

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Inter Partes Review of U.S. Patent No. 9,064,376

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Inventor: Aviel David Rubin

Original Assignee: None

Title: Utilization of Multiple Devices to Secure Online Transactions

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DECLARATION OF SIGURD MELDAL, Dr.Scient.

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

By:



LIST OF EXHIBITS

1001	Rubin, U.S. Patent No. 9,064,376 (“the ’376 patent”)
1002	Reserved
1003	Prosecution History File Wrapper of the ’376 patent (excerpts)
1004	U.S. Patent No. 9,497,565 (“ <i>Zha</i> ”)
1005	CN 2013/10674692 (“ <i>Zha Priority Application</i> ”)
1006	Certified English translation of the <i>Zha Priority Application</i>
1007	U.S. Patent Pub. No. 2015/0011318 (“ <i>Takahashi</i> ”)
1008	PCT/JP2012/007595 (“ <i>Takahashi Priority Application</i> ”)
1009	Certified English translation of <i>Takahashi Priority Application</i>
1010	U.S. Patent Pub. No. 2014/0006485 (“ <i>Tsushima</i> ”)
1011	U.S. Patent No. 9,591,083 (“ <i>Gumbula</i> ”)
1012	U.S. Patent Pub. No. 2012/0017236 (“ <i>Stafford</i> ”)
1013	U.S. Patent No. 9,330,531 (“ <i>Wakeford</i> ”)
1014	Patent Owner’s Preliminary Infringement Contentions in <i>Rubin v. Kahoot! ASA et al.</i> , Civil Action No. 6:22-cv-00236 (W.D. Tex.) (Sept. 28, 2022)
1015	U.S. Patent Pub. No. 2012/0253841 (“’841 Application”)
1016	U.S. Patent Pub. No. 2012/0209770 (“’770 Application”)
1017	U.S. Patent Pub. No. 2014/0121015 (“ <i>Massing</i> ”)
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I. INTRODUCTION

1. I have been retained by counsel for Kahoot! ASA and Kahoot EDU, Inc. as an expert witness in the above-captioned proceeding. I have been asked to provide my opinion about the patentability of claims of U.S. Patent No. 9,064,376 (“the ’376 patent”).

2. I have been retained at my normal rate of \$550 per hour. No part of my compensation is dependent on the outcome of this proceeding or the specifics of my testimony.

II. PROFESSIONAL BACKGROUND AND QUALIFICATION

3. A detailed record of my professional qualifications, including a list of publications, awards, and professional activities are set forth in my current Curriculum Vitae, a copy of which is attached as Appendix A. This Curriculum Vitae lists the publications that I have authored or co-authored.

4. I received a Doctor of Science (Dr. Scient.) in Informatics in 1986 from the University of Oslo, Norway and a thesis-based Candidatus Realium (cand. real.) (master’s degree equivalent) with a minor in mathematics and statistics in 1982 from the University of Oslo, Norway. My doctoral thesis was “On Hierarchical Abstraction and Partial Correctness of Concurrent Structures.”

5. My professional background is in the design of computer programs and software development spanning a career of over 30 years in the field. Relevant

expertise includes cybersecurity and the design and operation of embedded, server and networked systems, with handheld systems such as mobile devices and phones, and with user interfaces and secure architecture and protocol design for such systems.

6. I was on the faculty in the department of informatics at the University of Bergen in Norway, from 1987 to 1998, first as “førsteamanuensis” (associate professor equivalent) and then awarded the rank of full professor in 1990. I served as department chair of informatics between 1993 and 1995. I was also a visiting and consulting professor at Stanford University from 1989 to 1998 in its Electrical Engineering Department. In 1997, I also served as the director of the Computer Science Program at the University of Notre Dame.

7. I was on the faculty in the department of Computer Science at California Polytechnic State University, San Luis Obispo, from 1997 to 2002—first as an associate professor, then as associate chair in 1999, and lastly as professor and chair of the Department from 2000 to 2002.

8. I was also on the faculty in the departments of Computer Engineering and Computer Science at San Jose State University, from 2002 to 2020 as a tenured professor. I served as chair of the Computer Engineering Department from 2002 to 2013, and as director of the Cybersecurity and Big Data Initiative at San Jose State University from 2013 to 2014.

9. I was also the founding director of the Silicon Valley Big Data and Cybersecurity Center at San Jose State University from 2014 to 2016. I was in charge of the development of the Cloud Computing and Virtualization and the Enterprise Software Technologies specializations within the MS Software Engineering degree program. The specializations were introduced in 2011 and built on a deep background in enterprise systems development coupled with a close engagement with the software engineering communities of Silicon Valley. In addition to the consultative processes of industry engagement in the development, the specializations benefited from the employment of cloud computing and virtualization practitioners as lecturers for core courses. Recognizing the importance of the subject matter to future software engineers, we also included it as part of the undergraduate bachelor of science Software Engineering degree.

10. Over the course of my career, I have worked with remote-accessed computer systems for some three decades, starting with the very early systems (such as those based on the X Window Systems in the late 1980s).

11. I have served as co-director of Education of the National Science Foundation (NSF) Center for Research in Ubiquitous Secure Technologies (“NSF STC TRUST”) at the University of California, Berkeley from 2005 to 2016.

12. I also have extensive consulting experience in the design of computer programs and software development. My consulting experience has involved

middleware systems analysis, systems risk evaluation, mobile device technologies, networked military command-and-control systems, satellite and land-based information and communication systems, secure systems and networks design, network security and supporting protocols, networked media systems, and user interface designs among others. A recurring theme in my work has been the design of reliable and secure systems in a networked enterprise context.

13. I have received several honors and awards over the course of my career, including the Fulbright-Hayes Fellowship, the Carl-Erik Fröberg Award, a Certificate of Recognition from the California State Assembly, and a Certificate of Special Recognition from the U.S. House of Representatives.

14. I have served on many professional committees and organizations. For example, I am a member of the Fulbright Association, and a senior member of the Institute of Electrical and Electronics Engineers (IEEE) and of the Association for Computing Machinery (ACM). I also serve as a commissioner and a member of the Executive Committee of the international Engineering Accreditation Commission of ABET, Inc. The Engineering Accreditation Commission of ABET defines the global standards for engineering education and determines whether programs are up to those standards or not.

15. I have authored or co-authored more than 50 publications, including technical papers, textbooks, textbook chapters, and articles, and have delivered

numerous presentations including keynotes at several international conferences and workshops. These publications address topics including, but not limited to: cyber security, network security and protocols, privacy, architectures of programming languages, software design prototyping and engineering, distributed system design and architecture, concurrent processing, and user interfaces.

16. Examples of publications I have authored or co-authored on the topic of security are:

- Sigurd Meldal, Kristen Gates, Russell Smith, and Xiao Su. “Security, Safety and Privacy – Pervasive Themes for Engineering Education.” In *Proceedings of the International Conference on Engineering Education (ICEE)*, March 2008.
- Daniel Manson, Sigurd Meldal, Carol Sledge, Stephen M. Maurer, John C. Mitchell, Erich Spengler, Janos Sztipanovits, and Javier Torner. “Learning Modules for Security, Privacy and Information Assurance in Undergraduate Engineering Education.” In *Proceedings of the 36th Annual Frontiers in Education Conference (FIE)*, October 2006.
- Sigurd Meldal and David C. Luckham. “NSA’s MISSI Reference Architecture – Moving from Prose to Precise Specification.” In *Requirements Targeting Software and Systems Engineering*, Lecture Notes in Computer Science (LNCS) 1526, pp. 293–329. Springer-Verlag, 1998
- Sigurd Meldal. “**Some Thoughts on Cyber Risk and the Science(s) of Security.**” Keynote address, IEEE International Symposium on Signals, Circuits and Systems, July 2013.
- Sigurd Meldal. “**It’s a Dangerous World Out There – The Interplay of Security, Safety and Policy.**” Keynote address, IEEE International Advance Computing Conference (IACC), March 2009.

17. I have authored numerous publications in system architecture and design. Relevant examples of such publications include:

- David C. Luckham, James Vera, and Sigurd Meldal. “Key Concepts in Architecture Definition Languages.” In *Foundations of Component Based Systems*, pp. 23–46. Cambridge University Press, 2000.
- Sigurd Meldal and A. I. Vermesan. “Verification Oriented Development of Knowledge Based Systems.” In *New Review of Applied Expert Systems*, vol. 2, pp. 91–104. 1996.
- Sigurd Meldal. “Reference Architectures and Conformance.” In *Proceedings of the International Workshop on Requirements Targeting Software and Systems Engineering (RTSE)*, April 1998.
- Sigurd Meldal. “Supporting Architecture Mappings in Concurrent Systems Design.” In *Proceedings of the 1990 Australian Software Engineering Conference (ASWEC '90)*, May 1990.

18. I have also authored several publications in software design and implementation. Relevant examples of such publications include:

- Sigurd Meldal, Gene L. Fisher, Daniel J. Stearns, and Peter C. Ölveczky. “Software Prototyping.” In *Wiley Encyclopedia of Electrical and Electronics Engineering*. Wiley Online Library, 1999.
- John Mitchell, Sigurd Meldal, and Neel Madhav. “An Extension of Standard ML Modules with Subtyping and Inheritance.” In *Information and Control*, vol. 71, pp. 95–130. 1991.
- Daniel J. Stearns, C. S. Turner, and Sigurd Meldal. “Ten Pounds in a Five-Pound Sack: Providing Software Engineering Students with Management Experience.” In *Proceedings of the International Conference on Engineering Education (ICEE)*, August 2001.

- Neel Madhav and Sigurd Meldal. “An Object-Oriented Approach to Formal Specification of Reactive Systems.” In *Proceedings of the 11th International Conference on Distributed Computing Systems (ICDCS)*, May 1991.

III. INFORMATION CONSIDERED

19. My opinions are based on my years of education, research, and experience, as well as my study of relevant materials. In forming my opinions, I have considered the material identified in this declaration and in the Petition.

20. I may rely upon these materials and/or additional materials to respond to arguments raised by Mr. Rubin. I may also consider additional documents and information in forming any necessary opinions, including documents that may not yet have been provided to me.

21. My analysis of the materials is ongoing, and I will continue to review any new material as it is provided. This declaration represents only those opinions I have formed to date. I reserve the right to revise, supplement, or amend my opinions stated herein based on new information and on my continuing analysis of the materials provided.

IV. RELEVANT LEGAL STANDARDS

22. I have been asked to provide my opinion as to whether claims 1-6, 9-10, 12-17, and 23-25 of the '376 patent are patentable in view of the prior art.

23. I am a software engineer by education and profession. The opinions I am expressing in this declaration involve the application of my knowledge and experience to the evaluation of certain prior art with respect to the '376 patent. Aside from my experience in litigation support, my knowledge of patent law is no different than that of any lay-person. Therefore, I have requested that the attorneys from Slayden Grubert Beard PLLC, who represent Petitioner, provide me with guidance as to the applicable patent law in this matter. The paragraphs below express my understanding of how I must apply current principles related to patentability.

A. Claim Construction

24. I have been informed that in an *inter partes* review proceeding, the Patent Trial and Appeal Board gives a claim term its ordinary and customary meaning, i.e., the meaning that the term would have to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention. I understand that the claim language, specification, and prosecution history are relevant to determine the meaning of a claim term. I understand that the prosecution history of a patent provides the record of the examination of a patent application before the U.S. Patent and Trademark Office. The prosecution history provides evidence of how the patent examiner and the inventors understood the patent application and the claims and can therefore be instructive on how to interpret the claims. My understanding is that extrinsic evidence may also be used in understanding the meaning of a claim term.

Extrinsic evidence includes dictionaries, treatises, expert testimony, and prior art. But it is my understanding that one should first look to the intrinsic evidence in construing claims. Intrinsic evidence includes the patent itself and the prosecution history.

25. My understanding is that there are at least two circumstances where the words in a patent claim may differ from and not be given their plain and ordinary meaning. One circumstance is when the applicants act as their own lexicographer by clearly setting forth a definition of a claim term that may differ from the plain and ordinary meaning it would otherwise possess. Another circumstance is when the applicant includes or provides an intentional disclaimer, or disavowal, of claim scope. My understanding is that an applicant may act as their own lexicographer, or disclaim or disavow claim scope, in either the specification or the prosecution history of the patent. My understanding is also that the applicant may act as a lexicographer, or disclaim or disavow claim scope, by making amendments to the claims during prosecution, or by making assertions to the U.S. Patent and Trademark Office about the differences between the claimed inventions and the prior art.

B. Obviousness

26. It is my understanding that a claim is not patentable under 35 U.S.C. § 103 if the claimed subject matter as a whole would have been obvious to a POSITA at the time of the alleged invention. I understand that time is viewed as of the earliest

effective filing date of the patent application. I also understand that an obviousness analysis must take into account the scope and content of the prior art, the differences between the claimed subject matter and the prior art, and the level of ordinary skill in the art at the time of the invention.

27. In determining the scope and content of the prior art, it is my understanding that a reference is considered appropriate prior art if it falls within the field of the inventor's endeavor. In addition, a reference is prior art if it is reasonably pertinent to the particular problem with which the inventor was involved. A reference is reasonably pertinent if it logically would have commended itself to an inventor's attention in considering his problem. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis.

28. To assess the differences between prior art and the claimed subject matter, it is my understanding that 35 U.S.C. § 103 requires that the claimed invention be considered as a whole. I also understand that a finding of obviousness requires more than merely demonstrating that each claim element was known in the prior art. Obviousness requires showing that a person of ordinary skill in the art would have been motivated to combine the teachings of the prior art to achieve the claimed invention and would have had a reasonable expectation of success in doing so.

29. It is my understanding that the Supreme Court has recognized several rationales for combining references or modifying a reference to show the obviousness of claimed subject matter. Some of these rationales include: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known device (method or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

30. I understand that obviousness in an *inter partes* review must be shown by a preponderance of the evidence, which means it is more likely than not the claims are obvious.

V. LEVEL OF ORDINARY SKILL IN THE ART

31. I am informed the time of the alleged invention of the '376 patent is June-July 2014, which corresponds to the months in which the patent applications that led to the '376 patent were filed. Ex. 1001, [22], [60]. It is my opinion that a POSITA at the time of the alleged invention of the '376 patent would have a

bachelor's degree in electrical or computer engineering or computer science or a comparable field of study, plus approximately two years of professional experience in the field of computer and/or network design and security or other relevant industry experience. Additional graduate education could substitute for professional experience, and significant experience in the field could substitute for formal education.

32. In this regard, all of the technologies, techniques, methods, and components disclosed in *Zha*, *Takahashi*, *Tsushima*, *Gumbula*, *Stafford*, and *Wakeford*, *Crawford*, and all other references described below, would have been within the general knowledge of such a person of ordinary skill in the art.

33. In reaching my opinion as to the POSITA's level of skill, I have considered the types of problems encountered in the art, the prior solutions to those problems found in prior art references, the rapidity with which innovations are made, the sophistication of the technology, the level of education of active workers in the field, and my own experience working with those of ordinary skill in the art at the time of the invention.

34. The person of ordinary skill in the art would have had knowledge of network communication, user interfaces, and distributed architectures, as well as references relating to many well-known network technologies. The state of the art at the relevant time included the teachings of the references in this declaration.

35. I am very familiar with the technology of the '376 patent as of the June-July 2014 time frame. By 2014, I had extensive experience relating to computer and networked systems design as well as with security. As shown in my curriculum vitae and the Background and Qualifications section above, I have interacted with, and I am familiar with individuals having this level of skill at the relevant time both as a practitioner and as an educator. In particular, at the relevant time I had served as department chair of the Computer Engineering Department at San Jose State University, a major supplier of software and computer professionals to the technology industry in California. As department chair, I was responsible for the design of the curricula educating software and computer professionals, and I was thus intimately familiar with the capabilities of a POSITA at the time. Furthermore, I served as a Program Evaluator ("PEV") for the Engineering Accreditation Commission, evaluating software engineering degree programs with respect to compliance with national standards for engineering education. As a PEV, I was thoroughly familiar with the capabilities of graduates of such programs. At the relevant time I was serving as co-director of education at the NSF STC TRUST at UC Berkeley, a federal research institution focusing on security. As co-director of education my responsibilities included the transfer of knowledge from the center's research to the nation's engineering educational programs. In addition, based on my 30 years of experience in academia and industry, including in the fields of software

and computer engineering and development, networked systems design and security, the acceptance of my publications and professional recognition by societies in my field, I believe that I am an expert in the art of computer and networked systems, and security. I was also at least a person of ordinary skill by the earliest possible priority date of the '376 patent.

VI. CLAIM CONSTRUCTION

36. It is my understanding that the claims of the '376 Patent should be given their ordinary and customary meaning for the purposes of this proceeding, and that claim terms should be given the meaning that the terms would have to a POSITA at the time of the alleged invention (June-July 2014). This is the meaning that I have applied to the claims in my analysis.

37. In my discussion of various claims, I also refer to Patent Owner's apparent understanding of the claim terms. This is based on my review of Patent Owner's preliminary infringement contentions that were submitted in the related district court case. Ex. 1014. My reference to Patent Owner's apparent understanding of a claim term should not be taken as an admission (or argument) that Patent Owner's apparent understanding comports with the ordinary and customary meaning of the that term. It is not.

38. I reserve the right to respond to constructions offered by Patent Owner or adopted by the Board.

VII. SUMMARY OF THE '376 PATENT

A. The '376 Patent

39. The application leading to the '376 patent was filed on July 28, 2014, and claims priority to a provisional application filed June 6, 2014. Ex. 1001, [22], [60]. The '376 patent issued on June 23, 2015. Ex. 1001, [45]. The '376 patent is titled "Utilization of multiple devices to secure online transactions." Ex. 1001, [54]. The '376 patent "relates generally to securing communications against malware by utilizing two devices with differential or application-specific components during an online session." Ex. 1001, 1:16-19. The '376 patent presents an "architecture whereby a user's interaction with an application includes a first device [and a second device, both] which can be a computer, a tablet, a smartphone or other electronic device" Ex. 1001, 2:40-45. The '376 patent "describes a system where the user has persistent use of a first device and a second device throughout the use of an online application to prevent a compromise of the transaction if malware infects either device." Ex. 1001, 2:29-32. The '376 patent discloses a "preferred embodiment" that "is directed to online games." Ex. 1001, 2:46-47. However, the '376 patent indicates it "may also be used in any other domain, such as online banking, mobile healthcare, online investing, and other online activities that would benefit from enhanced security against malware on a user's computing device." Ex. 1001, 2:46-51.

B. Prosecution History

40. During examination of the '376 patent, the Examiner rejected claims 1 24 and 30 (and withdrew claims 25-29 based on an election/restriction requirement). Ex. 1003 at 58-80 (9/24/2014 Office Action). Claims 1-4, 9-12, 14 18, 20, 21, and 30 were rejected under 35 U.S.C. § 102(a)(1)(2) as being anticipated by U.S. Pub. No. 2012/0072561 to Rebacz ("*Rebacz*"). Ex. 1003 at 66-71. Claims 5 and 6 were rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of U.S. Pub. No. 2008/0039203 to Ackley et al. ("*Ackley*"). Ex. 1003 at 71-72. Claim 7 was rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of *Ackley* and further in view of U.S. Pub. No. 2009/0292640 to Heatherly ("*Heatherly*"). Ex. 1003 at 73. Claims 8 and 24 were rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz*. Ex. 1003 at 74-75. Claim 13 was rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of U.S. Pub. No. 2009/0227375 to Weisman et al. ("*Weisman*"). Ex. 1003 at 75-76. Claim 19 was rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of U.S. Pub. No. 2008/0318651 to Gross et al. ("*Gross*"). Ex. 1003 at 76-77. Claim 22 was rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of *Gross* and further in view of *Heatherly*. Ex. 1003 at 77-78. Claim 23 was rejected under 35 U.S.C. § 103 as being unpatentable over *Rebacz* in view of U.S. Pub. No. 2002/0010013 to Walker et al. ("*Walker*").

41. On November 19, 2014, the applicant submitted amended claims and remarks (some claims were added, some canceled). Ex. 1003 at 87-97. In response to the rejections under §§ 102-103, the applicant stated:

As indicated in the Interview Summary of November 18, 2014, it was agreed with the Examiner during the interview of November 5, 2014, that the proposed amendments to the independent claims, as presented herein, overcome the Rebacz reference.

In accordance with the agreement reached in the interview, claim 1 has been amended to recite “determining at the server whether both a first device being operated exclusively by a first user and a second device also being operated exclusively by the first user are accessible over at least one electronic communications network.” Corresponding amendments have been made to independent claim 30.

Ex. 1003 at 96-97.

42. On January 27, 2015, the Examiner finally rejected all pending claims (1-6, 8-17, and 19-32). Ex. 1003 at 102-124. Claims 1-4, 10-17, 23, 30, and 32 were rejected under 35 U.S.C. § 102(a)(1)(2) as being anticipated by U.S. Pub. No. 2014/0121015 to Massing et al. (“*Massing*”). Ex. 1003 at 106-111. Claims 5, 6, and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over *Massing* in view of *Ackley* and further in view of *Heatherly*. Ex. 1003 at 111-115. Claims 8 and 24 were rejected under 35 U.S.C. § 103 as being unpatentable over *Massing* in view of *Rebacz*. Ex. 1003 at 115-116. Claims 19-21 were rejected under 35 U.S.C. § 103

as being unpatentable over *Massing* in view of *Gross*. Ex. 1003 at 117-119. Claim 22 was rejected under 35 U.S.C. § 103 as being unpatentable over *Massing* in view of *Gross* and further in view of *Heatherly*. Ex. 1003 at 120-121. Claim 31 was rejected under 35 U.S.C. § 103 as being unpatentable over *Massing* in view of *Rebacz* and further in view of *Gross*. Ex. 1003 at 121-122.

43. On February 19, 2015, the applicant submitted amended claims and remarks. Ex. 1003 at 125-136. The same was submitted again on March 18, 2015, along with a request for continued examination. Ex. 1003 at 148-163. The applicant responded to the §§ 102-103 rejections and attempted to distinguish the claims from the base reference, *Massing*. The applicant argued:

- *Massing* does not disclose “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network” because “there is no suggestion [in *Massing*] of making the claimed determination [and] *Massing* disclose[s] nothing more than a generic arrangement of components configured as a network and do[es] not disclose or suggest the claimed determination of accessibility.” Ex. 1003 at 160-161.

- Massing does not disclose “if and only if both the first and second devices are determined to be accessible by the server” then transmitting certain information because “Massing does not teach or suggest making the claimed determination, it also does not teach transmitting certain information based on that determination.” Ex. 1003 at 161.
- “These two limitations [in the two previous bullets], taken together, require determining accessibility over a network and, based on that determination, transmitting information. Massing fails to teach this functionality.” Ex. 1003 at 161.
- “[C]laim 1 also recites that the first and second devices are ‘in possession of and being directly operated by’ the user ... [I]n Massing, even if the ‘gaming eyewear’ illustrated in Fig. 11 is in possession of and being operated by the user, there is no suggestion that the ‘wagering game server’ or ‘wagering game machine’ are both ‘in possession of and being directly operated’ by the user.” Ex. 1003 at 161.
- “Massing also does not disclose the claim feature of ‘wherein the second subset of the information includes information not transmitted to the first device’ because ‘Massing fails to disclose that the device in

question (the eyewear) receives information that is not transmitted to any other device in the system.” Ex. 1003 at 162.

44. On April 30, 2015, an Examiner-initiated interview was held. Ex. 1003 at 175. “The Examiner called the Applicant to propose claim amendments to overcome prior art and put claims in conditions for allowance. Consequently, the Applicant further suggested claim amendments and the Examiner agreed on the further suggested claim amendments in order to put claims in conditions for allowance.” Ex. 1003 at 175.

45. On May 6, 2015, the Examiner issued a Notice of Allowance that included an Examiner’s Amendment. Ex. 1003 at 164-174. The amendment amended independent claims 1 and 30 (now claims 1 and 25).

46. I have compared claim 1 before the Examiner’s amendment with issued claim 1. The Examiner’s amendment added the phrase “based on the first user being logged into the application at both the first and second devices,” as indicated in underline below:

1. A method for transmitting information to multiple electronic devices, the method comprising:

electronically storing a set of information at a server;

identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;

determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in

possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;

if and only if both the first and second devices are determined to be accessible by the server, then:

transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server,

wherein the second subset of the information includes information not transmitted to the first device.

47. I have compared claim 1 before the Examiner's amendment with issued claim 30. The Examiner's amendment added the phrase "based on the first user being logged into the application at both the first and second devices," as indicated in underline below:

30. A system for transmitting information to multiple electronic devices, the system comprising:

an electronic data store configured for electronically storing a set of information at a server, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;

a processor device programmed for:

identifying a first subset of the information and identifying a second subset of the information;

determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;

if and only if both the first and second devices are determined to be accessible by the server, then:

transmitting a first subset of the information to the first device from the server; and

transmitting a second subset of the information to the second device from the server,

wherein the second subset of the information includes information not transmitted to the first device.

48. The Examiner stated “the prior art lacks disclosing, teaching, or fairly suggesting in combination with other claim limitations” the “determining” limitations of claims 1 and 30. Ex. 1003 at 172. In particular, the Examiner stated that *Massing* “does not require the player to log into the poker application on both the game device and the eyewear.” Ex. 1003 at 172. Additionally, the Examiner stated the application “distinguishes over Ward et al (US Pub. 20140141864), because the player is required to log only in the mobile device app, whereas, the instant invention requires the determining at the server of possession of both devices based on logged into the application at both devices.” Ex. 1003 at 173.

49. Based on my review, none of the events or arguments in the prosecution history of the '376 patent impact my analysis. I reserve the right to consider those events and the references cited therein should Patent Owner raise a claim construction argument.

VIII. OVERVIEW OF CONCLUSIONS

50. I have reviewed and agree with the analysis in the Petition for *inter partes* review of the '376 patent. It is my opinion that each and every limitation of

each and every challenged claim would have been obvious to a person of ordinary skill in the art at the time of the alleged invention in view of the prior art cited in the Petition and further explained in this declaration. Below is a summary of my conclusions:

- GROUND 1 –It is my opinion that claims 1-4, 9, 13-14, 16, and 23-25 of the '376 patent are rendered obvious by U.S. Patent No. 9,497,565 (*Zha*) (Ex. 1004) and a POSITA's general knowledge.
- GROUND 2 –It is my opinion that claims 1-4, 9, 13-14, 16, and 23-25 of the '376 patent are rendered obvious by *Zha*, a POSITA's general knowledge, and U.S. Patent Pub. No. 2014/0006485 (*Tsushima*) (Ex. 1010).
- GROUND 3 –It is my opinion that claims 5 and 15 of the '376 patent are rendered obvious by *Zha*, a POSITA's general knowledge, and U.S. Patent No. 9,591,083 (*Gumbula*) (Ex. 1011).
- GROUND 4 –It is my opinion that claims 5 and 15 of the '376 patent are rendered obvious by *Zha*, a POSITA's general knowledge, *Tsushima*, and *Gumbula*.
- GROUND 5 –It is my opinion that claim 10 of the '376 patent is rendered obvious by *Zha*, a POSITA's general knowledge, and U.S. Patent Pub. No. 2012/0017236 (*Stafford*) (Ex. 1012).

- GROUND 6 –It is my opinion that claim 10 of the '376 patent is rendered obvious by *Zha*, a POSITA's general knowledge, *Tsushima* and *Stafford*.
- GROUND 7 –It is my opinion that claims 1-5, 9-10, 12-14, 16-17, and 23-25 of the '376 patent are rendered obvious by U.S. Patent Pub. No. 2015/0011318 (*Takahashi*) (Ex. 1007) and a POSITA's general knowledge.
- GROUND 8 –It is my opinion that claims 1-5, 9-10, 12-14, 16-17, and 23-25 of the '376 patent are rendered obvious by *Takahashi*, a POSITA's general knowledge, and *Tsushima*.

IX. RECITATION OF THE CHALLENGED CLAIMS

Claim	Claim Language
1	[1Preamble] A method for transmitting information to multiple electronic devices, the method comprising: [1a] electronically storing a set of information at a server; [1b] identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application; [1c] determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first

	user being logged into the application at both the first and second devices; [1d] if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.
2	The method of claim 1, further comprising transmitting at least a portion of the first subset of the information to the second device from the server only if both the first and second devices are determined to be accessible by the server.
3	The method of claim 1, wherein the first subset of the information comprises non-sensitive information; and the second subset of the information comprises sensitive information.
4	The method of claim 1, wherein the information received at the second device is more sensitive than the information received at the first device.
5	The method of claim 1, further comprising: determining if connectivity between the server and the second device has been disrupted; and providing a notification on the second device that the connectivity has been disrupted.
9	The method of claim 1, wherein the transmitting a first subset of the information to the first device from the server and transmitting a second subset of the information to the second device from the server are executed over independent electronic communications networks.
10	The method of claim 1, further comprising displaying a graphical identifier on the first device and a corresponding graphical indicator on the second device indicating a link between the information displayed on the respective devices.
12	The method of claim 1, wherein the information received at the second device is a user's private cards in an online card game.

13	The method of claim 1, wherein [] a display on the first device is being viewed exclusively by a first user and a display on a second device is also being viewed exclusively by the first user.
14	The method of claim 1, wherein neither the first subset of information nor the second subset comprise a two factor authentication code.
15	The method of claim 1, wherein the server is a proxy server configured to relay communications from an application server to the first and second devices wherein the proxy server emulates a client to the application server.
16	[16Preamble] The method of claim 1, further comprising [16a] configuring the server for managing an online game, and [16b] wherein the server is configured to communicate with a plurality of devices including a first electronic device and a second electronic device, [16c] wherein the first electronic device is primarily used to play the game, and [16d] wherein in the game server communicates sensitive information to the second electronic device so that sensitive information can be presented to a user.
17	The method of claim 16, wherein the online game is poker and wherein the information that is communicated to the second device includes hole cards.
23	The method of claim 1, further comprising electronically storing at the server a parameter indicating whether subsets of the information are to be divided between two or more devices.
24	[24Preamble] The method of claim 1, wherein [24a] the first and second subsets of information are application-specific, and [24b] wherein the first and second subsets of information derive from functions within a specific application.
25	[25Preamble] A system for transmitting information to multiple electronic devices, the system comprising:

	[25a] an electronic data store configured for electronically storing a set of information at a server, [25b] wherein the first and second subsets of information are generated by the same application at the server and are specific to that application; [25c] a processor device programmed for: [25d] identifying a first subset of the information and identifying a second subset of the information; [25e] determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices; [25f] if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.
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X. GROUND 1: CLAIMS 1-4, 9, 13-14, 16, AND 23-25 ARE OBVIOUS OVER ZHA AND A POSITA’S GENERAL KNOWLEDGE

A. Overview of *Zha*

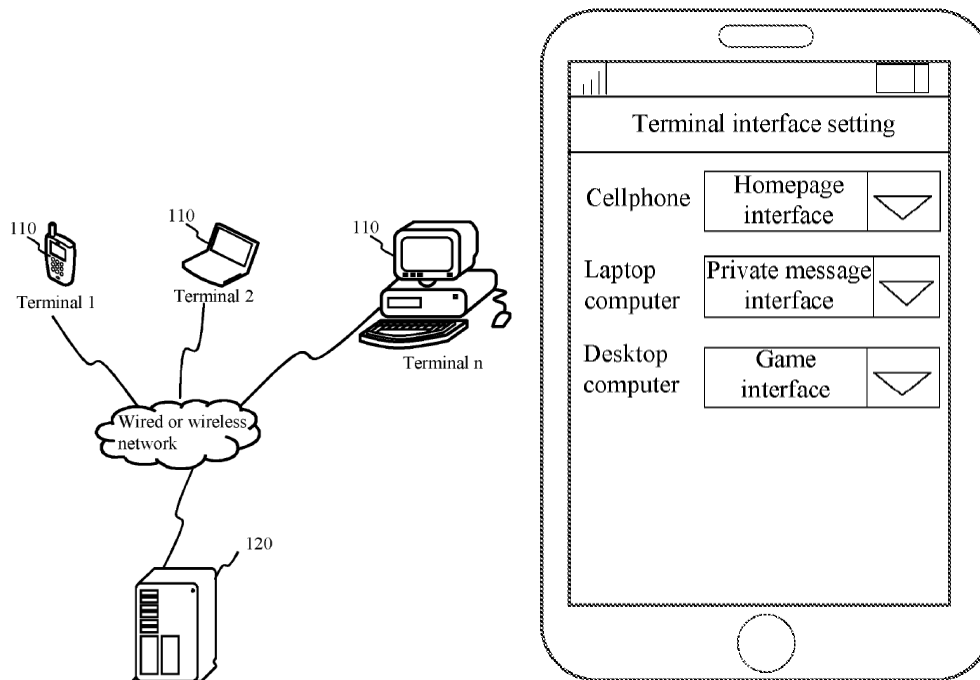
51. Counsel informs me U.S. Patent No. 9,497,565 (“*Zha*”) (Ex. 1004) is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on December 11, 2013, prior to the ’376 patent’s filing date on July 28, 2014. Ex. 1004, [22]. Counsel informs me that, under 35 U.S.C. § 102(d)(2), *Zha* was effectively filed on December 11, 2013, based on the prior-filed foreign application for patent CN 2013/10674692 (“*Zha Priority Application*”). The *Zha Priority Application* is

Ex. 1005, and a certified English translation of the *Zha Priority Application* is Ex.1006. I also understand that in order to claim the benefit of the *Zha Priority Application*, the subject matter relied upon in *Zha* must have been described in the *Zha Priority Application*. Accordingly, I have been asked to provide a table comparing the disclosures of *Zha* that are relied on in this declaration and in the Petition with the corresponding disclosures of the *Zha Priority Application*. This table is included below in Appendix B. Citations to *Zha* are provided throughout my analysis below. Because the disclosures in *Zha* that I (and Petitioner) rely on were previously described in the *Zha Priority Application*, I understand that *Zha* is entitled to claim the benefit of the filing date of its Chinese parent and qualifies as prior art.

52. *Zha* is directed to an interface display method that allows a user to simultaneously log in to one application with the same account via two or more terminals. Ex. 1004, 2:59-62. “[A]ccess permissions for accessing different functional interfaces are assigned to terminals which simultaneously run the same application program with the same account, and data corresponding to each of the functional interfaces is only assigned to a terminal having an access permission for accessing the functional interface.” Ex. 1004, 5:45-50.

53. As shown in Figure 1, the terminals may be a cell phone, a laptop computer, or a desktop computer. Ex. 1004, Fig. 1. As shown in Figure 5B, the

terminal interfaces may be set to display one or more interfaces, such as a homepage interface, a private message interface, and a game interface:



Ex. 1004, Figures 1, 5B.

54. A microblog application example illustrates the interface settings shown in Figure 5B.

For example, microblog may provide a *homepage functional interface*, a *private message functional interface* and a *game functional interface*. The server, on receiving that the cellphone logs in to microblog with the same account, may assign an access permission for accessing the *homepage interface* to a laptop computer which has logged in to microblog and assign an access permission for accessing the *private message interface* to a cellphone which logs in to microblog. Similarly, when a desktop computer logs in to microblog with the same account, the server may assign an access permission for accessing the *game interface* to the desktop computer.

Ex. 1004, 7:33-44 (emphasis added).

55. *Zha* further discloses the server determines on which terminals the user has logged in to the application and determines what data to transmit to each terminal. Ex. 1004, 22:43-62, Figure 6B. “Reference is made to FIG. 6B, which shows a block diagram of the structure of a server according to the fifth embodiment of the invention, where the server may be in the form of software, hardware or a combination of both. The server may include: a use receiving module 610, a permission assigning module 620 and a data sending module 630.” Ex. 1004, 22:43 62.

The use receiving module 610 is configured to receive a simultaneous running of the application program of at least two terminals with the same account.

The permission assigning module 620 is configured to assign an access permission for accessing at least one functional interface provided by the application program to the at least two terminals, where a functional interface assigned to each of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals.

And the data sending module 630 is configured to send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface.

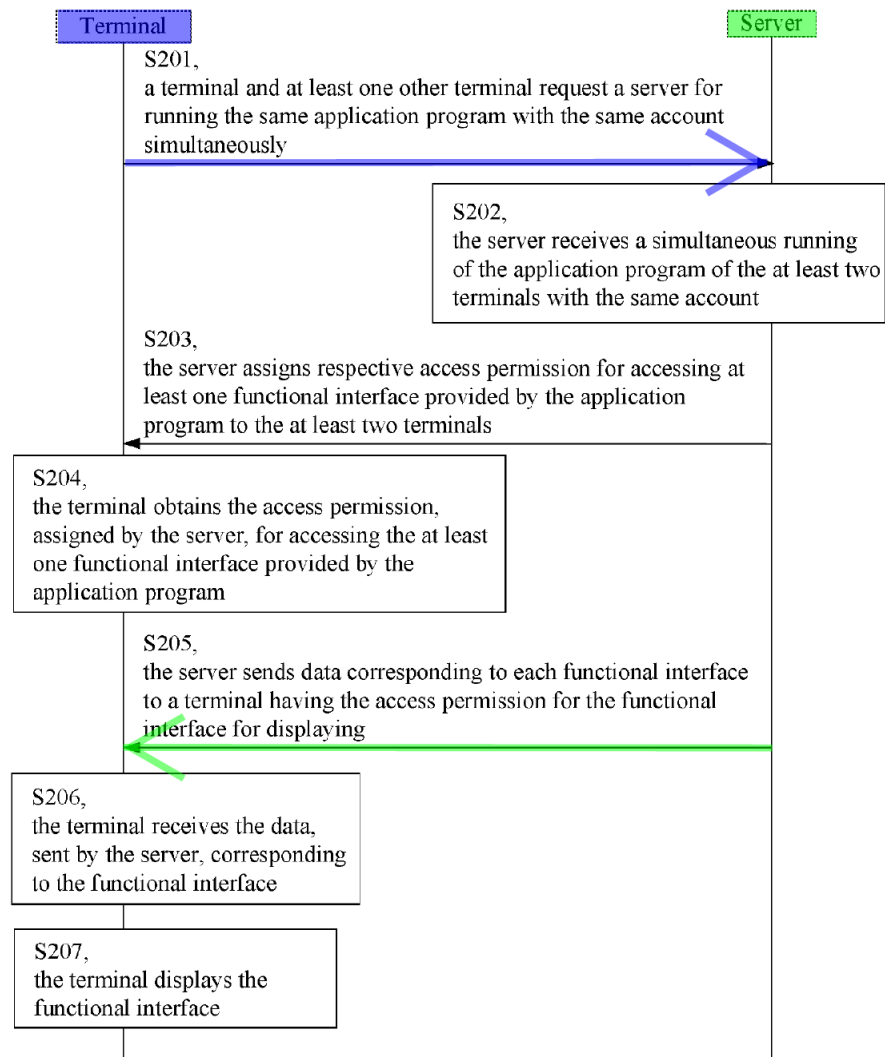
Ex. 1004, 22:49-62.

56. Thus, *Zha* discloses different data, related to the “distinct” functional interfaces respectively, is sent to different terminals when a user has logged into the microblog application using with two or more terminals. Ex. 1004, 22:49-62.

B. Independent Claim 1

1. [1Preamble] “A method for transmitting information to multiple electronic devices, the method comprising:”

57. To the extent the preamble is limiting, *Zha* discloses this element. *Zha* discloses a method for sending data to a first and second terminal, with reference to Figure 2B. Ex. 1004, 5:10-38.

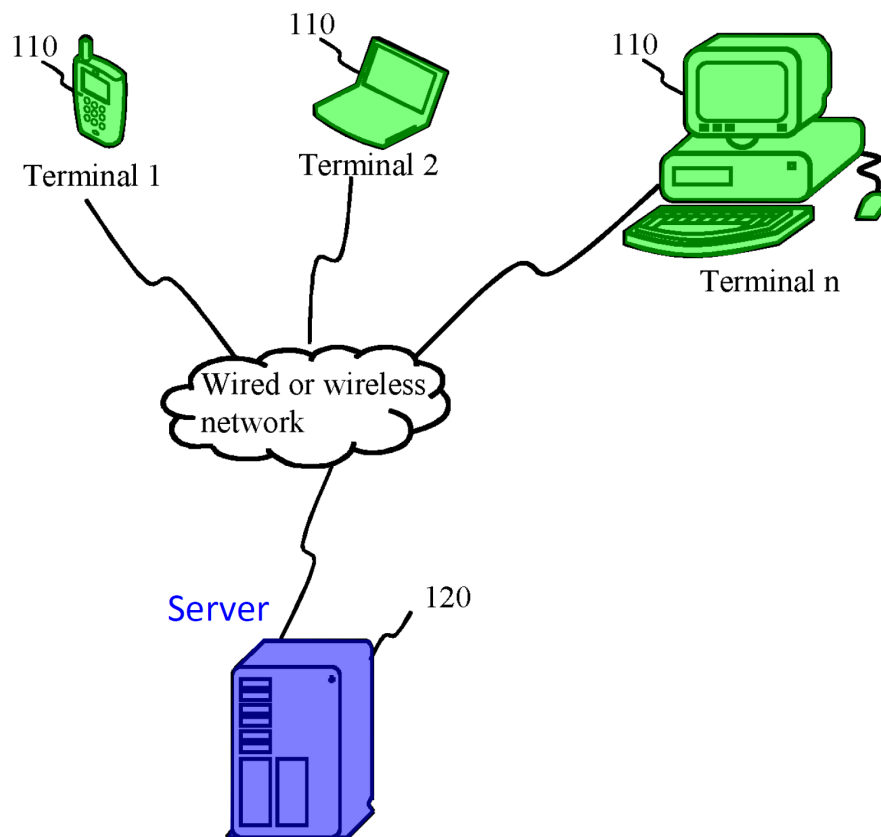


Ex. 1004, Figure 2B (annotated).

58. The terminals correspond to the claimed “electronic devices” and sending data corresponds to the claimed “transmitting information.”

2. [1a] “electronically storing a set of information at a server,”

59. *Zha* discloses this element. *Zha* discloses \ functional interface data that corresponds to the claimed “set of information” stored at the server. According to *Zha*, “[a]t least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1.” Ex. 1004, 4:22-24.



Ex. 1004, Figure 1 (annotated).

60. The server described by *Zha* corresponds to the claimed “server.” *Zha* also discloses the “server corresponding to an application program [runs] the application program with an account in a terminal.” Ex. 1004, 17:44-46. The server having the application program assigns access permissions to the terminals and sends data corresponding to functional interfaces to the terminals. Ex. 1004, 4:36-44. “[T]he server sends data corresponding to each functional interface to the terminal having the access permission for accessing the functional interface for display.” Ex. 1004, 5:35-37. “[T]he server may be in the form of software, hardware or a combination of both.” Ex. 1004, 22:45-46. The microblog application (and the data it transmits) is stored on the server (e.g., in a computer readable storage medium): “[A]ll or a part of the steps according to the embodiments above may be performed through hardware, or performed through related hardware under instructions of a program. The program may be stored in a computer readable storage medium, which may be a read-only memory, a magnetic disk or an optical disc.” Ex. 1004, 29:11-17. The functional interface data stored at the *Zha* server corresponds to “electronically storing a set of information at a server.”

61. To the extent Patent Owner argues *Zha* does not expressly disclose “storage” of information at the server, it is my opinion this limitation would have been obvious in view of the POSITA’s general knowledge. For example, a POSITA would understand that servers such as the *Zha* server are capable of storing

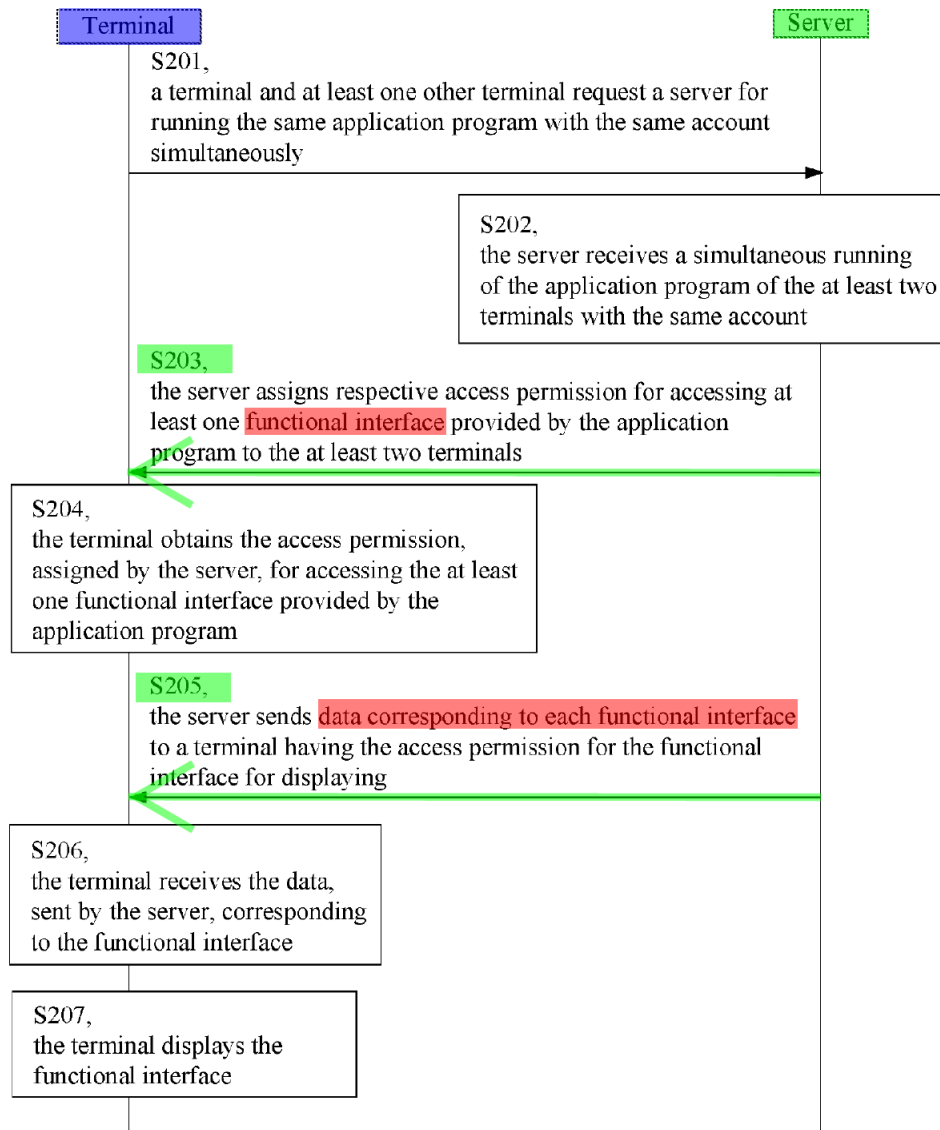
information because it was well-known in the art that servers stored information that they were tasked with providing to client devices.

62. Evidence of the POSITA's general knowledge is found at least in U.S. Pub. No. 2014/0121015 to Massing et al. ("*Massing*") (Ex. 1017). As mentioned above, *Massing* was cited in the '376 patent prosecution history. Ex. 1003 at 102-124. It is my opinion a POSITA would consider *Massing* to be within the scope of relevant prior art to the '376 patent at least because (1) the Examiner cited it in rejecting the pending '376 patent claims, and (2) it discloses a similar subject matter as the '376 patent, i.e., a gaming application that presents information on two different displays (a main display and a mobile wearable eyewear display). *Massing* confirms it was well-known in the art that servers stored information that they were tasked with providing to client devices. In particular, Figure 11 in *Massing* depicts a "wagering game server 1150" that includes "content store 1152." Ex. 1017, Figure 11. "The wagering game server 1150 can also include a content store 1152 configured to contain content to present on the gaming devices." Ex. 1017, [0082]. Thus, *Massing* confirms that by 2014, it was common for servers to store information the server ultimately transmits to client devices (e.g., *Massing*'s display and wearable eyewear devices).

3. [1b] “identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;”

63. *Zha* discloses this element. *Zha* discloses a method for identifying distinct subsets of information defined by individual functional interfaces that correspond to the claimed “first subset of information” and “second subset of information.” In particular, *Zha* discloses a microblog example, wherein private message interface data corresponds to the claimed “second subset of information” and other functional interface data (such as data for the homepage and game interfaces) corresponds to the claimed “first subset of information.” Ex. 1004, 18:66-19:13.

64. In *Zha*, the server assigns access permissions in step S203 and necessarily identifies the data related to the functional interfaces prior to sending that data in step S205:

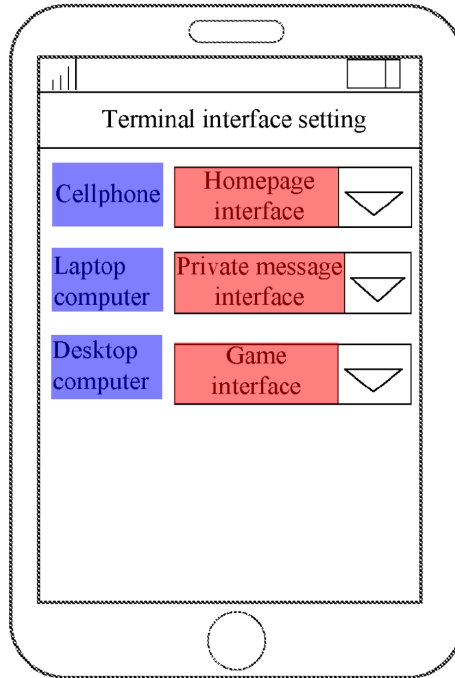


Ex. 1004, Figure 2B (annotated).

65. As shown in Figure 2B, “[i]n step 203, the server assigns respective access permission for accessing at least one functional interface provided by the application program to the at least two terminals. A functional interface assigned to a current terminal of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals.” Ex. 1004, 5:22-27. Also shown in Figure 2B, “[i]n step 204, each of the at least two terminals obtains the access

permission, assigned by the server, for accessing the at least one functional interface provided by the application program. The at least one functional interface is distinct from a functional interface assigned to any other of the at least two terminals.” Ex. 1004, 5:28-34.

66. *Zha* discloses distinct functional interface data for different terminals. Ex. 1004, 5:32-37. “In practical implementations, in a case the user has multiple terminals, the user may request the server for running an application program with same account in at least two terminals simultaneously. For example, in a case the application program is microblog, and the user has a cellphone, a laptop computer and a desktop computer, the user may log in to microblog in the laptop computer, cellphone and desktop computer with one microblog account.” Ex. 1004, 17:44-54. The user may “send application requests for three terminals, i.e., the cellphone, the laptop computer and the desktop computer, as illustrated in FIG. 5B.” Ex. 1004, 18:14-16.



Ex. 1004, Figure 5B (annotated).

67. Because *Zha* discloses the functional interface data is distinct for each terminal (Ex. 1004, 5:32-37), the functional interface data corresponds to a “first subset of information” and a “second subset of information,” as claimed.

68. The microblog application program described by *Zha* corresponds to the claimed “same application.” Ex. 1004, 7:33-44, 17:48-53, 18:11-17, 19:3-13.

For example, microblog may provide a homepage functional interface, a private message functional interface and a game functional interface. The server, on receiving that the cellphone logs in to microblog with the same account, may assign an access permission for accessing the homepage interface to a laptop computer which has logged in to microblog and assign an access permission for accessing the private message interface to a cellphone which logs in to microblog. Similarly, when a desktop computer logs in to microblog with the same account, the server may assign an access permission for accessing the game interface to the desktop computer.

Ex. 1004, 7:33-44; *see also* Ex. 1004, Abstract (“determining a first terminal and a second terminal currently *using the same application* with the same account;” (emphasis added)). *Zha* discloses the private message interface data, which corresponds to the claimed “second subset of information.” *Zha* also discloses the home page and game access interface data, which corresponds to the claimed “first subset of information.” The *Zha* functional interface data of the microblog application program is “specific to that application,” as claimed, because the interfaces are associated with the microblog application and are not associated with other applications.

69. Further, *Zha* discloses the application at the server generates the functional interface data, which corresponds to the claim requirement for the information to be “generated by the same application at the server.” After receiving the application requests, “the server assigns the applied access permission for accessing the at least one functional interface to the terminal, in response to the application request.” Ex. 1004, 18:26-28. “For example, in a case the server receives an application request sent by the cellphone for applying for the access permission for accessing the private message interface for the laptop computer, the server may assign the access permission for accessing the private message interface to the laptop computer.” Ex. 1004, 18:32-38. The *Zha* application on the server then generates the functional interface data, such as private messages:

After assigning the access permission for accessing the at least one functional interface to each of the at least two terminals, the server may send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.

Ex. 1004, 18:66-19:13.

70. Thus, *Zha* discloses a microblog application program on a server that generates distinct homepage, private message, and game interface data for display on different terminals, which corresponds to “identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application.”

4. **[1c] “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;”**

71. *Zha* discloses this element, at least in view of Patent Owner’s apparent understanding of the claim language. In the related litigation, Patent Owner’s

preliminary infringement contentions assert infringement of this limitation when a user sets up an online quiz that is displayed (on a display) for other participants who select quiz answers with their mobile devices:

A user, the host, sets up a quiz, which is displayed on a screen on a first device, that is shared with all the players. In many cases the host also participates in the quiz. In particular when a host first sets up a quiz, he/she will often test the quiz by running the game with no other players. In these instances, that user is a first user, and the first device is the device with the screen that displays the questions and answers, and the second device is the user's mobile device. The user is in possession of and directly operates the both the first and second devices.

The server determines whether both of the first user's devices are accessible over the user's network because the user is logged into the Kahoot! server with their Kahoot! hosting account, and is also logged into the application on their mobile device using a code generated by the application.

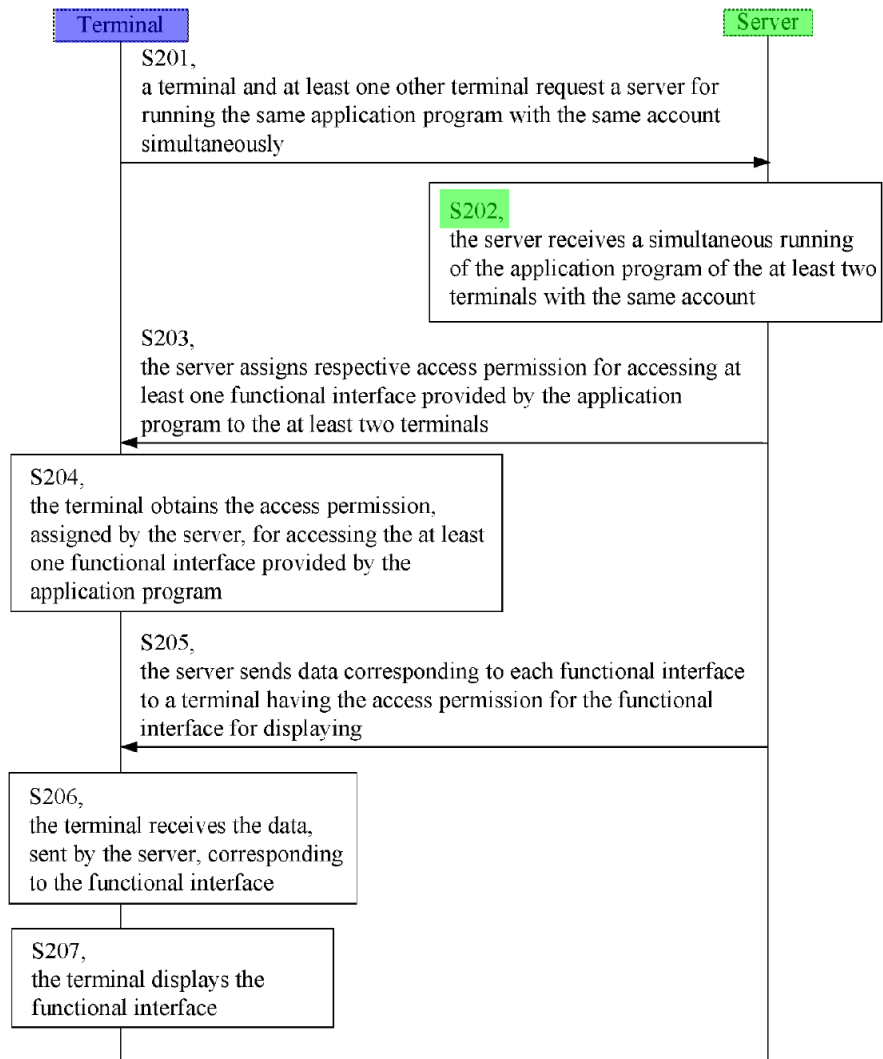
Ex. 1014-5.

