

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC
Petitioner,

v.

QUANTUM IMAGING LLC
Patent Owner.

Case No. IPR2023-00959
U.S. Patent No. 10,255,724

DECLARATION OF MR. DAVID CRANE

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I. INTRODUCTION

1. I have been retained by the firm of KXT Law representing Sony Interactive Entertainment LLC (“Sony” or “Petitioner”) as an independent expert consultant in this proceeding before the Patent Trial and Appeal Board (“PTAB”) of United States Patent and Trademark Office (“PTO”). I am not an employee of Sony or any affiliate or subsidiary of Sony.

2. I have been asked to provide my opinions and analysis regarding the subject matter of the ‘724 patent. I am being compensated at my ordinary and customary rate of \$500 per hour for my work, plus reimbursement for any reasonable expenses. My compensation is based solely on the amount of time that I devote to activity related to this case and is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other financial interest in this proceeding.

3. This declaration is based on information currently available to me. I reserve the right to modify, amend and/or supplement my opinions in response to any additional information that becomes available to me, and/or in light of any relevant orders from the PTAB.

4. To the extent I am asked to testify in this proceeding, I may provide background on the issues at hand and reserve the right to use visual aids to illustrate my testimony.

II. BACKGROUND AND QUALIFICATIONS

5. My curriculum vitae (“CV”) is provided as (“Ex. 1005”) and provides an accurate identification of my background and experience.

6. I am a world-renowned video game designer and game industry pioneer. I received a Bachelor of Science in Electronic Engineering Technology in 1975 from DeVry Institute of Technology, Phoenix, Arizona. This degree course of study included grounding in all areas of electronic circuitry and computer programming.

7. I have an engineering, gaming, and programming background going back more than 40 years. I built my first computer—an unbeatable Tic-Tac-Toe computer—at the age of 14 and graduated high school able to program IBM mainframe computers in 3 languages.

8. I began my professional engineering career at National Semiconductor in 1975 developing integrated circuits and working with early analog-to-digital and digital-to-analog converters. I brought microprocessor automation techniques to the IC development and testing processes.

9. In 1977, I joined Nolan Bushnell’s Atari Inc., developing games for the Atari Video Computer System. In a period of one year, my games generated approximately \$15 million in sales revenues for the company. While at Atari I developed a number of programming techniques incorporated in dozens, if not

hundreds of video games. I developed for publication several game products while at Atari, including an electronic Slot Machine game program in 1978.

10. In 1979, I co-founded Activision, Inc., the first third-party publisher of video game cartridges. Activision grew to over \$300 million in value in three years and is now the largest video game publisher in the world with a market capitalization of over \$60 billion.

11. During my tenure at Activision, I designed and programmed many hit games with unit sales over 500,000. One such example is the game Pitfall!™ which sold over 3,500,000 copies and held the #1 spot on the Billboard Charts for 64 consecutive weeks. Pitfall!™ generated over \$50 million in wholesale revenues and spawned numerous other products including many sequels, toys, and a Saturday morning cartoon.

12. Throughout my 40+ year career I have focused on video game technology as it evolved, creating and publishing more than 80 commercial game products generating over \$400 million in revenues. I have designed and programmed games on virtually every video game system invented, from the early days of Atari and Magnavox through to present-day systems such as the iPhone and iPad.

13. I have received many other awards for my work and career. Most notably, I received one of the Academy of Interactive Arts and Sciences lifetime

honors: The Pioneer Award, celebrating my foundational and continuing work in the creation and development of the video game business. This singular honor, presented to me in 2010, was the inaugural award in a new category. I was the first to receive this award out of everyone who had ever worked in the video game industry throughout its entire history.

14. Additional awards include Game Designer of the Year (twice), the prestigious 2003 Game Developer Choice Award for contribution to the field, and the Lifetime Achievement Award in Video Games from Classic Gaming Expo. In addition to these personal honors, many of the individual games that I have developed have also received numerous awards.

15. I am a regular speaker and/or panelist at video game industry trade events such as the D.I.C.E. Summit (Design, Innovate, Communicate & Entertain), and GDC (Game Developers Conference). I have spoken at gatherings of game business executives (such as at the Pepperdine University Graziadio School of Business and Management), and I am featured annually at many consumer-focused game events. I have been profiled in national press publications including Forbes Magazine and Newsweek, and I have been interviewed by such diverse publications as television’s 20/20 News Magazine and the G4 Television Network.

A. Publications

16. A partial list of the published game titles for which I am responsible for the game design and/or programming would include: Canyon Bomber, Outlaw, Slot Machine, Pitfall!, Pitfall II, Lost Caverns, Freeway, Laser Blast, Fishing Derby, Dragster, Grand Prix, A Boy and His Blob, The Rescue of Princess Blobette, Ghostbusters, Skateboardin’, Super Skateboardin’, The Activision Decathlon, T*O*Y*S, Transformers, the computer game, David Crane’s Amazing Tennis, Bart Simpson’s Escape from Camp Deadly, CHOMP, Arcade Bowling, Ten Pin Championship Bowling, Stellar Blast, Arcade Hoops, 3 Point Hoops, QB Pass Attack, Field Goal Frenzy, Lotto Letters, Super Swish, Stellar Blast, Mariner Hybrid Infomercial, Lacrosse, Beach Volleyball, Spiderman Climbing game, Miller Seat Salsa, Super Cocoa Man, Break the Rules Hoops, Downfield Strike, Mini Motocross, Robopup Run, Toyota 4runner Challenge, Tyco RC Speed Wrench, Vertical Jam, E.T.’s Adventure, Bubble Yum Home Run Derby, Bubble Yum Bullpen Blast, Gummi Savers Egg Hunt, Foul Shot Shootout, Life Savers Water Park Pinball, Field Goal Challenge, Crème Savers Bowling, Golf Solitaire, Skyworks Lanes Bowling, Carefree on Ice, Gummi Savers Rock-N-Skate, YIPES! Photo Safari, Ice Breakers Slap Shot Shootout, Southpark Pinball, Breath Savers Road Rally, Ford NASCAR racing challenge, MTv Cranks Dirt Bike Game, Ice Breakers Ultimate Bobsled, Breath Savers Billiards, Snackwells Chocolate Factory

Pinball, Snowboard Big Air, Skate Rage Inline Skating, Candystand Miniature Golf, Hole In One Golf, Lifesavers Word Challenge, Candystand Open Tennis, Mountain Climbing, 3 Point Shootout, Grand Slam Pinball, Nabisco World Team Racing, Soccer Shootout, LifeSavers Treasure Hunt, Oreo Adventure, LifeSavers Roll-A- ball, Air Crisps Slam Dunk, Fruit Chews BMX, and Postopia Bowling. A more complete list of these titles is included in my Curriculum Vitae, see Exhibit 1005..

17. In 1995 I co-founded Skyworks, Inc., a company dedicated to creating advertising-sponsored browser-based games served to, and played in, a consumer’s home computer. At its peak around the year 2000, Skyworks games were serving over 80 million game plays per month.

18. More than 50 of the games noted in my CV, (those listed as “Online Games”), integrated advertising into the browser page serving the game, integrated advertising into the game itself, or both. More than a dozen of these games integrated advertising into the game-playing experience prior to the year 2002. Each of the Online Games that I developed communicated online between a game computer and a central game server either before, during, or after game play. These games include those where a server communicated with, and synchronized game play between client computers, those in which the game was managed by the game server, and those in which the server was used to keep and track game statistics.

19. Many of the games I developed required expertise in 3D environments, such as Little Computer People™, Transformers®: Battle to Save the Earth, David Crane’s Amazing Tennis™, Spiderman®, Toyota® 4runner® Challenge, Boxer’s Road, Bubble Yum® Home Run Derby, Foul Shot Shootout, and Skyworks Lanes Bowling to name a few. Other games I developed took said 3D environment expertise into the realm of true Virtual Reality (VR), including war-themed games such as Battletech: Gray Death Legions (rendering mechanical “mech warriors” in a virtual environment) and Warrior 2000 (rendering soldiers in futuristic military exoskeletons); an auto-themed terrain simulation for the BMW X3; and a sports-themed 3D golf game for The Weather Channel that was served simultaneously with the Masters golf tournament - complete with real-world matching terrain, hole placements, and weather. I was also a lead designer and programmer for “The Road,” a VR experience with open-road driving, sponsored buildings and billboards, and destination locations including a bowling alley and arcade (with 3D lobby for social interaction and player pairing). I have extensive experience with 3D environments and VR gaming.

20. As explained in my CV, I am also extensively familiar with a variety of different programming languages, including mainframe computer languages like FOTRAN, COBOL, and BASIC, numerous microprocessor assembly languages, several microprocessor programming languages like C and JAVA, scripting

languages like JavaScript and HTML, and engineering languages employed by modern mobile devices like SPICE and VHDL.

III. ASSIGNMENT AND MATERIALS CONSIDERED

21. I have been asked to provide analysis and explain the subject matter of the ‘724 patent, including the state of the art when the ‘724 patent application was filed. I have also been asked to consider, analyze, and explain certain prior art to the ‘724 patent, including how that art relates to the challenged claims of the ‘724 patent and to provide my opinions regarding whether that art invalidates the claimed subject matter.

22. The opinions expressed in this declaration are not exhaustive of opinions I may offer in the future regarding the unpatentability of the claims of the ‘724 patent. Therefore, the fact that I do not address a particular point should not be understood to indicate an agreement on my part that any claim complies with the requirements of any applicable patent or other rule.

23. I reserve the right to amend and supplement this declaration in light of additional evidence, arguments, or testimony presented during this IPR or related proceedings on the ‘724 patent.

24. In forming the opinions set forth in this declaration, I have considered and relied upon my education, knowledge of the relevant field, knowledge of scientific and engineering principles, and my experience, as well as external

materials cited in the body of this declaration. I have also reviewed and considered the ‘724 patent (Ex. 1001), its prosecution history (Ex. 1003), and the following additional materials:

Exhibit	Description
Ex. 1007	U.S. Patent No. 5,933,811 to Angles et al. (“Angles”)
Ex. 1008	U.S. Patent No. 7,168,051 to Robinson et al. (“Robinson”)

IV. UNDERSTANDING OF THE LAW

25. I am not an attorney but have been instructed in and applied the law as described in this section.

26. I understand that the first step in comparing an asserted claim to the prior art is for the claim to be properly construed. I address how a person of ordinary skill in the art (“POSITA”) would have understood the claims of the alleged invention in Section V below.

27. I have been further instructed and understand that a patent claim is unpatentable and invalid as obvious if the subject matter of the claim as a whole would have been obvious to a POSITA of the claimed subject matter as of the time of the invention at issue. I understand that when assessing the obviousness of claimed subject matter, the following factors are evaluated: (1) the scope and content of the prior art; (2) the difference or differences between each claim of the patent and the prior art; and (3) the level of ordinary skill in the art at the time the patent was filed.

28. I understand that claimed subject matter may be obvious in view of prior art. I understand that the knowledge and understanding of a POSITA is relevant to an obviousness analysis. I understand, however, that it is not enough to show simply that all the limitations of the claimed subject matter are spread throughout the prior art. Instead, for claimed subject matter to be obvious over multiple references, including the knowledge of a POSITA, there must be some reason or motivation for a POSITA to combine the prior art references to arrive at the claimed subject matter. I understand that this motivation to combine need not be explicit in any of the prior art, but may be inferred from the knowledge of a POSITA at the time the patent was filed. I further understand that a single piece of prior art that discloses fewer than all of the elements of a patent claim may render a patent claim obvious if including the missing element would have been obvious to a POSITA (e.g., the missing element represents only an insubstantial difference over the prior art).

29. I understand that a patent claim is obvious if the differences between the subject matter claimed and the prior art are such that the subject matter as a whole would have been obvious during the relevant time period (e.g., at the time of the alleged invention). I understand that the obviousness analysis must focus on the knowledge available to a POSITA during the relevant time period in order to avoid impermissible hindsight. I further understand that the obviousness inquiry assumes

that the POSITA would have knowledge of all relevant references available during the relevant time period.

30. I have been informed and understand that, while not required, each prior art reference itself may provide a teaching, suggestion, motivation, or reason to combine, but other times the motivation linking the prior art references is common sense to a POSITA at the time of the invention.

31. I understand that a particular combination may be proven obvious by showing that it was obvious to try the combination. I have been informed that, if a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

32. I further understand that an obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references also may be supplied by the direction of the marketplace. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a POSITA has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

33. I have been informed that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Thus, where all of the elements of a claim are used in substantially the same manner, in devices in the same field of endeavor, the claim is likely obvious.

34. Additionally, I understand that a patent is likely to be invalid for obviousness if a POSITA can implement a predictable variation or if there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims. Therefore, when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.

35. I further understand that combining embodiments related to each other in a single prior art reference would not ordinarily require a leap of inventiveness.

36. I also understand that a POSITA must have had a reasonable expectation of success when combining references for claimed subject matter to be obvious.

37. I have been informed and I understand that factors referred to as “objective indicia of non-obviousness” or “secondary considerations” are also to be considered when assessing obviousness when such evidence is available. I understand that these factors can include: (1) commercial success; (2) long-felt but

unresolved needs; (3) copying of the invention by others in the field; (4) initial expressions of disbelief by experts in the field; (5) failure of others to solve the problem the claimed subject matter solved; and (6) unexpected results.

38. I also understand that evidence of objective indicia of non-obviousness must be commensurate in scope with the claimed subject matter. I further understand that there must be a relationship, sometimes referred to as a “nexus,” between any such secondary indicia and the claimed invention.

39. Finally, I have been informed that one cannot use hindsight to determine that an invention was obvious.

40. I provide my opinions in this declaration based on the guidelines set forth above.

V. LEVEL OF SKILL IN THE ART

41. I have been informed and understand that the level of ordinary skill in the relevant art at the time of the invention is relevant to inquiries such as the meaning of claim terms, the meaning of disclosures found in the prior art, and the reasons a POSITA may have for understanding the claim terms.

42. I have been informed and understand that factors that may be considered in determining the level of ordinary skill include: (1) the education of the inventor; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication

of the technology; and (6) education level of active workers in the relevant field. I have been further informed and understand that a POSITA is also a person of ordinary creativity.

43. A POSITA in the technology field of the ‘724 patent would, in my opinion, have had a bachelor’s degree in computer engineering, computer science, or a similar discipline, and/or two years of professional experience in the fields of networking and network-based systems or applications, such as client-server and web-based systems, in the specific context of console and gaming or an equivalent level of skill, knowledge, and experience. A POSITA would have at least a general knowledge of online and in-game advertising methods prevalent in the field, as well as at least a general knowledge of 3D rendering and virtual reality.

44. In view of my educational background (e.g., a Bachelor of Science in Electronic Engineering Technology obtained in 1975) and decades of computer programming experience—including experience with advertising-supported games as discussed above in Section II—I was a person of more than the ordinary level of skill in the art as of the date of the ‘724 application. In forming my opinion, I have drawn on my academic background and professional experiences. My opinions herein, however, were formed taking into account the perspective of an ordinarily skilled artisan.

VI. THE ‘724 PATENT’S EFFECTIVE FILING DATE

45. The filing date of the application that ultimately resulted in the ‘724 patent is listed on the face of the patent as August 4, 2011. I am informed that the ‘724 patent is not entitled to any priority prior to March 22, 2004. I am also informed that the Patent Owner may attempt to claim an earlier priority date of October 16, 2002, and I have considered both priority dates for my analysis.

VII. THE ‘724 PATENT

A. Overview

46. The ‘724 Patent is entitled “Interactive Virtual Thematic Environment.” Per the Abstract, the patent discloses “integrating information, including real-time information, into a virtual thematic environment using a computer system” such that “The computer system includes an interactive software application platform having at least:

- one thematic / publishing logic module which contains thematic environment rules;
- at least one digital content library module which provides content management on the thematic environment;
- and at least one quantum imaging environment (QIE) module which interprets content such that the content is manipulated and accessed by any device.” [Ex-1001, Abstract]

47. Note that said virtual interactive environment might be, for example:

“a game, or a particular website, such as a museum website, store, school, hospital etc., and is taken into a 3D virtual world.” [*Id.* 7:19-20]

48. In the “Background of the Invention” section [*Id.* 1:35-40], the ‘724 patent suggests that “[existing] virtual environments, especially those present on the interne (sic), for example, have not provided the user with a real world experience. Accordingly, a way to integrate audio, video, 2D and 3D technology in order to maximize the real world experience for the user, is desired.”

49. In the “Summary of the Invention” section (*Id.* 1:44 - 2:6), and re “Business Logic 208” (*Id.* 17:62-65) the ‘724 patent identifies examples of real-world information that might be integrated into a virtual thematic environment, including:¹

- Audio
- Video
- Chronological
- Text
- GPS

¹ See also “Detailed Description of the Invention.

