018) (quoting *Walsh v. TelTech Sys., Inc.*, 821 F.3d 155, 157-58 (1st Cir. 2016)).

Summary judgment is only appropriate when, drawing all justifiable inferences in the nonmovant's favor, "there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). "An issue is genuine if it can be resolved in favor of either party, and a fact is material

if it has the potential of affecting the outcome of the case." *Xiaoyan Tang v.*

Citizens Bank, N.A., 821 F.3d 206, 215 (1st Cir. 2016) (internal quotation marks

omitted) (quoting *Pérez–Cordero v. Wal–Mart P.R., Inc.*, 656 F.3d 19, 25 (1st

Cir. 2011)).

B.   **Step One: Worlds' Patents Are "Directed To" a Patent-Eligible Improvement to a Problem Specific to Computer-Based Virtual Worlds**

This Court has "approached the Step 1 'directed to' inquiry by asking 'what

the patent asserts to be the focus of the claimed advance over the prior art.'" *TecSec,*

Inc. v. Adobe Inc., 978 F.3d 1278, 1292 (Fed. Cir. 2020) (quotation and citation

omitted). In conducting that inquiry, a court should focus on the language of the

claims themselves considered in light of the specification, taking caution against

overgeneralizing claims. *Id.* at 1292-93.

In cases involving software innovations, like those embodied in the Worlds

claims, the "directed to" "inquiry often turns on whether the claims focus on

specific asserted improvements in computer capabilities or instead on a process or

system that qualifies an abstract idea for which computers are invoked merely as a

tool." *Id.* at 1293 (citation and quotation omitted) (collecting cases). As explained

in *TecSec*, "[s]oftware can make patent-eligible improvements to computer

technology, and related claims are eligible as long as they are directed to non-

abstract improvements to the functionality of a computer or network platform

itself." *TecSec*, 978 F.3d at 1293 (quotation and citation omitted). In this regard, two inquiries may be significant: "whether the focus of the claimed advance is on a solution to a problem specifically arising in the realm of computer networks or computers, and whether the claim is properly characterized as identifying a 'specific' improvement in computer capabilities or network functionality, rather than only claiming a desirable result or function." *Id*. (citation and quotation omitted).

> **1. Worlds' Claims Focus on Specific Improvements in Client-Server Architecture for Three-Dimensional Virtual Worlds, Addressing Problems Specifically Arising in Three-Dimensional Virtual Worlds**

As described throughout the specification and as recited in the claims of the Patents-In-Suit, in the mid-1990s, the implementation of a computer-based three-dimensional virtual world posed many challenges that restricted the number of users who could interact in the virtual world. *See* § III.C, *supra*. These challenges included the risk of overloading the network bandwidth through the ongoing distribution of positional updates reflecting the current state of the virtual world's users, and the varying capabilities of the user equipment accessing the virtual world. *Id*. Worlds' patents describe and claim aspects of a network architecture specific to solving these problems in virtual worlds, and therefore are directed to the quintessential example of a patent-eligible software invention under *TecSec*.

As disclosed and claimed, Worlds improved three-dimensional virtual world games in a manner that allows more users to participate in a game at any given time without overburdening the system network, and allows users with more capable equipment to play the game alongside users having less capable equipment. *See* § III.D, *supra*. The specification and claims achieve that solution by restricting the transmission of certain avatar position information from the server process to the client devices populating the virtual world, and by permitting each client device to further restrict which other user avatar information is processed while rendering the virtual world. *Id*.

For example, the Representative Claim specifically recites that a client process associated with a client device receives position information for fewer "than all of the other users' avatars" from the server process. Appx0154 at 19:37-38. Also, in determining the view of the virtual world to display, the client process checks the received positional updates received from the server and compares them against a maximum number for that client. Appx0154 at 19:56-64. The express claim language implements this check by performing the steps of "determining from the received positions an actual number of the other users' avatars;" "determining a maximum number of the other users avatars to be displayed;" and "comparing the actual number to the maximum number to determine which of the other users' avatars are to be displayed." *Id*.

Worlds' claimed client-server architecture enables an increase in the number of users who can participate in the virtual world at a given time (Appx0146 at 3:45-46 ("many other avatars are in the room")), and also permits users with less capable computers to operate in the virtual world alongside users having more capable computers (Appx0147 at 5:37-44). And its claims are directed to a specific improvement in virtual world network functionality, not just a desirable result or function.