72. Thus, I understand Patent Owner asserts a "first user" is a host that sets up an online quiz that is displayed on a screen of a first device that, although it is viewable by other players, is "in possession and directly operated by" the host. I further understand Patent Owner asserts the host is "logged into the application" from the first device (first screen device) "with their Kahoot! hosting account" and that the host is "logged into the application" on their mobile device using something other than the same hosting account, i.e., "a code generated by the application."

73. In *Zha*, the server determines whether a user has used one account to simultaneously log into a program application on a server via two different

terminals, which corresponds to the claimed “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices.” In particular, *Zha* discloses a microblog example, wherein a cellphone corresponds to the claimed “second device” and a desktop computer corresponds to the claimed “first device.” Ex. 1004, 18:66-19:13. *Zha*’s microblog provides a single user with the option to view different interfaces on different devices, each of which is “in possession of and being directly operated by” the user. Ex. 1004, 5:64-65 (“thus a user can directly view a functional interface in a terminal...”).

74. As shown in Figure 2B, “[i]n step 202, a server receives the simultaneous running of the same application program of the at least two terminals with the same account.” Ex. 1004, 5:19-21.



Ex. 1004, Figure 2B (annotated).

75. *Zha* discloses a login process to determine whether a single user has logged into the same microblog application at two terminals. “The terminals each send a login request to the server. The server returns contents in a main interface to each terminal after receiving the login request the user performs a certain operation on the main interface to guide the each terminal to each functional interface after the terminal displays the contents in the main interface. Hence, the server may assign an

access permission for accessing the main interface to multiple terminals simultaneously when the terminals are accessing the application program.” Ex. 1004, 18:41-49. *Zha*’s login process corresponds to the claimed “based on the first user being logged into the application at both the first and second devices.”

76. To the extent Patent Owner argues *Zha* does not expressly disclose the “user being logged into the application at both the first and second devices,” it is my opinion it would be obvious to include this functionality in *Zha*’s system based on the POSITA’s general knowledge. In particular, a POSITA would understand *Zha*’s login process may be used with standard login processes known in 2014. A POSITA would have known that commonly employed login processes include the application prompting the user to enter a username and a password. Further, a POSITA would have known login processes provide access to an application administered by a server through a terminal by which the user has logged in.

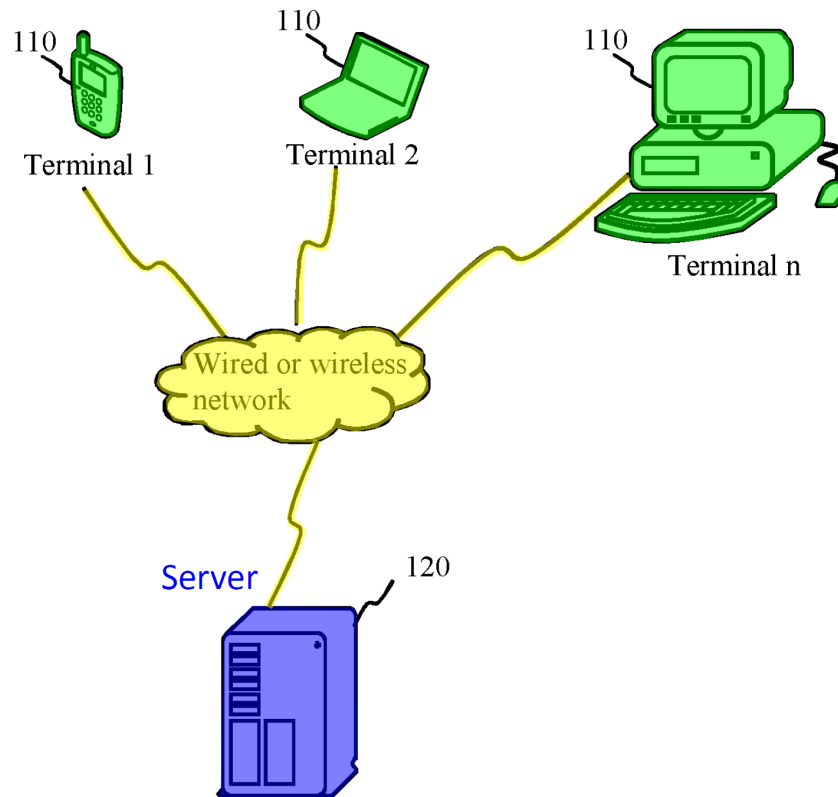
77. Evidence of a POSITA’s general knowledge is provided, for example, in prior art *Tsushima* (Grounds 2, 8) and *Takahashi* (Ground 7). *Tsushima* discloses a user may use account information to login to a service provided by the server through both a terminal 100 (mobile phone) and a personal computer 300. Ex. 1010, [0057]. *Tsushima* discloses login credentials include “USER ID” and “PASSWORD” information. Ex. 1010, [0041] and Figure 7A. As another example, *Takahashi* expressly discloses the terminals are logged in. Ex. 1007, [0109]-[0110]

(“Processing of FIGS. 11 and 12 is performed for every user ID. The flowchart of FIG. 11 represents processing *after a registered user (that is, a user whose user ID is registered) logs in to the game server 20.*” (emphasis added)); Ex. 1007, [0114] (“An access is received to the game server 20 (that is, *a user logs in*).” (emphasis added)). Based on this evidence, it is my opinion a POSITA would have general knowledge that a server could be configured to determine whether a user has successfully logged in at multiple terminals, rendering those terminals accessible to the server, and thereafter provide one or both terminals with access to an application.

78. It is my opinion a POSITA, based on their general knowledge, would have included the “user being logged into the application at both the first and second devices” in *Zha*’s system for a number of reasons. First, a POSITA would understand that enforcing a login process that requires users to provide username and password credentials would enhance security in a microblog application by prohibiting unregistered users from using the application. Second, a POSITA would be motivated to restrict the application to logged in users to reduce the load that the application server would otherwise experience if users who have not logged in (e.g., guest users) could use the service at will. (A POSITA would reasonably expect this would successfully reduce the cost of hosting the application and/or generate revenue if the service is a paid service.) Third, a POSITA would be motivated to restrict the application to logged in users to save bandwidth by not attempting to

transmit data to users who are no longer logged in (e.g., users who logged out). Indeed, a POSITA would reasonably expect *Zha* could successfully be modified in view of *Zha*'s desire to "reduc[e] the network traffic occupied in assigning the data corresponding to different functional interfaces to the terminals" (Ex. 1004, 2:67-3:4), would motivate a POSITA to find other ways to reduce network traffic, such as by restricting access to the application and only sending corresponding information to logged in users. Finally, a POSITA would be motivated to restrict the application to logged in users to ensure users are not spammed or otherwise harassed by messages from non-registered users, as could happen in a messaging system accessible to non-registered/non-logged-in users.

79. *Zha* discloses terminals 110 (a cellphone, a laptop computer, and a desktop computer), wherein a desktop computer corresponds to the claimed "first device" and cellphone corresponds to the "second device," and wherein these terminals 110 communicate with a server 120 over a wired or wireless network, and thus are "accessible over at least one electronic communications network." According to *Zha*, "[a]t least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1." Ex. 1004, 4:22-29.



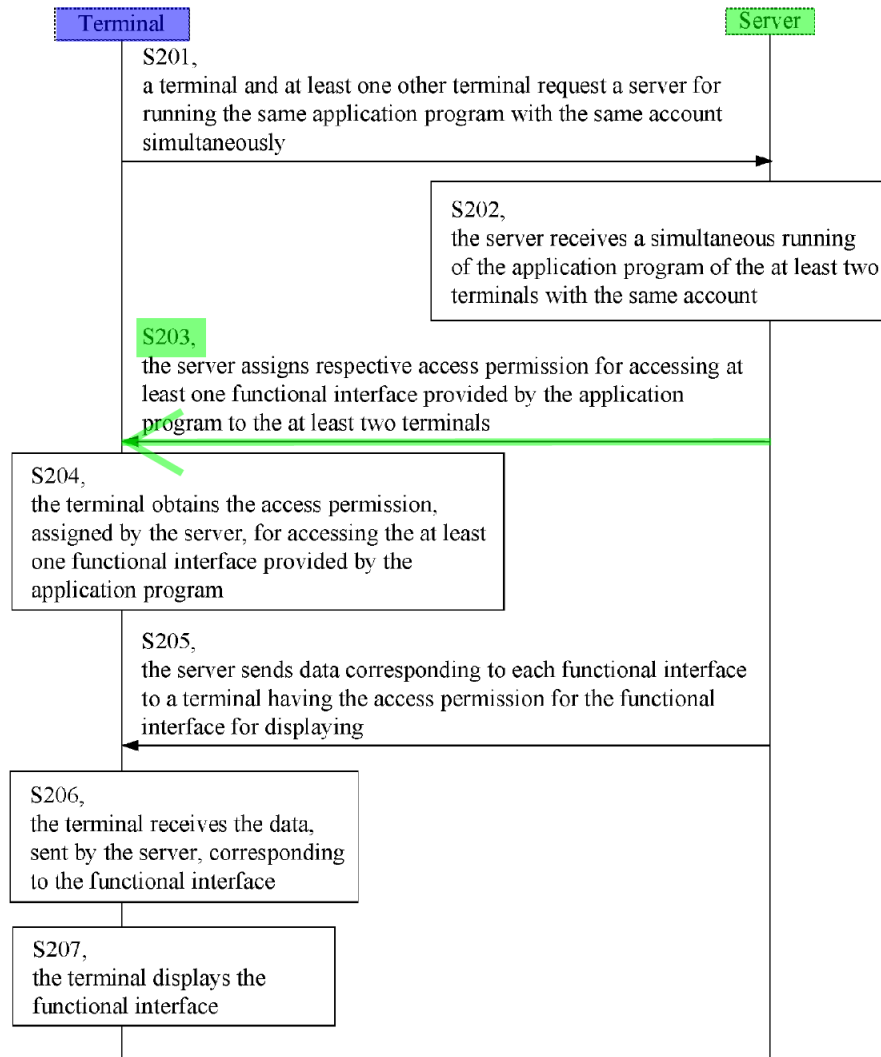
Ex. 1004, Figure 1 (annotated).

80. Thus, the log in determination performed by the *Zha* server (or added based on the POSITA's general knowledge) corresponds to the claimed “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices.”

5. [1d] “if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.”

81. *Zha* discloses this element. Specifically, *Zha* discloses to transmit distinct subsets of information defined by individual functional interfaces to both terminals (“devices”) if and only if both terminals are accessible by the server. In particular, *Zha* discloses a microblog example, wherein the server sends private message interface data corresponding to the claimed “second subset of information” to a cellphone corresponding to the claimed “second device.” The *Zha* server also sends other functional interface data (such as for the homepage and game interfaces) corresponding to the claimed “first subset of information” to a desktop computer corresponding to the claimed “first device.” Ex. 1004, 18:66-19:13.

82. As shown in Figure 2B, “[i]n step 203, the server assigns respective access permission for accessing at least one functional interface provided by the application program to the at least two terminals. A functional interface assigned to a current terminal of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals.” Ex. 1004, 5:22-27.



Ex. 1004, Figure 2B (annotated).

83. *Zha* provides a microblog example, wherein private message interface data corresponds to the claimed “second subset of information” and the other functional interfaces (homepage and game interface data) provided by microblog to the desktop computer corresponds to the claimed “first subset of information.”

After assigning the access permission for accessing the at least one functional interface to each of the at least two terminals, the server may send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for

display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.

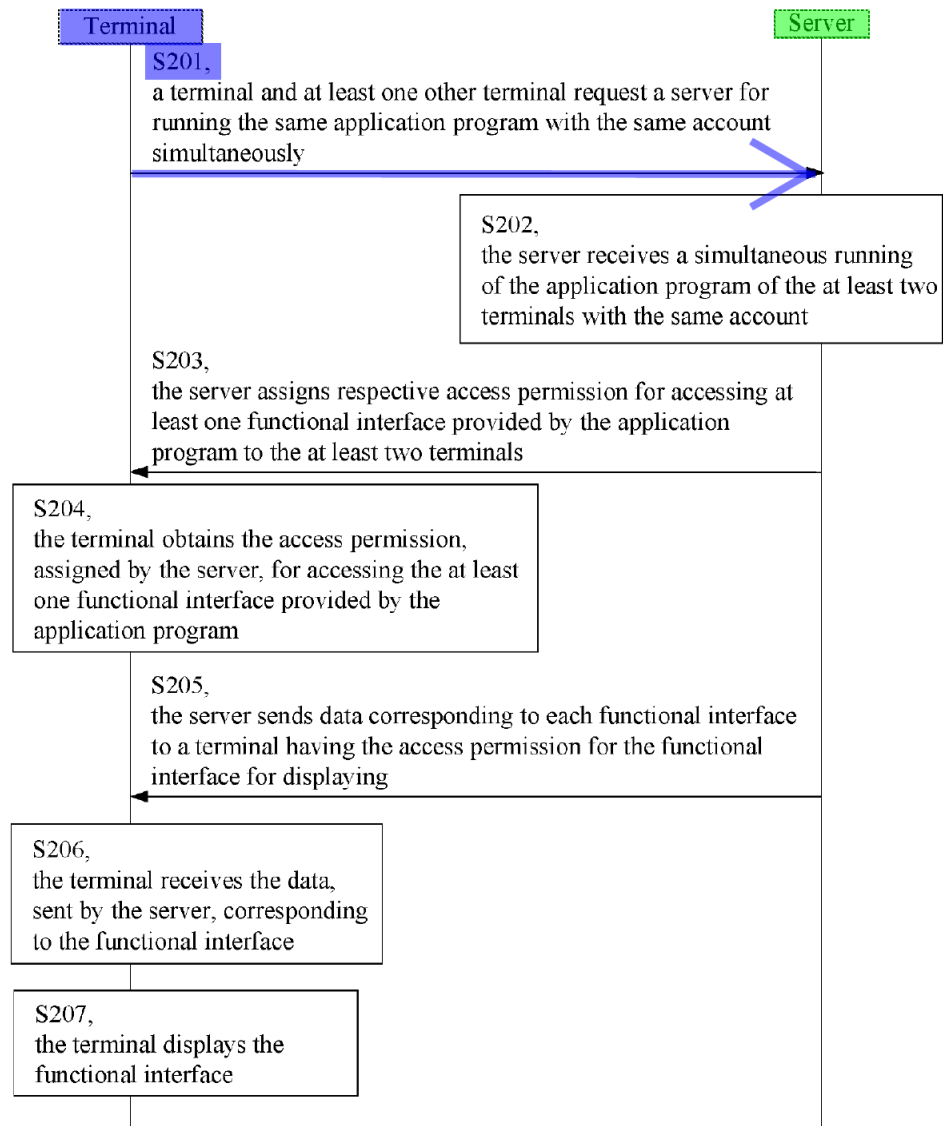
Ex. 1004, 18:66-19:13.

84. *Zha* discloses the server sends the “private message only to the cellphone” terminal, which corresponds to the claimed “transmitting a second subset of the information to the second device from the server.” Further, *Zha* discloses the server sends data for other functional interfaces (not private message data) to the desktop computer, which corresponds to the claimed “transmitting a first subset of the information to the first device from the server.” Ex. 1004, 18:63-19:13. Thus, *Zha* discloses “the second subset of the information includes information not transmitted to the first device” as claimed, where the *Zha* server only sends the private message to the cellphone and not to the desktop computer. Ex. 1004, 19:13-19 (“Since *the private message is sent only to the cellphone having the access permission but is not sent to the laptop computer or the desktop computer*, disturbance brought in to the laptop computer and the desktop computer when the private message arrives at the laptop computer and the desktop computer can be avoided.” (emphasis added)).

85. It is my opinion *Zha* discloses the “if and only if” claim element because the *Zha* server transmits distinct subsets of information defined by individual functional interfaces to the cellphone and desktop terminals when the server determines both cellphone and desktop terminals are accessible by the server, and the *Zha* server does not transmit distinct subsets of information defined by individual functional interfaces to both the cellphone and desktop terminals when the server determines both terminals are not accessible by the server. These cases are discussed in the next two paragraphs.

86. When the *Zha* server determines both cellphone and desktop terminals are accessible by the server, the claimed “if and only if” claim requirement is satisfied because the *Zha* server then transmits distinct subsets of information defined by individual functional interfaces to the terminals. First, the terminals do not send application requests until ***after*** the user has logged in via the terminals (that is having demonstrated accessibility based on being logged into the application). Ex. 1004, 18:39-49. *Zha* does not assign an applied access permission for accessing a functional interface until ***after*** receiving the application request (that is having demonstrated accessibility). Ex. 1004, 18:29-32. *Zha* discloses the access permissions are assigned ***when*** the terminal has logged in (that is having demonstrated accessibility based on being logged into the application). Ex. 1004, 7:35-44. Further, *Zha* does not send data corresponding to a functional interface until

after assigning the access permission for accessing the functional interface (that is having demonstrated accessibility). Ex. 1004, 18:66-19:3. Additionally, a POSITA would understand Figure 2B is a flow chart where the steps after step S201 happen “if and only if” S201 happens, i.e., two terminals used by the same account (i.e., logged in and accessible) request access to the same application on the server:

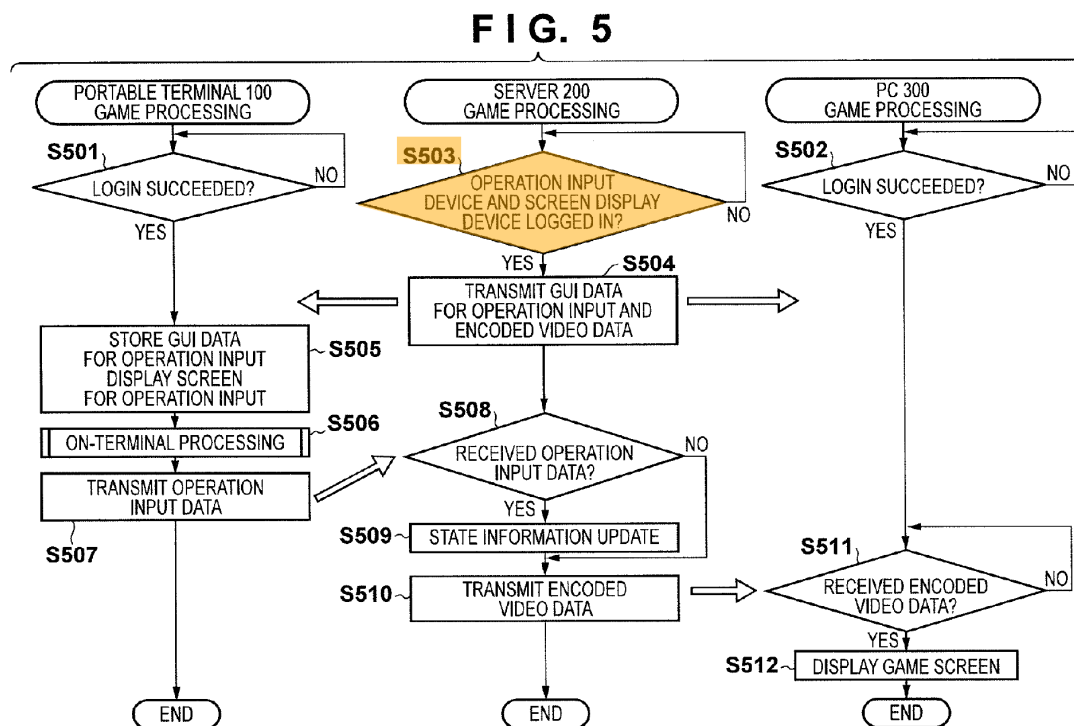


Ex. 1004, Figure 2B (annotated).

87. When the *Zha* server determines either of the terminals are not accessible by the server, the claimed “if and only if” claim requirement is satisfied because the *Zha* server then does not transmit distinct subsets of information defined by individual functional interfaces to both cellphone and desktop terminals, as required by claim element [1d]. Rather, if only one terminal is accessible, “the server may assign an access permission for accessing a functional interface which has not been applied for by any other terminal, to a terminal, in a case the terminal is a default terminal.” Ex. 1004, 8:40-44. Thus, *Zha* discloses to assign functional interfaces to a logged in default terminal, and thus transmit information to only one terminal, until another terminal logs in to the server and applies for an access permission. It is my opinion that *Zha*’s disclosure of sending data to only one terminal when only one terminal is accessible and logged in complies with the “if and only if” claim requirement because, in that case, (1) the condition of two terminals being accessible is not satisfied and (2) the server does not send different subsets of information to two terminals (i.e., does not perform what follows the “then:” in the claim).

88. To the extent Patent Owner argues *Zha* does not disclose the “if and only if” limitation, it is my opinion this limitation would have been obvious in view of the POSITA’s general knowledge. For example, a POSITA would understand that a server could be programmed to determine whether a user has successfully logged

in via both terminals and refrain from transmitting data to either or both terminals until both are logged in. For example, *Tsushima* (Ex. 1010) discloses “[i]n step S503, the server CPU 201 determines *whether or not login to a service succeeded on both* an operation input device (the portable terminal 100) and a screen display device (the PC 300) for a user ID that is a target of service provision.” Ex. 1010, [0059] (emphasis added). As shown in Figure 5, “when [the server] determines [at S503] that login has not succeeded for both devices, it repeats the processing of this step.” Ex. 1010, [0061].



Ex. 1010, Figure 5 (annotated).

89. “If and only if” both devices have successfully logged in (e.g., “YES” at step S503 in Figure 5), *Tsushima* expressly discloses transmitting different subsets

of data to (1) the operation input device (the portable terminal 100) and (2) a screen display device (the PC 300): “In step S504, the server CPU 201, transmits GUI data for game content operation input from the server communication unit 206 to the portable terminal 100 registered as an operation input device . . . Also, in this step, the server CPU 201 initiates provision of encoded video data to the PC 300 registered as the screen display device.” Ex. 1010, [0062]-[0063].

90. *Tsushima* is evidence of a POSITA’s general knowledge at the time of the ’376 patent application, i.e., that a POSITA would know how to implement an “if and only if” function such as *Tsushima*’s step S503. It is my opinion a POSITA would have used this function in *Zha*’s system because (1) *Zha* expressly discloses that its system is directed to a user using “two or more terminals simultaneously” and (2) *Zha* sought to avoid unwanted disturbances on one or more of those devices by sending private messages to a user’s mobile terminal. Ex. 1004 at 4:17-21 (“the implementation environment involved in the embodiments according to the present disclosure [are] that a user runs an application program with the same account through ***two or more terminals simultaneously***”); Ex. 1004 at 19:13-19 (“Since the private message is sent only to the cellphone having the access permission but is not sent to the laptop computer or the desktop computer, disturbance brought in to the laptop computer and the desktop computer when the private message arrives at the laptop computer and the desktop computer can be avoided.”).

91. It is my opinion that *Zha*'s goal of reducing disturbances on the desktop computer would motivate a POSITA to implement the "if and only if" function in *Zha* and I reasonably expect *Zha* could successfully require both the desktop computer and the mobile computer to be logged in and accessible prior to sending any functional interface data because *Zha* does not send data until after a user has logged in.

92. For the foregoing reasons, it is my opinion the subject matter of claim 1 is rendered obvious by *Zha* alone or combined with the POSITA's general knowledge (as demonstrated in *Tsushima*).

C. Claim 2 — "transmitting at least a portion of the first subset of the information to the second device from the server only if both the first and second devices are determined to be accessible by the server."

93. *Zha* discloses this element. This element requires a portion of the first subset of information that was transmitted to the first device in claim 1 to also be transmitted to the second device under the same "if and only if" requirement as claim 1.

94. *Zha* discloses the server transmits "main interface" information to all terminals after receiving a login request from each of the terminals. Ex. 1004, 18:41-49 ("The terminals each send a login request to the server. The server returns contents in a main interface to each terminal after receiving the login request the user performs a certain operation on the main interface to guide the each terminal to each

functional interface after the terminal displays the contents in the main interface. Hence, the server may assign an access permission for accessing the main interface to multiple terminals simultaneously when the terminals are accessing the application program.”). Thereafter, the terminals make access requests and the server transmits a different functional interface to each terminal, as explained for claim 1, above.

95. Thus, *Zha* discloses the same “main interface” information is transmitted to two different devices (terminals) as part of the functional interface data. In other words, because the cellphone and the desktop computer (discussed in claim 1, above) will both have access to the main interface, a POSITA would understand that (1) main interface data is a portion of the “first subset of information” transmitted to the desktop computer (the other portion is the other functional data, e.g., homepage functional interface data) and (2) the same main interface data is also transmitted to the cellphone (i.e., the claimed “second device).”

96. The “first subset of information” in claim 1 that the server transmits to the desktop computer would include the main interface data, homepage interface data, and game interface data. The server also transmits the main interface data to the cellphone (and then transmits the private message interface data to the cellphone). Thus, “at least a portion” of the first subset of information is transmitted to the “second device.”

97. Alternatively, the first subset of information is only the main interface information. The server transmits the main interface to the first device (desktop computer) and the server transmits the main interface to the second device (cellphone). Here, “at least a portion” of the first subset of information is transmitted to the second device because all of the first subset of information satisfies the plain meaning of “at least a portion.”

98. For the “only if both the first and second devices are determined to be accessible by the server” limitation, it is my opinion a POSITA would read this limitation as effectively a subset of the “if and only if” requirement of claim 1 because the condition is essentially the same (accessibility of both devices). Thus, it is my opinion that *Zha* renders this “only if” limitation obvious for the same reasons as discussed above for claim 1, namely, *Zha* discloses the “only if” condition and if not, it would be obvious based on a POSITA’s general knowledge. The fact that main interface data is transmitted for claim 2 does not alter my analysis of claim 1.

D. Claim 3 — “the first subset of the information comprises *non-sensitive information*; and the second subset of the information comprises sensitive information”

99. *Zha* discloses this element. *Zha* provides a microblog example, wherein the private message interface data corresponds to the claimed “sensitive information.”

After assigning the access permission for accessing the at least one functional interface to each of the at least two terminals, the server may

send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.

Ex. 1004, 18:66-19:13. Private message data is inherently more sensitive than information not identified as private such as homepage information.

100. *Zha* discloses the server sends the private message to the cellphone terminal, which corresponds to the claimed “transmitting a second subset of the information to the second device from the server.” Ex. 1004, 18:66-19:13. Further, *Zha* discloses the server sends the homepage (non-sensitive) information to the desktop computer, which corresponds to the claimed “transmitting a first subset of the information to the first device from the server.” Ex. 1004, 18:63-65, 19:4-13.

E. Claim 4 — “wherein the information received at the second device is more sensitive than the information received at the first device”

101. *Zha* discloses this element. *Zha* discloses each terminal only receives the data corresponding to the functional interfaces to which each terminal has access. Ex. 1004, 16:62-17:1. *Zha* provides a microblog example, wherein the server sends private message interface data only to the cellphone, which corresponds to the claimed “second device.”

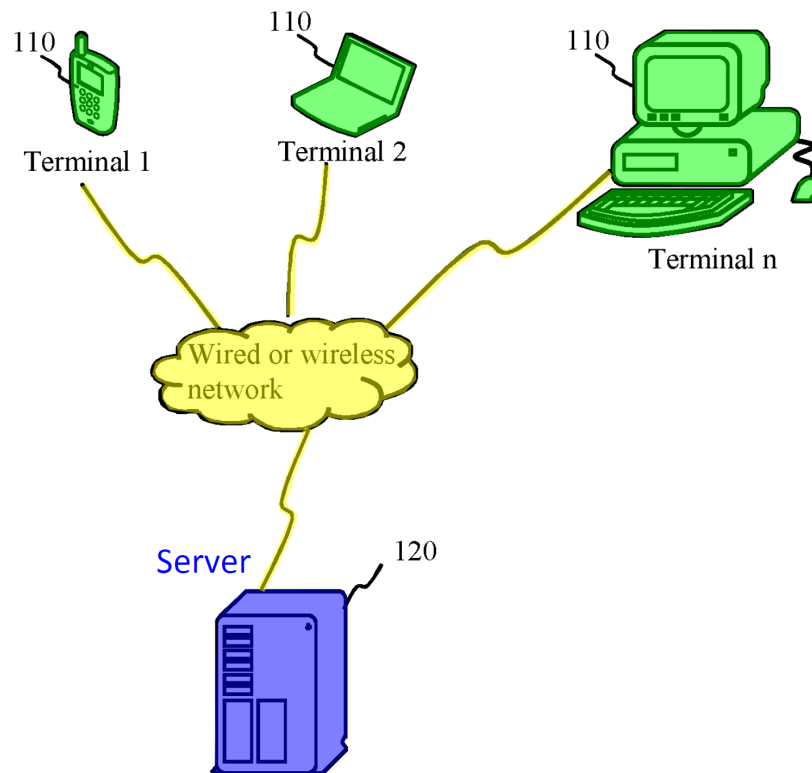
After assigning the access permission for accessing the at least one functional interface to each of the at least two terminals, the server may send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.

Ex. 1004, 18:66-19:13. Information that includes private message data is inherently more sensitive than information not including private message data such as homepage information. The *Zha* server only sends the private message to the cellphone, which corresponds to the claimed “second device,” and not to the desktop computer, which corresponds to the claimed “first device.” The private message corresponds to the claimed “more sensitive information.”

F. Claim 9 — “wherein the transmitting a first subset of the information to the first device from the server and transmitting a second subset of the information to the second device from the server are executed over independent electronic communications networks.”

102. *Zha* discloses this element. In particular, *Zha* discloses, “[t]he at least two terminals 110 may be connected with the server 120 through a *wired network or a wireless network*.” Ex. 1004, 4:27-29 (emphasis added), Figure 1. According to *Zha*, “[a]t least two terminals 110, which run an application program with the

same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1.” Ex. 1004, 4:22-29.



Ex. 1004, Figure 1 (annotated).

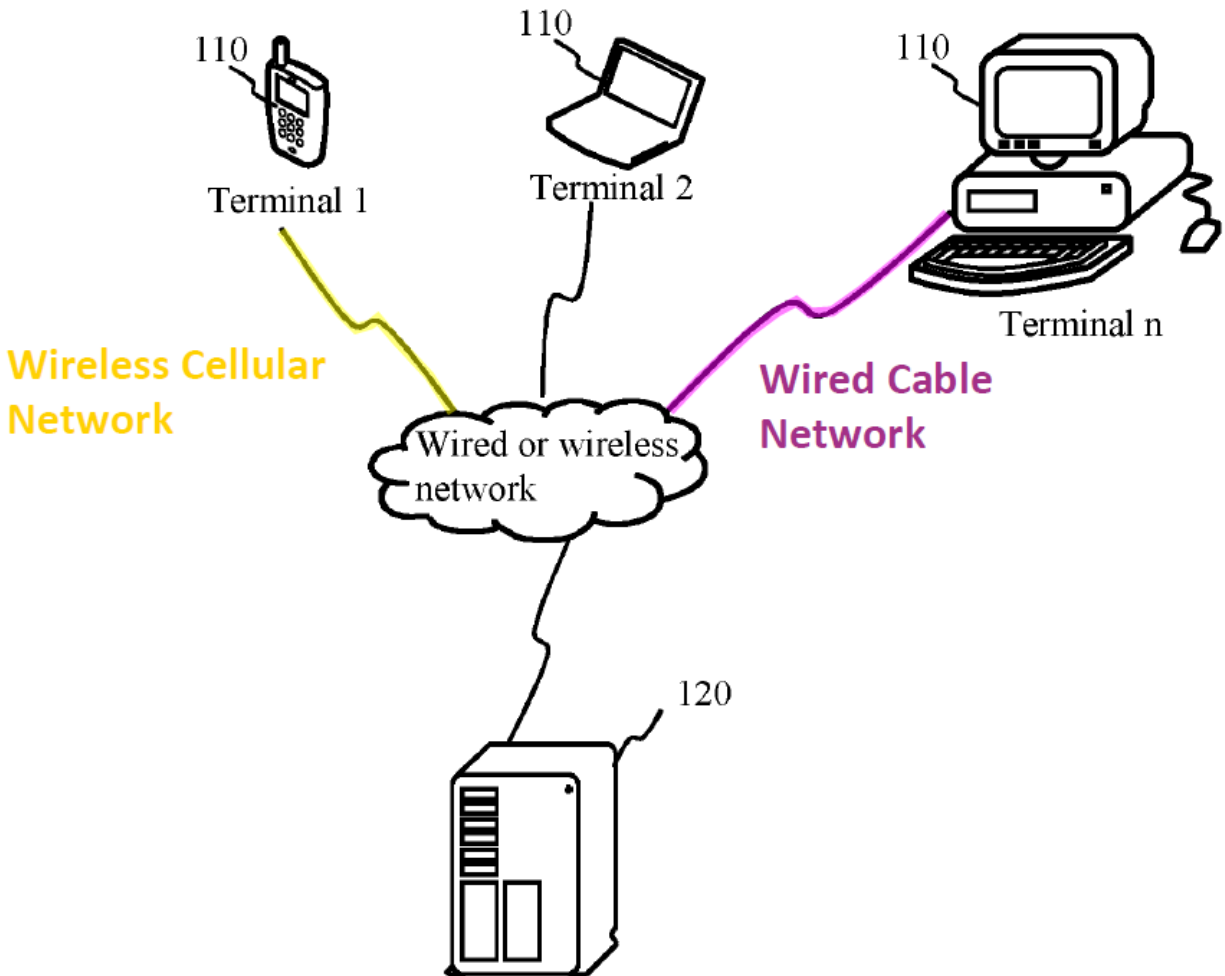
103. “The server 120 may be connected to each of the at least two terminals 110 through a *wired network or a wireless network*, such that the server can receive a use of an application of each of the at least two terminals 110, assign a access permission for accessing at least one functional interface provided by the application program to each of the at least two terminals 110 and send data corresponding to the functional interface to a terminal 110 having the access permission for accessing the functional interface.” Ex. 1004, 4:36-44 and Fig. 1 (emphasis added). “Each of the at least two terminals 110 may be a cellphone, a tablet computer, an e-book reader,

a laptop computer and a desktop computer.” Ex. 1004, 4:25-27. Thus, *Zha* discloses one terminal 110 (cellphone, tablet computer, or laptop computer) may communicate with the server 120 via a wireless network, and another terminal 110 (laptop computer, or desktop computer) may communicate with the server 120 via a wired network. *Zha* discloses the server sends the private message to the cellphone terminal, which corresponds to the claimed “transmitting a second subset of the information to the second device from the server.” Further, *Zha* discloses the server sends other functional interface data provided by microblog to the desktop computer, which corresponds to the claimed “transmitting a first subset of the information to the first device from the server.” It is my opinion a POSITA would understand a wired network is independent from a wireless network. Thus, *Zha* discloses the claim requirement of “transmitting a first subset of the information to the first device from the server and transmitting a second subset of the information to the second device from the server are executed over independent electronic communications networks.”

104. To the extent Patent Owner argues *Zha* does not expressly disclose “independent electronic communications networks,” it is my opinion this limitation would have been obvious in view of the POSITA’s general knowledge. For example, a POSITA would understand *Zha*’s “wired network or a wireless network” may comprise any wired or wireless networks known in 2014. A POSITA would have

understood that “wired networks” refers to any physical medium made up of cables. Copper wire, twisted pair, Ethernet, or fiber optic cables are all options in 2014. A POSITA would understand that “wireless networks” means without wire and made up of electromagnetic waves (EM waves) or infrared waves. Wireless technologies include cellular phones, wireless sensors, TV remotes, satellite disc receivers, and laptops with WLAN cards. A network may connect various kinds of nodes. Servers, networking hardware, personal computers, and other specialized or general-purpose hosts can all be nodes in a computer network. Hardware and software in various combinations are used to connect nodes in networks. A POSITA would have understood that a cellular (wireless) network is at least partially independent of a wired network. The former would, for instance connect to the internet by means of EM waves, a physically separate and therefore independent network from any that would connect to the internet via wires. A POSITA would understand that *Zha*’s disclosure of a terminal being a cellphone would teach that its transmissions would be across a wireless network. *Zha*’s disclosure of a terminal being a desktop computer would disclose a POSITA that transmissions to the desktop terminal would ordinarily use a wired network, distinct and independent of the cellular network employed by a cellphone terminal. As discussed for claim 9 in Ground 7 below (Part XVI(O)(6)), the *Wakeford* prior art (Ex. 1013) is further evidence a POSITA would know that servers in multi-client, client-server applications are capable of

transmitting information “over independent electronic communications networks” using known techniques.



Ex. 1004, Figure 1 (annotated).

105. In view of *Zha*’s disclosure that “[t]he server 120 may be connected to each of the at least two terminals 110 through a *wired network or a wireless network*” (Ex. 1004, 4:36-38 and Fig. 1 (emphasis added)), a POSITA would understand those to be “independent electronic communications networks,” as claimed.

G. Claim 13 — “the a display on the first device is being viewed exclusively by a first user and a display on a second device is also being viewed exclusively by the first user”

106. *Zha* discloses this element. The *Zha* desktop computer corresponds to the claimed “first device” and the *Zha* cellphone corresponds to the claimed “second device.” It is well known in the art that a single user may exclusively view an interface when that user is logged in with a desktop computer or a cellphone. Particularly in the instance of *Zha*’s private messages (which can be viewed on either of *Zha*’s desktop computer or cellphone), a POSITA would understand that the private interface would be viewed exclusively by the single user for whom the private messages are intended.

107. *Zha* also discloses displays on the desktop computer and the cellphone are exclusively viewed by the user. “In practical implementations, in a case *the user* has multiple terminals, *the user* may request the server for running an application program with *one account* in at least two terminals simultaneously. For example, in a case the application program is microblog and *the user* has a cellphone, a laptop computer and a desktop computer, *the user* may login to microblog in the laptop computer, the cellphone and the desktop computer with *one microblog account*.” Ex. 1004, 6:53-61(emphasis added). “[E]ach of the terminal[s] only receives data corresponding to a part of the functional interfaces, for which the terminal has an access permission, rather than receives data corresponding to all the functional

interfaces provided by the application program, and thus *a user can directly view a functional interface* in a terminal having an access permission therefore without frequent switching operations, thus reducing an operational complexity for the user.” Ex. 1004, 5:59-67(emphasis added). Thus, *Zha* expressly discloses “the a display on the first device is being viewed exclusively by a first user and a display on a second device is also being viewed exclusively by the first user.”

H. Claim 14 — “neither the first subset of information nor the second subset comprise a two factor authentication code.”

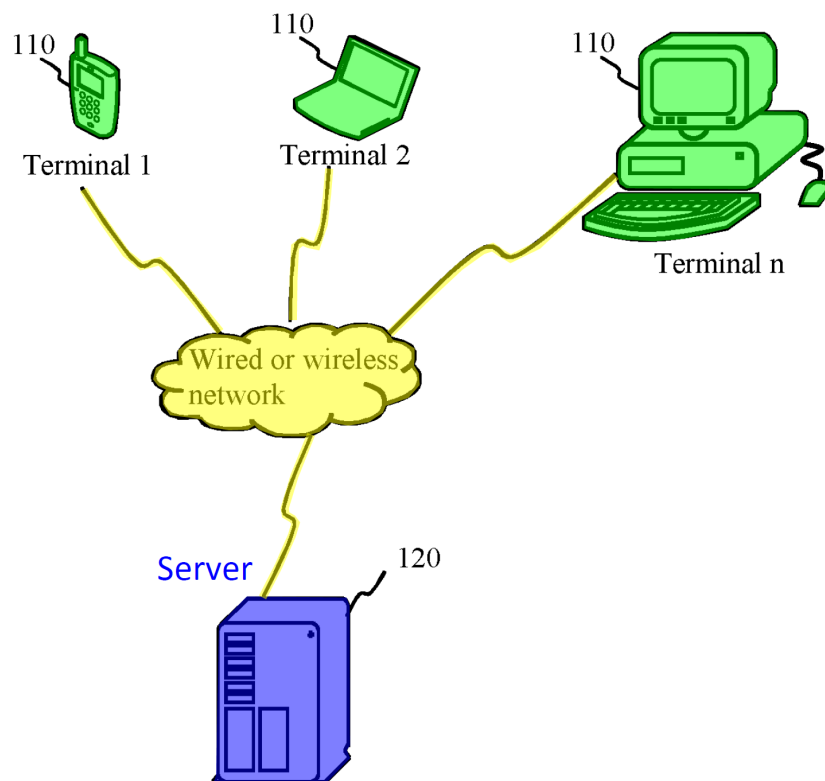
108. *Zha* discloses this element. *Zha* discloses “the method of claim 1,” as discussed above. Additionally, *Zha* makes no reference to employing two factor authentication codes.

I. Claim 16 — “[16a] configuring the server for managing an online game, and [16b] wherein the server is configured to communicate with a plurality of devices including a first electronic device and a second electronic device, [16c] wherein the first electronic device is primarily used to play the game, and [16d] wherein in the game server communicates sensitive information to the second electronic device so that sensitive information can be presented to a user”

109. *Zha* discloses this claim.

110. *Zha* discloses [16a] “configuring the server for managing an online game.” In particular, *Zha* discloses, “microblog may provide a homepage functional interface, a private message functional interface and a *game functional interface*.” Ex. 1004, 7:32-44 and Fig. 1 (emphasis added). Thus, a POSITA would understand

Zha discloses an “online game,” as claimed, because “[t]he at least two terminals 110 may be connected with the server 120 through a wired network or a wireless network.” Ex. 1004, 4:27-29 (emphasis added); Ex. 1004, Figure 1. The *Zha* server communicates with “a first electronic device and a second electronic device,” as claimed, where “[a]t least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1.” Ex. 1004, 4:22-29.



Ex. 1004, Figure 1 (annotated).

111. “The server 120 may be connected to each of the at least two terminals 110 through a **wired network or a wireless network**, such that the server can receive a use of an application of each of the at least two terminals 110, assign a access

permission for accessing at least one functional interface provided by the application program to each of the at least two terminals 110 and send data corresponding to the functional interface to a terminal 110 having the access permission for accessing the functional interface.” Ex. 1004, 4:36-44 (emphasis added).

112. *Zha* discloses [16b] “wherein the server is configured to communicate with a plurality of devices including a first electronic device and a second electronic device.” As noted above, *Zha* discloses the desktop computer is the “first electronic device” and the cellphone is the “second electronic device.”

113. *Zha* discloses [16c] “wherein the first electronic device is primarily used to play the game.” *Zha* discloses the desktop computer is the “first electronic device [and] is primarily used to play the game” where “the server may assign an access permission for accessing the game interface to the desktop computer.” Ex. 1004, 7:42-44. In this embodiment, the desktop computer is not assigned any other functional interfaces, and thus is primarily used to play the game.

114. *Zha* discloses [16d] “wherein in the game server communicates sensitive information to the second electronic device so that sensitive information can be presented to a user.” Further, *Zha* discloses “the game server communicates sensitive information to the second electronic device so that sensitive information can be presented to a user,” as claimed, where the server only sends private message data to the cellphone and not the desktop computer.

After assigning the access permission for accessing the at least one functional interface to each of the at least two terminals, the server may send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.

Ex. 1004, 18:66-19:13.

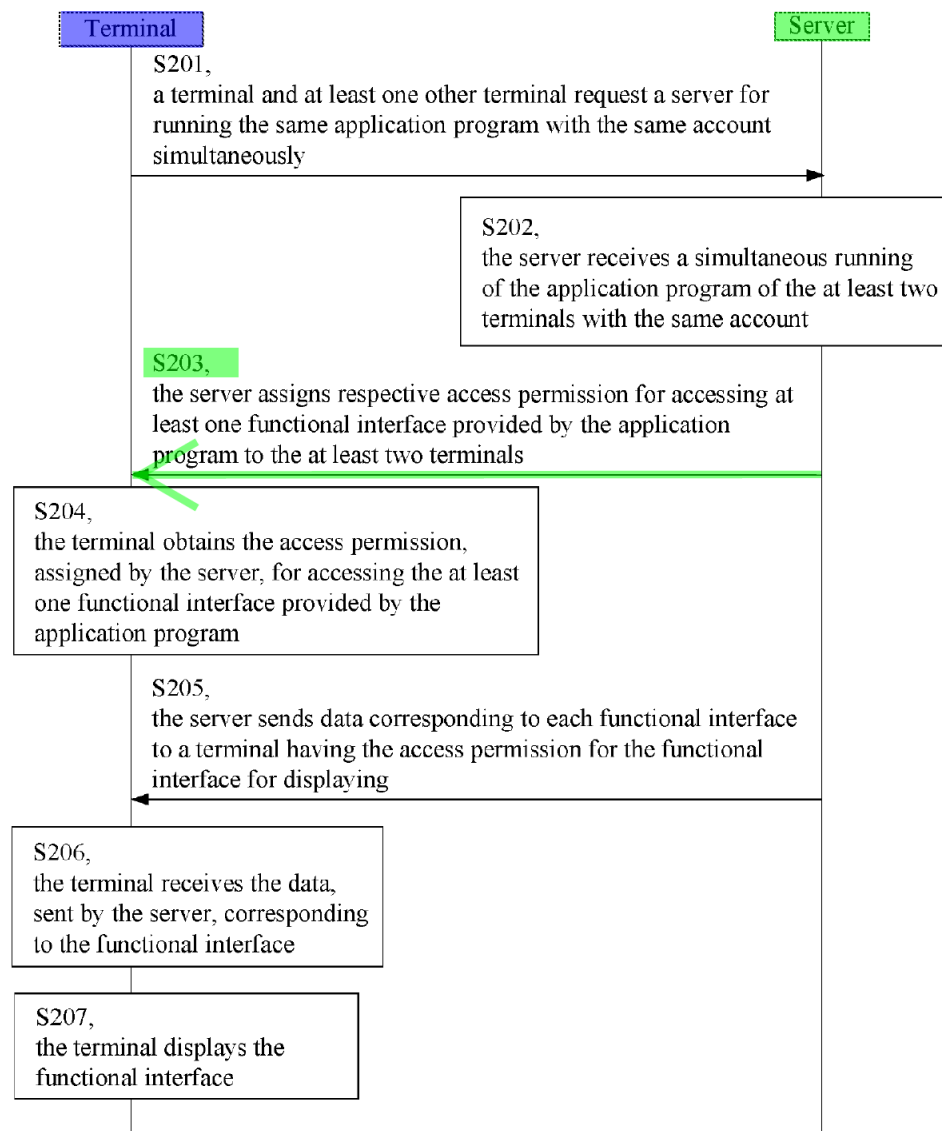
115. The *Zha* server only sends the private message to the cellphone, which corresponds to the claimed “second device,” and not to the desktop computer, which corresponds to the claimed “first device.” Private message data is inherently sensitive information and a POSITA would understand message data is transmitted to be presented to the user (i.e., the recipient of the message). A POSITA would know that private messages can be provided in games, and that *Zha*’s server (e.g., game server) could therefore send private message information.

J. Claim 23 — “electronically storing at the server a parameter indicating whether subsets of the information are to be divided between two or more devices.”

116. *Zha* discloses this claim. A *Zha* access permission corresponds to the claimed “parameter.” *Zha* discloses “data corresponding to each of the functional interfaces is only assigned to a terminal having an access permission for accessing

the functional interface, instead of assigning the data corresponding to each of the functional interfaces to all the terminals running the application program.” Ex. 1004, 5:48-53.

117. In *Zha*, the server assigns access permissions at step S203:



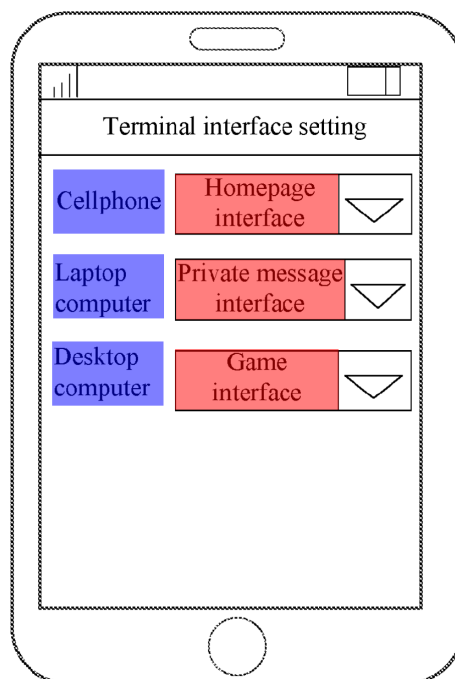
Ex. 1004, Figure 2B (annotated).

118. As shown in Figure 2B, “[i]n step 203, the server assigns respective access permission for accessing at least one functional interface provided by the application program to the at least two terminals. A functional interface assigned to a current terminal of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals.” Ex. 1004,5:22-27. Because *Zha* discloses the access permissions are distinct for each terminal, the access permissions correspond to a “parameter indicating whether subsets of information are to be divided between two or more devices,” as claimed.

K. Claim 24 — “the first and second subsets of information are application-specific, and wherein the first and second subsets of information derive from functions within a specific application.”

119. *Zha* discloses this claim. *Zha* discloses homepage, private messaging, and game functional interface data, which can each be “subsets of information [that] are application specific” and “derive from functions within a specific application,” as claimed. In particular, *Zha* discloses a microblog example, wherein private message interface data corresponds to the claimed “second subset of information” and other functional interface data (homepage and game interfaces) corresponds to the claimed “first subset of information.” Ex. 1004, 18:66-19:13. The microblog application program described by *Zha* corresponds to the claimed “specific application.”

120. *Zha* discloses “distinct” functional interface data for different terminals. Ex. 1004, 5:22-27. “In practical implementations, in a case the user has multiple terminals, the user may request the server for running an application program with same account in at least two terminals simultaneously. For example, in a case the application program is microblog, and the user has a cellphone, a laptop computer and a desktop computer, the user may log in to microblog in the laptop computer, cellphone and desktop computer with one microblog account.” Ex. 1004, 17:44-54. The user may “send application requests for three terminals, i.e., the cellphone, the laptop computer and the desktop computer, as illustrated in FIG. 5B.” Ex. 1004, 18:14-16.



Ex. 1004, Figure 5B (annotated).

121. The microblog application program described by *Zha* corresponds to the claimed “specific application.” Ex. 1004, 7:33-44, 17:48-53, 18:11-17, 19:3-13.

For example, microblog may provide a homepage functional interface, a private message functional interface and a game functional interface. The server, on receiving that the cellphone logs in to microblog with the same account, may assign an access permission for accessing the homepage interface to a laptop computer which has logged in to microblog and assign an access permission for accessing the private message interface to a cellphone which logs in to microblog. Similarly, when a desktop computer logs in to microblog with the same account, the server may assign an access permission for accessing the game interface to the desktop computer.

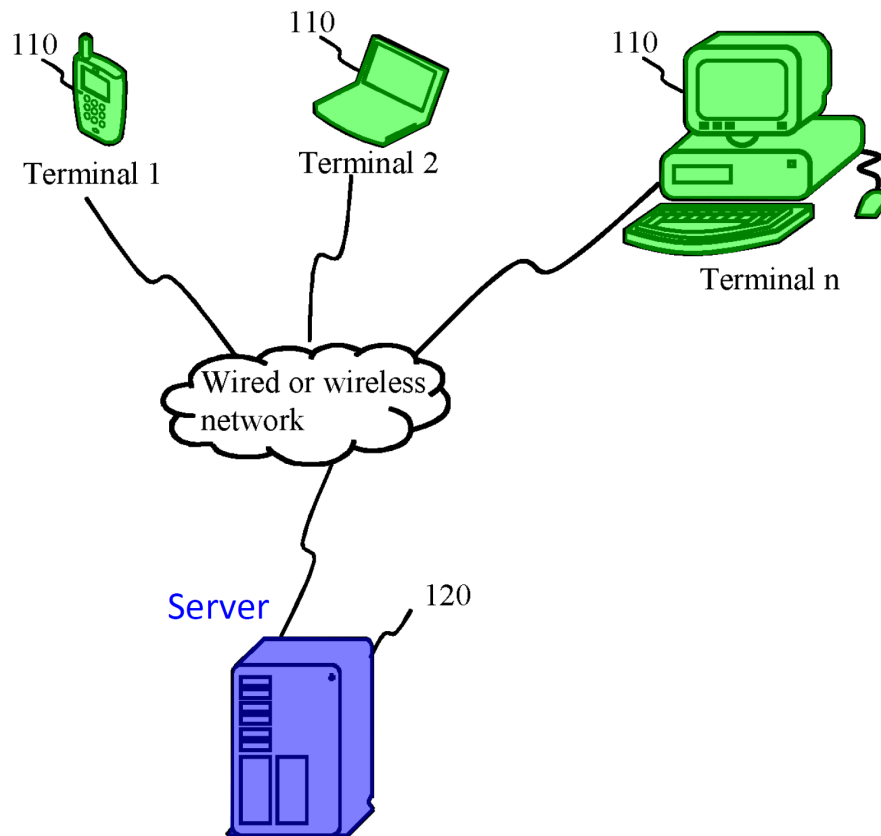
Ex. 1004, 7:33-44. *Zha* discloses the private message interface data, which correspond to the claimed “second subset of information.” *Zha* also discloses the home page and game interface data, which correspond to the claimed “first subset of information.” The *Zha* functional interface data of the microblog application program is “specific to that application,” as claimed, because that data is part of the microblog application. The *Zha* functional interface data is “derive[d] from functions within” the microblog application, for example, by a private messaging function, a homepage function, and a gaming function, respectively.

L. Independent Claim 25

1. [25Preamble] “A system for transmitting information to multiple electronic devices, the system comprising:”

122. To the extent the preamble is limiting, *Zha* discloses this element. *Zha* discloses a server for sending data to a first terminal and a second terminal. Ex. 1004,

22:16-33. According to *Zha*, “[a]t least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1.” Ex. 1004, 4:22-24.