- Product placement information from a sponsor
- Language translation
- Content from the sponsor’s websites
- Information on time
- Weather
- Late-breaking news
- Sports scores
- Live sports events
- Film

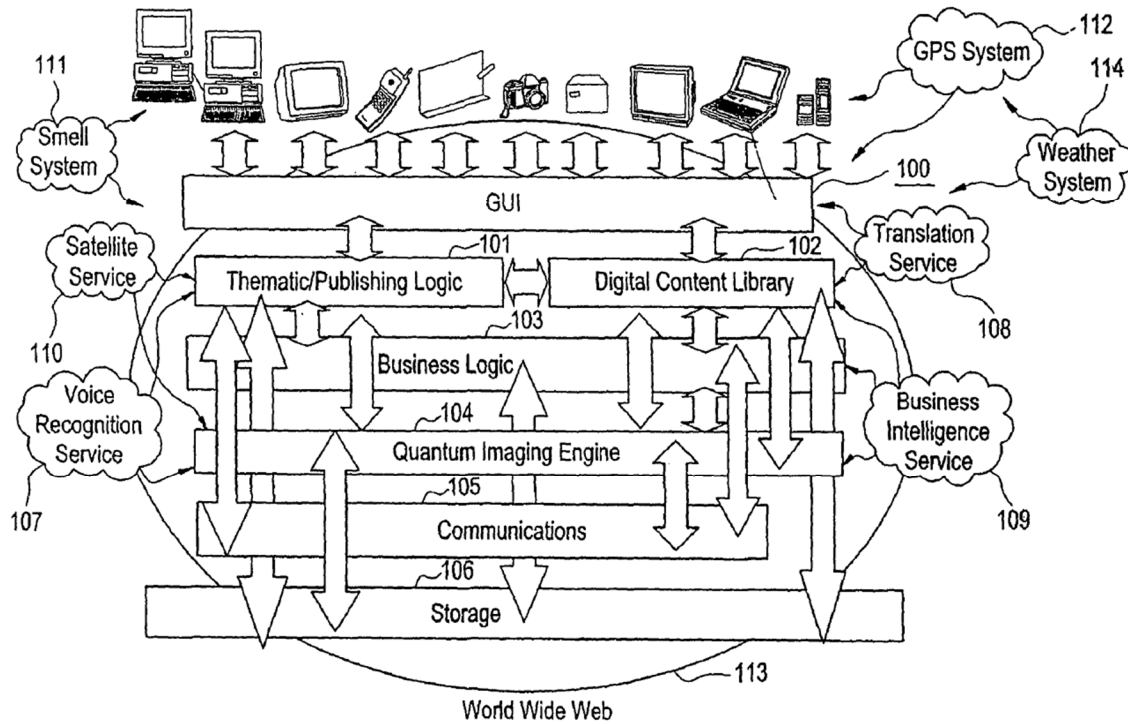
50. The ‘724 patent also claims automatically exiting the virtual thematic environment to “copy or grab” information:

“... upon a predetermined action within said virtual thematic environment, automatically exit the virtual thematic environment, and one of copy or grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment;” [*Id.* Claim 1[b]]

51. Thus, the ‘724 patent teaches that a user might leave or quit the virtual thematic environment in order to navigate to a sponsor’s website, grabbing data or objects to bring back for use in the virtual thematic environment.

52. Fig. 1 is a schematic display of a “six-level logical architecture of an interactive software platform” [*Id.* 6:34]:

FIG. 1



Ex-1001 Fig. 1

53. According to the purported invention, the interactive software platform can be served to *any device* (See EX-1001 Abstract²) with some such devices shown at the top of Fig. 1. This alleged ability to serve an interactive experience to any device is made possible by the Quantum Imaging Engine 104

² All emphasis in this declaration is added by me unless otherwise noted.

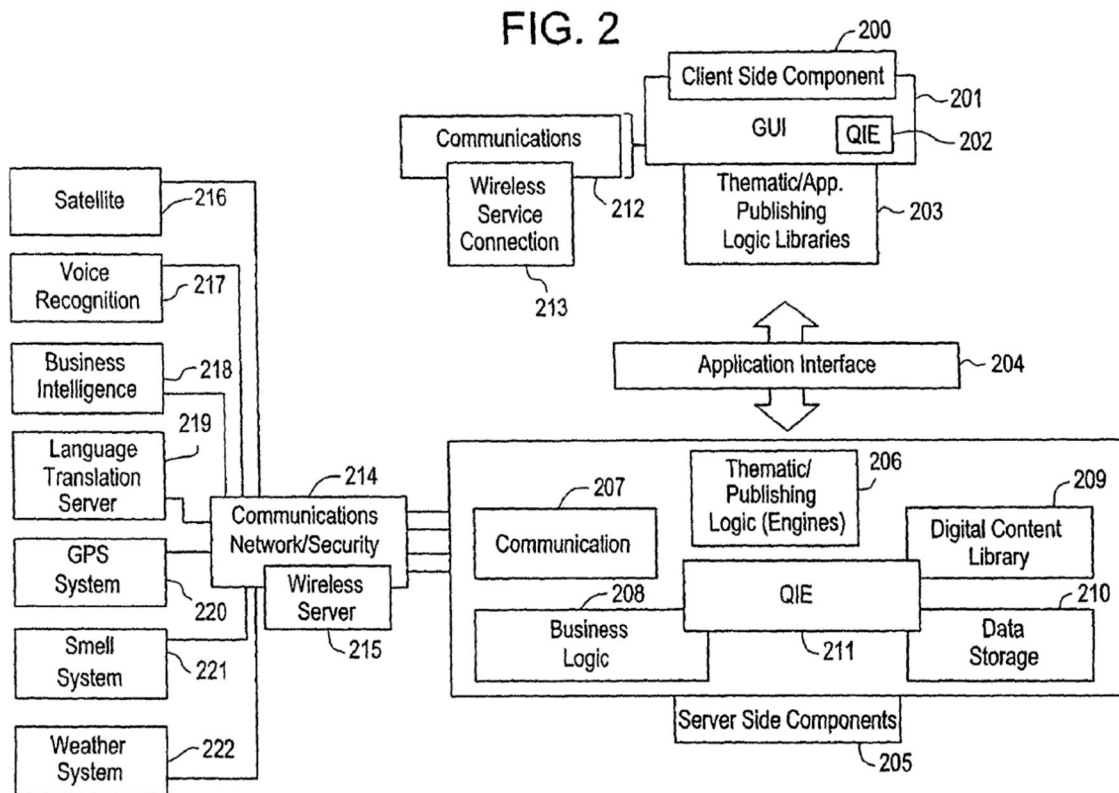
shown here. Note that Quantum Imaging Engine is not an industry term, but a “black box” that is integral to the alleged invention of the ‘724 patent. The specification describes what the Quantum Imaging Engine (QIE) does, the short form of which states:

“[the QIE module] interprets content such that the content is manipulated and accessed by any device” [*Id.* 4:30-31]

54. A more detailed description of what the QIE does can be found in column 15:

“The QIE 202/211 is both part of the client and the server components in the embodiment of FIG. 2. The QIE 202/211 includes an interpreter that will allow data to be transmitted to any device, and is the basis for the design structure and layout for applications. The QIE 202/211 allows developers to develop objects and applications from the interpreter. For gaming or other thematic environments, the representation of the layout and design may be in the representation of “zones”, and the layout and design may be set up as zones and content, for medical, retail, educational purposes, etc. The QIE 202/211 pertains to the most common denominator - the application architecture, and the content. QIE 202/211 is an interpreter that will take all of the rich content, interpret the information into objects to be manipulated and accessed via any device and place these objects or information in the appropriate format that is designed or will be designed by the developer.” [*Id.* 15:48-64]

55. “FIG. 2 is a schematic showing one embodiment of the interactive software platform consistent with the present invention, in a client - server arrangement” [*Id.* 6:36-38]. As seen in Fig. 2, the QIE exists in both the server and client side components of the interactive software platform. Notably, the specification explains that the QIE 202/211 “is an interpreter ...” - the singular form indicating to a POSITA that the contents of boxes 202 and 211 are the same system.



Ex-1001 Fig. 2

56. Thus, the QIE is an integral part of the alleged invention of the ‘724 patent. Despite the importance of this module or system to the claimed operation

of the invention, the specification describes what said module does, but does not inform a POSITA as to how one might implement such a black box.

57. The ‘724 patent also discloses the integration of “mini-applications” that operate within the virtual thematic environment. The ‘724 specification is not clear on what makes an application a mini-application (as opposed to a non-mini-application), but includes a list of examples:

“... integrates mini-applications, such as word processing, mutual fund calculators, spreadsheets, static purchasing (i.e., static e-commerce applications, and any other type of application that can be scaled or as a demo), e-mail, and the like, into the virtual thematic environment without a noticeable delay.” [*Id.* 6:67 - 7:5]

B. Prosecution History of the ‘724 Patent

58. As noted above, I have reviewed the ‘724 patent’s prosecution history.

59. I note that the examiner applied the teachings of US 2002/0082077 (“Johnson”) re: the term “automatically exit the virtual thematic environment.” In order to overcome said examiner’s objection, the ‘724 applicant argued that “Johnson does not disclose any triggering events that remove the player from the game environment to bring objects or data back into the gaming environment” (Ex-1003, page 126). In my opinion a POSITA would have understood this to mean that under the applicant’s interpretation, to “exit” a gaming environment meant to “remove the player” from the gaming environment.

60. See the attached Petition, section VI.B for more detail.

C. The ‘724 Patent’s Claims

61. For reference, claims 1-7, claims 9-14, 16, 18, and claims 20-23 of the ‘724 patent are reproduced below:

1. Claim 1:

[preamble]: A computer system having an interactive software application platform for providing a virtual thematic environment, comprising:

- a.** 1[a]: a processor which executes a program having a plurality of modules, said plurality of modules including:
- b.** 1[b]: at least one thematic/publishing logic module which contains virtual thematic environment rules configured for a gaming environment, the at least one thematic/publishing logic module being configured to allow a user to interact within said virtual thematic environment and upon a predetermined action within said virtual thematic environment, automatically exit the virtual thematic environment, and one of copy or grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment;
- c.** 1[c]: wherein said data or said objects are automatically integrated into the virtual thematic environment during execution of the virtual thematic environment;
- d.** 1[d]: at least one digital content library module which provides content management on the virtual thematic environment; and
- e.** 1[e]: at least one quantum imaging environment (QIE) module which interprets content such that said content is manipulated and accessed by any device; and

- f.** 1[f]: a display which displays the virtual thematic environment as images.

2. Claim 2: The system according to claim 1, wherein said program of said processor further comprises: at least one graphical user interface (GUI) module.
3. Claim 3: The system according to claim 1, wherein said program of said processor further comprises: at least one content logic module directed to accounting, sponsor and users, transactions, and collecting content in real-time and injecting said content into the virtual thematic environment.
4. Claim 4: The system according to claim 1, further comprising: at least one data storage.
5. Claim 5: The system according to claim 1, wherein said program of said processor further comprises: at least one communication module which provides access to various network services and connection options.
6. Claim 6: The system according to claim 5, wherein said communication module includes network and security features which provide integrity of users and secure interaction between the virtual thematic environment and sponsors.
7. Claim 7: The system according to claim 6, wherein said security features include authentication, anti-cheating mechanisms, and financial audit functions.
8. Claim 9: The system according to claim 2, wherein said GUI module comprises: a physics engine which controls behavior of objects affected by laws of nature.
9. Claim 10: The system according to claim 2, wherein said GUI module comprises: an Artificial Intelligence (AI) engine which controls behavior of objects and the virtual thematic environment.
10. Claim 11: The system according to claim 2, wherein said GUI module comprises: a mini-applications library.

11. Claim 12: The system according to claim 2, wherein said GUI module comprises: a thematic application/publication/game content component which provides a storage facility for all thematic content required in the virtual thematic environment.
12. Claim 13: The system according to claim 2, wherein said GUI module comprises: a networking interface which provides access to various network services required to support a server environment.
13. Claim 14: The system according to claim 2, wherein said GUI module comprises: a thematic application/publishing/game logic and scripting component which takes data from a rule set and from external sources and modifies the virtual thematic environment.
14. Claim 16: The system according to claim 3, wherein said content logic module comprises: an accounting, billing, and customer support module which provides for information modification and customer support, including billing.
15. Claim 18: The system according to claim 3, wherein said content logic module comprises: a reporting tools module which provides internal and external reporting tools.
16. Claim 20: The system according to claim 4, wherein said data storage comprises: a real-time thematic environment database which maintains a state of each user and the virtual thematic environment.
17. Claim 21: The system according to claim 1, further comprising a product placement interface within said virtual thematic environment, which seamlessly connects to a product sponsor external to said virtual thematic environment, at which a product is sold.
18. Claim 22: The system according to claim 1, further comprising: a timing mechanism which requires that a task performed on the worldwide web or internet must be performed within a certain period of time or on a competitive level with one or more opponents at a sponsored internet site.

19. Claim 23: The system according to claim 21, further comprising: a purchase mechanism which allows real-world credit or virtual credit to be used for payments of said product at said internet website of said product sponsor.

VIII. CLAIM CONSTRUCTION

62. I am not a legal expert or an attorney and offer no opinions on the law.

I understand that claim construction is a matter of law. However, I have been informed by counsel of the legal standards that apply to claim construction in an *inter partes* review, and I have applied them in forming my opinions. I understand that during an *inter partes* review, the same claim construction standard used in federal district court is applied when addressing the meaning of claim terms.

63. I have been informed that the words of a claim are generally given the ordinary and customary meaning that the term or phrase would have to a POSITA at the time of the invention in view of the surrounding claim language, the specification and the file history (collectively, the “intrinsic evidence” or “intrinsic record”).

64. I also understand that courts may consider extrinsic evidence, such as expert and inventor testimony, dictionaries, and learned treatises (collectively, the “extrinsic evidence” or the “extrinsic record”), but that such extrinsic evidence should be given less weight than the intrinsic evidence.

65. I have been instructed to apply the following construction of certain terms:

A. Quantum Imaging Environment Module (QIE)³

66. I would paraphrase the QIE described in the ‘724 patent as something of a “universal translator.” As an initial matter, I find that the ‘724 specification describes only *what* the QIE does and is completely silent on *how* it does it. There is nothing in the specification to inform a POSITA how to implement such a translator. In interpreting the claims for the purpose of this IPR I have been instructed to address the ‘what’ and not the ‘how’.

67. For this analysis I assume the QIE to be construed as “a software layer which receives and interprets content such that the content is manipulated so as to be accessible on different types of devices for use within the virtual thematic environment.”

³ District Court of the Northern District of California issued a claim construction order (Ex-1010) on Feb. 12, 2020 in *Barbaro Technologies, LLC v. Niantic, Inc.*, No. 3:18-cv 02955 (N.D. Cal.) on US 7,373,377 and US 8,228,325, which are in the same patent family with and share the same specification and figures as that of the ‘724 Patent. In its order, the court construed QIE as “a software layer which receives and interprets content such that the content is manipulated so as to be accessible on different types of devices for use within the virtual thematic environment.”

B. graphics user interface (GUI) module

68. I understand that the court has construed this term as “software that provides a graphical display and processes user inputs to allow a user to interact with the graphical display.”⁴

C. virtual thematic environment

69. I understand that the court has construed this term as “a theme-based virtual computer interface.”⁵

⁴ District Court of the Northern District of California issued a claim construction order (Ex-1010) on Feb. 12, 2020 in *Barbaro Technologies, LLC v. Niantic, Inc.*, No. 3:18-cv 02955 (N.D. Cal.) on US 7,373,377 and US 8,228,325, which are in the same patent family with and share the same specification and figures as that of the ’724 Patent.

⁵ District Court of the Northern District of California issued a claim construction order (Ex-1010) on Feb. 12, 2020 in *Barbaro Technologies, LLC v. Niantic, Inc.*, No. 3:18-cv 02955 (N.D. Cal.) on US 7,373,377 and US 8,228,325, which are in the same patent family with and share the same specification and figures as that of the ’724 Patent.

IX. UNPATENTABILITY ANALYSIS

70. The following paragraphs provide some basic background and then proceed with an overview of the main prior art references I discuss throughout this declaration.

A. Background Information

71. In my opinion, as of the ‘724 patent’s effective filing date a POSITA would have been aware of various different types of software, programming languages, and applications related to the subject matter of the ‘724 patent. Some of this background knowledge is discussed here.

1. Sponsored Content

72. It was well known at the time of the effective filing date of the ‘724 patent for businesses to reach consumers of their products through the sponsorship of entertainment products. This dates back to the early days of television, with companies such as Colgate-Palmolive, for example, paying for the production of television shows in order to reach a captive audience. This practice translated to interactive entertainment software as early as the mid 1990s when companies such as the Lifesavers Candy Company sponsored online gaming sites:



73. A POSITA would have understood that the incorporation of sponsored content into an interactive experience was a form of advertising. More generically, an advertiser whose ads appear as part of a game or other form of media would be known as a sponsor of said content.

2. Advertising served into network-connected systems

74. To the best of my knowledge, online advertising has been around since the beginning of the World Wide Web. The top-level domain “.com” refers to a website address representing a “commercial” presence on the Web. A commercial presence on the Web primarily exists to perform business-related operations. A common business-related operation supported by the Web is the advertising of goods and services. Prior to March 2004/October 2002, a POSITA

would have experienced at least a decade of online advertising served across the Internet.

75. Since at least the mid 1990s, online advertisements have taken many forms, such as for example, web banner ads served by companies created to automate the process of serving ads to web pages. As one example, the ad serving company Doubleclick was founded in 1995 and by 1996 was well known for serving advertisements to millions of online users.⁶ One primary function of banner ads was the ability to redirect a user to the advertiser’s web site with a single click of the mouse. This allowed the advertiser to capture information about any consumer who showed interest in its product or services.

3. Using a Web Browser as a Virtual Environment Game Player.

76. Gaming using a Web Browser program has been well known since the 1990s. A major leap in browser-based gaming came when Macromedia launched its “Shockwave” browser plug-in in 1995.

“Macromedia Shockwave Player (also known as Shockwave for Director and later Adobe Shockwave Player), was a freeware plug-in for viewing multimedia and video games in web pages, content

⁶ See the 1996 Doubleclick citation in the Angles specification under OTHER PUBLICATIONS, “Doubleclick Network Officially Exceeds 10 Million Users”

created on the Macromedia Shockwave platform. Content was developed with Macromedia Director and published on the Internet. Such content could be viewed in a web browser on any computer with the Shockwave Player plug-in installed. It was first developed by Macromedia, and released in 1995 ...”⁷

77. Macromedia followed Shockwave with Flash, another browser plug-in designed to add multimedia and game-playing functionality to a standard Web Browser program. By the year 2000, Shockwave and Flash had been successfully downloaded by over 200 million users around the world.⁸

78. Note that a Web Browser is a computer program that resides on a player’s personal computing device. The Shockwave and/or Flash plug-ins were downloaded from Macromedia and automatically installed as part of the browser program functionality. Prior to the priority date of the ‘724 patent, the Shockwave plug-in was installed in the browser programs on millions of computers, turning each browser program into a game-playing program. The playing of browser-based games was well known in the art.

