IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	E. EDDIE BAKHASH
U.S. Patent No.:	8,881,048 Attorney Docket No. 50095-0108IP1
Issue Date:	November 4, 2014
Appl. Serial No.:	12/751,879
Filing Date:	March 31, 2010
Title:	SYSTEM AND METHOD FOR PROVIDING THREE-DIMENSIONAL GRAPHICAL USER INTERFACE

Mail Stop Patent Board
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 8,881,048 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

TABLE OF CONTENTS

EXHIBITS

EX1001	U.S. Patent No. 8,881,048
EX1002	U.S. Patent No. 8,881,048 File History
EX1003	Declaration of Dr. Henry Fuchs
EX1004	U.S. Patent No. 6,414,677 ("Robertson")
EX1005	Preston Gralla, Que, HOW THE INTERNET WORKS (6th Ed. 2002) ("Gralla")
EX1006	U.S. Publication No. 2005/0086612 ("Gettman")
EX1007	U.S. Publication No. 2006/0230356 ("Sauve")
EX1008	U.S. Patent No. 6,577,330 ("Tsuda")
EX1009	Reserved
EX1010	Stuart K. Card, et al., ACM Conference on Human Factors in Computing Systems (CHI), THE INFORMATION VISUALIZER, AN INFORMATION WORKSPACE (1991)
EX1011	Robertson, et al., ACM Symposium on User Interface Software and Technology (UIST), THE DOCUMENT LENS (1993)
EX1012	Robertson, et al., Communications of the ACM, Vol. 36, No. 4, INFORMATION VISUALIZATION USING 3D INTERACTIVE ANIMATION (1993)
EX1013	3D DESKTOP PROJECT BY SUN MICROSYSTEMS: A REVOLUTIONARY EVOLUTION OF TODAY'S DESKTOP (2004)
EX1014	U.S. Patent No. 5,880,733

EX1015	European Patent Application No. 0 856 786
EX1016	U.S. Patent No. 6,909,443
EX1017	U.S. Patent No. 6,661,426
EX1018	U.S. Publication No. 2003/0142136
EX1019	U.S. Publication No. 2006/0107229
EX1020	U.S. Publication No. 2006/0161861
EX1021	U.S. Publication No. 2005/0057497
EX1022	Hideya Kawahara, et al., X Developer's Conference, PROJECT LOOKING GLASS: 3D DESKTOP EXPLORATION (2004)
EX1023	Andy Cockburn, et al., IT&Society, Volume 1, Issue 3, pp. 159-183, IMPROVING WEB PAGE REVISITATION: ANALYSIS, DESIGN AND EVALUATION (2003)
EX1024	Andy Cockburn, et al., WEBVIEW: A GRAPHICAL AID FOR REVISITING WEB PAGES (1999)
EX1025	Natalie Jhaveri, et al., ACM Conference on Human Factors in Computing Systems (CHI), THE ADVANTAGES OF A CROSS-SESSION WEB WORKSPACE (2004)
EX1026	Brian Amento, et al., ACM Symposium on User Interface Software and Technology (UIST), TOPICSHOP: ENHANCED SUPPORT FOR EVALUATING AND ORGANIZING COLLECTIONS OF WEB SITES (2000)
EX1027	Andy Cockburn, et al., BEYOND THE 'BACK' BUTTON: ISSUES OF PAGE REPRESENTATION AND ORGANISATION IN GRAPHICAL WEB NAVIGATION TOOLS (1999)
EX1028	U.S. Publication No. 2004/0001104

EX1029	Stuart K. Card, et al., ACM Conference on Human Factors in Computing Systems (CHI), THE WEBBOOK AND THE WEB FORAGER: AN INFORMATION WORKSPACE FOR THE WORLD-WIDE WEB (1996)
EX1030	George Robertson, et al., ACM Symposium on User Interface Software and Technology (UIST), DATA MOUNTAIN: USING SPATIAL MEMORY FOR DOCUMENT MANAGEMENT (1998)
EX1031	Mary P. Czerwinski, et al., Human-Computer Interaction—INTERACT '99, THE CONTRIBUTION OF THUMBNAIL IMAGE, MOUSE-OVER TEXT AND SPATIAL LOCATION MEMORY TO WEB PAGE RETRIEVAL IN 3D (1999)
EX1032	U.S. Publication No. 2002/0054114
EX1033	U.S. Publication No. 2004/0109031
EX1034	U.S. Publication No. 2003/0164827
EX1035	U.S. Patent No. 6,229,542
EX1036	Alfred T. Lee, ACM Special Interest Group on Computer-Human Interaction (SIGCHI) Bulletin, Volume 31, Number J, WEB USABILITY (1999)
EX1037	Mark J. Kilgard, ACM Special Interest Group on Computer Graphics (SIGGRAPH) Eurographics Workshop, REALIZING OPENGL: TWO IMPLEMENTATIONS OF ONE ARCHITECTURE (1997)
EX1038	3B BROWSER – 3B THE BROAD BAND BROWSER (2004), https://web.archive.org/web/20041208085023/http://www.3b.net/browser/index.html [accessed 9/28/2022]
EX1039	DICTIONARY OF COMPUTER SCIENCE, ENGINEERING AND TECHNOLOGY (2000) (excerpt)

EX1040	U.S. Appl. No. 09/152,712—File Wrapper Excerpts
EX1041	Robert Godwin-Jones, Language Learning & Technology, Volume 9, Number 2, EMERGING TECHNOLOGIES—AJAX AND FIREFOX: NEW WEB APPLICATIONS AND BROWSERS (2005)
EX1042	MOZILLA FIREFOX VS MICROSOFT INTERNET EXPLORER (2005), https://www.soundonsound.com/techniques/mozilla-firefox-vs-microsoft-internet-explorer [accessed 9/30/2022]
EX1043	X DEVELOPER'S MEETING 2004, https://www.x.org/wiki/Events/XDC2004/ [accessed 11/11/2022]
EX1044	Library of Congress Online Catalog Record re HOW THE INTERNET WORKS (Gralla)
EX1045	Public Copyright Catalog Record re HOW THE INTERNET WORKS (Gralla)
EX1046	International Standard Book Number Listing re HOW THE INTERNET WORKS (Gralla)
EX1047	Que Corporation, Product Record re HOW THE INTERNET WORKS (Gralla)
EX1048	Declaration of June Munford re HOW THE INTERNET WORKS (Gralla)
EX1049	Apple's Opposed Motion to Stay Pending Transfer, *SpaceTime3D, Inc. v. Apple Inc*., Case No.:6:22-cv-00149 (WDTX)
EX1050	Scheduling Order, *SpaceTime3D, Inc. v. Apple Inc*., Case No.:6:22-cv-00149 (WDTX)

EX1051	Order Resetting *Markman* Hearing, *SpaceTime3D, Inc. v. Apple Inc*., Case No.:6:22-cv-00149 (WDTX)
EX1052	SpaceTime's Complaint, *SpaceTime3D, Inc. v. Apple Inc*., Case No.:6:22-cv-00149 (WDTX)

LISTING OF CHALLENGED CLAIMS

Claim 1	
[1.pre]	A method for providing a three-dimensional (3D) graphical user interface, comprising:
[1.a]	receiving at least first and second inputs from an end user;
[1.b]	receiving first and second webpages from at least one server in response to said first and second inputs, wherein the first and second inputs are website addresses corresponding to said first and second webpages, respectively;
[1.c]	displaying at least a portion of the first webpage on a first object within a 3D space, and at least a portion of the second webpage on a second object within the 3D space, comprising;
[1.c.i]	rendering the first and second webpages;
[1.c.ii]	capturing first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and
[1.c.iii]	texturing the first image on the first object and the second image on the second object, the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space; and
[1.d]	displaying additional information, comprising:
[1.d.i]	receiving an interaction by the end user on the first image;
[1.d.ii]	replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the rendered first webpage;
[1.d.iii]	receiving an interaction by the end user on a link provided in the

	rendered first webpage, the link corresponding to the additional information;
[1.d.iv]	rendering the additional information; and
[1.d.v]	displaying the rendered additional information in said window within the 2D space.

Claim 2	
[2.pre]	The method of claim 1, further comprising:
[2.a]	capturing a third image of at least a portion of the rendered additional information;
[2.b]	texturing the third image on the first object, the third image thereby replacing the first image on the first object; and
[2.c]	replacing the window within the 2D space with at least the first and second objects within the 3D space, wherein the first object is displayed in the foreground of the 3D space and the second object is displayed in the background of the 3D space.

Claim 3	
[3.pre]	The method of claim 2, further comprising:
[3.a]	receiving a toggle interaction by the end user; and
[3.b]	replacing the window within the 2D space with at least the first and second objects within the 3D space in response to the toggle interaction.

Claim 4	
[4.pre]	The method of claim 2, further comprising:

[4.a]	receiving a navigation interaction by the end user; and
[4.b]	moving said second object from the background of the 3D space to the foreground of the 3D space in response to the navigation interaction.

Claim 5	
[5.pre]	The method of claim 1, further comprising:
[5.a]	receiving a toggle interaction by the end user; and
[5.b]	replacing the window within the 2D space with at least the first and second objects within the 3D space in response to the toggle interaction.

Claim 6	
[6.pre]	The method of claim 1, further comprising:
[6.a]	receiving at least a third input from the end user;
[6.b]	receiving a third webpage from the at least one server in response to the third input; and
[6.c]	displaying at least a portion of the third webpage on a third object within the 3D space, comprising:
[6.c.i]	rendering the third webpage;
[6.c.ii]	capturing a third image of the at least a portion of the third webpage; and
[6.c.iii]	texturing the third image on the third object, the third object being displayed in a further background of the 3D space, behind the second object.

Claim 7	
[7.pre]	The method of claim 1,
[7.a]	wherein the step of receiving the first and second webpages from the at least one server in response to said first and second inputs further comprises receiving the first webpage from a first server in response to said first input and receiving the second webpage from a second server in response to said second input.

Claim 8	
[8.pre]	A system for providing a three-dimensional (3D) graphical user interface, comprising:
[8.pre.i]	a display screen;
[8.pre.ii]	an input device for receiving at least one input from an end user
[8.pre.iii]	a processor module operatively coupled to the display screen and the user input device; and
[8.pre.iv]	a memory module operatively coupled to the processor module, the memory module comprising executable code for the processor module to:
[8.a]	receive at least first and second inputs from an end user;
[8.b]	receive first and second webpages from at least one source in response to said first and second inputs, wherein the first and second inputs are website address corresponding to said first and second webpages, respectively;
[8.c]	display at least a portion of the first webpage on a first object within a 3D space on the display screen, and at least a portion of the second webpage on a second object within the 3D space on the display screen, comprising;

[8.c.i]	rendering the first and second webpages;
[8.c.ii]	capturing first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and
[8.c.iii]	texturing the first image on the first object and the second image on the second object, the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space; and
[8.d]	display additional information, comprising:
[8.d.i]	receiving an interaction by the end user on the first image;
[8.d.ii]	replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space on the display screen in response to receiving the interaction, wherein the window includes the rendered first webpage;
[8.d.iii]	receiving an interaction by the end user on a link provided in the rendered first webpage, the link corresponding to the additional information;
[8.d.iv]	rendering the additional information; and
[8.d.v]	displaying the rendered additional information on the display screen in said window within the 2D space on the display screen.

Claim 9	
[9.pre]	The system of claim 8, wherein said executable code is further configured to:
[9.a]	capture a third image of at least a portion of the rendered additional information;
[9.b]	texture the third image on the first object, the third image thereby

	replacing the first image on the first object; and
[9.c]	replace the window within the 2D space with at least the first and second objects within the 3D space, wherein the first object is displayed in the foreground of the 3D space and the second object is displayed in the background of the 3D space.

Claim 10	
[10.pre]	The system of claim 9, wherein said executable code is further configured to:
[10.a]	receive a toggle interaction by the end user; and
[10.b]	replace the window within the 2D space with at least the first and second objects within the 3D space in response to the toggle interaction.

Claim 11	
[11.pre]	The system of claim 9, wherein said executable code is further configured to:
[11.a]	receive a navigation interaction by the end user; and
[11.b]	move said second object from the background of the 3D space to the foreground of the 3D space in response to the navigation interaction.

Claim 12	
[12.pre]	The system of claim 8, wherein said executable code is further configured to:
[12.a]	receive a toggle interaction by the end user; and
[12.b]	replace the window within the 2D space with at least the first and second objects within the 3D space in response to the toggle

	interaction.

Claim 13	
[13.pre]	The system of claim 8, wherein said executable code is further configured to:
[13.a]	receive at least a third input from the end user;
[13.b]	receive a third webpage from the at least one server in response to the third input; and
[13.c]	display at least a portion of the third webpage on a third object within the 3D space, comprising:
[13.c.i]	rendering the third webpage;
[13.c.ii]	capturing a third image of the at least a portion of the third webpage; and
[13.c.iii]	texturing the third image on the third object, the third object being displayed in a further background of the 3D space, behind the second object.

Claim 14	
[14.pre]	A method for providing a three-dimensional (3D) graphical user interface, comprising:
[14.a]	receiving at least first and second website addresses from an end user;
[14.b]	using said first and second website addresses to retrieve first and second webpages from at least one source in response to said first and second inputs;
[14.c]	displaying at least a portion of the first webpage within a 3D space, and at least a portion of the second webpage within the 3D space,

	comprising;
[14.c.i]	generating first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and
[14.c.ii]	displaying the first image and the second image in the 3D space, the first image being displayed in a foreground of the 3D space and the second image being displayed in a background of the 3D space; and
[14.d]	displaying additional information to said end user, comprising:
[14.d.i]	receiving an interaction from the end user with the first image;
[14.d.ii]	replacing the first and second images within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the first webpage;
[14.d.iii]	receiving an interaction by the end user on a link provided in the first webpage, the link corresponding to the additional information; and
[14.d.iv]	displaying the additional information to the user.

Claim 15	
[15.pre]	The method of claim 14,
[15.a]	wherein the additional information is displayed in the window, thereby replacing the first webpage in the window.

Claim 16	
[16.pre]	The method of claim 14, further comprising:
[16.a]	generating a third image of at least a portion of the additional information; and

[16.b]	replacing the window with at least the second and third images within the 3D space, wherein the third image replaces the first image in the foreground of the 3D space, and the second image remains in the background of the 3D space.

Claim 17	
[17.pre]	The method of claim 16, further comprising:
[17.a]	receiving a toggle interaction by the end user; and
[17.b]	replacing the window with at least the second and third images within the 3D space in response to the toggle interaction.

Claim 18	
[18.pre]	The method of claim 17, further comprising;
[18.a]	receiving a navigation interaction by the end user; and
[18.b]	moving said second image from the background of the 3D space to the foreground of the 3D space in response to the navigation interaction.

I. INTRODUCTION

Apple Inc. ("Apple" or "Petitioner") petitions for IPR of claims 1-18 ("Challenged Claims") of U.S. Patent No. 8,881,048 ("the '048 patent"). Compelling evidence presented in this Petition demonstrates at least a reasonable likelihood that Apple will prevail with respect to at least one of the Challenged Claims. Accordingly, Apple respectfully submits that an IPR should be instituted, and that the Challenged Claims should be canceled as unpatentable.

The '048 patent "is directed toward graphical user interfaces for operating and accessing information on a computer, and more particularly, to a three-dimensional ('3D') interactive computing interface." [EX1001, 1:25-37]. The '048 patent's graphical user interface (GUI) "uses the two-dimensional display of an end user's computer to display information (*e.g.*, webpages and other information mapped onto 3D objects) in a simulated real-time 3-D immersive Cartesian space." [*Id*., 7:59-63].

But the '048 patent's claimed systems and methods for "providing a three-dimensional (3D) graphical user interface" were not new. To the contrary, as demonstrated by this Petition, with reference to Dr. Henry Fuchs's testimony and additional evidence, the claimed concepts had already been researched, developed, and implemented long before the '048 patent. [*See infra* §V.A.1].

The Challenged Claims were granted without full consideration of the wide body of applicable prior art, and without a single prior art rejection. [*See infra*

§III.B]. And, as Dr. Fuchs explains, the claimed systems and methods would have been obvious to a POSITA based on the teachings of multiple prior art references. [*See infra* §VIII].

For example, Robertson (EX1004) describes a 3D graphical user interface that represents webpages as objects bearing images of corresponding content. [EX1004, 6:15-28; *see also id*., 6:30-67, 9:11-50, 12:54-13:4]. A POSITA would have found it obvious to integrate Robertson's teachings on a 3D-GUI into a web browser described by Gralla (EX1005), as an upgrade to conventional bookmark/favorites tools for revisiting webpages. [EX1003, ¶¶73-81; *infra* §VIII.A].

As another example, Tsuda (EX1008) describes "a device for displaying windows in a virtual three-dimensional (3D) space." [EX1008, 1:5-12]. A POSITA would have found it obvious to apply these teachings from Tsuda to a tabbed browser described by Sauve (EX1008), which arranges graphical representations of webpages in a quick pick user-interface. [EX1003, ¶¶156-162; *infra* §VIII.B].

By revealing the Challenged Claims as obvious combinations of well-known features, Petitioner seeks to correct the material error that led to issuance of the '048 patent—the examiner's apparent failure to substantively consider any of the prior art applied in this Petition. Moreover, Petitioner's diligence affords the Board an opportunity to decide patentability at the PTAB before the District Court reaches that issue in the co-pending litigation.

As demonstrated below, this Petition provides compelling reasons for the Board to institute IPR, and to ultimately find the Challenged Claims unpatentable.

II. CONVENTIONS OF THE PETITION

- All emphasis is added unless noted otherwise;
- Bold-italic emphasis correlates to claim language;
- Quotations are from exhibits, not claim language; and
- The phrase "as discussed" and equivalent phrases incorporate fully the analysis of the cross-cited portion of the Petition.

III. REQUIREMENTS FOR IPR—37 C.F.R. §42.104

A. Standing—37 C.F.R. §42.104(a)

Petitioner certifies that the '048 patent is available for IPR and that Petitioner is not barred or estopped from requesting this review. Petitioner was served with a complaint of infringement of the '048 patent less than one year ago.

B. The Challenge and Relief Requested—37 C.F.R. §42.104(b)

Petitioner requests IPR of the Challenged Claims on the following grounds.

Ground	Claims	Basis
1	1-18	§103: Robertson (EX1004), Gralla (EX1005), Gettman (EX1006)
2	1-18	§103: Sauve (EX1007), Tsuda (EX1008)

As shown below, each reference pre-dates the '048 patent's earliest proclaimed priority date (September 13, 2005; "Critical Date"), which Petitioner does not concede.

Reference	Filing	Publication	Status
Robertson (EX1004)	Sep. 14, 1998	Jul. 2, 2002	§102(b)
Gralla (EX1005)	N/A	No later than Dec. 31, 2002	§102(b)
Gettman (EX1006)	Jun. 8, 2004	Apr. 21, 2005	§§102(a), 102(e)
Sauve (EX1007)	Apr. 7, 2005	Oct. 12, 2006	§102(e)
Tsuda (EX1008)	Aug. 10, 1998	Jun. 10, 2003	§102(b)

IV. PUBLIC AVAILABILITY

Gralla (EX1005) bears conventional markers of publication, including a first printing date (September 2001), a copyright date (2002) an edition identifier (6th), multiple unique identifying numbers (ISBN and LCCN), and the name of a well-known publisher (Que). [EX1005, 7]. These markers provide sufficient indicia that Gralla was publicly available no later than the end of 2002, years before the Critical Date. [*Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 17-21 (PTAB Dec. 20, 2019) (precedential) (finding indicia of publication on the face of the reference relevant to public availability and sufficient for institution); *see also Microsoft Corp. v. Corel Software*, IPR2016-01086, Paper 14 at 9 (PTAB Dec. 1, 2016) ("a book publisher is generally in business to publish books and to make them widely accessible to the public for purchase")].

Moreover, Gralla's facial indicia is corroborated by:

- a record [EX1044] associated with Gralla's Library of Congress Catalog Card Number (LCCN), which identifies a 2002 publication date;

- Gralla's Copyright registration date of 2002 [EX1045];
- Gralla's ISBN listing [EX1046], which identifies a publication date of 2001; and
- a product record from the publisher's website [EX1047], which shows publication occurred in 2001.

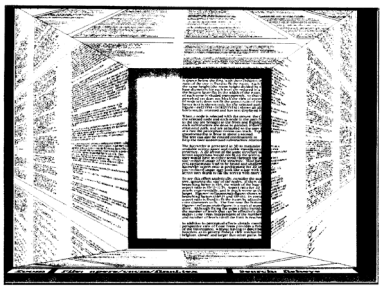
Testimonial evidence further corroborates Gralla's facial indicia by establishing accessibility in public libraries no later than the end of 2002. [EX1048, ¶¶7-12].

V. THE '048 PATENT

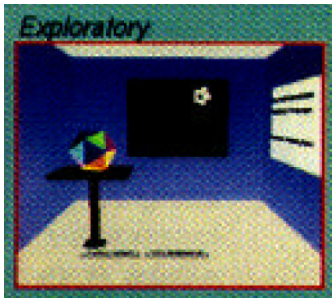
A. Subject Matter Description

1. Background of the Technology

Petitioner's expert, Dr. Fuchs, provides an extensive discussion on the state of the art at the time of the '048 patent. [EX1003, ¶¶34-55]. As Dr. Fuchs explains, focused research and development efforts on 3D-GUIs dates back more than a decade before the 2005 Critical Date when technological advances in computer hardware and standard graphics libraries ignited the aspirations of skilled artisans to explore new user interface paradigms. [EX1003, ¶¶36-43 (citing EX1012, EX1030)]. By the early 1990s, advanced prototypes of 3D-GUIs (pictured below) had been developed, tested, and described in peer-reviewed conference papers. [EX1003, ¶¶36-39].

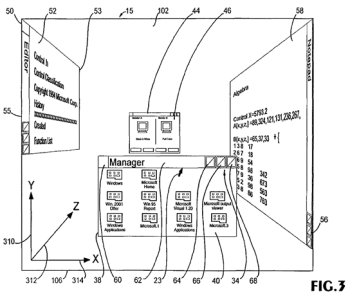


EX1011, p. 5 (Figure 3)
The Document Lens

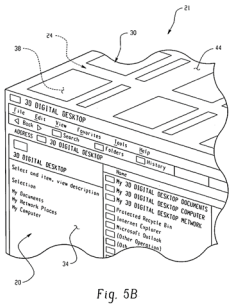


EX1010, p. 7
The Information Visualizer

These early prototypes led to an avalanche of progress on 3D-GUIs described in downstream papers and patent literature. [EX1003, ¶¶40-43 (citing exhibits below and EX1013, EX1015, EX1019-1022, EX1043)].

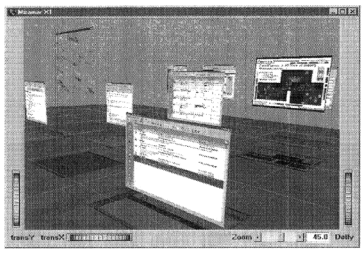


EX1014, Figure 3
US 5,880,733



EX1018, Figure 5B
US 2003/0142136

EX1012, p. 1
Project Looking Glass



EX1035, Figure 5
US 6,229,542

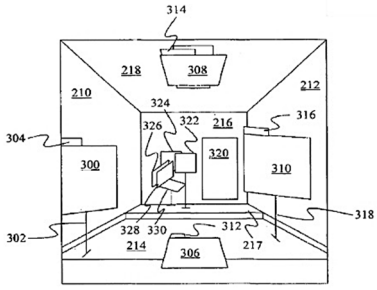


FIG. 6

EX1016, Figure 6
US 6,909,443

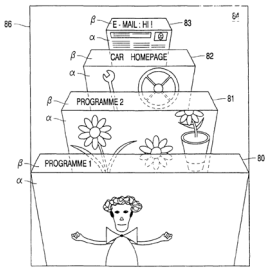


FIG. 2

EX1017, Figure 2
US 6,661,426

Around this same time in the 1990s and 2000s, skilled artisans were working to develop next-generation web browser tools. [EX1003, ¶¶44-47 (citing EX1023-1028, EX1030)]. And it did not take long for this line of development to merge with its natural counterpart: 3D-GUIs. [EX1003, ¶¶48-55 (citing EX1029-1034)]. In fact, some of the same authors that published influential papers on 3D-GUIs later published their follow-up development efforts on integrating 3D-GUIs into web browser tools. [*Id.*].

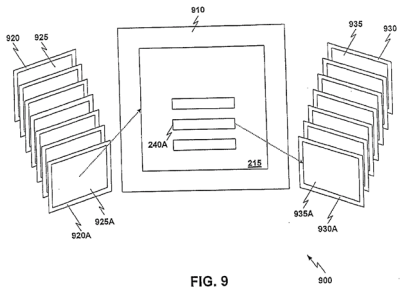


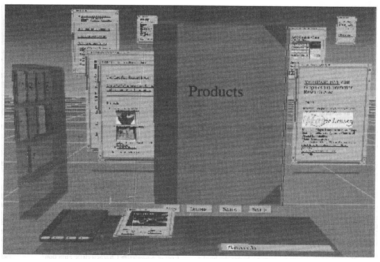
FIG. 9

EX1032, Figure 9
US 2002/0054114

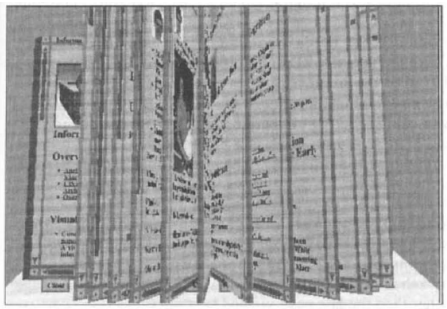
FIG 4

EX1033, Figure 4
US 2004/0109031

EX1038, p. 1
3B Browser



EX1029, p. 5 (Figure 5)
The Web Forager



EX1029, p. 3 (Figure 3)
The WebBook

EX1030, p. 1 (Figure 1)
Data Mountain

In sum, extensive development on 3D-GUIs and web browser tools took place long before the '048 patent, and those of skill in the art had already integrated these lines of development to create new and improved 3D-GUIs for web browsers. [EX1003, ¶¶34-55]. The '048 patent's claims do not account for the mature state of the art and, as a result, merely recite an unoriginal and obvious collection of features that would have been well known to any person of skill.