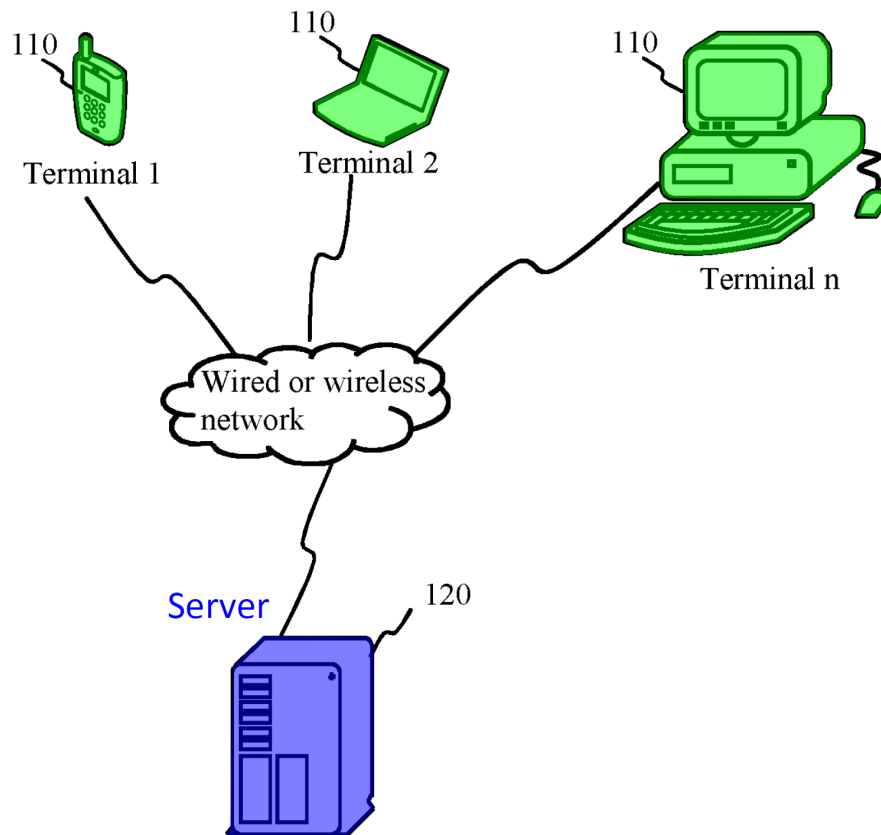


Ex. 1004, Figure 1 (annotated).

123. The server corresponds to the claimed “system,” the first and second terminals correspond to the claimed “multiple electronic devices” and sending data corresponds to the claimed “transmitting information.”

2. [25a] “an electronic data store configured for electronically storing a set of information at a server,”

124. *Zha* discloses this element. *Zha* discloses “the server may be in the form of software, hardware or a combination of both” (Ex. 1004, 22:45-47), which corresponds to the claimed “electronic data store.” *Zha* discloses the server is configured to electronically store functional interface data that corresponds to the claimed “electronically storing a set of information at the server.” Ex. 1004, 4:36-44, 29:11-17. According to *Zha*, “[a]t least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1.” Ex. 1004, 4:22-24.



Ex. 1004, Figure 1 (annotated).

125. *Zha* also discloses a “server corresponding to an application program for running the application program with an account in a terminal.” Ex. 1004, 17:44-46. It is my opinion that a POSITA would understand the *Zha* server is configured to electronically store access permissions and functional interface data that corresponds to the claimed “electronically storing a set of information at the server.”

3. [25b] “wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;”

126. To the extent this element is understandable, *Zha* discloses this element. Notably, “the first and second subsets of information” does not appear before this limitation in the claim. Thus, there appears to be an antecedent basis problem. These subsets appear to be recited later in the claim, and I assume for purposes of this report that this element is referring to “a first subset of the information” and “a second subset of the information” that appear later in the claim.

127. This element is also found in claim 1 and a similar limitation is found in claim 24. *Zha* discloses this element as explained for claim elements [1b] and [24a].

4. [25c] “a processor device programmed for:”

128. *Zha* discloses this element. *Zha* discloses a processor device that is programmed where “the server may be in the form of software, hardware or a combination of both.” Ex. 1004, 22:45-47.

129. “A user may request a server corresponding to an application program for running the application program with an account in a terminal.” Ex. 1004, 17:44-46. “For example, the application program is microblog.” Ex. 1004, 1:25. *Zha*’s server is a combination of hardware and software for running an application program, such as microblog, which corresponds to the claimed “processor device

programed for.” A POSITA would understand a server necessarily includes a processor that is programmed to perform the functions of the server. Evidence of this general knowledge is throughout the other prior art references cited in this declaration including, for example, *Takahashi*, which discloses a processor (CPU) that is part of game server. Ex. 1007, [0062].

5. [25d] “identifying a first subset of the information and identifying a second subset of the information;”

130. This element is also found in claim 1. *Zha* discloses this element as explained for claim element [1b].

6. [25e] “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;”

131. This element is also found in claim 1. *Zha* discloses this element as explained for claim element [1c].

7. [25f] “if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.”

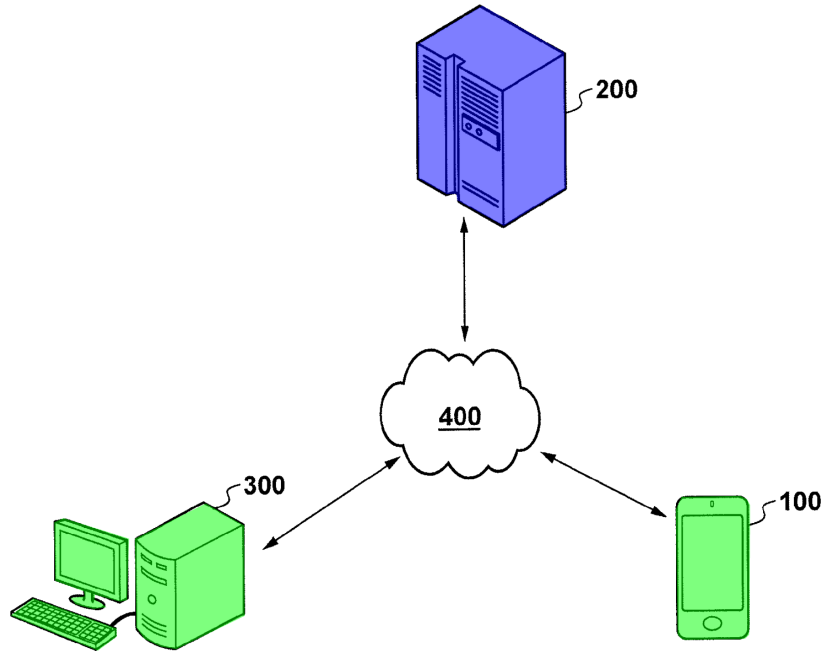
132. This element is also found in claim 1. *Zha* discloses this element as explained for claim element [1d].

XI. GROUND 2: CLAIMS 1-4, 9, 13-14, 16, AND 23-25 ARE OBVIOUS OVER ZHA, THE POSITA'S GENERAL KNOWLEDGE, AND TSUSHIMA

A. Overview of *Tsushima*

133. Counsel informs me U.S. Patent Application Publication No. 2014/0006485 (“*Tsushima*”) (Ex. 1010) is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on May 22, 2013, prior to the ’376 patent’s filing date on July 28, 2014. Ex. 1010, [22].

134. *Tsushima* is directed to a “content providing system and control method thereof.” Ex. 1010, [54]. *Tsushima* discloses a preferred embodiment in Figure 1 that is “a content providing system including a server 200 which distributes game content, a portable terminal 100 functioning as a first device that receives an operation input, and a PC 300 functioning as a second device that displays a screen distributed from the server.” Ex. 1010, [0022]. *Tsushima* discloses “a server 200 and the portable terminal 100, and the server 200 and the PC 300 are connected via a network 400 such as the Internet.” Ex. 1010, [0025].



Ex. 1010, Figure 1 (annotated).

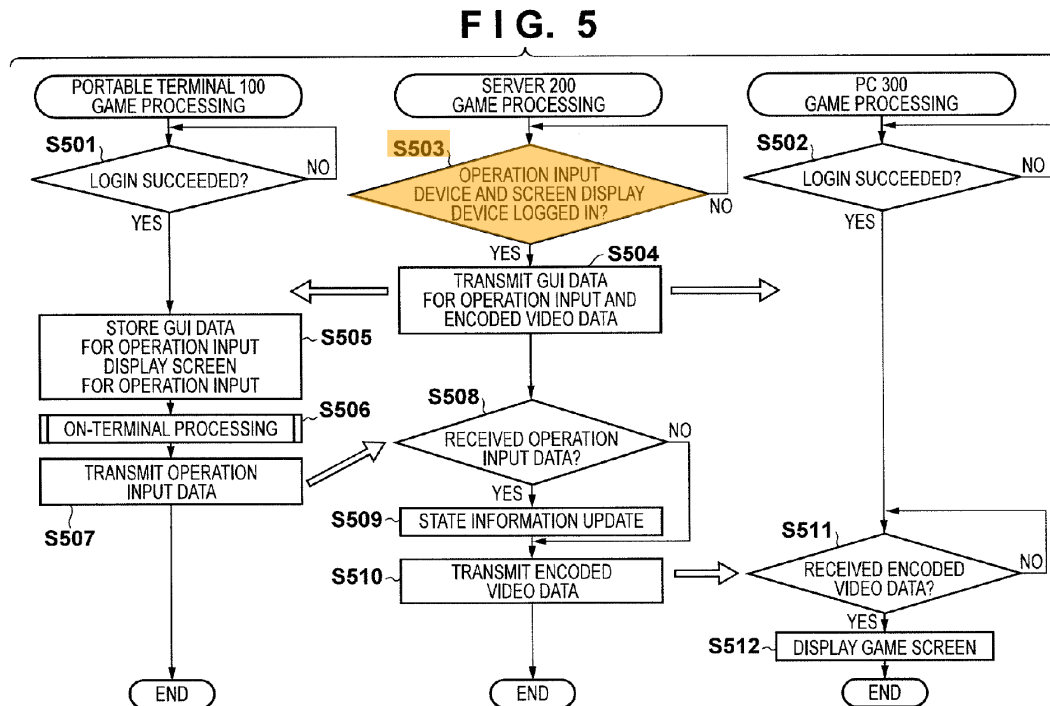
135. *Tsushima* discloses:

[I]n the game system of the present embodiment, game content features are provided to the portable terminal 100 and to the PC 300 having been separated based on whether or not a time lag is acceptable. Specifically, a feature corresponding to display of a main game screen, for which responsiveness to operation input is not required, is provided to the PC 300. Also, an operation input detection function or a function corresponding to display of a secondary game screen, for which responsiveness to operation input is required, is provided to the portable terminal 100.

Ex. 1010, [0027].

136. The server 200 distributes game content, the portable terminal 100 functions as a first device that receives an operation input, and the PC 300 functions as a second device that displays a game screen distributed from the server. Ex. 1010, [0022]. A user may use account information to login to a service provided by the

server through both the terminal 100 and the PC 300. Ex. 1010, [0057]. As illustrated in Figure 5, “[i]n step S503, the server CPU 201 determines whether or not login to a service succeeded on both an operation input device (the portable terminal 100) and a screen display device (the PC 300) for a user ID that is a target of service provision.” Ex. 1010, [0059].



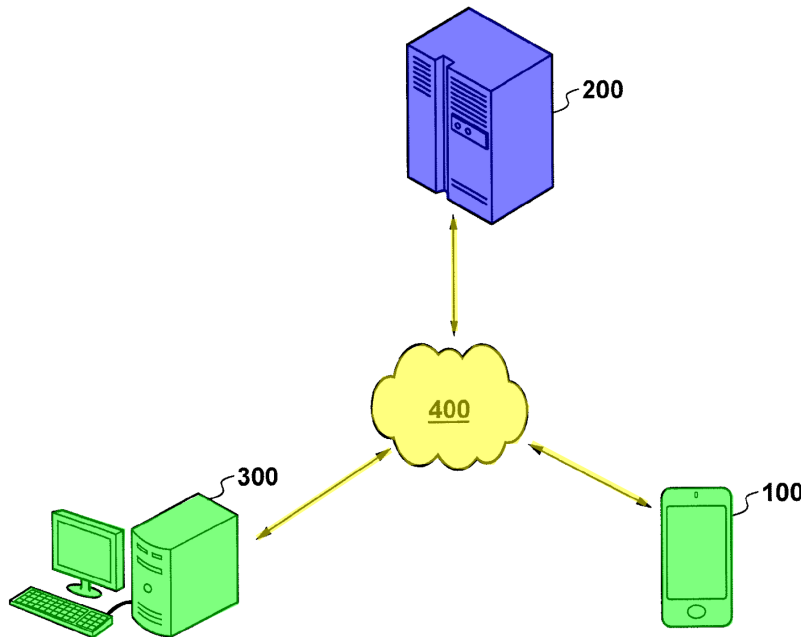
Ex. 1010, Figure 5 (annotated).

B. Independent Claim 1

1. [1Preamble] “A method for transmitting information to multiple electronic devices, the method comprising:”

137. To the extent the preamble is limiting, *Zha* discloses this element as noted in Ground 1.

138. *Tsushima* similarly discloses this element. *Tsushima* discloses “a server 200 and the portable terminal 100, and the server 200 and the PC 300 are connected via a network 400 such as the Internet.” Ex. 1010, [0025].



Ex. 1010, Figure 1 (annotated).

139. The server 200 distributes game content, the portable terminal 100 functions as a first device that receives an operation input, and the PC 300 functions as a second device that displays a screen distributed from the server. Ex. 1010, [0022].

2. [1a] “electronically storing a set of information at a server,”

140. *Zha* discloses this element as noted in Ground 1.

141. *Tsushima* similarly discloses this element. *Tsushima* discloses the server 200 has server RAM 203 and ROM 202 to store user account information, game content, and game screens. Ex. 1010, [0040]-[0044].

3. [1b] “identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;”

142. *Zha* discloses this element as noted in Ground 1.

143. *Tsushima* similarly discloses this element. *Tsushima* discloses the server 200 distributes game content, the portable terminal 100 functions as a first device that receives an operation input, and the PC 300 functions as a second device that displays a game screen distributed from the server. Ex. 1010, [0022]. “In step S504, the server CPU 201, transmits GUI data for game content operation input from the server communication unit 206 to the portable terminal 100 registered as an operation input device. . . . Also, in this step, the server CPU 201 initiates provision of encoded video data to the PC 300 registered as the screen display device.” Ex. 1010, [0062]-[0063]. The GUI data for game content operation input received by the portable terminal 100 corresponds to the claimed “first subset of the information” and the encoded video data for the game screen corresponds to the claimed “second subset of the information.” These subsets of information are generated by the same application at *Tsushima*’s server and are specific to that

application, i.e., the information is generated by “a program for a web browser application” stored on server 200. Ex. 1010, [0051].

4. **[1c] “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;”**

144. *Zha* discloses this element as noted in Ground 1.

145. *Tsushima* similarly discloses this element. *Tsushima* discloses a user may use account information to login to a service provided by the server through both the terminal 100 and the PC 300. Ex. 1010, [0057]. *Tsushima* discloses login credentials include “USER ID” and “PASSWORD” information. Ex. 1010, [0041] and Figure 7A.

5. **[1d] “if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.”**

146. *Zha* discloses this element as noted in Ground 1.

147. Further, *Tsushima* discloses transmitting subsets of data to terminals only if the server has determined the user has logged in via both terminals. It would have been obvious to a POSITA to modify *Zha* to transmit data to the first and

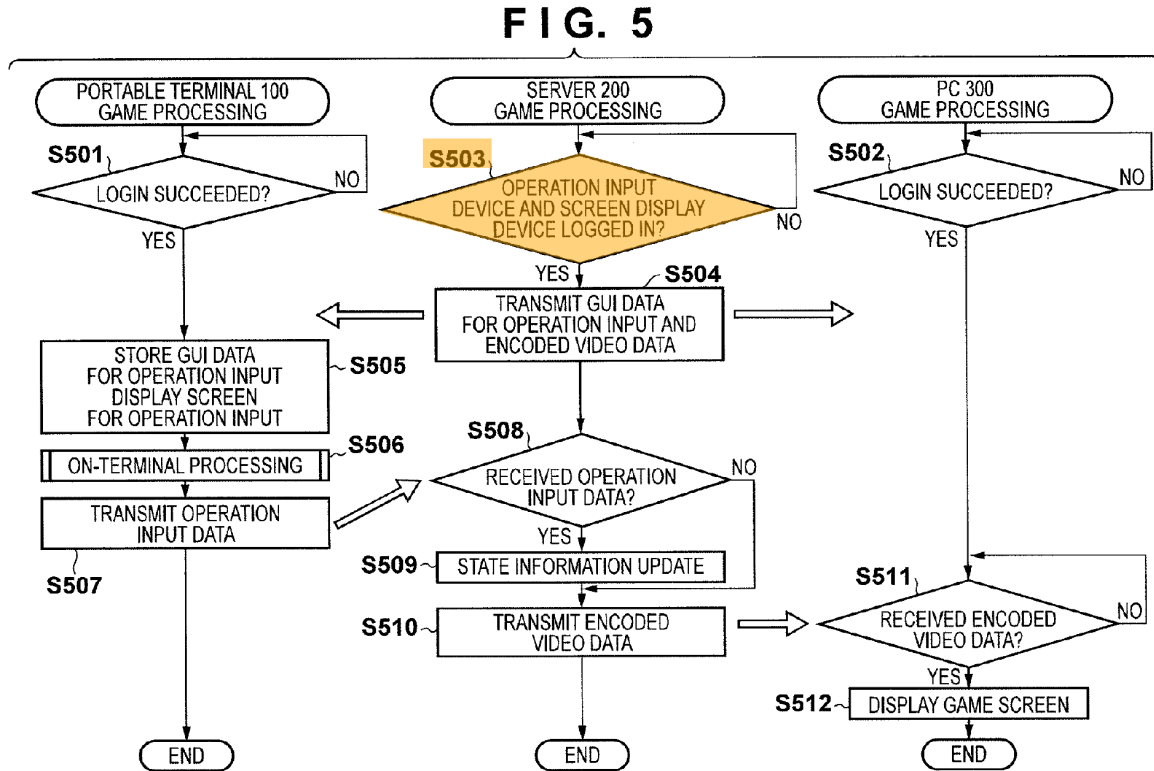
second terminals if and only if the server has determined the user has logged in to both terminals, as disclosed by *Tsushima*.

148. *Zha* and *Tsushima* address very similar technologies. *Zha* discloses a private message interface of a microblog application program for display on a cellphone and a game interface for display on a desktop computer (Ex. 1004, 7:32-44) and *Tsushima* similarly displays game screens on the PC 300 and a communication interface on the portable terminal 100. Ex. 1010, [0037], [0054]. A POSITA understands the *Zha* terminals (cellphone, laptop computer, and desktop computer) 110 are similar in functionality to the *Tsushima* terminals (portable game device, mobile phone, PDA, tablet, personal computer, set top box). Likewise, a POSITA understands the *Zha* server 120 is similar in functionality to the *Tsushima* server 200. *Zha* discloses communication over a “wired or wireless network,” and *Tsushima* discloses “a network 400 such as the Internet.” Ex. 1010, [0025].

149. A POSITA at the time the ’376 patent was filed (2014) would have been motivated to modify the *Zha* first and second terminals to include the *Tsushima* operation input device (the portable terminal 100) and a screen display device (the PC 300) with a reasonable expectation of success. *Tsushima* provides for a game, which is executed on a PC, and another registered portable terminal, such as a mobile phone, is used as an operation interface (Ex. 1010, [0010]) by providing “different features of game content respectively to the portable terminal 100 and to the PC

300.” Ex. 1010, [0025]. *Tsushima* recognized the game interfaces were limited by the communication formats between the devices and solved the problem by providing “a wide range of operation input to a user.” Ex. 1010, [0010]-[0011]. A POSITA would reasonably expect the *Zha* first and second terminals could be successfully modified to include the *Tsushima* operation input device (the portable terminal 100) and a screen display device (the PC 300) because the *Zha* terminals are the same.

150. *Tsushima* discloses the “if and only if” element of claim 1. For example, a POSITA would understand based on *Tsushima* that a server could be programmed to determine whether a user has successfully logged in via both terminals and refrain from transmitting data to either or both terminals until both are logged in: “In step S503, the server CPU 201 determines ***whether or not login to a service succeeded on both*** an operation input device (the portable terminal 100) and a screen display device (the PC 300) for a user ID that is a target of service provision.” Ex. 1010, [0059] (emphasis added). As shown in Figure 5, “when [the server] determines [at S503] that login has not succeeded for both devices, it repeats the processing of this step.” Ex. 1010, [0061].



Ex. 1010, Figure 5 (annotated).

151. “If and only if” both devices have successfully logged in (e.g., “YES” at step S503 in Figure 5), *Tsushima* expressly discloses transmitting different subsets of data in step S504 to (1) the operation input device (the portable terminal 100) and (2) a screen display device (the PC 300): “In step S504, the server CPU 201, transmits GUI data for game content operation input from the server communication unit 206 to the portable terminal 100 registered as an operation input device. . . . Also, in this step, the server CPU 201 initiates provision of encoded video data to the PC 300 registered as the screen display device.” Ex. 1010, [0062]-[0063].

152. It is my opinion a POSITA would have used *Tsushima*’s “if and only if” function in *Zha*’s system because (1) *Zha* expressly discloses that its system is

directed to a user using “two or more terminals simultaneously” and (2) *Zha* sought to avoid unwanted disturbances on one or more of those devices by sending private messages to a user’s mobile terminal. Ex. 1004 at 4:17-21 (“the implementation environment involved in the embodiments according to the present disclosure [are] that a user runs an application program with the same account through ***two or more terminals simultaneously***”); Ex. 1004 at 19:13-19 (“Since the private message is sent only to the cellphone having the access permission but is not sent to the laptop computer or the desktop computer, disturbance brought in to the laptop computer and the desktop computer when the private message arrives at the laptop computer and the desktop computer can be avoided.”). Thus a POSITA would successfully implement *Tsushima*’s known technique (“if and only if” step S503) in a known device (*Zha*’s system) that is ready for improvement (e.g., aimed to avoid unwanted disturbances on one terminal) to yield predictable results (i.e., not sending data until both devices are logged in).

153. It is my opinion that *Zha*’s goal of reducing disturbances on the desktop computer would motivate a POSITA to implement the “if and only if” function in *Zha* and I reasonably expect *Zha* could successfully require both the desktop computer and the mobile computer to be logged in prior to sending any functional interface data because *Zha* does not send data until after a user has logged in.

154. Thus, it is my opinion the subject matter of claim 1 is rendered obvious by *Zha*, the POSITA's general knowledge, and *Tsushima*.

C. Claim 2-4, 9, 13-14, 16, and 23-25

155. As noted in Ground 1, *Zha* discloses the elements of claims 2-4, 9, 13-14, 16, and 23-25. To the extent Patent Owner argues *Zha* alone fails to teach or suggest the "if and only if" limitation, it is my opinion these claims are rendered obvious by the combination of *Zha*, the POSITA's general knowledge, and *Tsushima* when *Tsushima*'s "if and only if" functionality is added to *Zha*'s system.

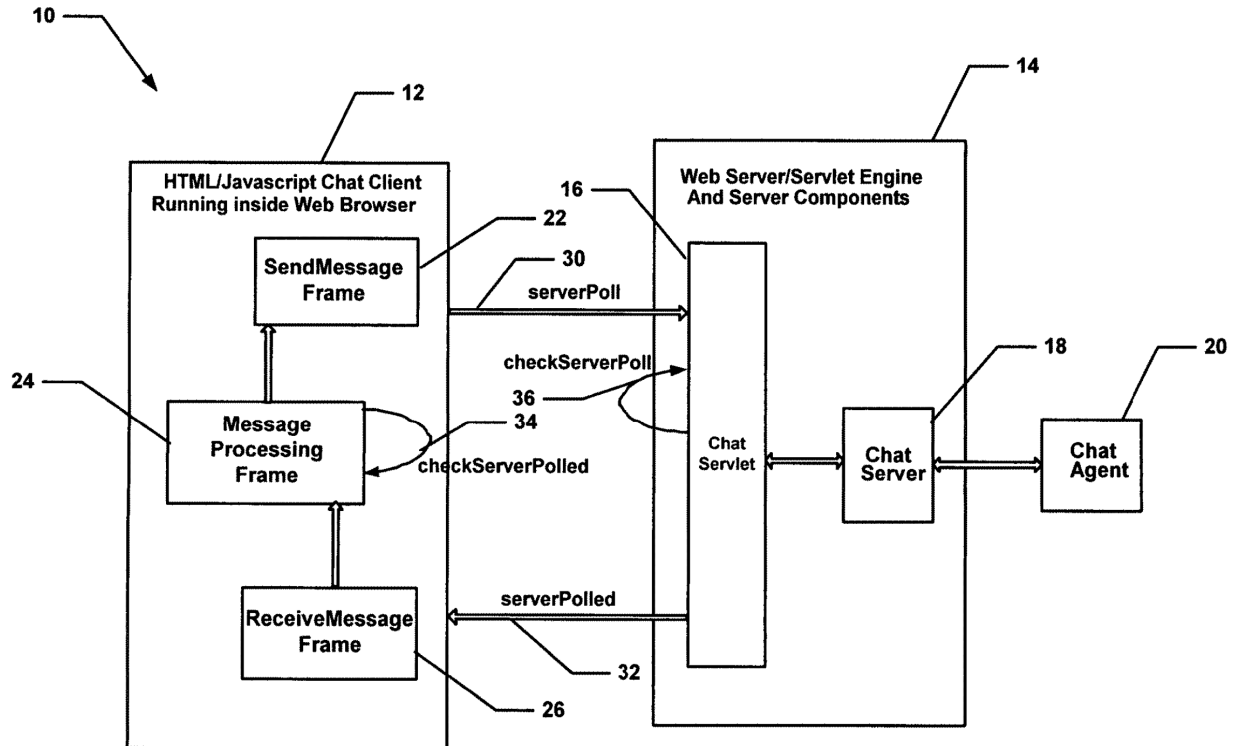
XII. GROUND 3: CLAIMS 5 AND 15 ARE OBVIOUS IN VIEW OF ZHA, A POSITA'S GENERAL KNOWLEDGE, AND GUMBULA

A. Overview of *Gumbula*

156. Counsel informs me *Gumbula* is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on November 23, 2005, prior to the '376 patent's filing date on July 28, 2014. Ex. 1011, [22].

157. *Gumbula* discloses connection monitoring and recovery for chat sessions and text-conferencing via the Internet between a chat client and a server. Ex. 1011, Abstract. "Heartbeat messages are exchanged between the chat client and the server at predetermined time intervals. When a failure to receive a heartbeat message for longer than one of the predetermined time intervals, then a lost connection message is provided to at least one of the server and client." Ex. 1011, Abstract.

158. Figure 1 of *Gumbula* shows an “environment 10 which provides connection recovery for a chat session.” Ex. 1011, 3:67-4:1.



Ex. 1011, Figure 1.

159. “The system includes a chat client 12, in this embodiment realized as an HTML/JavaScript chat client running inside a browser. The client 12 is shown including a SendMessage frame 22, a Message Processing Frame 24 and a ReceiveMessage frame 26. The SendMessage frame 22 is a hidden frame which is used by the Message Processing Frame 24 to send the messages. The Message Processing Frame 24 is a hidden frame that contains the logic of sending, receiving and processing messages. The ReceiveMessage frame 26 is a hidden frame which is

used by the Message Processing Frame 24 to receive the message and for the Chat Servlet 18 to write the callback messages.” Ex. 1011, 4:1-14.

160. *Gumbula* provides a mechanism “wherein a Chat Client 12 and a Chat Servlet 16 running inside the Servlet Engine 14 exchange heartbeat messages during a configurable poll interval. Both the client 12 and server 14 components are configured to check for the heartbeat messages every configurable check interval (greater than a poll interval). The heartbeat mechanism happens in two hidden frames namely *tunnsend* (e.g., *SendMessage* Frame 22) and *tunnreceive* (e.g., *ReceiveMessage* Frame 26) keeping the mechanism transparent to the client.” Ex. 1011, 4:26-36.

161. *Gumbula* provides a “poll message (e.g., *serverPoll* 30) sent from the client 12 to the server 14 results is a response where the hidden frame gets a *serverPolled* 32 JavaScript function callback. The client keeps checking for the *serverPolled* message 32 for every configured check interval (*checkServerPolled* 34), similarly the server component 14 checks for Successful client poll message for every configured check interval (*checkServerPoll* 36). If either client 12 or the server component 14 does not see a heartbeat message during the check interval then the client 12 displays the message ‘Lost connection to the server, retrying . . .’ and the server component 14 sends a message to the agent 20 ‘Client has lost connection to the server, retrying . . .’.” Ex. 1011, 4:37-49.

B. Motivation to Combine *Zha*, a POSITA's General Knowledge and *Gumbula*

162. It is my opinion that a POSITA at the time the '376 patent was filed (2014) would have considered it obvious to modify the *Zha* private message functional interface (as modified based on the POSITA's general knowledge in Ground 1) to include the *Gumbula* connection monitoring and recovery for chat sessions with a reasonable expectation of success.

163. *Zha* discloses a private message interface of a microblog application program may be used to send a private message to a friend (Ex. 1004, 1:28-32) and *Gumbula* similarly relates to "chat sessions [that] are a text-conferencing capability via the Internet allowing real-time communication between two users via computer." Ex. 1011, 1:7-9. It is my opinion that a POSITA would view private messaging applications and chat session applications as being functionally similar. A POSITA would also view the *Zha* server 120 as functionally similar to the *Gumbula* server 14. Moreover, *Zha* discloses communication over a "wired or wireless network," and *Gumbula* "includes recovery of the communication failures between the client running in the Internet browser and the backend server component hosted in the web server." Ex. 1011, 1:67-2:2. Thus, it is my opinion a POSITA would have a reasonable expectation of success in view *Zha* and *Gumbula* being directed to similar technological endeavors and having similar scope.

164. *Gumbula* explains how clients (terminals) in a client-server model send and receive private chat messages over a network:

The Internet Relay Chat (IRC) protocol has been designed over a number of years for use with text based conferencing. The IRC Protocol is based on the client-server model, and is well suited to running on many machines in a distributed fashion. A typical setup involves a single process (the server) forming a central point for clients (or other servers) to connect to, performing the required message delivery/multiplexing and other functions.

The server forms the backbone of IRC as it is the only component of the protocol which is able to link all the other components together: it provides a point to which clients may connect to talk to each other, and a point for other servers to connect to. The server is also responsible for providing the basic services defined by the IRC protocol.

Ex. 1011, 1:15-29.

165. *Gumbula* explains a problem in that “conventional solutions available [in 2005 did] not transparently recover a lost Hyper-Text transmission Protocol (HTTP) connection between the server and the client, nor notify the status of the connection to the parties involved.” Ex. 1011, 1:56-60. It is my opinion a POSITA at the time the '376 patent was filed (2014) would have been motivated by a recognition that lost connections between the server and the terminal/client diminish an ability to reliably send private messages, for example, using the *Zha* private message functional interface. The *Zha* private message functional interface could reasonably be expected to successfully provide connection monitoring and recovery for chat sessions as disclosed in *Gumbula* because private messaging and chat sessions are the same functions.

166. It is my opinion a POSITA would expect to be reasonably successful in adding *Gumbula*'s connection monitoring and recovery to *Zha*'s private message interface. Specifically, *Zha*'s private message functional interface and *Gumbula*'s chat application are both based on client-server architectures. A POSITA would understand that implementing *Gumbula*'s connection monitoring and recovery in *Zha* would simply require adding *Gumbula*'s server functionality for connection monitoring and recovery to *Zha*'s server and *Gumbula*'s client functionality for connection monitoring and recovery to *Zha*'s client. The additional functionality would supplement *Zha*'s functionality and would not interfere with *Zha* because *Zha* does not address disconnection events or connection monitoring/recovery. Thus, it is my opinion a POSITA would view implementing *Gumbula* as the simple use of *Gumbula*'s known technique related to chat applications to improve *Zha*'s similar private messaging application in the same way (i.e., providing connection monitoring and recovery).

167. In addition, because *Zha* does not disclose connection monitoring and recovery, a POSITA would recognize *Zha*'s private messaging as a system that is ready to be improved based on *Gumbula*'s disclosure that "conventional solutions today do not transparently recover a lost ... connection between the server and the client, nor notify the status of the connection to the parties involved." Ex. 1011, 1:56-60. Consequently, it is my opinion a POSITA would have been motivated to

apply *Gumbula*'s known connection monitoring and recovery technique to *Zha*'s system and would have had a reasonable expectation of success. A POSITA would understand this combination would yield predictable results (i.e., a more robust and less frustrating private messaging system as described in *Gumbula*).

C. Claim 5 — “determining if connectivity between the server and the second device has been disrupted and providing a notification on the second device that the connectivity has been disrupted”

168. It is my opinion a POSITA would find claim 5 obvious in view of *Zha*, the POSITA's general knowledge, and U.S. Patent No. 9,591,083 (*Gumbula*) (Ex. 1011).

169. *Gumbula* discloses the elements of claim 5. *Gumbula* discloses that a disruption to the connectivity between the server and a client/terminal may be determined by exchanging heartbeat messages and checking whether the heartbeat messages were exchanged successfully. “In a particular example, a mechanism is provided wherein a Chat Client 12 and a Chat Servlet 16 running inside the Servlet Engine 14 exchange heartbeat messages during a configurable poll interval.” Ex. 1011, 4:26-29. “A poll message (e.g., serverPoll 30) sent from the client 12 to the server 14 results is a response where the hidden frame gets a serverPolled 32 JavaScript function callback. The client keeps checking for the serverPolled message 32 for every configured check interval (checkServerPolled 34), similarly the server component 14 checks for successful client poll message for every configured check

interval (checkServerPoll 36).” Ex. 1011, 4:37-44. Thus, the *Gumbula* heartbeat message exchange corresponds to the claimed “determining if connectivity between the server and the second device has been disrupted.”

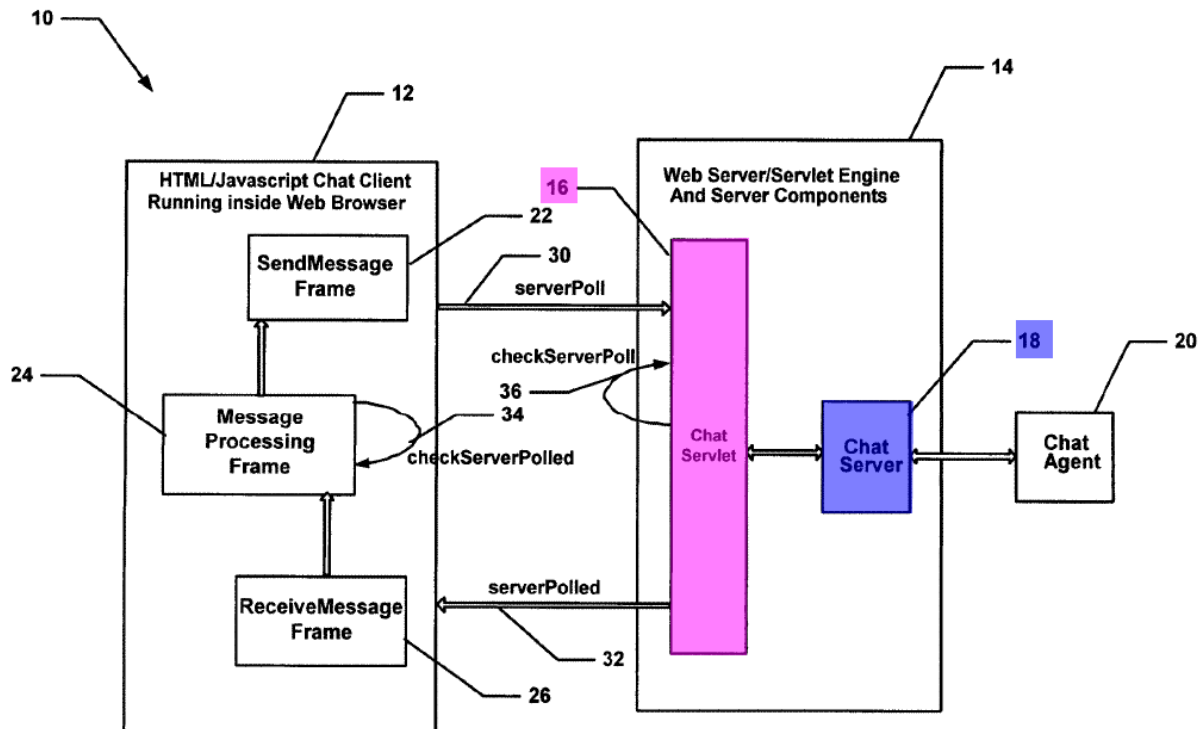
170. *Gumbula* further discloses to provide a notification on the client/terminal indicating a disruption to connectivity. “If either client 12 or the server component 14 does not see a heartbeat message during the check interval then the client 12 displays the message ‘Lost connection to the server, retrying . . .’” and the server component 14 sends a message to the agent 20 ‘Client has lost connection to the server, retrying . . .’”. Ex. 1011, 4:44-49. The *Gumbula* “lost connection” message corresponds to “providing a notification on the second device that the connectivity has been disrupted,” as claimed.

171. It is my opinion that a POSITA at the time the ’376 patent was filed (2014) would have considered it obvious to modify the *Zha* private message functional interface (as modified based on the POSITA’s general knowledge in Ground 1) to further include using the *Gumbula* heartbeat messages, checking for successful message exchanges, and providing “lost connection” messages when a connection is lost. Thus, the subject matter of claim 5 is rendered obvious by *Zha*, a POSITA’s general knowledge, and *Gumbula*.

D. Claim 15 — “the server is a proxy server configured to relay communications from an application server to the first and second devices wherein the proxy server emulates a client to the application server”

172. It is my opinion a POSITA would find claim 15 obvious in view of *Zha*, the POSITA’s general knowledge, and U.S. Patent No. 9,591,083 (*Gumbula*) (Ex. 1011).

173. *Gumbula* discloses the elements of claim 15. *Gumbula* discloses the Chat Servlet 16 is a proxy for the Chat Server 18. Figure 1 of *Gumbula* shows an “environment 10 which provides connection recovery for a chat session.” Ex. 1011, 3:67-4:1.



Ex. 1011, Figure 1 (annotated).

174. “The server components include a Chat Servlet 16 in communication with a Chat Server 18. Also shown is a Chat Agent 20 in communication with the Chat Server 18. The Chat Servlet 16 performs the server side tasks and *acts as a proxy* between the client 12 and the Chat Server 18.” Ex. 1011, 4:20-22 (emphasis added). Thus, the *Gumbula* Chat Servlet 16 corresponds to the claimed “proxy server emulates a client to the application server.”

175. It is my opinion that a POSITA at the time the '376 patent was filed (2014) would have considered it obvious to modify the *Zha* server 120 and private message functional interface (as modified based on the POSITA's general knowledge in Ground 1) to include the *Gumbula* Chat Servlet 16 as a proxy server that emulates a client to the application server.

XIII. GROUND 4: CLAIMS 5 AND 15 ARE OBVIOUS IN VIEW OF *ZHA*, A POSITA'S GENERAL KNOWLEDGE, *TSUSHIMA*, AND *GUMBULA*

176. It is my opinion that a POSITA would find claims 5 and 15 obvious in view of *Zha*, a POSITA's general knowledge, *Tsushima*, and *Gumbula*. Claims 5 and 15 depend on claim 1, and I address the reasons why a POSITA would find claim 1 obvious based on *Zha*, a POSITA's general knowledge, and *Tsushima* in Ground 2. Further, I discuss why a POSITA would be motivated to combine *Gumbula* with *Zha* with a reasonable expectation of success (as modified by the POSITA's general knowledge in Ground 1) as discussed in Ground 3.

177. It is my opinion a POSITA would be motivated to combine *Gumbula* with *Zha* with a reasonable expectation of success (as modified by the POSITA's general knowledge and *Tsushima*) for the same reasons a POSITA would be motivated to combine *Gumbula* with *Zha* with a reasonable expectation of success (i.e., as I discuss for Ground 3). Because *Tsushima*'s addition to *Zha* relates to the "if and only if" functionality (Ground 2), that *Zha-Tsushima* combination is unaffected by and would not interfere with *Gumbula*'s connection monitoring and recovery. Thus, a POSITA would expect success when implementing the *Zha-POSITA-general-knowledge-Tsushima-Gumbula* combination because it is the simple use of *Gumbula*'s known technique related to chat applications to improve *Zha-Tsushima*'s similar private messaging application in the same way (i.e., providing connection monitoring and recovery).

XIV. GROUND 5: CLAIM 10 IS OBVIOUS IN VIEW OF ZHA, A POSITA'S GENERAL KNOWLEDGE, AND STAFFORD

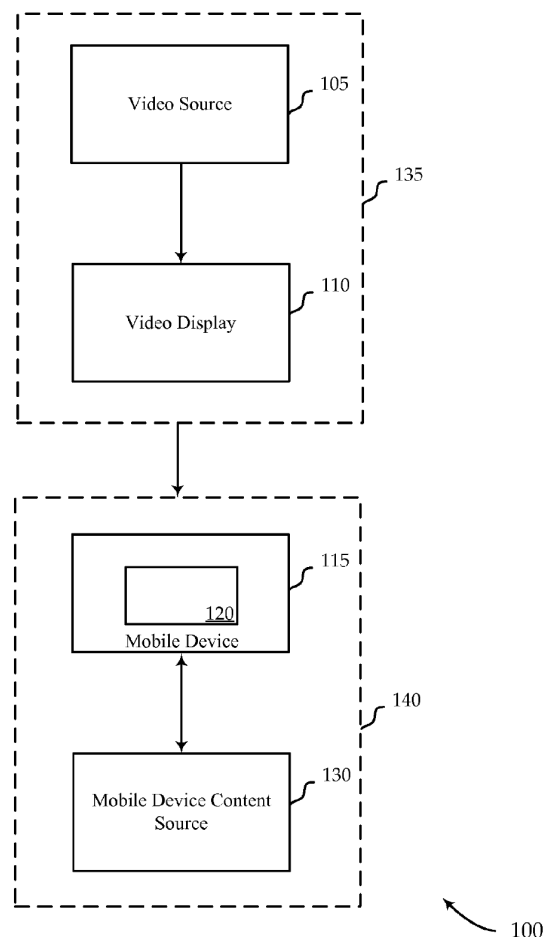
A. Overview of *Stafford*

178. Counsel informs me U.S. Patent Application Publication No. 2012/0017236 (*Stafford*) (Ex. 1012) is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on July 13, 2010, prior to the '376 patent's filing date on July 28, 2014. Ex. 1012, [22].

179. *Stafford* discloses a video display of video content and a mobile device displaying supplemental content. Ex. 1011, Abstract. "A mobile device may include

an integrated video camera to capture the video content for display with the supplemental content on the integrated display. The video content may include markers formatted to allow the mobile device to track the video display by capturing the marker using the integrated video camera.” Ex. 1012, [0008].

180. As shown in FIG. 1, the system 100 includes a video source 105, video display 110, mobile device 115, and mobile device content source 130. Each of these components of the system 100 may be in connection with each other (either directly, wirelessly, via a wired or wireless network, etc.). The mobile device 115 includes an integrated display 120.” Ex. 1012, [0030].

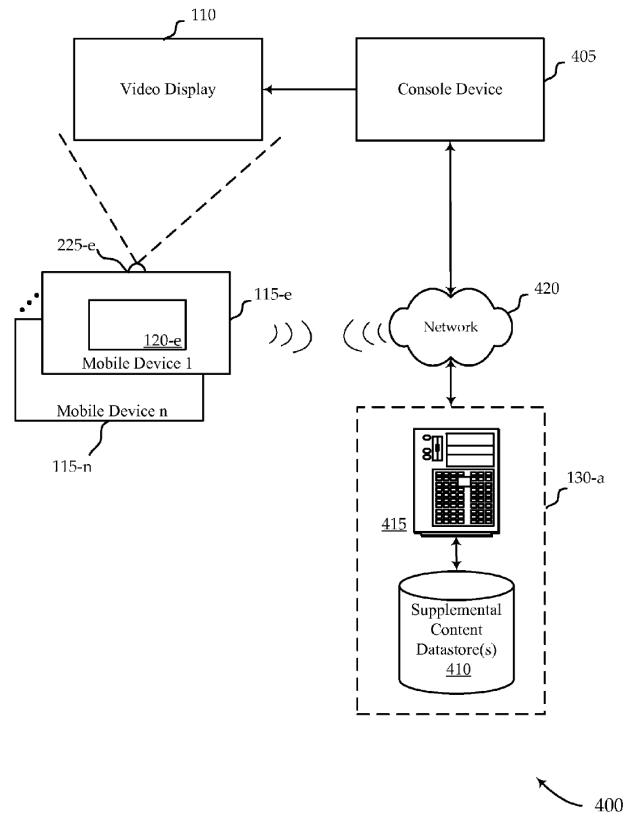


Ex. 1012, Figure 1.

181. “[T]he video source 105 and the user-dependent mobile device content source 205 may each be the same remote server (or different remote servers).”

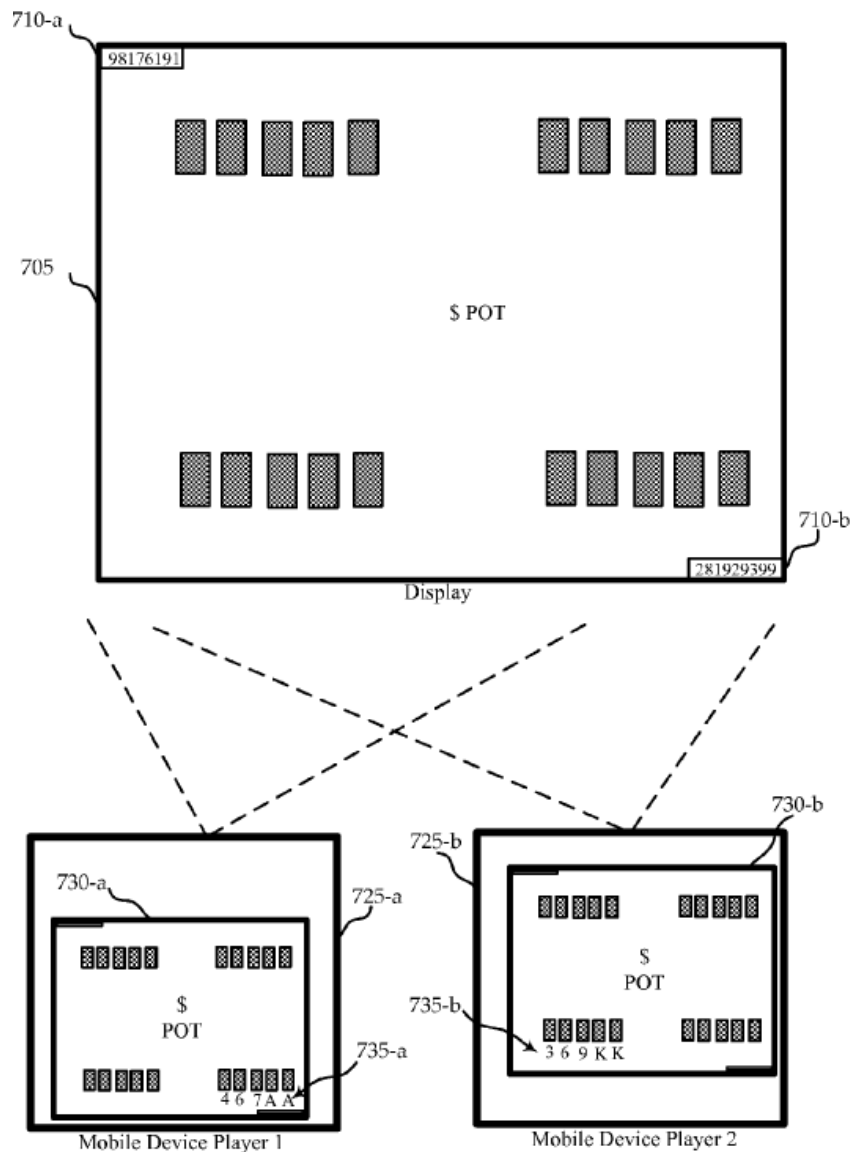
Ex. 1012, [0042].

182. As shown in FIG. 4, “a system 400 includes a console device 405, a video display 110, mobile devices 115, a network 420, supplemental content datastore(s) 410, and a supplemental content server 415. This system 400 may be an example of the system 100 of FIG. 1 (e.g., supplemental content datastore(s) 410 and supplemental content server 415 may be a mobile device content source 130-*a*, such as the mobile device content source 130 of FIG. 1; the console device 405 may be the video source 105 of FIG. 1). In one embodiment, the console device 405 is directly connected with the video display 110. The mobile devices 115 may be wirelessly connected to a network 420, and in communication with supplemental content datastore(s) 410 and supplemental content server 415 through the network 420. The console device 405 may be in communication with the network 420, and in communication with supplemental content datastore(s) 410 and supplemental content server 415 through the network 420.” Ex. 1012, [0047].



Ex. 1012, Figure 4.

183. In Figure 7, “image 705 is video card game on a display (e.g., the video display 110 of FIG. 1, 2, or 3). In the image 705, there are markers 710 identifying binary codes placed in certain corners.” Ex. 1012, [0064].



Ex. 1012, Figure 7.

184. “Images 725-a and 725-b illustrate captured video for different mobile devices (e.g., mobile device 115 of FIG. 1, 2, 3, 4, or 5): image 725-a is the image generated for player 1, image 725-b is the image generated for player 2. Images 730-a and 730-b illustrate a portion of the captured video game content from a video display (i.e., a portion of captured image 705). The markers 710 may be processed

to track images 730-a and 730-b within images 725-a and 725-b, respectively.” Ex. 1012, [0065].

185. *Stafford* discloses the mobile phones process the markers captured from the display 705 to identify and display images 725-a and 725-b on the mobile devices. “Image 735-a discloses the cards for player 1 (but player 2’s cards are not shown anywhere in the rest of image 725-a); image 735-b discloses the cards for player 2 (but player 1’s cards are not shown anywhere in the rest of image 725-b). This illustrates how secret views for the players may be maintained.” Ex. 1012, [0065].

B. Claim 10 — “displaying a graphical identifier on the first device and a corresponding graphical indicator on the second device indicating a link between the information displayed on the respective devices.”

186. It is my opinion that Claim 10 would have been obvious in view of *Zha*, the POSITA’s general knowledge, and U.S. Patent Pub. No. 2012/0017236 (*Stafford*) (Ex. 1012).

187. It is my opinion that a POSITA would reasonably expect *Zha* could successfully be modified because *Zha* and *Stafford* are in similar fields of technology. A POSITA would consider the *Zha* terminals (cellphone, laptop computer, and desktop computer) 110 as functionally similar to the *Stafford* video display 110 and mobile device 115. Likewise, a POSITA would view the *Zha* server 120 to be functionally similar to the *Stafford* server 415. Moreover, *Zha* discloses

communication over a “wired or wireless network,” and in *Stafford*, “[i]n one embodiment, the console device 405 is directly connected with the video display 110. The mobile devices 115 may be wirelessly connected to a network 420.” Ex. 1012, [0047]. Further, *Zha* discloses a game functional interface (Ex. 1004, 1:23-28) and *Stafford* also discloses a video game interface (Ex. 1012, [0006]).

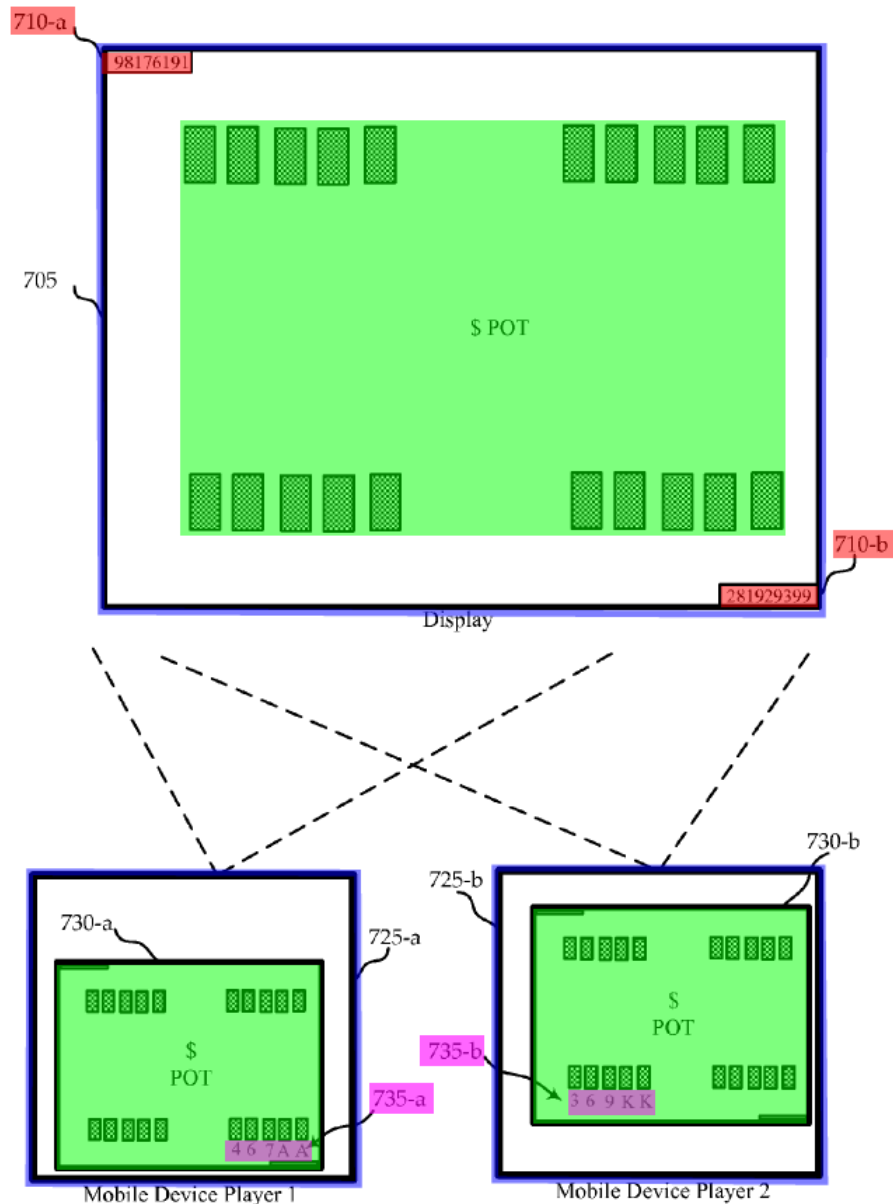
188. *Zha* discloses that the application program on the server may “run on different terminals” with different display screens and may have different “versions corresponding to different platforms.” Ex. 1004, 4:10-16. *Stafford* discloses a video display of video content and a mobile device displaying supplemental content related to the video being displayed. Ex. 1012, Abstract. “The mobile device 115 accesses supplemental content related to the identified video content.” Ex. 1012, [0033]. It is my opinion a POSITA would have a reasonable expectation of success where *Zha* and *Stafford* address similar fields of technology and deal with systems where distinct information is presented to a user on two different displays.