⁷ https://macromedia.fandom.com/wiki/Macromedia_Shockwave_Player

⁸ <https://www.awn.com/animationworld/shockwavecom-fun-and-games-high-flying-hub>

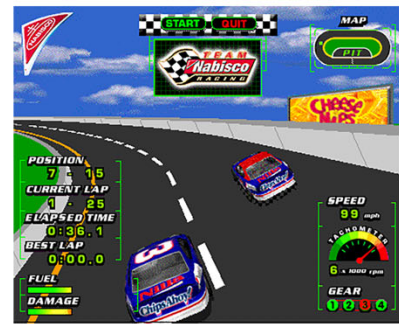
79. Many browser-based games featuring virtual thematic environments were available to be played prior to the effective filing date of the ‘724 patent. The virtual thematic environment games prior to 2004⁹/2002 include, for example:



BMX Trick Riding, 1999
Life Savers Candystand
X-Games themed dirt mogul track



Ford Racing Challenge, 1999
Life Savers Candystand
Speedway racing themed asphalt track



Nabisco Team Racing, 1999
NabiscoWorld.com
Speedway themed banked track



TYCO “Speed Wrench”, 2000
Life Savers Candystand
Race customizable toy on quarter mile



Toyota 4-Runner Challenge, 2002
Life Savers Candystand
Race on dirt track over moguls and hills



Mini-Motocross, 2003
Life Savers Candystand
Miniaturized motocross race through the grass

80. As can be seen from these few examples, a POSITA would have been well aware of the proliferation of virtual thematic environment games prior to the effective filing date of the ‘724 patent. Note that each of the games pictured above were configured for play by a single human player. It was well known in the art

⁹ I was the lead programmer on each of these games, and can personally attest to the publication dates.

that other objects in such games were controlled by AI engines, simulating the play of non-player characters in the game. Opposing cars or motocross riders, for example, played the game alongside the human player under the control of the AI and interfered with his or her progress as an integral part of the game play. As the author of these example browser games, I can attest that at least four of the examples cited above contained an Artificial Intelligence (AI) engine which controlled behavior of objects.

81. Browser-based gaming continued to evolve to support unbounded 3D environments with the launch of Shockwave 3D (using Macromedia Director 8.5) circa 2001. An example of such was the BMW X3 Adventure game:



BMW X3 Adventure, 2003 ^{10 11}

82. Each of the games reproduced here (as well as many others from the mid 1990s through the early 2000s) represented a virtual environment in which the players’ avatar moved about obstacles in racing-themed environments complete with signage and billboards; and each was played using a standard Web Brower with the Shockwave plugin.

83. It was also well known in the art prior to the effective filing date of the ‘724 patent for different consumer computing devices to be loaded with a Web Browser program specifically tailored to each type of device.

¹⁰<https://www.youtube.com/watch?v=o3uiyixWJME&list=PLg8EOzsV9fh5zSfnOeBnToDf7rNdapH50&index=5&t=5s>

¹¹<https://www.ign.com/articles/2003/12/01/bmw-x3-online-game-playable-now>

84. Each of the games shown above could be played on multiple browsers, on multiple computer systems, manipulated to be displayed on different display monitors, and compatible with different input devices. Consider, for example, Netscape Navigator:

“On September 18, 1995, Netscape Communications Corporation released the Netscape Navigator 2.0 web browser. The browser was available for Microsoft Windows 3.1/ 95/NT, Apple Macintosh, Linux, Solaris, IRIX, HP-UX, AIX, SunOS and FreeBSD.”¹²

85. Any computer running any of the aforementioned operating systems could run a game on Netscape Navigator 2.0, and the browser was configured to interpret and manipulate the gaming content for each device.

86. Thus, in addition to facilitating virtual thematic game play, at the time of the effective filing date of the ‘724 patent a Web Browser module also interpreted content such that the content was manipulated so as to be accessible on different types of devices.

¹² <https://www.webdesignmuseum.org/old-software/web-browsers/netscape-navigator-2-0>

B. Overview of the Prior Art

87. The following paragraphs proceed with an overview of the main prior art references I discuss throughout this declaration.

1. U.S. Patent No. 5,933,811 to Angles et al. (“Angles”)

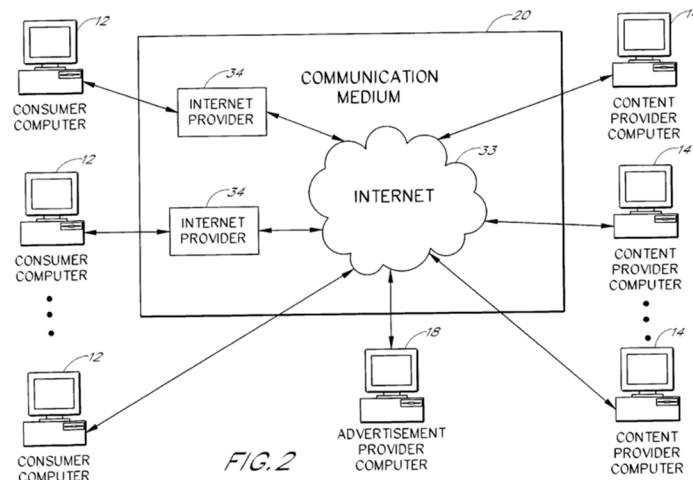
88. I am informed that Angles (Ex-1007), filed August 20, 1996, qualifies as prior art under 35 U.S.C. § 102(a) and 35 U.S.C. § 102(b) against the ‘724 Patent.

89. Angles teaches the serving of customized advertisements which are integrated into content served over a communication network:

“The present invention relates to communication systems and, in particular, to an apparatus and method for delivering customized advertisements within interactive communications systems.” [Ex-1007, 1:9-11].

“The embodiment shown in FIG. 9 allows the customized advertisements 30 to be incorporated directly into the content provider’s offerings. Thus, in addition to integrating the customized advertisements 30 in to an electronic page 32, the content provider computer 14 can integrate the customized advertisements 30 into offerings such as on-line games, video programming, internet radio, virtual reality environments and the like. For example, assuming the content provider computer 14 offers consumers on-line games such as interactive races.” [*Id.*, 21:53-62].

90. As shown in Fig. 2, said customized advertisements are communicated through a communication network between a plurality of CONSUMER COMPUTERS and a plurality of content and advertising provider computers:



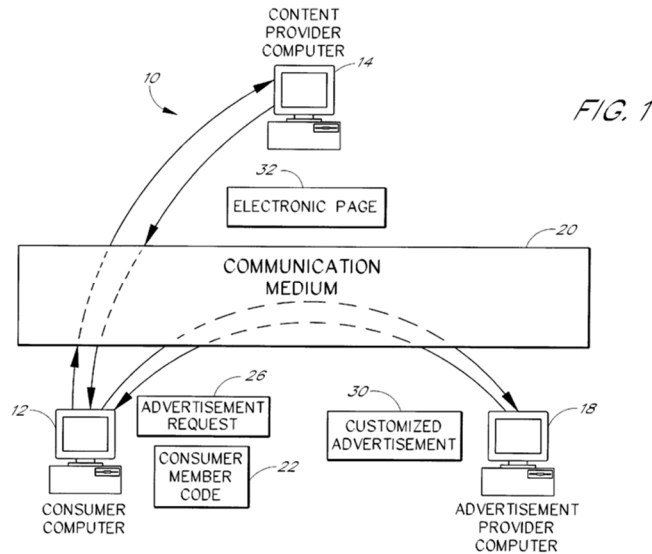
Angles Fig. 2

91. Said electronic devices are interfaced to COMMUNICATION MEDIUM 20, which is a computerized network such as the Internet:

“Focusing now on the communication medium 20 as shown in FIG. 2, the presently preferred computer medium includes the Internet 33 which is a global network of computers.” [*Id.*, 9:4-7].

92. Angles Fig. 1 shows an interactive system that “includes a consumer computer 12, a content provider computer 14 and an advertisement provider

computer 18 which communicate with each other by use of the communication medium 20.” [*Id.*, 7:49-52]:



Angles Fig. 1

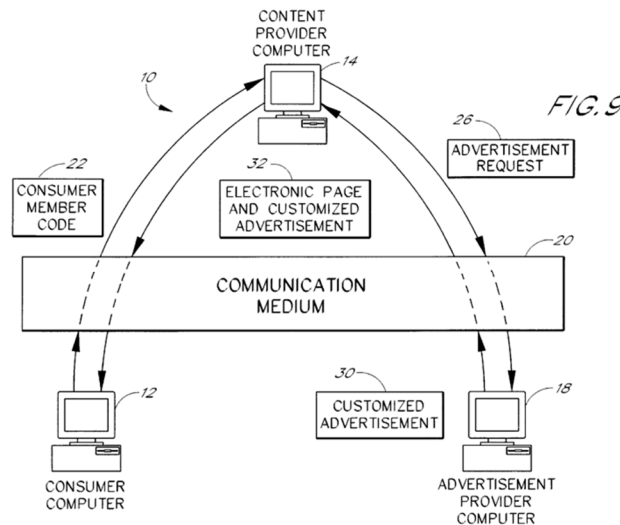
93. As shown, customized advertisements can be served from an advertiser’s computer to a consumer’s computer. This occurs in a system whereby content such as an electronic game, is served from a content provider computer. Fig. 1 shows communication between a CONSUMER COMPUTER 12, and a CONTENT PROVIDER COMPUTER 12 and an ADVERTISEMENT PROVIDER COMPUTER 18.

94. In this, the preferred embodiment, Angles teaches that the consumer computer can be equipped with a Web Browser to allow the consumer to access

the virtual reality environments with embedded advertisements from said content and/or advertisement provider computers.

“In the preferred embodiment, the consumer computer 12 utilizes several operational modules including a **consumer browser module** 40, a consumer member code 22 and an advertising storage medium 44. The consumer browser module 40 (hereinafter referred to as the consumer browser) is a **software program** which allows a consumer to access different content providers through the communication medium 20.” [*Id.*, 10:43-50 Emphasis added].

95. Alternately, as shown in Fig. 9, customized advertisements can be served from an advertiser’s computer through the content provider computer to a consumer’s computer:



Angles Fig. 9

96. Fig. 9 shows direct communication between a CONSUMER COMPUTER 12 (**a primary electronic device**), and a CONTENT PROVIDER COMPUTER 12, which is also coupled to an ADVERTISEMENT PROVIDER COMPUTER 18, whereby the customized advertising can be incorporated directly into the content providers offerings:

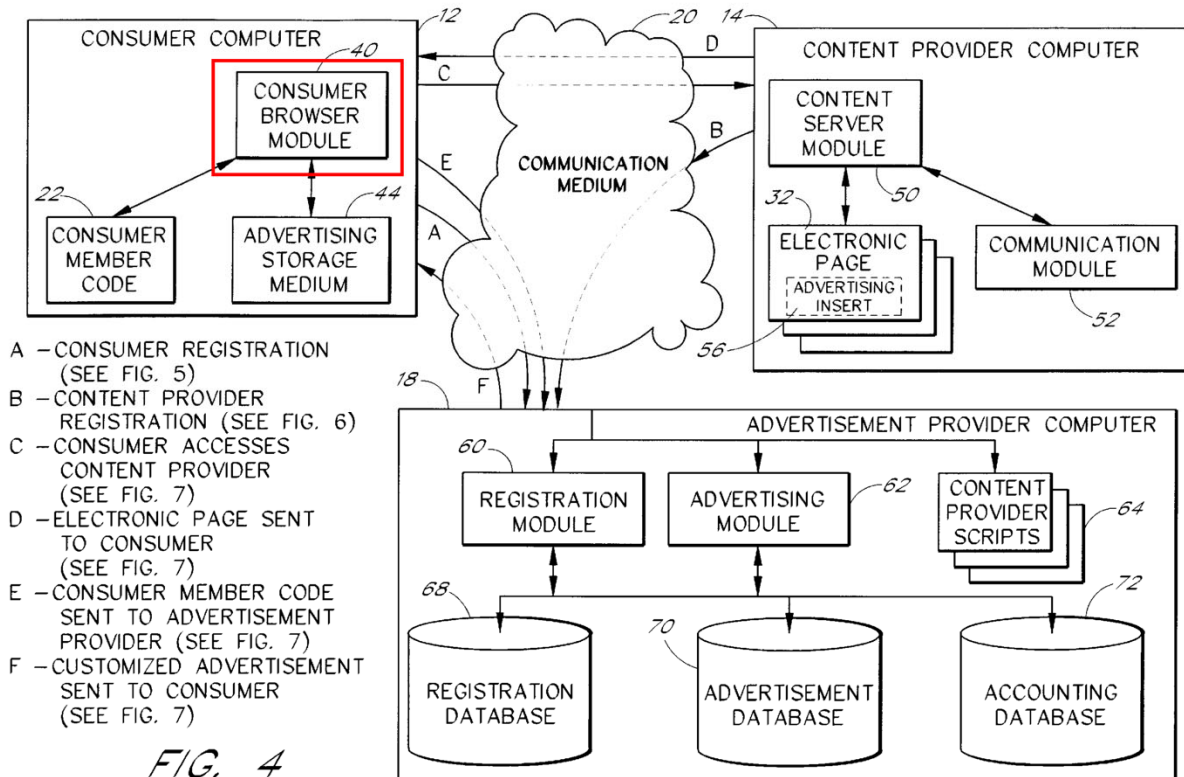
“The embodiment shown in FIG. 9 allows the customized advertisements 30 to be **incorporated directly into the content provider’s offerings**. Thus, in addition to integrating the customized advertisements 30 in to an electronic page 32, the content provider computer 14 can integrate the customized advertisements 30 into **offerings such as on-line games**, video programming, internet radio, **virtual reality environments** and the like. For example, assuming the content provider computer 14 offers consumers **on-line games** such as **interactive car races**.” [*Id.*, 21:53-62 Emphasis added].

97. Angles disclosed examples of types of content in which said advertising might be embedded or incorporated, such as serving advertising into games and three-dimensional virtual reality environments:

“For example, assuming the content provider computer 14 offers consumers **on-line games such as interactive car races**. In this example, the content provider computer 14 can **integrate the customized advertisements 30 into signs and billboards** which appear in the interactive game. In other embodiments, the content provider computer 14 can **integrate the customized advertisements**

30 into three-dimensional worlds defined by the Virtual Reality Modeling Language (VRML 1.0).” [*Id.*, 21:61 - 22:2 Emphasis added].

98. As shown in Fig. 4, Angles teaches the use of a Web Browser Module (Consumer Browser Module 40) that serves said “on-line games such as interactive car races” [*Id.*] to the game playing consumer:



Angles Fig. 4 (annotated)

99. A POSITA was aware that such a Web Browser Module was capable of publishing to the consumer a virtual environment, and to allow a user to interact within said virtual environment (*See* IX.A.3).

100. Also shown in Fig. 4 are Consumer Computer 12 and Content Provider Computer 14, both “conventional” computers:

“In the preferred embodiment, the consumer computer 12 is a conventional computer” [*Id.*, 10:23-24]

“Preferably, the content provider computer 14 is a conventional computer” [*Id.*, 12:17-18]

101. Angles further teaches that signs and billboards which appear in an interactive game can redirect a player to a business’ website for more information on the company’s goods or services based upon a user action:

“The invention also supports custom **advertisements which can contain hyper-links to other information.** The hyper-links typically direct the user’s Internet browser to access different websites on the Internet. For example, if a consumer wishes to obtain additional information about an advertised product or service, the consumer may simply use a mouse to **select an embedded hyper-link in the custom advertisement and be immediately transported to an advertiser’s website.** At the advertiser’s website, the user may receive a directed sales pitch, more information or a purchase order request form.” [*Id.*, 4:6-16 Emphasis added].

102. Thus, Angles teaches exiting a virtual environment upon a predetermined action (i.e., selection with a mouse).

103. Once a player has been transported to an advertiser’s website, data is grabbed from the advertiser’s website that will be used within the virtual environment. One type of said data comes in the form of a “Cookie” transmitted from the “registration module 60” component of the external “Advertisement Provider Computer” (*See Fig. 4*):

“Persistent Client State Cookies (Cookie). A file stored on the client computer which contains information such as user names and preferences. In the preferred embodiment, the Cookie in the consumer computer stores a member code which uniquely identifies each consumer. The specification for Cookies can be found at http://www.netscape.com/newsref/std/cookie_spec.html.” [*Id.*, 6:59-65].

“Proceeding to state 510, the registration module 60 then transfers the consumer member code 22 to the consumer computer 12. In the preferred embodiment, the registration module uses standard HTTP transfer procedures to transfer the consumer member code 22 to a cookie on the consumer computer 12.” [*Id.*, 17:25-30].

104. Information in the Cookie informs the system whether the player has registered with a particular advertiser:

“The advertising module 62 extracts the consumer member code 22 from the Cookie and determines whether the consumer has registered with the advertisement provider computer 18.” [*Id.*, 19:44-47].

105. Based on the Cookie data grabbed from the advertiser’s website, the “advertising insert” (e.g., a billboard in a virtual racing game) is served one of two things as disclosed in state 710 or state 712:

“At state 710, the advertising module 62 **fills the advertising insert 56 with an advertisement which directs the unregistered consumer to register with the advertisement provider computer 18**. If the consumer has registered with the advertisement provider computer 18, the advertising module 62 proceeds to state 712. In state 712, the advertising module 62 processes the advertisement request 26 [and] **delivers the customized advertisement to the consumer**” [*Id.*, 19:52-61 Emphasis added].

106. In addition, data in the form of a Java plug-in capable of opening a separate advertising window can be “grabbed” from a content provider’s computer:

“In other embodiments, the consumer control module 42 in the consumer computer 12 is **adapted to receive** a Java plug-in from the content provider computer 14 which **creates a separate window** which can **display customized advertisements 30** on the consumer computer 12.” [*Id.*, 23:16-20 Emphasis added].

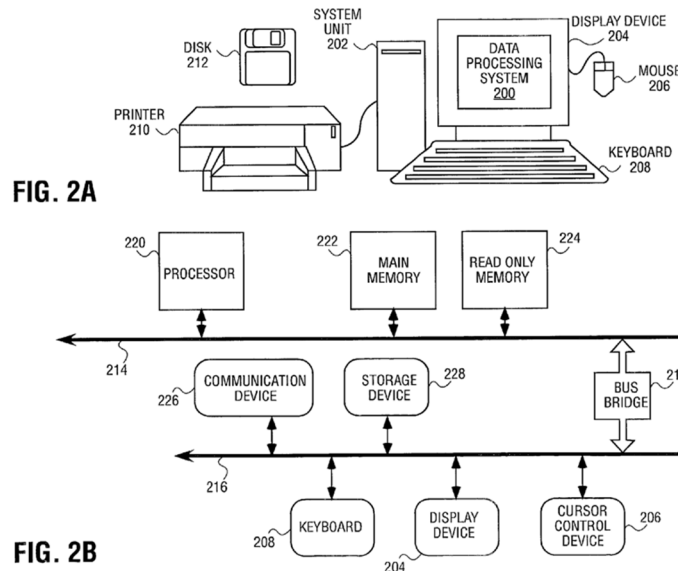
“In another embodiment, the consumer computer 12 stores the customized advertisements 30 on the advertising storage medium 44... [where] the consumer control module 42 receives an advertisement command which directs the consumer control module 42 to **retrieve the customized advertisement** 30 from the advertising storage medium 44” [*Id.*, 23:28-35].

