

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: E. EDDIE BAKHASH
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Title: SYSTEM AND METHOD FOR PROVIDING THREE-
DIMENSIONAL GRAPHICAL USER INTERFACE

SUPPLEMENTAL DECLARATION OF DR. HENRY FUCHS

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LIST OF CHALLENGED CLAIMS

Claim 1	
[1pre]	A method for using a two-dimensional (2D) space to selectively interact with a plurality of applications open on a device and a three-dimensional (3D) immersive space to switch between said plurality of application, said device having a fixed resolution display, comprising:
[1a]	receiving a plurality of inputs from a user, said plurality of inputs comprising at least first, second, and third inputs;
[1b]	opening said plurality of applications in response to said plurality of inputs, said plurality of applications comprising at least first, second, and third applications, wherein for each one of said plurality of applications (i) an object is generated having application-specific data, (ii) said object is displayed in said 2D space on said fixed resolution display, and (iii) said user is allowed to modify at least a portion of said application-specific data by interacting with said object;

[1c]	allowing a user to switch between said plurality of application, comprising;
[1c-1]	generating at least a plurality of images, said plurality of images comprising at least first, second, and third images, wherein said first image is an image of at least a portion of a first object generated by said first application and having first application-specific data, said second image is an image of at least a portion of a second object generated by said second application and having second application-specific data, and said third image is an image of at least a portion of a third object generated by said third application and having third application-specific data;

[1c-2]	replacing all objects corresponding to said plurality of applications that are visible in said 2D space with said plurality of images, said plurality of images being displayed in said 3D immersive space and in an order based on a last time that said user one of (i) opened said first application and interacted with said first object, (ii) opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object, wherein a first one in said order is displayed in a foreground of said 3D immersive space, a second one in said order is displayed in a background of said 3D immersive space behind at least said first one in said order, and a third one in said order is displayed in said background of said 3D immersive space behind at least said second one in said order;
[1c-3]	allowing said user to move said plurality of images, wherein (i) movement of one of said plurality of images results in movement of all of said plurality of images, and

[1c-4]	(ii) continued movement in one direction of one of said plurality of images results in a perception to said user that said one of said plurality of images is moved off of said fixed resolution display; and
[1c-5]	allowing said user to delete at least one of said plurality of images from said 3D immersive space, wherein deletion of said second one in said order results in said third one in said order being moved to a location in said 3D immersive space where said second one in said order was located prior to said deletion; and
[1d]	allowing said user to interact with one of said first, second, and third applications, comprising:
[1d-1]	receiving a selection from said user of one of said plurality of images corresponding to one of said plurality of applications;
[1d-2]	replacing said plurality of images within said 3D immersive space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space in response to said selection;

[1d-3]	receiving at least one interaction by said user with said one of said first, second, and third objects within said 2D space; and
[1d-4]	modifying said one of said first, second, and third application-specific data in response to said at least one interaction.
Claim 2	
[2]	The method of claim 1, wherein said step of displaying said plurality of images on said display device further comprises displaying said plurality of images together with a plurality of icons, wherein each one of said plurality of images has a corresponding one of said plurality of icons.
Claim 3	
[3]	The method of claim 1, wherein said step of displaying said plurality of images on said display device further comprises displaying said plurality of images together with a plurality of descriptions, wherein each one of said plurality of images has a corresponding one of said plurality of descriptions.

Claim 4	
[4]	The method of claim 1, further comprising the step of storing in a database data linking each one of said plurality of images with a corresponding one of said plurality of applications and a corresponding one of said order in which said plurality of images are displayed on said display device.
Claim 5	
[5]	The method of claim 1, wherein a reduction in size of an object or portion thereof is used to depict said object or portion thereof as being behind at least one other object or other portion of said object.
Claim 6	
[6a]	The method of claim 1, further comprising the steps of: displaying a fourth image on said display device, said fourth image being an image of a desktop having at least one other application; and

[6b]	allowing said user to open said other application by allowing said user to select said fourth image, replacing said fourth image with said desktop in response to said selection, receiving an interaction from said user with said other application, and opening said other application in response to said interaction.
Claim 7	
[7]	The method of claim 1, wherein each one of said plurality of applications comprises a web browser application, and each one of said first, second, and third objects comprises a web browser window.
Claim 8	
[8a]	The method of claim 7, further comprising the steps of: displaying at least fourth and fifth images in a second 3D immersive space, wherein said fourth image is an image of said plurality of images within said 3D immersive space and said fifth image is an image of at least a portion of a fourth object generated by a fourth application previously opened by said user; and