2. Description of the '048 Patent

The '048 patent was filed on March 31, 2010 with a priority claim that purportedly extends to a provisional application dated September 13, 2005. [EX1001, Cover]. As to its substance, the '048 patent "is directed toward graphical user interfaces for operating and accessing information on a computer, and more particularly, to a three-dimensional ('3D') interactive computing interface." [EX1001, 1:25-37; *see also* EX1003, ¶¶56-58]. The '048 patent's graphical user interface (GUI) "uses the two-dimensional display of an end user's computer to display information (*e.g.*, webpages and other information mapped onto 3D objects)

in a simulated real-time 3-D immersive Cartesian space." [EX1001, 7:59-63]. In the embodiment of Figure 11 (below), the 3D-GUI "draws [a new] HTML page…into the 3D virtual space" when the user types a URL web address into the command line followed by a carriage return. [EX1001, 29:23-42].

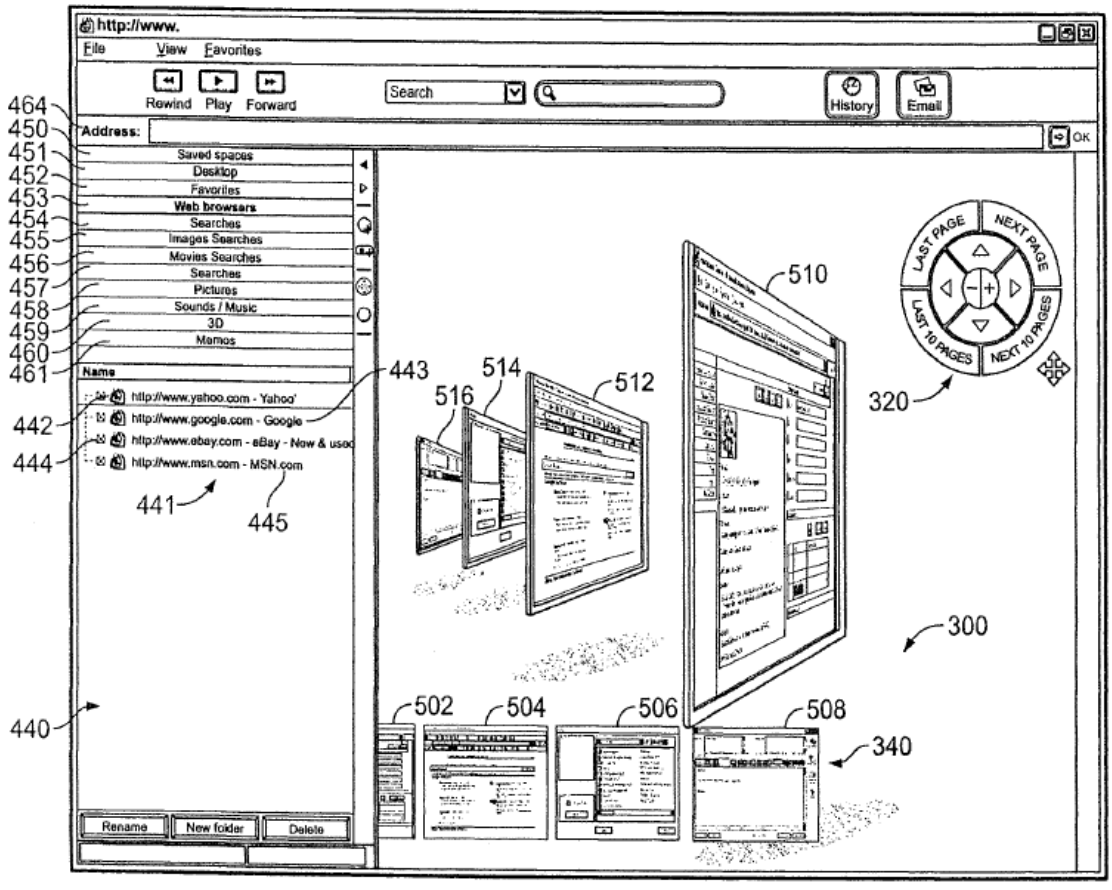


FIG. 11

But, according to the 048 patent, there is a problem with this approach: "it may be difficult to interact with" objects in the 3D space "if the end user is occupying an unfavorable viewpoint…where objects are drawn in skew" (*i.e.*, an angled perspective view). [EX1001, 21:20-24]. The '048 patent offers two solutions. First, as shown in Figure 13B (below), the '048 patent proposes to equip the 3D-GUI with

an explorer pane 441 indexing the various objects in the 3D space. [EX1001, 21:5-19]. "Clicking one of these indexed names…will bind the end user to a viewpoint" where the content of the webpage is easy to read and interact with, as shown below in Figure 13B. [*Id.*].

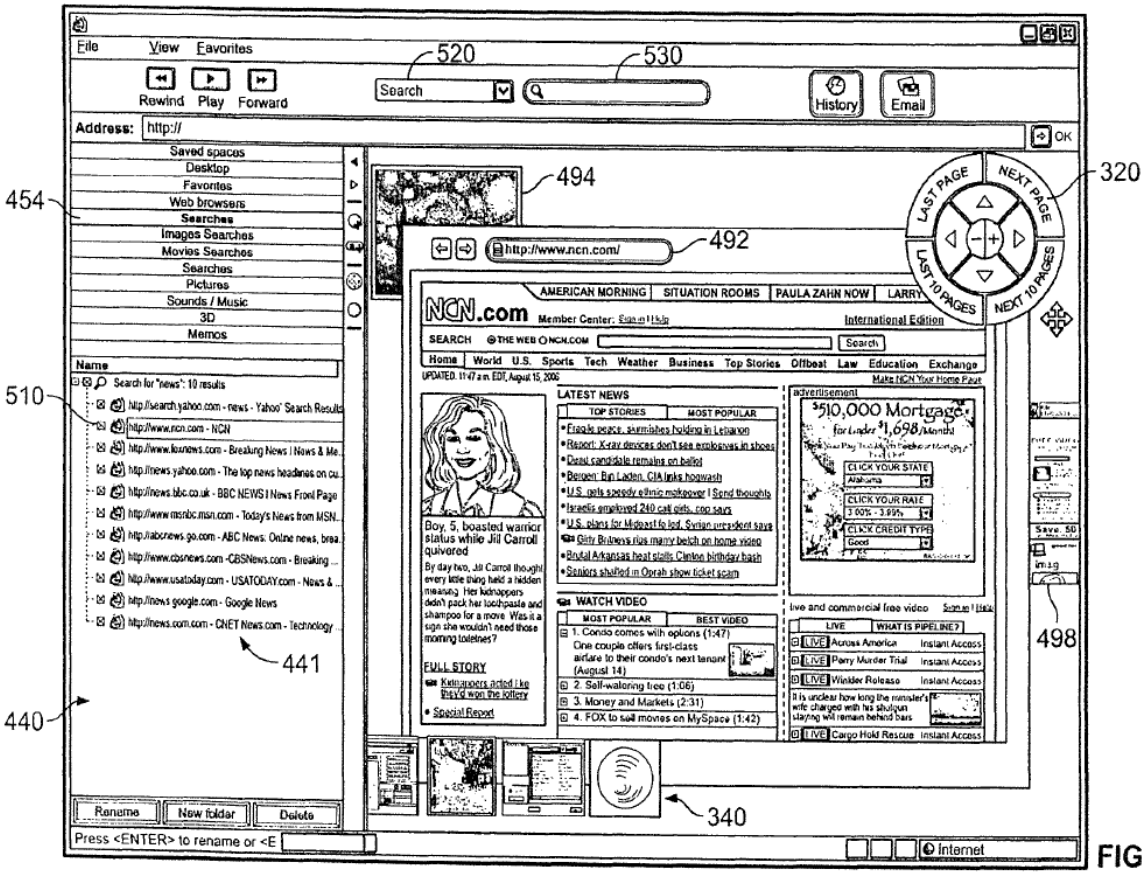


FIG. 13B

Second, the '048 patent proposes a "Bind to the HUD" (heads-up-display) feature that involves "revealing the 2D version of the webpage that was initially hidden or drawn off screen and positioning it in a layer that is in front of the 3D virtual space such that the end user can interact with this layer in 2D." [EX1001, 21:36-58; *see also* 30:33-38 ("the Internet Explorer window will open in front of the

3D virtual space in a 2D window")]. This second option corresponds to Element [1.d.ii] of the Challenged Claims, which calls for ***replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space***.

B. Prosecution History

The '048 patent issued on November 4, 2014 from U.S. Patent Application No. 12/751,879 ("the '879 application"), which was filed on March 31, 2010. [EX1001, Cover]. The '879 application is a continuation of 11/531,676, filed September 13, 2006, now U.S. Pat. No. 7,735,018, which claims the benefit of U.S. Provisional Application No. 60/717,019, filed September 13, 2005. [*Id*].

The Examiner rejected the '879 application's original 66 claims [EX1002, 329-342] in three separate Office Actions, as detailed in the table below:

Action	Date	Prior Art
First Action, Non-Final [EX1002, 176-194]	8/1/2012	US Pub. 2003/0164827 ("Gottesman") US Pat. 5,428,735 ("Kahl") US Pub. 2007/0043700 ("Dawson") US Pat. 6,725,427 ("Freeman")
Second Action, Final [EX1002, 126-145]	6/6/2013	US Pat. 5,428,735 ("Prager") US Pat. 5,428,735 ("Kahl") US Pub. 2007/0043700 ("Dawson") US Pub. 2003/0164827 ("Gottesman")
Third Action, Non-Final [EX1002, 71-89]	12/27/2013	US Pat. 5,428,735 ("Prager") US Pat. 5,428,735 ("Kahl") US Pub. 2007/0043700 ("Dawson") US Pub. 2003/0164827 ("Gottesman")

Unable to overcome the Examiner's rejections, the Applicant canceled all of the original claims (1-66) and introduced a new claim set (67-86) reciting entirely

different limitations. [*Compare* EX1002, 55-62 (new claims), *with id*., 99-116 (canceled claims)]. The next action was a Notice of Allowance, granting the new claim set based on a minor Examiner's Amendment to the independent claims:

Claim 1 (Currently Amended). A method for providing a three-dimensional (3D) graphical user interface, comprising:

receiving at least first and second inputs from an end user;

receiving first and second webpages from at least one server in response to said first and second inputs, wherein the first and second inputs are website addresses corresponding to said first and second webpages, respectively;

displaying at least a portion of the first webpage on a first object within a 3D space, and at least a portion of the second webpage on a second object within the 3D space, comprising;

rendering the first and second webpages;

capturing first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and

texturing the first image on the first object and the second image on the second object, the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space; and

displaying additional information, comprising:

receiving an interaction by the end user on the first image;

replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the rendered first webpage;

receiving an interaction by the end user on a link provided in the rendered first webpage, the link corresponding to the additional information;

rendering the additional information; and

displaying the rendered additional information in said window within the 2D space.

[EX1002, 26; *see also generally id*., 19-33].

> 6. The following is an examiner's statement of reasons for allowance: The present invention teaches interacting with a two-dimensional webpage that is being displayed in a three-dimensional space. The claims are allowable over the prior art in view of the examiner's amendment and the applicant's remarks filed on 06/27/2014.

[*Id*., 31].

The Applicant's new claim set—now issued as the Challenged Claims asserted against Petitioner—was never rejected over the prior art. These claims were not thoroughly vetted during prosecution. Had they been, the '048 patent would not have issued.

VI. LEVEL OF ORDINARY SKILL

The range of qualifications for a POSITA would have included a bachelor's degree in computer science or a comparable field and at least two years of professional experience working with 2D and 3D graphical user interfaces. [EX1003, ¶¶28-29]. Additional years of experience could substitute for an advanced-level degree (and vice versa). [*Id.*].

VII. CLAIM CONSTRUCTION—37 C.F.R. §§ 42.104(b)(3)

In an effort to promote transparency and consistency between co-pending proceedings, Petitioner discloses the parties' district court constructions below and addresses them in the obviousness analysis of §VIII. Importantly, Petitioner's obviousness analysis applies with equal force under both parties' respective

constructions of the lone disputed term—"texturing."[1] While material for determining infringement, the parties' dispute does not impact the merits of the Petition and, thus, need not be resolved by the Board. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011).

Term	Petitioner	Patent Owner
"3D space" Claims 1, 8, 14	"a virtual space defined by a three-dimensional coordinate system"	
"two-dimensional (2D) space" Claims 1, 8, 14	"a finite graphical area defined by a two-dimensional coordinate system"	
"texturing" Claims 1, 8	"drawing or mapping an image onto a 3D object"	No construction necessary; plain and ordinary meaning applies. Alternatively: drawing or mapping [the first image on the first object and the second image on the second object].

VIII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. GROUND 1: Claims 1-18 are obvious over Robertson, Gralla, and Gettman

1. Robertson (EX1004)

The explosive popularity of the Internet led to more and more "people using computers to access information…created by unrelated third parties (or content providers)." [EX1004, 2:26-65; *see also* EX1003, ¶¶59-66]. From this premise,

[1] The Court tentatively adopted Petitioner's construction before the *Markman* hearing, which has been postponed in view of Petitioner's transfer and stay motions.

Robertson reasoned that "[n]ew GUIs should therefore help people find information that they want." [EX1004, 2:66-67]. For example, a user may want to "'go back' to (or 'relocate') information (or content), to revisit that information or to revisit a familiar content provider to view new information (or content)" without "navigating through a hierarchy of menus, or entering a search query." [EX1004, 3:36-46].

While "[s]ome so-called 'Internet browser' program services, such as Microsoft's Internet Explorer" help with relocating information or content providers by "permit[ting] people to create lists of favorite Internet locations…represented by bookmarks," the "person's ability to find a desired bookmark becomes more difficult" when "the number of bookmarks in a list increases." [EX1004, 3:47-66]. To improve upon these and other GUIs for accessing information over the Internet, Robertson proposed an interface that "exploit[s] spatial memory" by "simulat[ing] three dimensions" and representing webpages in the 3D space as objects bearing a low resolution image of the corresponding content. [EX1004, 6:15-28; *see also id*., 6:30-67, 9:11-50, 12:54-13:4 ("the object thumbnails 806 represent web (or hypertext markup language or 'HTML') pages")]. The objects "can be added, moved, or deleted from [the] simulated three-dimensional environment" at will by the user. [*Id*., 6:34-40; *see also* 6:20-22, 6:56-61].

Figures 8A and 15A (below) are two of several exemplary 3D-GUIs proposed by Robertson where webpages are represented by objects on a simulated (*i.e.*,

virtual) 3D landscape. [EX1004, 12:54-13:4, 17:21-45, Figures 8A-18].

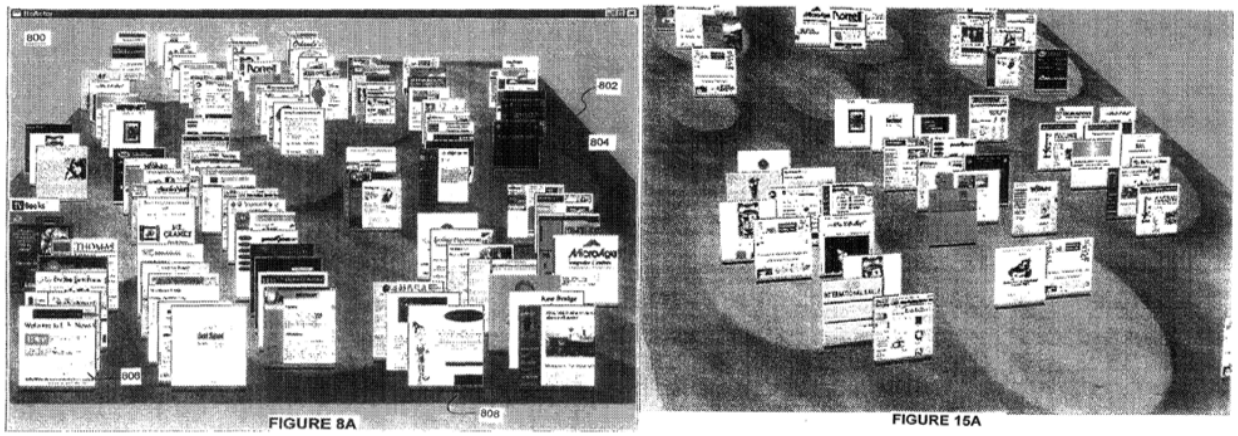


FIGURE 8A

FIGURE 15A

Like the '048 patent, Robertson recognized that it may not be feasible to interact with web content in the form of relatively small objects. Thus, "for editing or otherwise working on a selected object," Robertson provides "'live' objects within an associated application"—that is, actual HTML webpages ("live objects") within a web browser, such as Internet Explorer. [EX1004, 13:55-67]. Accordingly, when a thumbnail is selected by a user, "the Internet Explorer browser…render[s] [the corresponding] web page." [EX1004, 13:67-14:14]. The webpage ("live object") is presented in the foreground in 2D and "can be maximized…to substantially fill the screen of the video monitor," while the 3D space remains "in the background." [*Id*.].

2. Gralla (EX1005)

Gralla (EX1005) is a well-known textbook entitled HOW THE INTERNET WORKS. As its title suggests, Gralla teaches a variety of foundational principles regarding the Internet, including chapters on how webpages work (132-139) and

how web browsers work, including Microsoft's Internet Explorer (133-134, 140-145). [*See* EX1003, ¶67].

3. Gettman (EX1006)

Like Robertson, Gettman describes a 3D-GUI for presenting web content. In Gettman, the 3D space is a virtual city, where each building comprises a "virtual display window[]" that "shows a page of content retrieved from an Internet HTML page." [EX1006, ¶¶0076-0079, Figs. 1, 12 (below); *see also* EX1003, ¶¶68-70]. To create these virtual display windows, webpages are rendered by "an adapted HTML page-rendering engine" and "bitmap screenshots of [the] HTML pages…are cached in local memory," where they are "stored as textures…used to populate the display windows." [EX1006, ¶0082, ¶0112; *see also generally* ¶¶0108-0121, ¶0164 ("display windows 644, 646 display textures rendered from HTML documents of online [w]eb sites")].

Fig.1.

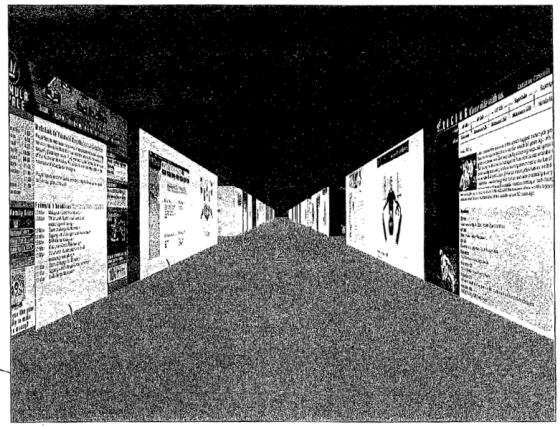
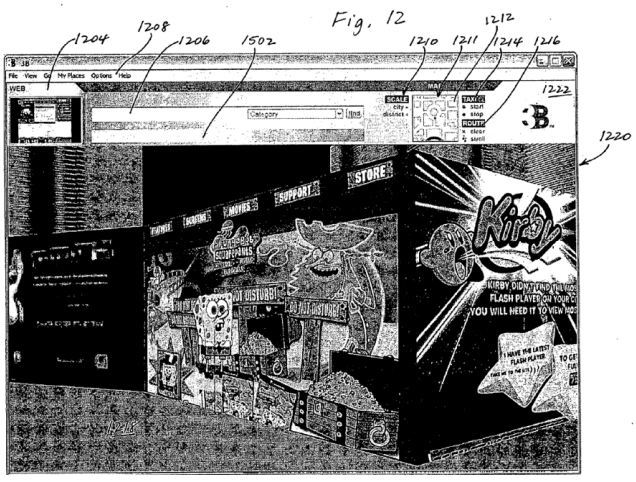


Fig. 12



When the user interacts with a display window in the virtual 3D city—*e.g.*, by clicking on it—"the target [w]eb site [will] open in a conventional two-dimensional web browser," such that "the user switches to an alternate two-dimensional view of the web page." [EX1006, ¶0164; *see also id.*, ¶¶0198-0202, Figures 12-13].

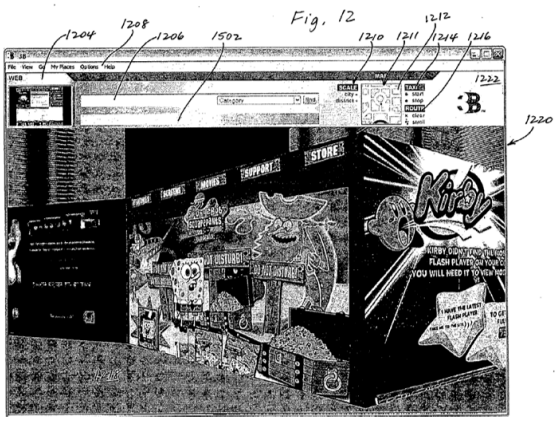


Figure 12: 3D Virtual City

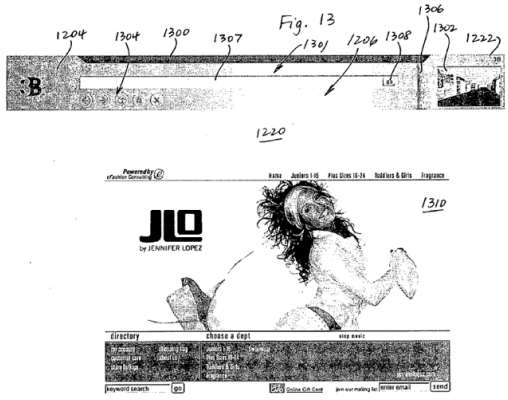


Figure 13: 2D Browser Window

4. The Robertson-Gralla-Gettman Combination

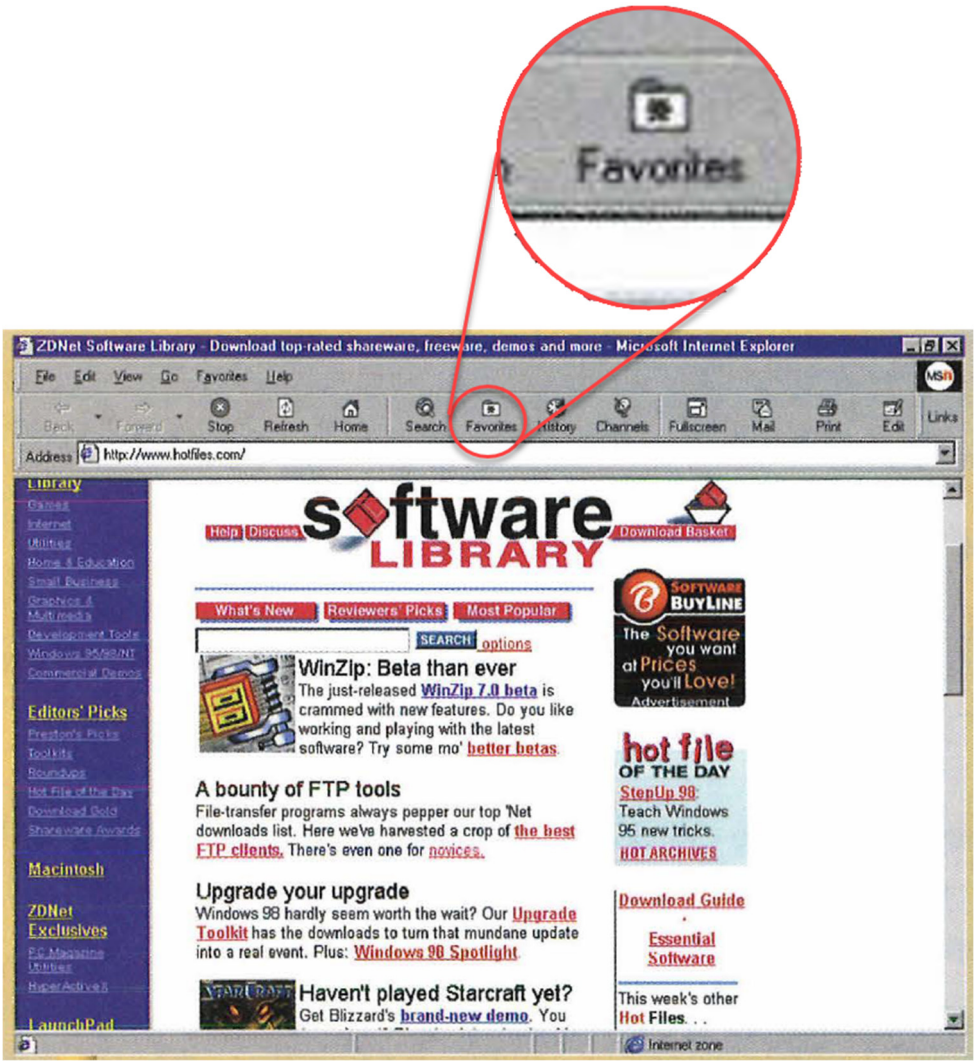
The Robertson-Gralla-Gettman Combination integrates Robertson's 3D-GUI into the web browser described by Gralla as an upgrade to the conventional bookmark/favorites tools for revisiting webpages. [EX1003, ¶¶71-72; *see also generally id.*, ¶¶73-90]. Gettman bolsters Robertson's disclosure on creating objects in a 3D space by articulating additional implementation details and also provides a desirable alternative approach to launching a 2D browser window. [*Id.*].

Reasons to Combine

Integrating Robertson's 3D-GUI into Gralla's web browser

First, Robertson makes clear that its 3D-GUI is an improvement over the "Favorites" tool employed in Microsoft's Internet Explorer, a featured web browser

in Gralla. [EX1004, 3:55-4:3 ("so-called 'Internet browser' program services, such as Microsoft's Internet Explorer…"); EX1005, 133-134 ("You run Web client browser software, such as Netscape Navigator or Microsoft's Internet Explorer…")].