189. A POSITA at the time the ’376 patent was filed (2014) would have been motivated to modify the *Zha* game functional interface to include the *Stafford* markings and graphic indicators (i.e., from *Stafford*’s poker game embodiment) with a reasonable expectation of success because doing so is the simple combination of prior art elements (*Stafford*’s poker game with identifiers and indicators) according to known methods (e.g., *Zha*’s game interface) to yield predictable results (playing

poker with *Zha*'s game interface). *Stafford* provides this motivation by explaining that "in some multiplayer games, it may be desirable for some information to be displayed to only a subset of the players." Ex. 1012, [0004].

190. The problem was that in 2010 there was a "need in the art to allow supplemental content related to video content to be displayed to one or more individual viewers, without displaying the supplemental content to all of those watching the video content on the video display." Ex. 1012, [0005]. A POSITA would have recognized it would be desirable to display related, but different, content on different devices. By the time the '376 patent was filed (2014), a POSITA would understand that related content on one device would need to be linked to the related content on another device. Because *Stafford* provides markers and graphical indicators to link differing content on separate devices, a POSITA would have been motivated to modify the *Zha* game interface with a reasonable expectation the markers and graphical indicators of *Stafford* could successfully be included.

191. *Stafford* discloses the elements of Claim 10. *Stafford*'s markers 710 identify binary codes ("graphical identifiers") displayed in corners of the display, which corresponds to "displaying a graphical identifier on the first device," as claimed. Figure 7 of *Stafford* shows an "image 705 is video card game on a display (e.g., the video display 110 of FIG. 1, 2, or 3). In the image 705, there are markers 710 identifying binary codes placed in certain corners." Ex. 1012, [0064].



Ex. 1012, Figure 7 (annotated).

192. *Stafford* displays a portion of captured image 705, which corresponds to “displaying . . . a corresponding graphical indicator on the second device indicating a link between the information displayed on the respective devices,” as claimed. “Images 725-a and 725-b illustrate captured video for different mobile devices (e.g., mobile device 115 of FIG. 1, 2, 3, 4, or 5): image 725-a is the image

generated for player 1, image 725-b is the image generated for player 2. Images 730-a and 730-b illustrate a portion of the captured video game content from a video display (i.e., a portion of captured image 705). The markers 710 may be processed to track images 730-a and 730-b within images 725-a and 725-b, respectively.” Ex. 1012, [0065]. *Stafford* discloses the mobile phones process the markers (“identifiers”) captured from the display 705 and capture a portion of the display 705 itself. Images 725-a and 725-b (“corresponding graphical indicator”) are then displayed on the mobile devices. Player 1’s mobile device (725-a) shows cards for player 1, but not player 2’s cards. Player 2’s mobile device (725-b) shows cards for player 2, but not player 1’s cards. Further, “compare the position of supplemental content 735-a with supplemental content 735-b. Image 735-a discloses the cards for player 1 (but player 2’s cards are not shown anywhere in the rest of image 725-a); image 735-b discloses the cards for player 2 (but player 1’s cards are not shown anywhere in the rest of image 725-b). This illustrates how secret views for the players may be maintained.” Ex. 1012, [0065].

193. Thus, the *Stafford* markers 710 (identifying binary codes placed in certain corners) correspond to “a graphical identifier on the first device,” as claimed. The *Stafford* portion of the captured video game content from a video display (i.e., a portion of captured image 705) corresponds to “a corresponding graphical indicator on the second device,” as claimed. The portion of the captured video

indicates “a link between the information displayed on the respective devices,” as claimed, because the same graphic image, i.e., a portion of captured image 705, is displayed on both devices.

194. A POSITA at the time the '376 patent was filed (2014) would have considered it obvious to modify the *Zha* game functional interface to further include the markers and graphic indicators of *Stafford* to allow supplemental content related to video content to be displayed on a cellphone where the *Zha* user simultaneously accesses the application via both a cellphone and a desktop computer, which would yield predictable results. A POSITA would have reasonably expected *Zha* could successfully include marker data and graphic indicator data of *Stafford* because *Zha* teaches a single user logs into the application via both a cellphone and a desktop computer simultaneously. Thus, it is my opinion claim 10 would have been obvious to a POSITA in view of *Zha*, the POSITA'S general knowledge, and *Stafford*.

XV. GROUND 6: CLAIM 10 IS OBVIOUS IN VIEW OF ZHA, A POSITA'S GENERAL KNOWLEDGE, TSUSHIMA, AND STAFFORD

195. It is my opinion that a POSITA would find claim 10 obvious in view of *Zha*, a POSITA's general knowledge, *Tsushima*, and *Stafford*. Claim 10 depends on claim 1, and I address the reasons why a POSITA would find claim 1 obvious based on *Zha*, a POSITA's general knowledge, and *Tsushima* in Ground 2. Further, I discuss why a POSITA would be motivated to combine *Stafford* with *Zha* with a

reasonable expectation of success (as modified by the POSITA's general knowledge in Ground 1) in Ground 5.

196. It is my opinion a POSITA would be motivated to combine *Stafford* with *Zha* (as modified by the POSITA's general knowledge and *Tsushima*) for the same reasons a POSITA would be motivated to combine *Stafford* with *Zha* (i.e., as I discuss for Ground 5). A POSITA would reasonably have expected success because *Tsushima*'s addition to *Zha* relates to the "if and only if" functionality (Ground 2), that *Zha-Tsushima* combination is unaffected by and would not interfere with *Stafford*'s markers ("identifiers") and graphic indicators. Thus, a POSITA would expect success when implementing the *Zha*-POSITA-general-knowledge-*Tsushima-Stafford* combination because it is the simple use of *Stafford*'s known technique related to providing graphic markers and indicators in a game environment to improve *Zha-Tsushima*'s game functional interface in the same way (i.e., providing markers and graphic indicators).

XVI. GROUND 7: CLAIMS 1-5, 9-10, 12-14, 16-17, AND 23-25 ARE OBVIOUS IN VIEW OF *TAKAHASHI* AND A POSITA'S GENERAL KNOWLEDGE

A. Overview of *Takahashi*

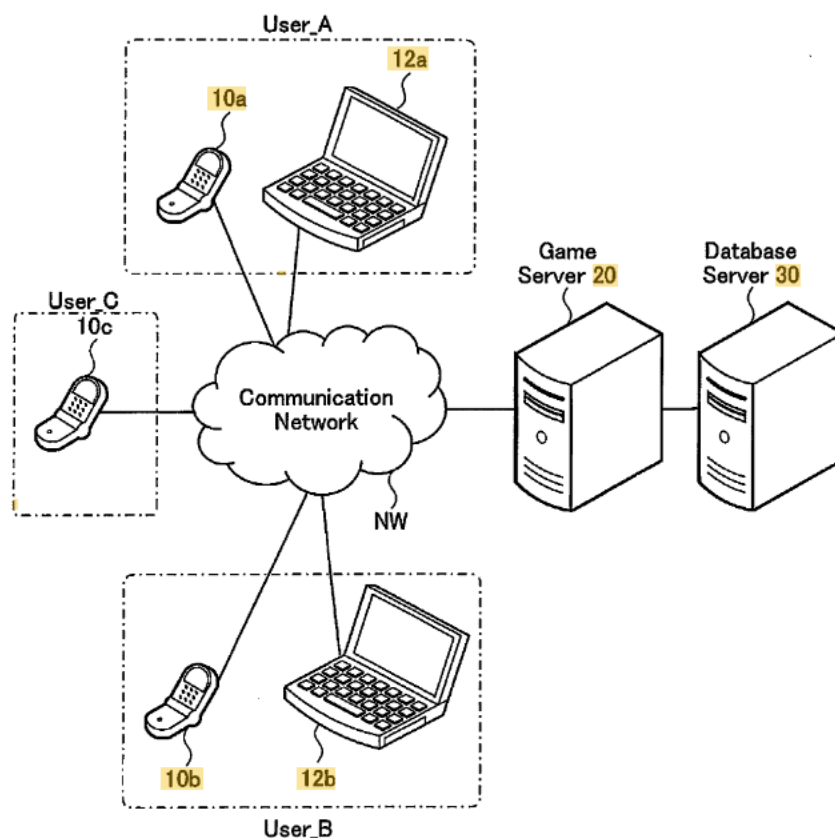
197. Counsel informs me U.S. Patent Pub. No. 2015/0011318 ("*Takahashi*") (Ex. 1007) is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on November 27, 2012, prior to the '376 patent's filing date on July 28, 2014.

Ex. 1007, [22]. Counsel informs me that, under 35 U.S.C. § 102(d)(2), *Takahashi* was effectively filed on November 27, 2012, based on the prior-filed application for patent PCT/JP2012/007595 (“*Takahashi Priority Application*”). The *Takahashi Priority Application* is Ex. 1008 and a certified English translation of the *Takahashi Priority Application* is Ex.1009. I also understand that in order to claim the benefit of the *Takahashi Priority Application*, the subject matter relied upon in *Takahashi* must have been described in the *Takahashi Priority Application*. Accordingly, I have been asked to provide a table comparing the disclosures of *Takahashi* that are relied on in this declaration and in the Petition with the corresponding disclosures of the *Takahashi Priority Application*. This table is included below in Appendix C. Citations to *Takahashi* are provided throughout my analysis below. Because the disclosures in *Takahashi* that I (and Petitioner) rely on were previously described in the *Takahashi Priority Application*, I understand that *Takahashi* is entitled to claim the benefit of the filing date of its Japanese parent and qualifies as prior art.

198. *Takahashi* is directed to a “game control device” that allows a variety of types or forms of games through the use of a plurality of communication terminals, where the device is connected through a communication network to the terminals. Ex. 1007, [0006]-[0007] (“An object of the present invention is to provide a **game control device**, a non-transitory computer-readable recording medium, a game control method, and a game control system that allows a variety of types or

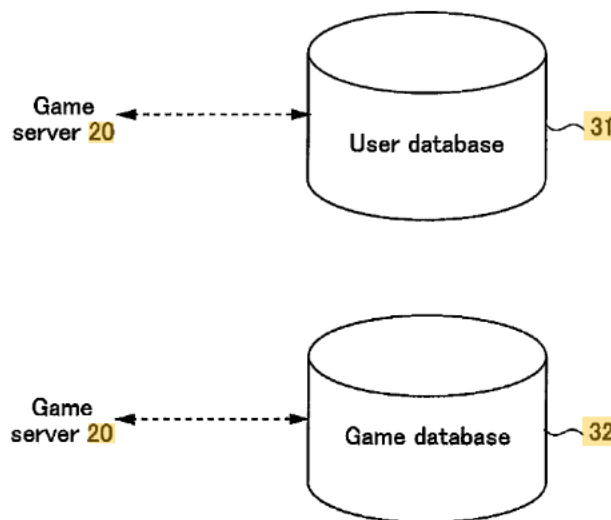
forms of games by use of a plurality of communication terminals. An aspect of the present invention is a **game control device**, the device being connected through a communication network to communication terminals, the device comprising...” (emphasis added)).

199. In Figure 1, “game control system includes a plurality of communication terminals [10a-c, 12a-b] that are connectable to a communication network NW such as the Internet, a game server 20 that is connectable to the communication network NW, and a database server 30.” Ex. 1007, [0040].



Ex. 1007, Figure 1.

200. *Takahashi* explains the “game control device” is “configured” by game server 20 and database server 30 in Figure 1. Ex. 1007, [0089] (“In the present embodiment, the game control device is configured, for example, by the game server 20 and the database server 30.”). While this wording may be a bit awkward due to its translation from Japanese, a person of ordinary skill in the art would understand from *Takahashi*’s entire disclosure that the “game control device” is an application installed on game server 20 that utilizes information stored in database server 30. For example, *Takahashi* describes a web-based (i.e., HTML) game program, or “game application,” embedded on game server 20. Ex. 1007, [0045] (“[G]ame server 20 is embedded with a program that is operable on a web browser as a game application.”). Figure 5 depicts game server 20 accessing different databases (user database 31 and game database 32) on database server 30.



Ex. 1007, Figure 5.

201. In Figure 1, communication terminals 10a-10c “are mobile phones” and “are therefore called as mobile terminals” 10a-c. Ex. 1007, [0041]. Communication terminals 12a-b “are personal computers” and “are therefore called as PCs” 12a-b. Ex. 1007, [0041].

202. *Takahashi* gives examples of the many types of hardware that may be used for the communication terminals: “Each of the communication terminals is a communication terminal operated by an individual user, such as a mobile terminal (including a smart phone), a personal digital assistant (PDA), a personal computer, or a television receiver including a two-way communication function (including a so-called multi-functional smart TV).” *Id.*

203. *Takahashi* discloses the communication terminals may connect to the game server through both wired and wireless protocols: “It should be noted that, the both of the mobile terminal 10 and the PC 12 are communicated with the game server 20 through the communication interface unit according to the any known wireless or wired communication protocol.” Ex. 1007, [0060].

204. *Takahashi*’s game control system allows “accesses from a plurality of communication terminals to the game server 20 for each user.” Ex. 1007, [0042]. “[T]he game server 20 identifies a main-terminal and a sub-terminal in executing a game provided by the game server 20. ... The main-terminal is a communication terminal that displays primary game images of the game being executed, for

example. The sub-terminal is a communication terminal that receives operational inputs from the user in the game being played by the user. For example, the sub-terminal is a communication terminal that is held by the user for operation.” Ex. 1007, [0042].

205. *Takahashi*’s web-based application example is a fishing game that uses both a user’s PC and mobile phone at the same time, where the PC is a “main terminal” and the mobile phone is a “sub terminal.” Ex. 1007, [0116] (“If the game server 20 is accessed from two communication terminals of a user (Step S28: YES), then it generates HTML data (new HTML data) for displaying a new web page based on the results of execution of the program. The game server 20 then transmits the HTML data to the PC 12 as main-terminal. Alternatively, as illustrated in FIG. 8, the game server 20 does not only transmit the HTML data to the PC 12, but it also transmits HTML data to the mobile terminal 10 as sub-terminal (Step S30). The transmitted HTML data to the mobile terminal 10 is different from the one transmitted to the PC 12.”); *see also*, Figure 8:

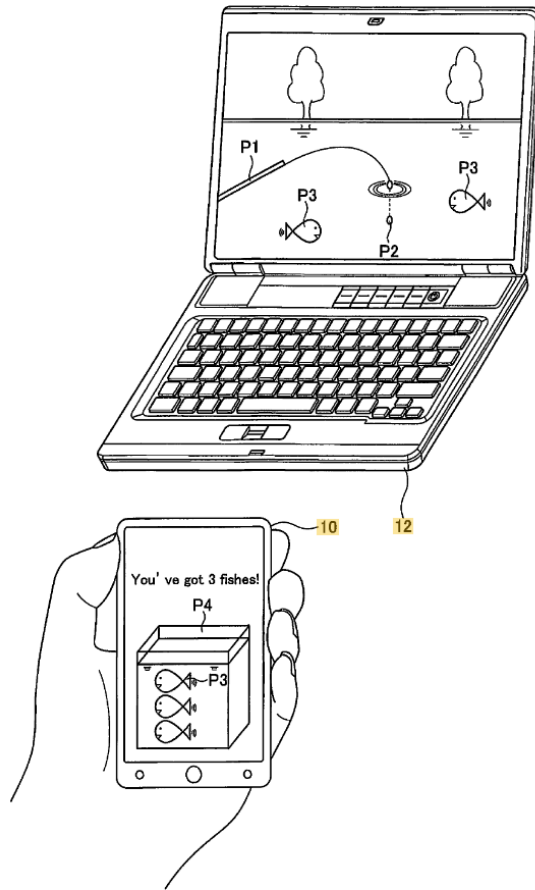
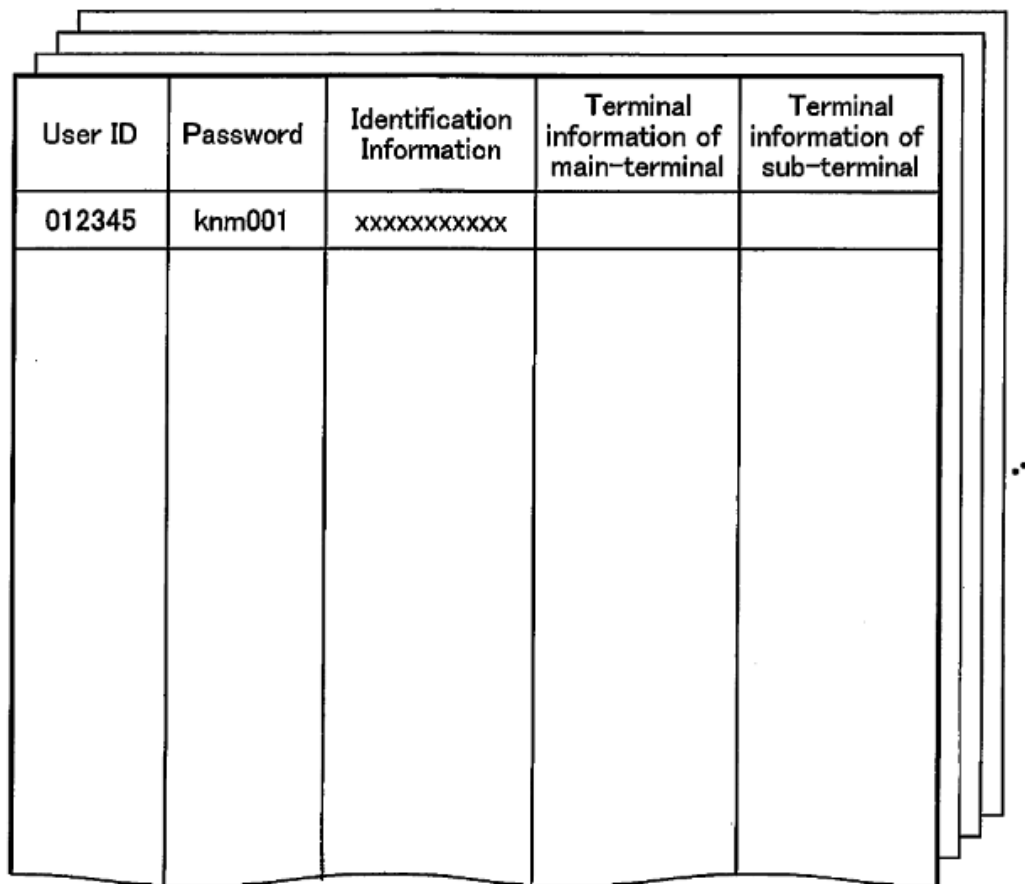


FIG.8

Ex. 1007, Figure 8.

206. *Takahashi* discusses “user data,” user accounts, and user authentication in relation to user database 31, with an example illustrated in Figure 6 (below).

Ex. 1007, [0070] (“FIG. 6 depicts an example of the user database 31. User data is referred to as collective data including the following information.”).



User ID	Password	Identification Information	Terminal information of main-terminal	Terminal information of sub-terminal
012345	knm001	xxxxxxxxxxx		

Ex. 1007, Fig. 6.

207. **User ID and Password**: According to *Takahashi*, the User ID and Password data is used for authentication when a user accesses the game server from a communication terminal such as PC 12. Ex. 1007, [0071]-[0072] (“User ID and Password are set in user registration and are recorded by the game server 20. User ID and Password are data mainly for user authentication that is executed after the PC 12 of a user accesses to the game server 20.”).

208. **Identification Information**: According to *Takahashi*, identification information is unique information corresponding to a mobile terminal such as a serial

number of the mobile terminal. Ex. 1007, [0073]-[0074] (“Identification information is unique information for each mobile terminal 10. Identification information is used mainly for user authentication that is executed after the mobile terminal 10 of a user accesses the game server 20. Identification information may be a serial number of the mobile terminal.”).

209. According to *Takahashi*, after a mobile terminal sends a request to the game server, the system incorporates the mobile terminal’s unique identification information into a “user agent character string” used in the HTTP request. Ex. 1007, [0074]-[0075] (“Identification information may be a part of a user agent character string in a HTTP request transmitted from the mobile terminal 10 to the game server 20. After the HTTP request is first transmitted from the mobile terminal 10 to the game server 20, the identification information of the mobile terminal 10 is incorporated into the user agent character string in the HTTP request upon the user’s permission.”).

210. The user agent character string may also include information about the terminal’s operating system and web browser. Ex. 1007, [0078] (“For example, the user agent character string in a HTTP request, which is transmitted from the communication terminal to the game server 20, includes information about an operating system and a web browser. For example, in the case in which there are accesses from a user through both a mobile terminal and a PC, because operating

systems installed into the mobile terminal and the PC are different, it is possible to identify whether the communication terminal performing each access is the mobile terminal or the PC. In such a case, the PC may be identified as a main-terminal, while the mobile terminal may be identified as a sub-terminal.”).

211. *Takahashi* stores the unique identification information in a database record associated with the user ID of the user. Ex. 1007, [0075] (“After the identification information of the mobile terminal 10 is first received by the game server 20, the identification information is recorded in association with user ID for the purpose of the subsequent user authentication.”).

212. **Terminal Information of Main-Terminal:** According to *Takahashi*, the terminal information for the main-terminal represents information that can identify the main-terminal, for example, an IP address, operating system, or browser. *Takahashi* discloses using this information to distinguish between the main terminal and the sub terminal. Ex. 1007, [0078] (“Terminal information of main-terminal is information of the communication terminal identified as main-terminal among a plurality of communication terminals when the game server 20 is accessed from the plurality of communication terminals of the user to be processed. The terminal information of the communication terminal may be any information that identifies the communication terminal such as address information like IP address, etc. Note that, as described later, a method to identify a main-terminal or a sub-terminal may

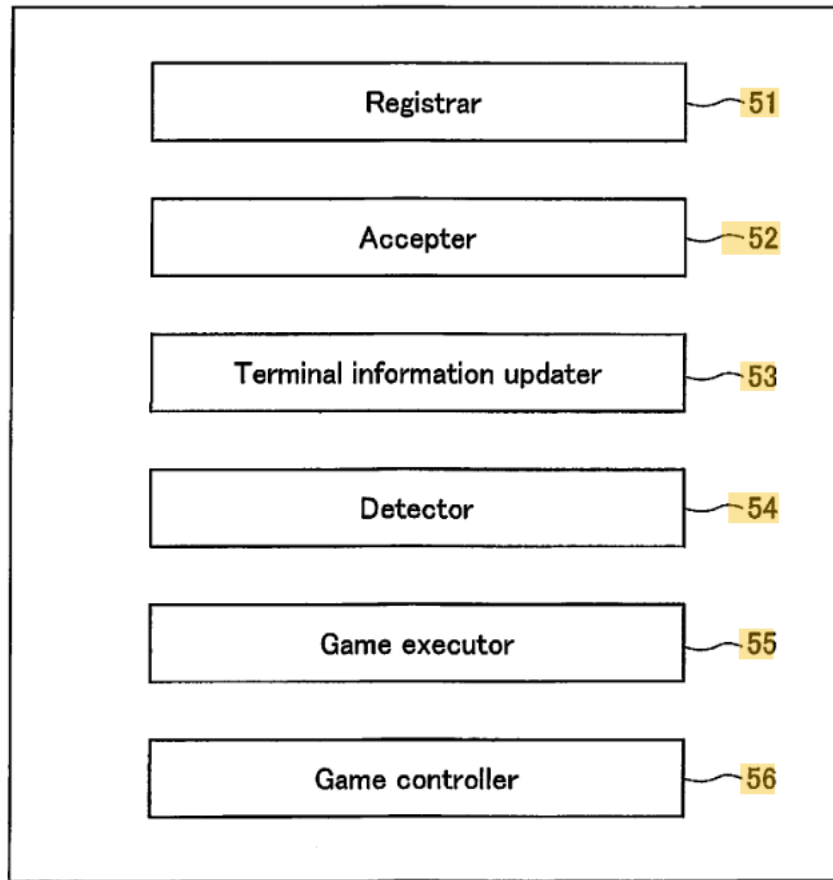
be as follows. For example, the user agent character string in a HTTP request, which is transmitted from the communication terminal to the game server 20, includes information about an operating system and a web browser. For example, in the case in which there are accesses from a user through both a mobile terminal and a PC, because operating systems installed into the mobile terminal and the PC are different, it is possible to identify whether the communication terminal performing each access is the mobile terminal or the PC. In such a case, the PC may be identified as a main-terminal, while the mobile terminal may be identified as a sub-terminal.”).

213. **Terminal Information of Sub-Terminal:** According to *Takahashi*, the terminal information for the sub-terminal represents information that can identify the sub-terminal, for example, an IP address. Ex. 1007, [0080] (“Terminal information of a sub-terminal is information of the communication terminal identified as a sub-terminal among a plurality of communication terminals after the game server 20 is accessed from the plurality of communication terminals of the user to be processed. The terminal information of the communication terminal may be any information that identifies the communication terminal such as address information like IP address, etc.”).

214. The terminal information for the sub-terminal (e.g., the “mobile terminal”) is not limited to the IP address, which is given as just an example. As another example, *Takahashi* discloses the terminal information for the sub-terminal

(stored in database 31 of Figure 6) may also include information about the sub-terminal's operating system or browser. Ex. 1007, [0078] (“For example, the user agent character string in a HTTP request, which is transmitted from the communication terminal to the game server 20, *includes information about an operating system and a web browser*. For example, *in the case in which there are accesses from a user through both a mobile terminal and a PC, because operating systems installed into the mobile terminal* and the PC are different, it is possible to identify whether the communication terminal performing each access is the mobile terminal or the PC. In such case, the PC may be identified as a main-terminal, while the mobile terminal may be identified as a sub-terminal.” (emphasis added)).

215. According to *Takahashi*, “FIG. 10 is a functional block diagram for explaining functions that play main rolls in the game control device according to the first embodiment.” Ex. 1007, [0028].



Ex. 1007, Figure 10.

216. **Registrar 51:** *Takahashi*'s "Registrar" function (element 51) performs "registration processing" when the game control device receives a user request from the mobile terminal 10 or the PC 12. Ex. 1007, [0090] ("A registrar 51 includes a function for recognizing a user request and executing registration processing. Such request is based on a suitable operational input to the mobile terminal 10 or PC 12 on a web page provided to the mobile terminal 10 or PC 12, for example.").

217. When *Takahashi*'s game control device receives a request (e.g., to play the game) from a mobile terminal, the registrar records the mobile terminal's identification information in user database 31 so that it is associated with the mobile

device user's user ID. *Takahashi* discloses the identification information may be taken from the mobile device's user agent character string. Ex. 1007, [0091] ("In the case in which the CPU 21 receives the HTTP request from the mobile terminal 10, the received HTTP request includes user agent character strings containing identification information which is a serial number of the mobile terminal 10, for example. After first receiving the identification information, the CPU 21 records the identification information in the user database 31 in association with user ID for the purpose of subsequent user authentication.").

218. When *Takahashi*'s game control device receives a request (e.g., to play the game) from a PC, the request can be from a user who is already registered or a new user. If the user is already registered, registrar 51 correlates the user to a user ID stored in user database 31. If the user is not already registered, registrar 51 creates a new record in database 31 and issues a new user ID and password. Ex. 1007, [0092] ("After receiving the user ID and the password, the CPU 21 correlates the user ID and the password and records them in the user database 31 for the purpose of subsequent user authentication. On the other hand, the CPU 21 of the game server 20 receives a registration request message (HTTP request), and issues a new user ID and a new password if any user ID is not included in the registration request message. The CPU 21 records the newly issued user ID and password in the user database 31 for the purpose of subsequent user authentication.").

219. According to *Takahashi*, “[a]fter a user ID, a password and/or identification information of the mobile terminal 10 are recorded in the user database 31, the registration processing completes.” Ex. 1007, [0094].

220. **Accepter 52:** *Takahashi*’s “accepter” function (element 52 in Figure 10) accepts access requests from users if they have previously registered and have provided accurate credentials (e.g., user ID and password). Essentially, this function authenticates a terminal that attempts to access the game control device. Ex. 1007, [0095] (“The accepter 52 includes a function for accepting an access request including identification information from the mobile terminal 10, and also includes a function for accepting an access request including a user ID from PC 12. The functions of the accepter 52 are realized as described below. After receiving a HTTP request as access request from the mobile terminal 10 or the PC 12 of the user, the CPU 21 of the game server 20 identifies identification information, or user ID and a password, based on user agent character strings included in the HTTP request. The CPU 21 collates the identified identification information, or the identified user ID and the identified password, with the identification information, or the user ID and the password recorded in the user data of the user database 31. If the received access request is one from any of the registered users, the CPU 21 accepts the access request.”).

221. **Terminal Information Updater 53:** *Takahashi's* “terminal information updater” function (element 53 in Figure 10) keeps track of the various terminals that have been accepted (authenticated) by the acceptor function (element 52). Where a user accesses the game control device with multiple terminals (e.g., mobile terminal 10 and PC 12), the terminal information updater identifies one terminal as the main-terminal and the other as the sub-terminal for the game. Ex. 1007, [0097] (“Resultantly, in the case in which the CPU 21 receives accesses that are associated with identical user identification information from two communication terminals for example, the CPU 21 executes the following processing. That is, if one of the two communication terminals is identified as the PC 12 and other communication terminal is identified as the mobile terminal 10, then the CPU 21 identifies the PC 12 as a main-terminal and identifies the mobile terminal 10 as a sub-terminal.”).

222. After identifying main- and sub-terminals for a user, *Takahashi's* “terminal information updater” function stores this information in database 31, for example, in “terminal information of main-terminal” and “terminal information of sub-terminal” fields. Ex. 1007, [0097] (“After identifying a main-terminal and a sub-terminal, the CPU 21 writes terminal information of the identified communication terminal into the user database 31 in association with the user ID.”).

223. **Detector 54:** *Takahashi's* “detector” function (element 54 in Figure 10) determines whether a user is using one or more terminals to access the game control device. Ex. 1007, [0101]-[0102] (“The detector 54 includes a function for detecting accesses from a plurality of communication terminals that are associated with an identical user ID. The function of the detector 54 is realized as described below. The CPU 21 of the game server 20 refers to the user database 31 to compare terminal information of the main-terminal and terminal information of the sub-terminal. If the terminal information of the main-terminal and the terminal information of the sub-terminal are identical, then it is judged that there is an access from a single communication terminal. On the other hand, if the terminal information of the main-terminal and the terminal information of the sub-terminal are not identical, then it is judged that there are accesses from at least two communication terminals that are associated with an identical user ID.”).

224. **Game Executor 55:** *Takahashi's* “game executor” function (element 55 in Figure 10) is the part of the application that executes game play. This function executes the loop shown in Figure 12 (below), taking inputs from the user (“operational inputs”), executing the game program in response to those inputs, and transmitting HTML data representing the results of executing the program to the user's communication terminal(s). Ex. 1007, [104] (“The function of the game executor 55 is realized as described below. After there is an access from

communication terminal (s) (namely, the mobile terminal 10 and/or the PC 12), the CPU 21 of the game server 20 transmits HTML data (game data) to that communication terminal. The transmitted HTML data is for displaying a web page including a start button of the fishing game. After receiving a HTTP request including a game start request of the fishing game in response to an operation of a user to the communication terminal, the CPU 21 starts *executing the fishing game for the user thorough web pages*. The fishing game is executed in the following. That is, the CPU 21 recognizes respective operational inputs of the user to the communication terminal(s) (namely, the mobile terminal 10 and/or the PC 12). The CPU 21 executes a program in response to the operational inputs. Then, the CPU 21 transmits HTML data displaying web pages including execution results to the communication terminal(s) of the user. Operational inputs and contents to be processed in response to each operational input are written in the program of the fishing game described above.” (emphasis added)).

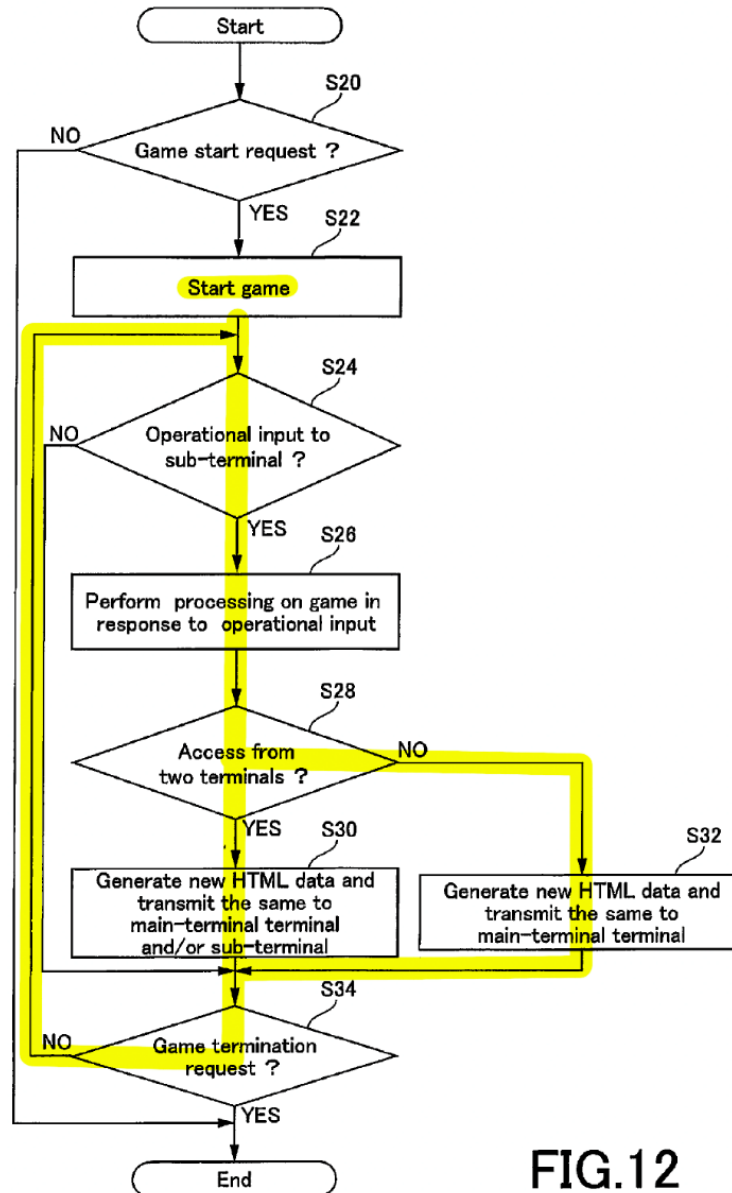


FIG.12

Ex. 1007, Figure 12 (execution loop highlighted).

225. **Game Controller 56:** *Takahashi's* “game controller” function (element 56 in Figure 10) transmits game data (e.g., HTML) to both the main-terminal (e.g., PC 12) and the sub-terminal (e.g., mobile terminal 10) during game play. Ex. 1007, [0106]-[0107] (“The game controller 56 includes a function for transmitting game data of the game being executed to the PC 12 (second

communication terminal) in response to an operational input to the mobile terminal 10 (first communication terminal) in the case in which there are accesses from a plurality of communication terminals that are associated with an identical user ID. The game data may be, for example, HTML data as described above. The function of the game controller 56 may be realized as described below, for example. In the case in which terminal information of the main-terminal and terminal information of the sub-terminal are different for user ID being processed, the CPU 21 of the game server 20 performs the following processing. That is, the CPU 21 generates HTML data (game data of the game being executed) based on information of an operational input included in a HTTP request received from the sub-terminal. The generated HTML data includes execution result of the program of the fishing game in response to the operational input. The CPU 21 then transmits the HTML data to the main terminal (PC 12 in FIG. 7). Further, as illustrated in FIG. 8, in the case in which the fishing game progresses with two screens, the CPU 21 also transmits HTML data to the sub-terminal (mobile terminal 10 in FIG. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (second game data) transmitted to the main-terminal and the HTML data (first game data) transmitted to the sub-terminal are different each other.”).

226. **Gameplay:** *Takahashi's* Figure 7 illustrates an example of a user playing the fishing game using both a PC and a mobile terminal. Ex. 1007, [0081] (“FIG. 7 illustrates a situation in which a user plays a fishing game, which is an example of a motion sensing game, by use of the user’s mobile terminal 10 and user’s PC 12.”).

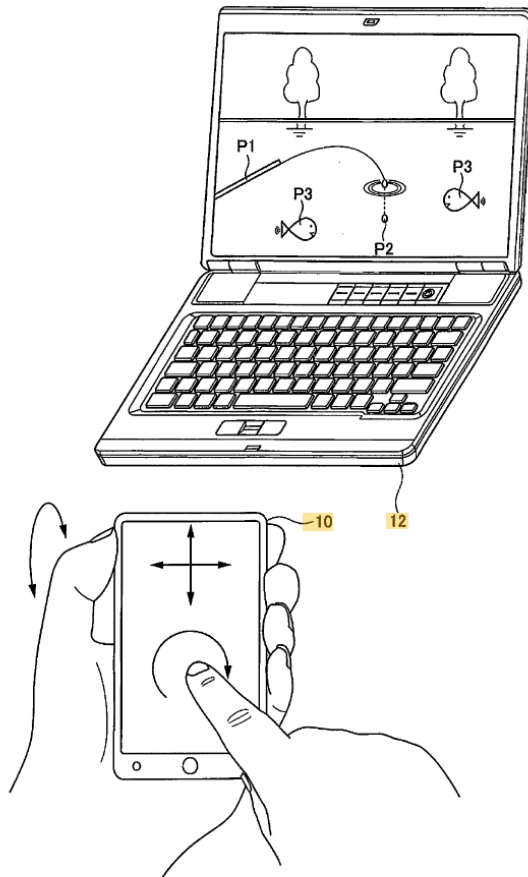


FIG.7

Ex. 1007, Figure 7.

227. *Takahashi* discloses the game play for Figure 7:

In FIG. 7, a game image of the fishing game being executed is displayed on the PC 12 in response to a user operation to the mobile terminal 10 as sub-terminal. The game image that is displayed on the display unit of the PC 12 includes a fishing rod object P1, a bait object P2, and fish

objects P3 that move in a pond which is a background image, for example.

This fishing game is configured such that, the fish objects P3 randomly move on the game image, and after reaching the bait object P2 at the edge of the fishing rod object P1, the fish object P3 stops moving for a certain period of time.

The user performs casting with regard to the fishing rod object P1 in the fishing game by swinging the mobile terminal 10. Depending on intensity and a direction (namely, output value of the accelerometer in the operational input unit 115) of the swinging action with respect to the mobile terminal 10, a position is determined where the bait object P2 is landed on the water by the casting. In the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in FIG. 7, a reel of the fishing rod object P1 is wound up in response to a user's moving operation with a finger of the user rotating on a display screen. In this fishing game, it is judged that the fish object P3 has been caught, if the user performs an operation with which the reel of the fishing rod object P1 is wound up while the fish object P3 stops moving at the position of the bait object P2 for a certain period of time. Further, in the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in FIG. 7, the bait object P2 for example may be selectable on the screen of the mobile terminal 10, in response to moving operations with regard to the display screen with a finger of the user in the forward, backward, right, or left direction (not illustrated in FIG. 7).

Ex. 1007, [0082]-[0084].

228. Although the mobile terminal can be used to provide input to the game (e.g., casting the fishing rod), *Takahashi* discloses mobile terminal may also be used to display user-specific information related to the game. For example, the mobile display may be used to depict the number of fish a user has caught in the game.

Ex. 1007, [0085] (“As illustrated in FIG. 8, based on the game progression status, the mobile terminal 10 as sub-terminal may be configured to display an image

including a fish tank object P4. The fish tank object P4 contains the fish objects P3 which is judged to have been caught, thereby allowing the user to visually recognize catches in fishing. In this case, the fishing game progresses with two screens. An image that is displayed on the mobile terminal 10 is updated every time it is judged that a fish object P3 has been caught. That is, images displayed on the PC 12 and the mobile terminal 10 may be updated such that, if it is judged that a specific fish object P3 has been caught, then the fish object P3 disappears from the pond, and the fish object P3 is added into the fish tank object P4.”).

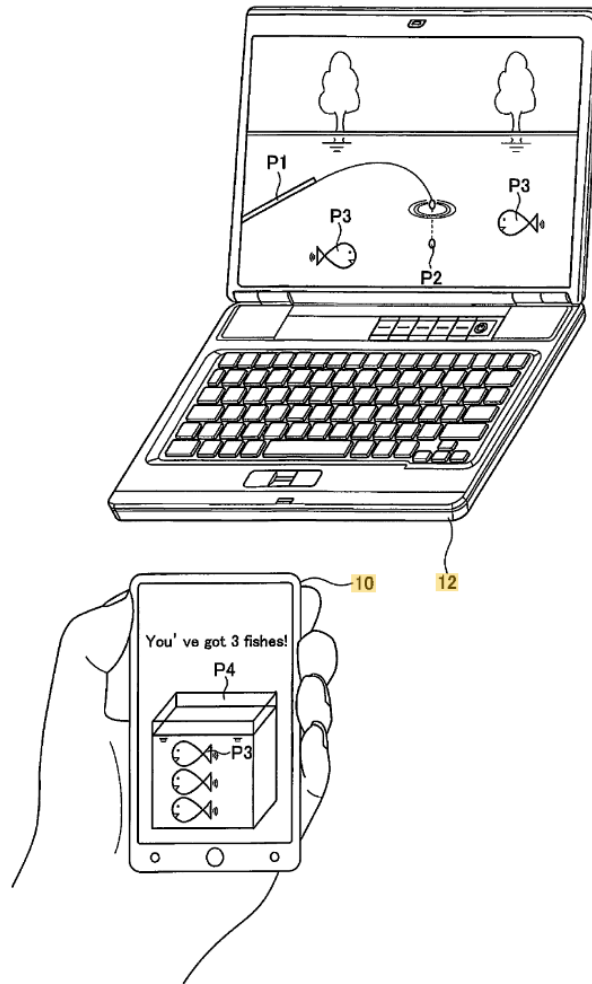


FIG.8

Ex. 1007, Figure 8.

229. *Takahashi* discloses the information displayed on the mobile terminal may be different from the information displayed on the PC so that information specific to a user will be displayed on that user's mobile device. Ex. 1007, [0120] ("Note that, as illustrated in FIG. 8, an image displayed on the mobile terminal 10 may be configured to be different from that displayed on the PC 12. This allows game entertainment to be enhanced, since *information indicating game results for respective users, or items and objects, etc., which the user owns in the*

game, apart from virtual game space indicating game environment, may be able to be displayed on the mobile terminal 10 which is held by a user's hand." (emphasis added)).

230. *Takahashi* discloses that the game control device, while explained with a fishing game, is not limited to fishing games, but can be used with "[a]ny game that is realized using a main-terminal and a sub-terminal." Ex. 1007, [0088] ("It should be noted that the fishing game is exemplified as a game provided by the game server 20 for convenience of explanation; however, a game provided from the game server 20 is not limited to a specific type of game. **Any game** that is realized using a main-terminal and a sub-terminal may be applied." (emphasis added)).

231. *Takahashi* discusses its applicability to other games throughout the specification. Ex. 1007, [0148] ("In the embodiments described above, the case is described in which a fishing game is applied; however, **applicable types of games are not limited to the fishing game.**" (emphasis added)); Ex. 1007, [0149] ("Examples have been described in which a game control system is configured with a social network game in the respective embodiments described above; however, the present invention is not limited to the social network game. Similar configuration can be realized with so called cloud gaming (On-demand type game utilizing cloud computing).").

B. Independent Claim 1

1. [1Preamble] “A method for transmitting information to multiple electronic devices, the method comprising:”

232. To the extent the preamble is limiting, *Takahashi* discloses this element. *Takahashi* discloses a “game control method” where information is transmitted to a plurality of communication terminals. Ex. 1007, [0006]-[0007], [0012] (“An object of the present invention is to provide a game control device, a non-transitory computer-readable recording medium, **a game control method**, and a game control system that allows a variety of types or forms of games by use of a plurality of communication terminals. An aspect of the present invention is a game control device, the device being connected through a communication network to communication terminals, the device comprising... In this game control device, the game controller may **transmit first game data** of the game being executed **to the first communication terminal**, and the game controller **transmits second game data** of the game being executed **to the second communication terminal** in response to an operational input to the first communication terminal.” (emphasis added)).

233. The game control device is described as performing the game control method and therefore discloses transmitting information (“first game data” and “second game data”) to multiple electronic devices (“first communication terminal” and “second communication terminal”).

2. [1a] “electronically storing a set of information at a server,”

234. *Takahashi* discloses this element. *Takahashi*’s “set of information” includes “a plurality of hierarchically structured web pages” and associated “objects such as images” (or “compressed image data,” etc.). This set of information is stored electronically (e.g., in ROM 22) on game server 20. Ex. 1007, [0062] (“For example, the game server 20 manages a website of a game including **a plurality of hierarchically structured web pages**. The game server 20 provides the mobile terminal 10 and PCs 12 with web service of a game. As illustrated in FIG. 4, the game server 20 includes a CPU 21, a ROM 22, a RAM 23, a database (DB) access unit 24, and a communication interface unit 25.” (emphasis added)); Ex. 1007, [0063] (“The **ROM 22** stores an application program that provides service of displaying a HTML document and **objects such as images (i.e., displaying a web page)** to the web browser of the mobile terminal 10 as a client. **A variety of data referenceable by the CPU 21 is stored in the ROM 22** in addition to the application program.” (emphasis added)); Ex. 1007, [0105] (“The game data transmitted to the communication terminal(s) (namely, the mobile terminal 10 and/or the PC 12) is not limited to HTML data, but may be **compressed image data** of game image to be displayed on the communication terminal(s).” (emphasis added)).

235. *Takahashi* discloses the information is stored at server 20, e.g., in ROM 22, which is part of game server 20. Ex. 1007, [0062] (“As illustrated in FIG.

4, the **game server 20 includes** a CPU 21, a **ROM 22**, a RAM 23, a database (DB) access unit 24, and a communication interface unit 25.” (emphasis added)). *Takahashi* further discloses that the database server 30 (which also stores information) may be part of server 20. In particular, “[t]he database server 30 can be realized by a general purpose storage such as a high-capacity hard disc drive, a redundant array of inexpensive disks (RAID) or other form of device. Databases inside the database server 30 are configured to allow reading and writing of data by the CPU 21 through the database access unit 24 of the game server 20.” Ex. 1007, [0068]. Thus, *Takahashi* discloses the databases are accessed not by a network connection (which might imply a separate server unit), but rather by a separate game server hardware interface, i.e., the “database access unit 24.” A POSITA would understand this interface as a regular on-device disk interface (SATA, SCSI, etc.) that “allows reading and writing of data by the CPU 21.” Ex. 1007, [0068].

3. [1b] “identifying a first subset of the information and identifying a second subset of the information, wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;”

236. *Takahashi* discloses this element. *Takahashi* discloses its game controller 56 function transmits first and second subsets of the information, i.e., first and second subsets of the “plurality of hierarchically structured web pages” and associated “objects such as images” (or “compressed image data,” etc.). For

example, when a user is using both a main-terminal and a sub-terminal, *Takahashi* discloses the game controller 56 transmits “second game data” to the main-terminal and “first game data” to the sub-terminal. Ex. 1007, [0107] (“[T]he CPU 21 generates HTML data (game data of the game being executed) based on information of an operational input included in a HTTP request received from the sub-terminal. The generated HTML data includes execution result of the program of the fishing game in response to operational input . . . [A]s illustrated in FIG. 8, in the case in which the fishing game progresses with two screens, the CPU 21 also transmits HTML data to the sub-terminal (mobile terminal 10 in FIG. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (*second game data*) transmitted to the main-terminal and the HTML data (*first game data*) transmitted to the sub-terminal are different each other.” (emphasis added)).

237. It is my opinion that a POSITA would understand that in order for *Takahashi*’s game controller function 56 to transmit the first and second subsets of game data to the different terminals, *Takahashi*’s system would necessarily need to *identify* the first and second subsets of information before transmitting them. Thus, *Takahashi* discloses identifying a first subset of the information (“second game data” for the main-terminal) and identifying a second subset of the information (“first game data” for the sub-terminal). In other words, the fact that *Takahashi* transmits

two different subsets of information to the two different terminals is an express disclosure that those different subsets are “identified” by the game control device before they are transmitted. At the very least, “identifying” the two subsets of information would be necessary in order to subsequently transmit those subsets of information.

238. *Takahashi* discloses the first and second subsets of information are generated by the same application at the server (i.e., server 20) and are specific to that application (e.g., fishing game). For example, the HTML data ultimately sent to the terminals is generated by “an application program” or “a game program” stored in ROM 22, which is part of server 20. Ex. 1007, [0063] (“The ROM 22 stores *an application program* that provides service of displaying a HTML document and objects such as images (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client. A variety of data referenceable by the CPU 21 is *stored in the ROM 22* in addition to the application program.” (emphasis added)); Ex. 1007, [0064] (“The CPU 21 loads a *game program stored in the ROM 22* into the RAM 23 and runs the loaded game program. The CPU 21 also performs a variety of processing through the communication interface unit 25.” (emphasis added)).

239. *Takahashi*’s Figures 7 and 8 provide examples of the subsets of information that are identified by the game program. In Figure 7, “[t]he game image that is displayed on the display unit of the PC 12 includes a fishing rod object P1, a

bait object P2, and fish objects P3 that move in a pond which is a background image.” Ex. 1007, [0082]. This subset corresponds to the “second game data” that is identified by game controller 56 function before it is transmitted to the main terminal. *See* Ex. 1007, [0107].

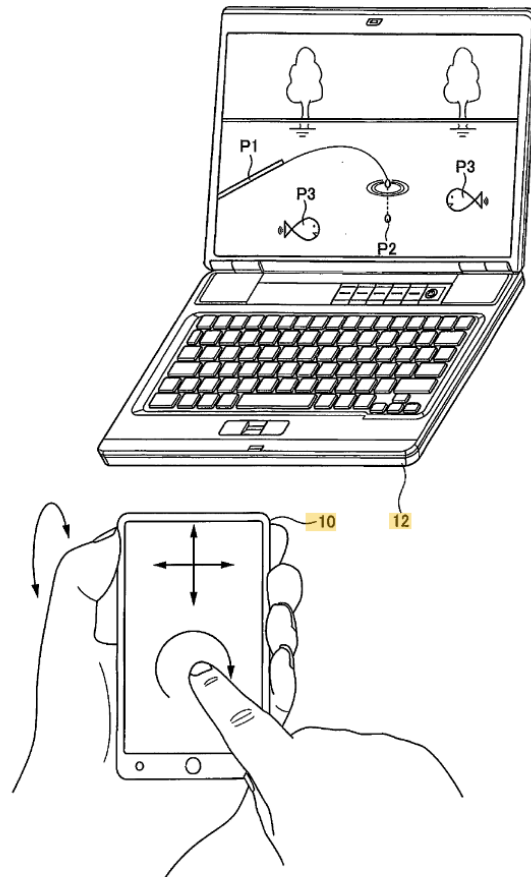


FIG.7

Ex. 1007, Figure 7.

240. In Figure 8, the subset of information identified for the sub-terminal is the “image including a fish tank object P4.” Ex. 1007, [0085] (“As illustrated in FIG. 8, based on the game progression status, the mobile terminal 10 as sub-terminal may

be configured to display an *image including a fish tank object P4.*” (emphasis added)).

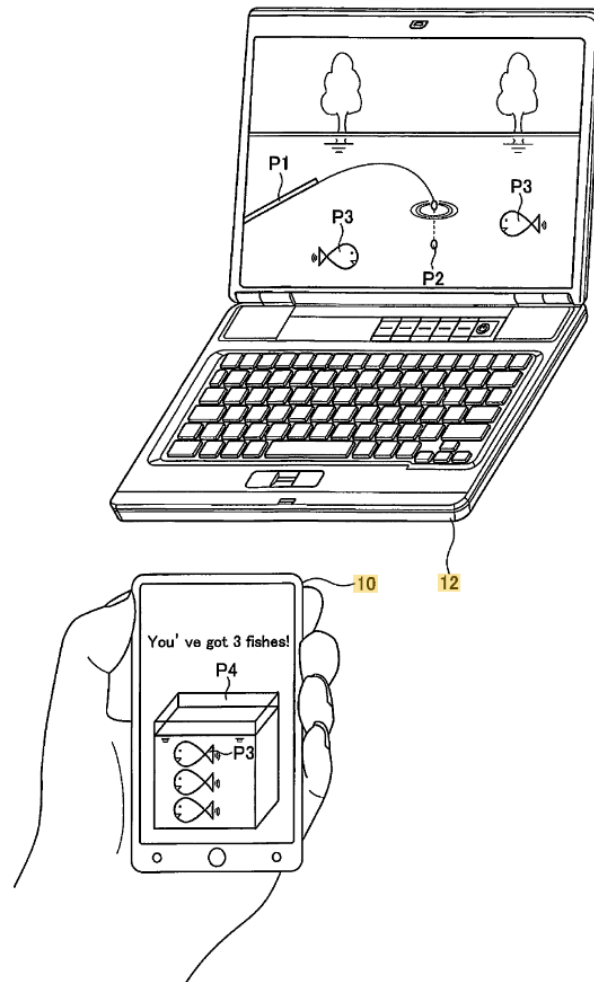


FIG.8

Ex. 1007, Figure 8.

241. In *Takahashi*, the HTML data identified as first and second subsets of the information is generated at game server 20 and is specific to the fishing game application, as can be seen in the images above (e.g., Figures 7 & 8).

4. [1c] “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;”

242. *Takahashi* discloses this element. *Takahashi* discloses a first device (PC) and a second device (mobile terminal/device) are in possession of and being directly operated by a first user. Specifically, *Takahashi* discloses “the case in which there are accesses from *a user* through *both a mobile terminal and a PC...*” Ex. 1007, [0078] (emphasis added).

243. *Takahashi* discloses the communication terminals (e.g., the user’s PC 12 and mobile terminal/device 10) connect to the game server using at least one electronic communications network, i.e., “a communication network NW such as the Internet.” Ex. 1007, [0040] (“As illustrated in FIG. 1, the game control system includes a *plurality of communication terminals that are connectable to a communication network NW such as the Internet*, a game server 20 that is connectable to the communication network NW, and a database server 30.” (emphasis added)).

244. *Takahashi* discloses determining whether the first and second devices are accessible over the network based on the first user being logged into the application at both devices. For example, *Takahashi*’s “detector 54 includes a

function for detecting accesses from a plurality of communication terminals that are associated with an identical user ID.” Ex. 1007, [0101].

245. More specifically detector 54 checks to see if the user is logged in by looking at user database 31 and, based on that information, determines whether both devices are accessible over the network. Detector 54 compares the “terminal information of main-terminal” field with the “terminal information of sub-terminal” field (in Figure 6), and if they are different for the current user, “then it is judged that there are accesses from at least two communication terminals that are associated with an identical user ID.” Ex. 1007, [0102]. In this case, the user is logged into the application on both terminals.