[8b]	allowing said user to interact with said one of said first, second, and third applications by selecting said fourth image, selecting said one of said plurality of images corresponding to said one of said plurality of applications, and interacting with said one of said first, second, and third objects corresponding to said one of said plurality of applications.
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Claim 9

[9]	The method of claim 1, wherein said step of replacing said plurality of images with one of said first, second, and third objects, further comprises enlarging a size of at least said one of said plurality of images before replacing said one of said plurality of images with said one of said first, second, and third objects, thereby simulating movement of said one of said plurality of images in a z-axis of said display device.
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Claim 10	
[10pre]	A system for using a two-dimensional (2D) space to selectively interact with at least one of a plurality of applications open on a computing device and a three-dimensional (3D) space to switch between said plurality of application, comprising:
[10a]	a display device;
[10b]	at least one input device;
[10c]	at least one processor operatively coupled to said display device and said at least one input device; and
[10d]	a memory device comprising executable code for:
[10d-1]	receiving a plurality of inputs from a user, said plurality of inputs comprising at least first, second, and third inputs;

[10d-2]	opening said plurality of applications in response to said plurality of inputs, said plurality of applications comprising at least first, second, and third applications, wherein for each one of said plurality of applications (i) an object is generated having application-specific data, (ii) said object is displayed in said 2D space on said fixed resolution display, and (iii) said user is allowed to modify at least a portion of said application-specific data by interacting with said object;
[10d-3]	allowing a user to switch between said plurality of application, comprising;

[10d-3i]	generating at least a plurality of images, said plurality of images comprising at least first, second, and third images, wherein said first image is an image of at least a portion of a first object generated by said first application and having first application-specific data, said second image is an image of at least a portion of a second object generated by said second application and having second application-specific data, and said third image is an image of at least a portion of a third object generated by said third application and having third application-specific data;
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[10d-3ii]	replacing said object corresponding to one of said plurality of applications that is being interacted with by said user in said 2D space with said plurality of images, said plurality of images being displayed in said 3D space and in an order based on a last time that said user one of (i) opened said first application and interacted with said first object, (ii) opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object, wherein a first one in said order is displayed in a foreground of said 3D space in front of at least said second one in said order, said second one in said order is displayed in said 3D space behind at least said first one in said order, and a third one in said order is displayed in said 3D space behind at least said second one in said order;
[10d-3iii]	allowing said user to move said plurality of images, wherein (i) movement of one of said plurality of images results in movement of all of said plurality of images, and

[10d-3iv]	(ii) continued movement in one direction of one of said plurality of images results in a perception to said user that said one of said plurality of images is moved off of said fixed resolution display; and
[10d-3v]	allowing said user to delete at least one of said plurality of images from said 3D space, wherein deletion of said second one in said order results in said third one in said order being moved to a location in said 3D space where said second one in said order was located prior to said deletion; and
[10d-4]	allowing said user to interact with one of said first, second, and third applications, comprising:
[10d-4i]	receiving a selection from said user of one of said plurality of images corresponding to one of said plurality of applications;
[10d-4ii]	replacing said plurality of images within said 3D space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space in response to said selection;

[10d-4iii]	receiving at least one interaction by said user with said one of said first, second, and third objects within said 2D space; and
[10d-4iv]	modifying said one of said first, second, and third application-specific data in response to said at least one interaction.
Claim 11	
[11]	The system of claim 10, wherein said step of displaying said plurality of images on said display device further comprises displaying said plurality of images together with a plurality of icons and a plurality of descriptions, wherein each one of said plurality of images has a corresponding one of said plurality of icons and a corresponding one of said plurality of descriptions.
Claim 12	
[12]	The system of claim 10, further comprising periodically replacing at least one of said plurality of images with at least one other image, said other image showing at least one change to application specific data of a corresponding to one of said plurality of applications while said plurality of images are being displayed in said 3D space.