EX1005, 134

Internet Explorer's "Favorites" tool allows users to organize webpage entries into hierarchical lists, which, according to Robertson, places a "cognitive load" on users each time they search for a desired entry. [EX1004, 3:55-4:3]. Hierarchical

lists also fail to "fully exploit the spatial memory (This concept has also been referred to as 'where it is is what it is'.) of people." [*Id*.]. By noting the downsides of the hierarchical lists used in Internet Explorer's "Favorites" tool and proposing its 3D-GUI as a needed improvement, Robertson expressly encourages the POSITA to combine the teachings of Robertson and Gralla. [EX1004, 6:15-67 (there exists a need for a user interface" that "exploit[s] spatial memory" by "simulat[ing] three dimensions" and "permit[ting] continuous movement in the simulated space"), 9:14-50 ("To achieve these [previously stated] goals…"); EX1003, ¶¶74-76 (citing EX1023, EX1026-1028, EX1030-1031); *supra* §V.A.1; *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 418 (2007) (the TSM test captured "helpful insight" on obviousness); *Comaper Corp. v. Antec, Inc*., 596 F.3d 1343, 1352 (Fed. Cir. 2010) ("the TSM test, flexibly applied, remains an important tool")].

Second, "design incentives" and "market forces" would have prompted a POSITA to pursue a combination of Robertson and Gralla. [*KSR*, 550 U.S. at 417; EX1003, ¶¶77-79 (citing, *e.g.*, EX1029-1030, EX1032-1033); *supra* §V.A.1]. For example, a POSITA would have known that page revisitation tools—such as the "Favorites" tool—were some of the most frequently used navigation features in commercial web browsers. [EX1003, ¶78 (citing EX1023-1025)]. Accordingly, the POSITA would have sought usability improvements to this aspect of Internet Explorer, such as offered by Robertson (*e.g.*, reduced cognitive load by exploiting

spatial memory), in an effort to distinguish over competitor products in the marketplace. [EX1003, ¶79 (citing EX1036)]. As the POSITA would have known, usability in this context—*e.g.*, the degree to which a given web browser efficiently facilitates the user's task of locating and consuming web content—was a key differentiator amongst competing web browsers. [*Id*.]. While the same web content could be accessed on two competing web browsers, differences in the user interface could make accessing that content more efficient on one of the two. [*Id*.]. The browser with a superior interface from a usability standpoint would be more desirable by consumers. [*Id*.].

Third, at the time of the '048 patent, the scientific and patent literature was replete with proposals to incorporate 3D-GUIs into commercial products like operating systems and web browsers. [EX1003, ¶¶80-81 (citing EX1010-1012, EX1014-1022, EX1029-1035); *supra* §V.A.1]. A POSITA would have been motivated by this contemporaneous design and research trend to incorporate Robertson's 3D-GUI into a commercial web browser like Microsoft's Internet Explorer. [*Id.*]. Indeed, it is telling that Robertson's disclosure is the product of research conducted by people at Microsoft—Microsoft Research. [*Id.*].

Incorporating Gettman's implementation details on creating 3D objects

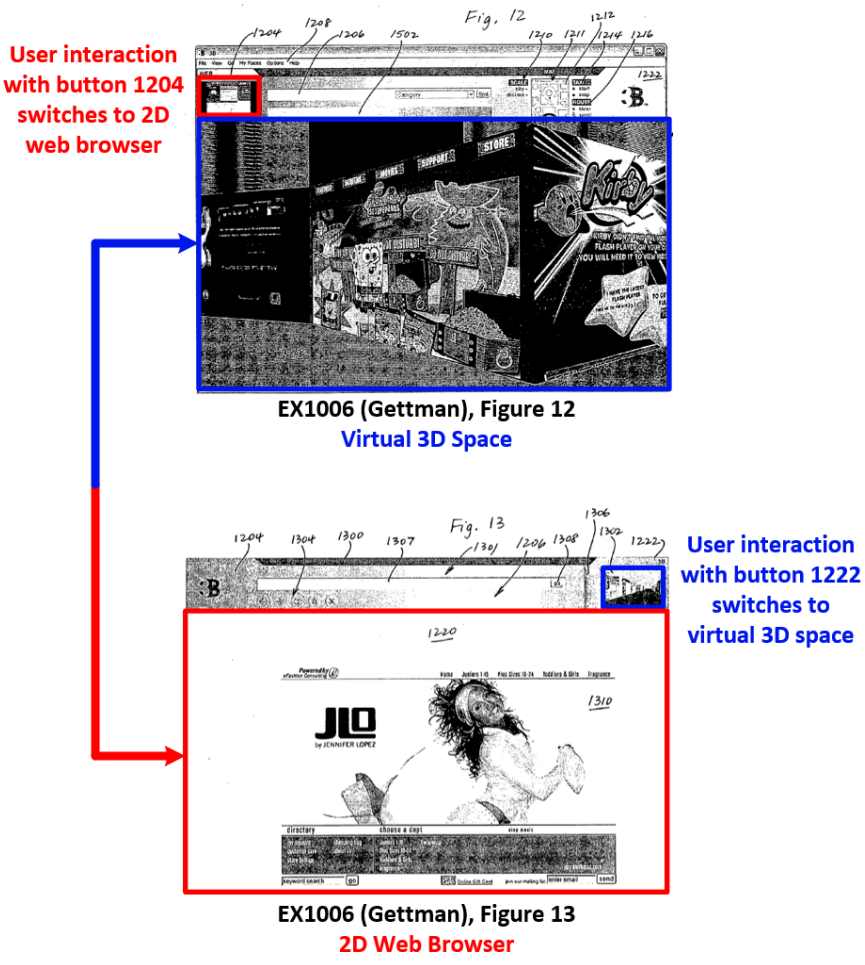
A POSITA would have understood Robertson to teach that objects in the 3D landscape are comprised of low-resolution images—"bitmaps"—obtained from

corresponding webpages. [EX1004, 6:30-50 ("low resolution image"), 9:10-35, 12:54-13:4 ("low resolution images," for example, "64 pixel by 64 pixel bitmaps having 24 bit color"), 18:1-5 (similar), 28:1-16 (similar), Figures 2, 4, 8A-18; EX1003, ¶82]. And while a POSITA would have known the implementation details required to obtain and apply such bitmaps, Gettman provides more guidance on this subject by explaining that: **(i)** bitmaps are obtained by rendering the webpages and capturing screenshots of their content, and **(ii)** the obtained bitmaps are applied to objects in a 3D space using a well-known technique called texturing. [EX1006, ¶0082, ¶¶0108-0121, ¶0164; EX1003, ¶82].

First, Robertson's instruction to provide webpage images on objects in a 3D space would have prompted a POSITA to seek out and apply teachings from references in the same field, like Gettman, that provide relevant implementation details. [EX1003, ¶83]. Second, the rendering, capturing, and texturing steps taught by Gettman were all known techniques, and applying them in the context of a similar reference like Robertson to obtain a substantially similar result would have been obvious. [EX1003, ¶¶84-85 (citing EX1012, EX1016, EX1018-1019, EX1021-1022, EX1030, EX1035, EX1037, EX1012); *supra* §V.A.1; *KSR*, 550 U.S. at 417 ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.")].

Employing Gettman's alternative approach to launching a 2D browser window

Robertson and Gettman both describe 3D-GUIs with functionality to launch 2D browser windows that facilitate conventional user interaction with webpages (*e.g.*, web browsing/surfing). [EX1004, 13:55-14:11; EX1006, ¶¶0198-0202; EX1003, ¶86]. In Robertson, the 2D browser window is "maximized, as is known to those skilled in the art," to replace the 3D space on the display. [*Id.*] In Gettman, the GUI "switches" between the 3D space and the 2D browser window, replacing one with the other when the user makes the corresponding selection in the user interface, as shown in the visual aid below. [*Id.*].



First, a POSITA would have been motivated to substitute Gettman's browser-window technique in place of Robertson's to obtain the predictable benefit of improved usability. [EX1003, ¶¶87-88 (explaining, with reference to EX1036, that "usability…was a key differentiator among competing we browsers")]. For example, the POSITA would have gleaned that Gettman's browser-window technique provides the ability for the user—with a single interaction—to switch efficiently between the 2D browser and the 3D space. [*Id*.] While Robertson does not detail the specific series of steps that the user must perform to obtain the "maximized" view of the 2D browser or to revert back to the 3D space, Gettman demonstrates that the interface should be designed to facilitate switching between 3D and 2D with a minimal number of user interactions. [*Id*.]

Second, this predictable combination of Robertson and Gettman resembles the familiar pattern of merely substituting one element for another known in the field to obtain predictable results. [*KSR*, 550 U.S. at 416; *In re Lackey*, 371 Fed. App'x 80, 82 (Fed. Cir. 2010) ("A simple substitution of one known element for another known element in the field to obtain predictable results is obvious." (citing *KSR*)); EX1003, ¶89]. Bolstering Robertson's 2D browser technique based on Gettman's teachings would not have disturbed the other aspects of Robertson's 3D-GUI, and it would have produced substantially similar functionality to what Robertson described. [EX1003, ¶89].

Reasonable Expectation of Success

A POSITA would have reasonably expected a successful outcome from the above-discussed combination of teachings from Robertson, Gralla, and Gettman. [EX1003, ¶90]. GUIs, web browsers, and simulated 3D environments were all well-known technologies at the time of the '048 patent in 2005, and these technologies had been successfully demonstrated in the real-world by then. [EX1003, ¶90 (citing EX1010-1012, EX1029-1030, EX1038); *supra* §V.A.1]. Thus, the result of the Robertson-Gralla-Gettman Combination would have been predictable to a POSITA, and the POSITA would have expected it to work. [*Id.*].

5. Element-by-Element Analysis

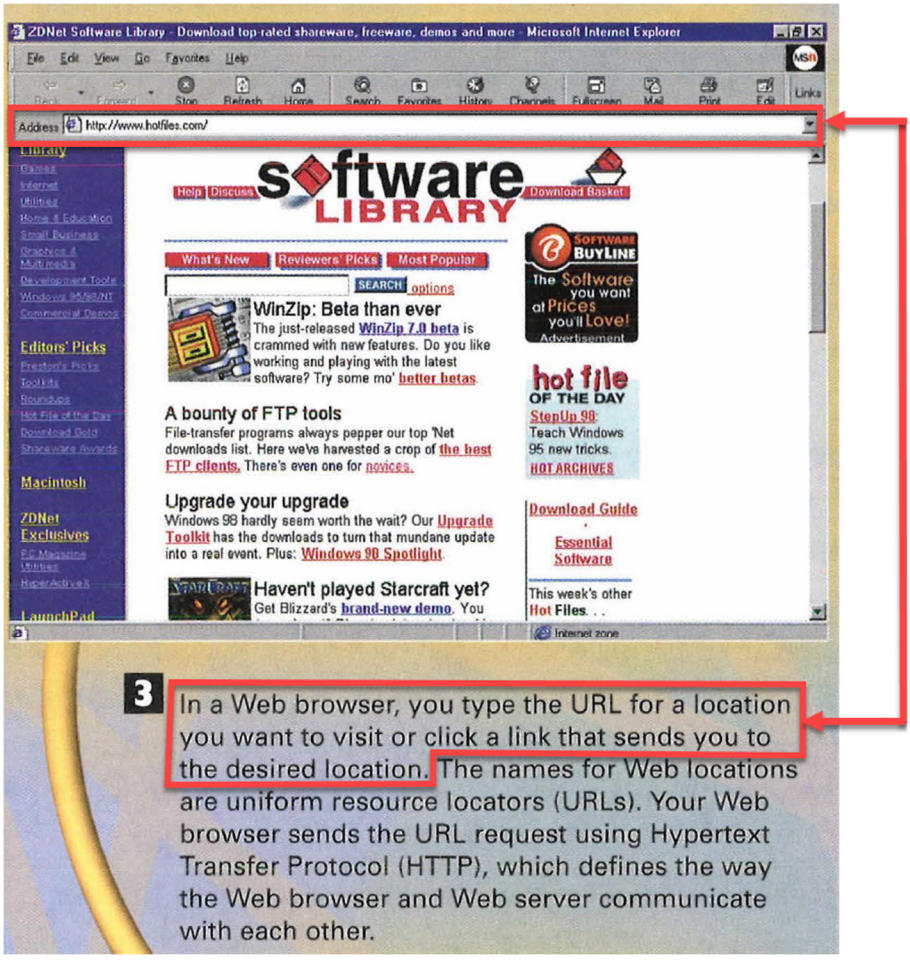
Claim 1

Element [1.pre]: A method for providing a three-dimensional (3D) graphical user interface, comprising:

To the extent the preamble is limiting (which Petitioner does not concede), the Robertson-Gralla-Gettman Combination satisfies Element [1.pre]. [EX1003, ¶91]. For example, Robertson describes "[a] ***graphical user interface*** in which object thumbnails are rendered on a simulated ***three-dimensional*** surface which (i) exploits spatial memory and (ii) allows more objects to be rendered on a given screen." [EX1004, Abstract; *see also id*., 6:30-67, 9:10-50, 15:46-16:2, 28:1-30, Figures 8A-18].

Element [1.a]: receiving at least first and second inputs from an end user;

The Robertson-Gralla-Gettman Combination satisfies Element [1.a]. [EX1003, ¶¶92-94]. As discussed at §VIII.A.4, the Combination involves Robertson's 3D-GUI integrated within Gralla's web browser. Gralla shows that the web browser ***receives inputs from an end user***, for example, when the user "type[s] the URL for a location [they] want to visit" in an address bar. [EX1005, 134].



A POSITA would have understood and found it obvious that a user would visit multiple Internet locations (*e.g.*, webpages and websites) during one or more browsing sessions and, accordingly, provide multiple (***first/second***) uniform

resource locator (URL) ***inputs***. [EX1003, ¶93]. This understanding is consistent with Robertson's teaching of favorites lists including "Internet locations (as located by a Uniform Resource Locator or 'URL') represented by [multiple] bookmarks." [EX1004, 3:58-63; *see also* §VIII.A.4 (the Robertson-Gralla-Gettman combination involves Robertson's 3D-GUI used in context of the bookmark/favorites tools described by Gralla). [EX1003, ¶94 (citing EX1023)].

Element [1.b]: receiving first and second webpages from at least one server in response to said first and second inputs, wherein the first and second inputs are website addresses corresponding to said first and second webpages, respectively;

The Robertson-Gralla-Gettman Combination satisfies Element [1.b]. [EX1003, ¶¶95-97].

the first and second inputs are website addresses corresponding to said first and second webpages

As discussed at Element [1.a], the Combination incorporates Gralla's teaching of receiving ***first and second inputs*** when a user types URLs (***website addresses corresponding to webpages***) into the address bar of a web browser. [EX1005, 134, 153 ("…a URL, or Web address, indicates where the host computer is located, the location of the Web site on the host, and the name of the Web page and the file type of each document…"); EX1003, ¶96].

receiving first and second webpages from at least one server in response to said first and second inputs

As discussed immediately above and at Element [1.a], "[i]n a Web browser, you type the URL for a location you want to visit" (***first and second inputs***).

[EX1005, 134]. "Your Web browser sends the URL request using Hypertext Transfer Protocol (HTTP), which defines the way the Web browser and Web server communicate with each other." [*Id*.]. "When the server finds the requested home page, document, or object, it sends that home page, document, or object back to the Web browser client. The information is then displayed on the computer screen in the Web browser." [*Id*.]. In short, after (***in response to***) the user types a URL (***website address***) into the address bar (***first/second inputs***), the browser sends a request to the ***server*** and receives a response from ***server*** including the (***first/second***) ***webpage*** that corresponds to the URL. [EX1003, ¶97].

Element [1.c]: displaying at least a portion of the first webpage on a first object within a 3D space, and at least a portion of the second webpage on a second object within the 3D space, comprising;

The Robertson-Gralla-Gettman Combination satisfies Element [1.c]. [EX1003, ¶¶98-103]. To start, Robertson's 3D-GUI ***displays first/second objects within a 3D space***. [EX1003, ¶98]. As to the ***3D space***, a POSITA would have understood and found it obvious that Robertson's repeated discussion of positioning and moving objects in a "simulated three-dimensional environment"[2] implicates a

[2] The term "three-dimensional environment" is used synonymously in Robertson with "three-dimensional space," "three-dimensional landscapes," and "three-dimensional plane."

virtual space defined by a three-dimensional coordinate system (the parties' agreed construction). [EX1004, 6:30-50, 9:14-50, 12:54-13:27; 15:59-63; EX1003, ¶99].

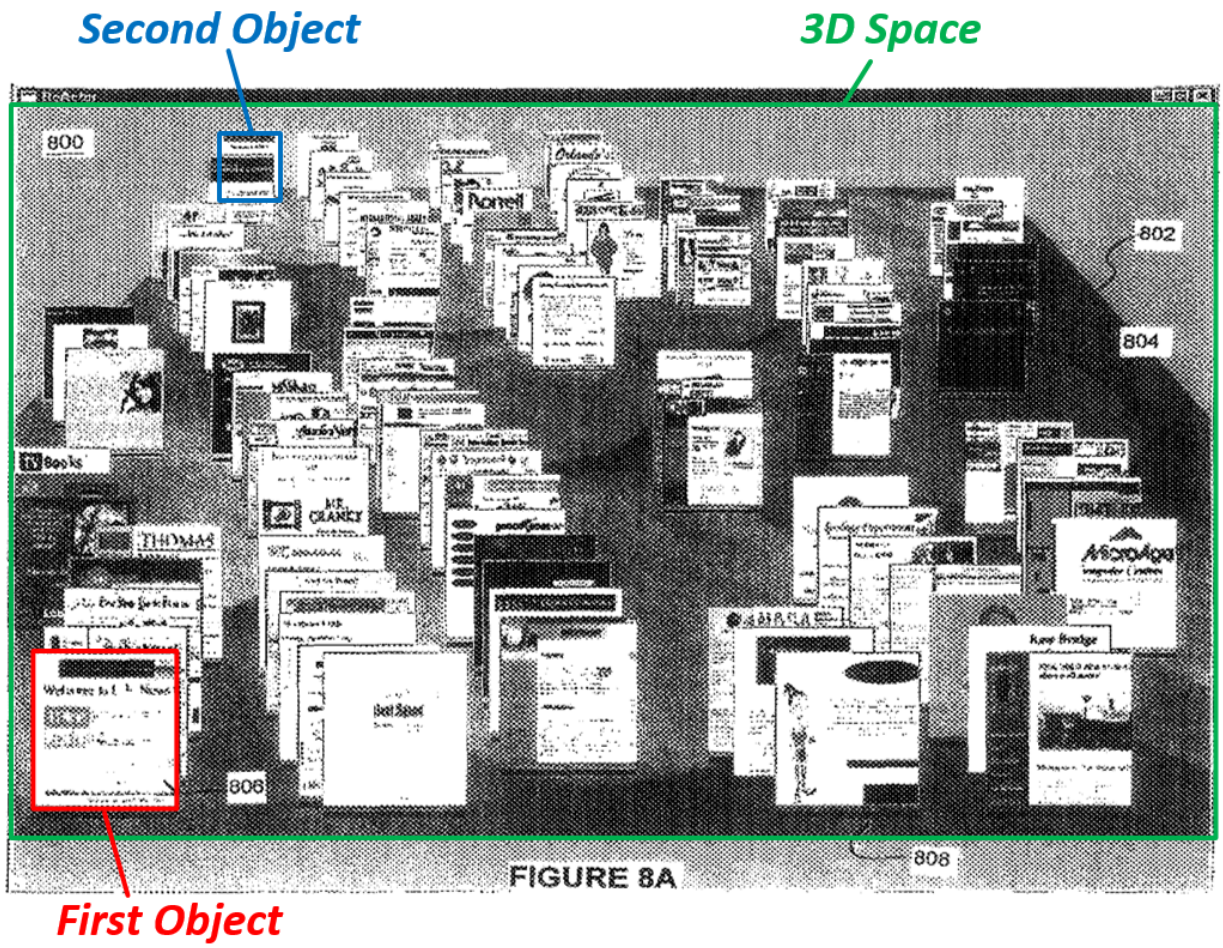
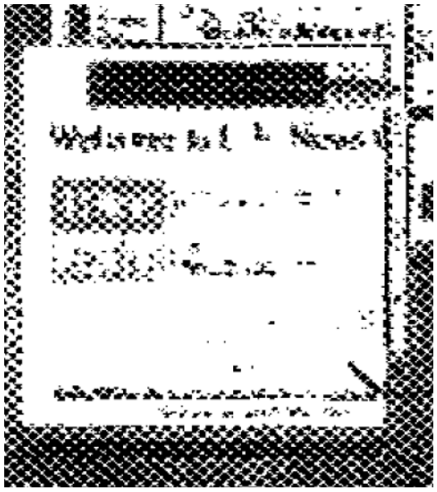


FIGURE 8A

Additionally, Robertson provides that its 3D-GUI "may (i) represent, visually, objects using object thumbnails and (ii) may simulate a three-dimensional plane, or other three-dimensional landscape on which the object thumbnails may be manipulated. FIG. 8A is a display 800 which illustrates an inclined…plane 802…having low resolution images…or object thumbnails 806." [EX1004, 12:54-13:4, Figure 8A (annotated below); EX1003, ¶100]. Robertson further teaches that,

"[i]n the display 800, the object thumbnails 806 represent web (or hypertext markup language or 'HTML') pages." [*Id*.].

As discussed at §VIII.A.4, the Combination employs Robertson's 3D-GUI to present webpages previously visited and added to the "Favorites" tool by a user of Gralla's web browser. *See also infra* Elements [1.a-1.b] (discussing Gralla's web browser). Accordingly, in the Combination, the ***first/second object*** thumbnails of Robertson represent the ***first/second webpages*** of Gralla (per Element [1.b]). [EX1003, ¶101]. And Robertson evinces that the ***object*** thumbnails comprise visual representations—images (***displaying at least a portion***)—of the ***webpages***. [EX1004, 6:30-50 ("low resolution image"), 9:10-35, 12:54-13:4 ("low resolution images," for example, "64 pixel by 64 pixel bitmaps having 24 bit color"), 18:1-5 (similar), 28:1-16 (similar), Figures 2, 4, 8A-18; EX1003, ¶¶101-102 (citing EX1030, 5 ("screen snapshots of actual web pages"))].



EX1004, FIG. 8A (cropped)

"low resolution images...represent web (or hypertext markup language or 'HTML') pages"

EX1004, 12:54-13:4

To the extent Patent Owner argues or the Board finds Robertson deficient, Gettman's supplemental disclosure provides this feature. [EX1003, ¶103; *see also supra* §VIII.A.4]. As discussed below at [1.c.i] through [1.c.iii], Gettman supplements Robertson with express teachings about saving bitmap screenshots (***at least a portion***) of ***webpages*** and ***displaying*** them in a 3D-GUI.

Element [1.c.i]: rendering the first and second webpages;

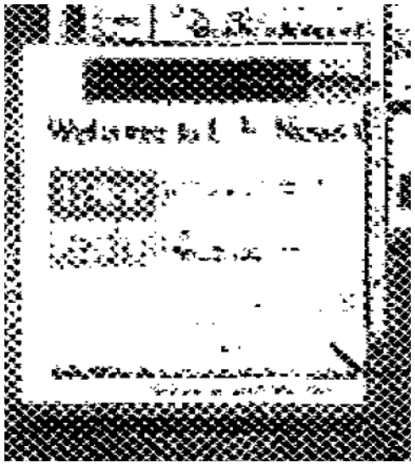
The Robertson-Gralla-Gettman Combination satisfies Element [1.c.i]. [EX1003, ¶¶104-106]. A POSITA would have understood that Robertson's 3D-GUI ***renders the*** (***first/second***) ***webpages*** to obtain the webpage images on the object thumbnails. [*See supra* Element [1.c]; EX1004, 6:30-50, 9:10-35, 12:54-13:4, 18:1-5, 28:1-16, Figures 2, 4, 8A-18; EX1003, ¶¶104-105 (citing EX1030, EX1001)]. For example, the POSITA would have known that webpage ***rendering*** was a ubiquitous process for converting code received from a web server into visible content. [*Id.*].

To the extent Patent Owner argues or the Board finds Robertson deficient, the Combination incorporates the implementation details provided by Gettman for displaying webpages in a 3D-GUI and applies those details to Robertson's disclosure on object thumbnails displaying webpage images. [*See supra* §VIII.A.4]. Gettman's technique involves "cach[ing]" "bitmap screenshots" of ***webpages*** in local memory using a "HTML page-***rendering*** engine"—a software application for ***rendering*** (the ***first/second***) ***webpages***. [EX1006, ¶0082; *see also id.*, ¶¶0108-0121,

Figure 2 ("Generate invisible window from source data"); EX1003, ¶106].

Element [1.c.ii]: capturing first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and

The Robertson-Gralla-Gettman Combination satisfies Element [1.c.ii]. [EX1003, ¶¶107-108]. A POSITA would have understood that Robertson's 3D-GUI ***captures images*** of the rendered (***first/second***) ***webpages*** to obtain the webpage images on the object thumbnails. EX1004, 6:30-50, 9:10-35, 12:54-13:4, 18:1-5, 28:1-16, Figures 2, 4, 8A-18; EX1003, ¶107 (citing EX1030, 5 ("screen snapshots of actual web pages"))]. Robertson shows the webpage images in its figures (*e.g.*, Figure 8A, below) and explains that they are saved in memory as low-resolution bit maps (EX1004, 9:10-35, 18:1-5). Robertson also distinguishes the still images on the object thumbnails from a "live" object containing a dynamic instance of the actual webpage. [*Id*., 9:103-35]. Storing a low-resolution still image of a webpage in memory demonstrates that the ***image*** was ***captured***. [EX1003, ¶107].