These computer-specific improvements are the same types of problems and solutions that this Court has previously found in patent-eligible claims, including *TecSec*, 978 F.3d at 1294-97 (holding claims patent-eligible where claims required more than an abstract idea and where "[t]he specification elaborates in a way that simultaneously shows that the claims at issue are directed at solving a problem specific to computer data networks."); *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253 (Fed. Cir. 2017) (a patent-eligible solution obviated the need to design a separate memory system for each type of processor); *SRI Int'l, Inc. v. Cisco Systems, Inc.*, 930 F.3d 1295, 1303 (Fed. Cir. 2019); *Ancora Techs., Inc. v. HTC America, Inc.*, 908 F.3d 1343, 1348 (Fed. Cir. 2018); *Data Engine Technologies LLC v. Google LLC*, 906 F.3d 999, 1007–08 (Fed. Cir. 2018); and *Finjan, Inc. v. Blue Coat Systems, Inc.*, 879 F.3d 1299, 1304–05 (Fed. Cir. 2018), thus placing Worlds' claimed invention squarely in the realm of patent eligibility.

Further, by counterintuitively restricting the quantity of avatar position information communicated from the server to each client, Worlds' invention removed a bottleneck restriction on the total number of users who could access the virtual world. And by permitting client processes to restrict the number of avatar positions that must be processed to render other avatars in the virtual world, Worlds' invention also made the virtual world available to users with varying client device capabilities. This solution enabled management of both networking and client-side processing limitations, preventing potential virtual world lock-out from too many users or less capable equipment.

Properly considered, Worlds' claims satisfy § 101 because they are "directed to non-abstract improvements to the functionality of a computer or network platform itself." *Uniloc USA, Inc. v. LG Elecs. USA, Inc*., 957 F.3d 1303, 1309 (Fed. Cir. 2020); *see also DDR Holdings*, 773 F.3d at 1257; *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc*., 880 F.3d 1356 (Fed. Cir. 2018). By failing to properly perform the "directed to" inquiry under Step One in accordance with Court's precedent, the District Court erred.

2. The District Court Erred in Ruling the Claims "Directed To" a Patent-Ineligible Abstract Idea

The District Court made findings of fact consistent with patent-eligibility under this Court's precedent, but ultimately drew the incorrect legal conclusion. Specifically, the District Court agreed with Worlds' explanation that "the Patents-

In-Suit resolve bandwidth issues with multiplayer games through multi-criteria filtering of avatar position and state information, but at the client side and the server side." Appx0003. This finding should have squarely defined Worlds' claims as "directed to" a computer network improvement and thus patent-eligible subject matter. *See Packet Intelligence LLC v. NetScout Systems, Inc.*, 965 F.3d 1299, 1309-10 (Fed. Cir. 2020) (upholding patent eligibility where the claim "purports to meet a challenge unique to computer networks" and "solves a technological problem by identifying and refining a conversational flow such that different connection flows can be associated with each other and ultimately with an underlying application or protocol"); *see also Uniloc USA,* 957 F.3d at 1307-08 (claims that enable a "communication system to accommodate additional devices … without compromising performance" are "directed to a patent-eligible improvement to computer functionality, namely the reduction of latency experienced by parked secondary stations in communication systems").

In the context of the Worlds patents, the challenges of both increasing the number of users who can simultaneously access the virtual world, and permitting users with less capable equipment to participate, without compromising performance, are analogous to the technical challenges in *Packet Intelligence* and *Uniloc USA*. And Worlds' invention solves those technical challenges "through multi-criteria filtering of avatar position and state information, but at the client side

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and the server side," as the District Court found. *See* Appx0003. Accordingly, the representative claim is not directed to an abstract idea. *See Packet Intelligence*, 965 F.3d at 1310; *Uniloc USA,* 957 F.3d at 1307.

The District Court, however, required more of Worlds, incorrectly stating that "[t]his description [that the claim is "directed to a novel client-server computer network architecture for 3-D virtual worlds"] alone does not convert the patents into patent-eligible inventions." Appx0015. This was reversible error because claims directed to non-abstract improvements to a computer network architecture avoid § 101. *See Uniloc USA,* 957 F.3d at 1307-08 ("The claimed invention's compatibility with conventional communication systems does not render it abstract."); *TecSec*, 978 F.3d at 1293 ("Software can make patent-eligible improvements to computer technology, and related claims are eligible as long as they are directed to non-abstract improvements to the functionality of a computer or network platform itself.") (citation and quotation omitted) (collecting cases). Moreover, as will be discussed in more detail in the Step Two analysis below, the specific steps recited in the Representative Claim, including its claimed structure and features of a client-server architecture of a virtual world, were confirmed patentable by the PTAB over IPR challenges in which Activision was a real-party-in-interest. *See* § III.E, *supra*; Appx1384; Appx1621 ("Activision further does not dispute that, in IPR2015-01268, claims 4, 8, 13, and