Claim 13

[13]	The system of claim 12, further comprising the step of receiving a request from said user to switch from said 2D space to said 3D space, wherein said step of replacing said object in said 2D space with said plurality of images further comprises replacing said object in said 2D space with said plurality of images in response to receiving said request to switch from said 2D space to said 3D space.
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Claim 14

[14]	The system of claim 10, wherein a reduction in size of an object or portion thereof is used to depict said object or portion thereof as being behind at least one other object or other portion of said object.
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Claim 15

[15a]	The system of claim 10, wherein said executable code is further configured to: display a fourth image on said display device in said 3D space, said fourth image being an image of a desktop having at least one other application; and
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[15b]	allow said user to open said other application by allowing said user to select said fourth image, replacing said fourth image with said desktop in response to said selection, receiving an interaction from said user with said other application, and opening said other application in response to said interaction.
Claim 16	
[16]	The system of claim 10, wherein each one of said plurality of applications comprises a web browser application, and each one of said first, second, and third objects comprises a web browser window.
Claim 17	
[17a]	The system of claim 16, wherein said executable code is further configured to: display at least fourth and fifth images in a second 3D space, wherein said fourth image is an image of said plurality of images within said 3D space and said fifth image is an image of at least a portion of a fourth object generated by a fourth application previously opened by said user; and

[17b]	allow said user to interact with said one of said first, second, and third applications by selecting said fourth image, selecting said one of said plurality of images corresponding to said one of said plurality of applications, and interacting with said one of said first, second, and third objects corresponding to said one of said plurality of applications.
Claim 18	
[18]	The system of claim 10, wherein said step of replacing said plurality of images with one of said first, second, and third objects, further comprises enlarging a size of at least said one of said plurality of images before replacing said one of said plurality of images with said one of said first, second, and third objects, thereby simulating movement of said one of said plurality of images in a z-axis of said display device.

Claim 19	
[19pre]	A method for using a two-dimensional (2D) space to selectively interact with at least one of a plurality of applications open on a device and a three-dimensional (3D) space to switch between said plurality of application, comprising:
[19a]	receiving a plurality of inputs from a user, said plurality of inputs comprising at least first, second, and third inputs;
[19b]	opening said plurality of applications in response to said plurality of inputs, said plurality of applications comprising at least first, second, and third applications, wherein for each one of said plurality of applications (i) an output is generated having application-specific data, (ii) displaying said output in said 2D space on said fixed resolution display, and (iii) allowing said user to modify at least a portion of said application-specific data by interacting with said output;
[19c]	allowing a user to view information on said plurality of application, comprising;

[19c-1]	generating at least a plurality of images, said plurality of images comprising at least first, second, and third images, wherein said first image is an image of at least a portion of a first object generated by said first application and having first application-specific data, said second image is an image of at least a portion of a second object generated by said second application and having second application-specific data, and said third image is an image of at least a portion of a third object generated by said third application and having third application-specific data;
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[19c-2]	replacing said output corresponding to one of said plurality of applications that is being interacted with by said user in said 2D space with said plurality of images, said plurality of images being displayed in said 3D space and in an order based on a last time that said user one of (i) opened said first application and interacted with said first object, (ii) opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object, wherein said 3D space comprises at least a foreground and a background, a first one in said order is displayed in said foreground, and second and third ones in said order are displayed in one of a foreground and a background;
[19c-3]	allowing said user to move said plurality of images, wherein (i) movement of one of said plurality of images results in movement of all of said plurality of images, and

[19c-4]	(ii) continued movement in one direction of one of said plurality of images results in a perception to said user that said one of said plurality of images is moved off of said fixed resolution display; and
[19c-5]	allowing said user to delete at least one of said plurality of images from said 3D space, wherein deletion of said second one in said order results in said third one in said order being moved to a location in said 3D space where said second one in said order was located prior to said deletion; and
[19d]	allowing said user to interact with one of said first, second, and third applications, comprising:
[19d-1]	receiving a selection from said user of one of said plurality of images corresponding to one of said plurality of applications;
[19d-2]	replacing said plurality of images within said 3D space with one of said first, second, and third outputs corresponding to said one of said plurality of applications within said 2D space in response to said selection;

[19d-3]	receiving at least one interaction by said user with said one of said first, second, and third outputs within said 2D space; and
[19d-4]	modifying said one of said first, second, and third application-specific data in response to said at least one interaction.
Claim 20	
[20]	The method of claim 19, wherein said step of replacing said plurality of images with one of said first, second, and third objects, further comprises enlarging a size of at least said one of said plurality of images before replacing said one of said plurality of images with said one of said first, second, and third objects, thereby simulating movement of said one of said plurality of images in a z-axis of said display device.