EX1004, FIG. 8A (cropped)

"low resolution images...represent web (or hypertext markup language or 'HTML') pages"

EX1004, 12:54-13:4

To the extent Patent Owner argues, or the Board finds Robertson deficient, the discussion at Element [1.c.i] shows that Gettman's technique involves "cach[ing]" "bitmap screenshots" (***captured first/second images***) of rendered (***first/second***) ***webpages*** in local memory. [EX1006, ¶0082; *see also id*., ¶¶0108-0121]. First, a POSITA understood that Gettman's reference to a "screenshot" teaches that the contents of the screen—here, a rendered ***webpage***—are ***captured*** in a file saved ("cached") in memory. [EX1003, ¶108]. Second, the POSITA also understood that Gettman's reference to a "bitmap" teaches that the captured contents are ***images***. [*Id.* (citing EX1039)].

Element [1.c.iii]: texturing the first image on the first object and the second image on the second object, the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space; and

The Robertson-Gralla-Gettman Combination satisfies Element [1.c.iii]. [EX1003, ¶¶109-120].

Per Element [1.c], Robertson provides (***first/second***) ***object*** thumbnails comprising low resolution bitmap ***images*** representing (***first/second***) ***webpages***. [EX1004, 6:30-50, 9:10-35, 12:54-13:4, 18:1-5, 28:1-16, Figures 2, 4, 8A-18]. According to Robertson, for each object:

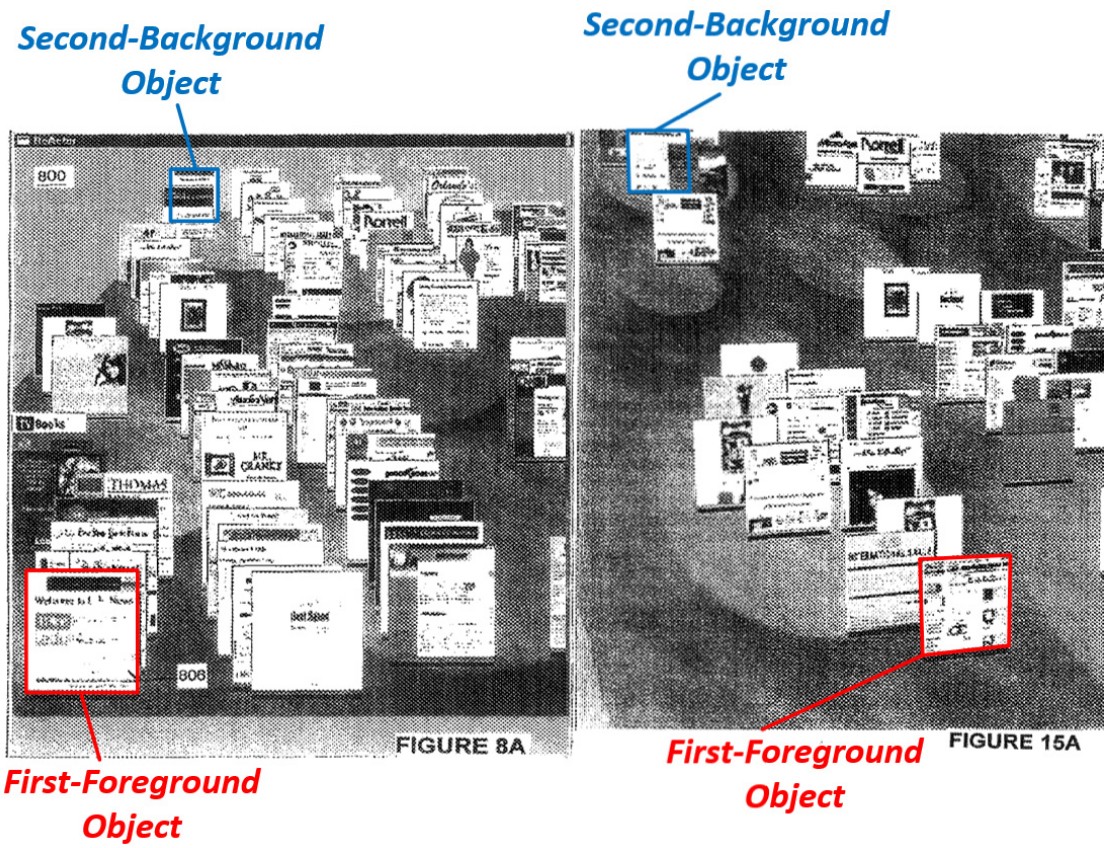
1. the "object's location" in the 3D space is retrieved from "storage means" (*id*., 17:49-67, Figs. 2, 4, 8A-D, 25; *see also id*., 14:61-63 ("The location information field 308 may include…a location in the simulated

three-dimensional environment.");

2. a "perspective view process" portrays the object on a "display plane" based on its location, such that objects "appear larger if located in the ***foreground***…and appear smaller if located in the ***background***" (*id*.);
3. an optional "parallax simulation process" applies an off-center effect to the object (*id*., 17:21-48, 18:6-13, Figs. 15A-B, 23A-B); and
4. the "low resolution image" is retrieved from "storage means" and drawn/mapped (***textured***) on the object (*id*., 17:49-67, Figs. 2, 4, 8A-D, 25; EX1003, ¶110)[3].

Robertson's figures demonstrate how the webpage ***images*** are drawn/mapped based on the size and shape of the ***object*** thumbnail—*e.g.*, larger in the foreground, smaller in the background, and optionally with a parallax effect. [EX1003, ¶¶111-113 (citing EX1016, EX1019, EX1021-1022, EX1030, EX1035, EX1037) (explaining that the '048 patent and Robertson disclose the same popular 3D graphics API—OpenGL—which provides texture mapping functionality)].

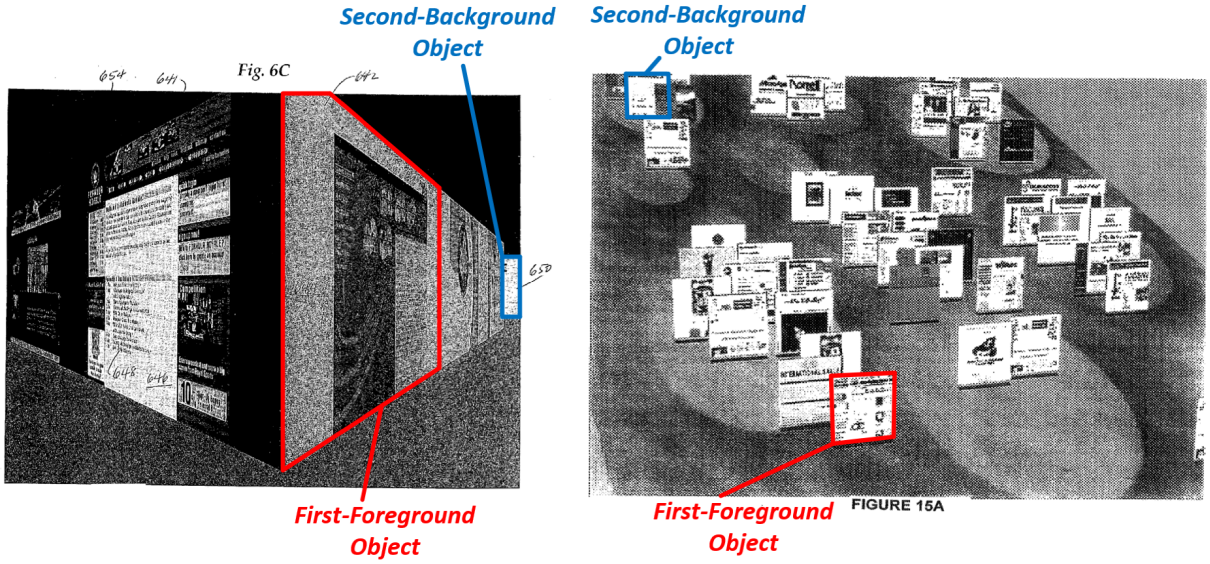
[3] Patent Owner cannot reasonably contest an obviousness analysis based on Robertson's figures given that its infringement allegations are based on an alleged "[i]llustration" of "Safari" [EX1052, 26 (¶¶71-73)].



Gettman's teachings reinforce the POSITA's understanding that Robertson uses ***texturing***. [*Real Time Data, LLC v. Iancu*, 912 F.3d 1368, 1372-73 (Fed. Cir. 2019) (approving the Board's reliance on a second reference to reinforce the interpretation of a first reference)]. According to Gettman, "cached HTML pages" (***captured images***, per Element [1.c.ii]) are "stored as ***textures*** in the client computer memory" and "used to populate the display windows" (***objects***) in ***the 3D space***. [EX1006, ¶0112, ¶0163 ("a first virtual building 642…in a ***foreground***…a second virtual building 650…in a ***background***[.]"); *see also id.*, ¶0113-0121, Figure 6C; EX1003, ¶114]. As shown below, Gettman and Robertson similarly provide 3D spaces with objects bearing images of webpages. While Robertson does not use the

exact term, Gettman confirms that a POSITA would have understood Robertson's technique to use ***texturing***. [EX1003, ¶114].

Gettman (EX1006), Figure 6C **Robertson (EX1004), Figure 15A**



The Parties' "Texturing" Constructions

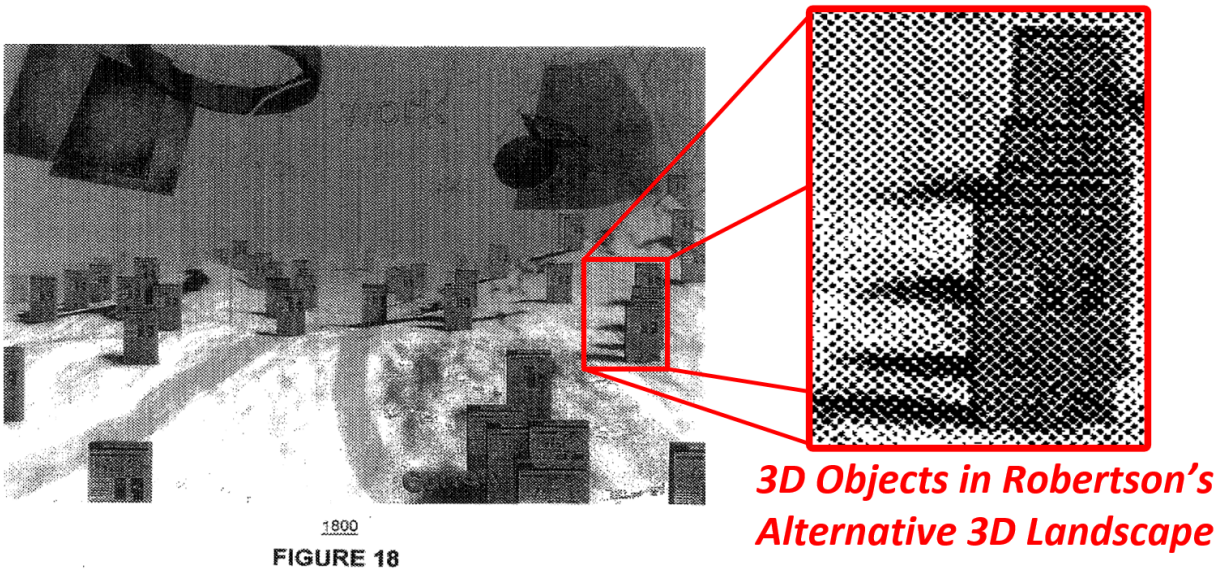
The analysis above satisfies Element [1.c.iii] under Patent Owner's proposed district court construction of ***texturing***[4] because that construction does not limit the claims to texturing on any particular kind of object. Petitioner's proposed construction[5], on the other hand, requires that the claimed ***objects*** on which the ***webpage images*** are ***textured*** must be ***3D objects***. The Robertson-Gralla-Gettman Combination satisfies Element [1.c.iii] under Petitioner's construction as well.

[4] Patent's Owner's construction is (1) plain and ordinary meaning; or alternatively (2) "drawing or mapping."

[5] Petitioner's construction is "drawing or mapping an image onto a 3D object."

[EX1003, ¶¶115-120].

For example, Robertson discloses a variety of "alternative landscapes," where the objects textured with webpage images are depicted as rectangular prisms (***3D objects***) having a height in the Y-dimension, a width X-dimension, and a depth in the Z-dimension. [EX1004, 13:5-7, 27:45-67, Figures 16-18; *see also id.*, 22:31-55, Figures 13A-13D; EX1003, ¶117 (citing EX1040)].



The '048 patent's preferred embodiments involve thin rectangular prisms that resemble those shown in Robertson's Figure 18. [EX1001, 18:46-56, Figure 10 (annotated below); EX1003, ¶118].

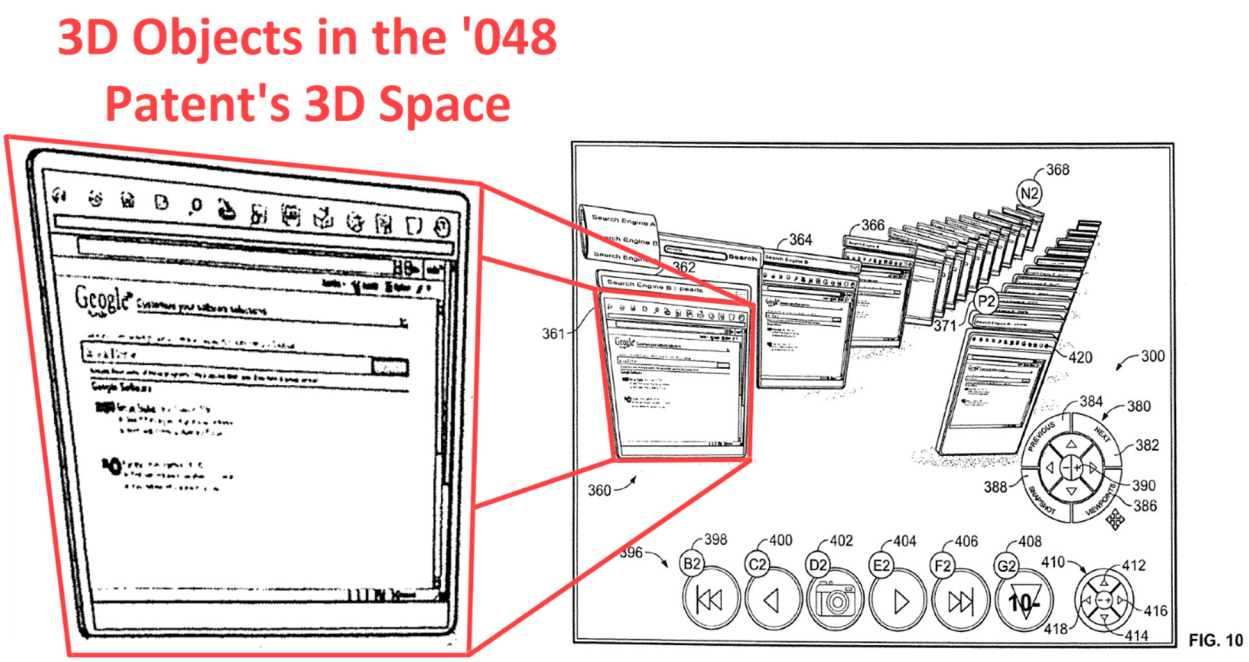


FIG. 10

A POSITA would have appreciated that utilizing the rectangular prisms (***3D objects***) from Robertson's alternative landscapes would have been a "predictable variation," *KSR* 550 U.S. at 417, from the embodiments discussed earlier in Robertson that employ flat rectangles without depth in the Z-dimension (to the extent they are 2D). [EX1003, ¶119]. This "simple substitution," *KSR*, 550 U.S. at 417, of one virtual object for another within the scope of the same disclosure would have been readily apparent to the POSITA, especially when the two are described as "alternatives." [*Id.* (citing EX1011-1012, EX1017-108, EX1029, EX1038)]. Moreover, the notion of adding depth to Robertson's objects would have been intuitive to the POSITA given that the surrounding three-dimensional environment naturally allows three-dimensional objects. [EX1003, ¶120]. Finally, the POSITA would have understood that using 3D objects would provide the predictable

advantage of improving the realism and immersive effect of the Robertson-Gralla-Gettman 3D-GUI. [*Id.*].

Element [1.d]: displaying additional information, comprising:

The Robertson-Gralla-Gettman Combination satisfies Element [1.d] for all the reasons below regarding Elements [1.d.i] through [1.d.v]. [EX1003, ¶121].

Element [1.d.i]: receiving an interaction by the end user on the first image;

The Robertson-Gralla-Gettman Combination satisfies Element [1.d.i]. [EX1003, ¶122]. For example, Robertson's 3D-GUI uses "'live' objects within an associated application for…working on a selected object." [EX1004, 13:55-14:21]. In one example, "the Internet Explorer™ Internet browser…may be rendering a web page, with the user interface of the present invention in the background." [*Id*.] The selection is made when the ***end user*** inputs, and the 3D-GUI ***receives***, a predetermined ***interaction***, such as a "mouse click," on the (***first***) ***image*** of the object thumbnail. [*Id*., 16:3-17, Figure 22; *see also* 15:45-68 ("a user may interact with the user interface…using a pointing device, such as a mouse") ("[T]he pointer input management process…provides user inputs, from the pointing device, to the input management process…")].

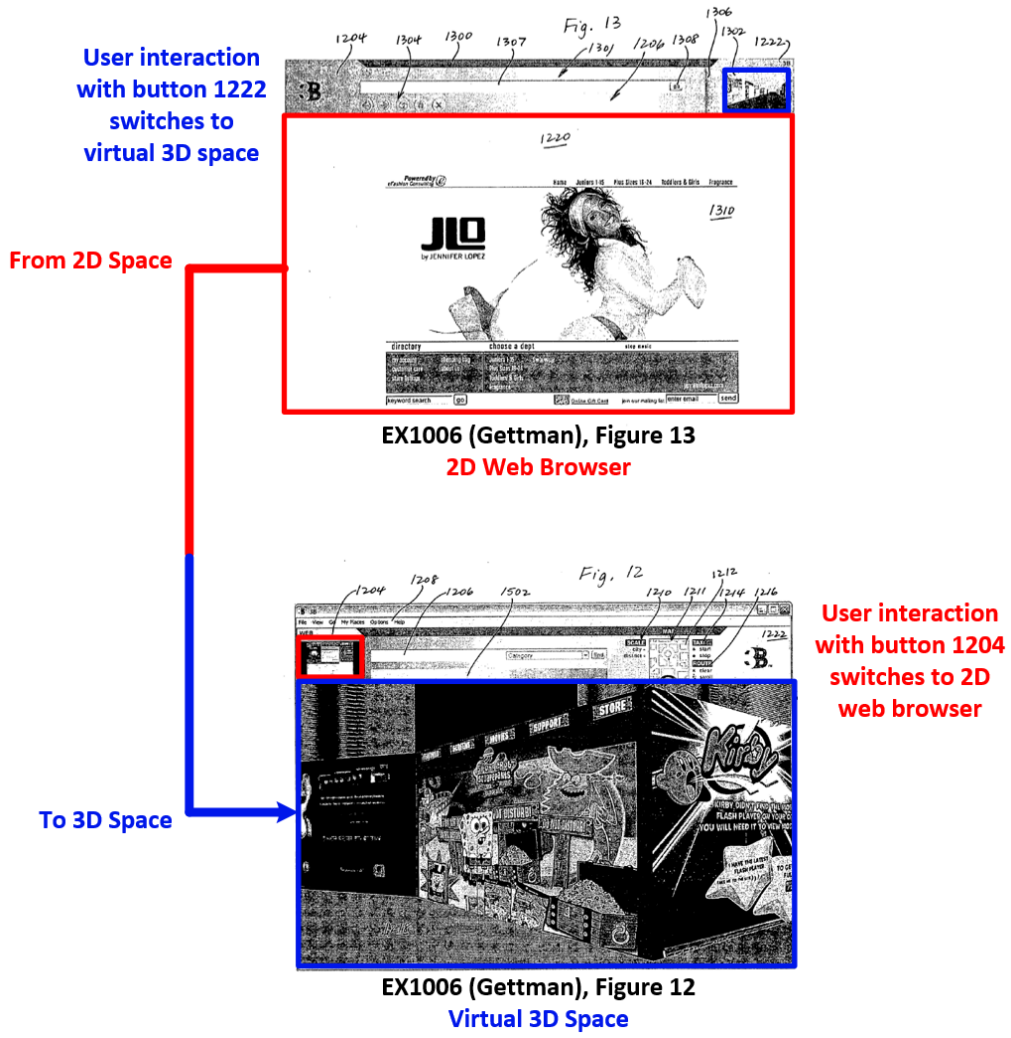
Element [1.d.ii]: replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the rendered first webpage;

The Robertson-Gralla-Gettman Combination satisfies Element [1.d.ii]. [EX1003, ¶¶123-127]. For example, per Element [1.d.i], when the user selects an

object thumbnail, Robertson's 3D-GUI presents a "'live' object" that is "in its associated application," such as "the Internet Explorer™ Internet browser…[for] ***rendering a [first] web page***." [EX1004, 13:55-14:14, Figure 9]. The browser can be "maximized…to substantially fill the screen of the video monitor" while the 3D-GUI is "in the background." [*Id*.]. In other words, the (***first/second***) ***objects in the 3D space*** of Robertson's GUI are ***replaced***—both from the user's perspective of what content is viewable and the computer's standpoint in terms of what content is being displayed—by a full-screen ***window in the two-dimensional space*** of a conventional Internet Explorer web browser. [EX1003, ¶¶123-124; *see also* ¶125 (explaining, *inter alia*, that Internet Explorer implicates a 2D coordinate system and is, thus, consistent with the parties construction of ***2D space***)]. In this way, Robertson's disclosure tracks the '048 patent's preferred embodiment, which involves a "heads-up-display" feature where "the 2D version of the webpage…[is] position[ed] in a layer that is <u>in front of</u> the 3D virtual space such that the end user can interact with this layer in 2D." [EX1001, 21:20-53; EX1003, ¶124].

To the extent Patent Owner argues or the Board finds Robertson deficient, Gettman's supplemental disclosure renders obvious this ***replacing*** feature. [EX1003, ¶126; *see also supra* §VIII.A.4]. For example, Gettman describes an embodiment where "the result of the interaction [with a 3D display window in the virtual city] may cause the target [w]eb site to open in a conventional two-

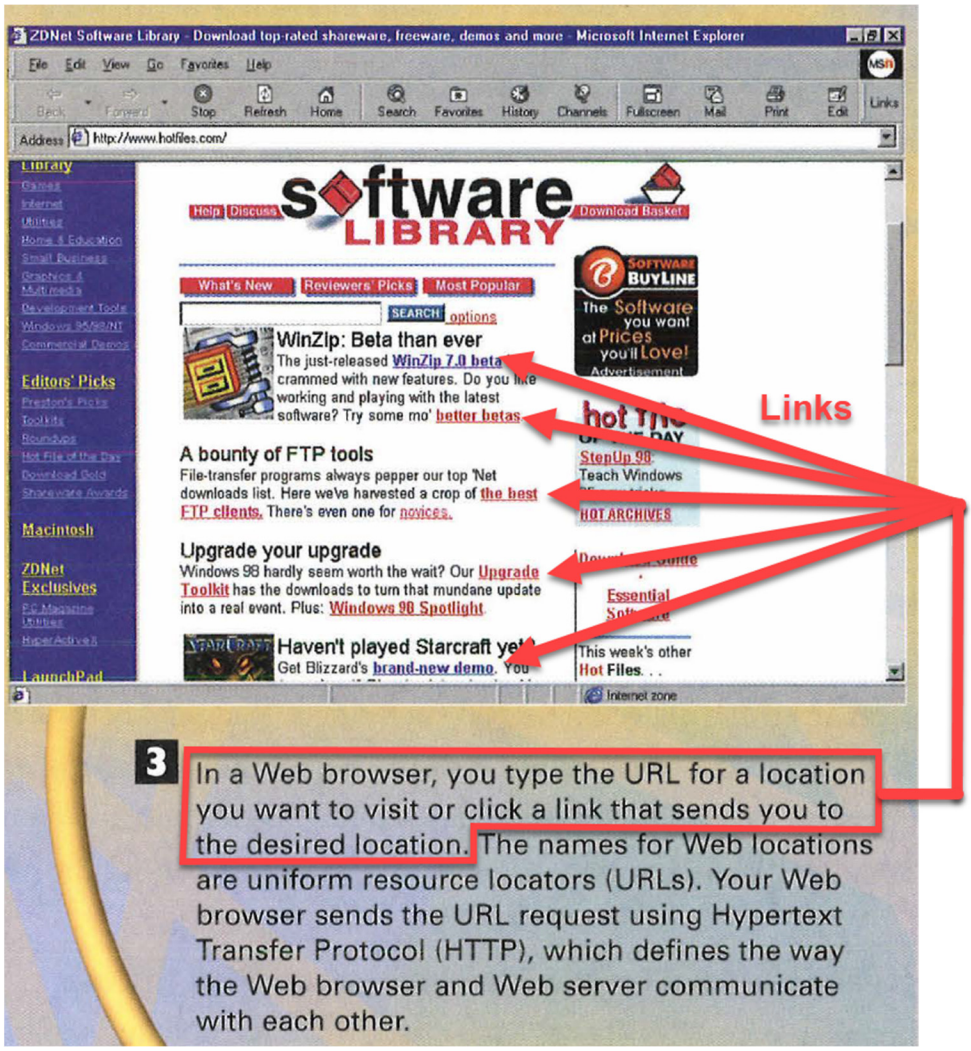
dimensional web browser." [EX1006, ¶0164; *see also id.*, ¶¶0200-0201]. In this way, "the user switches to an alternate two-dimensional view of the web page." [*Id.*]. With reference to Figures 12 (bottom) and 13 (top), Gettman explains how the user interface "switches" between (***replaces***) **(i)** "a virtual ***3D space***" with "display windows" (***first/second objects***) showing images of corresponding (***first/second***) ***webpages***; and **(ii)** a "web view" comprising a "conventional ***two-dimensional*** browser" (*e.g.*, Mozilla) that loads the webpage "linked to a display window…on which the user has clicked." [*Id.*, ¶0200].