16 of the '690 Patent were found patentable over the specific invalidity grounds

raised in IPR2015-01268."). Therefore, the computer network architecture

defined by the Representative Claim not only improved the functionality of prior

virtual gaming systems, it did so in a novel and inventive way. *See* §§ III.C-D,

supra.

a) The District Court Erred in Ruling the Claims Directed to the Abstract Idea of "Filtering"

As noted in *TecSec*, the Step One "directed to" analysis "depends on an

accurate characterization of what the claims require and of what the patent asserts

to be the claimed advance." *TecSec*, 978 F.3d at 1294 ("The accuracy of those

characterizations is crucial to the sound conduct of the inquiries into the problem

being addressed and whether the line of specificity of solution has been crossed").

For the reasons discussed in Section V.B.1 above, the proper Step One analysis

confirms that Worlds' claims are directed to patent-eligible subject matter that

solve a technological problem to improve computer network functionality.

Nevertheless, the District Court incorrectly ruled that Worlds'

Representative Claim is "directed to" the abstract idea of achieving crowd control

through "filtering." Appx0016 ("the claims do nothing more than recite a general

client-server computer architecture to perform routine functions of filtering

information to address the generic problem of crowd control.").[10] The District

Court also equated Worlds' invention to "real-world maximum capacity limits on

elevators, at restaurants and other physical spaces typically open to the public."

Appx0017. But Worlds' claims are not analogous to a capacity limit, which

would simply limit the number of users who could access a virtual world at a

given time and turn away all other potential users seeking entry. The Worlds

patents allow something different—they place **restrictions** on what is

communicated from the server to each user, and what each user must process to

render a view of the virtual world, in order to permit **more** users, rather than

fewer users, to access and interact in the virtual world.

Indeed, the District Court did not appreciate that the management of client-

server communications and client processing burdens as recited in the

Representative Claim constituted specific improvements to the computer network

architecture by permitting the virtual world to become more crowded while still

appearing to be less crowded to the individual users. Appx0146 at 3:45-46

("many other avatars are in the room"); *Uniloc USA,* 957 F.3d at 1307-08 (patent-

eligible claims enable a "communication system to accommodate additional

devices … without compromising performance"); *see also TecSec*, 978 F.3d at

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[10] In certain instances, the District Court refers to the claims as being
directed to a "natural phenomenon," namely "achieving crowd control thru the
filtering of information." Appx0016.

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1295 ("[t]he specification elaborates in a way that simultaneously shows that the claims at issue are directed at solving a problem specific to computer data networks."); *DDR*, 773 F.3d at 1257 (holding claims patent-eligible where "they do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet."). Contrary to the District Court's incorrect Step One analysis, the Representative Claim does not simply use a computer as a tool to achieve "filtering."

b) The District Court Erred By Failing to Account for This Court's Precedent Directed to Claims Necessarily Rooted in Computer Technology

As introduced above, the District Court found that "the Patents-In-Suit resolve bandwidth issues with multiplayer games through multi-criteria filtering of avatar position and state information, but at the client side and the server side." Appx0003. But the District Court failed to apply this finding of fact to this Court's body of law addressing similar claims necessarily rooted in computer technology. This is reversible error.

In *Core Wireless Licensing* , the asserted claims were "directed to an improved interface for computing devices, not to the abstract idea of an index." 880 F.3d at 1362. Rather than distilling the technical invention down to an abstract idea achieved by the computer device's interface (*i.e.*, an index), the Federal Circuit recognized that the claims were "directed to a particular manner

of summarizing and presenting information in electronic devices." *Id*. This Court interpreted this concept as "a specific manner of displaying a limited set of information to the user, rather than using conventional user interface methods to display a generic index on a computer." *Id*. at 1363. This Court also looked to the specification of the patent-at-issue, noting that the "claims disclose an improved user interface for electronic devices, particularly those with small screens." *Id*. After discussing numerous improvements in speed and efficiency resulting from the claimed invention, this Court concluded that the "claims are directed to an improvement in the functioning of computers, particularly those with small screens" and held that the claims satisfied step one of *Alice*. *Id*. As Worlds argued to the District Court, the reasoning in *Core Wireless* confirms that the Worlds claims satisfy Step One of *Alice*.