246. *Takahashi* is able to determine the user ID related to a request because each request from a PC or mobile terminal includes a user ID or other identification information (e.g., device serial number (Ex. 1007, [0074])) that is used to determine whether to accept the request. Ex. 1007, [0095] (“The acceptor 52 includes a function for accepting an access request including identification information from the mobile terminal 10, and also includes a function for accepting an access request including a user ID from PC 12. The functions of the acceptor 52 are realized as described below. After receiving a HTTP request as access request from the mobile terminal 10 or the PC 12 of the user, the CPU 21 of *the game server 20 identifies identification information, or user ID and a password, based on user agent*

character strings included in the HTTP request. The CPU 21 collates the identified identification information, or the identified user ID and the identified password, *with* the identification information, or the user ID and the password recorded in *the user data of the user database 31*. If the received access request is one from any of the registered users, the CPU 21 accepts the access request.” (emphasis added)).

247. An example in *Takahashi* demonstrates how the system determines whether the first (PC) and second (mobile terminal) devices are accessible over the network based on the first user being logged into the application at both devices. This example is when a user starts a game with just a single terminal and then accesses (or logs in) with a second terminal in the middle of the game. *Takahashi* discloses the game server “recognizes there is an access from the PC 12” and then updates the database to reflect access by two devices. This recognition is a determination that both devices are accessible based on the first user logging into the application with both devices. Ex. 1007, [0119] (“Note that there is a case in which a user starts the game by accessing first through a single communication terminal (mobile terminal 10, for example) and then accesses through the other communication terminal (PC 12, for example) as well in the middle of the game. In such case, after recognizing that there is an access from the PC 12, the game server 20 rewrites the database server 30 such that status in which the mobile terminal 10 is identified as both main-terminal and sub-terminal, is changed to status

in which the PC 12 is identified as main-terminal and the mobile terminal 10 as sub-terminal. The game server 20 then switches transmission destination of the HTML data for displaying a new web page from the mobile terminal 10 to the PC 12.”).

248. Figure 12 in *Takahashi* further discloses determining whether the first (PC) and second (mobile terminal) devices are accessible over the network based on the first user being logged into the application at both devices. For example, block S28 makes a determination if the user is accessing the game from two terminals (see below).

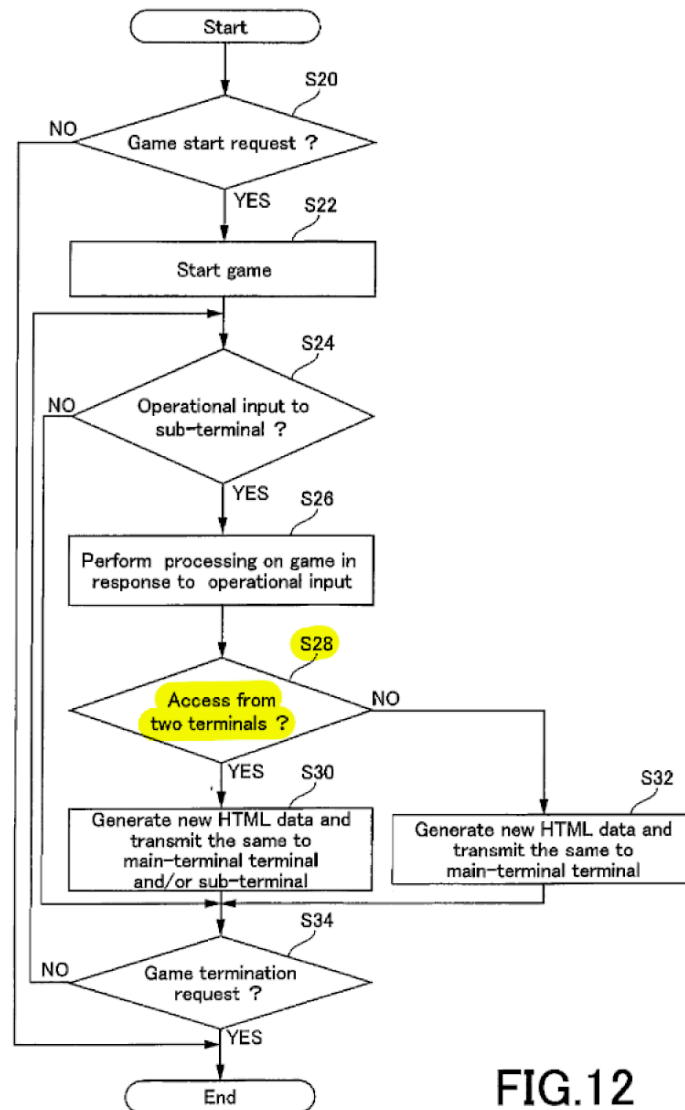


FIG.12

Ex. 1007, Figure 12 (annotated).

249. It is my opinion that a POSITA would understand that the user would be logged in at both terminals at this point because *Takahashi* discloses access requests are accepted when the user has registered. Ex. 1007, [0095] (“The acceptor 52 includes a function for accepting an access request including identification information from the mobile terminal 10, and also includes a function for accepting an access request including a user ID from PC 12. The functions of the

accepter 52 are realized as described below. After receiving a HTTP request as access request from the mobile terminal 10 or the PC 12 of the user, the CPU 21 of *the game server 20 identifies identification information, or user ID and a password, based on user agent character strings included in the HTTP request. The CPU 21 collates* the identified identification information, or the identified user ID and the identified password, *with* the identification information, or the user ID and the password recorded in *the user data of the user database 31*. If the received access request is one from any of the registered users, the CPU 21 accepts the access request.” (emphasis added)).

250. In addition, *Takahashi* expressly discloses the terminals are logged in. Ex. 1007, [0109]-[0110] (“Processing of FIGS. 11 and 12 is performed for every user ID. The flowchart of FIG. 11 represents processing *after a registered user (that is, a user whose user ID is registered) logs in to the game server 20.*” (emphasis added)); Ex. 1007, [0114] (“An access is received to the game server 20 (that is, *a user logs in.*” (emphasis added)). Notably, while *Takahashi* uses the term “logins,” it is clear from the certified translation of the *Takahashi* Priority Application this refers to “logging in.” Ex. 1009, [0054] (“The flow chart of Fig. 11 represents processing after a registered user (that is, a user whose user ID is registered) *logs in* to the game server 20.” (emphasis added)); Ex. 1009, [0056] (“When access to the

game server 20 is accepted (that is, *a user logs in*), HTML data (game data) is transmitted to any one of the user's communication terminals..." (emphasis added)).

5. [1d] **"if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device."**

251. *Takahashi* discloses this element. For example, *Takahashi* discloses determining both the first and second devices are accessible by the server as explained above for claim element [1c]. *Takahashi* further discloses transmitting "first game data" to the sub-terminal (mobile device) and different "second game data" to the main-terminal if and only if both devices are determined to be accessible by the server. Ex. 1007, [0106]-[0107] ("*[I]n the case in which there are accesses from a plurality of communication terminals that are associated with an identical user ID. ... The CPU 21 then transmits the HTML data to the main terminal (PC 12 in FIG. 7). Further, as illustrated in FIG. 8, in the case in which the fishing game progresses with two screens, the CPU 21 also transmits HTML data to the sub-terminal (mobile terminal 10 in FIG. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (second game data) transmitted to the main-terminal*

and the HTML data (first game data) transmitted to the sub-terminal are different each other.” (emphasis added)).

252. As shown in Figure 12, “[i]f the game server 20 is accessed from two communication terminals of a user (Step S28: YES), then it generates HTML data (new HTML data) for displaying a new web page based on the results of execution of the program. The game server 20 then transmits the HTML data to the PC 12 as main-terminal. Alternatively, as illustrated in FIG. 8, the game server 20 does not only transmit the HTML data to the PC 12, but it also transmits HTML data to the mobile terminal 10 as sub-terminal (Step S30). *The transmitted HTML data to the mobile terminal 10 is different from the one transmitted to the PC 12.*” Ex. 1007, [0116] (emphasis added).

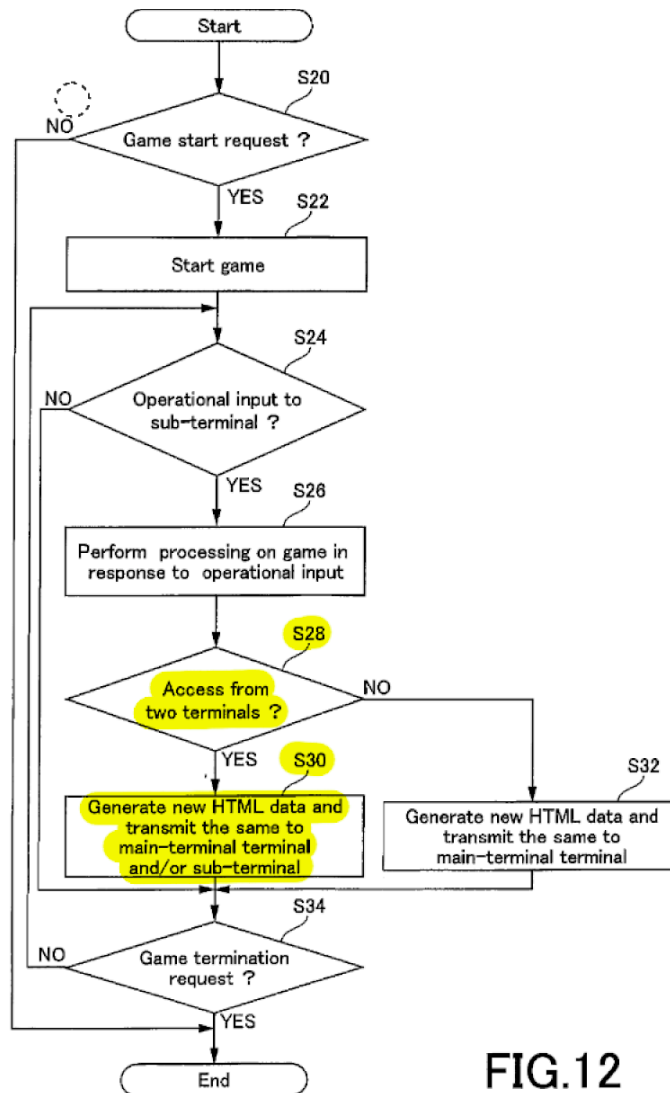


FIG.12

Ex. 1007, Figure 12 (annotated).

253. Regarding “if and only if,” *Takahashi* sends “different” HTML data to the main-terminal (PC) and sub-terminal (mobile terminal) when the server determines both terminals are accessible by the server, and *Takahashi* does not send different HTML data to the main-terminal (PC) and sub-terminal (mobile terminal) when the server determines both terminals are not accessible by the server. For example, this is illustrated in block S32 in Figure 12 (above), where the server sends

HTML data to one main-terminal instead of to both the main-terminal and sub-terminal. Ex. 1007, [0117] (“Meanwhile, ***if the game server 20 is accessed from a single communication terminal*** (mobile terminal 10 in this case) of a user (***Step S28: NO***), then it generates HTML data (new HTML data) for displaying a new web page based on the results of execution of the program. The ***game server 20 then transmits the HTML data to the mobile terminal*** 10 as both main-terminal and sub-terminal (Step S32).” (emphasis added)).

254. When *Takahashi* determines both terminals are accessible by the server, the claimed “if and only if” requirement is satisfied because *Takahashi*’s server transmits “different” HTML data to the main-terminal and sub-terminal. Ex. 1007, [0116].

255. When *Takahashi* determines both terminals are not accessible by the server, the claimed “if and only if” requirement is satisfied because *Takahashi* then does not transmit “different” HTML data to the main-terminal and sub-terminal. Rather, the server does not send anything to the sub-terminal and sends all HTML data to the main-terminal. Ex. 1007, [0017].

- C. Claim 2 — “The method of claim 1, further comprising transmitting at least a portion of the first subset of the information to the second device from the server only if both the first and second devices are determined to be accessible by the server.”**

256. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. In the context of *Takahashi*, the remainder of claim 2 requires transmitting at least a portion of the game information that was sent to the main-terminal (first subset of information) to the sub-terminal (second device) “only if both the first and second devices are determined to be accessible by the server.” *Takahashi* discloses this claim because the game server sends the same fish object image data to both the main-terminal and the sub-terminal, for example, as illustrated and described for Figure 8.

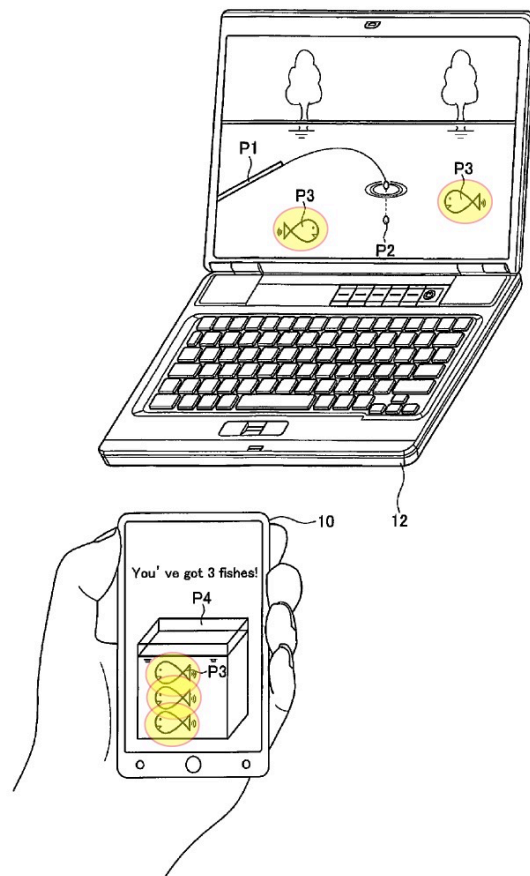


FIG.8

Ex. 1007, Figure 8 (annotated).

257. *Takahashi* discloses the information displayed on the user's terminals is "HTML document[s] and objects such as images" that is provided by the game server 20. Ex. 1007, [0063]-[0065] ("The ROM 22 stores an application program that provides service of displaying *a HTML document and objects such as images* (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client.... For example, the *CPU 21 transmits HTML data to the mobile terminal 10 and/or the PC 12* through the communication interface unit 25." (emphasis added)).

258. Based on this disclosure, it is my opinion a POSITA would understand the fish objects P3 in Figure 8, because they are not text, would be image data provided to the terminal by the game server. In other words, HTML is made up of textual HTML documents that reference images (e.g., JPEG file, etc.). *Takahashi* discloses the game server sends those HTML documents and images to the terminals. Ex. 1007, [0063]-[0065].

259. As illustrated, the game server transmits fish object P3 to both the main-terminal (PC 12) and the sub-terminal (mobile terminal 10). Thus, the server transmits the same image data to both the main-terminal and the sub-terminal when both terminals are determined to be accessible by the server. Ex. 1007, [0085] (“As illustrated in FIG. 8, based on the game progression status, the mobile terminal 10 as sub-terminal may be configured to display an image including a fish tank object P4. The fish tank object P4 contains the *fish objects P3* which is judged to have been caught, thereby allowing the user to visually recognize catches in fishing. In this case, the fishing game progresses with two screens. An image that is displayed on the mobile terminal 10 is updated every time it is judged that a *fish object P3* has been caught. That is, images displayed on the PC 12 and [images displayed on] the mobile terminal 10 may be updated such that, if it is judged that a specific *fish object P3* has been caught, then the *fish object P3* disappears from the pond, and the *fish object P3* is added into the fish tank object P4.” (emphasis added)).

260. Regarding “only if,” it is my opinion a POSITA would read this limitation as effectively a subset of the “if and only if” requirement of claim 1 because the condition is essentially the same (accessibility of both devices). Thus, it is my opinion that *Takahashi* renders this “only if” limitation obvious for the same reasons as discussed for element [1d].

D. Claim 3 — “The method of claim 1, wherein the first subset of the information comprises non-sensitive information; and the second subset of the information comprises sensitive information.”

261. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* discloses “the first subset of the information comprises non-sensitive information; and the second subset of the information comprises sensitive information” because user-specific information (“sensitive information”) is part of the “second subset” of information the game server transmits to the sub-terminal (mobile device) and normal game-play information (“non-sensitive information”) is part of the first subset of information the game server transmits to the main-terminal (PC).

262. For example, *Takahashi* discloses sensitive information, i.e., the fish objects the user has caught or “owns,” as part of the second subset of information (transmitted to mobile terminal) with respect to Figure 8: “Note that, as illustrated in FIG. 8, an image displayed on the mobile terminal 10 may be configured to be different from that displayed on the PC 12. This allows game entertainment to be

enhanced, since *information indicating game results for respective users, or items and objects, etc., which the user owns in the game*, apart from virtual game space indicating game environment, *may be able to be displayed on the mobile terminal 10 which is held by a user's hand.*” Ex. 1007, [0120] (emphasis added).

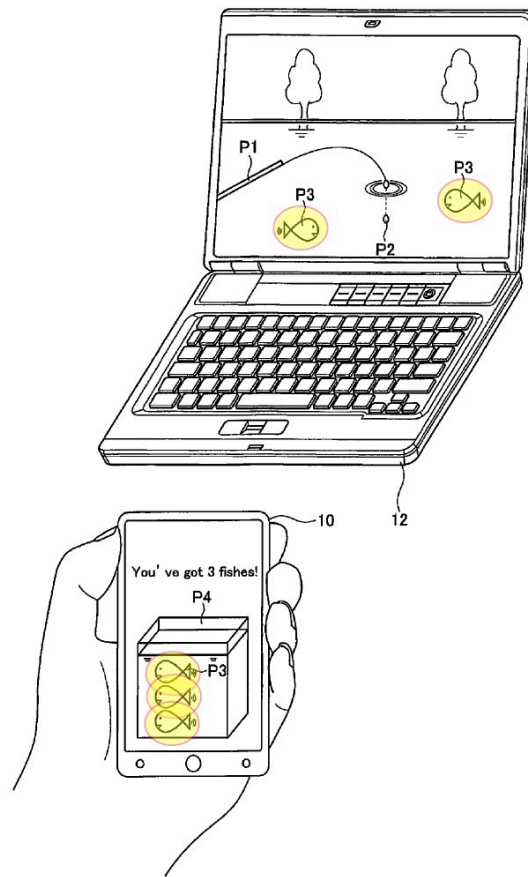


FIG.8

Ex. 1007, Figure 8 (annotated). Further, the game results (e.g., the user's score shown on the mobile device in Figure 8) is “sensitive” in the context of *Takahashi's* second embodiment where “the users may compete for a number of fish objects that are taken in a period of time in the game.” Ex. 1007, [0122]. In this scenario (multi-

player games such as the fishing game or other known multi-player games), knowing another player's score could provide a player with an unfair advantage.

263. *Takahashi* discloses non-sensitive information, i.e., the game environment, as part of the first subset of information (transmitted to main terminal) with respect to Figure 8: “Note that, as illustrated in FIG. 8, an image displayed on the mobile terminal 10 may be configured to be different from that displayed on the PC 12. This allows game entertainment to be enhanced, since information indicating game results for respective users, or items and objects, etc., which the user owns in the game, apart from *virtual game space indicating game environment*, may be able to be displayed on the mobile terminal 10 which is held by a user's hand.” Ex. 1007, [0120] (emphasis added).

E. Claim 4 — “The method of claim 1, wherein the information received at the second device is more sensitive than the information received at the first device.”

264. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* discloses receiving user-specific information (“sensitive information”) at the second device (mobile terminal), as discussed above for claim 3. The user-specific information is more sensitive than the non-user-specific information that is received at the first device (PC 12). *See* analysis of claim 3, above.

F. Claim 5 — “The method of claim 1, further comprising: determining if connectivity between the server and the second device has been disrupted; and providing a notification on the second device that the connectivity has been disrupted.”

265. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* discloses the second device (mobile terminal) utilizes a web browser to play the fishing game. Ex. 1007, [0046] (“The mobile terminal 10 and the PCs 12 each includes a web browser that is able to display a web page provided by the game server 20. A user plays a game by operating the sub-terminal which is either of the mobile terminal 10 and PC 12.”). It is my opinion that a POSITA would understand that web browsers utilize the HTTP protocol, and that the web browser executing on the mobile terminal (second device) would determine if connectivity between the server had been disrupted when it did not receive a response to an HTTP request it sent to the game server. After determining the connection has been disrupted, the browser would provide a notification on the mobile terminal’s display (second device), for example, an HTTP status code “503 Service Unavailable.” Further, *Gumbula* shows a POSITA has general knowledge of determining if a client-server connection is disrupted and, if so, providing a notification on the client device. *Gumbula* shows this knowledge in the context of an HTTP connection, which is used by *Takahashi*. Ex-1011, Abstract (“Heartbeat messages are exchanged between the chat client and the server at predetermined time intervals. When a failure to receive a heartbeat message for

longer than one of the predetermined time intervals, then a lost connection message is provided to at least one of the server and client.”), 1:56-60 (“conventional solutions available [in 2005 did] not transparently recover a lost Hyper Text Transmission Protocol (HTTP) connection between the server and the client, nor notify the status of the connection to the parties involved.”), 4:44-49 (“If either client 12 or the server component 14 does not see a heartbeat message during the check interval then the client 12 displays the message ‘Lost connection to the server, retrying...’ and the server component 14 sends a message to the agent 20 ‘Client has lost connection to the server, retrying...’.”).

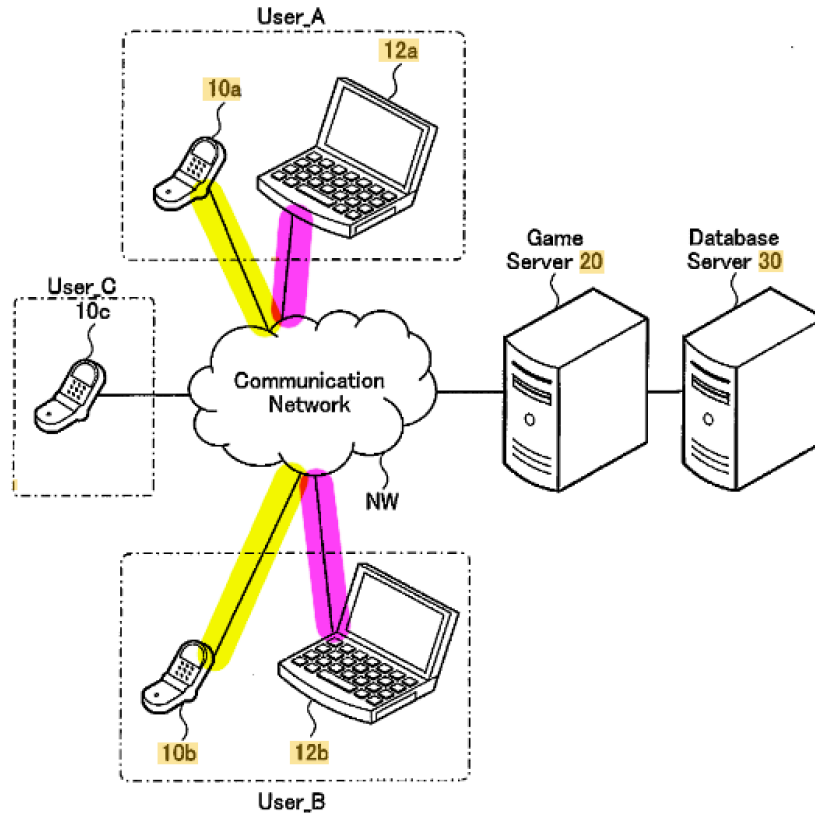
266. Because *Takahashi* discloses an HTML-based game that uses web browsers for the game display, the HTTP error notification is (1) necessarily present in or (2) the natural result of the *Takahashi*’s web-browser-based game system.

G. Claim 9 — “The method of claim 1, wherein the transmitting a first subset of the information to the first device from the server and transmitting a second subset of the information to the second device from the server are executed over independent electronic communications networks.”

267. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* discloses the main-terminal (first device) is a personal computer and the sub-terminal (second device) is a mobile phone. Ex. 1007, [0041] (“In the example illustrated in FIG. 1, the communication terminals 12a, 12b are *personal computers*.” (emphasis added)); Ex. 1007, [0049]

(“FIG. 2A illustrates a communication terminal with a button input system such as, for example, a foldable communication terminal (*mobile telephone*).” (emphasis added)). At the time of the invention a person of ordinary skill in the art would understand that a personal computer typically connects by means of a wired or Wi-Fi network (which is an electronic communications network), distinct and independent from the cellular networks (also an electronic communications network) employed by mobile phones.

268. Additionally, *Takahashi*’s Figure 1 shows separate connection lines (highlighted yellow) from the mobile phones (10a, 10b) to the communication network compared to the connection lines (highlighted pink) from the personal computers (12a, 12b) to the communication network, thus confirming the use of independent communications networks:



Ex. 1007, Figure 1 (annotated).

H. Claim 10 — “The method of claim 1, further comprising displaying a graphical identifier on the first device and a corresponding graphical indicator on the second device indicating a link between the information displayed on the respective devices.”

269. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* discloses displaying a graphical identifier (fish object) on the first device (main-terminal) and a corresponding graphical indicator (fish object) on the second device (sub-terminal) indicating a link between the information displayed on the respective devices (the link is the indication that the fish information that was first displayed on the first

device (main-terminal) was caught and is now displayed in the fish tank on the second device (sub-terminal)).

270. *Takahashi* discloses: “As illustrated in FIG. 8, based on the game progression status, the mobile terminal 10 as sub-terminal may be configured to display an image including a fish tank object P4. The fish tank object P4 contains the fish objects P3 which is judged to have been caught, thereby allowing to visually recognize catches in fishing. In this case, the fishing game progresses with two screens. An image that is displayed on the mobile terminal 10 is updated every time it is judged that a fish object P3 has been caught. That is, images displayed on the PC 12 and the mobile terminal 10 may be updated such that, if it is judged that a specific fish object P3 has been caught, then the fish object P3 disappears from the pond, and the fish object P3 is added into the fish tank object P4.” Ex. 1007, [0085].

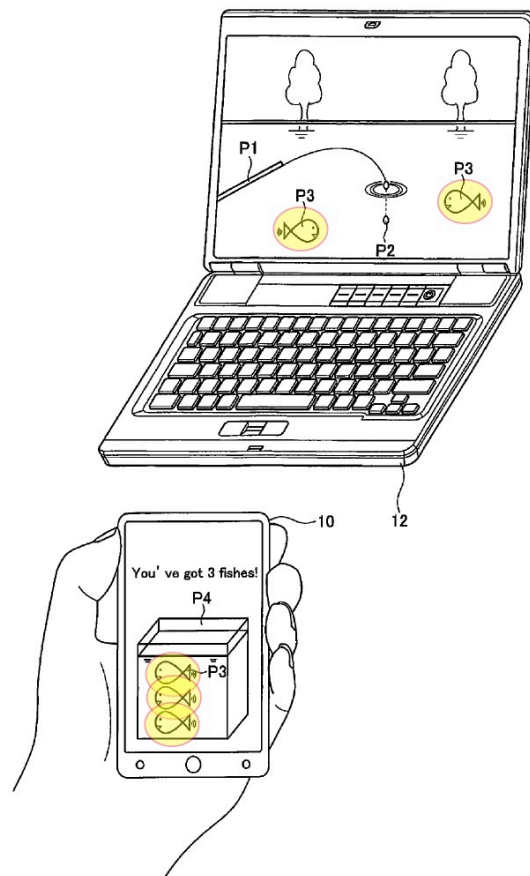
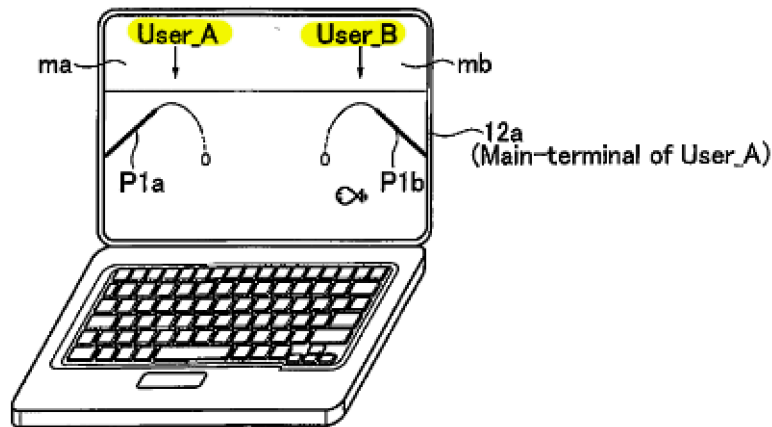


FIG.8

Ex. 1007, Figure 8 (annotated).

271. *Takahashi* also discloses claim 10 with respect to the 2-player embodiment. In 2-player mode, *Takahashi* includes graphical identifiers (“User_A” and “User_B”) on the first device (PC 12) owned by User_A:



Ex. 1007, Figure 18 (excerpted and annotated).

272. *Takahashi* discloses that at the end of a two-player game, the results of the game can be presented on the second device (mobile terminal 10):

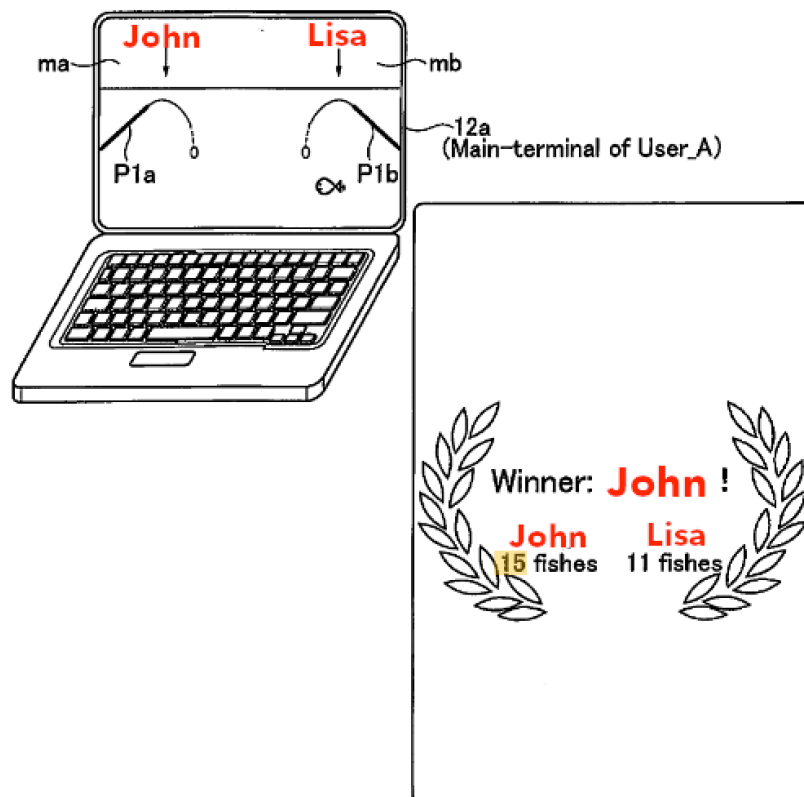


Ex. 1007, Figure 16 (excerpted).

273. The graphical “User_A” and “User_B” on this screen (Figure 16) are graphical indicators indicating a link between the information displayed on the two

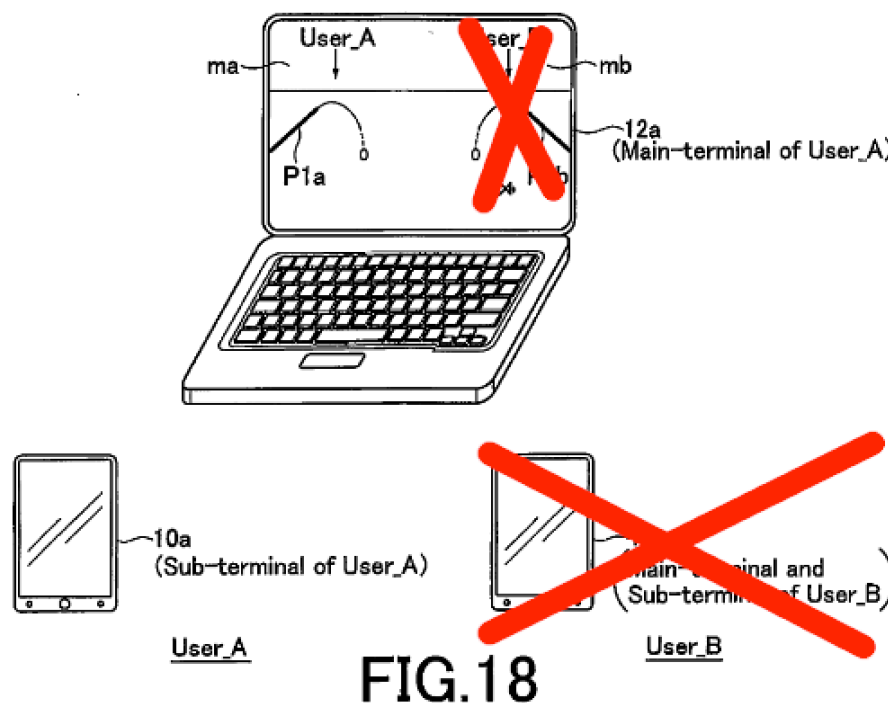
devices (i.e., this winner announcement corresponds to the game between User_A and User_B that was displayed on the first device (PC 12)).

274. Further, *Takahashi* discloses the identifier and indicators “User_A” and “User_B” may instead be user names: “it is preferable that the marks for identifying the fishing rod objects for the respective users include texts for user names or the like.” Ex. 1007, [0136]. Thus, when actual usernames for “User_A” and “User_B” are used, the graphical identifiers and indicator (i.e., the usernames) further indicate a link between the display of the results (Figure 16) and the specific game that was displayed on the main terminal. This link is shown in the modified figures below:



Ex. 1007, Figures 18 & 16 (modified).

275. While *Takahashi's* 2-player embodiment is a separate embodiment from the embodiment discussed above with respect to claim 1, all the same elements discussed for claim 1 are still present in the 2-player embodiment. For example, the 2-player embodiment includes two users, User_A and User_B and by simply removing User_B's mobile terminal and fishing rod from the main-terminal, the system looks and operates just like the 1-person embodiment:



Ex. 1007, Figure 18 (annotated).

276. Thus, for all the limitations of claim 1, the analysis of the 2-person embodiment is the same as the analysis of the 1-person embodiment.

I. Claim 13 — “The method of claim 1, wherein the a display on the first device is being viewed exclusively by a first user and a display on the second device is also being viewed exclusively by the first user.”

277. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi*’s Figure 7 “illustrates a situation in which a user plays a fishing game.” Ex. 1007, [0081]. Because “a user” is singular, there is only one player, and that player is viewing both displays.

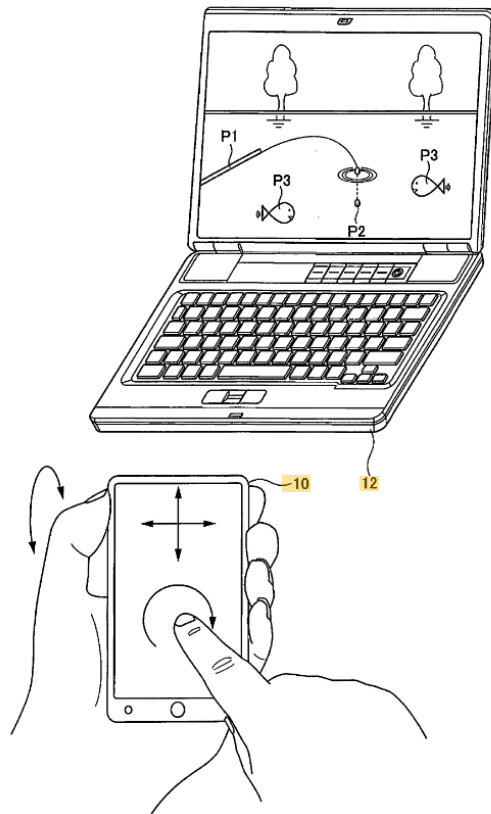


FIG.7

Ex. 1007, Figure 7. Additionally, *Takahashi* discloses a single-user embodiment (“First Embodiment” starting at [0039]) and a multi-user embodiment (“Second Embodiment” starting at [0121]). The single-user embodiment further confirms the

“display on the first device is being viewed exclusively by a first user and a display on the second device is also being viewed exclusively by the first user.”

J. Claim 14 — “The method of claim 1, wherein neither the first subset of information nor the second subset comprise a two factor authentication code.”

278. *Takahashi* discloses this claim. *Takahashi* discloses “the method of claim 1,” as discussed above. Additionally, *Takahashi* makes no reference to employing two factor authentication codes.

K. Dependent Claim 16 —

1. [16Preamble] “The method of claim 1, further comprising”

279. To the extent the preamble is limiting, *Takahashi* discloses “the method of claim 1,” as discussed above.

2. [16a] “configuring the server for managing an online game, and”

280. *Takahashi* discloses this element. *Takahashi* discloses game server 20 is configured to “manage[] a website of a game.” Ex. 1007, [0062] (under heading “Game Server Configuration”). It is my opinion a POSITA would understand this disclosure to indicate the game server was configured for managing the online fishing game. *Takahashi* discloses, “*the game server 20 is configured to* be able to communicate with the mobile terminal 10 and the PC 12 as clients and *provides the communication terminals with gaming service.*” Ex. 1007, [0045] (emphasis added).

3. [16b] “wherein the server is configured to communicate with a plurality of devices including a first electronic device and a second electronic device,”

281. *Takahashi* discloses this element. For example, *Takahashi* discloses the game server is configured to communicate with the plurality of devices, including the first and second electronic devices: “With this game control system, the game server 20 is configured to be able to communicate with the mobile terminal 10 and the PC 12 as clients and provides the communication terminals with gaming service.” Ex. 1007, [0045].

4. [16c] “wherein the first electronic device is primarily used to play the game, and”

282. *Takahashi* discloses this element. For example, *Takahashi* discloses the first electronic device (PC 12) is used primarily to play the game (i.e., it is called the “main” terminal) when a user logs in to play with both a PC and a mobile phone. Ex. 1007, [0119] (“[A]fter recognizing that there is an access from the PC 12, the game server 20 rewrites the database server 30 such that status in which the mobile terminal 10 is identified as both main-terminal and sub-terminal, is changed to status in which *the PC 12 is identified as main-terminal* and the mobile terminal 10 as sub-terminal. The *game server 20 then switches transmission destination of the HTML data for displaying a new web page* from the mobile terminal 10 *to the PC 12.*” (emphasis added)). *Takahashi* only describes using the first electronic device (PC 12) in the context of the game and, therefore, a person having ordinary

skill in the art would have understood that, when playing the game, the first electronic device is primarily used to play the game.

5. [16d] “wherein in the game server communicates sensitive information to the second electronic device so that sensitive information can be presented to a user.”

283. *Takahashi* discloses this element. For example, as discussed above for claims 3 and 4, *Takahashi* discloses the game server communicating user-specific information to the user’s mobile terminal (second electronic device).

L. Claim 23 — “The method of claim 1, further comprising electronically storing at the server a parameter indicating whether subsets of the information are to be divided between two or more devices.”

284. *Takahashi* discloses this claim. In *Takahashi*’s 2-player game embodiment, “the CPU 21 of the game server 20 recognizes that the two users are friends by referring to the user database 31” and then “transmits the HTML data to either or both of the main-terminals of the two user IDs as friends” (Ex. 1007, [0126]) or alternatively, “the CPU 21 may also transmit HTML data to either or both of the sub-terminals of the two user IDs as friends. The transmitted HTML data to either or both of the sub-terminals may be different from the one transmitted to the main-terminals” (Ex. 1007, [0127].) Thus, in this example, the CPU uses a parameter from the user database 31 to determine whether subsets of the information (HTML data) are to be divided between two devices (the main-terminals of the two user IDs

as friends) or to more than two devices (the main-terminals and the sub-terminals for the two user IDs).

285. The parameter is necessarily stored in the game server 20 since it serves as the basis for the determination of where to transmit particular information. In other words, although the parameter is also stored in user database 31 that resides on database server 30, one of ordinary skill in the art would understand that *Takahashi's* disclosure of the game server 20 "referring to the user database 31" means the game server necessarily obtained a copy of the parameter from the database and stored that parameter, at least temporarily, in local memory so that it could be used by its various functions (e.g., the function deciding whether subsets of the information are to be divided between two or more devices).

286. I note that my opinion related to claim 23 is guided by, and is consistent with, Patent Owner's apparent understanding of this claim. In particular, I am informed that Patent Owner provided infringement contentions in the related district court litigation and alleges infringement of claim 23 because "The Kahoot! server must have information that indicates how to communicate with the shared computer and how many mobile devices are involved in the quiz. That information is a parameter indicating whether subsets of the information are to be divided between two or more devices." Ex. 1014-16.

287. Again, it should be noted that although I rely on the 2-player embodiment as disclosure for the additional limitations of claim 23 (which depends from claim 1), my analysis of the 1-player embodiment for claim 1 applies equally to the 2-player embodiment because the User_A hardware and functionality does not materially change when a second user is added for the 2-player embodiment.

M. Dependent Claim 24 —

1. [24Preamble] “The method of claim 1, wherein”

288. To the extent the preamble is limiting, *Takahashi* discloses “the method of claim 1,” as discussed above.

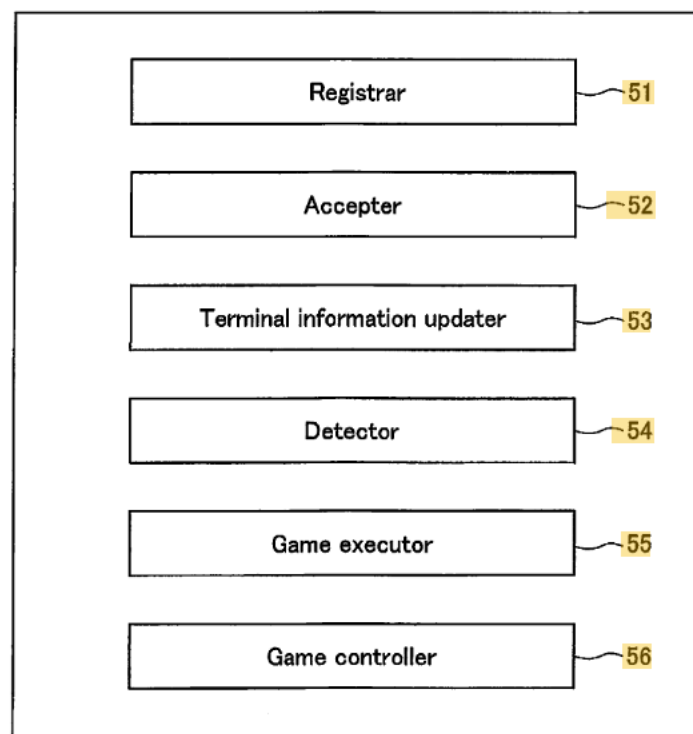
2. [24a] “the first and second subsets of information are application-specific, and”

289. *Takahashi* discloses this element. For example, *Takahashi* discloses the use of images specific to the application (such as the fish images in the game example) that appear on both the main-terminal and the sub-terminal (e.g., Figure 8) and, thus, are included in the first and second subsets of information. Ex. 1007, [0085] (“In this case, the fishing game progresses with two screens. An image that is displayed on the mobile terminal 10 is updated every time it is judged that a fish object P3 has been caught. That is, images displayed on the PC 12 and [images displayed on] the mobile terminal 10 may be updated such that, if it is judged that a specific fish object P3 has been caught, then the fish object P3 disappears from the pond, and the fish object P3 is added into the fish tank object P4.”); Ex. 1007, [0063]

(“The ROM 22 stores an *application program* that provides service of displaying a HTML document and *objects such as images* (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client. A variety of data referenceable by the CPU 21 is stored in the ROM 22 in addition to the application program.” (emphasis added)).

3. [24b] “wherein the first and second subsets of information derive from functions within a specific application.”

290. *Takahashi* discloses this element. For example, *Takahashi* discloses the first and second subsets of information derive from functions illustrated in “FIG. 10 [, which] is a functional block diagram for explaining functions that play main rolls in the game control device according to the present embodiment.” Ex. 1007, [0089].



Ex. 1007, Figure 10.

291. The first and second subsets of information (for different terminals) derive from *Takahashi's* “game controller” function (element 56 in Figure 10), which determines and transmits game data (e.g., HTML) to both the main-terminal (e.g., PC 12) and the sub-terminal (e.g., mobile terminal 10) during game play. Ex. 1007, [0106]-[0107] (“The game controller 56 includes a function for transmitting game data of the game being executed to the PC 12 (second communication terminal) in response to an operational input to the mobile terminal 10 (first communication terminal) in the case in which there are accesses from a plurality of communication terminals that are associated with an identical user ID. The game data may be, for example, HTML data as described above. The function of the game controller 56 may be realized as described below, for example. In the case in which terminal information of the main-terminal and terminal information of the sub-terminal are different for user ID being processed, the CPU 21 of the game server 20 performs the following processing. That is, the CPU 21 generates HTML data (game data of the game being executed) based on information of an operational input included in a HTTP request received from the sub-terminal. The generated HTML data includes execution result of the program of the fishing game in response to the operational input. The CPU 21 then transmits the HTML data to the main terminal (PC 12 in FIG. 7). Further, as illustrated in FIG. 8, in the case in which the fishing game progresses with two screens, the CPU 21 also

transmits HTML data to the sub-terminal (mobile terminal 10 in FIG. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (second game data) transmitted to the main-terminal and the HTML data (first game data) transmitted to the sub-terminal are different each other.”).

292. The functions are part of a “specific application,” i.e., the “game program.” Ex. 1007, [0064] (“The CPU 21 loads *a game program* stored in the ROM 22 into the RAM 23 and runs the loaded game program. The CPU 21 also performs a variety of processing through the communication interface unit 25.” (emphasis added)).

N. Independent Claim 25 —

1. [25Preamble] “A system for transmitting information to multiple electronic devices, the system comprising:

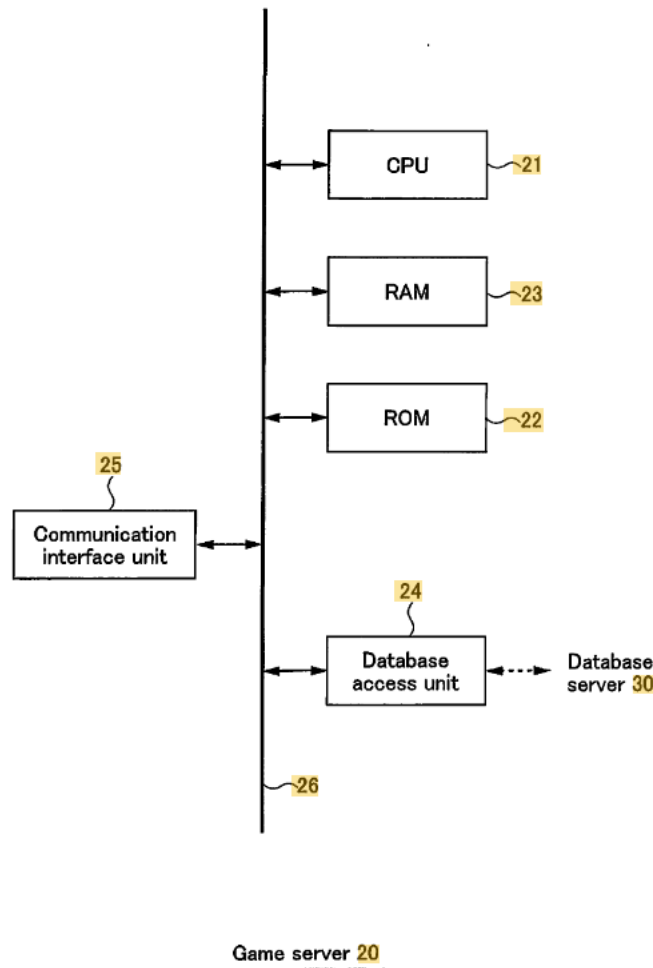
293. To the extent the preamble is limiting, *Takahashi* discloses this element. *Takahashi* discloses the “game control system” of Figure 1. Ex. 1007, [0018] (“FIG. 1 illustrates a basic configuration diagram of a game control system according to a first embodiment;”).

294. *Takahashi* discloses that the system transmits information to a plurality of communication terminals (electronic devices). Ex. 1007, [0006]-[0007], [0012] (“An object of the present invention is to provide a game control device, a non-transitory computer-readable recording medium, a game control method, and a

game control system that allows a variety of types or forms of games by use of a plurality of communication terminals. An aspect of the present invention is a game control device, the device being connected through a communication network to communication terminals, the device comprising... In this game control device, the game controller may *transmit first game data* of the game being executed *to the first communication terminal*, and the game controller *transmits second game data* of the game being executed *to the second communication terminal* in response to an operational input to the first communication terminal.” (emphasis added)).

2. [25a] an electronic data store configured for electronically storing a set of information at a server,

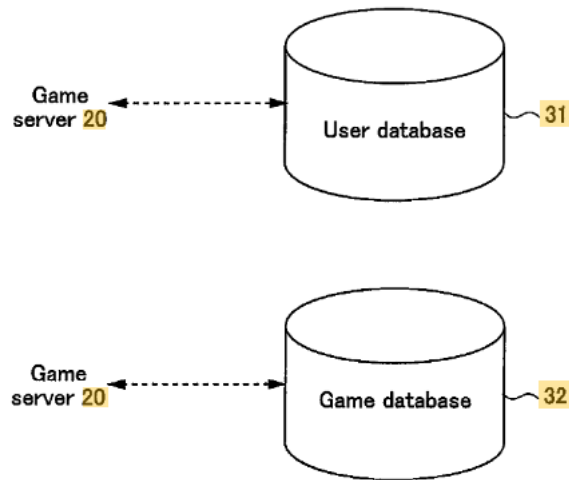
295. *Takahashi* discloses this element. For example, *Takahashi* discloses ROM 22 that is part of game server 20 that stores HTML documents and images (information). Ex. 1007, [0063] (“The ROM 22 stores an application program that provides service of displaying a HTML document and objects such as images (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client. A variety of data referenceable by the CPU 21 is stored in the ROM 22 in addition to the application program.”).



Ex. 1007, Figure 4.

296. It is my opinion that a POSITA would understand a ROM read-only memory is an electronic data store configured for electronically storing information.

297. *Takahashi* also discloses user database 31 and game database 32 that is part of database server 30 “realized by a general purpose storage such as a high-capacity hard disc drive, a redundant array of inexpensive disks (RAID) or other form of device” that stores other information (user information and game information). Ex. 1007, [0068]; Ex. 1007, [0023] (“FIG. 5 is a block diagram of a configuration of a database server according to the first embodiment;”).



Ex. 1007, Figure 5.

298. It is my opinion that a POSITA would understand a database (e.g., user database 31, game database 32) is an electronic data store configured for electronically storing information.

3. [25b] “wherein the first and second subsets of information are generated by the same application at the server and are specific to that application;”

299. To the extent this element is understandable, *Takahashi* discloses this element. Notably, “the first and second subsets of information” does not appear before this limitation in the claim. Thus, there appears to be an antecedent basis problem. These subsets appear to be recited later in the claim, and I assume for purposes of this report that this element is referring to “a first subset of the information” and “a second subset of the information” that appear later in the claim.

300. This element is also found in claim 1 and a similar limitation is found in claim 24. *Takahashi* discloses this element as explained for claim elements [1b] and [24a].

4. [25c] “a processor device programmed for:”

301. *Takahashi* discloses this element. For example, *Takahashi* discloses CPU 21 (i.e., a processor or central processing unit) that is part of game server 20. Ex. 1007, [0062] (“For example, the game server 20 manages a website of a game including a plurality of hierarchically structured web pages. The game server 20 provides the mobile terminal 10 and PCs 12 with web service of a game. As illustrated in FIG. 4, the game server 20 includes a **CPU 21**, a ROM 22, a RAM 23, a database (DB) access unit 24, and a communication interface unit 25.” (emphasis added)).

5. [25d] “identifying a first subset of the information and identifying a second subset of the information;”

302. This element is also found in claim 1. *Takahashi* discloses this element as explained for claim element [1b].

6. [25e] “determining at the server whether both a first device in possession of and being directly operated by a first user and a second device also in possession of and being directly operated by the first user are accessible over at least one electronic communications network based on the first user being logged into the application at both the first and second devices;”

303. This element is also found in claim 1. *Takahashi* discloses this element as explained for claim element [1c].

7. [25f] “if and only if both the first and second devices are determined to be accessible by the server, then: transmitting a first subset of the information to the first device from the server; and transmitting a second subset of the information to the second device from the server, wherein the second subset of the information includes information not transmitted to the first device.”

304. This element is also found in claim 1. *Takahashi* discloses this element as explained for claim element [1d].

O. POSITA’s General Knowledge

305. As addressed above (in this Ground 7), *Takahashi* fully discloses all elements of claims 1-5, 9-10, 13-14, 16, and 23-25. Alternatively, it would have been obvious to a POSITA to modify *Takahashi* in view of the POSITA’s general knowledge to achieve the features of claims 1-5, 9-10, 13-14, 16, and 23-25. Additionally, it is my opinion that claims 12 and 17 would have been obvious in view of *Takahashi* and the POSITA’s knowledge.

1. Independent Claim 1 (and all dependent claims) and Claim 25 —

a) “a method”

306. To the extent Patent Owner argues that *Takahashi*’s disclosure of a *system* does not expressly disclose *the method* of claim 1 (and its dependent claims), it is my opinion that a POSITA would find the method obvious based on the system. In particular, a POSITA would understand that all of the capabilities that are

disclosed for *Takahashi*'s system represent operations or steps that are performed by the system.

b) “at a/the server”

307. *Takahashi* discloses the limitations of claims 1, 23, and 25 that reference a “server.” As discussed above, it is my opinion that *Takahashi*'s game server 20 satisfies the “server” of the claims. See claims 1, 23, and 25 above.

308. Patent Owner might argue that one or more of the server elements of claims 1, 23, and 25 is not taught by *Takahashi* because *Takahashi* also uses database server 30, which is illustrated as a separate physical unit. Ex. 1007, Figure 1. Although I disagree with this view because database server is disclosed as being part of game server 20 (*see* discussion for element [1b]), it is nevertheless my opinion that a POSITA would find it obvious to combine the functionality of database server 30 with game server 20, i.e., as a single physical unit.

309. Even assuming *Takahashi*'s database server and game servers are physically distinct servers, it is my opinion that to a POSITA in 2014, *Takahashi*'s assumed server topology, utilizing an application server (i.e., game server 20) and a separate database server (i.e., database server 30), would be common. The two servers together would provide the functionality needed for *Takahashi*'s “game control device,” i.e., the application and the data used by the application. It is my opinion that in 2014, a POSITA would understand that *Takahashi*'s assumed

example topology is just one potential topology and that other topologies would be available, for example, using a single server that functions as both the game (application) server and the database server. It is my opinion that a POSITA would also understand that a “device” need not (nor commonly would) be monolithic. It could (and often would) be comprised of a set of components that together make the “device.”

310. For example, in U.S. Patent Pub. No. 2012/0253841 (published Oct. 4, 2012) (“’841 Application”) (Ex. 1015), it is acknowledged that application servers and database servers related to an application may reside on the same physical server or separate physical servers: “In an example embodiment, one of the devices to which the client’s 20 may be coupled via the network 30 may include one or more application servers (e.g., application server 40), and/or a database server 42, which together may form respective elements of a server network 32. Although the application server 40 and the database server 42 are each referred to as ‘servers,’ this does not necessarily imply that they are embodied on separate servers or devices. As such, for example, a POSITA would understand a single server or device may include both entities and the database server 42 could merely be represented by a database or group of databases physically located on the same server or device as the application server 40.” Ex 1015, [0021].