107. Thus, Angles teaches that data grabbed from an advertiser’s website is utilized in the virtual environment to display different advertising content.

2. U.S. Patent No. 7,168,051 to Robinson et al. (“Robinson”)

108. I am informed that Robinson (Ex-1008) qualifies as prior art under 35 U.S.C. § 102(a), § 102(e)(1), and § 102(e)(2) against the ‘724 Patent.

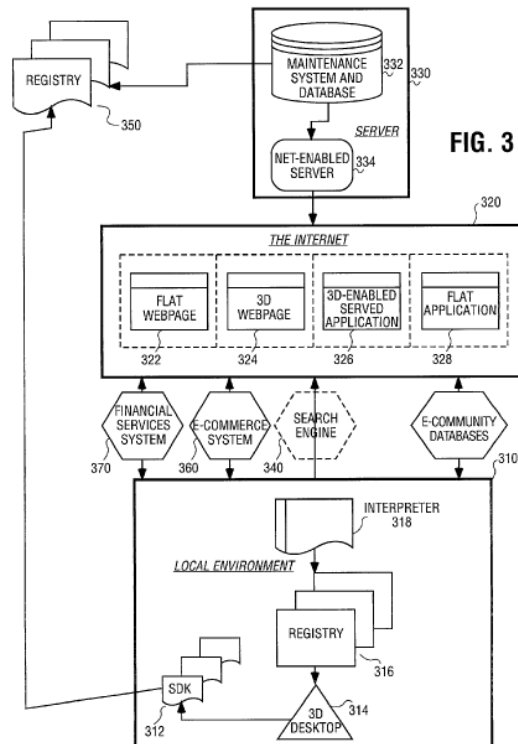
109. Robinson disclosed a data processing system “in which the features of the present invention may be implemented” as shown in Figs. 2A and 2B, which can employ conventional computing devices:



Ex-1008 Fig. 2A and Fig. 2B

“FIG. 2a illustrates an example of a data processing system 200 illustrating an exemplary client or server computer system in which the features of the present invention may be implemented. As illustrated, data processing or computer system 200 is comprised of a system unit 202, output devices such as display device 204 and printer 210, and input devices such as keyboard 208, and mouse 206. [...] Referring now to FIG. 2b, there is depicted a high-level block diagram of the components of a data processing system 200 such as that illustrated by FIG.2a. **In a conventional computer system**, system unit 202 includes a processing device such as **processor 220** in communication with main memory 222 ...” [*Id.*, 3:44-64 Emphasis added]

110. Robinson teaches a computerized network connecting a client computer to a plurality of networked services, including for example a financial services system, an e-commerce system, and other e-communities as shown in Fig. 3:



Robinson Fig. 3

111. As shown by the diagram of FIG. 3, Robinson teaches a “user object 310,” which represents a single user computer:

“The user object 310 contains everything that happens at a single computer, manned by a human who connects to the Internet.” [Ex-1008, 7:7-9]

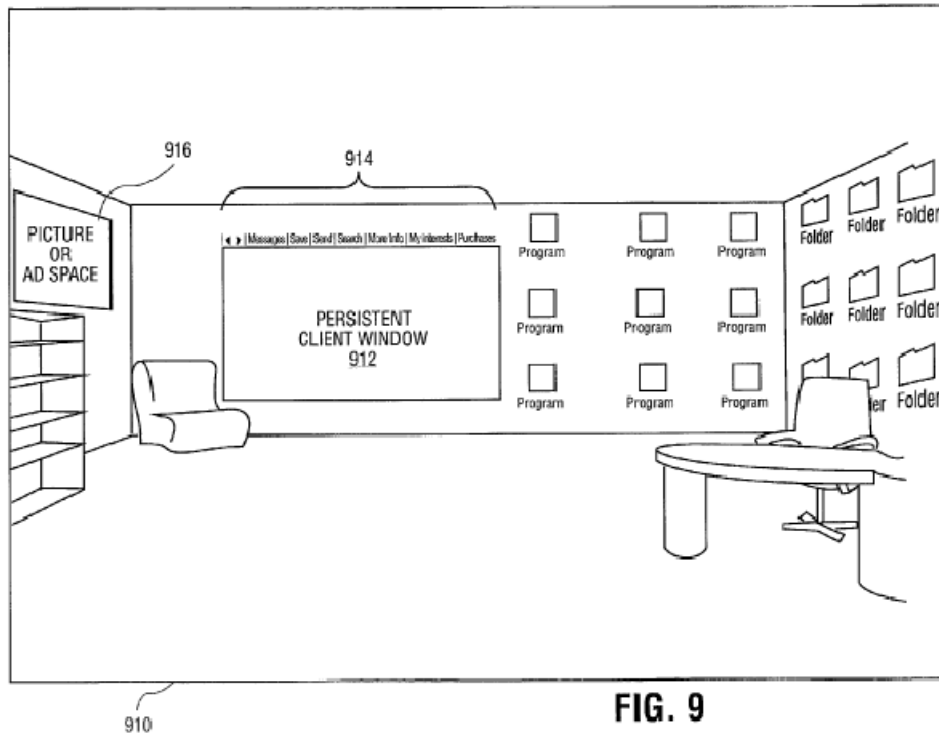
112. Also shown in Fig. 3 is a “server object 330:”

“The server object 330 contains everything needed to serve up webpages and/or applications to the network-enabled 3D computing environment-enabled user.” [*Id.*, 7:10-13]

113. Also shown in Fig. 3 is an “e-commerce system 360:”

“The present invention’s e-commerce system 360 takes advantage of key areas of a user’s 3D computing desktop environment that are reserved for placing messages and advertisements from commercial clients.” [*Id.*, 9:8-12]

114. The Robinson invention centers around a “3D visual interface for computing environments” as depicted in Fig. 9:



Robinson Fig. 9

“The present invention improves this desktop computing environment by creating a 3D visual interface for computing environments. With the interface of the present invention, a user turns his or her computer on and the monitor immediately displays the computer desktop as a 360°, 3-Dimensional room “inside’ of the monitor - a 3D computing environment.” [*Id.*, 5:16-23]

115. This 3D computing environment can be customized:

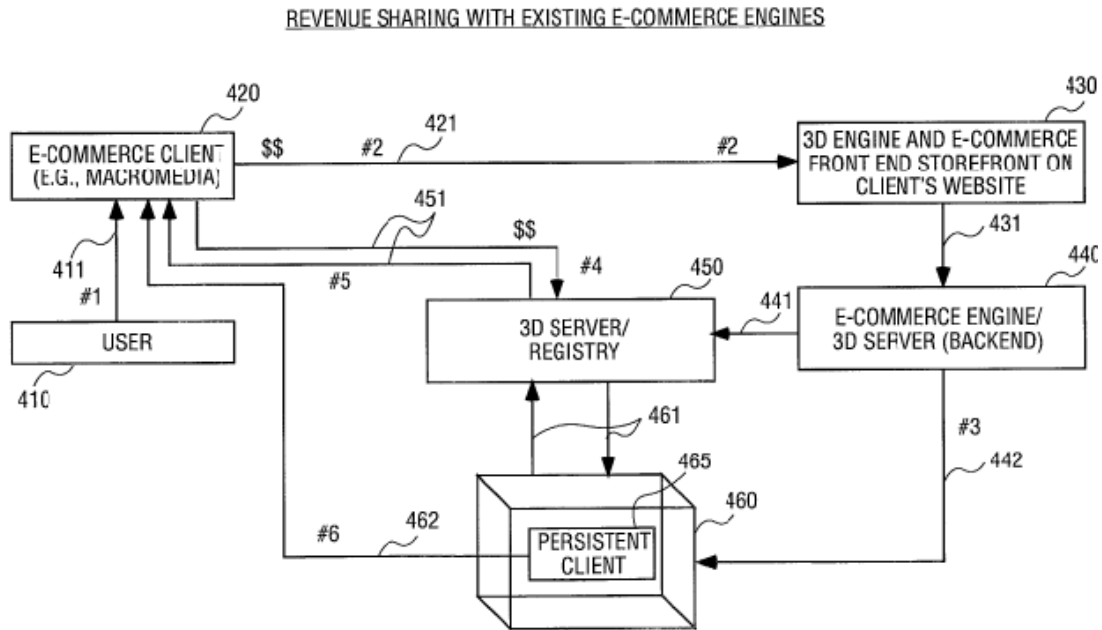
“For example, the user may want to place the desktop icons on the left wall of his or her 3D computing room (the 3D desktop) and by merely moving the cursor or computer mouse the user can quickly navigate to

those icons as easily as he or she can navigate around any physical room. There can be pictures on the walls of the 3D environment computing room displaying family members, advertisements, or other messages.” [*Id.*, 5:29-37]

116. Robinson teaches that the 3D computing environment can include “avatars” and “online games,” among other extensions:

“The network-enabled 3D computing environment of the present invention has several extensions, including: the introduction of **real-time avatars**. Avatars are virtual representations of users, allowing them to interact with other users across a network. The ability to create an interactive online community is very powerful. Such a utility would allow for intra- and inter-company meetings, the extension of the online communities which exist today, virtual concerts, **online games**, etc.” [*Id.*, 9:29-37 Emphasis added]

117. Robinson teaches the use of its 3D computing environment for “e-commerce,” depicted in Fig. 4 which “illustrates the use of the present invention in an e-commerce setting” [*Id.*, 2:15-16]:

**FIG. 4**

118. In an e-commerce setting, Robinson teaches downloading a “Persistent Client kernel 465” to manage the serving of business-related content, as well as capturing information about the user:

“When user 410 installs the downloaded software on client machine 460, the persistent 3D kernel is automatically installed on the user’s desktop environment at client machine 460.” [*Id.*, 10:26-29]

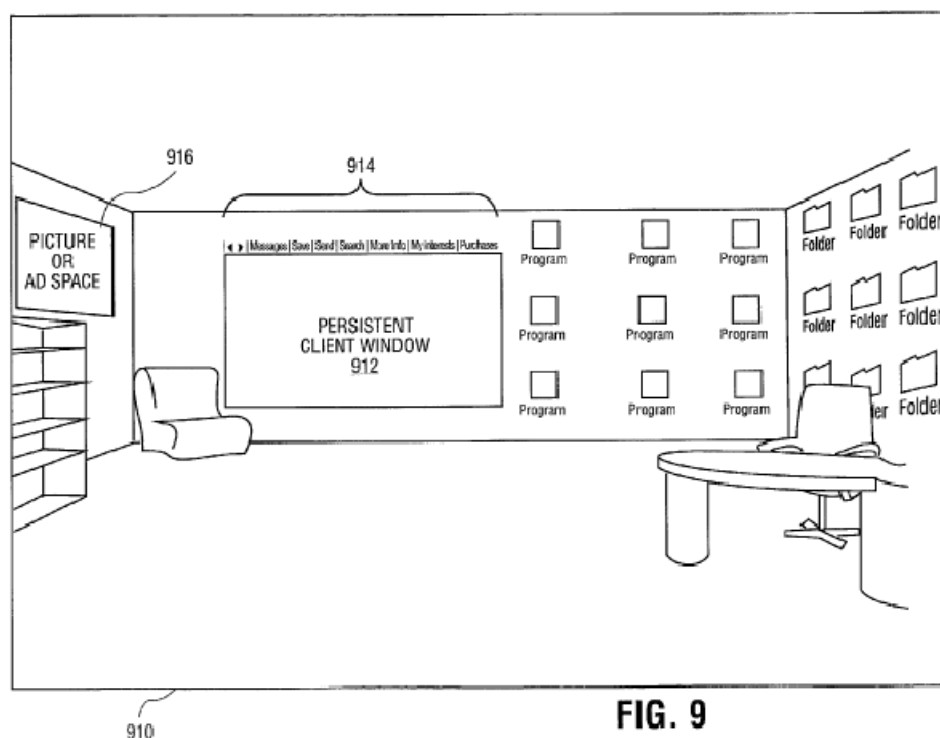
[The Persistent Client] “remains active in an unobtrusive two-dimensional persistent window on the user’s desktop for the delivery of advertisement or messages to the user’s desktop.” [*Id.*, 10:43-45]

119. The Persistent Client also serves to identify a particular user’s computer and profile the user, generating and disseminating a profile of a user to a related e-commerce supplier:

“Following the downloading of the requested or purchased software with the appended 3D environment Persistent Client kernel 465, [...] the 3D environment server is now **aware of the identity and/or location of a client machine** 460 to which the persistent 3D kernel 465 has been downloaded.” [*Id.*, 10:29-36 Emphasis added]

“... the 3D server 450 may keep a registry of such downloads along with **corresponding user profiles, buying patterns, searches, etc.** This registry and associated user information can be made accessible to the e-commerce client 420 via interface 451 with 3D server 450. In this manner, **the e-commerce Supplier 420 can thereby obtain information about users** of the e-commerce site via 3D server and registry 450. Because the present invention through 3D **server 450 can provide e-commerce client 420 with a wealth of information about particular users**, the e-commerce client 420 **may generate targeted advertising** or product offerings for particular client machines 460. [*Id.*, 10:53-64 Emphasis added]

120. Robinson teaches various types of advertising through a clickable Persistent Client Window 912 shown in Fig. 9 (repeated here for reference):



Robinson Fig. 9

121. Robinson teaches the serving of interactive advertisements through a user-clickable window to link to an e-commerce website:

“The present invention includes functionality to place 2D or “3D/spatial” **advertisements, promotions, or messages** in the Persistent Client Window 912 that, when **clicked on by a user/viewer**, will activate full or partial-screen interactive **3D virtual reality environment advertisements** that can also be **equipped with e-commerce capabilities**, such as **links to product/service ordering websites**” [*Id.*, 15:5-11 Emphasis added].

122. When said advertisement is “clicked on by a user/viewer” (i.e., activated), Robinson taught that the user exited the virtual thematic environment and was “taken to a related website:”

“Upon activation of a related link provided within region 916, the user is **taken to a related website** where an e-commerce transaction corresponding to the advertisement may be initiated.” [*Id.*, 15:21-25 Emphasis added]

123. Advertisements come into the 3D desktop from external sources, such as the e-commerce client 420:

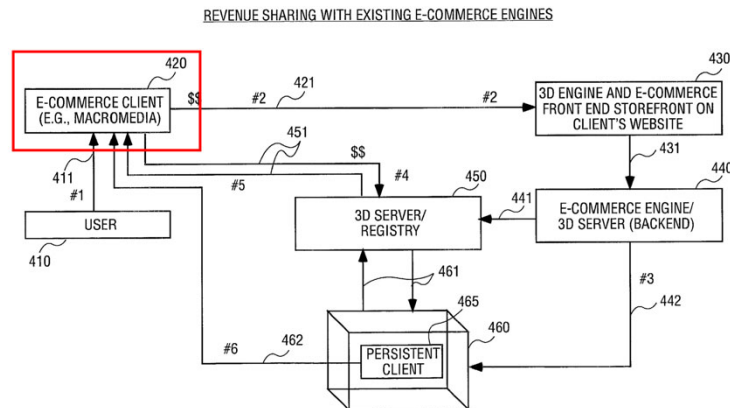


FIG. 4

Robinson Fig. 4 (annotated)

“... the e-commerce client 420 may generate targeted advertising or product offerings for particular client machines 460.”

124. In addition, Robinson teaches opening a full-screen VR advertising environment:

“Further, the present invention can be used to embed a similar VR/spatial environment behind a static or dynamic two dimensional (2D) advertisement that is placed in the Persistent Client window 912. For example, a 3D or 2D advertisement may be positioned in the Persistent Client window 912. When this advertisement is selected by a user/viewer clicking on it, the advertisement enlarges into a partial or full-screen VR/spatial environment that the user can move through spatially and take advantage of the media-enriched features of the advertisement.” [*Id.*, 15:31-40].

125. Within the disclosed VR advertising environment the user can select an avatar, meet up with other users as if in a video game, and meet and discuss the business-related advertisement:

“If the advertisement is a 3D VR environment, the user can click onto an avatar section of the advertisement and choose a virtual body (avatar) that will be the identification or representation of the user’s presence in the 3D advertisement VR environment. The user can then virtually walk around that advertisement, meet other virtual users who have entered into the collaborative VR advertisement in the same way from their own computer desktops. The virtual users can converse with each other about the content of the advertisement” [*Id.*, 15:48-57].

126. The act of choosing a virtual body to be used in a virtual walkthrough with other avatars requires that the system grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment.

C. Ground 1: Claims 1-7, 9-14, 16, 18, and 20-23 Are Obvious Over U.S. Patent No. 5,933,811 to Angles et al. (“Angles”) in View of the Knowledge of a POSITA

127. In my opinion, a POSITA would have considered Angles to be prior art and highly relevant to the patentability of the ‘724 patent’s claims. Both patents are directed to interactive environments which include information served from external sources. The ‘724 patent discloses “integrating information, including real-time information, into a virtual thematic environment using a computer system” [Ex-1001, Abstract]. Said virtual thematic environment might be a game [Ex-1001, 2:18-19]. The ‘724 patent further identifies that said integrated information can include “product placement information from a sponsor” [*Id.*, 1:63-64]. The ‘724 patent claims “connect[ing] to a product sponsor external to said virtual thematic environment, at which a product is sold” [*See Id.*, Claim 21].

128. Angles is entitled “System and method for delivering customized advertisements within interactive communication systems” [Ex-1007, Title]. As noted in section IX.A.1 above, including sponsored content into an interactive

environment would have been understood by a POSITA as a form of customized advertising as taught by Angles. Angles teaches that such customized advertisements can be integrated into “offerings such as on-line games” [*Id.*, 21:57-60]. As with the ‘724 patent, Angles teaches integrating externally-sourced content into an electronic game, as well as teaching connecting and navigating to an advertiser’s website in order to purchase goods and services.