First, *Core Wireless* confirms that solutions to technical limitations in electronic devices are patent-eligible. That patent-at-issue was directed to solving user interface complexities for devices with small screens by limiting the lists of commonly-accessed functions available to the user through a main menu. *Id*. Just because that patent-at-issue used filtering to generate the list of commonly-accessed functions did not mean that it was "directed to" filtering or summarizing. *Packet Intelligence* similarly counsels against focusing on an aspect of the claim rather than the claim as a whole during the Step One inquiry.

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Packet Intelligence, 965 F.3d at 1309 (where "identifying and refining a conversational flow" were not what the claims were "directed to" but instead how the claims solved a technological problem); *see also TecSec*, 978 F.3d at 1296 ("although the patent involves multilevel security, that does not negate the conclusion that the patent is aimed at solving a particular problem of multicasting computer networks"). Similarly, the Worlds patents are directed to solving the network and processing requirements for client devices accessing an online virtual world by providing two opportunities working in tandem to limit the data that must be processed and rendered by a client computer. This does not mean that the Worlds patents are directed to filtering.

Like the patent-at-issue in *Core Wireless*, Worlds' improvement in the management of three-dimensional virtual worlds allowed access to even those users using less-powerful legacy equipment. The District Court viewed Worlds' improvements to benefit legacy equipment as a **negative** factor for eligibility, stating that "[c]lient-server networks, virtual worlds, avatars, or position and orientation information are not inventions of Worlds." Appx0020. But that logic failed to give proper consideration to the combination recited in Worlds' claims, and the technical improvements in even legacy equipment resulting therefrom. *See TecSec,* 978 F.3d at 1297. Just as a small-screen device in *Core Wireless* might benefit the most from the invention at issue there, a user accessing a virtual

world with an aged or overburdened processor might benefit the most from Worlds' claimed invention. As discussed previously, the client-side recitations in the Representative Claim include a client device's consideration of the "maximum number" of other user avatars to display, which may be lower than the number of positional updates sent from the server process. *See* § III.D, *supra*. Therefore, the less-capable client device can still access the virtual world.

Second, as Worlds pointed out to the District Court, *Core Wireless* refused to interpret the claims as an "'abstract idea' for which computers are invoked merely as a tool." *Core Wireless*, 880 F.3d at 1362 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016)). Although LG argued that Core Wireless's invention was the "generic idea of summarizing information" with a computer invoked as a tool, this Court recognized that the claims were "directed to a particular manner of summarizing and presenting information in electronic devices" and therefore patent-eligible. *Id.*; *see also TecSec*, 978 F.3d at 1293. Similarly, Worlds' claims are not merely directed to the abstract idea of filtering information using a computer, but to specific aspects of filtering at specific locations in the client-server network architecture to improve the speed, efficiency, and scalability of a three-dimensional virtual world experience for its users.

The Worlds claims are also comparable to another case involving a patent directed to a flexible solution for interacting with hardware of varying capabilities. In *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253 (Fed. Circ. 2017), the patent-at-issue was directed to an improved memory system that could be tailored to different processor types. *Id.* at 1259. This patent-eligible solution "obviated the need to design a separate memory system for each type of processor." *Core Wireless*, 880 F.3d at 1362 (discussing *Visual Memory*, 867 F.3d at 1259). Under this reasoning, there are clear parallels to Worlds' claims, which set forth a computer network architecture having flexible protocols to enable client devices with varying capabilities to manage network and processing loads while accessing a largely-populated, online three-dimensional virtual world.

Additionally, this Court has also held as patent-eligible a process that "uses a combined order of specific rules that renders information into a specific format that is then used and applied to create desired results: a sequence of synchronized, animated characters." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1315 (Fed. Cir. 2016). Once again, this reasoning leads to clear parallels with the Worlds patents, which also implement an improved computer network architecture with protocols to provide user devices with position information sufficient to render other avatars in the virtual world, while still safeguarding the burdens on network traffic and client processors.

Like in *DDR*, Worlds' claims "specify how interactions with [clients and servers] are manipulated to yield a desired result—a result that overrides the routine and conventional sequence of events ordinarily [involved in client-server architecture]." *DDR*, 773 F.3d at 1258. Where a conventional client-server architecture would broadcast all avatar position and state information to all users, the asserted claims provide a computer network architecture that minimizes network loads, allows for client processing burdens to be reduced, and improves the user experience. Like the asserted claims of *DDR, Core Wireless, Visual Memory, McRo, TecSec*, *Packet Intelligence*, *Uniloc USA* and their progeny, the asserted Worlds claims are not directed to an abstract idea under step one of *Alice*. Rather, they are patent-eligible under § 101 because they solve problems necessarily routed in computer technology and improve computer network functionality for virtual worlds.