As discussed at §VIII.A.4, a POSITA would have been motivated to employ Gettman's above-discussed teaching of toggling between "a virtual 3D space" and "a two dimensional browser" in response to an end user interacting with and selecting an object thumbnail. [EX1003, ¶127].

Element [1.d.iii]: receiving an interaction by the end user on a link provided in the rendered first webpage, the link corresponding to the additional information;

The Robertson-Gralla-Gettman Combination satisfies Element [1.d.iii]. [EX1003, ¶128]. As discussed at Element [1.d.ii], Robertson and Gettman teach the concept of launching a web browser (*e.g.*, Internal Explorer or Mozilla) for the user to interact with in a conventional way—*i.e.*, in a 2D window instead of a virtual 3D space. And Gralla explains that the conventional functionalities of such a web browser involve ***receiving an interaction by the end user***—a "click"—***on a link provided in the rendered (first) webpage, the link corresponding to the additional information***. [EX1005, 134].



Element [1.d.iv]: rendering the additional information; and

Element [1.d.v]: displaying the rendered additional information in said window within the 2D space.

The Robertson-Gralla-Gettman Combination satisfies Elements [1.d.iv] and [1.d.v]. [EX1003, ¶129]. As discussed at Element [1.d.ii], Robertson and Gettman teach the concept of launching a web browser (*e.g.*, Internal Explorer or Mozilla) for the user to interact with in a conventional way—*i.e.*, in ***a 2D window*** instead of a virtual 3D space. And Gralla explains that the conventional functionalities of such

a web browser involve ***rendering*** and ***displaying the additional information***—*i.e.*, content from the URL location of the link. [EX1005, 142-143 ("A web browser ***displays information*** on your computer by interpreting the [HTML] that is used to build home pages on the Web."); EX1003, ¶¶129 (explaining that web browsers ***render information*** by interpreting HTML code and ***displaying*** the corresponding content); *see also* ¶¶104-105].

Claim 2

Elements [2.a] and [2.b]

The Robertson-Gralla-Gettman Combination satisfies Elements [2.a] and [2.b]. [EX1003, ¶¶130-134]. These elements require repeating the ***capturing*** and ***texturing*** steps of Elements [1.c.ii] and [1.c.iii] for the ***additional information rendered*** and ***displayed*** in Elements [1.d.iv] and [1.d.v]. Repeating Elements [1.c.ii] and [1.c.iii] is taught by Robertson's instruction to perform its 3D-GUI processing steps "as a sequence of cycles" where "inputs are accepted" and "states are updated" based on "user inputs." [EX1004, 14:25-34 ("[T]he processing by the present invention may be thought of as a sequence of cycles."), Figure 2]. It would have been clear to a POSITA that the notion of "updat[ing]" applies throughout Robertson, and thus includes the obvious functionality of updating the images on the object thumbnails in the 3D space to reflect updates in the 2D browser window based on the user's inputs and interactions with the 2D browser. [EX1003, ¶131].

Accordingly, during a subsequent processing cycle, the ***first image*** is replaced by a ***third image*** on the ***first object*** thumbnail to reflect the user input conducted using the browser application (navigating to a ***third webpage***). [EX1003, ¶131].

Even without Robertson's teaching, repeating Elements [1.c.ii] and [1.c.iii] for the ***additional information*** of Elements [1.d.iv] and [1.d.v] would have been obvious to a POSITA using common sense and ordinary creativity. [EX1003, ¶132]. Moreover, the POSITA would have been motivated to incorporate such "updating" functionality in Robertson's 3D-GUI to promote Robertson's stated goal of improving the spatial/visual recognition of web pages. [EX1004, 3:36-45, 6:15-23, 9:10-25; EX1003, ¶¶133-134 (explaining that updating object thumbnail images would help users re-locate those objects at a later time within a browsing session)].

Element [2.c]

The Robertson-Gralla-Gettman Combination satisfies Element [2.c]. [EX1003, ¶¶135-136]. This element requires the 3D-GUI to revert the ***replacing*** step of Element [1.d.ii] to re-enter the 3D space, which Robertson and Gettman both teach. [EX1004, 16:15-17 ("If the object is deselected, for example by another mouse click," the prior state is "reentered."), 22:67-23:4, Figure 22; EX1006, ¶¶0200-0201 ("3B Button area 1222 [in the 2D browser window of Figure 13]…when selected by a user, cause[s] the browser to display the 3B view [comprising the 3D-GUI of Figure 12] in the main pane 1220.")].

Claim 3

Elements [3.a] and [3.b]

The Robertson-Gralla-Gettman Combination satisfies Elements [3.a] and [3.b] for the same reasons discussed at Element [2.c]. [EX1003, ¶¶137-138]. Robertson and Gettman both teach reverting the ***replacing*** step of Element [1.d.ii] in response to a ***toggling interaction*** (*e.g.*, a mouse click or button selection) ***received*** from the ***end user***. [EX1004, 16:15-17, 22:67-23:4, Figure 22; EX1006, ¶¶0200-0201, Figures 12-13]. In other words, Robertson and Gettman both teach replacing the 2D window with the 3D space in response to an interaction from the user, like a mouse click or button selection. [EX1003, ¶¶137-138].

Claim 4

Elements [4.a] and [4.b]

The Robertson-Gralla-Gettman Combination satisfies Elements [4.a] and [4.b]. [EX1003, ¶139]. For example, in Robertson, "***object*** thumbnails are ***moved*** about the landscape" using "inputs from a familiar input device such as a mouse" (***in response to receiving a navigation interaction***). [EX1004, 9:36-63; *see also id*., 6:32-40]. A POSITA would have appreciated that Robertson's teaching of moving the object thumbnails "about" the simulated three-dimensional landscape (***3D space***) entails moving them from ***background to foreground*** (and vice versa). [EX1003, ¶139].

Claim 5

Elements [5.a] and [5.b]

The Robertson-Gralla-Gettman Combination satisfies Elements [5.a] and [5.b] for the same reasons discussed at Elements [3.a] and [3.b]. [EX1003, ¶140].

Claim 6

Elements [6.a] through [6.c.iii]

The Robertson-Gralla-Gettman Combination satisfies Elements [6.a] through [6.c.iii] for the same reasons discussed at Elements [1.a] through [1.c.iii]. [EX1003, ¶¶141-142]. The elements of Claim 6 merely require repeating the steps of Claim 1 a ***third*** time to create a ***third object*** bearing a ***third image*** from a ***third webpage***. Robertson teaches this feature by showing that the processing steps of its 3D-GUI are repeated many times over (and thus a ***third*** time) to create a multitude of object thumbnails with webpage images, as shown in the visual aid below. [EX1004, 17:21-67, 18:6-13, Figures 2, 4, 8A-18, 23A-B, 24; EX1003, ¶142].

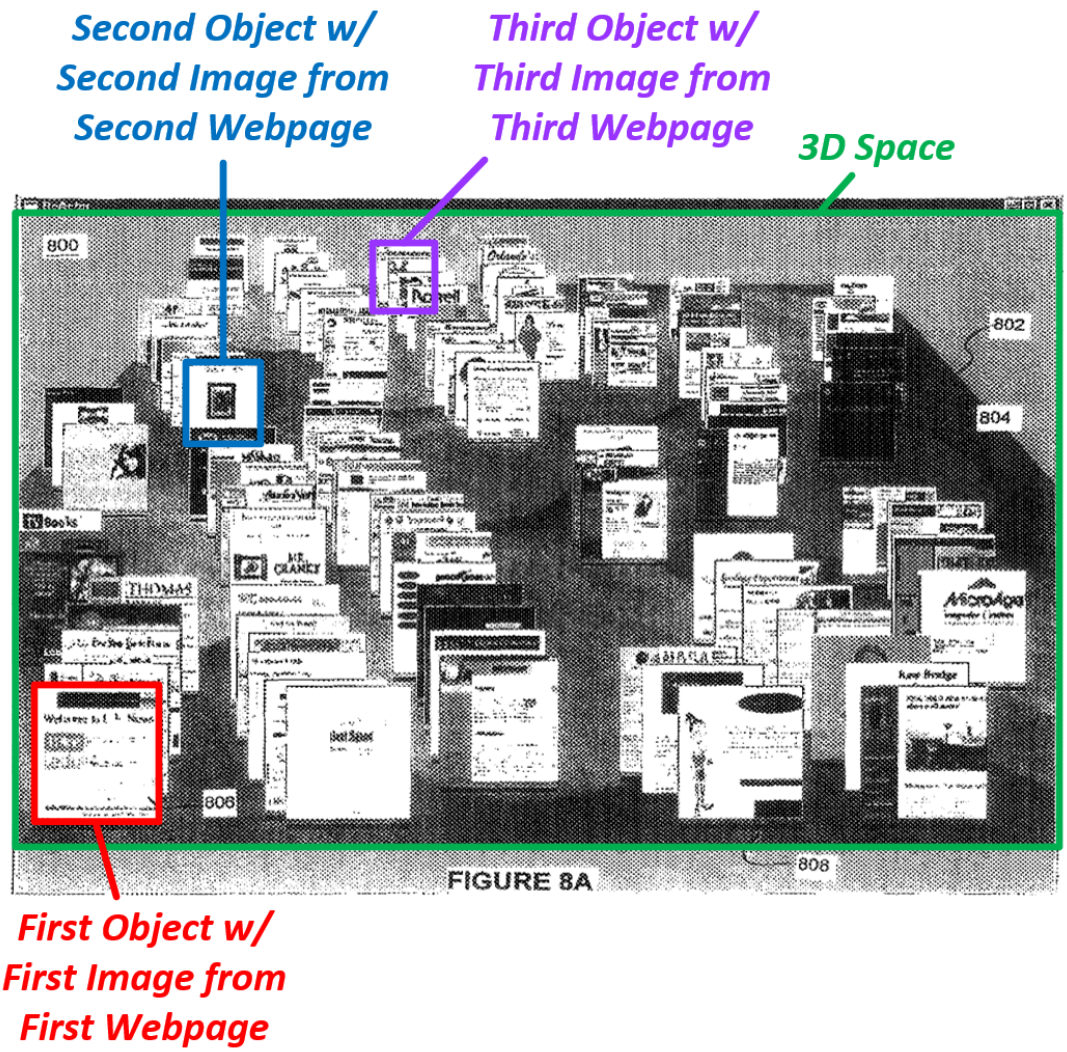


FIGURE 8A

Claim 7

Element [7.a]

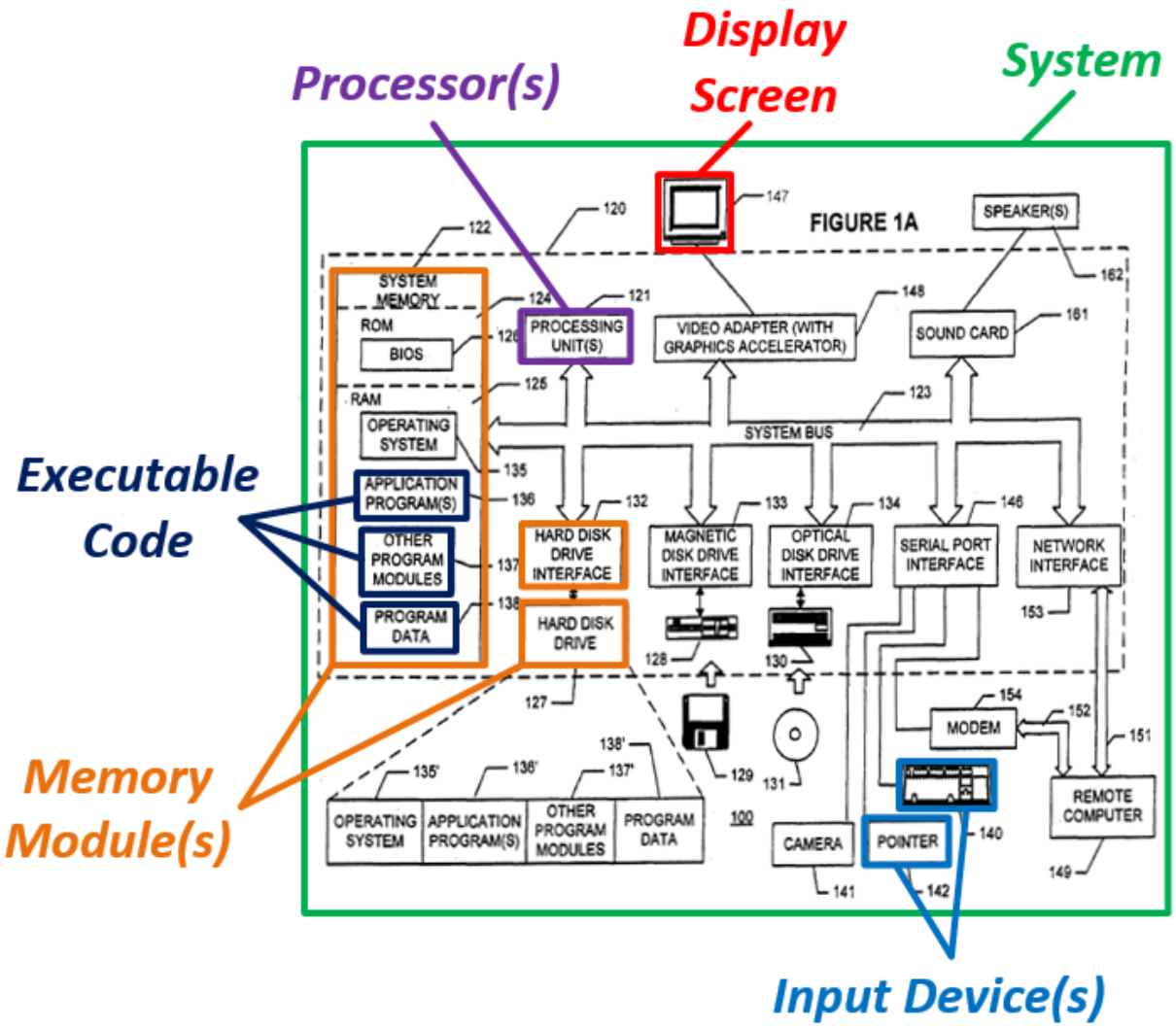
The Robertson-Gralla-Gettman Combination satisfies Element [7.a]. [EX1003, ¶143]. To start, Robertson teaches and suggests that different (***first/second***) ***webpages*** are ***received*** from different (***first/second***) ***servers***. [EX1003, ¶143]. For example, Robertson explains that the Internet allows "users [to] seamlessly transition from various resources, even when such resources were

stored at geographically remote resource servers." [EX1004, 2:27-34]. Similarly, Gralla teaches that a URL web address "refers to the specific host [or 'server'] computer on which the document resides." [EX1005, 155; *see also* 31, 141]. The fact that URLs identify the host where a webpage resides shows that two different webpages can be (and often are) hosted by two different servers. [EX1003, ¶143].

Claims 8-13

Claims 8-13 are substantially similar to Claims 1-6, reciting a similar series of steps in Beauregard [6] form with generic preamble language identifying conventional computer system components. Robertson (EX1004) plainly provides the ***system*** [8.pre] (11:7-10), ***display screen*** [8.pre.i] (12:3-12), ***input device*** [8.pre.ii] (11:54-66), ***processor*** [8.pre.iii] (11:10-14), and ***memory module*** storing ***executable code*** [8.pre.iv] (11:10-54) recited in the preamble elements of Claim 8, as shown below. [*See generally* EX1004, 11:7-12:51, Figures 1A-1B; EX1003, ¶144].

[6] Beauregard claims are typically treated as method claims. *E.g.*, *Digital-Vending Services Intern.*, *LLC v. University of Phoenix*, *Inc.*, 672 F.3d 1270, 1275 n.1 (Fed. Cir. 2012).



The Robertson-Gralla-Gettman Combination satisfies the remaining elements of Claims 8-13 for the same reasons discussed above regarding Claims 1-6. Identification of the relevant discussion for each step is provided below. [EX1003, ¶145].

Claim 8	
[8.a]	*See* [1.a]
[8.b]	*See* [1.b]

[8.c]	*See* [1.c]
[8.c.i]	*See* [1.c.i]
[8.c.ii]	*See* [1.c.ii]
[8.c.iii]	*See* [1.c.iii]
[8.d]	*See* [1.d]
[8.d.i]	*See* [1.d.i]
[8.d.ii]	*See* [1.d.ii]
[8.d.iii]	*See* [1.d.iii]
[8.d.iv]	*See* [1.d.iv]
[8.d.v]	*See* [1.d.v]

Claim 9	
[9.a]	*See* [2.a]
[9.b]	*See* [2.b]
[9.c]	*See* [2.c]

Claim 10	
[10.a]	*See* [3.a]
[10.b]	*See* [3.b]

Claim 11	
[11.a]	*See* [4.a]
[11.b]	*See* [4.b]

Claim 12	
[12.a]	*See* [3.a]/[5.a]
[12.b]	*See* [3.b]/[5.b]

Claim 13	
[13.a]	*See* [6.a]
[13.b]	*See* [6.b]
[13.c]	*See* [6.c]
[13.c.i]	*See* [6.c.i]
[13.c.ii]	*See* [6.c.ii]
[13.c.iii]	*See* [6.c.iii]

Claims 14-18

The elements of Claims 14-18 recite language that is substantially similar to Claims 1-4. Accordingly, the Robertson-Gralla-Gettman Combination satisfies the elements of Claims 14-18 for the same reasons discussed above regarding Claims 1-4. Identification of the relevant discussion for each step is provided below. [EX1003, ¶146].

Claim 14	
[14.pre]	*See* [1.pre]
[14.a]	*See* [1.a] (receiving inputs), [1.b] (inputs are website addresses)

[14.b]	*See* [1.b] (receiving webpages); EX1003, ¶¶147-148 (explaining that webpages are received/retrieved using the same process described in Gralla)
[14.c]	*See* [1.c]
[14.c.i]	*See* [1.c.ii]
[14.c.ii]	*See* [1.c.iii]
[14.d]	*See* [1.d]
[14.d.i]	*See* [1.d.i]
[14.d.ii]	*See* [1.d.ii]
[14.d.iii]	*See* [1.d.iii]
[14.d.iv]	*See* [1.d.v]

Claim 15	
[15.a]	*See* [1.d.ii]/[1.d.v]

Claim 16	
[16.a]	*See* [2.a]
[16.b]	*See* [2.c]

Claim 17	
[17.a]	*See* [3.a]
[17.b]	*See* [2.c]/[3.b]

Claim 18	
[18.a]	*See* [4.a]
[18.b]	*See* [4.b]

B. GROUND 2: Claims 1-18 are obvious over Sauve and Tsuda

1. Sauve (EX1007)

Sauve "relates to browsing software, and more particularly, to tabbed-browser software." [EX1007, ¶0001; *see also* EX1003, ¶¶149-153]. "Tabbed browsers load web pages in 'tabs' within the same browser window." [EX1007, ¶0004]. According to Sauve, "[t]abbed browsing makes it easier and more convenient to view multiple web pages" but, "when multiple tabs are open, users may experience difficulty switching between them." [*Id*.]. Sauve sought to solve this problem by enhancing the user experience "with selecting one out of a large set of open tabs." [*Id*., ¶0005].

Sauve's solution is "[a] quick pick user-interface…that visually displays a rich set of information, such as thumbnails, meta-data describing each tab (*e.g.*, title) and the like. The thumbnails may be selected and/or moved within the quick pick user-interface. Upon switching back to the tabbed window view, the tab row and contents of the tabbed window are modified based on the interactions that occurred in the quick pick user interface." [*Id*., ¶0018]. The progression of Figures 3-5 show how Sauve's quick pick user-interface helps the user switch between different tabs.

In Figure 3, the user is viewing a webpage #6 ("content of current tab 360") in the window of tab 336. [EX1007, ¶¶0037-0041].

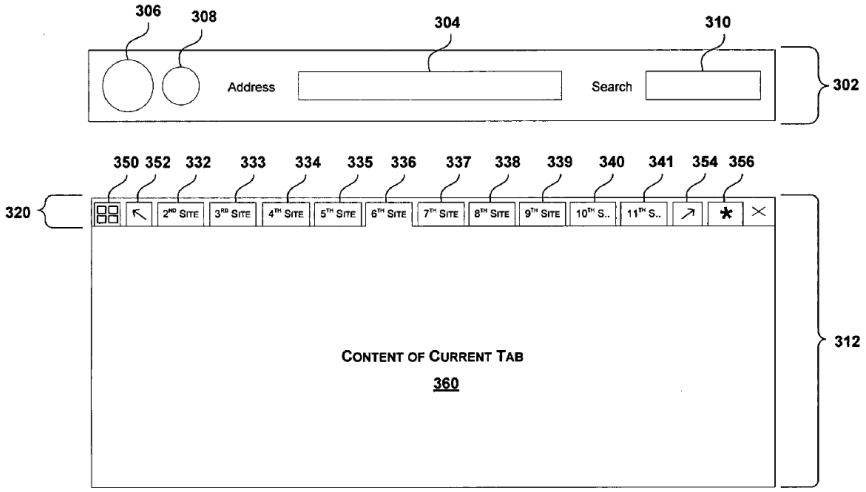


Fig. 3

In Figure 4, the user toggles from the browser view to the quick pick user-interface, where all of the open tabs are presented for selection as thumbnails displaying the content of the corresponding webpages. [EX1007, ¶¶0042-0042].

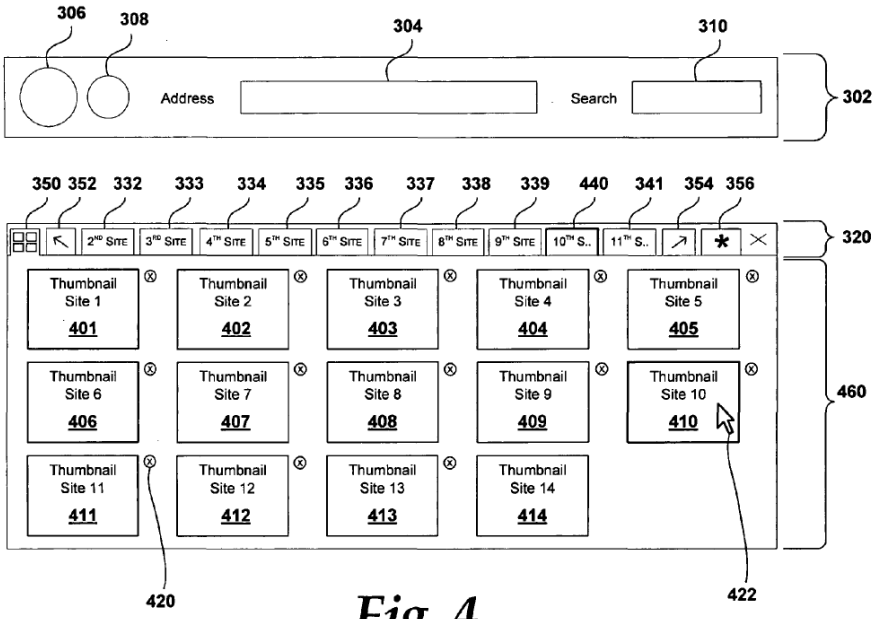


Fig. 4

In this example, the user selects thumbnail 410, which shows an image from webpage #10, and this selection prompts the browser to display webpage #10 ("content of selected tab 560") in the window of tab 340, as shown in Figure 5. [EX1007, ¶¶0043-0044].