129. A POSITA would have been motivated to combine and collectively consider the teachings of Angles with his knowledge of the state of the art of advertising in video games (*See* Section IX.A: Background Information) to arrive at the subject matter claimed by the ‘724 patent.

130. Additionally, the exemplary systems disclosed in both Angles and the ‘724 patent serve interactive content in a substantially similar manner, transmitting said content from a server computer over a network such as the Internet to a client computer. Not only would a POSITA have been motivated to combine and collectively consider the teachings of Angles with well-known industry knowledge to arrive at the subject matter claimed by the ‘724 patent, he would have had a reasonable expectation of success when doing so.

131. In my opinion, when viewed and considered in light of the knowledge possessed by a POSITA, Angles and said knowledge together disclose all the

limitations of and render claims 1-7, 9-14, 16, 18, and 20-23 of the ‘724 patent obvious.

1. Claim-By-Claim Analysis

a. Claim 1

- (i) **1[preamble]: A computer system having an interactive software application platform for providing a virtual thematic environment, comprising:**

132. Should the preamble be deemed to be limiting, Angles teaches this element. Angles teaches **a computer system having an interactive software application platform**, teaching the serving of “offerings such as **on-line games**, video programming, internet radio, **virtual reality environments** and the like.” [*Id.*, 21:58-60 Emphasis added]. Angles teaches **providing a virtual thematic environment** in the form of a consumer computer equipped with a Web Browser in communication with a content provider computer that integrates customized advertisements into offerings such as on-line games, virtual reality environment, etc., such as interactive car races (*See* ¶¶96 and ¶¶97). Online games, virtual reality environments, and interactive car races are consistent with the Court’s construction of a “virtual thematic environment” as “a theme-based virtual computer interface.”

133. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

- (ii) **1[a]: a processor which executes a program having a plurality of modules, said plurality of modules including:**

134. Angles Fig. 4 and Fig. 11 both indicate a Consumer Computer 12 equipped with a Web Browser; a well-known **program having a plurality of modules**. Said figures also indicate Content Provider 14. Both computers (12 & 14) are disclosed to be “conventional” computers (*See* ¶100) and would be understood by a POSITA to include the claimed **processor** capable of serving virtual reality environments and the like because a computer without a processor cannot operate and function as a computer.

135. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

- (iii) **1[b]: at least one thematic/publishing logic module which contains virtual thematic environment rules configured for a gaming environment, the at least one thematic/publishing logic module being configured to allow a user to interact within said virtual thematic environment and upon a predetermined action within said virtual thematic environment, automatically exit the virtual thematic environment, and one of copy or grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment;**

136. Angles teaches **at least one thematic/publishing logic module** in the form of the Consumer Browser Module 40 (*See* ¶98). Said module is configured to

display an **interactive gaming environment** while implementing **virtual thematic gaming rules** [*Id.*]. As noted in section IX.A.3, a POSITA would have recognized a Web Browser to be a gaming application capable of implementing a **virtual thematic environment**, complete with **virtual thematic environment rules configured for a gaming environment**. The Web Browser enables the user to interact within the virtual thematic environment by playing on-line games such as interactive car races or to interact within virtual reality environment. It was well known in the art that interactions between objects in a virtual gaming environment were subject to environmental rules, including rules that govern gravity, terrain-following, and collisions with other objects, walls, and such.

137. Regarding the claimed **upon a predetermined action within said virtual thematic environment, automatically exit the virtual thematic environment**, Angles teaches exiting the virtual environment upon the predetermined action of selecting a hyperlink with a mouse, to be immediately transported to an advertiser’s website:

“For example, if a consumer wishes to obtain additional information about an advertised product or service, the consumer may simply use a mouse to select an embedded hyper-link in the custom advertisement and be immediately transported to an advertiser’s website. At the advertiser’s website, the user may receive a directed

sales pitch, more information or a purchase order request form.” [*Id.*, 4:9-16].

138. When a user wishes to obtain additional information about an advertised product or service, the consumer may select an embedded hyper-link and be “immediately transported to an advertiser’s website”, thereby exiting the virtual thematic environment (*See* ¶101).

139. Angles also teaches grabbing other data from a **website external to the virtual thematic environment**, such as the Advertisement Provider Computer shown in Fig. 1 and Fig. 9. Said data (in the form of a Cookie or a Java plug-in) that is grabbed from the advertiser’s website is **utilized in the virtual thematic environment** to determine what advertisements are displayed in, for example, a billboard in a virtual racing game (*See* ¶103 - ¶106).

140. Moreover, the core function of the invention disclosed by Angles teaches how to integrate custom advertisements into signs and billboards displayed in online content including on-line games such as interactive car races. The **data** represented by said advertisements are **grabbed from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment**.

141. Angles also disclosed grabbing program data. It was well known in the art prior to the effective filing date of the ‘724 patent for a Shockwave game

(See Section IX.A.3) to “sniff” the Web Browser to determine if the browser was equipped with the Shockwave plugin; and if not initiate the download of said plugin from external servers maintained by Shockwave.com. Angles teaches the grabbing of program data from a **website external to the virtual thematic environment** to be **utilized in the virtual thematic environment** for merging advertisements:

“In an alternate embodiment, the consumer is sent unique software which enhances the consumer’s Internet browser so that custom advertisements can be merged with electronic documents obtained from the content provider.” [*Id.*, 3:24-28].

142. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(iv) **1[c]: wherein said data or said objects are automatically integrated into the virtual thematic environment during execution of the virtual thematic environment;**

143. Angles disclosed that the advertisement **data is automatically integrated** (incorporated) into billboards in the game (**virtual thematic environment**) **during execution of the virtual thematic environment** by, for example, incorporating the advertisement into an electronic page automatically upon receipt:

“Upon receiving the customized advertisement, the content provider incorporates the customized advertisement 30 into an electronic page 32.” [*Id.*, 21:38-40 Emphasis added]. (See also ¶¶96 - ¶97)

144. Angles further taught that data was **automatically integrated into the virtual thematic environment as claimed**, integrating “customized advertisements” into various other offerings:

“... the content provider computer 14 can integrate the customized advertisements 30 into offerings such as on-line games, video programming, internet radio, virtual reality environments and the like” [Ex-1007, 21:57-60 Emphasis added].

“For example, assuming the content provider computer 14 offers consumers on-line games such as interactive car races. In this example, the content provider computer 14 can integrate the customized advertisements 30 into signs and billboards which appear in the interactive game.” [*Id.*, 21:57-60 Emphasis added].

“In other embodiments, the content provider computer 14 can integrate the customized advertisements 30 into three dimensional worlds defined by the Virtual Reality Modeling Language (VRML 1.0).” [*Id.*, 21:65 - 22:2 Emphasis added].

145. A POSITA would understand that when customized advertisements are integrated into offerings such as on-line games, video programming, ..., virtual

reality environments and the like, that is occurring **during execution** of the offerings.

146. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(v) **1[d]: at least one digital content library module which provides content management on the virtual thematic environment; and**

147. As an initial matter, a POSITA would have considered it obvious that in order to display and interact with a virtual reality gaming environment as required by claim 1[b], the consumer computer must necessarily store and manage the content required by said virtual reality gaming environment. Moreover, a POSITA would have understood that a digital storage module must necessarily manage the data stored within. And when managing stored content to be used in a virtual thematic environment, said storage module would provide a content management service.

148. Angles explicitly disclosed multiple digital storage modules for content within the virtual environment, including an “advertising storage medium 44:”

“In the preferred embodiment, the consumer computer 12 utilizes several operational modules including a consumer browser module 40, a consumer member code 22 and an **advertising Storage medium 44.**” [*Id.*, 10:43-46 Emphasis added].

149. Angles taught that said advertising storage medium may have taken many forms:

“In one embodiment, the advertising storage medium 44 is a compact disk drive and a compact disk. The compact disk stores a variety of advertisements which can be retrieved and displayed by the consumer computer 12. The advertising storage medium 44, however, can consist of a wide range of data storage devices including, but not limited to, digital Video devices, floppy disks, hard drives, system memory, tape drives, Personal Computer Memory Card Interface Adapter cards (PCMCIA cards), and the like.” [*Id.*, 11:51-60]

150. Angles’ advertising storage medium was configured to store and manage content, e.g., customized advertisement, on the consumer computer to be used for the virtual thematic environment, by selecting and retrieving an advertisement for display:

“... in one embodiment of the present invention, the consumer computer 12 receives an advertisement command which directs the consumer computer 12 to **retrieve and display one of the advertisements** stored on the advertising storage medium 44.” [*Id.*, 11:60-65 Emphasis added].

“In another embodiment, the consumer computer 12 stores the customized advertisements 30 on the advertising storage medium 44 ... [such that when] the consumer control module 42 receives an

advertisement command ... the consumers control module 42 [is directed] to **retrieve the customized advertisement 30** from the advertising storage medium 44.” [*Id.*, 23:28-35 Emphasis added].

151. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(vi) **1[e]: at least one quantum imaging environment (QIE) module which interprets content such that said content is manipulated and accessed by any device; and**

152. In the browser-based gaming system taught by Angles, each device’s Web Browser module is tasked with manipulating the display of and interaction with the virtual environment content to make it compatible with the capabilities of each device (*See* ¶83 - 86 of Section IX.A.3). In doing so, the Web Browser module taught by Angles performs the function described by the quantum imaging module, **interpret[ing] content such that said content is manipulated and accessed by any device** as claimed.

153. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(vii) **1[f]: a display which displays the virtual thematic environment as images.**

154. Angles disclosed displaying the virtual environment, combined with advertising images on the customer computer:

“Generally, an electronic page is a document which organizes the presentation of text, **graphical images**, audio and video.” [*Id.*, 10:15-16 Emphasis added].

“The consumer’s computer then merges and displays the electronic page 32 and the customized advertisement 30 to the consumer.” [*Id.*, 19:1-3].

155. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

b. Claim 2: The system according to claim 1, wherein said program of said processor further comprises: at least one graphical user interface (GUI) module.

156. Angles disclosed, or at least rendered obvious claim 1 from which claim 2 depends, thus disclosing or rendering obvious this claim.

157. As was well known in the art, in the browser-based gaming system taught by Angles, each device’s Web Browser module implemented a **graphical user interface** taking user input through keyboard, mouse, or touchscreen and displaying content graphically on the consumer computer’s screen (*See* ¶79).

158. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- c. **Claim 3: The system according to claim 1, wherein said program of said processor further comprises: at least one content logic module directed to accounting, sponsor and users, transactions, and collecting content in real-time and injecting said content into the virtual thematic environment.**

159. Angles disclosed, or at least rendered obvious claim 1 from which claim 3 depends, thus disclosing or rendering obvious this claim.

160. In addition, Angles specifically disclosed logic **directed to accounting** (crediting), **users** (consumers), and **transactions** (purchase goods and services):

“The advertisement provider computer also **credits a consumer account, a content provider account and an internet provider account** each time a consumer views a custom advertisement.” [*Id.*, Abstract, Emphasis added].

“In other embodiments, the advertising module 62 also credits a consumer’s digital cash account each time the consumer views a customized advertisement 30. The consumer can then use the digital cash to **purchase goods and services** offered for sale on the Internet 33.” [*Id.*, 21:25-29 Emphasis added].

161. An advertiser whose ads appear as part of a game or other form of media would be known as a sponsor of said content (*See* ¶73). The purchase of goods and services offered for sale is a **transaction**. Thus, the tracking of

consumer views of custom advertisements teaches the claimed **accounting of sponsor and users and transactions**.

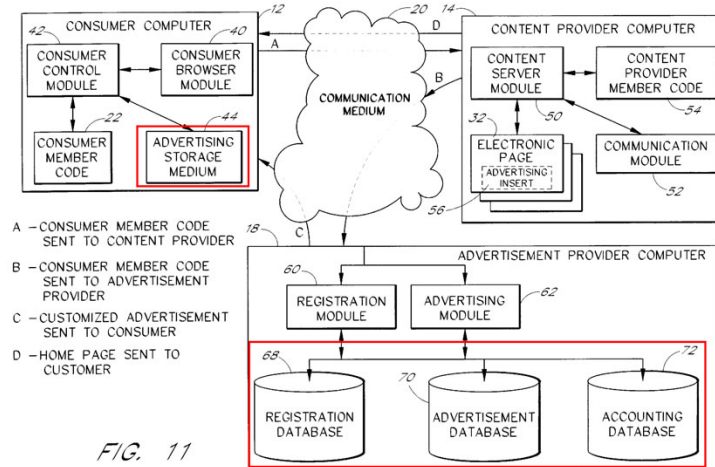
162. Moreover, Angles teaches how to integrate custom advertisements into signs and billboards displayed in online content including on-line games such as interactive car races (*See* ¶97), **collecting content in real-time and injecting said content into the virtual thematic environment** as claimed.

163. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

d. Claim 4: The system according to claim 1, further comprising: at least one data storage.

164. Angles disclosed, or at least rendered obvious claim 1 from which claim 4 depends, thus disclosing or rendering obvious this claim.

165. In addition, Angles specifically disclosed data storage, in both the Consumer Computer and Advertising Provider Computer as seen in Fig. 11.



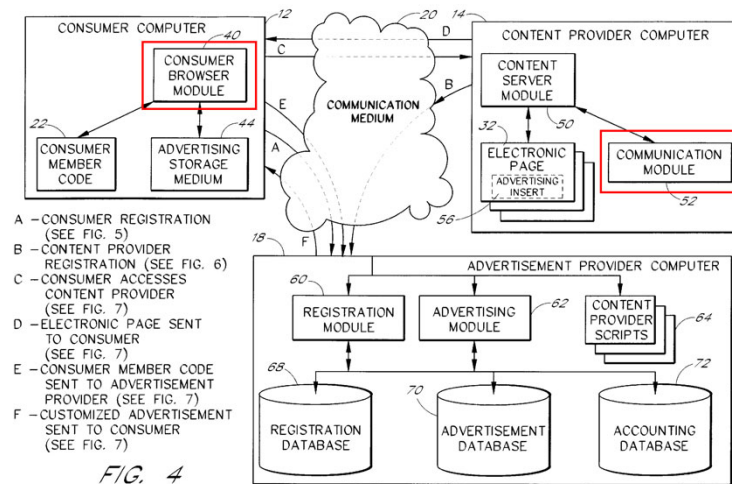
Angles Fig. 11 (annotated)

166. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- e. **Claim 5: The system according to claim 1, wherein said program of said processor further comprises: at least one communication module which provides access to various network services and connection options.**

167. Angles disclosed, or at least rendered obvious claim 1 from which claim 5 depends, thus disclosing or rendering obvious this claim.

168. As for the additional limitation of this claim, Angles disclosed the claimed **at least one communication module**. For example, as shown in Fig. 4 the Consumer Computer contained a Consumer Browser Module 40 while the Content Provider Computer contained a Communication Module 52:



Angles Fig. 4 (annotated)

169. The Consumer Browser Module was configured to communicate over the Communication Medium 20 which allowed a consumer to access different content providers and thus was equipped with a Communication Module:

“In the preferred embodiment, the consumer computer 12 utilizes several operational modules including a consumer browser module 40, a consumer member code 22 and an advertising storage medium 44. The consumer browser module 40 (hereinafter referred to as the consumer browser) is a software program **which allows a consumer to access different content providers through the communication medium 20.**” [*Id.*, 10:43-50 Emphasis added].

“... the consumer browser 40 uses the TCP/IP Internet protocols to establish a communications link with the content server 50 in the content provider computer 14. The content provider computer 14 then

uses the HTTP protocols to transfer an electronic page 32 to the consumer computer 12. [*Id.*, 19:22-27]

170. Communication Module 52 in the Content Provider Computer was configured to interact with other computers in the system, including the Consumer Member Code stored in the Consumer Computer:

“A unique **communications module 52** in the content provider is invoked each time a consumer computer accesses an electronic page 32. [...] Once invoked, **the communications module 52 directs the content server 50 to obtain the consumer's member code 22** when a consumer accesses the content Server 14.” [*Id.*, 22:16-25 Emphasis added].

171. Moreover, as seen in Fig. 4 every computer in the system was interconnected by Communication Medium 20, necessitating a communication module (not necessarily shown) in each. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- f. **Claim 6: The system according to claim 5, wherein said communication module includes network and security features which provide integrity of users and secure interaction between the virtual thematic environment and sponsors.**

172. Angles disclosed, or at least rendered obvious claim 5 from which claim 6 depends, thus disclosing or rendering obvious this claim.

173. In addition, Angles specifically disclosed that communication of, for example Cookie data, between advertisers (sponsors), content providers, and consumers occur over a secure network connection, thus providing **integrity of users and secure interaction between the virtual thematic environment and sponsors** as claimed.

“Set-Cookie: NAME=VALUE; expires=DATE; path=PATH; domain=DOMAIN_NAME; secure
NAME and VALUE are the actual information to include in the cookie. DATE is the time at which the cookie information expires and will be “forgotten” by the browser. DOMAIN is a host or domain name for which the cookie is valid. PATH specifies a subset of the URLs at that server for which the cookie is valid. If “secure” is included in the cookie, then **the cookie will only be transmitted over a secure network connection.**” [*Id.*, 11:16-25 Emphasis added].

174. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

g. Claim 7: The system according to claim 6, wherein said security features include authentication, anti-cheating mechanisms, and financial audit functions.

175. Angles disclosed, or at least rendered obvious claim 6 from which claim 7 depends, thus disclosing or rendering obvious this claim.