Despite this robust body of applicable Federal Circuit precedent, the District Court limited its Step One analysis to *Fuzzysharp Techs. Inc. v. Intel Corp.*, No. 12-cv-4413, 2013 WL 5955668, at *13 (N.D. Cal. Nov. 6, 2013), *aff'd*, 595 F. App'x 996 (Fed. Cir. 2015), *Intellectual Ventures II LLC v. JP Morgan Chase & Co.*, No. 13-cv-3777, 2015 WL 1941331, at *8 (S.D.N.Y. Apr. 28, 2015), and *Bascom*. Appx0015-0017.

But *Bascom* is inapplicable as to Step One, because the Worlds claims are not simply directed to "filtering" using a computer as discussed throughout this Section V.B. Moreover, *Bascom* did not establish a rule that the use of filtering in a claim causes that claim to fail the Step One inquiry. This Court agreed that "filtering content is an abstract idea" (*Bascom*, 827 F.3 at 1348) and noted that the patent-at-issue in *Bascom* included filtering content, but also found that the claims-at-issue presented a "'close call[ ] about how to characterize what the claims are directed to'" before holding there was insufficient evidence to find the claims patent-ineligible. *Id*. at 1349 (quoting *Enfish*, 822 F.3d at 1339); *Id*. at 1353.

Similarly, *Fuzzysharp* is also inapplicable. In discussing that case, the District Court noted that the patent at issue there "purported to cover all applications of such filtering in the field of 3D computer graphics." Appx0016-0017. No such statement can be made about Worlds' claims, which do not preempt all computer-based filtering in virtual world technology. Indeed, characterizing the claims as a raw virtual world "maximum capacity limit[]," such as was envisioned by the District Court (Appx0017), completely overlooks that the Worlds claims increase the capacity of the virtual world, as noted above in Section V.B.2.a.

3. Properly Considered, Worlds' Patents Are "Directed To" a Patent-Eligible Improvement to a Problem Unique to Computer-Based Virtual Worlds, and Satisfy Step One Under This Court's Precedent

The District Court erred by concluding that the Worlds claims are directed to patent-ineligible subject matter. As addressed above, Worlds' claims address problems unique to computer networks by disclosing a client-server architecture that uses specific protocols including filtering, but this does not mean that Worlds' claims are simply directed to filtering using a computer. *Packet Intelligence LLC*, 965 F.3d at 1309-10; *TecSec*, 978 F.3d at 1296; *Core Wireless*, 880 F.3d at 1363. Under this Court's precedent, Worlds' claims are not directed to an abstract idea and are patent-eligible under Step One, and this Court does not need to analyze the claims under Step Two of *Alice*. *Enfish,* 822 F.3d at 1339.

C. Step Two: The Asserted Claims Include an Inventive Concept

Whether a claimed invention involves "well-understood, routine, and conventional activities previously known to the industry" under the second *Alice* step is a question of fact. *Berkheimer*, 881 F.3d at 1368. This Court has found Step Two satisfied where the limitations of the claims, taken together as an ordered combination, "recite an invention that is not merely the routine or conventional use of the Internet." *DDR*, 773 F.3d at 1259.

In conducting this second step inquiry, the District Court erred by misapplying the evidence before it, failing to view the evidence in the light most

favorable to Worlds, and failing to conduct a proper legal analysis according to this Court's binding precedent. Evaluated properly, the District Court could not conclude, based on clear and convincing evidence, that elements of the representative claim, whether considered individually or in combination, were well-known, routine, and conventional. Appx0018-0020.

Viewing the evidence presented in the light most favorable to nonmovant Worlds, the only conclusion that could be reached is that the claims include an inventive concept that was not well-known, routine, and conventional in the industry. At a minimum, the evidence reflects clear factual disputes regarding what was well-known, routine, and conventional, thus making the issue inappropriate for resolution on summary judgment.