I, Henry Fuchs, PhD, declare as follows:

I. INTRODUCTION

1. I have been retained as a technical expert by counsel on behalf of Apple Inc. (“Apple”/“Petitioner”) in Case No. IPR2023-00344 with respect to U.S. Patent No. 9,696,868 (“the ’868 patent”) (APPLE1001).

2. I understand that this declaration (“Supplemental Declaration”) will be submitted in support of Petitioner’s Reply to Patent Owner’s Response to the Petition for *inter partes* review of the ’868 patent. This Supplemental Declaration supplements certain portions of my prior declaration in support of the Petition for this IPR Proceeding (APPLE1003, “my Prior Declaration”). In my Prior Declaration, I address many topics, including (but not limited to) my background and qualifications, the level of skill in art, an overview of the ’868 patent, a POSITA’s background knowledge, certain legal standards explained to me by counsel, legal principles applied for the purposes of my analysis and this declaration, and a detailed analysis of the prior art against the claim elements of the ’868 patent.

3. I maintain all of my earlier analysis and continue to hold the opinions expressed in my Prior Declaration. This Supplemental Declaration does not replace my Prior Declaration. These declarations are complementary and should be read in tandem. Accordingly, this Supplemental Declaration does not cover every topic addressed in my Prior Declaration.

4. In forming this Supplemental Declaration, I have considered the following: the declaration of Patent Owner's Dr. Schaefer (EX2016), the Board's institution decision (Paper 11), my knowledge and experience in this field, including my research, and work experience in the field, my experience working with others involved in the field, and the third-party documents cited throughout my analysis. *See* APPLE1003, ¶¶4-22 (discussing qualifications) and ¶¶31-32 (discussing the level of skill for a "POSITA"). I have also considered the following additional references:

- Merriam-Webster's Collegiate Dictionary, Tenth Edition, Merriam-Webster, Inc., 1999 (APPLE1029)
- US Patent No. 10,936,270 ("Xu" or APPLE1030)
- Transcript of the Deposition of Dr. Schaefer taken on January 9, 2024 (APPLE1031)
- SpaceTime's Opposition to LG's Motion to Dismiss, *SpaceTime3D, Inc. v. LG Electronics Inc., et al.*, Case No.: 2:22-cv-00049 (EDTX) (APPLE1032).

5. Although I cite and quote to selected portions of various references in this Declaration, the reader should understand that these citations are representative examples. A POSITA would have viewed each reference in its entirety and in combination with other references. Accordingly, I intend the references identified in this Declaration to be viewed as incorporated in their entireties.

6. I am not, and never have been, an employee of Apple. I received no compensation for this Declaration beyond my normal hourly compensation based on my time actually spent analyzing the '868 patent, the prior art publications cited below, and various issues related thereto. I will not receive any added compensation based on the outcome of any IPR or other proceeding involving the '868 patent.

7. The analysis and opinions expressed in my Prior Declaration fully explain why [1] each and every feature of the '868 patent's claims is provided in the prior art; and [2] a POSITA would have been motivated to combine the known prior art elements in a manner that reaches the claimed invention. Patent Owner's expert, Dr. Schaefer, has considered my opinions and offered his own, some of which are inconsistent with my view. I will address certain points of dispute below. The fact that I have not addressed all of Dr. Schaefer's opinions should not be interpreted as agreement with them.

II. PO'S ARGUMENTS RELY ON TERMS AND FEATURES THAT ARE NOT RECITED IN THE CLAIMS

8. A pervasive theme in PO's arguments is that "the claimed invention allows the user to interact with *active applications in 2D space*¹ while displaying *images* of open applications in 3D space." POR, 7, 8, 4, 45-46 ("the claimed invention *switches from (inactive) images* of applications in 3D space *to an (active)*

¹ I have bolded and italicized text for emphasis in this paper.

application in 2D space”). The bolded phrases are at the core of PO’s arguments, even though they are nowhere to be found in the claims.