176. In addition, Angles specifically disclosed the use of a secure network (*See Claim 6 above*). At 6:64 Angles incorporates by reference the Cookie

specification document located at:

http://www.netscape.com/newsref/std/cookie_spec.html. A 1996 capture of [cookie_spec.html](http://www.netscape.com/newsref/std/cookie_spec.html) contains additional detail, stating:

“If a cookie is marked secure, it will only be transmitted if the communications channel with the host is a secure one. Currently this means that secure cookies will only be sent to HTTPS (HTTP over SSL) servers.”¹³

177. Thus, Angles teaches the use of HTTPS for its communications, including all of the security features incorporated in the HTTPS standard using SSL servers. A specification for SSL can also be found at the same [netscape.com/newsref/std](http://www.netscape.com/newsref/std) url from 1996 noting that a base function of SSL is the claimed **authentication**:

“The SSL Protocol is designed to provide privacy between two communicating applications (a client and a server). Second, the protocol is designed to **authenticate the server, and optionally the**

¹³https://web.archive.org/web/19961027104920/http://www3.netscape.com/newsref/std/cookie_spec.html

client. SSL requires a reliable transport protocol (e.g. TCP) for data transmission and reception.”¹⁴ (Emphasis added)

178. Links found at the same netscape.com/newsref/std url from 1996 provide descriptions of what security was provided at the time by version 3.0 of the Secure Socket Layer (SSL) Protocol, stating:

“SSL VERSION 3.0, DATED MARCH 1996 ... is a security protocol that prevents eavesdropping, tampering, or message forgery over the Internet.”¹⁵

179. Thus, Angles disclosed incorporating security features from the SSL Protocol to provide **anti-cheating mechanisms** as claimed, including the prevention of eavesdropping, tampering, or message forgery.

180. As for the claimed **financial audit functions**, Angles disclosed maintaining a database of audit information for financial purposes, such as the billing of advertising based on ad exposure:

¹⁴https://web.archive.org/web/19961027104907/http://www3.netscape.com/newsref/std/SSL_old.html

¹⁵<https://web.archive.org/web/19961027104859/http://www3.netscape.com/newsref/std/SSL.html>

“Maintaining a record of the advertisement audit information in the accounting database 72 provides a number of advantages. For example, because the accounting database 72 maintains a record of which advertisements have been viewed by consumers, **advertisers can be billed** based on actual delivery of the advertisements to pertinent consumers. Furthermore, advertisers can be billed based on how often a targeted demographic group views the advertisements.” [Ex-1007, 16:8-15 Emphasis added].

181. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

h. Claim 9: The system according to claim 2, wherein said GUI module comprises: a physics engine which controls behavior of objects affected by laws of nature.

182. Angles disclosed, or at least rendered obvious claim 2 from which claim 9 depends, thus disclosing or rendering obvious this claim.

183. In addition, Angles teaches serving advertisements into virtual environments like interactive car races. Virtual car races were well known in the art prior to the effective filing date of the ‘724 patent (*See IX.A.3*). The simulation of real-world physics was a large part of the attraction of car racing games. For example, the description of the “BMW X3 Adventure” game highlighted the use of real-world physics:

“The BMW X3 Adventure offers unparalleled realism for an on-line promotional game, such that the precise physics of the car -- including the weight of the car, the length of its axles, its center of gravity, etc. - were taken into account so that players feel they are really handling an X3 in an outdoor environment.”¹⁶

184. Thus, it would have been obvious to a POSITA in view of Angles’ disclosure of an interactive, virtual car racing game that the claimed **physics engine** would necessarily be a part of the simulation. This claim is rendered obvious in view of the knowledge of a POSITA.

- i. **Claim 10: The system according to claim 2, wherein said GUI module comprises: an Artificial Intelligence (AI) engine which controls behavior of objects and the virtual thematic environment.**

185. Angles disclosed, or at least rendered obvious claim 2 from which claim 10 depends, thus disclosing or rendering obvious this claim.

186. As with the reliance on real-world physics in car racing games as described for claim 9, many of the same games were well known prior to the effective filing date of the ‘724 patent featured AI-controlled opponents in the game (*See* ¶80).

¹⁶ <https://www.ign.com/articles/2003/12/01/bmw-x3-online-game-playable-now>

187. Thus, it would have been obvious to a POSITA in view of Angles’ disclosure of an interactive, virtual car racing game that the claimed **Artificial Intelligence (AI) engine which controls behavior of objects** would necessarily be a part of the simulation to control non-player-operated race cars. This claim is rendered obvious in view of the knowledge of a POSITA.

j. Claim 11: The system according to claim 2, wherein said GUI module comprises: a mini-applications library.

188. Angles disclosed, or at least rendered obvious claim 2 from which claim 11 depends, thus disclosing or rendering obvious this claim.

189. The ‘724 specification does not define the term a mini-application, other than that it operates within the virtual thematic environment and by providing an examples such as word processing, mutual fund calculators, spreadsheets, static purchasing (i.e., static e-commerce applications, and any other type of application that can be scaled or as a demo), e-mail, and the like (*See* ¶57). A POSITA would likely have assumed that a mini-application was a small application or small program. A common term in use at the time of the effective filing date of the ‘724 patent was “applet,” defined as a “small program that runs within an application.”¹⁷ It is reasonable to assume that a POSITA would have considered an applet to be a

¹⁷ <https://www.gartner.com/en/information-technology/glossary/applet>

mini-application. Angles discloses the use of applets within the content displayed by the Consumer Computer:

“In other embodiments, the consumer control module 42 in the consumer computer 12 is adapted to receive a Java plug-in from the content provider computer 14 which creates a separate window which can display customized advertisements 30 on the consumer computer 12. The Java programming language is a robust, secure, architecture-neutral, portable, general-purpose programming language developed by Sun Microsystems. Java supports programming for the Internet 33 in the form of independent Java “applets”. Additional information about the Java programming language can be obtained at <http://www.sun.com>.” [Ex-1007, 16:8-15].

190. Not only would a POSITA have been motivated to combine and collectively consider the teachings of Angles with well-known and disclosed applet technology, he would have had a reasonable expectation of success when doing so.

191. Thus, this claim would either have been rendered obvious based on the use of well-known and disclosed applet technology, or it would have been disclosed in view of the teachings of Angles.

- k. **Claim 12: The system according to claim 2, wherein said GUI module comprises: a thematic application/publication/game content component which provides a storage facility for all thematic content required in the virtual thematic environment.**

192. Angles disclosed, or at least rendered obvious claim 2 from which claim 12 depends, thus disclosing or rendering obvious this claim.

193. As noted for claim 1[d], a POSITA would have considered it obvious that in order to publish a virtual reality gaming environment the consumer computer 12 must necessarily contain a storage facility to store the content required by said virtual reality gaming environment (*See* ¶150). As disclosed by Angles, the customized advertisement may be stored on the consumer computer that is retrieved by the consumer control module of the consumer computer when directed to do so. Said storage facility would provide storage **for all thematic content required in the virtual thematic environment** as claimed.

194. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- l. **Claim 13: The system according to claim 2, wherein said GUI module comprises: a networking interface which provides access to various network services required to support a server environment.**

195. Angles disclosed, or at least rendered obvious claim 2 from which claim 13 depends, thus disclosing or rendering obvious this claim.

196. In addition, the Web Browser GUI disclosed by Angles provides a **networking interface which provides access to various network services required to support a server environment** as claimed. For example, the Web Browser accesses such network services as HTML pages as well as following hyperlinks:

“When a web browser accesses a HTML document, the web browser reads the embedded tags in the document so it appears formatted in the specified manner. [Ex-1007, 1:67 - 2:3].

“A HTML document can also include hyper-links which allow a user to move from one document to another document on the Internet. A hyper-link is an underlined or otherwise emphasized portion of text which, when selected using an input device such as a mouse, activates a software connection module which allows the user to jump between documents (i.e., within the same website or to other websites)” [*Id.*, 2:4-11].

197. Angles disclosed using the Web Browser to perform such network services as registration with an advertiser:

“In particular, during state 502, the consumer inputs the URL of the advertising provider computer 18 into his consumer browser 40. The consumer browser 40 then establishes a link with the registration module 60.

Upon establishing a link with the registration module 60, the registration module 60 displays a HTML document which invites the consumer to input demographic information. Proceeding to state 504, the consumer enters information which includes, but is not limited to, age, sex, income, career, interests, hobbies, consumer preferences, the account number of the consumer’s Internet provider 34, other account information, etc.” [*Id.*, 16:65 - 17:10].

198. Moreover, Angles disclosed accessing many other network services, including:

“For example, the communication medium 20 can include interactive television networks, telephone networks, wireless data transmission systems, two-way cable systems, customized computer networks, interactive kiosk networks, automatic teller machine networks, and the like.” [*Id.*, 9:29-34].

199. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- m. **Claim 14: The system according to claim 2, wherein said GUI module comprises: a thematic application/publishing/game logic and scripting component which takes data from a rule set and from external sources and modifies the virtual thematic environment.**

200. Angles disclosed, or at least rendered obvious claim 2 from which claim 14 depends, thus disclosing or rendering obvious this claim.

201. Regarding the additional limitations of this claim, the POSITA in this case has at least a general knowledge of 3D rendering and virtual reality, such as the virtual car racing game disclosed by Angles. He or she would have understood how a virtual environment is defined in the memory of a computer in order to be rendered to a game client. Any POSITA with a rudimentary understanding of a virtual environment would understand that objects in a virtual world are defined with shape, position, orientation, and other visual and ‘physical’ attributes. The definition of an object in the virtual environment would be the claimed **rule set**.

202. A simple example from a racing game would be a billboard positioned alongside the road. Said billboard has a defined shape, position, and orientation. It may or may not have a default image on its face, but in either case Angles teaches combining a customized advertisement with the virtual content. In the case of said billboard, that would entail combining the defined and positioned billboard with an advertisement overlayed on the face of the billboard (at the proper position and orientation).

203. In this example, the racing game is the claimed **thematic application / publishing / game logic and scripting component**, processing the game logic and controlling the game as scripted by the programmer. A POSITA would understand that the shape and orientation of the billboard in the virtual environment are defined in the source code and are governed by a **rule set**. A

POSITA would understand that the claimed **data from an external source** would be the image data retrieved from the advertiser computer overlaid (combined) onto the face of the billboard.

204. A POSITA would understand the net result of said combination would result in **modifying the virtual thematic environment** by combining **data from a rule set** with **data from external sources** as claimed.

205. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- n. **Claim 16: The system according to claim 3, wherein said content logic module comprises: an accounting, billing, and customer support module which provides for information modification and customer support, including billing.**

206. Angles disclosed, or at least rendered obvious claim 3 from which claim 16 depends, thus disclosing or rendering obvious this claim.

207. In addition, Angles disclosed the ability to register with an advertiser, including providing demographic information. Each customer is identified by a consumer member code which is used for **accounting** (monitoring views) and **billing**:

“... the advertisement provider assigns the consumer a unique member code.” [*Id.*, 3:23-24].

“The advertisement provider uses the consumer member code to identify the consumer’s demographic profile and preferences. The advertisement provider then selects an appropriate advertisement based on the consumer’s profile and sends the customized advertisement to the consumer computer.” [*Id.*, 3:56-61].

“Another feature of the invention is directed to **monitoring the particular advertisements which are viewed by particular consumers**. With this information, advertisers can pay for advertising directed at specific demographic target groups. Additionally, **advertisers may be billed** by the advertisement provider based on actual delivery of the advertisements to pertinent consumers.” [*Id.*, 3:66 - 4:5 Emphasis added].

208. The aforementioned “monitoring the particular advertisements which are viewed by particular consumers” disclosed modifying the count of each view of an advertisement by an identified customer, disclosing the claimed **information modification**.

209. Moreover, Angles teaches the claimed **information modification and customer support** by enabling a consumer to enter personal demographic information, supporting a customer’s desire to receive targeted advertisements:

“A consumer who wishes to receive customized advertisements first registers with the advertisement provider by entering pertinent demographic information into the advertisement provider’s demographic database.” [*Id.*, 3:18-21].

210. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- o. Claim 18: The system according to claim 3, wherein said content logic module comprises: a reporting tools module which provides internal and external reporting tools.**

211. Angles disclosed, or at least rendered obvious claim 3 from which claim 18 depends, thus disclosing or rendering obvious this claim.

212. As for the additional limitation of this claim, Angles disclosed the use of relational databases, such as Registration Database 68, Advertising Database 70, and Accounting Database 72 (*See* Fig. 4, ¶98). Said databases were disclosed as standard relational databases implemented with SQL:

“Preferably, the registration database 68 is **implemented with Structured Query Language (SQL) code**. The structured query language is a language **standardized** by the International Standards Organization (ISO) for **defining, updating and querying relational databases**. For example, the registration database can be implemented with any number of commercial database programs including Microsoft(R) Access, Oracle's relational database products and the like.” [*Id.*, 14:51-58 Emphasis added].

213. As disclosed, SQL was a standardized language that included the claimed **reporting tools** in the form of “queries,” and would have been well known by a POSITA prior to the effective filing date of the ‘724 patent. A “query”

in the SQL language was configured to generate reports from the contents of a database. For example, one reporting statement implemented by SQL was the “SELECT” command, which isolated selected data stored in the database, returning a report of the selected data as a “result-set.” As an example, if the Registration Database contained a “Users” table with “firstname” and “lastname” fields, the following SQL query would have reported a list of the first and last name of every registered user:

```
SELECT firstname, lastname FROM Users
```

214. While this is but a simple example, the disclosed SQL databases included the claimed **reporting tools**.

215. In addition, Angles disclosed monitoring consumer activity, including monitoring the number of views of a particular advertisement by a particular consumer; and monitoring the number of views of particular advertisements by customers of particular internet service providers:

“An additional feature of the invention allows the advertisement provider to monitor the number of advertisements viewed by consumers associated with a particular content provider. With this information, the content providers can receive advertising revenue based on the number of consumers who access their websites.” [*Id.*, 4:17-22].

“Another aspect of the invention relates to the addition of a fourth category of entities - the Internet providers. [...] The system of the present invention can then monitor the number of advertisements viewed by consumers associated with a particular Internet provider. Accordingly, the system of the present invention can pay an Internet provider based on the number of advertisements viewed by its consumers.” [*Id.*, 4:27-45].

216. In each disclosure above a number of views is converted to a commensurate payment to a third party. While not explicitly disclosed in Angles, it would be obvious that there would likely be a reporting component either internally within the advertisement provider, or between the advertisement provider and the content or Internet provider associated with the payment of advertising revenues because having a database that can be queried (e.g., SQL database) and without a reporting component the result of the query cannot be rendered. Therefore, a reporting component is necessarily present.

p. Claim 20: The system according to claim 4, wherein said data storage comprises: a real-time thematic environment database which maintains a state of each user and the virtual thematic environment.

217. Angles disclosed, or at least rendered obvious claim 4 from which claim 20 depends, thus disclosing or rendering obvious this claim.

218. Angles discloses that “[t]he system of the present invention overcomes the difficulties discussed above by providing an on-line advertising

service which can custom tailor specific advertisements to particular consumers and **track** consumer responses to the advertisement”. [*Id.*, 2:45-49]. Angles further discloses that “[t]he advertisement provider uses the content provider member code to **track** the number of advertisements displayed by a particular content provider”. [*Id.*, 3:51-53]. Thus, Angles maintains a state of a user, e.g., user responses, and also a state of the virtual thematic environment, e.g., tracking the number of advertisements displayed. Moreover, Angles discloses a process of a consumer requesting an electronic document with a number of processing **states** [*id.*, 8:33-35 and 19:12 to 21:32], a consumer/content provider registrations with multiple **states** [*id.*, 16:56 to 18:34]. Additionally, the POSITA in this case has at least a general knowledge of 3D rendering and virtual reality, such as the virtual car racing game disclosed by Angles. He or she would have understood how a virtual environment is defined in the memory of a computer in order to be rendered to a game client. Any POSITA with a rudimentary understanding of a virtual environment would understand that the state of dynamic objects in the world (the player’s car, AI opponents, damaged terrain, etc.), contain the same properties as static objects (i.e., shape, position, orientation, and other visual and ‘physical’ attributes), but due to the dynamic nature of such objects those parameters change in real time as objects move and the virtual environment evolves. It was well

known in the art prior to the effective filing date of the ‘724 patent that said changes are stored under the control of the rendering system.

219. Thus, the claimed **real-time thematic environment database which maintains a state of each user and the virtual thematic environment** is rendered obvious in view of the knowledge of a POSITA.

q. **Claim 21: The system according to claim 1, further comprising a product placement interface within said virtual thematic environment, which seamlessly connects to a product sponsor external to said virtual thematic environment, at which a product is sold.**

220. Angles disclosed, or at least rendered obvious claim 1 from which claim 21 depends, thus disclosing or rendering obvious this claim.

221. In addition, the clickable, customized billboard incorporated into the virtual environment taught by Angles represents the claimed **product placement interface within said virtual thematic environment**. Angles teaches that based on a consumer’s demographic information, an advertisement for farm products might be incorporated into a billboard:

“For example, when accessing a content provider’s website, a consumer with a demographic profile indicating an interest in farming would be sent customized advertisements for farm products by the advertisement provider. Customer requests for more information about the advertised farm products are also monitored.” [*Id.*, 3:11-17].

222. Farm products represented on an advertisement in the virtual environment represent a **product placement**, and the ability to accept and monitor requests for more information teach a **product placement interface**.

223. Angles further teaches the claimed **seamlessly** (with a simple mouse click) **connect[ing] to a product sponsor external to said virtual thematic environment, at which a product is sold:**

“For example, if a consumer wishes to obtain additional information about an advertised product or service, the consumer may simply use a mouse to select an embedded hyper-link in the custom advertisement and be immediately transported to an advertiser’s website. At the advertiser’s website, the user may receive a directed sales pitch, more information or a purchase order request form.” [*Id.*, 4:9-16].

“In other embodiments, the advertising module 62 also credits a consumer’s digital cash account each time the consumer views a customized advertisement 30. The consumer can then use the digital cash to **purchase goods and services offered for sale on the Internet 33.**” [*Id.*, 21:25-29 Emphasis added].

224. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- r. **Claim 22: The system according to claim 1, further comprising: a timing mechanism which requires that a task performed on the worldwide web or internet must be performed within a certain period of time or on a competitive level with one or more opponents at a sponsored internet site.**

225. Angles disclosed, or at least rendered obvious claim 1 from which claim 22 depends, thus disclosing or rendering obvious this claim.

226. In addition, the “interactive car race” disclosed by Angles (*See* ¶97) is, by definition, a competition played **on a competitive level with one or more opponents** as claimed. Moreover, the Cookie used to identify a “consumer member code” (*See* ¶103) contains the claimed **period of time** during which it is active:

“Set-Cookie: NAME=VALUE; expires=DATE; path=PATH;
domain=DOMAIN_NAME; secure
NAME and VALUE are the actual information to include in the
cookie. **DATE is the time at which the cookie information expires
and will be “forgotten” by the browser.** DOMAIN is a host or
domain name for which the cookie is valid. PATH specifies a subset
of the URLs at that server for which the cookie is valid.” [*Id.*, 11:16-
23 Emphasis added].