1.   The Recitations in Worlds' Claims Impart Novelty and Are Not "Well Understood, Routine, and Conventional"

The District Court's Step Two analysis concludes by stating that "Worlds' asserted claims use a general-purpose computer to employ well known filtering or crowd control methods and means that ultimately use [the] same to display graphical results and generate a view of the virtual world, none of which is inherently inventive … ." Appx0020. But the evidence does not support this conclusion. In particular, a key fact was earlier noted by the District Court, but absent from the District Court's Step Two analysis. Namely, the Representative Claim evaluated by the District Court survived IPR and was found **patentable** by

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the PTAB over IPR challenges in which Activision was a real-party-in-interest. *See*

§ III.E, *supra*; Appx1384; Appx1621 (Activision admitting that the Representative

Claim was found patentable in IRP2015-01268). This undisputed fact confirms that

the Representative Claim's elements, taken together as an ordered combination,

"recite an invention that is not merely the routine or conventional use of [a client-

server computer network architecture for a virtual world]." *See DDR*, 773 F.3d at

1259.

As Worlds contended, the claims are "directed to a novel client-server

computer network architecture for 3-D virtual worlds." Appx0015. Moreover, the

District Court held that "the Patents-In-Suit resolve bandwidth issues with

multiplayer games through multi-criteria filtering of avatar position and state

information, but at the client side and the server side." Appx0003. In other words,

the specific arrangement or combination of multi-criteria filtering not only

improved multiplayer games, it is novel. Under *Berkheimer*, such undisputed facts

should have led to a holding of patent eligibility rather than ineligibility.

> **2.** **The District Court's Step Two Analysis Also Ran Afoul of Summary Judgment Standards**

Under the summary judgment standard, the District Court should have

considered the record evidence in the light most favorable to nonmovant Worlds,

and drawn all reasonable inferences in Worlds' favor. *Alliance of Auto. Mfrs. v.*

Gwadosky, 430 F.3d 30, 34 (1st Cir. 2005). Here, that record included the

PTAB's determination that the Representative Claim was patentable in IPR2015-01268, and Activision's admission of that finding. *See* Appx1384; Appx1621. Instead of crediting that evidence, the District Court failed to address it. *See* Appx0018-0020. As a result, the District Court's characterization of the record as "undisputed" is reversible error. Appx0011. This record evidence should have been viewed in the light most favorable to Worlds, and summary judgment should have been denied.

Moreover, the District Court foreshadowed its erroneous Step Two analysis early in its Opinion, where it stated that the PTAB's **vacated** decisions "support the Court's analysis below that the client-side and server-side filtering of position information is not inventive." Appx0009. The Court then cited to the three vacated decisions of the PTAB, respectively directed to the '856 patent, the '501 patent, and the '998 patent. This reasoning suffers numerous flaws.

First is the District Court's willingness to rely upon PTAB decisions that were vacated by this Court and no longer possess any authority. *See County of Los Angeles v. Davis*, 440 U.S. 625, 634 n. 6 (1979) ("Of necessity our decision 'vacating the judgment of the Court of Appeals deprives that court's opinion of precedential effect … .'") (quoting *O'Connor v. Donaldson*, 422 U.S. 563, 577-78 n. 12 (1975)); *see also Tollett v. City of Kemah*, 285 F.3d 357, 366 (5th Cir. 2002) ("It goes without saying that, as a result of the revised sanctions [order]

being vacated, the findings of fact and conclusions of law in the district court's post-remand orders, . . . are vacated as well."). It was error for the District Court to look to those vacated decisions for support on whether the three patents addressed in those decisions recite inventive claims, particularly where another **non-vacated** decision confirms the patentability of the Representative Claim. Appx1384.

Second, the District Court's reliance on the vacated IPR decisions unjustly rewards prior concealment of Activision's status as a real-party-in-interest to Bungie's IPRs. *See* § III.E, *supra*. The doctrine of unclean hands requires a litigant to have "acted fairly and without fraud or deceit as to the controversy in issue" and provides a "wide range to the equity court's use of discretion in refusing to aid the unclean litigant." *Precision Instrument Mfg. Co. v. Automotive Co.*, 324 U.S. 806, 814-15 (1945). Had Activision informed the District Court or the PTAB of its real-party-in-interest status when Bungie's IPRs were filed, the IPRs would have been terminated at institution phase under 35 U.S.C. § 315(b) and no IPR decisions would have been issued. Under those circumstances, there would have been no need for this Court to vacate the improperly-issued decisions. *See* § III.E, *supra*.

Further, after having wrongfully obtained those vacated decisions from the PTAB, Activision admitted it was a real-party-in-interest to them. *See* § III.E,

supra. Activision admitted its real-party-in-interest status to avoid discovery into the details of its pre-IPR cooperation with Bungie, *id.*, and that unqualified admission precludes Activision from benefiting from the vacated decisions as if they had been correctly issued by the PTAB.