311. U.S. Patent Pub. No. 2012/0209770 (published Aug. 16, 2012) (“’770 Application”) (Ex. 1016) discloses an application server providing data over the internet via HTML (Ex. 1016, [0133]) and further confirms that using the same or separate servers for application and database functions was well known in the art prior to 2014. “It should be noted that the functions described with respect to various servers herein (e.g., application server, database server, host server, file server, etc.) can be performed by a single server and/or a plurality of specialized servers, depending on implementation-specific needs and parameters.” Ex. 1016, [0134].

312. Indeed, as discussed above with respect to the ’841 Application and the ’770 Application, a POSITA would know that application servers and database servers related to an application may reside on the same physical server or separate physical servers. Thus, assuming *Takahashi*’s depicts two physically separate servers, that is a mere design choice and a POSITA would be successful in combining game server 20 and database server 30 into a single physical server, rendering claims 1, 23, and 25 (and all claims that depend from claim 1) obvious.

313. Additionally, it is my opinion that a POSITA at the time of the alleged ’376 invention would understand that a term such as “a/the server” is principally one of functionality, referring to one or more physical components that would jointly provide the services and functionality of “a server.” Thus, a more granular design where a “server” is realized by two components jointly providing services and where

the server functionality is shared in a cooperative manner among the two components would be understood by a POSITA to provide “a/the server” functionality at a less granular design level.

c) “determining [whether devices are accessible] based on the first user being logged into the application at both the first and second devices”

314. *Takahashi* discloses that users are logged into the application before the game server will process access requests from the user’s terminals (i.e., mobile terminals or personal computers). Ex. 1007, [0109]-[0110], [0114]. To the extent it is argued that *Takahashi* does not disclose “basing the determination of whether first and second devices are accessible on the first user being logged in,” it is my opinion this functionality would have been obvious based on the POSITA’s general knowledge. In particular, a POSITA would know that basing the determination on user login would reduce the load that the game server would otherwise experience if users who have not logged in (e.g., guest users) could play games whenever they want. In addition, by basing the determination on the user being logged in, a POSITA would understand the game server can save bandwidth by not attempting to transmit data to users who are no longer logged in (e.g., users who logged out). Additionally, a POSITA would understand that *Takahashi*’s disclosure that the identification of a main-terminal and a sub-terminal among the single or the plurality of communication terminal(s) of the user(s) whose access request has been accepted

requires that the identity of the user(s) be determined. A POSITA would understand that a commonly employed basis for such a determination would be the user(s) logging into the server, thereby providing credentials sufficient to make the identification across a plurality of terminals. Evidence of this general knowledge is evident from the other prior art references discussed herein, such as *Zha* and *Tsushima*, both of which enforce a login policy so that the server can identify and access the devices seeking to use the disclosed applications. Thus, to the extent necessary, a POSITA would be motivated and would reasonably expect to be successful in basing the determination on the user being logged into the application at both the first and second device, rendering claim 1 and all dependent claims obvious.

d) “if and only if”

315. As discussed above for claim element [1d], *Takahashi* discloses the “if and only if” claim language because it (1) transmits first and second subsets of information to two devices when they are determined to be accessible and (2) does not transmit first and second subsets of information to two devices when they are determined not to be accessible. If it is argued this limitation is missing in *Takahashi*, it is my opinion this limitation would be obvious in view of the POSITA’s general knowledge. For example, a POSITA would know to modify *Takahashi* in order to save bandwidth by transmitting information if and only if both terminals of a user

are determined to be accessible. Additionally, transmitting information to terminals that are not accessible could result in error messages or other exceptions. Evidence of this general knowledge is evident from the other prior art references discussed herein, such as *Tsushima*, which discloses enforcement of an “if and only if” policy at step S503 of Figure 5 (*see, e.g.*, discussion in Ground 8). Consequently, claim 1 and all dependent claims would be rendered obvious.

2. Claim 2 —

a) “transmitting at least a portion of the first subset of the information to the second device”

316. As discussed above for claim 2, *Takahashi* discloses that some of the first subset of information sent to the main-terminal (e.g., the fish image) is also sent to the sub-terminal. To the extent it is argued that *Takahashi* does not expressly disclose “transmitting at least a portion of the first subset of the information to the second device,” it is my opinion that this limitation would have been obvious based on *Takahashi* and a POSITA’s general knowledge of how HTML works. In particular, a POSITA would know that the fish objects that are displayed on both the main-terminal and the sub-terminal could use the same image file (e.g., a JPEG image). Further, a POSITA would find it desirable to use the same image file on both terminals to ensure continuity in game play and avoid confusion as to whether a particular fish was caught.

b) “only if”

317. As discussed above for claim 2, *Takahashi* discloses the “only if” condition. To the extent it is argued this aspect of claim 2 is missing from *Takahashi*, a POSITA would have been motivated to modify *Takahashi* with a reasonable expectation of success for the same reasons discussed above with respect to “if and only if” of claim 1.

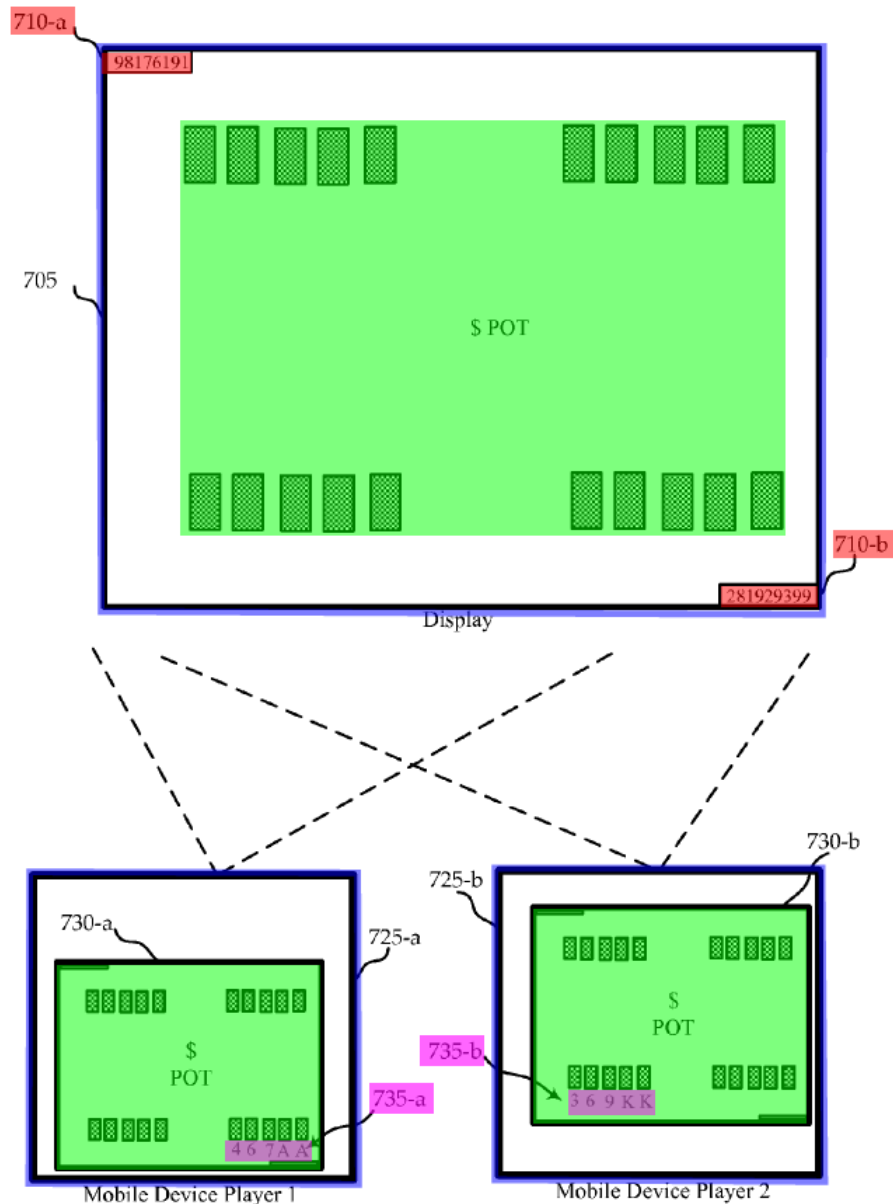
3. Claims 3 & 4 — “sensitive information,” “non-sensitive information,” and “more sensitive” information

318. As discussed for claims 3 and 4, *Takahashi* discloses sensitive information such as user-specific information (e.g., “game results for respective users, or items and objects, etc., which the user owns in the game” (Ex. 1007, [0120])) is displayed on a user’s mobile terminal and not the main-terminal. To the extent it is argued that *Takahashi* does not expressly disclose “sensitive information” and “non-sensitive information” (claim 2) or “more sensitive” information (claim 3), it is my opinion that these limitations would have been obvious based on *Takahashi* and a POSITA’s general knowledge of other games that could be played using *Takahashi*’s system.

319. In particular, *Takahashi* discloses “that the fishing game is exemplified as a game provided by the game server 20 for convenience of explanation; however, a game provided from the game server 20 is not limited to a specific type of game. Any game that is realized using a main-terminal and a sub-terminal may be applied.”

Ex. 1007, [088]. Thus, a POSITA would understand *Takahashi* encourages use with other games that require both the PC and the mobile device and, in so doing, the POSITA would look to other prior art in the same field as *Takahashi*, including *Stafford* and U.S. Patent Pub. No. 2006/0058088 (“*Crawford*”) (Ex. 1018).

320. As discussed above in Ground 5, *Stafford* discloses using both a main terminal and a mobile terminal to play poker. In *Stafford*’s Figure 7, “image 705 is video card game on a display (e.g., the video display 110 of FIG. 1, 2, or 3). In the image 705, there are markers 710 identifying binary codes placed in certain corners.” Ex. 1012, [0064].



Ex. 1012, Figure 7 (annotated).

321. “Images 725-a and 725-b illustrate captured video for different mobile devices (e.g., mobile device 115 of FIG. 1, 2, 3, 4, or 5): image 725-a is the image generated for player 1, image 725-b is the image generated for player 2. Images 730-a and 730-b illustrate a portion of the captured video game content from a video display (i.e., a portion of captured image 705). The markers 710 may be processed

to track images 730-a and 730-b within images 725-a and 725-b, respectively.” Ex. 1012, [0065].

322. *Stafford* discloses the mobile phones process the markers captured from the display 705 to identify and display images 725-a and 725-b on the mobile devices. “Image 735-a discloses the cards for player 1 (but player 2’s cards are not shown anywhere in the rest of image 725-a); image 735-b discloses the cards for player 2 (but player 1’s cards are not shown anywhere in the rest of image 725-b). This illustrates how secret views for the players may be maintained.” Ex. 1012, [0065].

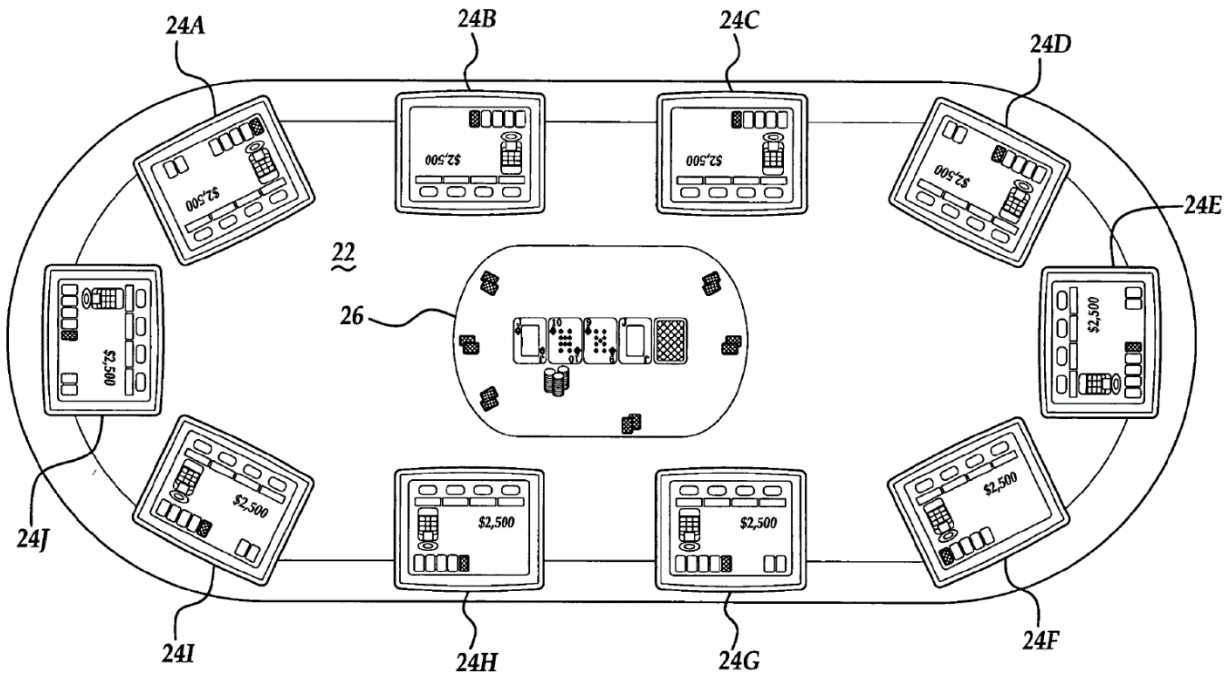
323. Thus, *Stafford* discloses a poker game that includes images on a main display (e.g., 705) and images on mobile devices (e.g., 725-a and 725-b) where the information displayed on the mobile devices is “secret” because it shows each individual user’s hole cards in a game of poker (e.g., 4, 6, 7, A, A for mobile device player 1 (725-a)).

324. Counsel informs me *Crawford* (Ex. 1018) is prior art under at least 35 U.S.C. § 102(a)(2) because it was effectively filed on November 19, 2004, almost 10 years prior to the ’376 patent’s filing date on July 28, 2014. Ex. 1012, [22].

325. *Crawford* also discloses using both a main terminal and a mobile terminal to play poker. In particular, *Crawford* discloses the “central display area”

as the main terminal and “electronic player interaction area 24” as the mobile terminal (“hand-held device ... such as a personal data assistant):

- “As discussed above, the hole cards 28 are displayed face-down on the respective electronic player interaction area 24 and the common cards are displayed in the central display area 26. In one aspect, the common cards 30 are displayed at a larger size than the hole card 28.” Ex. 1018, [0118].
- “With reference to FIGS. 9 and 10, each electronic player interface area 24 implements a player interface 54. The player interfaces 54 may be implemented on the table top 20 (see above), or in the module 34. In another embodiment, the player interface 54 may be implemented on a hand-held device 58, such as a personal data assistant (PDA).” Ex. 1018, [0066].



Ex. 1018, Figure 7.

326. Thus, like *Stafford*, *Crawford* discloses a poker game that includes a main display (e.g., 26) and mobile devices (e.g., 24A-J) where the information displayed on the mobile devices is secret because it shows each individual user's hole cards in a game of poker.

327. Thus, it is my opinion a POSITA would have general knowledge of poker games, including those that use a main terminal and a sub terminal to protect the player's sensitive hold cards at least as early as 2004 when *Crawford* was filed. (*Stafford* was filed six years later in 2010. Ex. 1012, [22].)

328. It is my opinion that a POSITA would be motivated to implement poker games such as those disclosed in *Crawford* and *Stafford* in *Takahashi*'s system with a reasonable expectation of success because *Takahashi* expressly discloses that

“[a]ny game that is realized using a main-terminal and a sub-terminal may be applied.” Ex. 1007, [088]. It is my opinion that a POSITA would understand such an implementation is simply using a known technique (*Takahashi*’s system) to improve similar products (poker game products) in the same way (in a web-based client-server environment according to *Takahashi*’s disclosure).

329. It is my opinion that a POSITA would be successful in implementing a poker game with community cards displayed on a main terminal and hole card displayed in a mobile terminal, as that game concept would be well within a POSITA’s general knowledge as evidenced by *Crawford* and *Stafford*. A POSITA would actually find it easier to implement than the *Takahashi*’s fishing game because the poker game is relatively static whereas the fishing game requires real-time feedback to control a fishing rod in the main terminal based on a user casting via movement of the mobile terminal.

330. It is my opinion that claims 3 and 4 are rendered obvious because the POSITA is motivated to implement the poker game in *Takahashi*’s system with a reasonable expectation of success. The hole cards are the “sensitive information” (claim 3) and the “more sensitive” information (claim 4). The communal cards on the main display are the “non-sensitive information” (claim 3).

4. Claim 12 — “The method of claim 1, wherein the information received at the second device is a user’s private cards in an online card game.”

331. It is my opinion claim 12 is rendered obvious by *Takahashi* and a POSITA’s general knowledge. As just discussed, a POSITA would be motivated to implement the poker games of *Stafford* and *Crawford* in *Takahashi*’s system with a reasonable expectation of success, and the hole cards in that online poker game would be received at the second device (user’s mobile terminal).

5. Claim 17 — “The method of claim 16, wherein the online game is poker and wherein the information that is communicated to the second device includes hole cards.”

332. It is my opinion claim 17 is rendered obvious by *Takahashi* and a POSITA’s general knowledge. As just discussed, a POSITA would be motivated to implement the poker games of *Stafford* and *Crawford* in *Takahashi*’s system with a reasonable expectation of success, and the hole cards in that online poker game would be communicated by the game server to the second device (user’s mobile terminal).

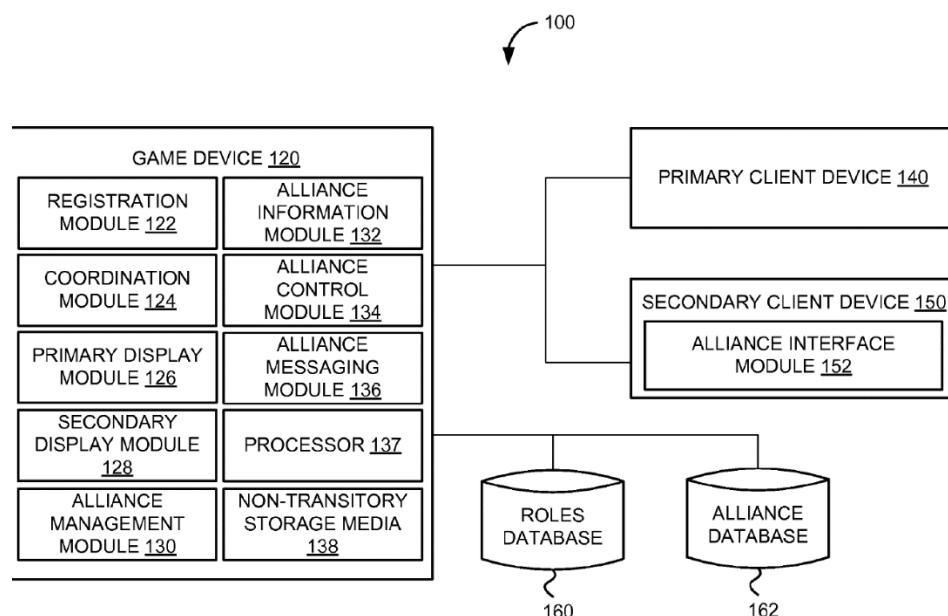
6. Claim 9 — “transmitting ... over independent electronic communications networks”

333. As discussed for claim 9, *Takahashi* discloses the server transmitting information to the first and second devices “over independent electronic communications networks” as depicted by the different connection lines between the mobile devices and PCs in Figure 1. Ex. 1007, Figure 1. To the extent it is argued

that *Takahashi* does not expressly disclose “transmitting ... over independent electronic communications networks,” it is my opinion that this limitation would have been obvious based on *Takahashi* and a POSITA’s general knowledge of other multi-client, client-server systems where the server transmits information to mobile devices via a cellular network and the server transmits information to personal computers via a wired network.

334. U.S. Patent No. 9,330,531 (“*Wakeford*”) (Ex. 1013) was filed on March 14, 2013, more than a year prior to the ’376 patent’s filing date on July 28, 2014. Ex. 1013, [22].

335. *Wakeford* is directed to a multi-client, client-server gaming system: “System 100 may include a game device 120, a primary client device 140, a secondary client device 150, and/or other components.” Ex. 1013, 4:9-11.



Ex. 1013, Figure 1.

336. Figure 3C “illustrates a block diagram of a second particular architecture for interacting with the game device, according to an embodiment of the invention.” Ex. 1013, 3:16-18.

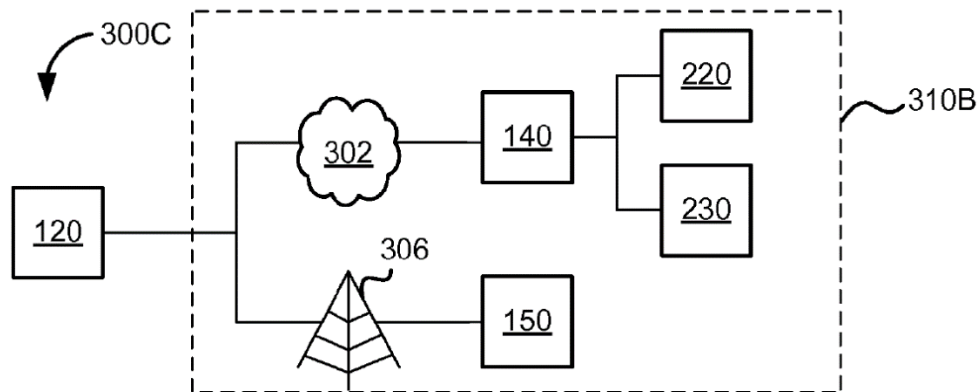


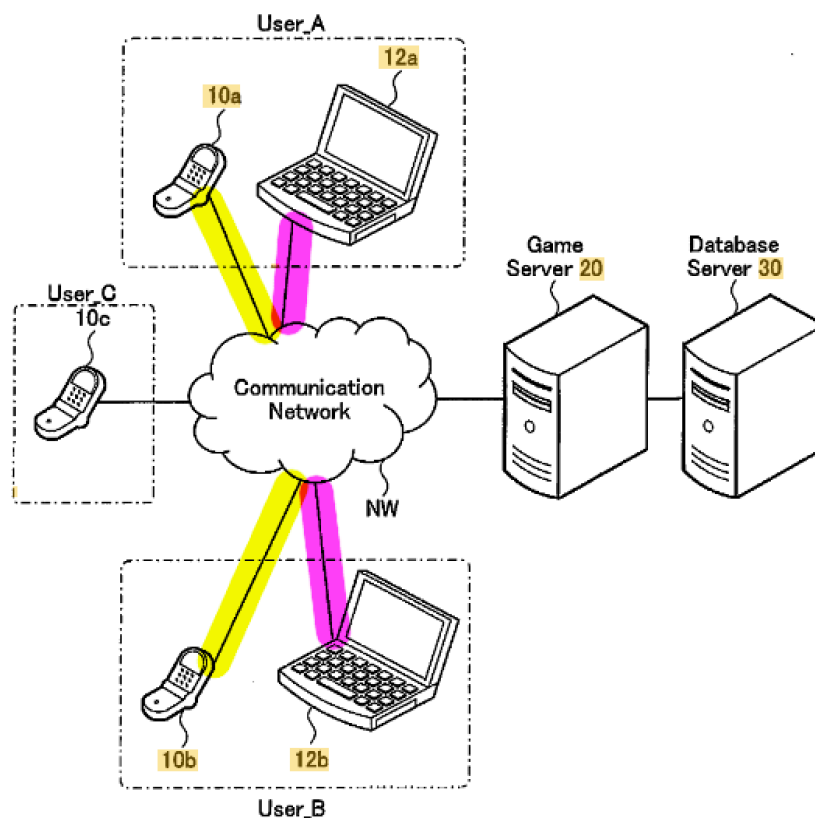
FIG. 3C

Ex. 1013, Figure 3C.

337. In Figure 3C, “game device 120 may be configured as a networked server device that facilitates online gameplay between one or more users.” Ex. 1013, 11:23-25. Figure 3C illustrates “primary client device 140” and “secondary client device 150” that are “communicably coupled” to game device 120. Ex. 1013, 4:9-11, 11:13-16. *Wakeford* discloses that “instead of using the same communication channel over network 302 as primary client device 140, secondary client device 150 may use a separate network connection, such as a cellular communications network 306.” Ex. 1013, 11:41-44.

338. *Wakeford* is evidence a POSITA would know that servers in multi-client, client-server applications are capable of transmitting information “over

independent electronic communications networks” using known techniques. This general knowledge, combined with *Takahashi*’s depiction of two separate connection lines (highlighted pink and yellow below) confirms my opinion that claim 9 would be obvious in view of *Takahashi* and the POSITA’s general knowledge.



Ex. 1007, Figure 1 (annotated).

XVII.GROUND 8: CLAIMS 1-5, 9-10, 12-14, 16-17, AND 23-25 ARE OBVIOUS IN VIEW OF *TAKAHASHI* AND *TSUSHIMA*

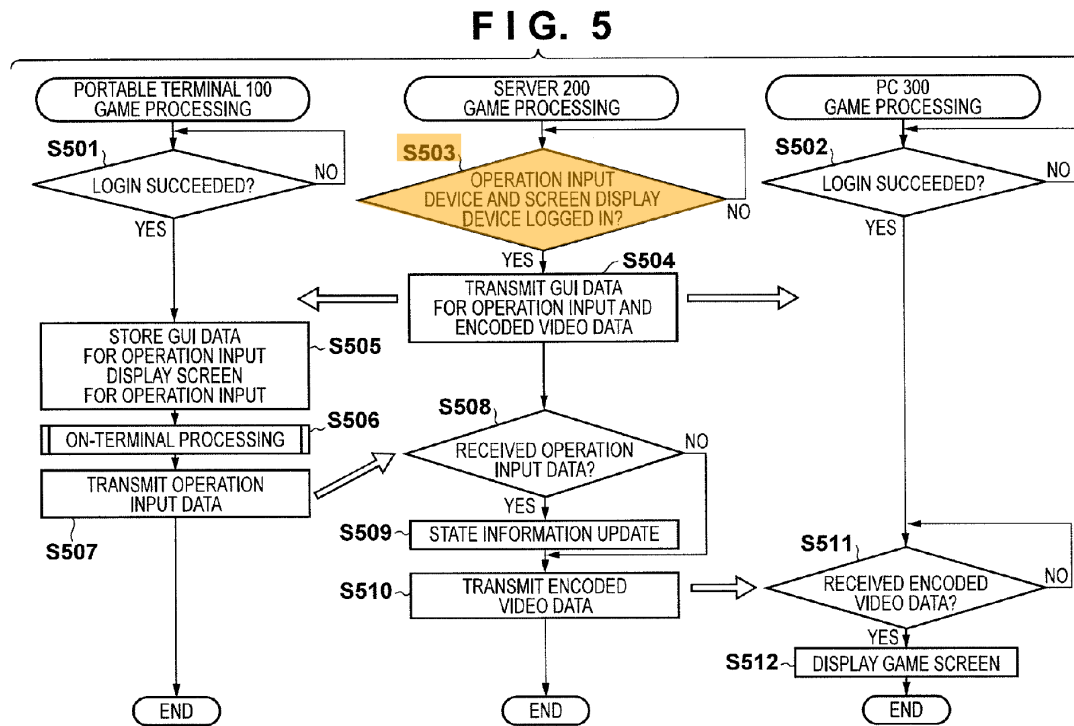
A. Overview of *Tsushima*

339. An overview of *Tsushima* is provided, *supra*, at Paragraphs 134-137.

B. Independent Claims 1 & 25 — “if and only if”

340. As noted above for Ground 7, it is my opinion that *Takahashi* either discloses every element of claims 1-5, 9-10, 12-14, 16-17, and 23-25 or each claim is rendered obvious based on *Takahashi* in view of the general knowledge of a POSITA. To the extent it is argued *Takahashi*, as supplemented with the general knowledge of a POSITA, does not render the “if and only if” condition of claims 1 & 25 obvious, *Tsushima* discloses this aspect of the claims, and it is my opinion that *Takahashi* combined with *Tsushima* renders the “if and only if” limitation of claims 1 & 25 obvious.

341. For example, *Tsushima* discloses “[i]n step S503, the server CPU 201 determines *whether or not login to a service succeeded on both* an operation input device (the portable terminal 100) and a screen display device (the PC 300) for a user ID that is a target of service provision.” Ex. 1010, [0059] (emphasis added).



Ex. 1010, Figure 5 (annotated).

342. *Tsushima* expressly discloses to transmit data to the operation input device (the portable terminal 100) and a screen display device (the PC 300) “if and only if” both devices have successfully logged in.

343. “In step S504, the server CPU 201, transmits GUI data for game content operation input from the server communication unit 206 to the portable terminal 100 registered as an operation input device. . . . Also, in this step, the server CPU 201 initiates provision of encoded video data to the PC 300 registered as the screen display device.” Ex. 1010, [0062]-[0063]. *Tsushima* step S503 is a decision operation to determine whether “OPERATION INPUT DEVICE AND SCREEN DISPLAY DEVICE LOGGED IN?” Ex. 1010, Figure 5. *Tsushima* transmits the data in step S504 “if and only if” the decision of S503 is “YES.” Ex. 1010, Figure 5.

344. A POSITA at the time the '376 patent was filed (2014) would have considered implementing *Tsushima*'s "if and only if" condition in *Takahashi*'s game control device obvious, for example, when implementing a game that required both the main-terminal (PC) and sub-terminal (mobile device). In particular, *Takahashi* discloses "that the fishing game is exemplified as a game provided by the game server 20 for convenience of explanation; however, a game provided from the game server 20 is not limited to a specific type of game. Any game that is realized using a main-terminal and a sub-terminal may be applied." Ex. 1007, [088]. Thus, a POSITA would understand *Takahashi* could be used to implement games that require both the PC and the mobile device and, in so doing, the POSITA would look to *Tsushima*'s disclosure to ensure both devices were logged in before beginning the game and/or transmitting information to the devices.

345. It is my opinion that a POSITA would look to *Tsushima* in this capacity at least because of the vast similarities between *Takahashi* and *Tsushima*. For example, both inventions address similar challenges with similar solutions. Both address challenges of multi-terminal games where a single user pairs a handheld device such as a mobile phone with a more powerful main device such as a PC. Ex. 1007, Figure 1; Ex. 1010, Figure 1. Both disclose employing the handheld device as a controller for the game, with results of input provided at the handheld terminal being displayed on the PC. Ex. 1007, [0012]; Ex. 1010 [0012]. Both disclose the

same architecture where a server responds to input from the handheld device and transmits resulting updated state information for display on the PC device. Ex. 1007, [0106]; Ex. 1010, [0012]-[0013]. Both disclose employing the architecture of the invention for a multiuser environment. Ex. 1007, [0122]; Ex. 1010, [0006-08]. Both disclose similar architectures for the handheld device. Ex. 1007, Figure 3; Ex. 1010, Figure 2. Both disclose authentication of users where the authentication employs a combination of user ID and passwords; Ex. 1007, [0071]-[0072], [0092]-[0097]; Ex. 1010, Figure 7A, [0041]. Both disclose employing user authentication from separate devices to pair such devices. Ex. 1007, [0091]-[0092], [0097]; Ex. 1010, [0057]-[0059], Figure 5 (step S503). Both disclose employing platform information (such as serial numbers, MAC addresses, IP addresses and the like) combined with user identification to assign devices to the appropriate roles (e.g., handheld controller v. main display device). Ex. 1007, [0074]-[0080]; Ex. 1010, [0042].

346. For these reasons, it is my opinion a POSITA would consider *Tsushima* to be within the same scope and content of art as *Takahashi* and would look to *Tsushima*'s disclosure to ensure both devices in *Takahashi* are logged in when the style of game so necessitates before beginning the game and transmitting data to the devices. Consequently, it is my opinion the "if and only if" limitation of claims 1 and 25 of the '376 are rendered obvious by *Takahashi* and *Tsushima*.

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EDUCATION

- **Dr. Scient. in Informatics** 1986
University of Oslo
- **NATO Advanced Science Institute on Concepts of Distributed Programming,** 1984
Marktoberdorf
- **Cand. Real. in Informatics** 1982
University of Oslo
- **Cand. Mag.,** with Minor in Mathematics and Statistics 1979
University of Oslo

EXPERIENCE

- **Commissioner, Engineering Accreditation Commission (EAC)** 2016 – present
ABET, Inc., Baltimore, MD
- **CEO, Mostly Sunny** 2012 – Present
Menlo Park, CA
- **Member, California Task Force on Cyber Security** 2014 – 2016
State of California
- **Director, Silicon Valley Big Data and Cybersecurity Center** 2013 – 2016
San José State University, San José, CA
- **Co-Director, NSF Center for Research in Ubiquitous Secure Technologies** 2005 – 2016
University of California, Berkeley, CA
- **Professor of Computer Engineering, Software Engineering and Computer Science** 2002 – 2020
Computer Engineering and Computer Science Departments, San José State University, San José, CA
- **Chair, Computer Engineering Department** 2002 – 2013
San José State University, San José, CA
- **Chair, Academic Senate** 2008 – 2009
San José State University, San José, CA
- **Chair, Computer Science Department** 2000 – 2002
California Polytechnic State University, San Luis Obispo, CA
- **Professor of Computer Engineering and Computer Science** 2000 – 2002
California Polytechnic State University, San Luis Obispo, CA
- **Associate Chair, Computer Science Department** 1999 – 2000
California Polytechnic State University, San Luis Obispo, CA
- **Associate Professor, Computer Science Department** 1997 – 2000
California Polytechnic State University, San Luis Obispo, CA
- **Professor (Consulting/Visiting), Electrical Engineering Department** 1989 – 1998
Stanford University, Palo Alto, CA
- **Professor, Department of Informatics** 1990 – 1998
University of Bergen, Bergen, Norway

- **Director, Computer Science Program** **1997**
College of Notre Dame, Belmont, CA
- **Department Chair, Department of Informatics** **1993 – 1995**
University of Bergen, Bergen, Norway
- **Associate Professor (Visiting), Electrical Engineering Department** **1989**
Stanford University, Palo Alto, CA
- **Førsteamanuensis, Department of Informatics** **1987 – 1989**
University of Bergen, Bergen, Norway
- **Fulbright Scholar** **1986 – 1987**
Stanford University, Palo Alto, CA
- **Universitetsstipendiat, Institute of Informatics** **1983 – 1986**
University of Oslo, Oslo, Norway
- **Researcher** **1982**
The Norwegian Computing Center, Oslo, Norway

LITIGATION CONSULTING

International Trade Commission; USPTO Patent Trial and Appeal Board; US District Court for the Central District of California; US District Court for the Northern District of California; US District Court for the Southern District of California; US District Court for the District of Columbia; US District Court for the District of Delaware; US District Court for the Northern District of Illinois; US District Court for the District of Nevada; US District Court for the District of New Jersey; US District Court for the Southern District of New York; US District Court for the Eastern District of Texas; US District Court for the Northern District of Texas; US District Court for the Eastern District of Virginia; Superior Court of the State of California, County of Alameda; Superior Court of the State of California, County of Santa Clara; US Bankruptcy Court for the Southern District of Florida, West Palm Beach Division

HONORS AND AWARDS

- **Certificate of Special Recognition from the U.S. House of Representatives** **2000**
Award given in bipartisan recognition of innovative work in software engineering degree design, in particular the integration of industry partners with academic studies.
- **Certificate of Recognition from the California State Assembly** **2000**
Award given in partisan recognition of innovative work in software engineering degree design, in particular the integration of industry partners with academic studies.
- **The Carl-Erik Fröberg Prize** **1987**
The Prize is given in odd numbered years to a young Nordic author of a distinguished paper published in the journal BIT.
- **Fulbright-Hays Fellowship** **1986**
The Fulbright Program is one of the most prestigious awards programs worldwide, with a highly competitive, merit-based grant for international educational exchange for scholars and scientists. Fifty-three Fulbright alumni have won Nobel Prizes; seventy-eight have won Pulitzer Prizes. More Nobel laureates are former Fulbright recipients than any other award program.

RESEARCH GRANTS, CONTRACTS, AND AWARDS

- **Hightail, Inc.,** Hightail QA Internship Program, \$452,805. **2013 – 2014**

• Citrix Systems Silicon Valley , QA Internships, \$218,342.	2012 – 2014
• RingCube , QA Internships, \$940,000.	2007 – 2011
• National Science Foundation (NSF) , Science and Technology Center, Team for Research in Ubiquitous Secure Technology (TRUST), \$963,746.	2005 – 2016
• National Science Foundation (NSF) , Information Assurance Capacity Building Program (IACBP), \$356,000.	2006 – 2009
• Intel , Software Security Laboratory (co-PI), \$40,000.	2005
• Samsung Electronics , Software Engineering Internationalization, \$60,000.	2005
• GREEN Foundation , Fund for Excellence in Computer Software Engineering, \$500,000.	2000-2004
• CalPoly Plan , Retaining Females in Computer Science Education, \$15,000.	2000 – 2002
• CalPoly Plan , High Demand Courses - Computer Science, \$30,000.	2000 – 2002
• Private Donation , The Bonderson Advanced Software Design Studio, \$1,000,000.	2001
• Compaq , Computer Software Engineering Laboratory, \$35,000.	2001
• Compaq , Static Analysis Tools (requirements phase), \$20,000.	2000 – 2001
• Raytheon Systems , User Interface Frameworks for Command & Control, \$45,000.	1999 – 2000
• Raytheon Systems , JavaBeans, \$75,000.	2000
• Norges Forskningsråd (The Research Council of Norway) , Architecture Independence in Software Design and Development, \$175,000.	1997 – 2000
• US Department of Education , Supporting Effective Educator Development (SEED) Grant Program, \$2,500,000.	1999
• Metrowerks , Integrated Development Environment, \$157,398.	1998
• Norges Forskningsråd , Biocomputing, \$150,000.	1996 – 1998
• Norges Forskningsråd , Internationalization, \$75,000.	1994 – 1997
• US Department of Defense/Office of Naval Research , Rapid Construction of Software Prototypes (with Stanford University Program Analysis and Verification Group), senior personnel, \$545,367.	1989 – 1996
• US Advanced Research Projects Agency (ARPA) , Computer Aided Educational Technology (with Stanford University Program Analysis and Verification Group), senior personnel. Approx. \$600,000.	1989 – 1996
• European Strategic Program on Research in Information Technology (ESPRIT) , COMPASS-II (co-PI with Universität Bremen and other European partners), \$408,000.	1993 – 1996
• Norges Forskningsråd , Genetic Structures, \$150,000.	1994 – 1996
• Norges Forskningsråd , Architecture Abstraction, \$75,000.	1993 – 1995
• Norges Allmenvitenskapelige Forskningsråd , Parallellitet – algoritmer, pålitelighet og numeriske metoder, \$370,000.	1991 – 1993

DISSERTATIONS

- Sigurd Meldal. **"On Hierarchical Abstraction and Partial Correctness of Concurrent Structures."** Ph.D. dissertation, Institute of Informatics, University of Oslo, June 1986.
- Sigurd Meldal. **"CHAP — Et Forslag til Syntaks og Semantikk for Parallelle Prosesser."** Master's thesis, Institute of Informatics, University of Oslo, June 1982. (In Norwegian.)

BOOKS

- J. Homb, T.M. Jonassen, Sigurd Meldal, T. Rekdal, A. Schjalm. **"Overlevelseshjelp for Realistakstudenter."** Realistakstudenter forlag, 1982. (In Norwegian.)

EDITED PROCEEDINGS

- **Proceedings of Norsk Informatikkonferanse (NIK '94).** Edited with Magne Haveraaen, Bjørn Jæger, Siri Bjorvand, Randi Karlsen, Stein Krogdahl, Arne Maus, and Syvert Nørsett. Tapir forlag, November 1994.
- **Proceedings of the 3rd Nordic Workshop on Program Correctness (NWPC).** Edited with Magne Haveraaen. University of Bergen, November 1992.

JOURNAL ARTICLES AND BOOK CHAPTERS

- Michal A. Walicki, Magne Haveraaen, and Sigurd Meldal. "**Computation Algebras.**" In *Mathematical Structures in Computer Science*, vol. 11, no. 5. Cambridge University Press, October 2001.
- David C. Luckham, James Vera, and Sigurd Meldal. "**Key Concepts in Architecture Definition Languages.**" In *Foundations of Component Based Systems*, pp. 23–46. Cambridge University Press, 2000.
- Sigurd Meldal, Gene L. Fisher, Daniel J. Stearns, and Peter C. Ölveczky. "**Software Prototyping.**" In *Wiley Encyclopedia of Electrical and Electronics Engineering*. Wiley Online Library, 1999.
- Sigurd Meldal and David C. Luckham. "**NSA's MISSI Reference Architecture – From Prose to Precise Specification.**" In *Requirements Targeting Software and Systems Engineering*, Lecture Notes in Computer Science (LNCS) 1526, pp. 293–329. Springer-Verlag, 1998.
- Sigurd Meldal and M. A. Walicki. "**Singular and Plural Non-deterministic Parameters.**" In *SIAM Journal of Computing*, vol. 26, no. 4. Society for Industrial and Applied Mathematics, August 1997.
- Michal Walicki and Sigurd Meldal. "**Algebraic Approaches to Non-Determinism – an Overview.**" In *ACM Computing Surveys*, vol. 29, no. 1, pp. 30–81. Association for Computing Machinery, March 1997.
- Sigurd Meldal and A. I. Vermesan. "**Verification Oriented Development of Knowledge Based Systems.**" In *New Review of Applied Expert Systems*, vol. 2, pp. 91–104. 1996.
- Michal Walicki and Sigurd Meldal. "**Multialgebras, Power Algebras and Complete Calculi of Identities and Inclusions.**" In *Recent Trends in Data Type Specification*, Lecture Notes in Computer Science (LNCS) 906, pp. 453–468. Springer-Verlag, March 1995.
- Michal Walicki and Sigurd Meldal. "**A Complete Calculus for the Multialgebraic and Functional Semantics of Non-determinism.**" In *ACM Transactions on Programming Languages and Systems (TOPLAS)*, vol. 17, no. 2, pp. 366–393. Association for Computing Machinery, March 1995.
- John Mitchell, Sigurd Meldal, and Neel Madhav. "**An Extension of Standard ML Modules with Subtyping and Inheritance.**" In *Information and Control*, vol. 71, pp. 95–130. 1991.
- Sigurd Meldal. "**A Complete Axiomatic Semantics of Spawning.**" In *Distributed Computing 5*, pp. 159–174. Springer-Verlag, May 1991.
- Sigurd Meldal. "**Fra Spesifikasjon til Virkelighet.**" In *DATA*, vol. 17, no. 4, pp. 42–45. 1987. (In Norwegian.)
- Sigurd Meldal. "**Partial Correctness of Exits from Concurrent Structures.**" In *BIT Numerical Mathematics*, vol. 26, iss. 3, pp. 295–302. BIT Computer Science and Numerical Mathematics, September 1986.
- Sigurd Meldal. "**An Axiomatic Semantics for Nested Concurrency.**" In *BIT Numerical Mathematics*, vol. 26, iss. 2, pp. 164–174. BIT Computer Science and Numerical Mathematics, April 1986.
- Sigurd Meldal and E. Mellbye-Larsen. "**Styring av Bus- of Lageraksess i en Multiprosessorarkitektur.**" In *Trip Report from the Joint Scandinavian Computer Conference (NordDATA '83)*. Den Norske Dataforening, June 1983. (In Norwegian.)

CONFERENCE PAPERS

- Sigurd Meldal. **"Some Thoughts on Cyber Risk and the Science(s) of Security."** Keynote address, IEEE International Symposium on Signals, Circuits and Systems, July 2013.
- Sigurd Meldal. **"Breadth, Depth...and Predictable Weather. Components of the Success of Silicon Valley."** Invited talk, Third International Exhibition and Forum of Industry and Innovations (INNOPROM), July 2011.
- Sigurd Meldal. **"Security – a Science?"** Invited Valedictorian address, IEEE 2nd International Advance Computing Conference (IACC), February 2010.
- Sigurd Meldal. **"It's a Dangerous World Out There – The Interplay of Security, Safety and Policy."** Keynote address, IEEE International Advance Computing Conference (IACC), March 2009.
- Sigurd Meldal, Kristen Gates, Russell Smith, and Xiao Su. **"Security, Safety and Privacy – Pervasive Themes for Engineering Education."** In *Proceedings of the International Conference on Engineering Education (ICEE)*, March 2008.
- Daniel Manson, Sigurd Meldal, Carol Sledge, Stephen M. Maurer, John C. Mitchell, Erich Spengler, Janos Sztipanovits, and Javier Torner. **"Learning Modules for Security, Privacy and Information Assurance in Undergraduate Engineering Education."** In *Proceedings of the 36th Annual Frontiers in Education Conference (FIE)*, October 2006.
- Jerry Gao, Yumei Wu, Lee Chang, and Sigurd Meldal. **"Measuring Component-Based Systems Using a Systematic Approach and Environment."** In *Proceedings of the Second IEEE International Symposium on Service-Oriented System Engineering (SOSE)*, October 2006.
- Daniel J. Stearns, C. S. Turner, and Sigurd Meldal. **"Ten Pounds in a Five-Pound Sack: Providing Software Engineering Students with Management Experience."** In *Proceedings of the International Conference on Engineering Education (ICEE)*, August 2001.
- Michal Walicki and Sigurd Meldal. **"Nondeterminism vs. Underspecification."** In *Proceedings of The Fifth World Multi-Conference on Systemics, Cybernetics and Informatics (SCI/ISAS)*, July 2001.
- Michal Walicki, Adis Hodzic, and Sigurd Meldal. **"Compositional Homomorphisms of Relational Structures."** In *Proceedings of the 13th International Symposium on Fundamentals of Computation Theory*, August 2001.
- David C. Luckham and Sigurd Meldal. **"Causal Event-Relations as a Basis for Analyzing Distributed Architectures."** In *Proceedings of the 8th International Colloquium on Computer Science with Applications*, August 1999.
- Peter C. Ölveczky and Sigurd Meldal. **"Specification and Prototyping of Network Protocols in Rewriting Logic."** In *Proceedings of Norsk Informatikkonferanse (NIK '98)*, November 1998.
- Sigurd Meldal. **"Reference Architectures and Conformance."** In *Proceedings of the International Workshop on Requirements Targeting Software and Systems Engineering (RTSE)*, April 1998.
- Valentinas Kriauciukas, Michal A. Walicki, and Sigurd Meldal. **"Nondeterministic Algebraic Specifications in a Relational Syntax."** In *Proceedings of the Nordic Workshop on Programming Theory (NWPT)*, November 1995.
- Anca Vermesan and Sigurd Meldal. **"An Algebraic Approach to Refinement of KBS Specifications."** In *Proceedings of the European Symposium on the Validation and Verification of Knowledge-Based Systems (EUROVAV)*, June 1995.
- Michal A. Walicki and Sigurd Meldal. **"Generated Models and the ω -Rule: The Nondeterministic Case."** In *Proceedings of the Sixth International Joint Conference on Theory and Practice of Software Development (TAPSOFT)*, May 1995.

- Aida Pluskeviciene, Regimantas Pluskevicius, Michal Walicki, and Sigurd Meldal. "**On Specialization of Derivations in Axiomatic Equality Theories.**" In *Proceedings of the Symposium on Logical Foundations of Computer Science (LFCS)*, July 1994.
- Dinesh Katiyar, David Luckham, John Mitchell, and Sigurd Meldal. "**Polymorphism and Subtyping in Interfaces.**" In *Proceedings of the Workshop on Interface Definition Languages*, January 1994.
- P.O. Tvette and Sigurd Meldal. "**Causality Breakdown at ω .**" In *Proceedings of the Nordic Workshop on Programming Theory (NWPT)*, October 1994.
- Michal Walicki and Sigurd Meldal. "**Initiality + Nondeterminism $\Rightarrow$ Junk.**" In *Proceedings of Norsk Informatikkonferanse (NIK '93)*, November 1993.
- Michal Walicki and Sigurd Meldal. "**Sets and Nondeterminism.**" In *Proceedings of the Tenth International Conference on Logic Programming (ICLP) Workshop on Logic Programming with Sets*, June 1993.
- Michal Walicki and Sigurd Meldal. "**Computations: A Deterministic Semantics of Nondeterminism.**" In *Proceedings of the 3rd Nordic Workshop on Program Correctness (NWPC)*, November 1992.
- John Mitchell, Dinesh Katiyar, David C. Luckham, Neel Madhav, Sigurd Meldal, and Sriram Sankar. "**Subtyping, Assignment and Cloning in a Concurrent Object-Oriented Language.**" In *Proceedings of the DARPA Software Technology Conference*, April 1992.
- Michal Walicki and Sigurd Meldal. "**Towards an Equational Theory of Nondeterminism.**" In *Proceedings of Norsk Informatikkonferanse (NIK '91)*, November 1991.
- Sigurd Meldal, Sriram Sankar, and James Vera. "**Exploiting Locality in Maintaining Potential Causality.**" In *Proceedings of the 10th ACM Symposium on the Principles of Distributed Computing (PODC)*, August 1991.
- Neel Madhav and Sigurd Meldal. "**An Object-Oriented Approach to Formal Specification of Reactive Systems.**" In *Proceedings of the 11th International Conference on Distributed Computing Systems (ICDCS)*, May 1991.
- John C. Mitchell, Neel Madhav, and Sigurd Meldal. "**An Extension of Standard ML Modules with Subtyping and Inheritance.**" In *Proceedings of the 18th ACM Symposium on the Principles of Programming Languages (POPL)*, January 1991.
- Sigurd Meldal. "**Supporting Architecture Mappings in Concurrent Systems Design.**" In *Proceedings of the 1990 Australian Software Engineering Conference (ASWEC '90)*, May 1990.
- David C. Luckham and Sigurd Meldal. "**Specifying and Observing Concurrent Programs.**" In *Proceedings of the 3rd Workshop on Large Grain Parallelism*, October 1989.
- Sigurd Meldal. "**An Abstract Axiomatization of Pointer Types.**" In *Proceedings of the 22nd Annual Hawaii International Conference on System Sciences (HICSS)*, January 1989.
- Sigurd Meldal, David C. Luckham, and Michael A. Haberler. "**Specifying Ada Tasking Using Patterns of Behavior.**" In *Proceedings of the 21st Annual Hawaii International Conference on System Sciences (HICSS)*, January 1988.
- Sigurd Meldal. "**Redundancy in Software Design.**" In *Proceedings of Norsk Informatikkonferanse (NIK '88)*, November 1988.
- Sigurd Meldal. "**Har Formelle Metoder Noen Plass i Programutvikling?**" In *Trip Report from the Joint Scandinavian Computer Conference (NordDATA '87)*, June 1987. (In Norwegian.)
- David C. Luckham, David P. Helmbold, Sigurd Meldal, D.L. Bryan, and Michael A. Haberler. "**Task Sequencing Language for Specifying Distributed Ada Systems.**" In *System Development and Ada, Proceedings of the CRAI Workshop on Software Factories and Ada*, 1987.

PRESENTATIONS

- **At the Center of the Storm: Preparing the Future Engineers of Silicon Valley, and the Globe.** *The Olvian Forum*, June 2007.
- **International Partnership – Opportunities to Pursue, Barriers to Overcome.** *International Conference on Engineering Education (ICEE) 2001 International Partnership Workshop*, August 2001.
- **Causal Event-Relations as a Basis for Analyzing Distributed Architectures.** *8th International Colloquium on Numerical Analysis and Computer Science with Applications*, August 1999.
- **Conformance and Multiple Reference Architectures.** *International Workshop on Requirements Targeting Software and Systems Engineering (RTSE)*, October 1997.
- **Architecture Design and Conformance Testing in Rapide.** *Information Survivability*, January 1996.
- **Communication Algebras.** *11th Workshop on Specification of Abstract Data Types Joint with the 8th COMPASS Workshop*, September 1995. With Michal A. Walicki and Magne Haverlaen.
- **Nondeterministic Operators in a Standard Framework – What's the Use?** *10th Workshop on Specification of Abstract Data Types Joint with the 5th COMPASS Workshop*, June 1994. With Michal A. Walicki.
- **Multialgebras, Power Algebras and Complete Calculi of Identities and Inclusions.** *10th Workshop on Specification of Abstract Data Types Joint with the 5th COMPASS Workshop*, June 1994. With Michal A. Walicki.
- **On Generated Models and Inductive Reasoning: The Nondeterministic Case.** *5th COMPASS Workshop*, September 1993. With Michal A. Walicki.
- **Parallel Architectures – Flop or gigaFLOP?** *Vilnius University*, 1993. With Tor Sørøvik and Randi Moe.
- **Multialgebras and Computations: Two Algebraic Semantics of Nondeterminism.** *9th Workshop on Specification of Abstract Data Types Joint with the 4th COMPASS Workshop*, October, 1992. With Michal A. Walicki.
- **A Function Oriented View of Nondeterminism.** *2nd Nordic Workshop on Program Correctness (NWPC)*, October 1991. With Michal A. Walicki.

TECHNICAL REPORTS

- David C. Luckham and Sigurd Meldal. **Defining a Security Reference Architecture.** Technical Report CSL-97-728, Stanford University, June 1997.
- David C. Luckham, James Vera. **Three Concepts of System Architecture.** Technical Report CSL-TR-95-674, Stanford University, July 1995.
- Michal A. Waliki and Sigurd Meldal. **Algebraic Approaches to Nondeterminism – an Overview.** Technical Report 104, Department of Informatics, University of Bergen, February 1995.
- Michal A. Waliki and Sigurd Meldal. **Nondeterministic Operators in Algebraic Frameworks.** Technical Report CSL-TR-95-664, Stanford University, March 1995.
- Sigurd Meldal. **Extending CSP with Termination Independent Process Activation.** Technical Report 37, Department of Informatics, University of Bergen, 1989.
- Sigurd Meldal. **A Proof System Using Context Invariants in Verification of Concurrent Programs.** Technical Report 39, Department of Informatics, University of Bergen, 1989.
- Sigurd Meldal. **Allocations of Objects Considered as Nondeterministic Expressions — Towards a More Abstract Axiomatics of Access Types.** Technical Report CSL-TR-87-335, Stanford University, 1987.

- David C. Luckham, David P. Helmbold, Sigurd Meldal, D.L. Bryan, and Michael A. Haberler. **Task Sequencing Language for Specifying Distributed Ada Systems: TSL-1**. Technical Report CSL-TR-87-334, Stanford University, 1987.
- Sigurd Meldal. **Dokumenter i Devnagari og transkripsjon ved hjelp av TeX**. NUSE, 61, 1986. (In Norwegian.)
- Sigurd Meldal. **Predicting the Future: Proof Rules for Exceptions in Concurrent Structures**. Technical Report 101, Institute of Informatics, University of Oslo, 1986.
- Sigurd Meldal. **Language Elements for Hierarchical Abstraction in Concurrent Structures**. Technical Report 102, Institute of Informatics, University of Oslo, 1986.
- Sigurd Meldal. **Axiomatic Semantics of Access Type Tasks in Ada**. Technical Report 100, Institute of Informatics, University of Oslo, 1986. Invited paper at the Ada Europe Working Group on Formal Methods, February 1986.
- Sigurd Meldal. **Exits from Systems of Nested Processes — An Axiomatic Semantics**. Technical Report 93, Institute of Informatics, University of Oslo, 1985.
- D. Belsnes, O. Hanseth, and Sigurd Meldal. **The HOLM Language**. Technical Report 728, Norwegian Computing Centre, 1982.