A. The ’868 Patent Does not Recite “Active” or “Inactive”

9. As a preliminary matter, the terms “active” and “inactive” are not recited in the claims. The term “active application” cannot even be found in the specification, let alone limit the claimed objects in 2D space, as alleged by the PO. POR, 7, 8, 4, 45-46. In the ’868 patent, the word “active” is most frequently recited as part of the word “interactive,” which is used to describe the **3D** interface. APPLE1001, 1:30-35, 7:48-54, 8:20-25, 14:19-30. For instance, in the Field of Invention section, the ’868 patent states that the alleged invention is directed “to a three-dimensional (“3D”) *interactive* computing interface.” APPLE1001, 1:30-35. Moreover, the ’868 patent states that:

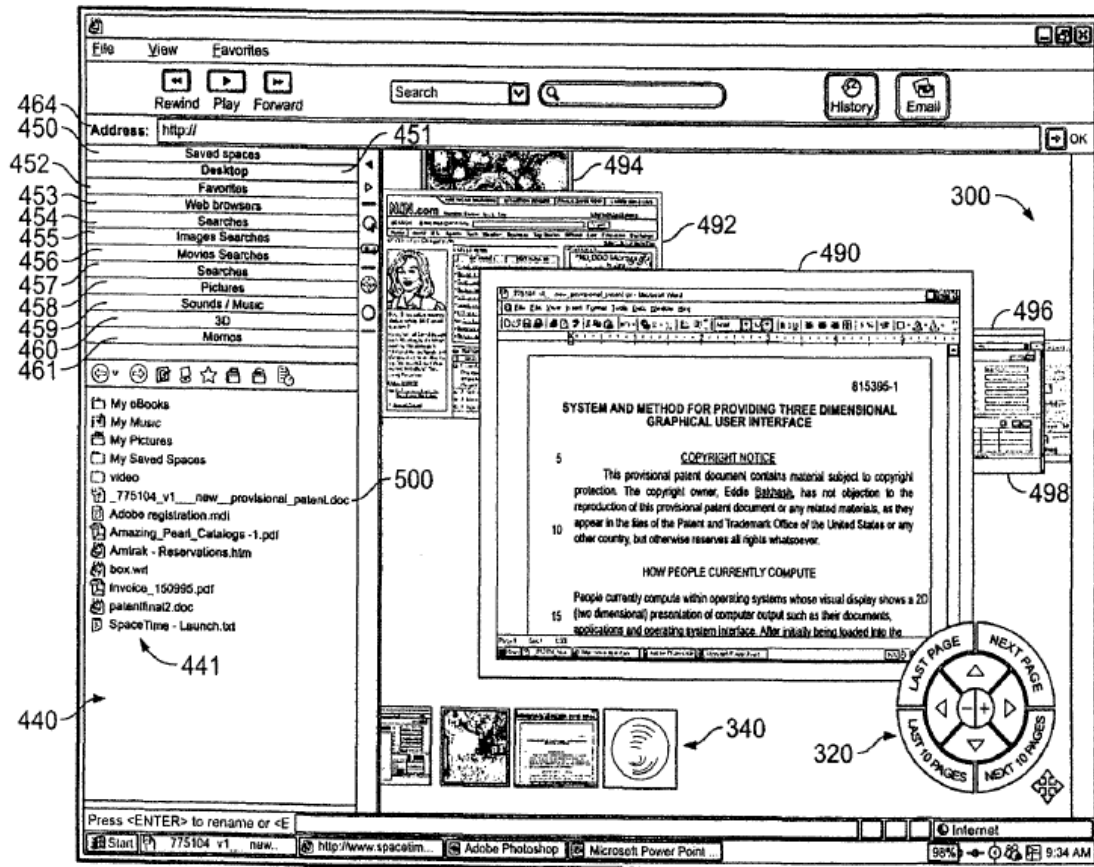
Through programmatic access or helper *applications* (e.g., *represented by interactive icons within the 3D space*), the 3D GUI allows the user to locate data, applications, files created by applications, desktop windows, HTML pages, and **3D applications**, and it facilitates or invites the *graphical output of these files and programs in their interactive 3D spaces*. In general, the present invention displays graphics from the user’s 2D finite desktop in 3D infinite space *while retaining the functionality of the 2D programs and documents*.

APPLE1001, 5:45-60.

10. Any characterization of the functionality of images corresponding to applications in the 3D space necessarily being different from objects in the 2D space is not supported by the '868 specification (see above “*while retaining the functionality of the 2D programs and documents*”). Thus, PO’s argument that the present invention allows a user to interact with active applications in a 2D space, while displaying inactive images of those same applications in a 3D space, is inconsistent with both the claim language and the specification.