Third, the District Court's willingness to consider the vacated decisions failed to view all the evidence, including the PTAB's decision of patentability for the Representative Claim, in the light most favorable to nonmovant Worlds. Indeed, the Court's step two analysis, spanning pages 17 to 19 of its Opinion, cites to no evidence to show what was well-known, routine, and conventional. Appx0018-20. There is no evidence that a virtual world network system architecture for avatars with multi-criteria filtering occurring at both the server and client, when taken together as the ordered combination claimed in the Representative Claim, was well-known, routine, and conventional in the industry.

To the contrary, Worlds cited to articles applauding Worlds' virtual reality development in early 1995, thus confirming that Worlds' technology was not previously known to the industry. *See* § III.B, *supra*; Appx1492-1500; Appx1501, Appx1543-1545. Further, as addressed above, the IPR against the Representative Claim was resolved with a final written decision from the PTAB confirming the patentability of the Representative Claim, and that final written decision was neither vacated nor appealed. The absence of evidence in

Activision's favor is even more pronounced considering that Activision was a real-party-in-interest to the IPR filed against the Representative Claim, and therefore is estopped under 35 U.S.C. § 315(e)(2) from raising "any ground that the petitioner raised or reasonably could have raised during that *inter partes* review." While Activision could not have raised a § 101 challenge in the IPR, it is notable that the Representative Claim survived the best novelty challenges asserted against it under 35 U.S.C. §§ 102 and 103, and against a lower burden of proof relative to the demanding "well-known, routine, and conventional" showing based on clear and convincing evidence as required in District Court.

Thus, the record evidence flatly contradicts the District Court's conclusion that "there is nothing in the ordering of the steps in the claims (i.e., receiving, determining, comparing) that make them inventive" and that the "'steps are organized in a completely conventional way.'" Appx0019. When the record evidence is viewed in the manner most favorable to Worlds, it was legal error for the District Court to grant summary judgment against Worlds.

3. The District Court's Step Two Analysis was also Based on an Erroneous Analysis of Precedent

Finally, rather than conducting an evidence-based analysis under Step Two, the District Court conducted a purely legal analysis of those cases it found to be analogous. Appx0018-0020. However, that analysis was conclusory and failed

to appreciate the distinctions between Worlds' claims and technology addressed in those cases.

Like its Step One analysis, the District Court supports its Step Two conclusion with additional citations to *Fuzzysharp*, a 2013 case from the Northern District of California. Appx0018.[11] The District Court's analysis of the *Fuzzysharp* case concludes that Worlds' "claims lack limitation to any specific application." *Id.* But this conclusion is directly contradicted by the language of the claims, which are expressly directed to a specific improvement in computer network architecture. *See* § III.D, *supra*. Similar improvements to a computer architecture have been found by this Court to satisfy Step Two of *Alice*. *See Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1301 (Fed. Cir. 2016) (holding that a claim involving a distributed architecture of components is patent-eligible where the claim "purposefully arranges the components in a distributed architecture to achieve a technological solution to a technological problem specific to computer networks" even though the components "may be generic").

Also, without explanation, the District Court concludes that the Worlds claims "do not add any steps other than 'conventional "post-solution" activity to

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[11] The District Court's discussion of *Intellectual Ventures II LLC*, 2015 WL 1941331, at *9, includes no application to the present case, and instead merely restates the holding of that case. Appx0018-0019.

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the abstract formula described.'" Appx0018. But characterizing Worlds' claims as "conventional" is contradicted by the PTAB decisions confirming patentability of the Representative Claim and other claims of the '690 patent, the '558 patent, and the '998 patent. *See* § III.E, *supra*; Appx1383-1384; Appx1386-1387; Appx1389-1390. This evidence establishes—at minimum—a genuine issue of material fact whether the claims simply recite conventional features. Granting summary judgment where this genuine issue of material fact exists is legally improper and reversible error.

The District Court's Step Two analysis also applies *Bascom* in a legally erroneous manner. In *Bascom*, this Court confirmed that an inventive concept, searched for under Step Two of the *Alice* test, "may arise in one or more of the individual claim limitations or in the ordered combination of the limitations." *Bascom*, 827 F.3d at 1349. Further, the inventive concept inquiry under Step Two "requires more than recognizing that each claim element, by itself, was known in the art." *Id*. at 1350. An "inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." *Id*. at 1350.

The District Court noted that in *Bascom*, "the 'installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user' provided the necessary, inventive concept."