INVITED TALKS

- Keynote, **International Software Summit (ISS-13)**, April 2013.
- **Third International Exhibition and Forum of Industry and Innovations (INNOPROM)**, July 2011.
- Keynote, **IEEE 2nd International Advance Computing Conference (IACC)**, February 2010.
- **Beijing University of Technology**, 2010.
- **IEEE International Advance Computing Conference (IACC)**, March 2009.
- **M. S. Ramaiah Institute of Technology**, 2008.
- **The International Scientific and Practical Conference Olvian Forum**, 2007.
- **Beijing University of Technology**, 2006.
- **Beijing University of Technology**, 2003.
- **8th International Colloquium on Numerical Analysis and Computer Science with Applications**, August 1999.
- **The International Workshop on Requirements Targeting Software and Systems Engineering (RTSE)**, October 1997.
- **Rensselaer Polytechnic Institute, Clemson University, Polytechnic University (New York), New Mexico State University, Western Oklahoma State College, College of Notre Dame**, 1996.
- **University of San Francisco**, 1994.
- **Stanford University, Vilnius University**, 1993.
- **University of Oslo**, 1992.
- **Universität Bremen**, 1991.
- **3rd Workshop on Large Grain Parallelism**, October 1989.
- **Joint Scandinavian Computer Conference (NordDATA '88)**, June 1988.
- **Ada Europe – Working Group on Formal Methods, University of California**, San Diego, 1986.

TEACHING

Academic programs created:

- **Co-terminal Bachelor of Science (BS) and Master of Science (MS) in Computer Engineering Degree Program**, San Jose State University.

- **Master of Science (MS) in Software Engineering International Dual Degree Program**, San Jose State University and Beijing University of Technology.
- **Bachelor of Science (BS) in Software Engineering**, San Jose State University.
- **Master of Science (MS) in Software Engineering**, San Jose State University.
- **Certificate Programs in Advanced Computer Engineering**, San Jose State University.
- **Bachelor of Science (BS) in Software Engineering**, California Polytechnic State University.

University courses created:

- **CPE 205/206 – Software Engineering I/II** (sophomore level), California Polytechnic State University.
- **CPE 402 – Software Requirements Engineering** (senior level), California Polytechnic State University.
- **CPE 405 – Software Construction** (senior level), California Polytechnic State University.
- **CPE 406 – Software Deployment** (senior level), California Polytechnic State University.
- **I110 – Introduction to Programming** (freshman level), University of Bergen.
- **I220 – Program Specification and Verification** (senior level), University of Bergen.
- **I229 – Selected Topics in Software Development** (senior level), University of Bergen.

Other topics taught at the undergraduate through doctoral levels:

- Compiler technology, object-oriented programming methods, algorithms (basic and advanced), data structures, file structures, concepts in concurrency, discrete mathematics.

UNIVERSITY SERVICE

Key administrative responsibilities at San Jose State University, California Polytechnic State University, and the University of Bergen:

- Member, **Dean of CIES Search Committee**, San Jose State University, 2014.
- Member, **Strategic Planning Board**, San Jose State University, 2010 – 2012.
- Member, **Policy Committee on Organization and Government**, Academic Senate, San Jose State University, 2010 – 2012.
- Member, **Resource Advisory Board**, College of Engineering, San Jose State University, 2010 – 2012.
- Member, **Vice President for Student Affairs Search Committee**, San Jose State University, 2010.
- Member, **Provost Search Committee**, San Jose State University, 2009.
- Chair, **Academic Senate**, San Jose State University, 2008 – 2009.
- Vice Chair, **Academic Senate**, San Jose State University, 2007 – 2008.
- Member, **University Planning Committee**, San Jose State University, 2007 – 2009.
- Chair, **Senate Instruction and Student Affairs Committee**, San Jose State University, 2006 – 2007.
- Member, **Senate Executive Committee**, San Jose State University, 2006 – 2010.
- Member, **Resource Review Board**, San Jose State University, 2005 – 2009.
- Member, **Committee on the Joint Master of Science Degree Program**, Beijing Univ. of Technology, China, 2005 – 2008.
- Senator, **Academic Senate**, San Jose State University, 2005 – 2010.
- Member, **Senate Curriculum and Research Committee**, San Jose State University, 2005 – 2006.
- Member, **ACE Internationalization Leadership Team**, San Jose State University, 2003 – 2005.
- Member, **Academic Senate Task Force on Chairs' Roles and Responsibilities**, San Jose State University, 2003 – 2004.

- Vice Chair, **Discipline Council in Software Engineering**, Computer Science and Information Systems, California State University, 2001 – 2006.
- Chair, **Computer Science Department Resource Acquisition Committee**, California Polytechnic State University, 2000 – 2002.
- Member, **Computer Engineering Administrative Council**, California Polytechnic State University, 2000 – 2002.
- Member, **Computer Engineering Council**, California Polytechnic State University, 2000 – 2002.
- Chair, **Computer Science Department Software Engineering Program Task Force**, California Polytechnic State University, 1999 – 2002.
- Member, **GE&B Area B/F committee**, California Polytechnic State University, 1999 – 2000.
- Member, **College of Engineering Committee on the Life Sciences**, California Polytechnic State University, 1998.
- Member, **Biotechnology Program Task Force**, California Polytechnic State University, 1997 – 2000.
- Member, **Computer Science Curriculum Committee**, California Polytechnic State University, 1997 – 2000.
- Member, **College of Engineering Committee on Research and Development**, California Polytechnic State University, 1997 – 1999.
- Member, **Doctoral Program Development Task Force**, 1993 – 1995.
- Chair, **Informatics Curriculum Development Committee**, University of Bergen, 1987 – 1989.
- Member, **Undergraduate Curriculum Development Committee**, University of Bergen, 1987 – 1989.
- Member, **Task force on distributed systems research**, Norwegian Research Council, 1995.
- Chairman, **Task force on increasing research productivity**, University of Bergen, 1994 – 1995.
- Member, **Board of Directors**, National Center for Parallel Computing, 1993 – 1996.
- Member, **Board of the Norwegian Universities' Council on Computer Science**, 1993 – 1995.
- Member, **Board of Directors of the Faculty of Mathematics and Science**, University of Bergen, 1993–1995.

PROGRAM COMMITTEES

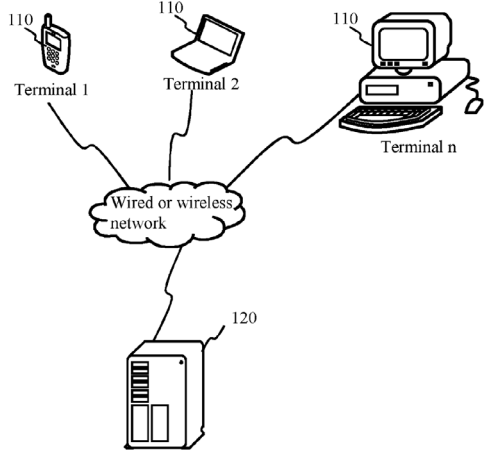
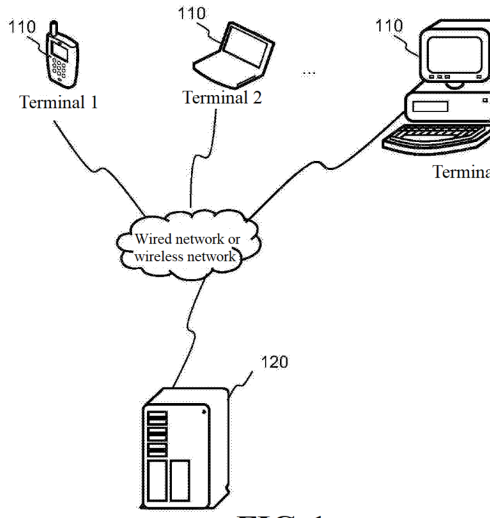
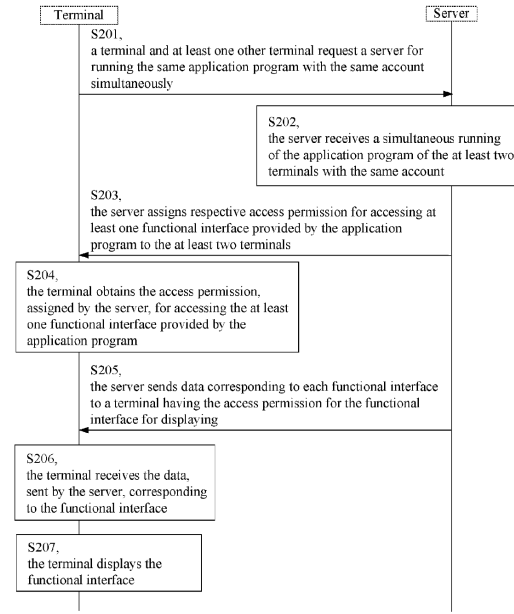
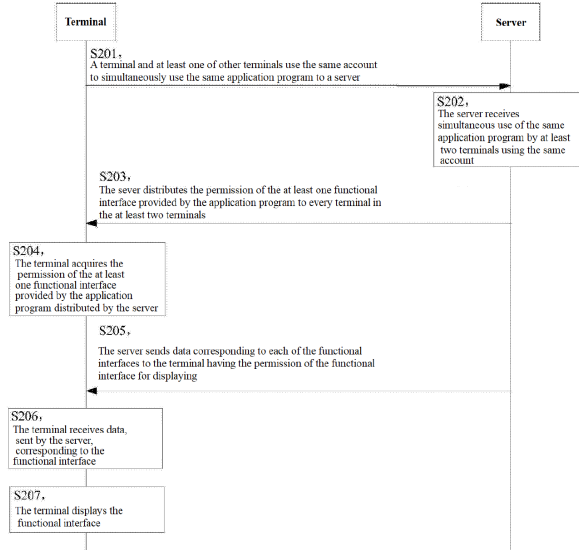
- Co-chair, **8th Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2015.
- Co-chair, **7th Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2014.
- Co-chair, **6th Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, May 2013.
- Co-chair, **5th Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2012.
- Chair, **4th Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2011.
- Co-chair, **20th ACM Conference on Computers, Freedom, and Privacy (CFP)**, June 2010.
- Chair, **3rd Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2010.
- Technical Committee Member, **2nd IEEE International Advance Computing Conference (IACC)**, February 2010.
- Chair, **2nd Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2009.

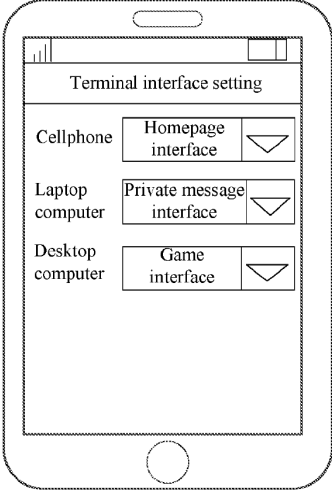
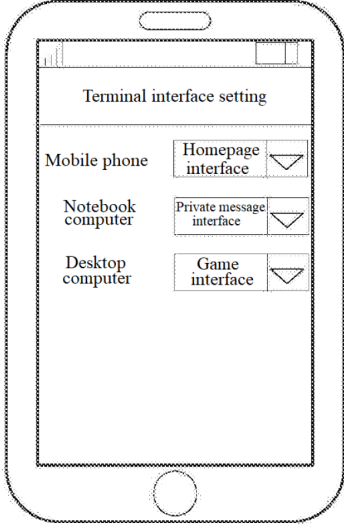
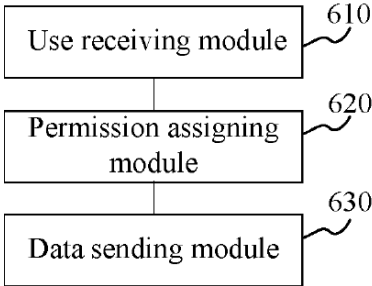
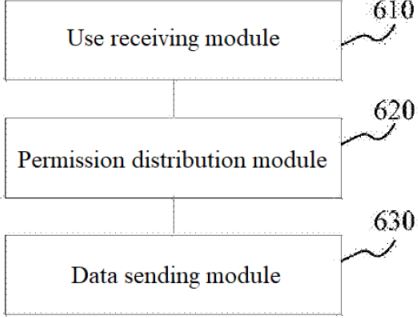
- Chair, **Symposium on Curriculum Development in Security and Information Assurance (CDSIA)**, April 2008.
- Program Committee Member, **International Conference on Engineering Education (ICEE)**, August 2001.
- Program Committee Member, **5th International Conference on Mathematics of Program Construction (MPC)**, July 2000.
- Program Committee Member, **4th International Conference on Mathematics of Program Construction (MPC)**, July 1998.
- Program Committee Member, **7th Nordic Workshop on Programming Theory (NWPT)**, October 1996.
- Program Committee Member, **First Workshop on Formal Methods in Software Practice (FMSP)**, January 1996.
- Program Committee Member, **Norsk Informatikkonferanse (NIK '95)**, November 1995.
- Program Committee member, **6th Nordic Workshop on Program Correctness (NWPC)**, November 1995.
- Program Committee member, **5th Nordic Workshop on Program Correctness (NWPC)**, October 1994.
- Chair, **4th Nordic Workshop on Program Correctness (NWPC)**, October 1993.
- Program Committee Member, **Norsk Informatikkonferanse (NIK '94)**, November 1994.
- Program Committee Member, **Norsk Informatikkonferanse (NIK '93)**, November 1993.

OTHER PROFESSIONAL SERVICE

- Member, **Bay Area Council Committee on Cyber Security**.
- Executive Committee Member, **The Engineering Accreditation Commission (EAC) of ABET**.
- Senior Member, **Association for Computing Machinery (ACM)**.
- Senior Member, **Institute of Electrical and Electronic Engineers (IEEE)**.
- Member, **California Engineering Faculty Discipline Review Group**.
- Editor and Member of the Board of Directors, **Nordic Journal of Computing**.
- Referee, **Frontiers in Education Conference (FIE)**.
- Referee, **ACM Special Interest Group on Computer Science Education (SIGCSE)**.
- Referee, **Addison-Wesley**.
- Referee, **Research Council of Norway**.
- Panelist, **National Science Foundation (NSF)**.
- Referee, **Army Research Office (ARO)**.
- Referee, **Lecture Notes in Computer Science (LNCS)**.
- Member, **Fulbright Association**.

APPENDIX B – ZHA COMPARISON TABLE

U.S. Patent No. 9,497,565 (“Zha”) Ex. 1004	Certified English translation of the <i>Zha Priority Application</i> Ex. 1006
 Fig. 1 Ex. 1004, Fig. 1	 FIG. 1 Ex. 1006, Fig. 1
 Fig. 2B Ex. 1004, Fig. 2B	 FIG. 2 Ex. 1006, Fig. 2

 Fig. 5B Ex. 1004, Fig. 5B	 FIG. 5B Ex. 1006, Fig. 5B
 Fig. 6B Ex. 1004, Fig. 6B	 FIG. 6 Ex. 1006, Fig. 6
Ex. 1004, 1:25 For example, the application program is microblog,	Ex. 1006, [0002] For example, the application program is Weibo
Ex. 1004, 1:28-32 And, in a case the user wants to send a private message to a friend.	Ex. 1006, [0003] When the user accessing the home page of Weibo wants to send private messages to friends
Ex. 1004, 2:59-62 According to the embodiments of the invention, access permissions for different functional interfaces are assigned to terminals which	Ex. 1006, [0077] The technical solution provided by the embodiments of the present invention has the following beneficial effects: by distributing the permissions of different

simultaneously use an application program with one account	functional interfaces to various terminals that use the same account to use the same application program simultaneously
Ex. 1004, 4:10-16 With the improvement of living standard of people, a person usually has multiple terminals with a display screen, such as a cellphone, a laptop computer and a desktop computer. In order to fulfill the demand of people of running an application program in different terminals, for more and more application programs, versions corresponding to different platforms are developed.	Ex. 1006, [0090] With improvement of people's living standard, people usually have a plurality of terminals with display screens. For example, a user has a mobile phone, a notebook computer and a desktop computer at the same time. Therefore, in order to satisfy the demands of users using application programs in different terminals, editions corresponding to different platforms have been developed for an increasing number of application programs.
Ex. 1004, 4:21-44 At least two terminals 110, which run an application program with the same account simultaneously, and a server 120 may be included in the implementation environment, as is shown in FIG. 1. Each of the at least two terminals 110 may be a cellphone, a tablet computer, an e-book reader, a laptop computer and a desktop computer. The at least two terminals 110 may be connected with the server 120 through a wired network or a wireless network, such that the each of the at least two terminals 110 can send a request for running an application program to the server 120, receive a access permission for accessing at least one functional interface provided by the application	Ex. 1006, [0091] The implementation environment may include at least two terminals 110 that use the same account simultaneously to use the same application program simultaneously and a server 120, with reference to FIG. 1 specifically. Ex. 1006, [0092] The terminals 110 may be terminals such as mobile phones, tablet computers, e-book readers, notebook computers, and desktop computers. The terminal 110 may be connected to the server 120 through a wired network or a wireless network, so as to achieve purposes that the terminal 110 makes a request to the server 120 to use the application program, and meanwhile, the terminal 110 receives the permission of at least one functional interface provided by the application

program assigned by the server 120, and receive data corresponding to the functional interface sent from the server 120. The server 120 may be connected to each of the at least two terminals 110 through a wired network or a wireless network, such that the server can receive a use of an application of each of the at least two terminals 110, assign a access permission for accessing at least one functional interface provided by the application program to each of the at least two terminals 110 and send data corresponding to the functional interface to a terminal 110 having the access permission for accessing the functional interface.	program distributed by the server 120, and receives data, sent by the server 120, corresponding to the functional interface. Ex. 1006, [0093] The server 120 may be respectively connected to the terminals 110 through the wired network or the wireless network, so as to achieve purposes that the server 120 may receive use of the application program by the terminals 110 to distribute the permission of the at least one functional interface provided by the application program to the terminals 110 and send data corresponding to the functional interface to the terminals 110 having the permission of the functional interface.
Ex. 1004, 5:10-43 Reference is made to FIG. 2B, which shows a flowchart of a method for displaying an interface according to the first embodiment of the invention. In the embodiment, the method for displaying an interface is applied in the implementation environment shown in FIG. 1, for example. The method for displaying an interface may include steps 201 to 207. In step 201, at least two terminals run the same application program with the same account simultaneously. In step 202, a server receives the simultaneous running of the same application program of the at least two terminals with the same account. In step 203, the server assigns respective access permission for	Ex. 1006, [0095] Referring to FIG. 2, it illustrates a flow diagram of an interface display method provided by the embodiment I. The embodiment is illustrated as the interface display method is used in the implementation environment shown in FIG. 1. The interface display method may includes: Ex. 1006, [0096] In S201, a terminal and at least one of other terminals use the same account to simultaneously use the same application program to a server; Ex. 1006, [0097] in S202, the server receives simultaneous use of the same application program by at least two

accessing at least one functional interface provided by the application program to the at least two terminals. A functional interface assigned to a current terminal of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals. In step 204, each of the at least two terminals obtains the access permission, assigned by the server, for accessing the at least one functional interface provided by the application program. The at least one functional interface is distinct from a functional interface assigned to any other of the at least two terminals. In step 205, the server sends data corresponding to each functional interface to the terminal having the access permission for accessing the functional interface for display. In step 206, the terminal receives the data corresponding to the functional interface, where the data corresponding to the functional interface is sent by the server to the terminal having the access permission for accessing the functional interface. In step 207, the terminal displays the functional interface.	terminals using the same account; Ex. 1006, [0098] in S203, the sever distributes the permission of the at least one functional interface provided by the application program to every terminal in the at least two terminals, Ex. 1006, [0099] where the functional interface distributed to the current terminal is different from other functional interfaces distributed to other terminals in the at least two terminals; Ex. 1006, [0100] in S204, the terminal acquires the permission of the at least one functional interface provided by the application program distributed by the server, Ex. 1006, [0101] where the at least one functional interface is different from other functional interfaces distributed by the server to the other terminals; Ex. 1006, [0102] in S205, the server sends data corresponding to each of the functional interfaces to the terminal having the permission of the functional interface for displaying; Ex. 1006, [0103] in S206, the terminal receives data, sent by the server, corresponding to the functional interface, where the data corresponding to the functional interface is sent by the server to the terminal having the permission of the functional interface; and
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	in S207, the terminal displays the functional interface.
Ex. 1004, 5:44-67 In summary, in the method for displaying an interface according to the embodiment, access permissions for accessing different functional interfaces are assigned to terminals which simultaneously run the same application program with the same account, and data corresponding to each of the functional interfaces is only assigned to a terminal having an access permission for accessing the functional interface, instead of assigning the data corresponding to each of the functional interfaces to all the terminals running the application program, thereby addressing the issue that the consumption of network traffic is large in conventional technology and reducing the network traffic occupied in assigning the data corresponding to different functional interfaces to the terminals. Besides, since the data corresponding to each of the functional interfaces is only assigned to the terminal having the access permission, i.e., each of the terminal only receives data corresponding to a part of the functional interfaces, for which the terminal has an access permission, rather than receives data corresponding to all the functional interfaces provided by the application program, and thus a user can directly view a functional interface in a terminal having an access permission therefore without frequent switching operations, thus reducing an operational complexity for the user.	Ex. 1006, [0105] In conclusion, by distributing the permissions of different functional interfaces to various terminals that use the same account to use the same application program simultaneously to further distribute data corresponding to each of the functional interfaces to the terminal having the permission of the functional interface rather than distributing data corresponding to each of the functional interfaces to all terminal that use the application program, the interface display method provided by the embodiment solves the problem of large network flow consumed in the prior art, thereby reducing the occupied network flow when data of different functional interfaces are distributed to the terminals. Meanwhile, as data of each of the functional interfaces is only distributed to the terminal with permission, namely, each of the terminals would only receive data of a part of functional interfaces for which it has the permission rather than receiving the data of all the functional interfaces provided by the application program. Therefore, when a user needs to access a certain functional interface, the user may directly check in the terminal with the permission of the functional interface without performing frequent switching operations, so that the complexity of operations of the user is reduced.

Ex. 1004, 6:53-61 A user may request a server corresponding to an application program for running the application program with an account in a terminal. In practical implementations, in a case the user has multiple terminals, the user may request the server for running an application program with one account in at least two terminals simultaneously. For example, in a case the application program is microblog and the user has a cellphone, a laptop computer and a desktop computer, the user may login to microblog in the laptop computer, the cellphone and the desktop computer with one microblog account.	Ex. 1006, [0110] the user may use the account in the terminal to make a request to the server corresponding to the application program to use the application program. In an actual implementation, when the user has multiple terminals, the user may use the same account in at least two terminals to simultaneously make a request to the server to use the same application program. By taking a condition where the application program is Weibo and the user has a mobile phone as an example, a notebook computer and a desktop computer at the same time as an example, the user may respectively use the same Weibo account to log in to Weibo in the tablet computer, the mobile phone and the desktop computer.
Ex. 1004, 7:32-44 For example, microblog may provide a homepage functional interface, a private message functional interface and a game functional interface. The server, on receiving that the cellphone logs in to microblog with the same account, may assign an access permission for accessing the homepage interface to a laptop computer which has logged in to microblog and assign an access permission for accessing the private message interface to a cellphone which logs in to microblog. Similarly, when a desktop computer logs in to microblog with the same account, the server may assign an access permission for accessing the	Ex. 1006, [0118] For example, Weibo may provide functional interfaces such as a home page, private messages and games. When the server receives logging in Weibo by using the same account through the mobile phone, the server may distribute the permission of a home page interface to the notebook computer that has logged in Weibo and distribute the permission of a private message interface to the mobile phone logging in Weibo. Similarly, when the desktop computer uses the same account to log in Weibo, the server may distribute the permission of a game interface to the desktop computer.

game interface to the desktop computer.	
Ex. 1004, 8:24-26 In a third possible implementation, the server may automatically assign a most time access permission for accessing a functional interface to each of the at least two terminals.	Ex. 1006, [0123] In a third possible implementation mode, the server may further automatically distribute the permission of the functional interface, most frequently used by the terminal previously, to the terminal.
Ex. 1004, 8:40-44 In a fourth possible implementation, the server may assign an access permission for accessing a functional interface which has not been applied for by any other terminal, to a terminal, in a case the terminal is a default terminal.	Ex. 1006, [0125] In a fourth possible implementation mode, when the terminal is the default terminal, the server may further automatically distribute the permission of the functional interface, that has not been applied for by other terminals, to the terminal.
Ex. 1004, 16:29 the server may send prompt information to the terminal.	Ex. 1006, [0193] the server may send the prompt information to the terminal.
Ex. 1004, 16:35-42 After receiving the prompt information, the terminal may perform a corresponding operation in response to the prompt information. Specifically, the terminal may apply for an access permission for accessing another of the functional interfaces provided by the application program, or determine whether to have the access permission for accessing the at least one functional interface in replacement of the another terminal.	Ex. 1006, [0193] After receiving the prompt information, the terminal may execute corresponding operations according to the prompt information. Specifically, the terminal may re-apply the permission of other functional interfaces in the functional interfaces provided by the application program, or decide whether to replace the other terminals to have the permission of the at least one functional interface.
Ex. 1004, 16:62-17:1 Besides, since the data corresponding to each of the functional interfaces is only assigned to the terminal having the access permission, i.e., each of the terminal only receives data corresponding to a part of the	Ex. 1006, [0195] Meanwhile, as data of each of the functional interfaces is only distributed to the terminal with permission, namely, each of the terminals would only receive data of a part of functional interfaces for which it has the

functional interfaces, for which the terminal has an access permission, rather than receives data corresponding to all the functional interfaces provided by the application program, a user can directly view a functional interface in a terminal having an access permission therefore when accessing the functional interface without frequent switching operations, thereby reducing an operational complexity for the user.	permission rather than receiving the data of all the functional interfaces provided by the application program. Therefore, when a user needs to access a certain functional interface, the user may directly check in the terminal with the permission of the functional interface without performing frequent switching operations, so that the complexity of operations of the user is reduced.
Ex. 1004, 17:44-56 A user may request a server corresponding to an application program for running the application program with an account in a terminal. In practical implementations, in a case the user has multiple terminals, the user may request the server for running an application program with same account in at least two terminals simultaneously. For example, in a case the application program is microblog and the user has a cellphone, a laptop computer and a desktop computer, the user may log in to microblog in the laptop computer, cellphone and desktop computer with one microblog account. In step 502, the server receives a simultaneous running of the application program of the at least two terminals with the one account.	Ex. 1006, [0201] the user may use the account in the terminal to make a request to the server corresponding to the application program to use the application program. In an actual implementation, when the user has multiple terminals, the user may use the same account in at least two terminals to simultaneously make a request to the server to use the same application program. By taking a condition where the application program is Weibo and the user has a mobile phone as an example, a notebook computer and a desktop computer at the same time as an example, the user may respectively use the same Weibo account to log in to Weibo in the tablet computer, the mobile phone and the desktop computer. Ex. 1006, [0202] In S502, the server receives simultaneous use of the same application program by at least two terminals using the same account;
Ex. 1004, 18:11-49	Ex. 1006, [0206]

For example, in a case the user logs in to microblog in the cellphone, the laptop computer and the desktop computer simultaneously, and sets the cellphone as the multifunction terminal, the user may simultaneously send application requests for the three terminals, i.e., the cellphone, the laptop computer and the desktop computer, as illustrated in FIG. 5B for details. For the laptop computer and the desktop computer, an application request for applying a user permission for a functional interface is sent by another terminal, i.e., the cellphone. In step 504, the server receives the application request sent by the another terminal. After the another terminal sends the application request to the server, the server may receive the application request sent by the terminal accordingly. In step 505, the server assigns the applied access permission for accessing the at least one functional interface to the terminal, in response to the application request. After receiving the application request sent by the another terminal, the server may assign the applied access permission for accessing the at least one functional interface to the terminal, in response to the application request. For example, in a case the server receives an application request sent by	For example, if the user simultaneously uses the same account to log in to Weibo through the mobile phone, the notebook computer and the desktop computer, and the user device mobile phone is the multifunctional terminal, the user may send the application request to the three terminals: the mobile phone, the notebook computer and the desktop computer on the mobile phone, and a specific schematic diagram is shown in FIG. 5B. At the time, with respect to the notebook computer and the desktop computer, the application request for applying for the permission of the functional interface to the notebook computer and the desktop computer is sent out by other terminal mobile phones. Ex. 1006, [0207] In S504, the server receives the application request sent by the other terminals; Ex. 1006, [0208] after the other terminals send the application request to the server, the server may correspondingly receive the application request sent by the other terminals. Ex. 1006, [0209] In S505, the server distributes the permission of the requested functional interface to the terminal according to the application request. Ex. 1006, [0210] After receiving the application request
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the cellphone for applying for the access permission for accessing the private message interface for the laptop computer, the server may assign the access permission for accessing the private message interface to the laptop computer. It should be noted that a conventional method for a terminal to apply for running an application program is described herein. The terminals each send a login request to the server. The server returns contents in a main interface to each terminal after receiving the login request the user performs a certain operation on the main interface to guide the each terminal to each functional interface after the terminal displays the contents in the main interface. Hence, the server may assign an access permission for accessing the main interface to multiple terminals simultaneously when the terminals are accessing the application program.	sent by the terminal, the server may distribute the permission of the requested functional interface to the terminal according to the application request. For example, if the server receives the application request for applying for the permission of the private message interface sent by the notebook computer, the server may distribute the permission distributed by the private message interface to the notebook computer. Ex. 1006, [0211] It should be noted that a mode that the terminal makes a request to use the application program is as follows: the terminal uses the account to make a request to log in to the server first; after the server receives the login request, the server returns the content of the main interface to each of the terminals; after the terminal displays the content of the main interface, the user operates certainly on the main interface to further guide the terminal to enter each of the functional interfaces, so that when the terminal uses the application program, the server may distribute the permission of the main interface to the plurality of terminals at the same time.
Ex. 1004, 18:63-19:13 In step 507, the server sends data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. After assigning the access permission for accessing the at least one functional	Ex. 1006, [0214] In S507, the server sends data corresponding to each of the functional interfaces to the terminal having the permission of the functional interface for displaying; Ex. 1006, [0215]

interface to each of the at least two terminals, the server may send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface for display. For example, in a case the server assigns the access permission for accessing the private message interface to the cellphone, assigns an access permission for accessing a homepage interface to the laptop computer and assigns access permissions for accessing the other functional interfaces provided by microblog to the desktop computer, the server may send a private message only to the cellphone without sending the private message to the laptop computer or the desktop computer when needing to sending the private message to a terminal logging in with the account.	after distributing the permission of the functional interface to each of the terminals, the server may send data corresponding to each of the functional interfaces to the terminal having the permission of the functional interface for displaying. For example, if the server distributes the permission of the private messages to the mobile phone, distributes the permission of the home page to the notebook computer, and distributes the permissions of all the other functional interfaces provided by Weibo to the desktop computer, when the server needs to send a private message to the terminal that has logged in to the account, the server may only send the private message to the mobile phone rather than sending the private message to the notebook computer or the desktop computer.
Ex. 1004, 22:43-63 Fifth Embodiment Reference is made to FIG. 6B, which shows a block diagram of the structure of a server according to the fifth embodiment of the invention, where the server may be in the form of software, hardware or a combination of both. The server may include: a use receiving module 610, a permission assigning module 620 and a data sending module 630. The use receiving module 610 is configured to receive a simultaneous running of the application program of at least two terminals with the same account.	Ex. 1006, [0238] Embodiment V Ex. 1006, [0239] Referring to FIG. 6, it illustrates a structural block diagram of an interface display device provided by the embodiment V of the present invention. The interface display device may become all or part of the server through a software, a hardware or a combination thereof. The display device may include a use receiving module 610, a permission distribution module 620 and a data sending module 630,

The permission assigning module 620 is configured to assign an access permission for accessing at least one functional interface provided by the application program to the at least two terminals, where a functional interface assigned to each of the at least two terminals is distinct from a functional interface assigned to any other of the at least two terminals. And the data sending module 630 is configured to send data corresponding to each functional interface to a terminal having an access permission for accessing the functional interface.	Ex. 1006, [0240] where the use receiving module 610 is configured to receive simultaneous use of the same application program by at least two terminals using the same account; Ex. 1006, [0241] the permission distribution module 620 is configured to distribute the permission of at least one functional interface provided by the application program to every terminal in the at least two terminals, wherein the functional interface distributed to the terminal is different from other functional interfaces distributed to other terminals in the at least two terminals; and Ex. 1006, [0242] the data sending module 630 is configured to respectively send data corresponding to the functional interfaces to the terminals having the permission of the functional interfaces for displaying.
Ex. 1004, 29:11-17 Those in the art shall understand that all or a part of the steps according to the embodiments above may be performed through hardware, or performed through related hardware under instructions of a program. The program may be stored in a computer readable storage medium, which may be a read-only memory, a magnetic disk or an optical disc.	Ex. 1006, [0278] Those of ordinary skill in the art may understand that all or part of steps of the embodiments may be completed via the hardware or via the program instructing related hardware. The program may be stored in a computer readable storage medium. The abovementioned storage medium may be a read-only memory, a disk or an optical disk and the like.

APPENDIX C – TAKAHASHI COMPARISON TABLE

U.S. Patent Pub. No. 2015/0011318 ("Takahashi") – Exhibit 1007	Certified English translation of <i>Takahashi</i> <i>Priority Application</i> – Exhibit 1009
Figure 1 FIG.1	[Fig. 1] FIG. 1
Figure 3 Mobile terminal 10 FIG.3	[Fig. 3] Mobile terminal 10 FIG. 3

Figure 4

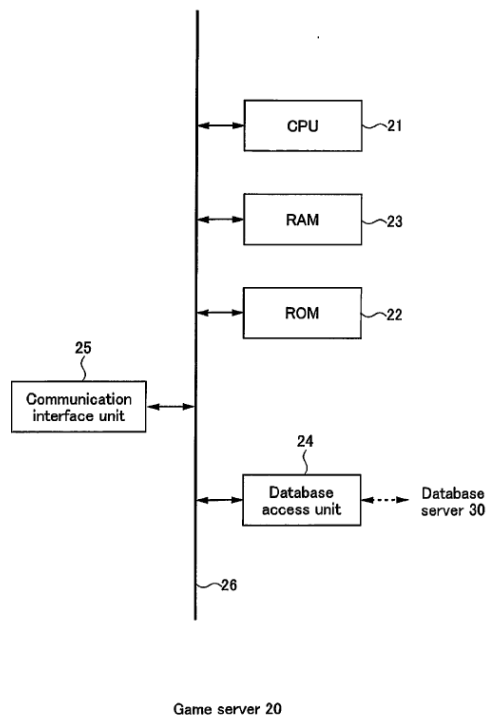


FIG.4

[Fig. 4]

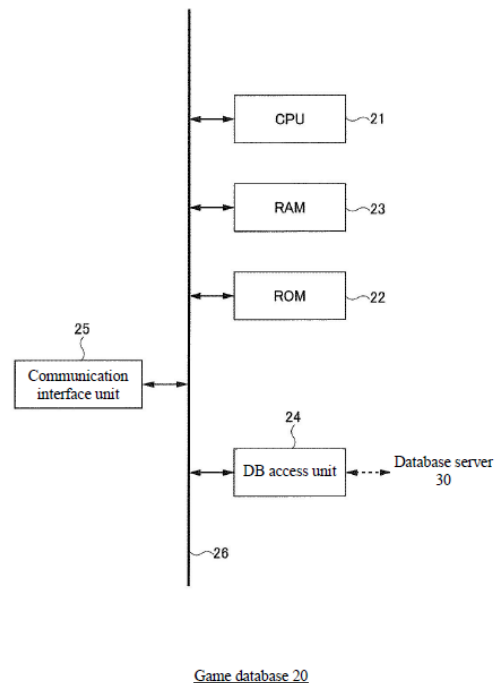


Figure 5

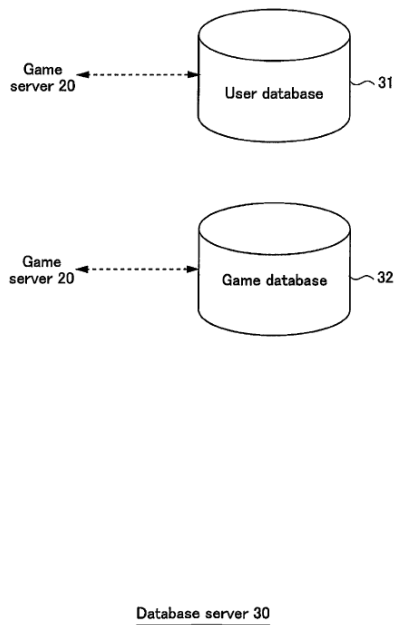


FIG.5

[Fig. 5]

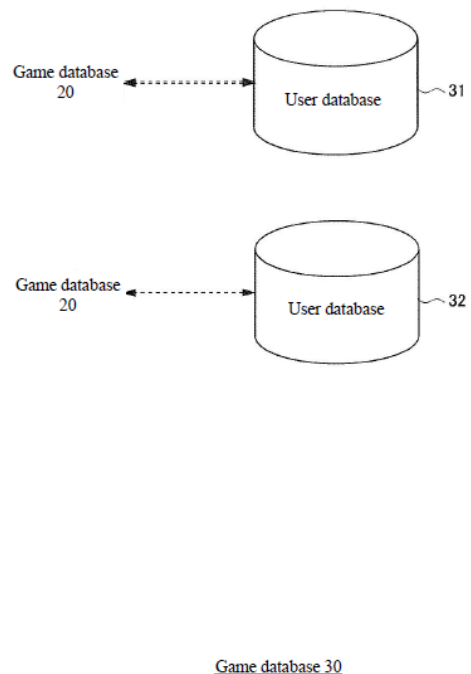


Figure 6

User ID	Password	Identification Information	Terminal information of main-terminal	Terminal information of sub-terminal
012345	knm001	xxxxxxxxxxx		

FIG.6

[Fig. 6]

User ID	Password	Identification Information	Terminal information of main terminal	Terminal information of sub-terminal
012345	knm001	xxxxxxxxxxx		

Figure 7

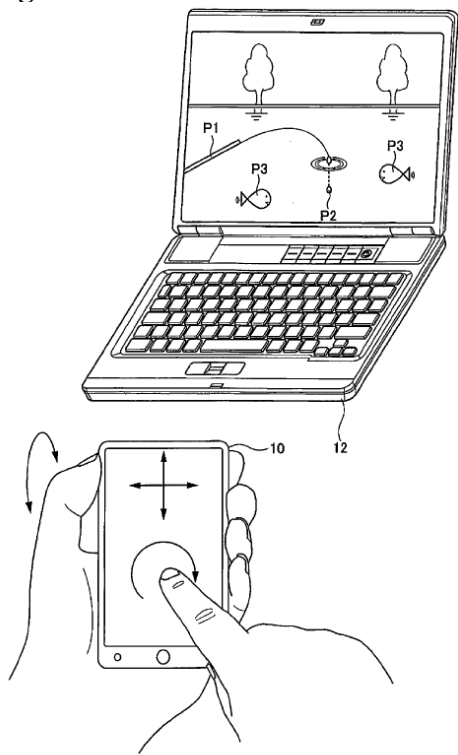


FIG.7

[Fig. 7]

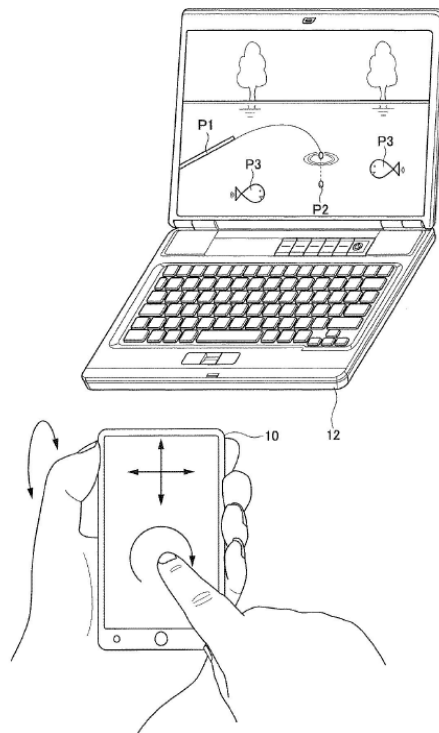


Figure 8

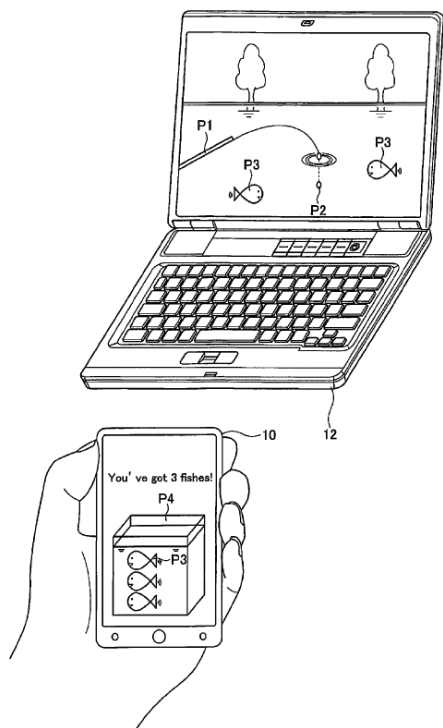


FIG.8

[Fig. 8]

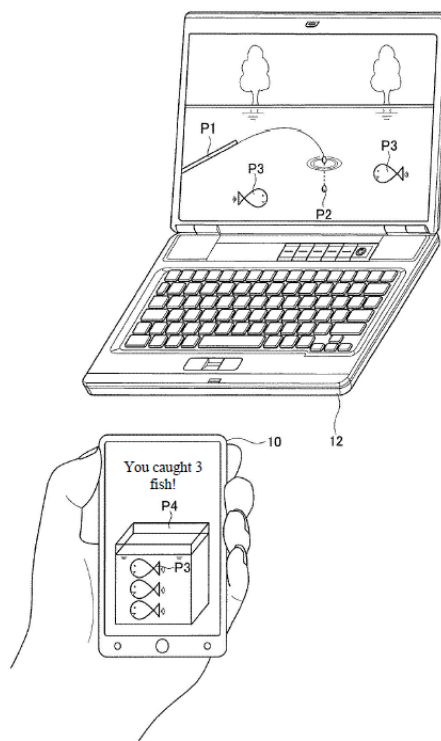


Figure 10

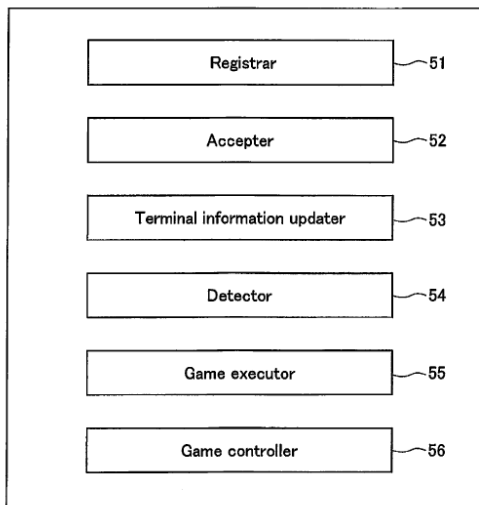


FIG.10

[Fig. 10]

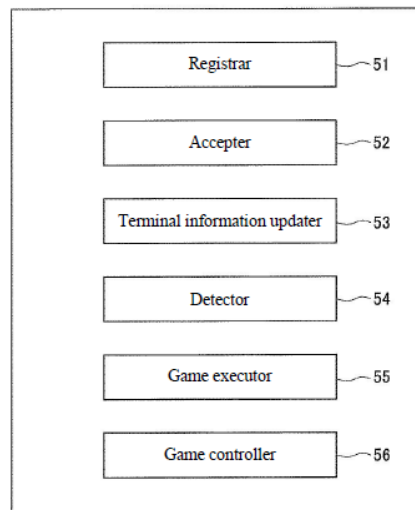
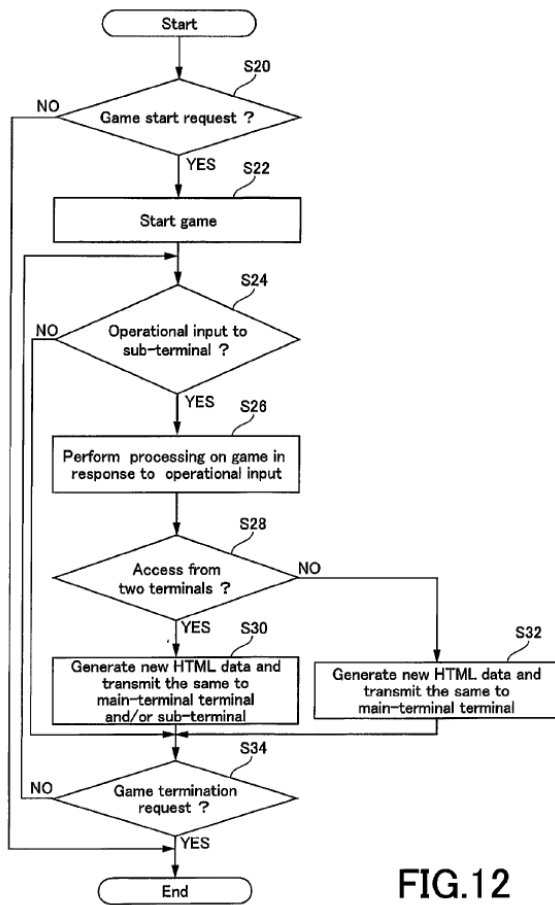


Figure 12



[Fig. 12]

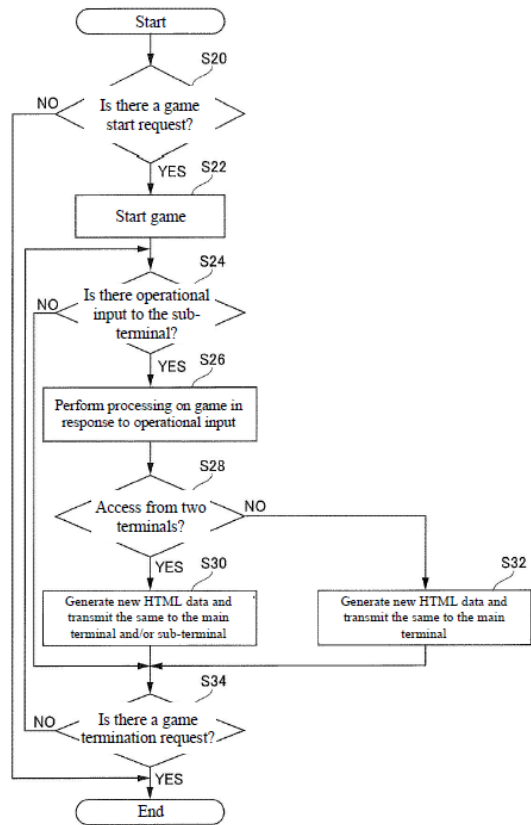


Figure 16

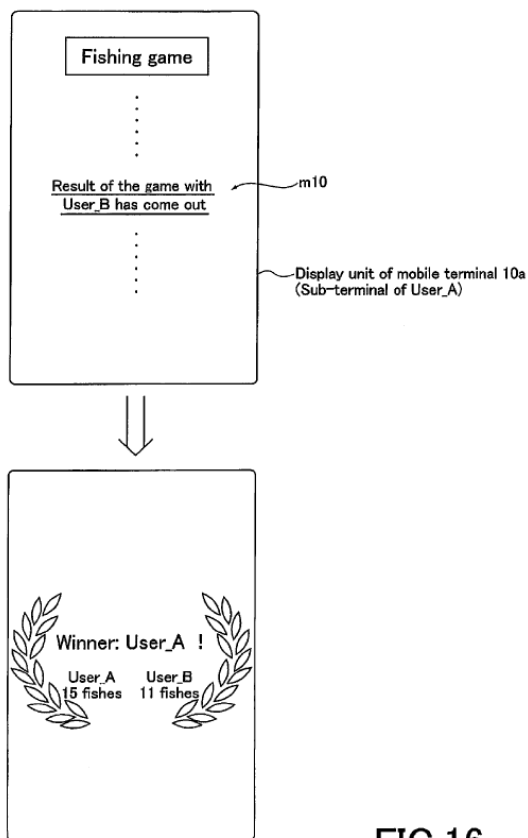
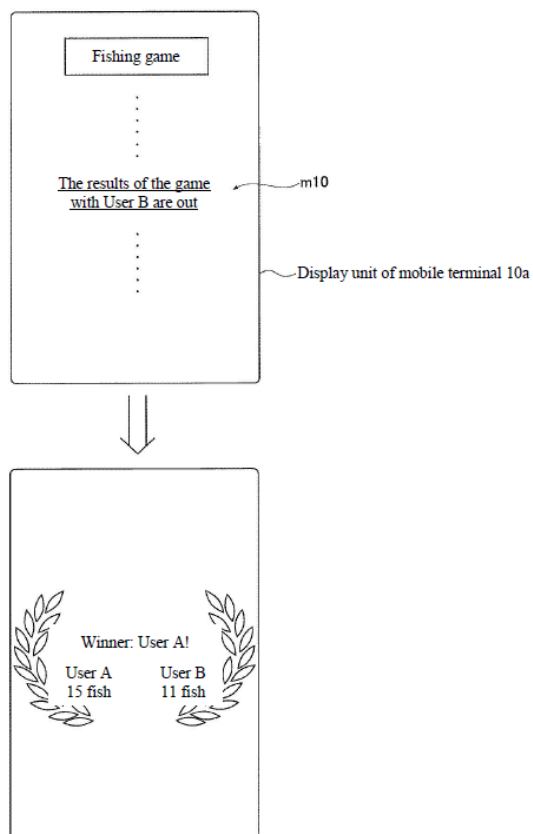
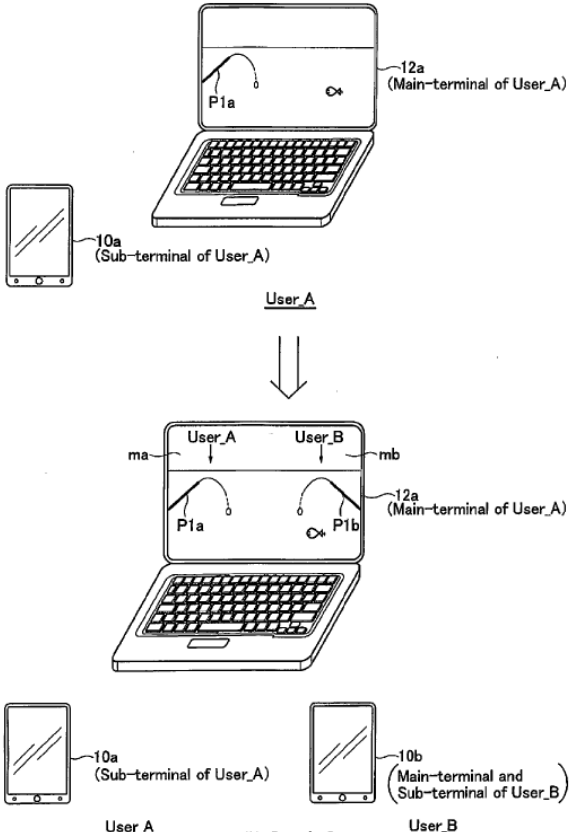
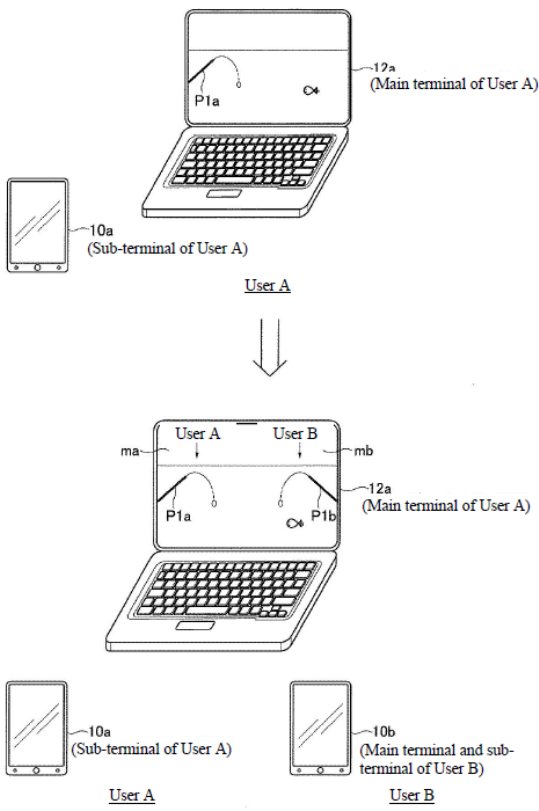


FIG.16

[Fig. 16]



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Figure 18  FIG.18	[Fig. 18] 
[0006] The present invention has been devised in consideration of the above. An object of the present invention is to provide a game control device, a non-transitory computer-readable recording medium, a game control method, and a game control system that allows a variety of types or forms of games by use of a plurality of communication terminals. [0007] An aspect of the present invention is a game control device, the device being connected through a communication network to communication terminals, the device comprising:	[0006] This invention has been devised in consideration of the above. An objective of this invention is to provide a game control device, a non-transitory computer-readable recording medium, a game control method, and a game control system that allows a variety of types or forms of games by use of multiple communication terminals. [0007] A first aspect of this invention is a game control device connected via a communication network to a communication terminal operated by a user, and controlling the execution of a game by the user via the aforesaid communication network, which is equipped with:

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[0008] an acceptor configured to accept an access request including user-specific user identification information from at least one communication terminal; [0009] a detector configured to detect accesses from a plurality of communication terminals that are associated with identical user identification information, the plurality of communication terminals including a first communication terminal and a second communication terminal; [0010] a game executor configured to execute a game for a user of user identification information after access from any one of the plurality of communication terminals based on user identification information; and [0011] a game controller configured to transmit game data of the game being executed to the second communication terminal in response to an operational input to the first communication terminal, after the detector detects the accesses from the plurality of communication terminals that are associated with the identical user identification information.	– an acceptor configured to accept access requests including user-specific user identification information from at least one communication terminal; – a detector configured to accesses from multiple communication terminals that are associated with the same user identification information; – a game executor configured to execute a game for a user of user identification information after access from a communication terminal based on the user identification information has occurred; and – a game controller configured to transmit game data of the game being executed to the second communication terminal being different from the aforesaid first communication terminal in response to an operational input to the first communication terminal, when an access from multiple communication terminals has occurred based on the same user identification information.
[0012] In this game control device, the game controller may transmit first game data of the game being executed to the first communication terminal, and the game controller transmits second game data of the game being executed to the second communication terminal in response to an operational input to the first communication terminal. The second game data is different from the first game data.	[0009] In the above-mentioned game control device, the game controller transmits the first game data of the game being executed to the aforesaid first communication terminal, and the game controller transmits the second game data of the game being executed to the aforesaid second communication terminal in response to an operational input to the aforesaid first communication terminal, the