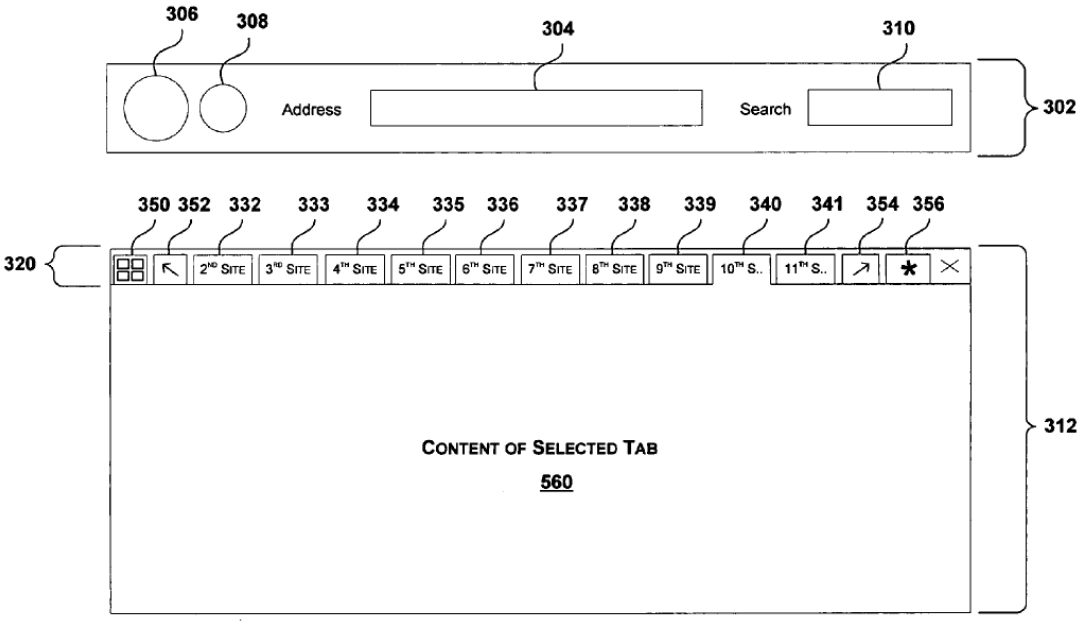


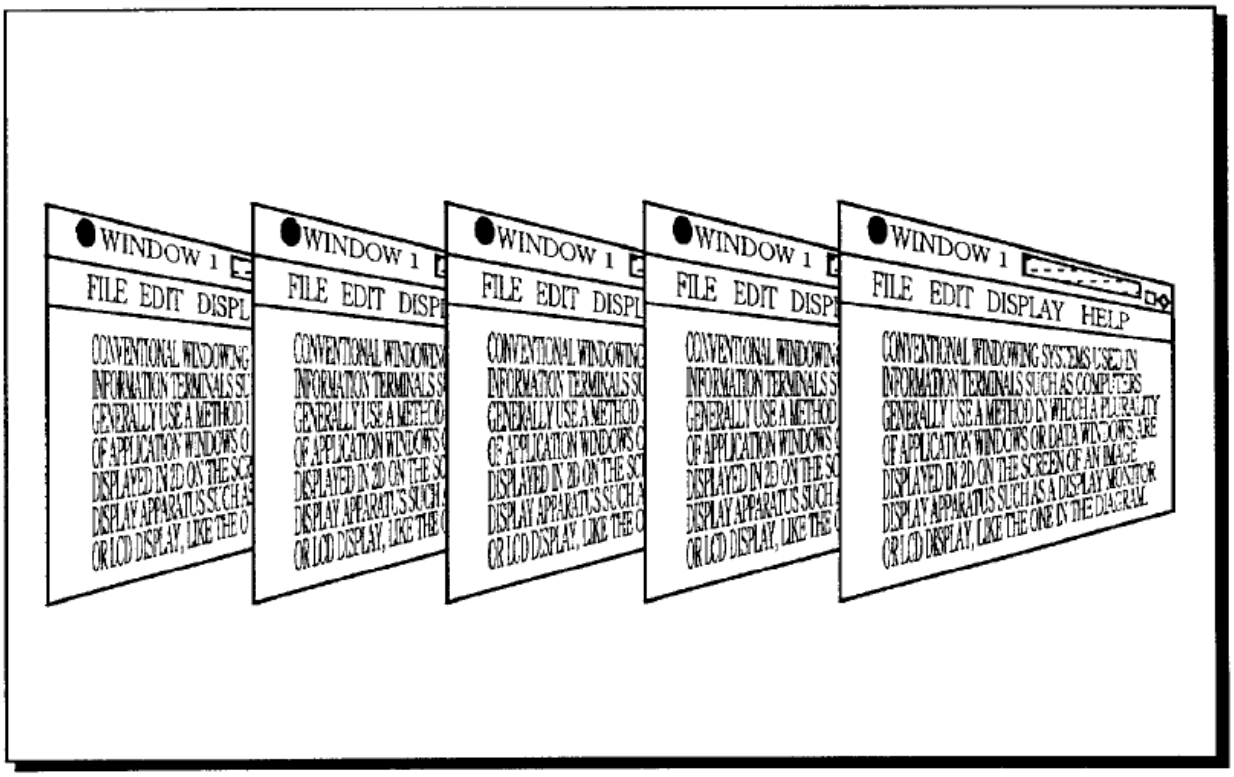
Fig. 5

2. Tsuda (EX1008)

Tsuda describes "a device for displaying windows in a virtual three-dimensional (3D) space." [EX1008, 1:5-12; EX1003, ¶154]. In the example of Figure 11B, the windows are arranged in a horizontally stacked configuration that "eliminates wasted area on the screen and enables the position and content of all the windows to be grasped at a glance." [EX1008, 18:1-24]. While Tsuda's disclosure is not tied to any particular application, web browsers are a contemplated use case.

[*Id*., 14:24-27 ("This invention may also be effective for desktop computers, if a user is browsing various homepages on the Internet…")].

FIG. 11B



3. The Sauve-Tsuda Combination

The Sauve-Tsuda Combination applies Tsuda's teachings on a user interface featuring a virtual 3D space to Sauve's task of arranging graphical representations in a quick pick user-interface for a tabbed browser. [EX1003, ¶¶155-163]. The visual aid below demonstrates how the 2D thumbnails disclosed by Sauve are replaced by Tsuda's 3D windows. [*Id*.].

FIG. 11B

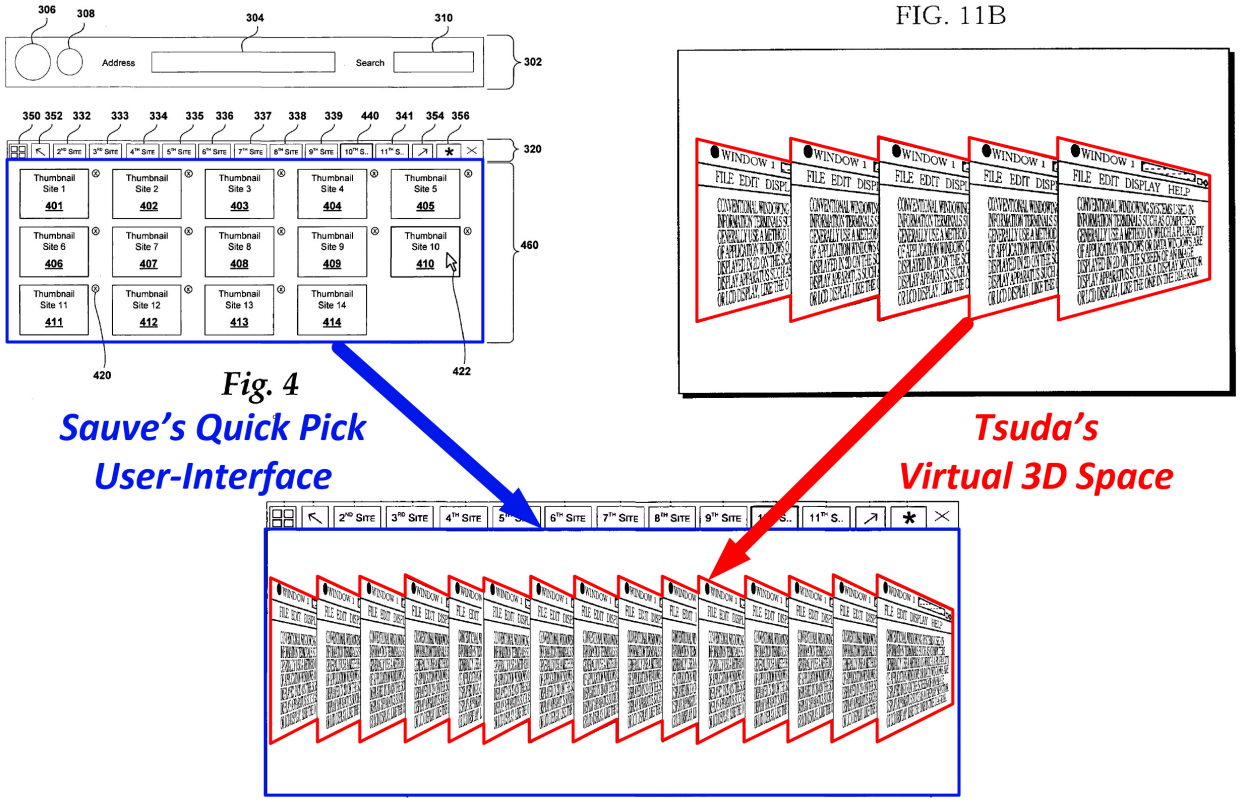


Fig. 4

Sauve's Quick Pick User-Interface

Tsuda's Virtual 3D Space

Reasons to Combine

First, a POSITA would have been motivated to pursue the Sauve-Tsuda Combination based on Tsuda's statement that "[t]his invention may also be effective for desktop computers, if a user is browsing various homepages on the Internet." [EX1008, 14:24-26; EX1003, ¶156; *KSR*, 550 U.S. at 418 (the TSM test captured "helpful insight" on obviousness); *Comaper Corp.*, 596 F.3d at 1352 ("the TSM test, flexibly applied, remains an important tool"). In other words, Tsuda made clear that web browsers were a preferred use case for its 3D user interface. [*Id.*]. And a POSITA looking to improve Sauve's tabbed web browser would have acted on Tsuda's suggestion by contemplating the above-discussed Sauve-Tsuda Combination. [*Id.*].

The quick pick user-interface would have been the natural place to apply Tsuda's teachings in Sauve's tabbed browser. [EX1003, ¶157]. For one, the POSITA would have recognized that Tsuda's 3D windows are analogous to Sauve's 2D thumbnails in the quick pick user-interface. [*Id*.]. Indeed, both objects comprise graphical representations reflecting the content of an underlying application—namely, a web browser. [*Id*.]. The POSITA also would have appreciated that Tsuda's stated advantage of using screen space efficiently by depicting 3D windows in perspective view is particularly beneficial in the context of Sauve quick pick user-interface, which faces the difficulty of fitting numerous 2D thumbnails on the same screen. [EX1008, 14:16-24; EX1003, ¶158]. The benefit of improved space efficiency in a user interface would have been evident to a POSITA. [EX1003, ¶158 (citing EX1004, EX1010-1011, EX1014, EX1029-1030, EX1035)]. In particular, the POSITA would have understood that arranging more objects on the screen allows the user to digest information at a glance—*e.g.*, without an additional scrolling or panning interaction. [*Id*.].

Second, a POSITA would have been motivated to pursue the Sauve-Tsuda Combination to predictably improve Sauve's quick pick user-interface through the known benefits of 3D-GUIs. [EX1003, ¶159 (citing EX1004, EX1016, EX1030); *supra* §V.A.1]. For one, as noted in Tsuda, depicting thumbnail images in a perspective view within a 3D space is more space efficient than a conventional 2D

front view. [*Id.*]. Additionally, the added depth dimension enables the arrangement of thumbnails to have structure, which can convey meaning to the user. [*Id*.]. For example, in the Sauve-Tsuda Combination, the thumbnail windows in the 3D space are arranged in a stack, where the relative position in the stack conveys order (*e.g.*, position in the row of tabs, order of importance, etc.) more clearly than an array of 2D thumbnails. [*Id.*]. Further still, the POSITA would have expected the stack "metaphor" used in Tsuda's 3D space to add an element of realism to Sauve's quick pick user-interface and, as a result, exploit the spatial location abilities of human users. [*Id.*].

Third, "design incentives" and "market forces" would have prompted a POSITA to pursue a combination of Sauve and Tsuda. [*KSR*, 550 U.S. at 417; EX1003, ¶¶160-162; *supra* §V.A.1]. For example, a POSITA would have known that users viewed tabbed browsing, such as disclosed by Sauve, as a desirable and important web browser functionality. [EX1003, ¶161 (citing EX1041-1042)]. Accordingly, the POSITA would have sought usability improvements in this area, such as offered by the Sauve-Tsuda combination (*e.g.*, exploiting spatial memory and more efficient use of screen space), in an effort to distinguish over competitor products in the marketplace. [*Id*.] As the POSITA would have known, usability in this context—*e.g.*, the degree to which a given web browser efficiently facilitates the user's task of locating and consuming web content—was a key differentiator

amongst competing web browsers. [*Id*. (citing EX1036)] While the same web content could be accessed on two competing web browsers, differences in the user interface could make accessing that content more efficient on one of the two. [*Id*.] The browser with a superior interface from a usability standpoint would be more desirable by consumers. [*Id*.]

Reasonable Expectation of Success

A POSITA would have reasonably expected a successful outcome from the above-discussed combination of teachings from Sauve and Tsuda. [EX1003, ¶163]. GUIs, web browsers, and simulated 3D environments were all well-known technologies at the time of the '048 patent in 2005, and these technologies had been successfully demonstrated in the real-world by then. [EX1003, ¶163 (citing EX1010-1012, EX1029-1030, EX1038); *supra* §V.A.1]. Thus, the result of the Sauve-Tsuda Combination would have been predictable to a POSITA, and the POSITA would have expected it to work. [*Id.*].

4. Element-by-Element Analysis

Claim 1

Element [1.pre]: A method for providing a three-dimensional (3D) graphical user interface, comprising:

To the extent the preamble is limiting (which Petitioner does not concede), the Sauve-Tsuda Combination satisfies Element [1.pre]. [EX1003, ¶164]. For example, Sauve describes a "tab UI" that "provide[s] a quick pick ***user-interface***"

where each web browser tab is displayed "as a ***graphical*** representation." [EX1007, [0035], [0042], Figures 2, 4]. The integrated teachings of Tsuda convert Sauve's 2D-GUI into a ***3D-GUI***. [*See supra* §VIII.B.3; EX1008, Abstract, 1:5-12, 14:16-27, Figures 1, 5, 11B, 12A-C].

Element [1.a]: receiving at least first and second inputs from an end user;

The Sauve-Tsuda Combination satisfies Element [1.a]. [EX1003, ¶¶165-166]. For example, Sauve's web browser ***receives input*** when the ***end user*** enters a web address into the address bar. [EX1007, ¶0002, ¶¶0004-0005, ¶0040, Figure 3; EX1003, ¶165]. As shown below, a POSITA would have understood that in Sauve's tabbed browser, the user would provide different (***first***/***second***) web address ***inputs*** with respect to different tabs. [EX1003, ¶165].

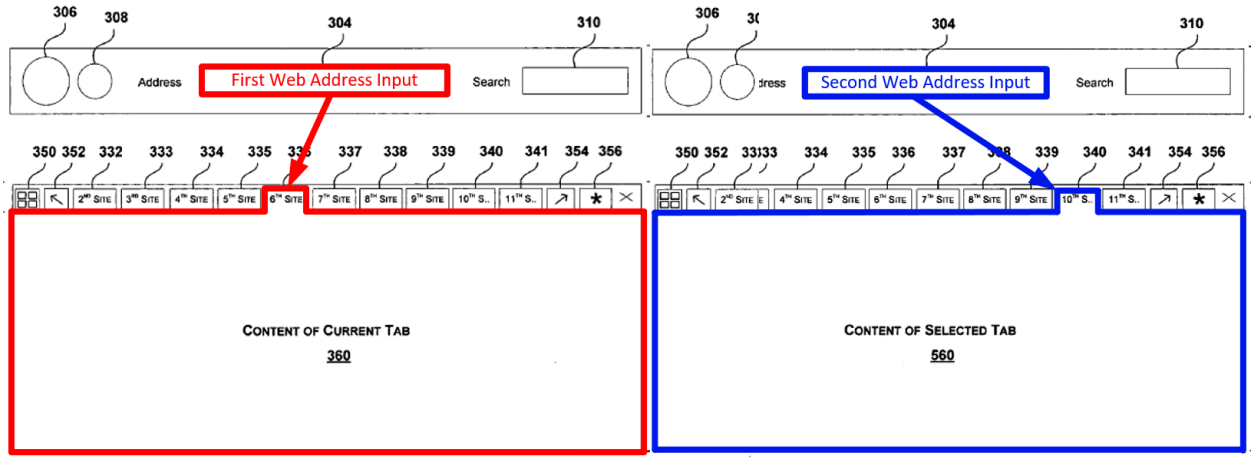


Fig. 3 ***Fig. 5***

Additionally, even without Sauve's disclosure on this point, Element [1.a] would not patentably distinguish the Challenged Claims over the prior art. The notion of receiving user input in the form of web addresses was foundational to many

(if not all) web browsers at the time of the '048 patent, and a POSITA would have understood Sauve's tabbed browser to operate in this conventional manner. [EX1003, ¶166].

Element [1.b]: receiving first and second webpages from at least one server in response to said first and second inputs, wherein the first and second inputs are website addresses corresponding to said first and second webpages, respectively;

The Sauve-Tsuda Combination satisfies Element [1.b]. [EX1003, ¶¶167-168]. Per Element [1.a], the (***first/second***) ***inputs*** comprise ***web addresses*** entered into the address bar of Sauve's browser. And Sauve further teaches:

> Upon entering a web address or URL of a particular website, the browser requests web pages from a web server hosting that website. The browser then interprets the web pages and displays the content on a display.

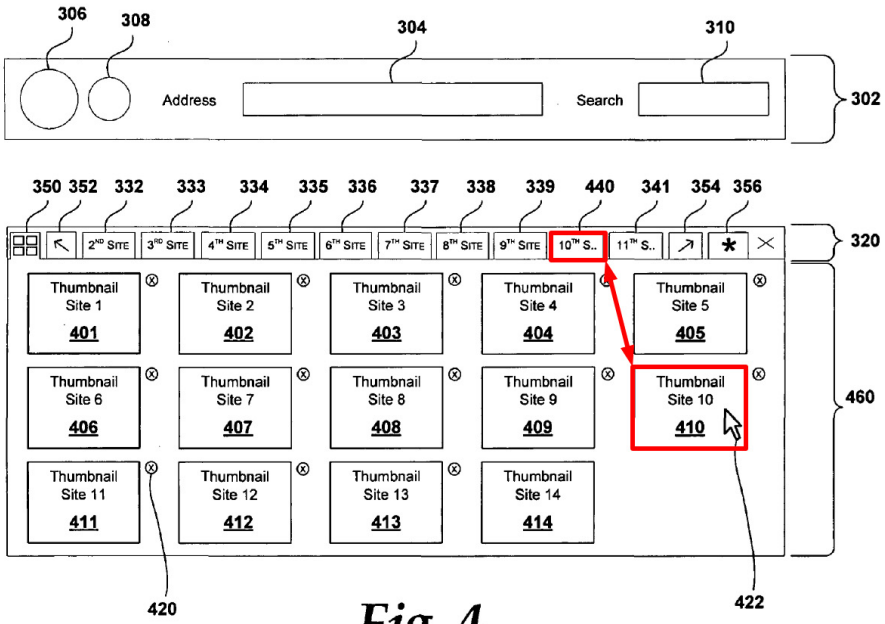
[EX1007, ¶0002]. In other words, when (***in response to***) the user enters the (***first/second***) ***web address***, Sauve's web browser requests and ***receives*** the corresponding (***first/second***) ***webpage from the server*** specified in the address. [EX1003, ¶167].

Additionally, even without Sauve's disclosure on this point, Element [1.b] would not patentably distinguish the Challenged Claims over the prior art. The notion of retrieving webpages from servers was foundational to many (if not all) web browsers at the time of the '048 patent, and a POSITA would have understood Sauve's tabbed browsers to operate in this conventional manner. [EX1003, ¶168].

Element [1.c]: displaying at least a portion of the first webpage on a first object within a 3D space, and at least a portion of the second webpage on a second object within the 3D space, comprising;

The Sauve-Tsuda Combination satisfies Element [1.c]. [EX1003, ¶¶169-172]. As discussed at §VIII.B.3, the Combination applies Tsuda's teachings regarding a virtual 3D space to Sauve's quick pick user-interface, which "visually ***displays*** a rich set of information, such as thumbnails…describing each tab." [EX1007, ¶0018; *see also id.*, ¶0042 ("The tabbed browser scales the thumbnails so that the content of each tab can be viewed in the quick pick window."); cl.3 ("a thumbnail displaying the portion of content"), cl.13 ("the thumbnail displaying a screen shot of content"); EX1003, ¶169].

Sauve's Quick Pick User-Interface



An image of the webpage on the 10th tab 440 is displayed on the corresponding thumbnail 410, and so on for the other tabs and thumbnails

Fig. 4

Accordingly, in the Sauve-Tsuda Combination, the visually displayed information comprises "windows…placed in a virtual ***3D space***" defined by a "3D coordinate system" with X/Y/Z axes (pictured below), just as Tsuda teaches and the parties' construction requires. [EX1008, 10:50-62, 11:27-31 ("The 3D position calculating unit calculates a position (coordinates for the four vertices of the window) in the 3D space for a window stored in the storage unit 5201…."); 11:59-12:4 ("In other words, image data is converted from a virtual 3D coordinate system to a screen coordinate system."), 12:8-67, 13:15-43 ("The coordinate system used [by the 3D position calculating unit] is the one shown in FIG. 3C."), Figures 2B (below, left), 3C (below, right), 4, and 5; EX1003, ¶170].

FIG. 2B

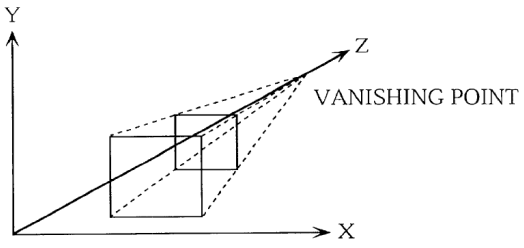
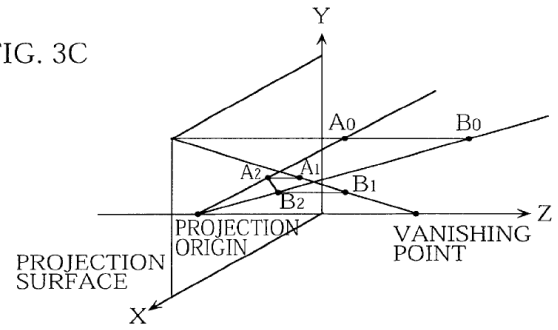


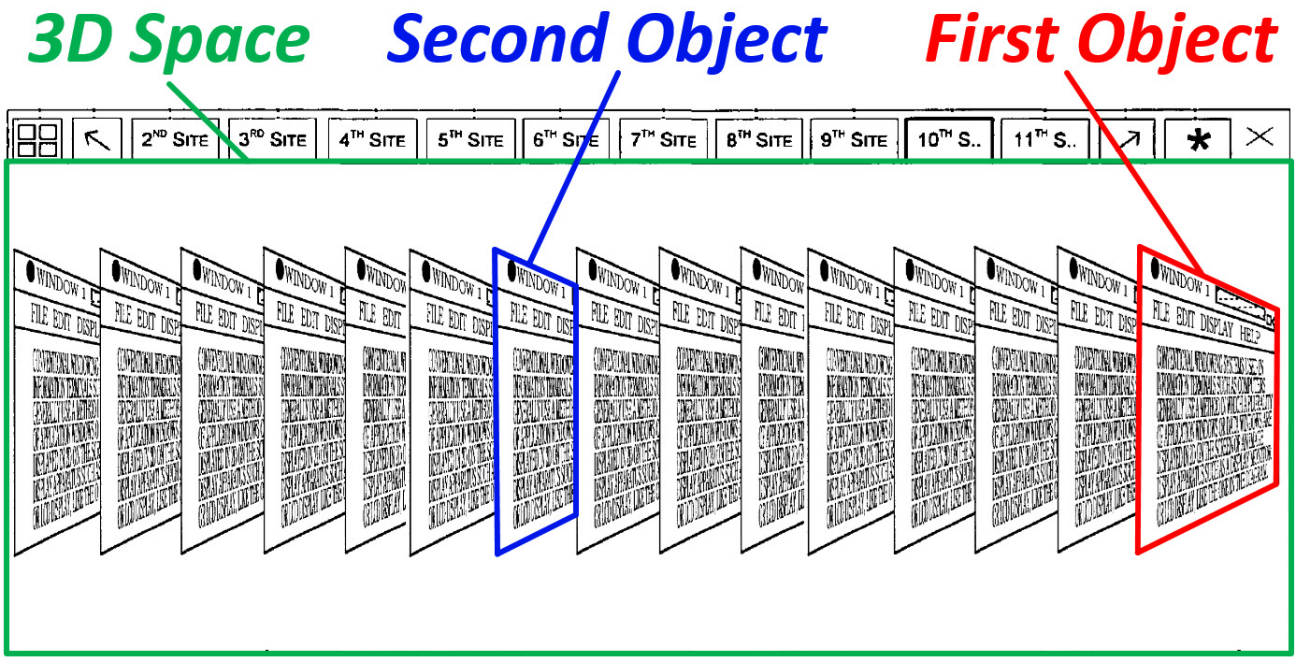
FIG. 3C



The Challenged Claims are no less obvious even if Patent Owner were to argue that Tsuda's teachings fall short of the parties' ***3D space*** construction. First, Tsuda's express disclosure of a "3D space" implicates a virtual space defined by a three-dimensional coordinate system. [EX1003, ¶171]. Second, the notion of defining a "3D space" using a three-dimensional coordinate system would have been obvious to a POSITA applying mere common sense and ordinary creativity to a

routine design challenge. [EX1003, ¶171].

Finally, Tsuda's windows (***first/second objects***) in the ***3D space*** include texture-mapped ***images*** of the application content—here, the (***first/second***) ***webpages*** retrieved by Sauve's tabbed browser—as shown in the visual aid below. [EX1008, 11:4-17, 13:10-46, Figures 1, 4-6, 9, 11-12C; EX1003, ¶172].



Element [1.c.i]: rendering the first and second webpages;

The Sauve-Tsuda Combination satisfies Element [1.c.i]. [EX1003, ¶¶173-174]. For example, Sauve's browser performs HTML ***rendering*** for each (***first/second***) ***webpage*** of its various tabs. [EX1007, ¶0002 (web browsers "interpret[] the web pages and display[] the content on a display"), ¶0004 ("Tabbed browsers load web pages in 'tabs'…"), ¶¶0026-0027 (threads handle "HTML rendering"), ¶0041 ("content 360 may be a web page"); EX1003, ¶¶173-174

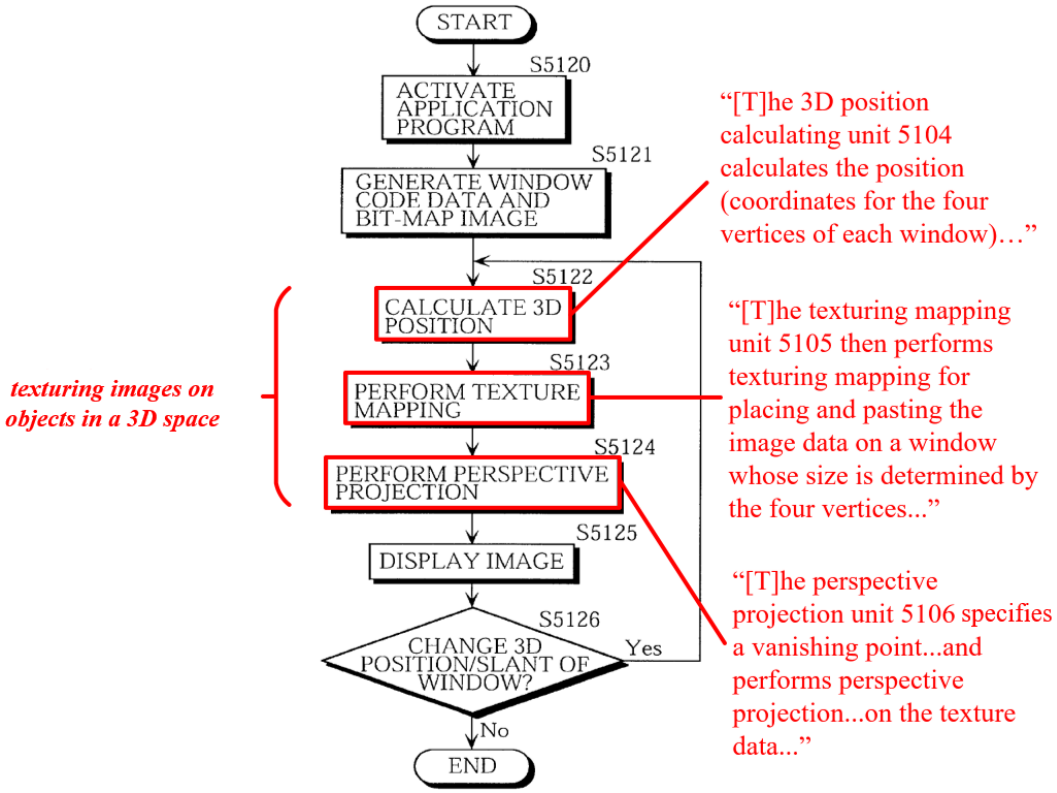
("webpage ***rendering*** is a core functionality of virtually all web browsers"); *see also* ¶¶104-105].