Appx0019 n.2. But the District Court failed to see the clear parallels with that description and the Worlds claims, and concluded that *Bascom*'s analysis "is not the case here." *Id*.

Like the claims at issue in *Bascom*, here Worlds' claims define a specific location, including both the server-side and client-side, for omitting certain avatar position information from client-server communications and client-side processing for rendering a view of the virtual world. The Representative Claim expressly recites method steps to be performed by a client process, including consideration of that client process's "maximum number" of avatars to be displayed, and reduction of client-server communications through the client receiving "a position of less than all of the other users' avatars from the server process." Appx0154 at 19:36-37, 19:55-64.

Instead of crediting the express language of this claim, which does allow for client-specific consideration of its own "maximum number," the District Court held that "no language in the claim suggests that this is done through any sort of 'customizable filtering features specific to each end user,' but rather through a generically stated determination of the maximum number of the other users' avatars to be displayed." Appx0019 n.2. This conclusion is simply incorrect in view of the claimed features of the Representative Claim.

In *Bascom*, the patentee explained to this Court that its "inventive concept [harnessed the] technical feature of network technology in a filtering system by associating individual accounts with their own filtering scheme and elements while locating the filtering system on an ISP server." *Bascom*, 827 F.3d at 1350. This Court held that on the limited record before it, "this specific method of filtering Internet content cannot be said, as a matter of law, to have been conventional or generic." *Id*. For the same reasons here, the Representative Claim includes the very type of inventive concept that this Court found in *Bascom*, and in fact here the evidence before the District Court was even stronger than in *Bascom*. Specifically, the record evidence here established conclusively that the specific method claimed by Worlds was not conventional or generic. *See* Appx1384. Activision's motion for summary judgment should have been denied.

The District Court also relied on this Court's opinion in *Two-way Media, Ltd. v. Comcast Cable Comms. LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017) to support its Step Two analysis. Citing *Two-way Media*, the District Court wrongly concluded that "[t]he steps of the claims here use only 'generic functional language to achieve the purported solution' of filtering of position information for crowd control." But in *Two-way Media*, the claims required nothing "other than conventional computer and network components operating according to their ordinary functions." *Two-way Media*, 874 F.3d 1341. It is legally incorrect to

read Worlds' claims as directed to nothing more than filtering position information using a computer.

The invention claimed in the Representative Claim decidedly does not operate conventionally. It may employ omission of certain avatar position information from transmissions and display-rendering as part of the client-server network architecture protocols, but its specific way of doing so allows **more** users to play instead of fewer users. By restricting the transmission and processing of avatar position information in the manner set forth in Worlds' Representative Claim, the resulting "crowd control" actually permits more users than would be admitted in a conventional "capacity limit" solution that imposes a hard limit on the total number of game-players.

Accordingly, it was error for the Court to hold that "[n]one of the remaining claims are limited to 'any specific form or implementation of filtering.'" Appx0019. Moreover, as noted above, the fact that Worlds' claims are directed to inventive solutions that can permit more game-players to enter the virtual world while still using "generic computer components," (Appx0013), stands as a testament to their eligibility under Step Two (*see Bascom*, 827 F.3d at 1350) rather than the contrary.

Despite the claimed features of the Representative Claim and the technical solution reached by those claims, the District Court held that the "[t]he method

outlined here, as represented by claim 4 of the '690 patent, cannot be said to be as specific" as *Bascom*'s claims. Appx0019 n.2. This was legal error.

4. The Record Evidence and This Court's Precedent Confirm that Worlds' Claims Satisfy Step Two

Under Step Two, the District Court should have denied summary judgment of invalidity under § 101, and instead confirmed that the Worlds' claims satisfy § 101.

VI.   CONCLUSION AND RELIEF REQUESTED

For the foregoing reasons, Worlds' asserted claims are patent-eligible, and Worlds respectfully asks that the Court reverse, or alternatively remand the District Court's Summary Judgment for Invalidity Under § 101.

August 2, 2021   Respectfully submitted,

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ADDENDUM

CERTIFICATE OF FILING AND SERVICE

I hereby certify that, on August 2, 2021, I electronically filed the foregoing

with the Clerk of Court using the CM/ECF System, which will send notice of

such filing to all registered users.

I further certify that, upon acceptance and request from the Court, the

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Service for delivery to the Clerk, UNITED STATES COURT OF APPEALS FOR THE

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CERTIFICATE OF COMPLIANCE

1. This brief complies with the type-volume limitation of Federal Circuit Rule 32(b)(1):

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Dated: August 2, 2021

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