227. The consumer member code embedded in the Cookie is used to identify the consumer and look up his or her demographic information (*See* ¶104

and ¶207). Such a look up task **must be performed within a certain period of time** before the Cookie is “forgotten by the browser.”

228. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- s. **Claim 23: The system according to claim 21, further comprising: a purchase mechanism which allows real-world credit or virtual credit to be used for payments of said product at said internet website of said product sponsor.**

229. Angles disclosed, or at least rendered obvious claim 21 from which claim 23 depends, thus disclosing or rendering obvious this claim.

230. As discussed for claim 21, Angles taught obtaining a purchase order for the purchase of goods with the claimed **real-world credit**, or accumulating a “digital cash credit” to **purchase goods and services offered for sale on the Internet** (*See* ¶223).

231. Thus, Angles disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

D. Ground 2: Claims 1-7, 9-14, 16, 18, and 20-23 Are Obvious Over U.S. Patent No. 7,168,051 to Robinson et al. (“Robinson”) in View of the Knowledge of a POSITA

232. In my opinion, a POSITA would have considered Robinson to be prior art and highly relevant to the patentability of the ‘724 patent’s claims. Both

patents are directed to interactive environments which include information served from external sources. The ‘724 patent discloses “integrating information, including real-time information, into a virtual thematic environment using a computer system” [Ex-1001, Abstract]. Said virtual thematic environment might be a game [Ex-1001, 2:18-19]. The ‘724 patent further identifies that said integrated information can include “product placement information from a sponsor” [*Id.*, 1:63-64]. The ‘724 patent claims “connect[ing] to a product sponsor external to said virtual thematic environment, at which a product is sold” [*See Id.*, Claim 21].

233. Robinson relates to e-commerce and configurable websites, including the application of same to “network-enabled three-dimensional computing environments” (*See* Ex-1008, ‘Field of Invention’). Robinson also teaches a user interface configured to display advertisements (*Id.*, 8-11) that can be integrated into “online communities which exist today, virtual concerts, online games, etc.” (*Id.*, 9:29-37). As noted in section IX.A.1 above, advertisements delivered into interactive systems would have been understood by a POSITA to include “product placement information from a sponsor” as described in the ‘724 patent. Robinson teaches integrating advertising and product placement content into an electronic game, as well as teaching connecting and navigating to an advertiser’s website mirroring fundamental elements of the alleged invention of the ‘724 patent.

234. A POSITA would have been motivated to combine and collectively consider the teachings of Robinson with his knowledge of the state of the art of advertising in video games (*See* Section IX.A: Background Information) to arrive at the subject matter claimed by the ‘724 patent.

235. Additionally, the exemplary systems disclosed in both Robinson and the ‘724 patent serve interactive content in a substantially similar manner, transmitting said content from a server computer over a network such as the Internet to a client computer. Not only would a POSITA have been motivated to combine and collectively consider the teachings of Robinson with well-known industry knowledge to arrive at the subject matter claimed by the ‘724 patent, he would have had a reasonable expectation of success when doing so.

236. In my opinion, when viewed and considered in light of the knowledge possessed by a POSITA, Robinson and said knowledge together disclose all the limitations of and render claims 1-7, 9-14, 16, 18, and 20-23 of the ‘724 patent obvious.

1. Claim-By-Claim Analysis

a. Claim 1

- (i) **1[preamble]: A computer system having an interactive software application platform for providing a virtual thematic environment, comprising:**

237. Should the preamble be deemed to be limiting, Robinson teaches this limitation, placing a **virtual thematic environment** on a user’s **computer system** such that the user interacts with the virtual thematic environment space:

“This technology enables each user to create an intuitive **3D desktop environment** tailored to their specific needs. When turned on, the user's computer screen displays a 3D room or scene, which can be customized with virtual objects. **The user can “enter” the space,** rather than merely “view it”, operate intuitively within it (360° in every direction), and **invite others to enter, participate and interact in that space.**” [Ex- 1008, 1:57-64 Emphasis added]

238. Robinson’s 3D desktop environment is consistent with the Court’s construction of a “virtual thematic environment” as “a theme-based virtual computer interface.”

239. Robinson teaches a plurality of **virtual thematic environments**, including varied spaces such as rooms, cityscapes, or landscapes:

“The 3D Desktop of the present invention can replace the boring, one or two-dimensional computer desktop with a web enabled,

customizable, media rich environment. This environment can take the appearance of a room, a neighborhood, city or landscape.” [*Id.*, 5:57-61]

240. Said claimed **virtual thematic environments** populated with real-time avatars can take the form of an online game (*See* ¶116).

241. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element. And for the purposes of this claim-by-claim analysis I consider the Robinson phrase “3D desktop” and the ‘724 phrase “virtual thematic environment” to be synonymous.

(ii) **1[a]: a processor which executes a program having a plurality of modules, said plurality of modules including:**

242. Robinson teaches this limitation, disclosing a “persistent 3D kernel” **program having a plurality of modules:**

“Thus, the user 410 requested or purchased software with the appended 3D environment persistent kernel 465 is downloaded to client machine 460 as shown in FIG. 4 by arrows 431 and 442. When user 410 installs the downloaded software on client machine 460, the persistent 3D kernel is automatically installed on the user's desktop environment at client machine 460.” [*Id.*, 10:23-29]

243. Said “client machine” was disclosed to be a conventional computing device including a “processor 220” (*See* ¶109) which would be understood by a POSITA to **execute a program having a plurality of modules** as claimed.

244. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

- (iii) **1[b]: at least one thematic/publishing logic module which contains virtual thematic environment rules configured for a gaming environment, the at least one thematic/publishing logic module being configured to allow a user to interact within said virtual thematic environment and upon a predetermined action within said virtual thematic environment, automatically exit the virtual thematic environment, and one of copy or grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment;**

245. Robinson teaches this limitation, disclosing a “network-enabled 3D computing environment” **which contains virtual thematic environment rules configured for a gaming environment which is configured to allow a user to interact within said virtual thematic environment:**

“The network-enabled 3D computing environment of the present invention has several extensions, including: the introduction of **real-time avatars**. Avatars are virtual representations of users, allowing them to **interact with other users** across a network. The ability to create an interactive online community is very powerful. Such a utility

would allow for intra- and inter-company meetings, the extension of the online communities which exist today, **virtual concerts, online games, etc.**” [*Id.*, 9:29-37 Emphasis added]

246. It was well known in the art that interactions between avatars in a virtual environment were subject to environmental rules, including rules that govern gravity, terrain-following, and collisions with other avatars, walls, and such.

247. Further, Robinson teaches the claimed **automatically exit the virtual thematic environment** by clicking away from the 3D computing environment to an advertiser’s website:

“The present invention includes functionality to place 2D or “3D/spatial” advertisements, promotions, or messages in the Persistent Client Window 912 that, **when clicked on by a user/viewer**, will activate full or partial-screen interactive 3D virtual reality environment advertisements that can also be equipped with e-commerce capabilities, such as links to product/service ordering websites. [...] Subsequently, **a user/viewer can view the advertisement** in region 916 and select a portion of the advertisement or a related **link by clicking on a portion of region 916 using a conventional mouse**. Upon selection of the region 916, an expanded view of the advertisement is presented. Upon activation of a related link provided within region 916, **the user is taken to a related**

website where an e-commerce transaction corresponding to the advertisement may be initiated.” [*Id.*, 15:5-25 Emphasis added]

248. When a user follows a link to an advertiser’s website, whether said website contains 2D or “3D/spatial” advertisements, the user exits one virtual thematic environment to enter another. It is the antecedent “**the** virtual thematic environment” that is exited.

249. The 3D desktop taught by Robinson is configurable using a drag-and-drop interface, whereby a user can **copy or grab data or objects from a website external to the virtual thematic environment, to be utilized in the virtual thematic environment** (i.e., his or her 3D desktop).

“The present invention provides this virtual reality (VR) environment for a client, who can use the “drag and drop”, easy-to-configure nature of the environment provided by the present invention to allow users on their **website** to **customize a spatial environment with a new line of products** they had **created for the environment.**” [*Id.*, 15:25-31 Emphasis added]

250. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

- (iv) **1[c]: wherein said data or said objects are automatically integrated into the virtual thematic environment during execution of the virtual thematic environment;**

251. Robinson teaches this limitation. A new product obtained from a website discussed for claim 1[b], (i.e., the claimed **said data or said objects**), is **integrated into the user’s 3D desktop** via the drag-and-drop interface. As with any drag-and-drop interface, upon the “drop” of an object it is re-integrated into its environment in a new location, an activity that takes place automatically upon the “drop” (i.e., release of the mouse button, for example) without human initiation or intervention, and is therefore automatic. Moreover, as the drag-and-drop functionality is a part of the user’s 3D desktop, said **automatic integration** occurs **during execution of the virtual thematic environment**.

252. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

- (v) **1[d]: at least one digital content library module which provides content management on the virtual thematic environment; and**

253. As an initial matter, a POSITA would have considered it obvious that in order to publish a virtual reality gaming environment as required by claim 1[b], the content provider computer must necessarily store and manage the content required by said virtual reality gaming environment. In other words, for a server to serve data, that data must be stored on the server.

254. Robinson teaches this limitation, providing for **content management** on the configurable 3D desktop. As an initial example, the 3D desktop manages positions of content resulting from a drag-and-drop interface (*See* claim 1[c]). Also, the 3D desktop program must necessarily manage content such as the new products grabbed from a website to customize the 3D desktop (*See* claim 1[b]).

255. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(vi) **1[e]: at least one quantum imaging environment (QIE) module which interprets content such that said content is manipulated and accessed by any device; and**

256. Robinson teaches this limitation. While most of Robinson’s disclosures center around a traditional desktop computer embodiment, Robinson teaches that the invention can be implemented on a plurality of devices such that each of which would necessarily interpret the 3D environment in a way as to make it operated specifically for said device.

“Additionally, the user receives an invitation from the present invention to download the three dimensional environment and the Persistent Client of the present invention to their **user desktop, personal digital assistant (PDA), cell phone, or other information appliance or display device.** (Block 720).” [*Id.*, 12:13-18 Emphasis added]

257. For the 3D desktop to be compatible with such a plurality of devices, each would necessarily interpret the 3D environment in a way as to make it operable specifically for said device (*See* Section IX.A.4).

258. In doing so, the Web Browser module taught by Robinson performs the function described by the quantum imaging module, **interpret[ing] content such that said content is manipulated and accessed by any device** as claimed.

259. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim element.

(vii) 1[f]: a display which displays the virtual thematic environment as images.

260. Robinson teaches this limitation as seen in Fig. 9, disclosing a **display** which as claimed **displays the virtual thematic environment as images**:

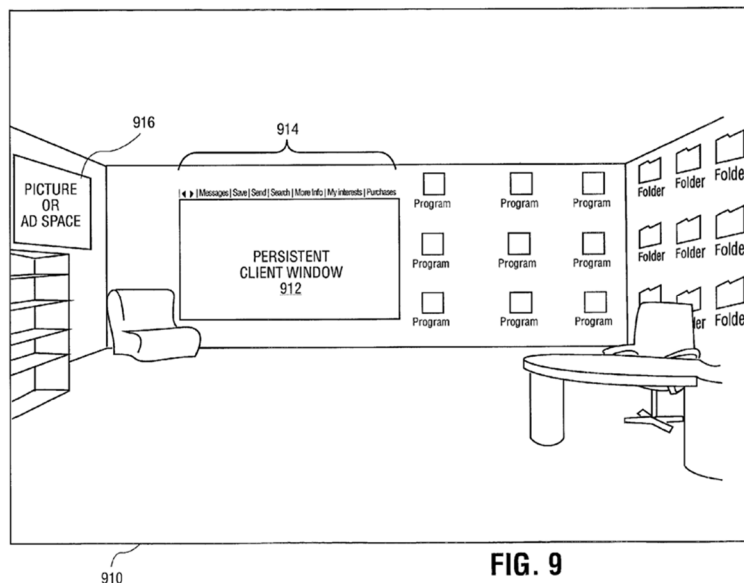


FIG. 9

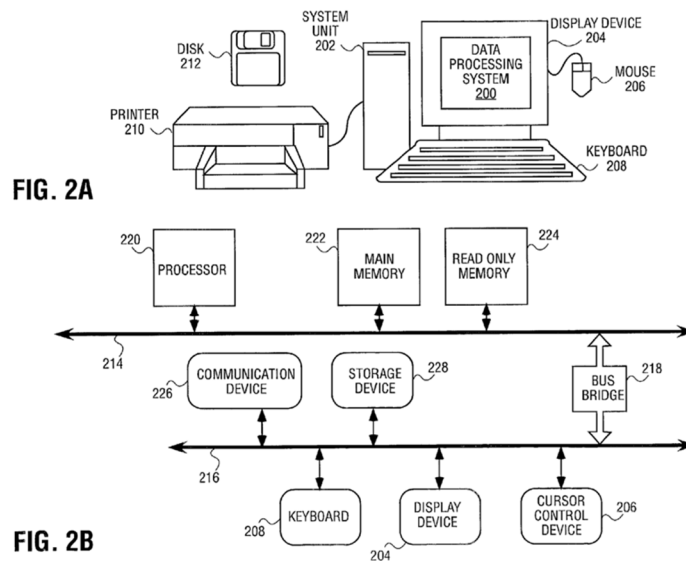
Ex-1008 Fig. 9

261. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA every element of Claim 1 of the ‘724 patent.

b. Claim 2: The system according to claim 1, wherein said program of said processor further comprises: at least one graphical user interface (GUI) module.

262. Robinson disclosed, or at least rendered obvious claim 1 from which claim 2 depends, thus disclosing or rendering obvious this claim.

263. In addition, Robinson disclosed the claimed limitation of **at least one graphical user interface (GUI)**, said GUI comprised of a user interface (inputs and outputs) and graphical output:



Ex-1008 Fig. 2

“As illustrated, data processing or computer system 200 is comprised of a system unit 202, **output devices such as display device 204** and

printer 210, and **input devices such as keyboard 208, and mouse 206.**” [*Id.*, 3:48-51 Emphasis added]

264. The input devices and display device disclosed by Robinson is consistent with the Court’s construction of “GUI” which is “software that provides a graphical display and processes user inputs to allow a user to interact with the graphical display.”

265. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

c. **Claim 3: The system according to claim 1, wherein said program of said processor further comprises: at least one content logic module directed to accounting, sponsor and users, transactions, and collecting content in real-time and injecting said content into the virtual thematic environment.**

266. Robinson disclosed, or at least rendered obvious claim 1 from which claim 3 depends, thus disclosing or rendering obvious this claim.

267. In addition, Robinson disclosed using the 3D desktop for e-commerce, allowing a sponsor to engage with a consumer directly on his or her desktop, teaching the claimed purchase **transactions**, interaction with a furniture company **sponsor**, and collecting **user** information:

“The furniture company makes their entire furniture line available to drag and drop into the scene so that prospective purchasers can see how the furniture works in their own home. [...] When the user has

added furniture into the room to their satisfaction, they could then purchase the selected furniture. This makes the room similar to an e-commerce shopping cart. User interactions within the room can also be tracked including how long they visited the space, what they looked at and for how long. This data can then be used for profiling user preferences and in focused marketing.” [*Id.*, 6:26-42]

268. Moreover, Robinson disclosed the **collecting** of sponsored **content in real-time** as claimed, at least each time the 3D desktop is connected to the Internet:

“When the user logs onto an intranet or internet system, the present invention will go to a server that contains advertisements or messages that can be dow[n]loaded and buffered onto the user's computer. The computer will periodically display a different advertisement or message within the Persistent Client Window per a predefined cycling period for rotating the advertisements or messages that are being displayed.” [*Id.*, 12:59-66]

269. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

d. Claim 4: The system according to claim 1, further comprising: at least one data storage.

270. Robinson disclosed, or at least rendered obvious claim 1 from which claim 4 depends, thus disclosing or rendering obvious this claim.

271. In addition, Robinson disclosed the claimed **at least one data storage**, seen in Fig. 2 as storage devices 224 and 228 and described as:

“Computer system 200 also comprises a read only memory (ROM) and/or other static storage device 224 coupled to local bus 214 for storing static information and instructions for processor 220.” [*Id.*, 4:6-9]

272. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- e. **Claim 5: The system according to claim 1, wherein said program of said processor further comprises: at least one communication module which provides access to various network services and connection options.**

273. Robinson disclosed, or at least rendered obvious claim 1 from which claim 5 depends, thus disclosing or rendering obvious this claim.

274. In addition, Robinson disclosed the claimed **at least one communication module**, also shown in Fig. 2 as “Communication Device 226” which **provides access to various network services** (such as connecting to servers) **and connection options** (including Ethernet, Token-ring, or other types of networks):

“A **communication device 226** is also coupled to bus 216 for accessing remote computers or servers, such as web server 100, or other servers via the Internet, for example. The communication device

226 may include a modem, a network interface card, or other well-known interface devices, such as those used for interfacing with **Ethernet, Token-ring, or other types of networks**. In any event, in this manner, the computer system 200 may be **coupled to a number of servers** 100 via a network infrastructure such that illustrated in FIG. 1 and described above.” [*Id.*, 4:44-53 Emphasis added]

275. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- f. **Claim 6: The system according to claim 5, wherein said communication module includes network and security features which provide integrity of users and secure interaction between the virtual thematic environment and sponsors.**

276. Robinson disclosed, or at least rendered obvious claim 5 from which claim 6 depends, thus disclosing or rendering obvious this claim.

277. As for the additional limitation of this claim, Robinson disclosed the use of a firewall server and other network security means including group access restriction (including “others outside the company like sponsors), disclosing the claimed **network and security features which provide integrity of users and secure interaction between the virtual thematic environment and sponsors:**

“Each network 110 and 116 may be private, for use by members of a particular company or organization, in which case the network is described as an intranet, or public, as for example, a portion of the Internet. Complete isolation from other networks or users is not

required for a network to be considered an intranet. For example, users within an intranet may be given access to the public Internet **through firewall servers that have the ability to screen incoming and outgoing messages so that network security is maintained.** Similarly, **a portion of an intranet may be made accessible to customers, partners, suppliers or others outside of a company or organization** with the resulting network being described as an extranet.” [*Id.*, 3:2-14 Emphasis added]

278. Moreover, the use of encryption and SSL were well known in the art prior to the effective filing date of the ‘724 patent and would have been an obvious improvement where security was desired.