Element [1.c.ii]: capturing first and second images of the at least a portion of the first webpage and the at least a portion of the second webpage, respectively; and

The Sauve-Tsuda Combination satisfies Element [1.c.ii]. [EX1003, ¶¶175-176]. For example, Sauve suggests ***capturing first and second images of the first and second webpages*** by explaining that the thumbnails shown in the quick pick window are scaled "so that the content of each tab can be viewed." [EX1007, ¶0042; *see also id*., ¶0041 ("content 360 may be a web page"), cl.3 ("each graphical view comprises a thumbnail displaying the portion of content"), cl.13 ("the thumbnail displaying a screen shot of content"); EX1003, ¶175]. Tsuda is even more direct on this point, stating expressly that "display data" from "application programs that interact with users by displaying conventional two-dimensional (2D) windows"—here, Sauve's (***first/second***) ***webpages***—is stored in computer memory. [EX1008, 11:4-12; *see also id*., 13:10-46, Figures 1, 4-6, 9, 11-12C; EX1003, ¶176]. And Tsuda goes on to explain that "display data" includes "code data specifying window display content (documents, characters, graphics etc.) and ***image*** data expressing the objects as bitmap ***images***." [*Id*.].

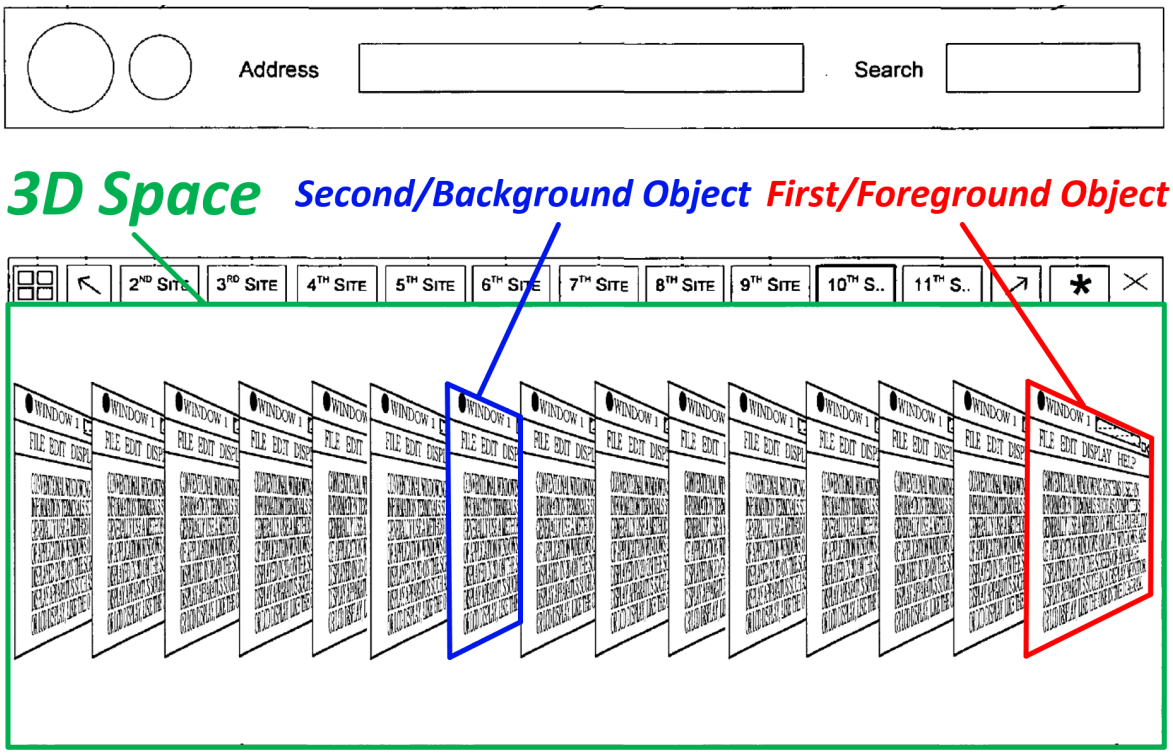
Element [1.c.iii]: texturing the first image on the first object and the second image on the second object, the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space; and

The Sauve-Tsuda Combination satisfies Element [1.c.iii]. [EX1003, ¶¶177-179]. For example, Tsuda describes a three-step process that demonstrates ***texturing*** (***first/second***) ***images*** from content on a 2D application, such as Sauve's webpages, ***on the*** (***first/second***) windows (***objects***) in the 3D space. [EX1008, 13:15-43 (quoted below), Figure 4 (annotated below); EX1003, ¶¶177-179 (citing EX1004, EX1012, EX1016, EX1018-1019, EX1021-1022, EX1030, EX1035, EX1037)].



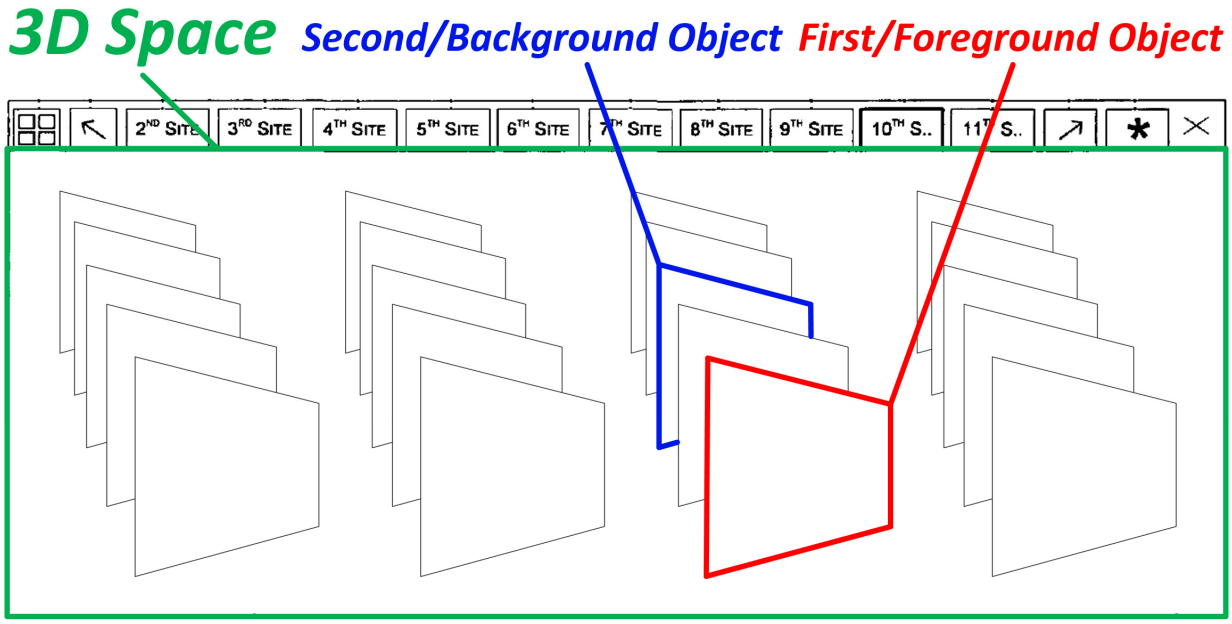
In short, Tsuda's process: calculates the four vertices for the window in the 3D space; ***texture*** maps the image data according to the location-based size of the window; and performs a projection on the texture data to impart a perspective view. [*Id.*].

In Figures 11B-12C, Tsuda's windows (***objects***) are stacked horizontally from right to left, such that the rightmost window in the stack occupies a plane that is forward in the stack (***first object*** in a ***foreground***) relative to the plane of a window further to left (***second object*** in a ***background***). [EX1008, 8:3-14, 17:25-32, 18:8-18; EX1003, ¶¶180-181]. The visual aid below demonstrates a horizontal stack of Tsuda's windows applied in the context of Sauve's quick pick user-interface.[7]



[7] Petitioner's analysis regarding Tsuda's horizontal stack is based on Petitioner's understanding of Patent Owner's district court litigation position that objects at the same depth along the Z-dimension can satisfy the foreground/background requirement.

Additionally, to a POSITA exercising common sense and ordinary creativity, one obvious variant of Tsuda's embodiment with horizontally stacked windows would have been to stack the windows in the Z-dimension and in the X/Y-dimensions (to reduce occlusion), as shown in the visual aid below. [EX1003, ¶182].



Conceptually, changing the orientation of the stack from horizontal to front-to-back would have been a trivial modification. [EX1003, ¶183 (citing EX1017, EX1020, EX1029-1030, EX1032, EX1035)]. For one, in a virtual 3D environment, orientation is a flexible property. [*Id.*]. Indeed, it is telling that Tsuda's three-step process discussed above can be used to produce a stack of windows in essentially any orientation. [*Id.*]. Moreover, a POSITA would have been motivated to incorporate functionality for different types of stacked orientations to enable users to customize the layout of the user interface according to their preferences.

[EX1003, ¶184]. Layout customization options of this sort would have improved user satisfaction with the interface. [*Id*.].

The Parties' "Texturing" Constructions

The analysis above satisfies Element [1.c.iii] under Patent Owner's proposed district court construction of ***texturing***[8] because that construction does not limit the claims to texturing on any particular kind of object. Petitioner's proposed construction[9], on the other hand, requires that the claimed ***objects*** on which the ***webpage images*** are ***textured*** must be ***3D objects***. The Sauve-Tsuda Combination satisfies Element [1.c.iii] under Petitioner's construction as well. [EX1003, ¶¶185-188]. For example, Tsuda contemplates alternative embodiments where the 3D window is "a ***3D object***." [EX1008, 21:5-25]. Tsuda goes on to provide a motivation for using such 3D objects—it (A) "makes windows more visually appealing"; and (B) "enabl[es] the window surface to be utilized more effectively" because basic information about the window (*e.g.*, title and menu bar) can be displayed elsewhere (*e.g.*, "on a side surface"). [*Id*.; *see also* EX1003, ¶¶187-188 (citing EX1011-1012, EX1017-1018, EX1029, EX1038)].

[8] Patent's Owner's construction is (1) plain and ordinary meaning; or alternatively (2) "drawing or mapping."

[9] Petitioner's construction is "drawing or mapping an image onto a 3D object."

Element [1.d]: displaying additional information, comprising:

The Sauve-Tsuda Combination satisfies Element [1.d] for all the reasons below regarding Elements [1.d.i] through [1.d.v]. [EX1003, ¶189].

Element [1.d.i]: receiving an interaction by the end user on the first image;

The Sauve-Tsuda Combination satisfies Element [1.d.i]. [EX1003, ¶¶190-191]. For example, Sauve teaches that the ***end user*** can switch from the quick pick user-interface (Figure 4 below) and a tabbed window showing the webpage content for an in-focus tab (Figure 5 below) by "select[ing] any one of the thumbnails to view its corresponding content." [EX1007, ¶¶0043-0044]. As illustrated in Figure 4, the action of making a "select[ion]" involves the user moving a pointer to the thumbnail, which bears an image of the corresponding webpage (***interacting on the first image***). [*Id.*; *see also id.*, ¶0018, ¶0042; EX1003, ¶190].

"The user may select any one of the thumbnails to view its corresponding content in the tabbed window." [EX1007, ¶0043].

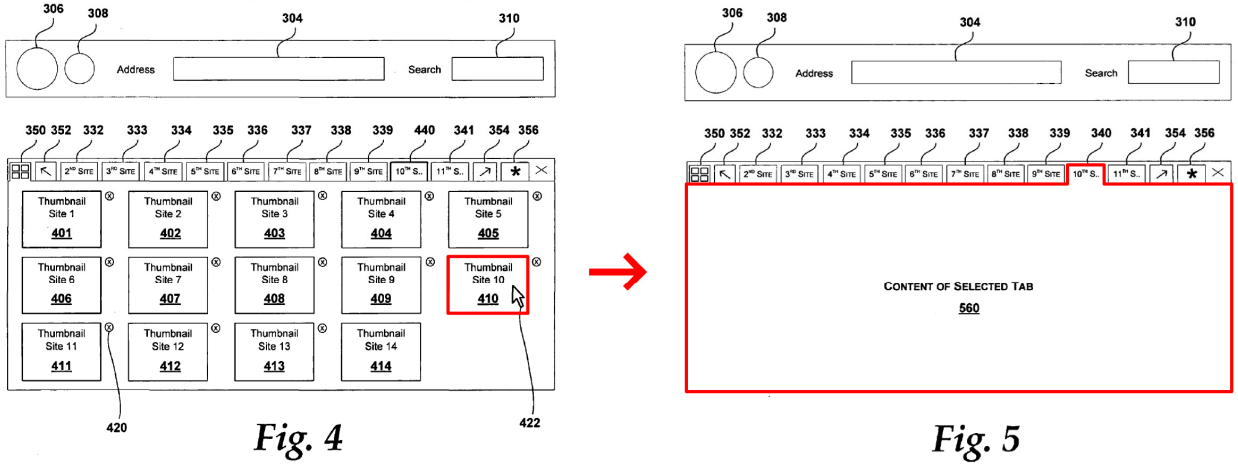
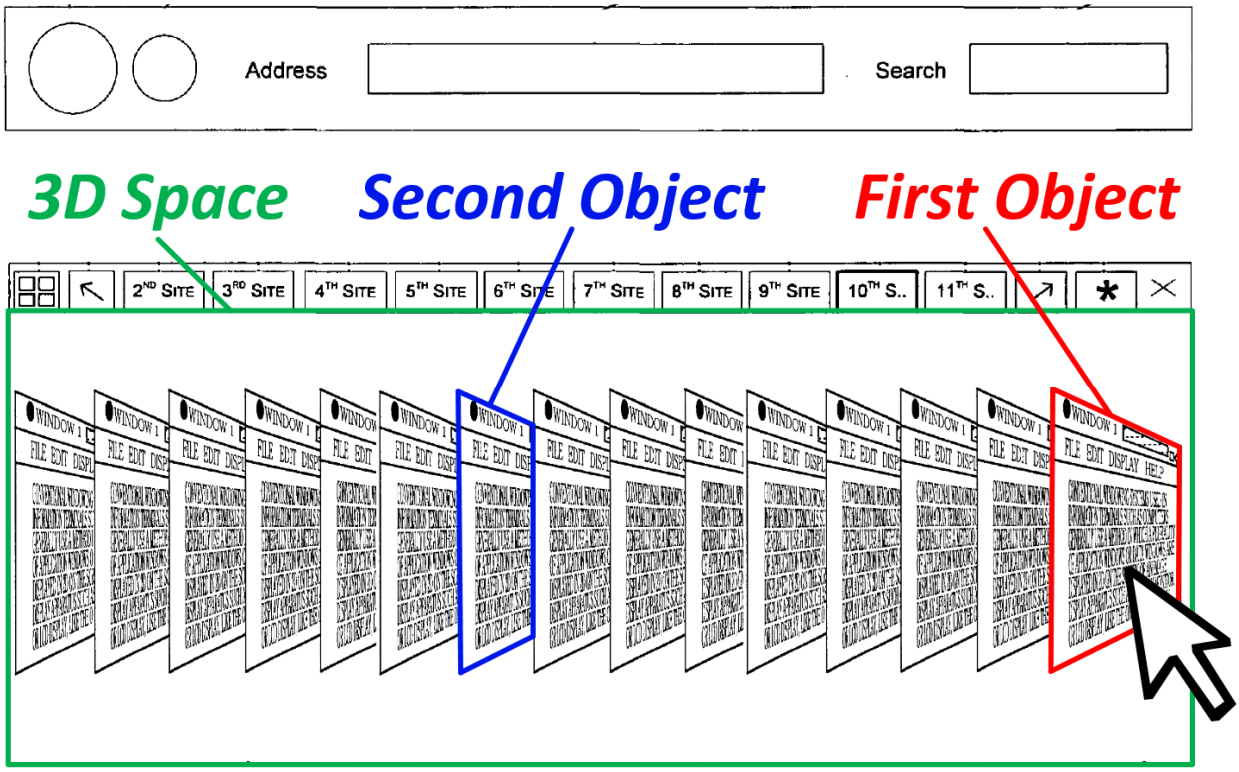


Fig. 4 *Fig. 5*

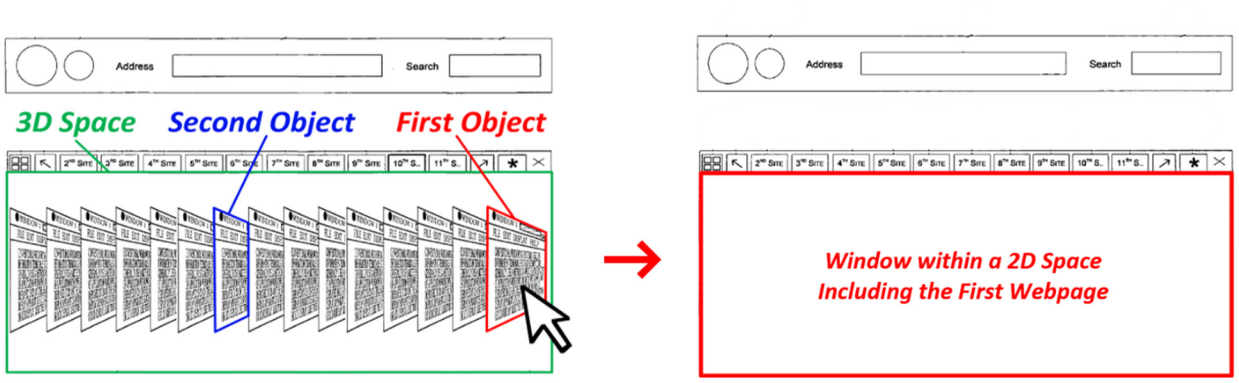
Applying Sauve's teaching to the Combination (*e.g.*, as discussed at Elements [1.c] through [1.c.iii]) yields an ***interaction*** by the end-user on a 3D window (***first object***) bearing an ***image*** of a webpage, as shown in the visual aid below. [EX1003, ¶191].



Element [1.d.ii]: replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the rendered first webpage;

The Sauve-Tsuda Combination satisfies Element [1.d.ii]. [EX1003, ¶¶192-193]. As discussed at Element [1.d.i], the web browser of the Combination ***replaces*** the ***3D space*** of the quick pick user-interface, which includes the (***first/second***) virtual 3D windows (***objects***), with a ***window within a 2D space*** including the (***first***) ***webpage*** of the selected tab, as shown in the visual aid below. [EX1007, ¶0018,

¶¶0042-0044; 1003, ¶193 (explaining, *inter alia*, that Sauve's "tabbed browser" implicates a 2D coordinate system and is, thus, consistent with the parties construction of ***2D space***)].



Element [1.d.iii]: receiving an interaction by the end user on a link provided in the rendered first webpage, the link corresponding to the additional information;

Element [1.d.iv]: rendering the additional information; and

Element [1.d.v]: displaying the rendered additional information in said window within the 2D space.

The Sauve-Tsuda Combination satisfies Elements [1.d.iii] through [1.d.v]. [EX1003, ¶¶194-195]. For example, once transitioned from the quick pick user-interface (*e.g.*, Figure 4) to the tabbed window (*e.g.*, Figure 5), as discussed above at Element [1.d.ii], Sauve's tabbed browser provides conventional point-and-click web surfing/browsing functionality. [EX1003, ¶194; EX1007, ¶¶0002-0005, ¶¶0025-0027, ¶¶0042-0044]. And this conventional functionality includes: ***receiving*** a mouse click ***interaction by the end user on a link provided in the rendered (first) webpage, the link corresponding to*** a new webpage (***additional***

information), per Element [1.d.iii]; ***rendering the*** new webpage (***additional information***), per Element [1.d.iv]; and ***displaying*** the rendered webpage (***additional information***) ***in said window within the 2D space***, per Element [1.d.v]. [*Id*., ¶0002 ("a web browser…provides an easy-to-use point-and-click interface for accessing various content on the web"), ¶0003 (the conventional functionality of a web browser includes "[e]ach time one of the hypertext or hyperlinks is selected, the new content is downloaded into the current window"), ¶¶0004-0005 ("Tabbed browsers load web pages in 'tabs' within the same browser window"), ¶¶0025-0027 (explaining with reference to Figure 2 that each content window 202 of the tabbed browser "may be a web browser"); *see also supra* Element [1.c.i] (discussing webpage ***rendering***)].

Additionally, even without Sauve's disclosure on this point, Elements [1.d.iii] through [1.d.v] would not patentably distinguish the Challenged Claims over the prior art. The notion of receiving a user interaction on a hyperlink and rendering/displaying a new webpage associated with the link was foundational to many (if not all) web browsers at the time of the '048 patent, and a POSITA would have understood Sauve's tabbed browser to operate in this conventional manner. [EX1003, ¶195].

Claim 2

Elements [2.a] and [2.b]

The Sauve-Tsuda Combination satisfies Elements [2.a] and [2.b]. [EX1003, ¶¶196-198]. These elements require repeating the ***capturing*** and ***texturing*** steps of Elements [1.c.ii] and [1.c.iii] for the ***additional information rendered*** and ***displayed*** in Elements [1.d.iv] and [1.d.v], which yields ***a third image on the first object*** in the 3D space. Sauve suggests repeating Elements [1.c.ii] and [1.c.iii] in this manner by specifying that images shown in the quick-pick user interface match the webpage content from the corresponding browser tabs. [*E.g.*, EX1007, ¶0041 ("content 360 may be a web page"), ¶0042 ("the content of each tab can be viewed in the quick pick window"), cl.3 ("each graphical view comprises a thumbnail displaying the portion of content")].

A POSITA would have appreciated that users of the Sauve-Tsuda tabbed browser would toggle back and forth between the quick pick user-interface and the tabbed browser view multiple times during a web browsing session. [EX1003, ¶198 EX1007, ¶0039 (discussing a "button" or "hot key" to access the quick pick-user interface)]. Indeed, the purpose of the quick pick user-interface is to help users navigate between different tabs. [*E.g.*, EX1007, ¶¶0004-0005, ¶0018]. Accordingly, it would have been understood by the POSITA, especially based on Sauve's suggestion noted above, that the ***capturing*** and ***texturing*** steps of Elements

[1.c.ii] and [1.c.iii] are executed anew each time the user calls forth the quick pick user-interface. [EX1003, ¶198]. Without this functionality, the effectiveness of the quick pick user-interface would be diminished. [*Id*.]. That is, it would be more difficult for users to associate the thumbnails/windows in the quick pick user-interface with corresponding web browser tabs. [*Id*.]. Thus, even without Sauve's disclosure on this subject, a POSITA would have been motivated to repeat the ***capturing*** and ***texturing*** steps of Elements [1.c.ii] and [1.c.iii]. [*Id*.].

Element [2.c]

The Sauve-Tsuda Combination satisfies Element [2.c]. [EX1003, ¶199]. This element requires the 3D-GUI to revert the ***replacing*** step of Element [1.d.ii] to re-enter the 3D space. As discussed above regarding Elements [2.a] and [2.b], a POSITA would have appreciated that users of the Sauve-Tsuda tabbed browser would toggle back and forth between the quick pick user-interface and the tabbed browser view multiple times during a web surfing session. [EX1003, ¶199; EX1007, ¶¶0004-0005, ¶0018, ¶0039].

Claim 3

Elements [3.a] and [3.b]

The Sauve-Tsuda Combination satisfies Elements [3.a] and [3.b] for the same reasons discussed at Elements [2.a]-[2.c]. [EX1003, ¶200].