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	second game data being different from the aforesaid first game data.
[0018] FIG. 1 illustrates a basic configuration diagram of a game control system according to a first embodiment;	[0016] [Fig. 1] It is a diagram illustrating a basic configuration diagram of a game control system according to a first embodiment.
[0022] FIG. 4 illustrates a configuration of a game server according to the first embodiment;	[0016] [Fig. 4] It is a diagram illustrating a configuration of a game server according to the first embodiment.
[0023] FIG. 5 is a block diagram of a configuration of a database server according to the first embodiment;	[0016] [Fig. 5] It is a block diagram of a configuration of a database server according to the first embodiment.
[0028] FIG. 10 is a functional block diagram for explaining functions that play main rolls in the game control device according to the first embodiment;	[0016] [Fig. 10] It is a functional block diagram for explaining functions that play main roles in the game control device according to the first embodiment.
[0040] FIG. 1 represents an exemplary system configuration of a game control system according to the present embodiment. As illustrated in FIG. 1, the game control system includes a plurality of communication terminals that are connectable to a communication network NW such as the Internet, a game server 20 that is connectable to the communication network NW, and a database server 30. In FIG. 1, communication terminals 10 <i>a</i>, 12 <i>a</i> of User_A, communication terminals 10 <i>b</i>, 12 <i>b</i> of User_B, and a communication terminals 10 <i>c</i> of User_C are illustrated as an example of a plurality of communication terminals. Each of the communication terminals is a communication terminal operated by an individual user, such as a mobile terminal (including a smart phone), a	[0019] Fig. 1 represents an exemplary system configuration of a game control system according to this embodiment. As illustrated in Fig. 1, the game control system includes multiple communication terminals that are connectable to a communication NW (network) such as the Internet, a game server 20 that is connectable to the communication NW, and a database server 30. In Fig. 1, communication terminals 10a, 12a of User A, communication terminals 10b, 12b of User B, and communication terminal 10c of User C are illustrated as an example of multiple communication terminals. Each of the communication terminals is a communication terminal operated by an individual user, such as a mobile terminal (including a smart phone), a personal digital assistant (PDA), a personal computer, or a television receiver

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personal digital assistant (PDA), a personal computer, or a television receiver including a two-way communication function (including a so-called multi-functional smart TV).	including a two-way communication function (also including a so-called multi-functional smart TV).
[0041] In the example illustrated in FIG. 1, the communication terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> are mobile phones. The communication terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> are therefore called as mobile terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> in the following explanation. The mobile terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> may be called as mobile terminal 10 when they are commonly referred to. In the example illustrated in FIG. 1, the communication terminals 12<i>a</i>, 12<i>b</i> are personal computers. The communication terminals 12<i>a</i>, 12<i>b</i> are therefore called as PCs 12<i>a</i>, 12<i>b</i> in the following explanation. The PCs 12<i>a</i>, 12<i>b</i> may be called as PC 12 when they are commonly referred to.	[0020] In the example illustrated in Fig. 1, the communication terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> are mobile terminals, are hereafter called mobile terminals 10<i>a</i>, 10<i>b</i> and 10<i>c</i> in the following explanation, and may be called as mobile terminal 10 when they are commonly referred to. In the example illustrated in Fig. 1, the communication terminals 12<i>a</i>, 12<i>b</i> are personal computers, are hereafter called PC 12<i>a</i> and PC 12<i>b</i> in the following explanation. PC 12<i>a</i> and PC 12<i>b</i> may be called PC 12 when they are commonly referred to.
[0042] In this game control system, a case is assumed in which there are accesses from a plurality of communication terminals to the game server 20 for each user. In the case in which there have been accesses from a plurality of communication terminals of a user to the game server 20, the game server 20 identifies a main-terminal and a sub-terminal in executing a game provided by the game server 20. The main-terminal is a communication terminal that receives from the game server 20 game data of a game being played by a user. The main-terminal is a communication terminal that displays primary game images of the game being executed, for example. The sub-terminal is a communication terminal that receives operational inputs from the user in the game being played by the user. For example, the sub-terminal is a communication terminal that is held by the user for operation. As described	[0021] In this game control system, a case is assumed in which there are accesses from multiple communication terminals to the game server 20 for each user. In the case in which there have been accesses from multiple communication terminals of a user to the game server 20, the game server 20 identifies a main terminal and a sub-terminal in executing a game provided by the game server 20. The main terminal is a communication terminal that receives from the game server 20 game data of a game being played by a user. The main terminal is a communication terminal that displays primary game images of the game being executed, for example. The sub-terminal is a communication terminal that receives operational inputs from the user in the game being played by the user. For example, the sub-terminal is a communication terminal that is held by the user for operation. As described

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later, the game data of the game being played by the user may be received from the game server 20.	later, the game data of the game being played by the user may be received from the game server 20.
[0045] With this game control system, the game server 20 is configured to be able to communicate with the mobile terminal 10 and the PC 12 as clients and provides the communication terminals with gaming service. The game server 20 is embedded with a program that is operable on a web browser as a game application. The database server 30 stores a variety of information for executing the games as described below. The database server 30 is connected to the game servers 20 by means of a wired connection for example for reading and writing the information. [0046] The mobile terminal 10 and the PCs 12 each includes a web browser that is able to display a web page provided by the game server 20. A user plays a game by operating the sub-terminal which is either of the mobile terminal 10 and PC 12.	[0022] With this game control system, the game server 20 is configured to be able to communicate with the mobile terminal 10 and the PC 12 as clients and provides the communication terminals with gaming service. The game server 20 is embedded with a program that is operable on a web browser as a game application. The database server 30 stores a variety of information for executing the games as described below, and is connected to the game server 20 by means of a wired connection, for example, for reading and writing the information. The mobile terminal 10 and the PC 12 each includes a web browser that is able to display a web page provided by the game server 20. A user plays a game by operating the sub-terminal which is either of the mobile terminal 10 and PC 12.
[0049] FIGS. 2A and 2B each illustrates exemplary appearances of the mobile terminal 10. FIG. 2A illustrates a communication terminal with a button input system such as, for example, a foldable communication terminal (mobile telephone). FIG. 2B illustrates a communication terminal with a touch panel input system such as a smartphone. FIG. 3 is a configuration block diagram of the mobile terminal 10.	[0024] Fig. 2A and Fig. 2B each are a diagram illustrating exemplary appearances of the mobile terminal 10. Fig. 2A is a diagram illustrating a communication terminal with a button input system such as, for example, a foldable communication terminal (mobile telephone). Fig. 2B is a diagram illustrating a communication terminal with a touch panel input system such as a smartphone. Fig. 3 is a configuration block diagram of the mobile terminal 10.
[0051] The CPU 111 loads a web browser stored in the ROM 112 into the RAM 113, runs the	[0025] The CPU 111 loads a web browser stored in the ROM 112 into the RAM 113, runs the

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web browser therein, and then executes web access to the game server 20 according to HTTP (HyperText Transfer Protocol). For example, the CPU 111 acquires data for displaying a web page from the game server 20 through the communication interface unit 117 on the basis of an appropriately specified uniform resource locator (URL) that is inputted by a user using the operational input unit 115 and the like. The acquired data is data of objects such as images associated with a hypertext markup language (HTML) document and the HTML document (hereinafter collectively referred to as "HTML data" on an as-needed basis). The CPU 111 then interprets the acquired HTML data. It should be noted that each mobile terminal 10 may be embedded with a variety of plug-ins for extending browsing functions of the web browser.	web browser therein, and then executes web access to the game server 20 according to HTTP (HyperText Transfer Protocol). For example, the CPU 111 acquires data, that is, objects such as HTML (HyperText Markup Language) documents and images associated with such documents, for displaying a web page from the game server 20 through the communication interface unit 117 on the basis of an appropriately specified URL (Uniform Resource Locator) that is input by a user using the operational input unit 115 and the like, and then interprets the acquired HTML data. Moreover, each mobile terminal 10 may be embedded with a variety of plug-ins for extending browsing functions (e.g., animation functions) of the web browser.
[0060] It should be noted that, the both of the mobile terminal 10 and the PC 12 are communicated with the game server 20 through the communication interface unit according to the any known wireless or wired communication protocol.	[0031] Moreover, both the mobile terminal 10 and the PC 12 communicate with the game server 20 through the communication interface unit according to any known wireless or wired communication protocol.
[0062] For example, the game server 20 manages a website of a game including a plurality of hierarchically structured web pages. The game server 20 provides the mobile terminal 10 and PCs 12 with web service of a game. As illustrated in FIG. 4, the game server 20 includes a CPU 21, a ROM 22, a RAM 23, a database (DB) access unit 24, and a communication interface unit 25. Further, the game server 20 includes a bus 26 for transmitting control signals or data signals between the components. It should be noted that the game server 20 may have the same	[0032] The game server 20, for example, manages a website of a game including multiple hierarchically structured web pages, and provides the mobile terminal 10 and PC 12 with web service of a game. As illustrated in Fig. 4, the game server 20 includes a CPU 21, a ROM 22, a RAM 23, a database (DB) access unit 24, a communication interface unit 25, and has a bus 26 for transmitting control signals or data signals between the components. Moreover, the game server 20 may have the same hardware structure as general-purpose web servers.

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hardware structure as general-purpose web servers.	
[0063] The ROM 22 stores an application program that provides service of displaying a HTML document and objects such as images (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client. A variety of data referenceable by the CPU 21 is stored in the ROM 22 in addition to the application program. [0064] The CPU 21 loads a game program stored in the ROM 22 into the RAM 23 and runs the loaded game program. The CPU 21 also performs a variety of processing through the communication interface unit 25.	[0033] The ROM 22 stores application programs that provide service of displaying a HTML document and objects such as images (i.e., displaying a web page) to the web browser of the mobile terminal 10 as a client. A variety of data referenceable by the CPU 21 is stored in the ROM 22 in addition to the application program. The CPU 21 loads a game program stored in the ROM 22 into the RAM 23 and runs the game program and also performs a variety of processing through the communication interface unit 25.
[0065] For example, the CPU 21 transmits HTML data to the mobile terminal 10 and/or the PC 12 through the communication interface unit 25. Moreover, the CPU 21 performs authentication processing in the case in which the game server 20 performs authentication processing of the user of the mobile terminal 10 and/or the PC 12.	[0034] For example, the CPU 21 transmits HTML data to the mobile terminal 10 and/or the PC 12 through the communication interface unit 25. Moreover, the CPU 21 performs authentication processing in the case in which the game server 20 performs authentication processing of the user of the mobile terminal 10 and/or the PC 12.
[0068] The database server 30 can be realized by a general-purpose storage such as a high-capacity hard disc drive, a redundant array of inexpensive disks (RAID) or other form of device. Databases inside the database server 30 are configured to allow reading and writing of data by the CPU 21 through the database access unit 24 of the game server 20.	[0035] (1-4) Database Server Configuration The database server 30 can be realized by a general-purpose storage such as a high-capacity hard disc drive, a redundant array of inexpensive disks (RAID) or other form of device. Databases inside the database server 30 are configured to allow reading and writing of data by the CPU 21 through the database access unit 24 of the game server 20.
[0070]	[0036]

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FIG. 6 depicts an example of the user database 31. User data is referred to as collective data including the following information. [0071] User ID and Password [0072] User ID and Password are set in user registration and are recorded by the game server 20. User ID and Password are data mainly for user authentication that is executed after the PC 12 of a user accesses to the game server 20. [0073] Identification Information [0074] Identification information is unique information for each mobile terminal 10. Identification information is used mainly for user authentication that is executed after the mobile terminal 10 of a user accesses to the game server 20. Identification information may be a serial number of the mobile terminal. Identification information may be a part of a user agent character string in a HTTP request transmitted from the mobile terminal 10 to the game server 20. [0075] After the HTTP request is first transmitted from the mobile terminal 10 to the game server 20, the identification information of the mobile terminal 10 is incorporated into the user agent character string in the HTTP request upon the user's permission. After the identification information of the mobile terminal 10 is first received by the game server 20, the identification information is	Fig. 6 depicts an example of the user database 31. User data is data that collectively represents the following information for each user. • User ID and Password User ID and Password are set in user registration and are recorded by the game server 20. User ID and Password are data mainly for user authentication that is executed after the PC 12 of a user accesses the game server 20. • Identification Information Identification information is unique information for each mobile terminal 10 and is used mainly for user authentication that is executed after the mobile terminal 10 of a user accesses the game server 20. Identification information may be, for example, a serial number of the mobile terminal. Identification information may be, for example, a part of a user agent character string in an HTTP request transmitted from the mobile terminal 10 to the game server 20. After the HTTP request is first transmitted from the mobile terminal 10 to the game server 20, the identification information of the mobile terminal 10 is incorporated into the user agent character string in the HTTP request upon the user's permission. After the identification information of the mobile terminal 10 is first received by the game server 20, the identification information is

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recorded in association with user ID for the purpose of the subsequent user authentication. [0076] Note that, in the case in which both the main-terminal and the sub-terminal are mobile terminals in executing the game provided by the game server 20, the identification information of those two mobile terminals are recorded. [0077] Terminal Information of Main-Terminal [0078] Terminal information of main-terminal is information of the communication terminal identified as main-terminal among a plurality of communication terminals when the game server 20 is accessed from the plurality of communication terminals of the user to be processed. The terminal information of the communication terminal may be any information that identifies the communication terminal such as address information like IP address, etc. Note that, as described later, a method to identify a main-terminal or a sub-terminal may be as follows. For example, the user agent character string in a HTTP request, which is transmitted from the communication terminal to the game server 20, includes information about an operating system and a web browser. For example, in the case in which there are accesses from a user through both a mobile terminal and a PC, because operating systems installed into the mobile terminal and the PC are different, it is possible to identify whether the communication terminal performing each access is the mobile terminal or the PC. In such case, the PC may be identified as a main-terminal, while the mobile terminal may be identified as a sub-terminal.	recorded in association with user ID for the purpose of subsequent user authentication. Moreover, in the case in which both the main terminal and the sub-terminal are mobile terminals in executing the game provided by the game server 20, the identification information of those two mobile terminals is recorded. • Terminal Information of Main Terminal This is the information of the communication terminal identified by the game server 20 as the main terminal among multiple communication terminals when the game server 20 is accessed from the multiple communication terminals of the user with the target user ID. The terminal information of the communication terminal may be any information that identifies the communication terminal such as, for example, address information like the IP address, etc. Note that, as described later, a method to identify a main terminal or a sub-terminal may be as follows. For example, the user agent character string in a HTTP request, which is transmitted from the mobile terminal 10 to the game server 20, includes information about an operating system and a web browser. For example, in the case in which there are accesses from the same user through both a mobile terminal and a PC, because operating systems installed into the mobile terminal and the PC are different, it is possible to identify whether the communication terminal performing each access is the mobile terminal or the PC. In such case, the PC may be identified as a main terminal, while the mobile terminal may be identified as a sub-terminal.

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[0079] Terminal Information of a Sub-Terminal [0080] Terminal information of a sub-terminal is information of the communication terminal identified as a sub-terminal among a plurality of communication terminals after the game server 20 is accessed from the plurality of communication terminals of the user to be processed. The terminal information of the communication terminal may be any information that identifies the communication terminal such as address information like IP address, etc. (1-5) Example of a Game Provided by the Game Server [0081] An example of a game provided by the game server will be explained with reference to FIGS. 7 to 9. FIG. 7 illustrates a situation in which a user plays a fishing game, which is an example of a motion sensing game, by use of the user's mobile terminal 10 and user's PC 12. FIG. 8 illustrates an image regarding the fishing game displayed on the mobile terminal 10. FIG. 9 illustrates a situation in which a user plays the fishing game with the mobile terminal 10 only. [0082] In FIG. 7, a game image of the fishing game being executed is displayed on the PC 12 in response to a user operation to the mobile terminal 10 as sub-terminal. The game image that is displayed on the display unit of the PC 12 includes a fishing rod object P1, a bait object P2, and fish objects P3 that move in a pond which is a background image, for example. [0083]	• Terminal Information of a Sub-Terminal This is the information of the communication terminal identified by the game server 20 as a sub-terminal among multiple communication terminals when the game server 20 is accessed from the multiple communication terminals of the user with the target user ID. The terminal information of the communication terminal may be any information that identifies the communication terminal, for example, address information such as the IP address, etc. [0037] (1-5) Example of a Game Provided by the Game Server An example of a game provided by the game server 20 will be explained with reference to Fig. 7 to Fig. 9. Fig. 7 is a diagram illustrating a situation in which a user plays a fishing game, which is an example of a motion sensing game, by use of the user's mobile terminal 10 and user's PC 12. Fig. 8 is a diagram illustrating an image regarding the fishing game displayed on the mobile terminal 10. Fig. 9 is a diagram illustrating a situation in which a user plays the fishing game with the mobile terminal 10 only. In Fig. 7, a game image of the fishing game being executed is displayed on the PC 12 in response to a user operation to the mobile terminal 10 as a sub-terminal. The game image that is displayed on the display unit of the PC 12 includes, for example, a fishing rod object P1, a bait object P2, and fish objects P3 that move in a pond which is a background image.

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This fishing game is configured such that, the fish objects P3 randomly move on the game image, and after reaching the bait object P2 at the edge of the fishing rod object P1, the fish object P3 stops moving for a certain period of time.	This fishing game is configured such that the fish objects P3 randomly move on the game image, and after reaching the bait object P2 at the edge of the fishing rod object P1, the fish object P3 stops moving for a certain period of time.
[0084] The user performs casting with regard to the fishing rod object P1 in the fishing game by swinging the mobile terminal 10. Depending on intensity and a direction (namely, output value of the accelerometer in the operational input unit 115) of the swinging action with respect to the mobile terminal 10, a position is determined where the bait object P2 is landed on the water by the casting. In the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in FIG. 7, a reel of the fishing rod object P1 is wound up in response to a user's moving operation with a finger of the user rotating on a display screen. In this fishing game, it is judged that the fish object P3 has been caught, if the user performs an operation with which the reel of the fishing rod object P1 is wound up while the fish object P3 stops moving at the position of the bait object P2 for a certain period of time. Further, in the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in FIG. 7, the bait object P2 for example may be selectable on the screen of the mobile terminal 10, in response to moving operations with regard to the display screen with a finger of the user in the forward, backward, right, or left direction (not illustrated in FIG. 7).	[0038] The user performs casting with regard to the fishing rod object P1 in the fishing game by swinging the mobile terminal 10. Depending on the intensity and direction (namely, the output value of the accelerometer in the operational input unit 115) of the swinging action with respect to the mobile terminal 10, a position is determined where the bait object P2 lands on the game screen by casting. In the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in Fig. 7, the reel of the fishing rod object P1 is wound up in response to a user's operation of moving a finger in a rotational direction on the display screen. In this fishing game, it is judged that the fish object P3 has been caught when user performs an operation with which the reel of the fishing rod object P1 is wound up while the fish object P3 stops moving at the position of the bait object P2 for a certain period of time. Further, in the case in which a touch panel input method applies to the mobile terminal 10 as illustrated in Fig. 7, for example, the bait object P2 may be selectable on the screen of the mobile terminal 10, in response to moving operations with regard to the display screen with a finger of the user in the forward, backward, right, or left direction (not illustrated in Fig. 7).
[0085] As illustrated in FIG. 8, based on the game progression status, the mobile terminal 10 as sub-terminal may be configured to display an image including a fish tank object P4. The	[0039] As illustrated in Fig. 8, based on the game progression status, the mobile terminal 10 as a sub-terminal may be configured to display an image including a fish tank object P4, the fish

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fish tank object P4 contains the fish objects P3 which is judged to have been caught, thereby allowing to visually recognize catches in fishing. In this case, the fishing game progresses with two screens. An image that is displayed on the mobile terminal 10 is updated every time it is judged that a fish object P3 has been caught. That is, images displayed on the PC 12 and the mobile terminal 10 may be updated such that, if it is judged that a specific fish object P3 has been caught, then the fish object P3 disappears from the pond, and the fish object P3 is added into the fish tank object P4.	tank object P4 contains the fish objects P3 which are judged to have been caught, thereby allowing the user to visually recognize catches while fishing. In this case, the fishing game progresses with two screens. The image that is displayed on the mobile terminal 10 is updated every time it is judged that a new fish object P3 has been caught. That is, images displayed on the PC 12 and the mobile terminal 10 may be updated such that, if it is judged that a specific fish object P3 has been caught, then the fish object P3 disappears from the pond, and the fish object P3 is added to the fish tank object P4.
[0088] It should be noted that the fishing game is exemplified as a game provided by the game server 20 for convenience of explanation; however, a game provided from the game server 20 is not limited to a specific type of game. Any game that is realized using a main-terminal and a sub-terminal may be applied. (1-6) Overview of Functions of Game Control Device	[0041] Moreover, the fishing game is exemplary as a game provided by the game server 20 for convenience of explanation; however, the games provided from the game server 20 are not limited to a specific type of game. This applies to any game that is realized using a main terminal and a sub-terminal. [0042] (1-6) Overview of Functions of Game Control Device
[0089] In the present embodiment, the game control device is configured, for example, by the game server 20 and the database server 30. Hereinafter, functions realized by the game control device of the present embodiment will be described with reference to FIG. 10 in the exemplified case in which the fishing game described above is applied. FIG. 10 is a functional block diagram for explaining functions that play main rolls in the game control device according to the present embodiment.	[0042] In this embodiment, the game control device is configured, for example, by a game server 20 and database server 30. Hereinafter, functions realized by the game control device of this embodiment will be described with reference to Fig. 10 in the exemplary case in which the fishing game described above is applied. Fig. 10 is a functional block diagram for explaining functions that play main roles in the game control device according to this embodiment.
[0090]	[0043]

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A registrar 51 includes a function for recognizing a user request and executing registration processing. Such request is based on a suitable operational input to the mobile terminal 10 or PC 12 on a web page provided to the mobile terminal 10 or PC 12, for example. The function of the registrar 51 is realized, for example, as described below. [0091] The CPU 21 of the game server 20 receives a registration request message (HTTP request) from the mobile terminal 10 or the PC 12 through the communication interface unit 25. In the case in which the CPU 21 receives the HTTP request from the mobile terminal 10, the received HTTP request includes user agent character strings containing identification information which is a serial number of the mobile terminal 10, for example. After first receiving the identification information, the CPU 21 records the identification information in the user database 31 in association with user ID for the purpose of subsequent user authentication. [0092] The HTTP request that the CPU 21 receives from the PC 12 includes a user ID and a password specified by the user based on operational inputs to the PC 12. That is, the HTTP request is generated in the PC 12 so as to include input result of the user ID and the password. The HTTP request is then transmitted to the game server 20. After receiving the user ID and the password, the CPU 21 correlates the user ID and the password and records them in the user database 31 for the purpose of subsequent user authentication. On the other hand, the CPU 21 of the game server 20 receives a registration request message (HTTP request), and issues a new user ID and a new password	A registrar 51 includes a function for recognizing a user request and executing registration processing. Such requests are based, for example, on a suitable operational input to the mobile terminal 10 or PC 12 on a web page provided to the mobile terminal 10 or PC 12. The function of the registrar 51 is realized, for example, as described below. The CPU 21 of the game server 20 receives a registration request message (HTTP request) from the mobile terminal 10 or the PC 12 through the communication interface unit 25. In the case in which the CPU 21 receives an HTTP request from the mobile terminal 10, the received HTTP request includes user agent character strings containing identification information, which is, for example, a serial number of the mobile terminal 10. After first receiving the identification information, the CPU 21 records the identification information in the user database 31 in association with the user ID for the purpose of subsequent user authentication. The HTTP request that the CPU 21 receives from the PC 12 includes a user ID and password specified by the user based on operational inputs to the PC 12. That is, the HTTP request is generated in the PC 12 so as to include the input result of the user ID and the password. The HTTP request is then transmitted to the game server 20. After receiving the user ID and the password from the PC 12, the CPU 21 correlates the user ID and the password and records them in the user database 31 for the purpose of subsequent user authentication. On the other hand, the CPU 21 of the game server 20 receives a registration request message (HTTP request), and issues a new user ID and a new password

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if any user ID is not included in the registration request message. The CPU 21 records the newly issued user ID and password in the user database 31 for the purpose of subsequent user authentication. [0093] The web page provided by the game server 20 may be configured so that a registration request message is automatically generated by a certain operation (e.g., a selection of a certain menu, or a text input and the like) on the mobile terminal 10 or the PC 12 on the web page. Information (e.g., an IP address or an email address and the like) for identifying the mobile terminal 10 or the PC 12 that is the transmission source may be included in the registration request message. Alternatively, in the case in which the user plays the other game(s) from the same service provider, the registration request message may include the user ID of that user. [0094] After a user ID, a password and/or identification information of the mobile terminal 10 are recorded in the user database 31, the registration processing completes. The CPU 21 transmits a registration completion message to the mobile terminal 10 indicating that the registration processing has completed.	if any user ID is not included in the registration request message. The CPU 21 records the newly issued user ID and password in the user database 31 for the purpose of subsequent user authentication. The web page provided by the game server 20 may be configured so that a registration request message is automatically generated by a certain operation (e.g., a selection of a certain menu, or a text input and the like) on the mobile terminal 10 or the PC 12 on the web page. Information (e.g., an IP address or an email address and the like) for identifying the mobile terminal 10 or the PC 12 that is the transmission source may be included in the registration request message. Alternatively, in the case in which the user plays another game from the same service provider, the registration request message may include the user ID of that user. After a user ID, password and/or identification information of the mobile terminal 10 are recorded in the user database 31, registration processing is completed. The CPU 21 transmits a registration completion message to the mobile terminal 10 indicating that the registration processing has been completed.
[0095] The acceptor 52 includes a function for accepting an access request including identification information from the mobile terminal 10, and also includes a function for accepting an access request including a user ID from PC 12. The functions of the acceptor 52 are realized as described below. After receiving a HTTP request as access request from the mobile terminal 10 or the PC 12 of the user, the CPU 21 of the game server 20 identifies identification information,	[0044] The acceptor 52 includes a function for accepting an access request including identification information from the mobile terminal 10, and also includes a function for accepting an access request including a user ID from the PC 12. The functions of the acceptor 52 are realized as described below. After receiving an HTTP request as an access request from the mobile terminal 10 or the PC 12 of the user, the CPU 21 of the game server 20 identifies identification information, or the

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or user ID and a password, based on user agent character strings included in the HTTP request. The CPU 21 collates the identified identification information, or the identified user ID and the identified password, with the identification information, or the user ID and the password recorded in the user data of the user database 31. If the received access request is one from any of the registered users, the CPU 21 accepts the access request.	user ID and a password, based on user agent character strings included in the HTTP request. The CPU 21 collates the identified identification information, or the identified user ID and the identified password, with the identification information, or the user ID and the password recorded in the user data of the user database 31. If the received access request is one from any of the registered users, the CPU 21 accepts the access request.
[0096] The terminal information updater 53 includes a function for recording and updating terminal information of a single or a plurality of communication terminal(s) of the user(s) whose access request has been accepted. Terminal information of a communication terminal is information capable of identifying the communication terminal, like address information such as IP address, etc. The terminal information updater 53 further includes a function for identifying a main-terminal and a sub-terminal among the single or the plurality of communication terminal(s) of the user(s) whose access request has been accepted, before the terminal information is updated.	[0045] The terminal information updater 53 includes a function for recording and updating terminal information of single or multiple communication terminals of users whose access request has been accepted. Terminal information of a communication terminal is information capable of identifying the communication terminal, like address information such as an IP address, etc. The terminal information updater 53 further includes a function for identifying a main terminal and sub-terminal among single or the multiple communication terminals of users whose access request has been accepted, before the terminal information is updated.
[0097] The function of the terminal information updater 53 is realized as described below. Based on information regarding an operating system of a transmission source communication terminal for example, the CPU 21 of the game server 20 specifies the communication terminal as the mobile terminal 10 or the PC 12. Alternatively, if a HTTP request includes identification information, the CPU 21 may then determine that the transmission source communication terminal is the mobile terminal 10. Meanwhile, if the HTTP request includes a user ID and a password, the CPU 21 may then	[0046] The function of the terminal information updater 53 is realized as described below. Based on information regarding an operating system of a transmission source communication terminal, for example, the CPU 21 of the game server 20 specifies the communication terminal as the mobile terminal 10 or the PC 12. Alternatively, if an HTTP request includes identification information, the CPU 21 may determine that the transmission source communication terminal is a mobile terminal 10, meanwhile, if the HTTP request includes a user ID and a password, the CPU 21 may determine that the

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determine that the transmission source communication terminal is the PC 12. Resultantly, in the case in which the CPU 21 receives accesses that are associated with identical user identification information from two communication terminals for example, the CPU 21 executes the following processing. That is, if one of the two communication terminals is identified as the PC 12 and other communication terminal is identified as the mobile terminal 10, then the CPU 21 identifies the PC 12 as a main-terminal and identifies the mobile terminal 10 as a sub-terminal. In the case in which an access is received from a single communication terminal, the CPU 21 identifies the communication terminal (either the mobile terminal 10 or the PC 12, for example) as both main-terminal and sub-terminal. After identifying a main-terminal and a sub-terminal, the CPU 21 writes terminal information of the identified communication terminal into the user database 31 in association with the user ID.	transmission source communication terminal is a PC 12. As a result, in the case in which the CPU 21 receives accesses that, for example, are associated with the same user identification information from two communication terminals and one is a PC 12 and the other is a mobile terminal 10, the CPU 21 identifies the PC 12 as the main terminal and identifies the mobile terminal 10 as the sub-terminal. In the case in which an access is received from a single communication terminal, the CPU 21 identifies the communication terminal (for example, either the mobile terminal 10 or the PC 12) as the main terminal and sub-terminal. After identifying the main terminal and sub-terminal, the CPU 21 writes terminal information of the identified communication terminal into the user database 31 in association with the user ID.
[0101] The detector 54 includes a function for detecting accesses from a plurality of communication terminals that are associated with an identical user ID. [0102] The function of the detector 54 is realized as described below. The CPU 21 of the game server 20 refers to the user database 31 to compare terminal information of the main-terminal and terminal information of the sub-terminal. If the terminal information of the main-terminal and the terminal information of the sub-terminal are identical, then it is judged that there is an access from a single communication terminal. On the other hand, if the terminal information of the main-terminal and the terminal information of the	[0048] The detector 54 includes a function for detecting accesses from multiple communication terminals that are associated with the same user ID. The function of the detector 54 is realized as described below. The CPU 21 of the game server 20 refers to the user database 31 to compare terminal information of the main terminal and terminal information of the sub-terminal. If the terminal information of the main terminal and the terminal information of the sub-terminal are identical, then it is judged that there is access from a single communication terminal. On the other hand, if the terminal information of the main terminal and the terminal information of the

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sub-terminal are not identical, then it is judged that there are accesses from at least two communication terminals that are associated with an identical user ID.	sub-terminal are not identical, then it is judged that there are accesses from at least two communication terminals that are associated with the same user ID.
[0104] The function of the game executor 55 is realized as described below. After there is an access from communication terminal (s) (namely, the mobile terminal 10 and/or the PC 12), the CPU 21 of the game server 20 transmits HTML data (game data) to that communication terminal. The transmitted HTML data is for displaying a web page including a start button of the fishing game. After receiving a HTTP request including a game start request of the fishing game in response to an operation of a user to the communication terminal, the CPU 21 starts executing the fishing game for the user thorough web pages. The fishing game is executed in the following. That is, the CPU 21 recognizes respective operational inputs of the user to the communication terminal(s) (namely, the mobile terminal 10 and/or the PC 12). The CPU 21 executes a program in response to the operational inputs. Then, the CPU 21 transmits HTML data displaying web pages including execution results to the communication terminal(s) of the user. Operational inputs and contents to be processed in response to each operational input are written in the program of the fishing game described above.	[0049] The function of the game executor 55 is realized as described below. After there is an access from a communication terminal (namely, the mobile terminal 10 and/or the PC 12) based on the user ID, the CPU 21 of the game server 20 transmits to that communication terminal HTML data (game data) for displaying a web page including a start menu for the fishing game. After receiving an HTTP request including a start request for the fishing game in response to an operation of a user on the communication terminal, the CPU 21 starts executing the fishing game for the user through web pages. The fishing game is executed in the following manner. That is, the CPU 21 recognizes respective operational inputs of the user to the communication terminals (namely, the mobile terminal 10 and/or the PC 12), executes a program in response to the operational inputs, then transmits HTML data to display web pages including execution results to the communication terminal(s) of the user. Operational inputs and contents of processing in response to each operational input are written in the program of the fishing game described above.
[0105] The game data transmitted to the communication terminal (s) (namely, the mobile terminal 10 and/or the PC 12) is not limited to HTML data, but may be compressed image data of game image to be displayed on the communication terminal(s).	[0050] Moreover, the game data transmitted to the communication terminals (namely, the mobile terminal 10 and/or the PC 12) is not limited to HTML data, but may be compressed image data of game images to be displayed on the communication terminal(s). In the case in

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In the case in which at least a portion of a program and/or data for progressing the game with the mobile terminal is included, the game data transmitted to the communication terminal (s) may be a command for causing the program run on the communication terminal(s), or a command for extracting data (compressed image data, for example) memorized in the communication terminal(s), etc.	which at least a portion of a program and/or data for progressing in the game with the mobile terminal is included, the game data transmitted to the communication terminal(s) may be a command for causing the program to run on the communication terminal(s), or a command for extracting data (compressed image data, for example) stored on the communication terminal(s), etc.
[0106] The game controller 56 includes a function for transmitting game data of the game being executed to the PC 12 (second communication terminal) in response to an operational input to the mobile terminal 10 (first communication terminal) in the case in which there are accesses from a plurality of communication terminals that are associated with an identical user ID. The game data may be, for example, HTML data as described above. [0107] The function of the game controller 56 may be realized as described below, for example. In the case in which terminal information of the main-terminal and terminal information of the sub-terminal are different for user ID being processed, the CPU 21 of the game server 20 performs the following processing. That is, the CPU 21 generates HTML data (game data of the game being executed) based on information of an operational input included in a HTTP request received from the sub-terminal. The generated HTML data includes execution result of the program of the fishing game in response to the operational input. The CPU 21 then transmits the HTML data to the main terminal (PC 12 in FIG. 7). Further, as illustrated in FIG. 8, in the case in which the fishing game progresses with two screens, the	[0051] The game controller 56 includes a function for transmitting game data of the game being executed to the PC 12 (second communication terminal) in response to an operational input to the mobile terminal 10 (first communication terminal) in the case in which there are accesses from multiple communication terminals that are associated with the same user ID. The game data may, for example, be HTML data as described above. The function of the game controller 56 may, for example, be realized as described below. In the case in which terminal information of the main terminal and terminal information of the sub-terminal are different for the user ID being processed, the CPU 21 of the game server 20 performs the following processing, that is, the CPU 21 generates HTML data (game data of the game being executed), which includes execution results of the program of the fishing game in response to the operational input, based on information of an operational input included in an HTTP request received from the sub-terminal, and then transmits the HTML data to the main terminal (PC 12 in Fig. 7). Further, as illustrated in Fig. 8, in the case in which the fishing game progresses with two screens, the CPU 21 also transmits HTML data to the sub-

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CPU 21 also transmits HTML data to the sub-terminal (mobile terminal 10 in FIG. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (second game data) transmitted to the main-terminal and the HTML data (first game data) transmitted to the sub-terminal are different each other.	terminal (mobile terminal 10 in Fig. 8) based on the information of the operational input included in the HTTP request received from the sub-terminal. In this case, the HTML data (2nd game data) transmitted to the main terminal and the HTML data (1st game data) transmitted to the subterminal are different from each other.
[0109] Next, an example of main processing flow of the game control device according to the present embodiment will be explained with reference to flowcharts of FIGS. 11 and 12. Processing of FIGS. 11 and 12 is performed for every user ID.	[0053] Next, an example of main processing flow of the game control device according to this embodiment will be explained with reference to the flow charts of Fig. 11 and Fig. 12. Processing of Fig. 11 and Fig. 12 is performed for every user ID.
[0110] The flowchart of FIG. 11 represents processing after a registered user (that is, a user whose user ID is registered) logs in to the game server 20. In this case, in response to an operational input by the user to communication terminal (mobile terminal 10 or PC 12), a HTTP request (access request) is transmitted from the mobile terminal 10 or the PC 12 to the game server 20. The HTTP request transmitted from the mobile terminal 10 includes identification information. The HTTP request transmitted from the PC 12 includes a user ID and a password that have been inputted to the PC 12. After receiving the HTTP request (Step S10: YES), the game server 20 performs authentication processing (Step S12). In the authentication processing, the identification information, or the user ID and the password, which are included in the HTTP request, are identified first. The game server 20 then collates the identified identification information, or the identified user ID and the identified password, with the	[0054] The flow chart of Fig. 11 represents processing after a registered user (that is, a user whose user ID is registered) logs in to the game server 20. In this case, in response to an operational input by the user to the communication terminal (a mobile terminal 10 or PC 12), an HTTP request (access request) is transmitted from the mobile terminal 10 or the PC 12 to the game server 20. If the HTTP request is transmitted from the mobile terminal 10, the HTTP request includes identification information. The HTTP request transmitted from the PC 12 includes a user ID and a password that have been input to the PC 12. After receiving the HTTP request (Step S10: YES), the game server 20 performs authentication processing (Step S12). In the authentication processing, the identification information, or the user ID and the password, which are included in the HTTP request, are identified first. The game server 20 then collates the identified individual identification information or the identified user ID and the

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identification information, or the user ID and the password recorded in the user data of the user database 31. If the received access request is a request from any of the registered users, the game server 20 accepts the access request.	identified password against the individual identification information, or the user ID and the password recorded in the user data of the user database 31, and if the received access request is a request from any of the registered users, the game server 20 accepts the access request.
[0114] An access is received to the game server 20 (that is, a user logins). Then, the game server 20 transmits HTML data (game data) to any one of the use's communication terminals (preferably, to the mobile terminal 10, if that an access is received from a plurality of communication terminals of the user). The transmitted HTML data is for displaying a web page including a start menu of the fishing game. A HTTP request including a game start request of the fishing game is transmitted to the game server 20, in response to a selection operation for a given menu in the web page displayed on the communication terminal (Step S20). After receiving the HTTP request including the game start request of the fishing game, the game server 20 starts game processing for the user of the transmission source communication terminal of the request (Step S22).	[0057] When access to the game server 20 is accepted (that is, a user logs in), HTML data (game data) is transmitted to any one of the user's communication terminals (preferably, to the mobile terminal 10, if access is received from multiple communication terminals of the user). The transmitted HTML data is for displaying a web page including a start menu of the fishing game. An HTTP request including a game start request of the fishing game is transmitted to the game server 20, in response to a selection operation for a given menu in the web page displayed on the communication terminal (Step S20). After receiving the HTTP request including the game start request for the fishing game, the game server 20 starts game processing for the user of the transmission source communication terminal of the request (Step S22).
[0116] If the game server 20 is accessed from two communication terminals of a user (Step S28: YES), then it generates HTML data (new HTML data) for displaying a new web page based on the results of execution of the program. The game server 20 then transmits the HTML data to the PC 12 as main-terminal. Alternatively, as illustrated in FIG. 8, the game server 20 does not only transmit the HTML data to the PC 12, but it also transmits HTML data to the mobile terminal 10 as sub-terminal (Step S30). The	[0058] If the access is from two communication terminals of a user (Step S28: YES), HTML data (new HTML data) for displaying a new web page based on the results of execution of the program is generated, and is transmitted to the PC 12 as the main terminal. Alternatively, as illustrated in Fig. 8, in addition to the transmission of the HTML data to the PC 12, HTML data, which is different from the one transmitted to the PC 12, is transmitted to the mobile terminal 10 as a sub-terminal (Step S30).

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transmitted HTML data to the mobile terminal 10 is different from the one transmitted to the PC 12. [0117] Meanwhile, if the game server 20 is accessed from a single communication terminal (mobile terminal 10 in this case) of a user (Step S28: NO), then it generates HTML data (new HTML data) for displaying a new web page based on the results of execution of the program. The game server 20 then transmits the HTML data to the mobile terminal 10 as both main-terminal and sub-terminal (Step S32).	Meanwhile, if access is from a single communication terminal (in this case, mobile terminal 10) of a user (Step S28: NO), HTML data (new HTML data) for displaying a new web page based on the results of execution of the program is generated and transmitted to mobile terminal 10 as the main terminal and the sub-terminal (Step S32).
[0119] Note that there is a case in which a user starts the game by accessing first through a single communication terminal (mobile terminal 10, for example) and then accesses through the other communication terminal (PC 12, for example) as well in the middle of the game. In such case, after recognizing that there is an access from the PC 12, the game server 20 rewrites the database server 30 such that status in which the mobile terminal 10 is identified as both main-terminal and sub-terminal, is changed to status in which the PC 12 is identified as main-terminal and the mobile terminal 10 as sub-terminal. The game server 20 then switches transmission destination of the HTML data for displaying a new web page from the mobile terminal 10 to the PC 12.	[0059] Moreover, there is a case in which a user starts the game by accessing first through a single communication terminal (mobile terminal 10, for example) and then accesses through the other communication terminal (for example, a PC 12) as well in the middle of the game. In such case, after recognizing that there is an access from a PC 12, the game server 20 rewrites the database server 30 such that the status in which the mobile terminal 10 is identified as both main terminal and sub-terminal is changed to the status in which the PC 12 is identified as the main terminal and the mobile terminal 10 as a sub-terminal. The game server 20 then switches transmission destination of the HTML data for displaying a new web page from the mobile terminal 10 to the PC 12.
[0120] As described above, with the game control system of the present embodiment, in the case in which there are accesses that are associated with an identical user ID from two communication terminals (mobile terminal 10 and PC 12), the game server 20 transmits HTML data (game data)	[0060] As described above, with the game control system of this embodiment, in the case in which there are accesses that are associated with the same user ID from two communication terminals (mobile terminal 10 and PC 12), the game server 20 transmits HTML data (game data) to the PC 12 (second

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to the PC 12 (second communication terminal) of the two communication terminals, in response to an operational input to the mobile terminal 10 (first communication terminal) of the two communication terminals. The transmitted HTML data is for displaying image of the game being executed. Thus, for example, a user may go out with a mobile terminal only, and the user can enjoy a variety of games that would be difficult to realize with the mobile terminal only, by use of the mobile terminal and a PC existing outside. As illustrated in FIG. 7 for example, the mobile terminal 10 primarily functions as a controller for receiving operational inputs from the user in the game, while the PC 12 primarily functions as display device for displaying a game image, thereby realizing a motion sensing game such as the exemplified fishing game. That is, a user can enjoy irrespective of a place where the user is, without need to bring a large input device. Note that, as illustrated in FIG. 8, an image displayed on the mobile terminal 10 may be configured to be different from that displayed on the PC 12. This allows game entertainment to be enhanced, since information indicating game results for respective users, or items and objects, etc., which the user owns in the game, apart from virtual game space indicating game environment, may be able to be displayed on the mobile terminal 10 which is held by a user's hand. (2) Second Embodiment	communication terminal) of the two communication terminals, in response to an operational input to the mobile terminal 10 (first communication terminal) of the two communication terminals. The transmitted HTML data is for displaying images of the game being executed. Thus, for example, a user may go out with a mobile terminal only, and the user can enjoy a variety of games that would be difficult to realize with the mobile terminal only, by use of the mobile terminal and a PC existing outside. For example, as illustrated in Fig. 7, the mobile terminal 10 primarily functions as a controller for receiving operational inputs from the user in the game, while the PC 12 primarily functions as a display device for displaying a game image, thereby realizing a motion sensing game such as the exemplary fishing game. That is, a user can enjoy irrespective of a place where the user is, without the need to bring a large input device. Moreover, as in the example in Fig. 8, an image displayed on the mobile terminal 10 may be configured to be different from that displayed on a PC 12. This allows game entertainment to be enhanced, since information indicating game results for respective users, or items and objects, etc., which the user owns in the game, apart from virtual game space that is displayed on the PC 12 indicating game environment, may be able to be displayed on the mobile terminal 10 which is held in the user's hand. [0061] (2) Second Embodiment
[0122] In the game control system of the present embodiment, hardware configurations of the mobile terminal 10, the PC 12, the game server 20, and the database server 30 may be the same as those described in the first	[0061] In the game control system of this embodiment, hardware configurations of the mobile terminal 10, the PC 12, the game server 20, and the database server 30 may be the same as those described in the first

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embodiment. The game control system of the present embodiment is configured such that a plurality of users are correlated as friend users through predetermined procedures and the friend users can enjoy a game. In this case, the users may compete for a number of fish objects that are taken in a period of time in the game. (2-1) Overview of Functions of Game Control Device	embodiment. The game control system of this embodiment is configured such that multiple users are correlated as friend users through predetermined procedures and friend users can enjoy a game. In this case, the users may compete for a number of fish objects that are taken in a period of time in the game. [0062] (2-1) Overview of Functions of Game Control Device
[0126] In the present embodiment, in addition to the function described in the first embodiment, the game controller 56 includes the following function. In the case in which two user IDs are correlated as friends by the correlator 57, the game controller 56 transmits game data of the game being executed, to a communication terminal performing an access based on one of the two user IDs as friends, in response to an operational input to the communication terminal performing an access based on another of the two user IDs as friends. Before executing the game, or during execution of the game for two users whose user IDs are different, the CPU 21 of the game server 20 recognizes that the two users are friends by referring to the user database 31 and performs the following processing. That is, based on information of an operational input included in a HTTP request which the CPU 21 receives from the sub-terminal of one user ID of two user IDs recognized as friends, the CPU 21 generates HTML data (game data of the game being executed) including results of execution of the fishing game program in response to the operational input. The CPU 21 then transmits the HTML data to either or both of the main-terminals of the two user IDs as friends. In the case in which the HTML data is transmitted to both of the main-terminals of the two user	[0065] In this embodiment, in addition to the function described in the first embodiment, if two user IDs are correlated as friends by the correlator 57, the game controller 56 has a function to transmit game data of the game being executed to a communication terminal performing access based on one of the two user IDs as a friend, in response to an operational input to the communication terminal performing access based on another of the two user IDs as a friend. The functions of the game controller 56 in this embodiment, for example, are realized as follows. Before executing the game, or during execution of the game for two users whose user IDs are different, the CPU 21 of the game server 20 recognizes that the two users are friends by referring to the user database 31 and performs the following processing. That is, based on information of an operational input included in a HTTP request which the CPU 21 receives from the sub-terminal of one user ID of two user IDs recognized as friends, the CPU 21 generates HTML data (game data of the game being executed) including results of execution of the fishing game program in response to the operational input, and then transmits the HTML data to either or both of the main-terminals of the two user IDs as friends. In the case in which the HTML data is transmitted to both of the main terminals of the two user

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IDs as friends, the respective main-terminals may display different web pages; however, it is preferable that the web pages displayed on the respective main-terminals for the users are related such that the friend users enjoy playing synchronously.	IDs as friends, the respective main terminals may display different web pages; however, it is preferable that the web pages displayed on the respective main terminals for the users are related such that the friend users enjoy playing synchronously.
[0127] Alternatively, the CPU 21 does not only transmit the HTML data to either or both of the main-terminals of the two user IDs as friends, but the CPU 21 may also transmit HTML data to either or both of the sub-terminals of the two user IDs as friends. The transmitted HTML data to either or both of the sub-terminals may be different from the one transmitted to the main-terminals. (2-2) Exemplified Gameplay Style 1 in the Case in which Friends Play the Game	[0065] Alternatively, at the same time the CPU 21 transmits the HTML data to either or both of the main terminals of the two user IDs as friends, the CPU 21 may also generate HTML data, which is different from the HTML data transmitted to the main terminal, and transmit it to either or both of the sub-terminals of the two user IDs as friends. [0066] (2-2) Exemplified Gameplay Style 1 in the Case in Which Friends Play the Game
[0136] FIG. 18 illustrates conceptually another exemplified gameplay style in the case in which friends play a fishing game together. In this illustrated example, status in which User_A plays the fishing game using the PC 12 <i>a</i> as main-terminal and the mobile terminal 10 <i>a</i> as sub-terminal, is shifted to status in which User_B, a friend of User_A, participates in the fishing game using the mobile terminal 10 <i>b</i> as both main-terminal and sub-terminal (that is, the status in which User_A and User_B play together). In this case, because User_B accesses through a single communication terminal, image that represents a common fishing place is displayed on the PC 12 <i>a</i> of User_A. In this image, the fishing rod object P1 <i>a</i> of User_A and the fishing rod object P1 <i>b</i> of User_B are distinguishably displayed. In FIG. 18, for example, an arrow mark ma is displayed near the fishing rod object P1 <i>a</i> of User_A on the PC 12 <i>a</i> of User_A, while an arrow mark mb	[0072] Fig. 18 is a diagram illustrating conceptually another exemplary gameplay style in a case in which friends play a fishing game together. In this illustrated example, the status in which User A plays the fishing game using the PC 12a as the main terminal and the mobile terminal 10a as a sub-terminal is shifted to a status in which User B, a friend of User A, participates in the fishing game using a mobile terminal 10b as both the main terminal and sub-terminal (that is, the status in which User A and User B play together). In this case, because User B accesses through a single communication terminal, an image that represents the common fishing place is displayed on the PC 12a of User A. In this image, the fishing rod object P1a of User A and the fishing rod object P1b of User B are displayed in a manner wherein they can be distinguished. In Fig. 18, for example, an arrow mark ma is displayed near the fishing rod object P1a of

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is displayed near the fishing rod object P1 <i>b</i> of User_B on the PC 12 <i>b</i> of User_B. Because a display screen for displaying a fishing place is common for User_A and User_B in this play style unlike FIG. 15, it is preferable that the marks for identifying the fishing rod objects for the respective users include texts for user names or the like.	User A on the PC 12a of User A, while an arrow mark mb is displayed near the fishing rod object P1b of User B on the PC 12b of User B. Because a display screen for displaying a fishing place is common for User A and User B in this play style, unlike Fig. 15, it is preferable that the marks for identifying the fishing rod objects for the respective users include text for user names or the like.
[0143] As illustrated in FIG. 20, in the case in which friends play the game, the gameplay style 1 (synchronous play with two screens) and the gameplay style 2 (synchronous play with a single screen) described above are preferably configured to be switched upon request from a user. Here, a case is assumed in which User_A and User_B are playing synchronously with two screens for example, and subsequently, access from the PC 12 <i>b</i> of User_B is disconnected. Then, the game server 20 recognizes the access disconnection by referring to the user database 31. The game server 20 may then switch to synchronous play with a common single screen.	[0077] Moreover, as illustrated in Fig. 20, in the case in which friends play the game, the gameplay style 1 (synchronous play with two screens) and the gameplay style 2 (synchronous play with a single screen) described above are preferably configured to be switched upon a request from a user. Here, a case is assumed in which User A and User B are playing synchronously with two screens, for example, and subsequently, access from the PC 12b of User B is disconnected, then the game server 20 recognizes the access disconnection by referring to the user database 31 and may switch to synchronous play on a common single screen.
[0148] In the embodiments described above, the case is described in which a fishing game is applied; however, applicable types of games are not limited to the fishing game. A motion sensing game is preferable by use of the mobile terminal 10 at user's hand and the PC 12 that the user primarily confirms game progression status with. Such motion sensing game other than the fishing game may be, for example, a bowling game, a darts game, or the like. In the case of the bowling game, throwing a ball is simulated with action of swinging the mobile terminal 10 for example. A result of throwing the ball is determined	[0081] In the embodiments described above, the case is described in which a fishing game is applied; however, applicable types of games are not limited to the fishing game. A motion sensing game is preferable by use of the mobile terminal 10 in the user's hand and the PC 12 that the user primarily uses to confirm game progression status. Such a motion sensing game other than the fishing game may be, for example, a bowling game, a darts game, or the like. In the case of a bowling game, for example, throwing a ball is simulated with the action of swinging the mobile terminal 10. A result of throwing the

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based on output of three-axis acceleration sensor installed in the mobile terminal 10. A lane and pins are displayed on the PC 12. A user watches the result of throwing the ball on an image of the PC 12. In the case of the darts game, throwing darts is simulated with action of moving the mobile terminal 10 back and forth for example. A result of throwing darts is determined based on output of three-axis acceleration sensor installed in the mobile terminal 10. A darts board is displayed on the PC 12. A user watches an image that shows the result of throwing darts on the PC 12.	ball is determined based on the output of a 3-axis acceleration sensor installed in the mobile terminal 10. A lane and pins are displayed on the PC 12. A user watches the result of throwing the ball on an image of the PC 12. In the case of a darts game, for example, throwing darts is simulated with action of moving the mobile terminal 10 back and forth. The result of throwing darts is determined based on output of a 3-axis acceleration sensor installed in the mobile terminal 10. A darts board is displayed on the PC 12. A user watches an image that shows the result of throwing darts on the PC 12.
[0149] Examples have been described in which a game control system is configured with a social network game in the respective embodiments described above; however, the present invention is not limited to the social network game. Similar configuration can be realized with so called cloud gaming (On-demand type game utilizing cloud computing).	[0082] Examples have been described in which a game control system is configured with a social game in the respective embodiments described above; however, this invention is not limited to social games. Similar configurations can be realized with so called cloud gaming (on-demand type game utilizing cloud computing).

APPENDIX D - LIST OF MATERIALS CONSIDERED

Rubin, U.S. Patent No. 9,064,376 (“the ’376 patent”)
Prosecution History File Wrapper of the ’376 patent (excerpts)
U.S. Patent No. 9,497,565 (“ <i>Zha</i> ”)
CN 2013/10674692 (“ <i>Zha Priority Application</i> ”)
Certified English translation of the <i>Zha Priority Application</i>
U.S. Patent Pub. No. 2015/0011318 (“ <i>Takahashi</i> ”)
PCT/JP2012/007595 (“ <i>Takahashi Priority Application</i> ”)
Certified English translation of <i>Takahashi Priority Application</i>
U.S. Patent Pub. No. 2014/0006485 (“ <i>Tsushima</i> ”)
U.S. Patent No. 9,591,083 (“ <i>Gumbula</i> ”)
U.S. Patent Pub. No. 2012/0017236 (“ <i>Stafford</i> ”)
U.S. Patent No. 9,330,531 (“ <i>Wakeford</i> ”)
Patent Owner’s Preliminary Infringement Contentions in <i>Rubin v. Kahoot! ASA et al.</i> , Civil Action No. 6:22-cv-00236 (W.D. Tex.) (Sept. 28, 2022)
U.S. Patent Pub. No. 2012/0253841 (“’841 Application”)
U.S. Patent Pub. No. 2012/0209770 (“’770 Application”)
U.S. Patent Pub. No. 2014/0121015 (“ <i>Massing</i> ”)
U.S. Patent Pub. No. 2006/0058088 (“ <i>Crawford</i> ”)
Complaint (Dkt. 001) in <i>Rubin v. Kahoot! ASA et al.</i> , Civil Action No. 6:22-cv-00236 (W.D. Tex.) (Sept. 28, 2022)
Answer (Dkt. 021) in <i>Rubin v. Kahoot! ASA et al.</i> , Civil Action No. 6:22-cv-00236 (W.D. Tex.) (Sept. 28, 2022)