279. Not only would a POSITA have been motivated to combine and collectively consider the teachings of Robinson with well-known and disclosed security technology, he would have had a reasonable expectation of success when doing so.

280. Thus, this claim would either have been rendered obvious based on well-known security technology, or it would have been disclosed in view of the teachings of Robinson.

g. Claim 7: The system according to claim 6, wherein said security features include authentication, anti-cheating mechanisms, and financial audit functions.

281. Robinson disclosed, or at least rendered obvious claim 6 from which claim 7 depends, thus disclosing or rendering obvious this claim.

282. The security solutions described for claim 6 apply to claim 7. *See* ¶¶277-279.

283. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

h. Claim 9: The system according to claim 2, wherein said GUI module comprises: a physics engine which controls behavior of objects affected by laws of nature.

284. Robinson disclosed, or at least rendered obvious claim 2 from which claim 9 depends, thus disclosing or rendering obvious this claim.

285. In addition, Robinson disclosed extensions of the 3D desktop invention including 3D avatars, virtual concerts, online games, etc. (*See* ¶245). Robinson also included by reference examples of the use of avatars in video games, including such “conventional technology” as used in Quake and Diablo:

“Companies such as id Software (the makers of Quake), Blizzard North (the makers of Diablo), and others have explored limited avatar use with startling results. The Diablo server had, at one point, over 320,000 simultaneous connections. The present invention can be used with this **conventional technology** to create a population of network enabled 3D computing systems, with people interacting in virtual cafes, offices, showrooms, etc.” [*Id.*, 9:40-47 Emphasis added]

286. It was well known in the art of said conventional technology that interactions between avatars in a virtual environment were subject to

environmental rules, including rules that govern gravity, terrain-following, and collisions with other avatars, walls, and such.

287. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- i. **Claim 10: The system according to claim 2, wherein said GUI module comprises: an Artificial Intelligence (AI) engine which controls behavior of objects and the virtual thematic environment.**

288. Robinson disclosed, or at least rendered obvious claim 2 from which claim 10 depends, thus disclosing or rendering obvious this claim.

289. In addition, Robinson disclosed a number of 3D characters generated in support of advertising scenarios. These generated characters, commonly referred to as non-player characters (NPCs) include:

“When invited, a 3D environment character visits the users room to offer advise on assembly of the new furniture...” [*Id.*, 6:29-31]

“... recognizable characters (i.e. corporate mascots) ...” [*Id.*, 17:15]

“Golden State has signed on with the provider of the present invention, sends out a 3D representation (e.g. avatar) of the Warriors mascot to greet the user...” [*Id.*, 17:29-33]

“[An online computer purchase processor responds] by sending an avatar by to greet the user and inform them of the large line of peripherals available from Company A...” [*Id.*, 17:40-44]

“A user that frequently downloads hip hop music is exploring the automatically generated landscape via their Persistent Client-enabled 3D desktop. They soon cross paths with an avatar styled out in baggy jeans, ball cap, tennis shoes and headphones. The avatar approaches the user and offers him the opportunity to check out the new track he's listening to on his portable mp3 player.” [*Id.*, 17:53-59]

290. It was well known in the art that NPCs were controlled by an AI that governed their behavior. It would have been obvious to a POSITA that such a pre-programmed AI controlled each NPC’s interaction with human-controlled avatars in the virtual space, disclosing the claimed **Artificial Intelligence (AI) engine which controls behavior of objects and the virtual thematic environment.**

291. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

j. Claim 11: The system according to claim 2, wherein said GUI module comprises: a mini-applications library.

292. Robinson disclosed, or at least rendered obvious claim 2 from which claim 11 depends, thus disclosing or rendering obvious this claim.

293. The ‘724 specification is not clear on what makes an application a mini-application, other than it operates within the virtual thematic environment and includes email as an example (*See* ¶57). It follows that a library of applications that operate within the virtual thematic environment would disclose the claimed **mini-applications library**.

294. As an initial matter, Robinson disclosed the ability of customizing the 3D desktop with programs that include email:

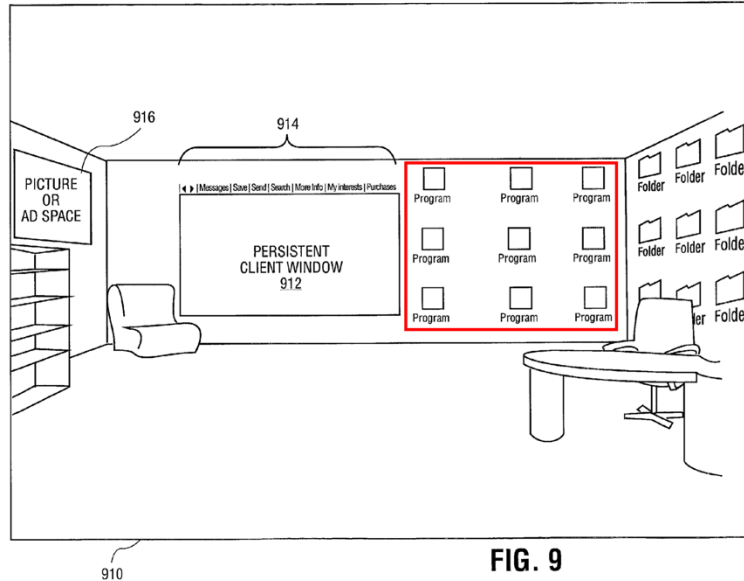
“New items can be added to the desktop via a simple drag and drop interface. Users can change colors and materials in the scene via the same drag and drop interface. The desktop supports all web functions **including email** and buddy list interactivity.” [*Id.*, 5:63-67 Emphasis added]

295. Robinson disclosed that its 3D desktop further supports a library of applications from other corporations. Said “applications from other corporations” can be delivered into the GUI module that is the 3D desktop, which is Robinson’s virtual thematic environment:

“**Applications 328 built by other corporations** can also use the extended markup language of the present invention to make their tools 3D-enabled. By hosting standard markup language libraries at the registry 350, corporations could add to the markup language in an extensible, standardized fashion. In this fashion, **corporations can**

deliver their tools to both a **three-dimensional audience** and a flat audience.” [*Id.*, 8:25-31]

296. Moreover, Robinson shows said library of applications arranged along the back wall, operating within the 3D desktop environment:



Ex-1008 Fig. 9 (annotated)

297. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- k. Claim 12: The system according to claim 2, wherein said GUI module comprises: a thematic application/publication/game content component which provides a storage facility for all thematic content required in the virtual thematic environment.**

298. Robinson disclosed, or at least rendered obvious claim 2 from which claim 12 depends, thus disclosing or rendering obvious this claim.

299. As noted for claim 1[d], a POSITA would have considered it obvious that in order to publish a virtual reality gaming environment the GUI module must necessarily contain a storage facility to store the content required by said virtual reality gaming environment (*See* ¶147). Said storage facility would provide storage **for all thematic content required in the virtual thematic environment** as claimed.

300. In addition, Robinson disclosed the claimed **storage facility for all thematic content required in the virtual thematic environment**, storing the graphical objects for the rendering of 3D webpages:

“The Server Maintenance System and Database: Any network-enabled 3D computing environment server should include a system to communicate with the registry 350, allowing for periodic updates to the network-enabled 3D computing environment-based protocols, as well as **increasing the library of graphical objects** that could be stored on the server 330. By storing the objects on the server 330, the SDK 312 could be used by users to automatically **generate 3D-enabled webpages** without having the SDK on their desktop.” [*Id.*, 8:44-53 Emphasis added]

301. Robinson also disclosed data storage on the desktop computer for “information and instructions,” which would include thematic content:

“A data storage device 228, Such as a magnetic disk 212 or optical disk such as a CD-ROM and its corresponding drive may be coupled

to data processing system 200 for storing **information and instructions** via expansion bus 216.” [*Id.*, 4:13-17 Emphasis added]

302. Moreover, Robinson disclosed that its invention may be implemented as a “network computer” or “thin client.” Such an implementation combines the operational functions of client and server, using the client as just a display and input device:

“Alternatively, the client 150 can be implemented as a network computer or thin client device [...] Such a **network computer** or **thin client** device does not necessarily include all of the devices and features of the above described exemplary computer system; however, the functionality of the present invention or a subset thereof may nevertheless be implemented with such devices.” [*Id.*, 4:38-43]

303. By teaching the use of a “network computer,” Robinson teaches that functions attributed to the claimed **GUI module** may be represented by the server computer. In that case, the storage facility for all thematic content may reside on the server as disclosed above (*See* ¶300).

304. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- l. Claim 13: The system according to claim 2, wherein said GUI module comprises: a networking interface which provides access to various network services required to support a server environment.**

305. Robinson disclosed, or at least rendered obvious claim 2 from which claim 13 depends, thus disclosing or rendering obvious this claim.

306. In addition, Robinson disclosed the claimed **networking interface** (*See* claim 5) **which provides access to various network services required to support a server environment:**

“...in this manner, the computer system 200 may be **coupled to a number of servers** 100 via a network infrastructure such that illustrated in FIG. 1 and described above.” [*Id.*, 4:50-53 Emphasis added]

307. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- m. Claim 14: The system according to claim 2, wherein said GUI module comprises: a thematic application/publishing/game logic and scripting component which takes data from a rule set and from external sources and modifies the virtual thematic environment.**

308. Robinson disclosed, or at least rendered obvious claim 2 from which claim 14 depends, thus disclosing or rendering obvious this claim.

309. As an initial matter, Robinson disclosed that advertisements are served into the 3D desktop from external sources (*See* ¶122).

310. In addition, the POSITA in this case has at least a general knowledge of 3D rendering and virtual reality, such as the 3D VR environment disclosed by Robinson:

“If **the advertisement is a 3D VR environment**, the user can click onto an avatar section of the advertisement and choose a virtual body (avatar) that will be the identification or representation of the user's presence in the 3D advertisement VR environment. The user can then **virtually walk around that advertisement, meet other virtual users** who have entered into the collaborative VR advertisement in the same way from their own computer desktops.” [*Id.*, 15:48-55
Emphasis added]

311. The POSITA would have understood how a virtual environment is defined in the memory of a computer in order to be rendered to a game client. Any POSITA with a rudimentary understanding of a virtual environment would understand that objects in the world are defined with shape, position, orientation, and other visual and ‘physical’ attributes. The definition of an object in the virtual environment would be the claimed **rule set**.

312. Said 3D VR advertisement comes from an external source, and represents the virtual environment of the advertisement through which users’ avatars are walking around and interacting. Also, the data that controls the movement of other users comes from an external source as that user controls his or

her avatar within the virtual scene. All of these rules and external data are combined to create the virtual experience, and a POSITA would understand the net result of said combination would result in **modifying the virtual thematic environment** by combining **data from a rule set** with **data from external sources** as claimed.

313. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- n. **Claim 16: The system according to claim 3, wherein said content logic module comprises: an accounting, billing, and customer support module which provides for information modification and customer support, including billing.**

314. Robinson disclosed, or at least rendered obvious claim 3 from which claim 16 depends, thus disclosing or rendering obvious this claim.

315. In addition, Robinson disclosed the inclusion of a financial services system and an e-commerce system (*See* ¶109), both of which necessarily include **accounting and billing** modules. Said financial services system also provides **customer support**:

“The Financial Services system 370 of the present invention applies more advanced features [...] This gives retail customers a more intuitive tool to interact with the data they receive from financial institutions, and to conduct banking and other financial transactions online.” [*Id.*, 9:18-26]

316. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- o. Claim 18: The system according to claim 3, wherein said content logic module comprises: a reporting tools module which provides internal and external reporting tools.**

317. Robinson disclosed, or at least rendered obvious claim 3 from which claim 18 depends, thus disclosing or rendering obvious this claim.

318. As for the additional limitation of this claim, Robinson disclosed the claimed **internal and external reporting tools module**. Robinson’s Persistent Client frequently reported user profile and metrics information to the “3D server/registry” (internal), and ultimately to the “e-community database provider” (external):

“Referring to FIG. 8, in a next step, the **3D server/registry 550 receives frequent profile information and metrics** from each Persistent Client 565 on a user's desktop. This information can be used for focused searching and targeted advertising specific for a particular user. (Block 810). Subsequent advertising placed on the Persistent Client-enabled desktop may be used to enable a user to navigate to product offerings offered from the advertisement sponsor. (Block 820).” [*Id.*, 12:48-56 Emphasis added]

“This user information retained in the registry of 3D server 550 may be accessed and used by the **e-community database provider 520** via

interface 551. In this manner, e-community database provider 520 may employ targeted advertising, targeted information publications, links, or other information particularly relevant to individual client machines 560.” [*Id.*, 11:58-64 Emphasis added]

319. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

p. Claim 20: The system according to claim 4, wherein said data storage comprises: a real-time thematic environment database which maintains a state of each user and the virtual thematic environment.

320. Robinson disclosed, or at least rendered obvious claim 4 from which claim 20 depends, thus disclosing or rendering obvious this claim.

321. In addition, the POSITA in this case has at least a general knowledge of 3D rendering and virtual reality, such as the 3D VR environment disclosed by Robinson. He or she would have understood how a virtual environment is defined in the memory of a computer in order to be rendered to a game client. Any POSITA with a rudimentary understanding of a virtual environment would understand that the state of dynamic objects in the virtual world (other avatars, AI-controlled customer service representatives, animating products, etc.), contain the same properties as static objects (i.e., shape, position, orientation, and other visual and ‘physical’ attributes), but due to the dynamic nature of such objects those parameters change in real time as objects move and the virtual environment

evolves. It was well known in the art prior to the effective filing date of the ‘724 patent that said changes were stored under the control of the rendering system.

322. Thus, the claimed **real-time thematic environment database which maintains a state of each user and the virtual thematic environment** is rendered obvious in view of the knowledge of a POSITA.

323. Additionally, Robinson disclosed tracking **a state of each user** over time, including profile and metrics used to target advertising to said user (*See* claim 19).

324. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

q. **Claim 21: The system according to claim 1, further comprising a product placement interface within said virtual thematic environment, which seamlessly connects to a product sponsor external to said virtual thematic environment, at which a product is sold.**

325. Robinson disclosed, or at least rendered obvious claim 1 from which claim 21 depends, thus disclosing or rendering obvious this claim.

326. In addition, Robinson disclosed the limitations of this claim. For example, an advertisement displayed in the “Persistent Client Window” can be a **product placement interface which seamlessly connects to a product sponsor external to said virtual thematic environment, at which a product is sold:**

“The present invention includes functionality to place 2D or “3D/spatial” **advertisements, promotions, or messages in the Persistent Client Window 912** that, when clicked on by a user/viewer, will activate full or partial-screen interactive 3D virtual reality environment **advertisements that can also be equipped with e-commerce capabilities, such as links to product/service ordering websites.** As shown in FIG. 9, a portion 916 of the persistent client desktop environment 910 is allocated for the positioning of 2D or 3D advertisements, pictures, promotions, or messages. [...] Subsequently, a user/viewer can view the advertisement in region 916 and **select a portion of the advertisement or a related link by clicking on a portion of region 916 using a conventional mouse.** Upon selection of the region 916, an expanded view of the advertisement is presented. Upon activation of a related link provided within region 916, **the user is taken to a related website where an e-commerce transaction corresponding to the advertisement may be initiated.**” [*Id.*, 15:5-25 Emphasis added]

327. The disclosed clickable advertisement that links to a product ordering website would have been understood by a POSITA to teach the claimed **product placement interface.**

328. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- r. **Claim 22: The system according to claim 1, further comprising: a timing mechanism which requires that a task performed on the worldwide web or internet must be performed within a certain period of time or on a competitive level with one or more opponents at a sponsored internet site.**

329. Robinson disclosed, or at least rendered obvious claim 1 from which claim 22 depends, thus disclosing or rendering obvious this claim.

330. In addition, Robinson disclosed the claimed **timing mechanism which requires that a task performed on the worldwide web or internet must be performed within a certain period of time**. For example, Robinson disclosed that advertisements contained links to take the user to an advertiser’s website to purchase a product (*See* claim 21). Robinson further disclosed that said advertisements were periodically cycled over time:

“The computer will **periodically display a different advertisement** or message within the Persistent Client Window per a **predefined cycling period** for rotating the advertisements or messages that are being displayed.” [*Id.*, 12:62-66 Emphasis added]

331. It was therefore obvious that if a user wanted to take advantage of a particular advertised offer, he or she would have to click on the related advertisement within the **certain period of time** during which said advertisement was being displayed.

332. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

- s. **Claim 23: The system according to claim 21, further comprising: a purchase mechanism which allows real-world credit or virtual credit to be used for payments of said product at said internet website of said product sponsor.**

333. Robinson disclosed, or at least rendered obvious claim 21 from which claim 23 depends, thus disclosing or rendering obvious this claim.

334. As shown, Robinson disclosed seamlessly connecting to a product sponsor at which a product is sold (*See* claim 21). Once arriving at said sponsor’s website, Robinson disclosed that “an e-commerce transaction corresponding to the advertisement may be initiated” (*Id.*). It was well known in the art at the time the ‘724 patent was filed that an e-commerce purchase could be made using real-world credit.

335. Thus, Robinson disclosed, or at least rendered obvious in view of the knowledge of a POSITA this claim.

E. Secondary Considerations of Non-Obviousness

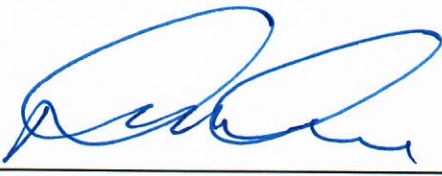
336. Based on my review of the ‘724 patent’s prosecution history, I note that no secondary considerations of non-obviousness were identified in connection with the patent’s claims.

337. I am not separately aware of any evidence of commercial success, skepticism, failure of others, industry praise, unexpected results, or the like.

Instead, as discussed above, it is my opinion that the subject matter embraced by the ‘724 patent’s claims was known in the art and would have been expected to function as any service configured to deliver clickable, online advertising (e.g., banner ads).

I declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willfully 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.

Date: MAY 30, 2023



David Crane