Claim 4

Elements [4.a] and [4.b]

The Sauve-Tsuda Combination satisfies Elements [4.a] and [4.b]. [EX1003, ¶201]. For example, Sauve teaches that the graphical representations in the quick pick user-interface—the virtual 3D windows (***objects***) taught by Tsuda, per Elements [1.c] though [1.c.iii]—are "re-positioned" (***moved***) in response to ***receiving*** a "drag-drop operation" (navigation interaction) ***by the end user***. [EX1007, ¶¶0047-0048, Figure 8]. Sauve makes clear that this functionality allows the user to place the graphical representations in whatever location and order the user desires. [*Id*.; EX1003, ¶201]. Accordingly, in the Combination's quick pick user-interface, the user can ***move*** Tsuda's 3D windows (***first/second objects***) forward (***foreground***) or backward (***background***) through the window-stacks in the ***3D space*** discussed at Element [1.c.iii]. [EX1003, ¶201]

Claim 5

Elements [5.a] and [5.b]

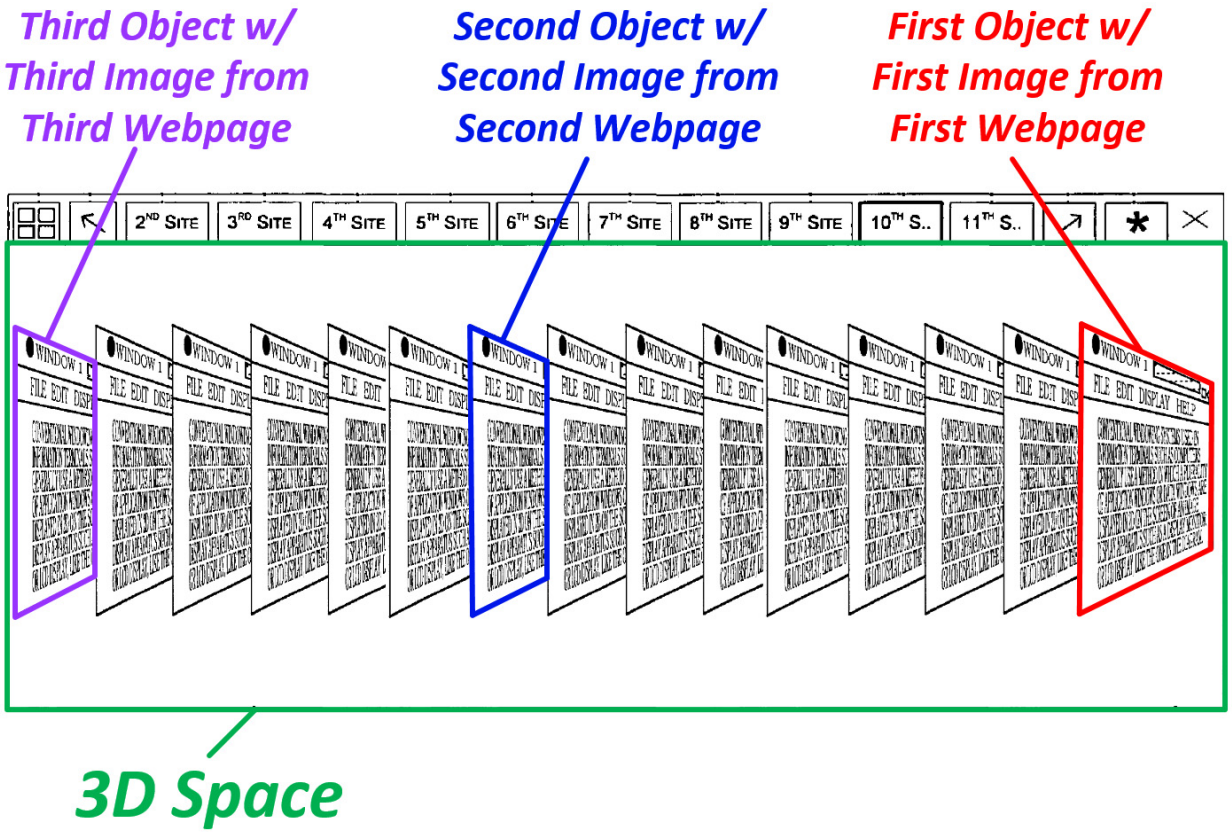
The Sauve-Tsuda Combination satisfies Elements [5.a] and [5.b] for the same reasons discussed at Elements [3.a] and [3.b]. [EX1003, ¶202].

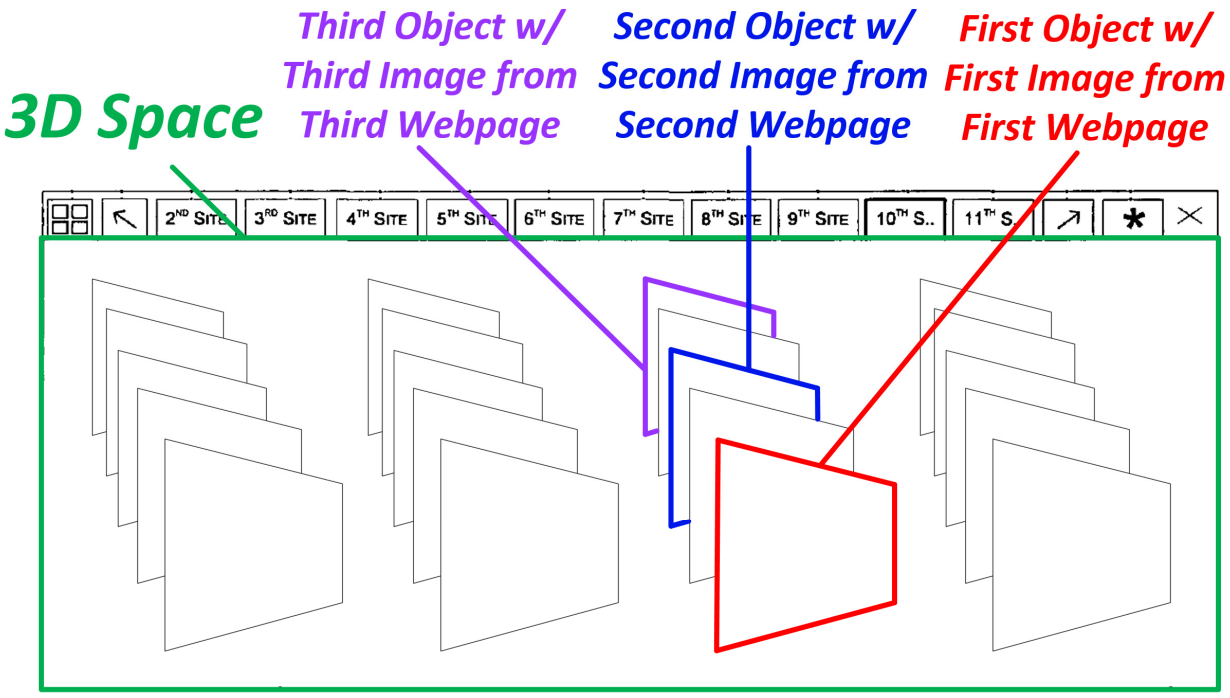
Claim 6

Elements [6.a] through [6.c.iii]

The Sauve-Tsuda Combination satisfies Elements [6.a] through [6.c.iii] for the same reasons discussed at Elements [1.a] through [1.c.iii]. [EX1003, ¶¶203-

204]. The elements of Claim 6 merely require repeating the steps of Claim 1 a ***third*** time to create a ***third object*** bearing a ***third image*** from a ***third webpage***. Sauve and Tsuda teach this feature by showing in their figures that the processing steps are repeated multiple times over to create several thumbnails/windows. [EX1007, Figures, 4, 6, 8; EX1008, Figures 5, 8, 11B-12C; EX1003, ¶204]. The visual aids below demonstrate how the quick pick user-interface of the Combination provides a ***third object*** bearing a ***third image*** from a ***third webpage***. [EX1003, ¶204].





Claim 7

Element [7.a]

The Sauve-Tsuda Combination satisfies Element [7.a]. [EX1003, ¶205]. Consistent with the discussion at Element [1.b], Sauve discloses that "[u]pon entering a web address or URL of a particular website, the browser requests web pages from a web server hosting that website." [EX1007, ¶0002]. As Sauve suggests, and as a POSITA would have known, URLs identify the host server where a webpage resides, and this identification requirement in the syntax indicates that different (***first/second***) ***webpages*** are commonly hosted on different (***first/second***) ***servers***. [EX1003, ¶205].

Claims 8-13

Claims 8-13 are substantially similar to Claims 1-6, reciting a similar series of steps in Beauregard [10] form with generic preamble language identifying conventional computer system components. Sauve (EX1007) plainly provides the ***system*** [8.pre], ***display screen*** [8.pre.i], ***input device*** [8.pre.ii], ***processor*** [8.pre.iii], and ***memory module*** storing ***executable code*** [8.pre.iv] recited in the preamble elements of Claim 8, as shown below. [*See generally* EX1007, ¶¶0019-0021; EX1003, ¶206].

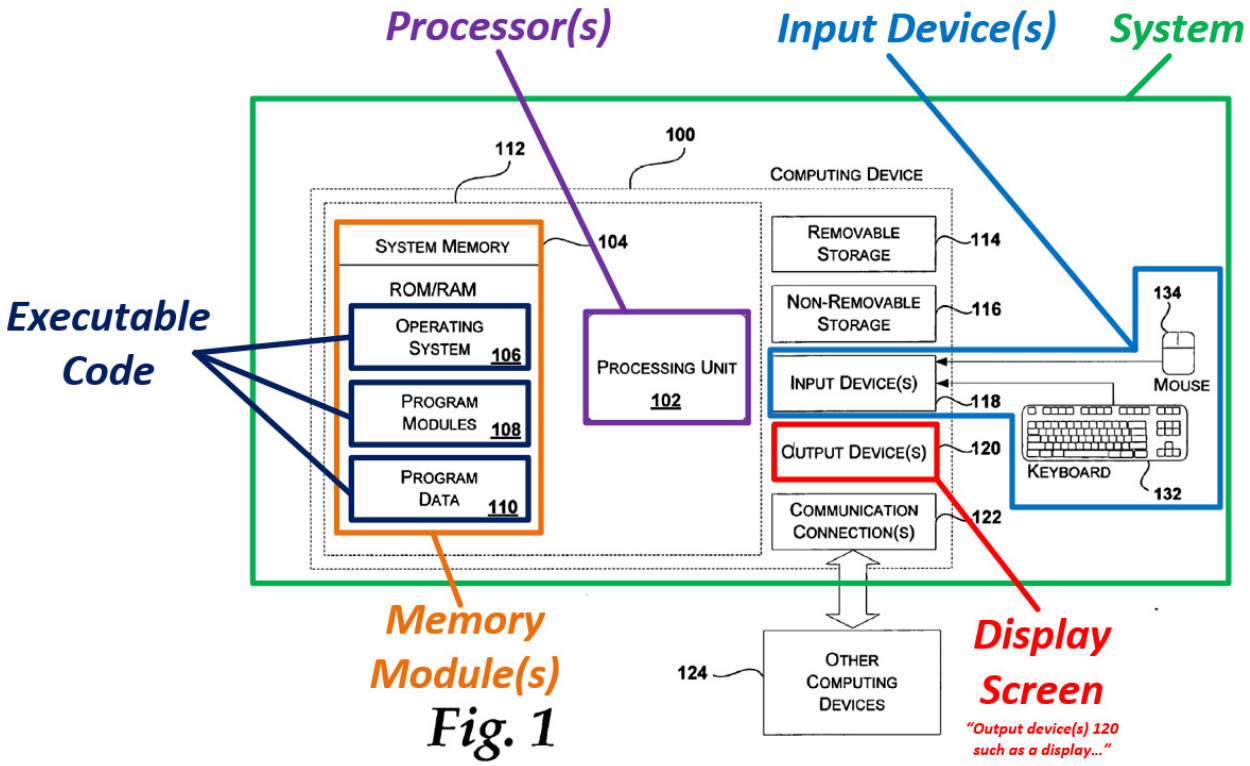


Fig. 1

[10] Beauregard claims are typically treated as method claims. *E.g.*, *Digital-Vending Services*, 672 F.3d at 1275 n.1.

The Sauve-Tsuda Combination satisfies the remaining elements of Claims 8-13 for the same reasons discussed above regarding Claims 1-6. Identification of the relevant discussion for each step is provided below. [EX1003, ¶207].

Claim 8	
[8.a]	*See* [1.a]
[8.b]	*See* [1.b]
[8.c]	*See* [1.c]
[8.c.i]	*See* [1.c.i]
[8.c.ii]	*See* [1.c.ii]
[8.c.iii]	*See* [1.c.iii]
[8.d]	*See* [1.d]
[8.d.i]	*See* [1.d.i]
[8.d.ii]	*See* [1.d.ii]
[8.d.iii]	*See* [1.d.iii]
[8.d.iv]	*See* [1.d.iv]
[8.d.v]	*See* [1.d.v]

Claim 9	
[9.a]	*See* [2.a]
[9.b]	*See* [2.b]
[9.c]	*See* [2.c]

Claim 10	
[10.a]	*See* [3.a]
[10.b]	*See* [3.b]

Claim 11	
[11.a]	*See* [4.a]
[11.b]	*See* [4.b]

Claim 12	
[12.a]	*See* [3.a]/[5.a]
[12.b]	*See* [3.b]/[5.b]

Claim 13	
[13.a]	*See* [6.a]
[13.b]	*See* [6.b]
[13.c]	*See* [6.c]
[13.c.i]	*See* [6.c.i]
[13.c.ii]	*See* [6.c.ii]
[13.c.iii]	*See* [6.c.iii]

Claims 14-18

The elements of Claims 14-18 recite language that is substantially similar to Claims 1-4. Accordingly, the Sauve-Tsuda Combination satisfies the elements of Claims 14-18 for the same reasons discussed above regarding Claims 1-4.

Identification of the relevant discussion for each step is provided below. [EX1003, ¶¶208-210].

Claim 14	
[14.pre]	*See* [1.pre]
[14.a]	*See* [1.a] (receiving inputs), [1.b] (inputs are website addresses)
[14.b]	*See* [1.b] (receiving webpages); EX1003, ¶¶209-210 (explaining that webpages are received/retrieved using the same process)
[14.c]	*See* [1.c]
[14.c.i]	*See* [1.c.ii]
[14.c.ii]	*See* [1.c.iii]
[14.d]	*See* [1.d]
[14.d.i]	*See* [1.d.i]
[14.d.ii]	*See* [1.d.ii]
[14.d.iii]	*See* [1.d.iii]
[14.d.iv]	*See* [1.d.v]

Claim 15	
[15.a]	*See* [1.d.ii]/[1.d.v]

Claim 16	
[16.a]	*See* [2.a]

[16.b]	*See* [2.c]

Claim 17	
[17.a]	*See* [3.a]
[17.b]	*See* [2.c]/[3.b]

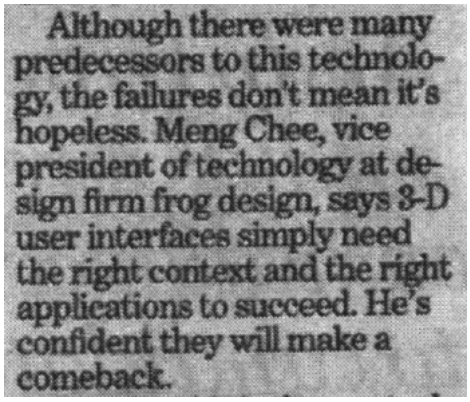
Claim 18	
[18.a]	*See* [4.a]
[18.b]	*See* [4.b]

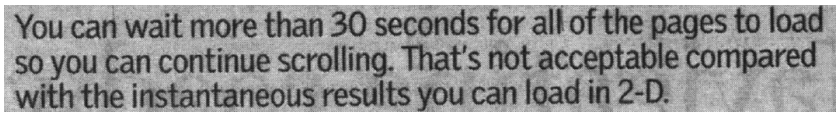
C. Any Secondary Considerations Evidence Patent Owner Might Produce Could Not Save the Challenged Claims

Patent Owner presented alleged evidence of industry praise and commercial success in an earlier IPR (Case No. IPR2020-01417).[11] However, the alleged evidence was not vetted because the parties terminated the IPR before the Board reached a decision on institution. Regardless, the alleged evidence was not persuasive for a number of reasons.

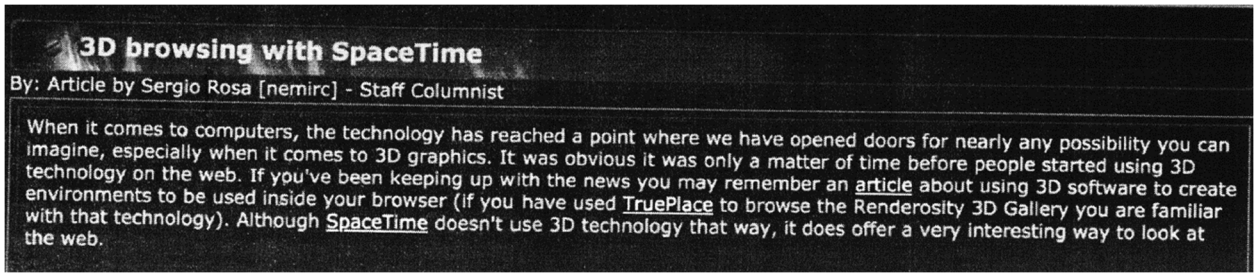
[11] There is no significant relationship between Petitioner Apple and the petitioner in the prior proceeding, Samsung. Samsung and Apple are competitors. Nor is there any connection between this Petition and the petition in the prior proceeding. The grounds presented in the two petitions rely on distinct, non-overlapping prior art.

To start, Patent Owner's alleged industry praise evidence contained a variety of statements about the SpaceTime 3D software that undermine Patent Owner's position. For example, while an article by the *San Jose Mercury News* said SpaceTime 3D "shows promise," it also acknowledged the extensive prior art ("there were many predecessors") and commented that SpaceTime 3D's webpage loading times were "not acceptable." [*See* excerpts below].


Although there were many predecessors to this technology, the failures don't mean it's hopeless. Meng Chee, vice president of technology at design firm frog design, says 3-D user interfaces simply need the right context and the right applications to succeed. He's confident they will make a comeback.


You can wait more than 30 seconds for all of the pages to load so you can continue scrolling. That's not acceptable compared with the instantaneous results you can load in 2-D.

Another purported web article attributed to *Renerosity* that Patent Owner relied on characterized the application of 3D-GUIs to web browsers as "obvious," which supports the obviousness grounds in this Petition. [*See* excerpt below].


3D browsing with SpaceTime

By: Article by Sergio Rosa [nemirc] - Staff Columnist

When it comes to computers, the technology has reached a point where we have opened doors for nearly any possibility you can imagine, especially when it comes to 3D graphics. It was obvious it was only a matter of time before people started using 3D technology on the web. If you've been keeping up with the news you may remember an article about using 3D software to create environments to be used inside your browser (if you have used TruePlace to browse the Renderosity 3D Gallery you are familiar with that technology). Although SpaceTime doesn't use 3D technology that way, it does offer a very interesting way to look at the web.

Patent Owner also attempted to establish industry praise by citing an alleged string of email communications with a Samsung employee. But even Patent Owner

admitted that the email string shows nothing more than the Samsung employee "expressing interest in [the] technology" and inviting Patent Owner to put on a demonstration. Merely expressing interest is not the sort of "industry praise" that can confer patentability on a claimed invention shown to be obvious multiple times over. [*See supra* Grounds 1 and 2]. While representative, these weaknesses are not an exhaustive critique of Patent Owner's evidence.

For at least these reasons, even if Patent Owner were to bring forth similar evidence in this proceeding, it would not warrant upholding the Challenged Claims.

IX. ANALYSIS ON DISCRETION

A. 35 U.S.C. §325(d)

The *Advanced Bionics* framework strongly favors institution. [*Advanced Bionics LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential)].

The examiner never rejected the Challenged Claims during prosecution. [*See*, *generally*, EX1002; *supra* §V.B]. And there is no indication in the '048 patent's file history that the examiner substantively considered the prior art combinations applied in this Petition. Neither condition of Part One in the *Advanced Bionics* two-part framework is met.

Further, while there is no need to reach Part Two of the *Advanced Bionics* framework to resolve against discretionary denial under §325(d), the Challenged

Claims were allowed based on the Examiner's mistaken view that the prior art failed to "teach[] interacting with a two-dimensional webpage that is being displayed in a three-dimensional space." [EX1002, 31]. This feature was plainly disclosed in the prior art, including the Robertson-Gralla-Gettman (Ground 1) and Sauve-Tsuda (Ground 2) combinations presented above in §VIII. Thus, the Examiner's failure to consider obviousness of the Challenged Claims over uncited references such as Robertson, Gettman, and Sauve constitutes a material error.

B. 35 U.S.C. §314(a)

Consistent with Congressional intent, the goals of *Fintiv*, and the interim guidance issued by Director Vidal on June 21, 2022 ("Director's Guidance"), Petitioner asks the Board to consider the challenges raised in this Petition. [*Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*")]. First and foremost, the merits of the Petition are "compelling," and this "alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*." [*Director's Guidance*, 3-5]. Further, and as explained in more detail below, even if the Board were to address the full *Fintiv* framework, a holistic analysis favors institution.

1. Factor 1: Petitioner Requested a Stay

Factor 1 favors institution. On November 16, 2022, Petitioner requested a stay in the parallel Litigation (*SpaceTime3D, Inc. v. Apple Inc.*, Case No.:6:22-cv-

00149 (WDTX)) pending the Court's decision on Petitioner's motion to transfer. [EX1049]. The Court responded the following day by delaying the *Markman* hearing (originally November 10, 2022) by two weeks (now December 1, 2022). [EX1050, 3; EX1051]. The parties' venue dispute has slowed the pace of the Litigation and increased the likelihood that the Board will be first to review the '048 patent against the prior art.

2. Factor 2: The Board's Statutory Timeline is More Reliable Than the District Court's

Patent Owner filed its complaint in the Litigation on February 10, 2022. [EX1052]. The District Court, which is one of the country's busiest patent courts, has not yet set an estimated trial date. [EX1050 ("To be determined by the Court"), 5]. Even if it had, the Director recognizes "that scheduled trial dates are unreliable and often change." [*Director's Guidance*, 8]. Thus, "the proximity to trial should not alone outweigh" other relevant factors. [*Id.*, 8].

Based on the February 10, 2022 filing date of Patent Owner's original complaint, a median time-to-trial of about 28.3 months [EX1053, 37], and the 18-month IPR schedule, the Board will likely issue its Final Written Decision around the same time as a median-expected jury trial in the Litigation. But there is no reason to expect this Litigation to follow the median path given Petitioner's pending transfer and stay motions. Factor 2 therefore favors institution.

3. Factor 3: Petitioner's Diligence and Investment in IPR Favors Institution

As a result of Petitioner's diligence in filing this Petition months ahead of the one-year time bar, the Litigation still is in its early stages. [*Fintiv*, 11]. Beyond exchanging preliminary infringement/invalidity contentions and claim construction briefs, the parties and the District Court have yet to expend significant resources on invalidity. [EX1050].

4. Factor 4: The Petition's Grounds are Materially Different from Any That Might be Raised in Litigation

To eliminate any doubt as to the absence of meaningful overlap between the Litigation and IPR, Apple stipulates that, unless the Board denies or later vacates institution of this Petition, Apple will not seek resolution in the District Court of invalidity based on the specific grounds asserted in this Petition. [*Sand Revolution* at 11-12]. Accordingly, Factor 4 favors institution.

5. Factor 5: Parties in Parallel Proceedings

Given the circumstances, including the uncertain trial date in the Litigation and the above-noted contingent stipulation, Petitioner's status as a defendant in the Litigation favors institution under *Fintiv* Factor 5. Institution would serve the Board's efficiency and integrity goals by potentially relieving the District Court of the need to conduct a trial and facilitating review of claims that Patent Owner has, thus far, asserted in three litigations across two district courts.

6. Factor 6: The Merits Compel Institution

Director Vidal has explained that "the PTAB will not deny institution…under *Fintiv*…when a petition presents compelling evidence of unpatentability." [Director's Guidance, 3-5, 9; *see also Fintiv* at 14-15]. The merits of this Petition are compelling and, thus, the Board should institute review.

X. FEES—37 C.F.R. §42.103

Petitioner authorizes the Office to charge Deposit Account No. 06-1050 for the fee set in 37 C.F.R. §42.15(a) and for any additional fees.

XI. MANDATORY NOTICES—37 C.F.R §42.8(a)(1)

A. Real Party-In-Interest—37 C.F.R. §42.8(b)(1)

Petitioner, Apple Inc. is the real party-in-interest.

B. Related Matters—37 C.F.R. §42.8(b)(2)

Petitioner is not aware of any disclaimers, reexamination certificates or petitions for *inter partes* review for the '048 patent. The '048 patent is the subject of the following proceedings:

Caption	Case No.	Court	Filing Date	Status
SpaceTime3D, Inc. v. LG Electronics Inc. et al.	2:22-cv-00049	EDTX	2022-02-10	Active
SpaceTime3D, Inc. v. Apple Inc.	6:22-cv-00149	WDTX	2022-02-10	Active
SpaceTime3D, Inc. v. Samsung Electronics Co., Ltd. et al.	2:19-cv-00372	EDTX	2019-11-14	Terminated
SpaceTime3D, Inc. v. Samsung Electronics Co., Ltd. et al.	IPR2020-01417	PTAB	2020-08-04	Terminated Pre-Institution

C. Lead And Back-Up Counsel—37 C.F.R. §42.8(b)(3)

Lead Counsel	Backup counsel
W. Karl Renner, Reg. No. 41,265 Fish & Richardson P.C. 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 612-335-5070 Fax: 612-288-9696 Email: IPR50095-0108IP1@fr.com	Andrew B. Patrick, Reg. No. 63,471 Kenneth Wayne Darby, Jr., Reg. No. 65,068 Usman A. Khan, Reg. No. 70,439 Fish & Richardson P.C. 60 South Sixth Street, Suite 3200 Minneapolis, MN 55402 Tel: 612-335-5070 Fax: 612-288-9696 Email: IPR50095-0108IP1@fr.com

D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR50095-0108IP1@fr.com.

Respectfully submitted,

Dated November 22, 2022

/Kenneth Wayne Darby Jr./

W. Karl Renner, Reg. No. 41,265
Andrew B. Patrick, Reg. No. 63,471
Kenneth Wayne Darby, Jr., Reg. No. 65,068
Usman A. Khan, Reg. No. 70,439
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 612-335-5070
F: 612-288-9696

(Control No. IPR2023-00242)

Attorneys for Petitioner

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,872 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated November 22, 2022

/Kenneth Wayne Darby Jr./

W. Karl Renner, Reg. No. 41,265
Andrew B. Patrick, Reg. No. 63,471
Kenneth Wayne Darby, Jr., Reg. No. 65,068
Usman A. Khan, Reg. No. 70,439
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 612-335-5070
F: 612-288-9696

(Control No. IPR2023-00242)

Attorneys for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on November 22, 2022, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided via USPS, to the Patent Owner by serving the correspondence address of record as follows:

FITZSIMMONS IP LAW
PO BOX 199
GARDENA, CA 90248

/Crena Pacheco/
Crena Pacheco
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
(617) 956-5938