11. The description of FIG. 13A (reproduced below) in the '868 patent further exposes the error in PO’s characterization of images in 3D immersive space necessarily being “inactive.” In particular, the '868 patent explains that “the **3D GUI** runs as *an Active X control* within the Internet Explorer web browser.” APPLE1001, 21:12-28, 5:33-44. A “saved Microsoft Word document 500 is running in a window 490 within a 3D virtual space 300 alongside items 492, 494, 496, 498. All of the outputs of these items were captured through the input of the end user through helper applications.” APPLE1001, 21:12-28. “[O]nce [a] file, document, application or desktop is added to the virtual space 300, *it is fully interactive and functional and appears no different from, or close to, the original way the program functions when it was not in the 3-D Cartesian space 300.*” APPLE1001, 21:29-43. This description makes clear that the images in 3D are fully

interactive and function in the same or similar manner as the corresponding objects in 2D.



APPLE1001, FIG. 13A.

12. Accordingly, PO's attempt to distinguish objects in 2D in the claims as allegedly being "active" whereas images in the 3D immersive space are allegedly "inactive," not only lacks support, but directly contradicts the '868 patent. For at least this reason, the majority of PO's arguments fail.

B. PO has no Support for its Fabricated Distinction Between Images and Windows

13. PO argues that HAC² does not render the independent claims obvious because HAC allegedly does not disclose generating and displaying *images* in the 3D immersive space. POR, 2-6. At the heart of PO's arguments is the incorrect and unsupported notion that an image must be inactive/static and cannot be active/dynamic. For instance, in describing Hanggie, PO contends that "*the windows are always active. As such, they are not images as claimed.*" POR, 29. PO also argues that "*[b]y definition, because the user can interact with the control buttons on the window, the window (object) is not an image as required by the claims of the '868 Patent.*" POR, 46. Relatedly, PO contends that "if the window and its title bar (with maximize button) is active, then it is not an image. Alternatively, if the window and its title bar (with maximize button) is an image, then it cannot be interacted with by the user to maximize the window." POR, 54.

14. Nowhere in the '868 patent specification is there any disavowal or description suggesting that an image cannot be active or is incapable of receiving interactions. On the contrary, in the example of FIG. 13A noted above and as

² "HAC" refers to the combination of Anthony and Hanggie, and the combination of Hanggie and Anthony. Petition (Pet.), 33-34.

described further below, images in the 3D immersive space can be interacted with. APPLE1001, 21:12-43. And while PO alleges that an interaction with an object means that the object is not an image “by definition,” PO does not provide any definition of an “image” in support of its argument. PO also fails to point to any support from the specification or secondary sources, such as dictionaries. Instead, PO only cites to its expert (Dr. Schaefer) declaration, which repeats the same language and offers no further corroboration or explanations. *See e.g.*, POR, 45-46, 54.

15. For at least these reasons, I found PO’s attempt to distinguish the applied prior art based on language not found in the claims to be without merit.

16. More, a POSITA would not have understood an “image” to be limited in the manner that PO wishes it to be. Merriam Webster’s Dictionary defines an image as “a reproduction or imitation of the form of a person or thing;” “a tangible or visible representation;” “a vivid or graphical representation or description.” APPLE1029, 578. Petitioner’s mapping of HAC’s 3D application windows to “an image of at least a portion of a [first/second/third] object generated by said [first/second/third] application” is consistent with the understanding a POSITA would have had because the application window is a visible or graphical representation of a 2D application window (“an image of at least a portion of a first object generated by said first application”) in a 3D immersive space. *See e.g.*, Pet.,

44-51. Neither the '868 patent specification nor a POSITA's understanding in the art would have limited an "image" to being a static image or an entity incapable of being interacted with. Moreover, nothing prevents HAC's application windows in 3D space to be an image with control buttons. Indeed, such window design is a common feature in several computer user interfaces. APPLE1030, FIGS. 4A-4F, 9:26-34, 10:8-16; APPLE1005, FIG. 6, ¶[0064].

17. If anything, the '868 patent specification includes descriptions of an image in 3D space that indicate it is not static and is configured for user interaction. For instance, in addition to the description of FIG. 13A above, the '868 patent explains that images taken from 2D computer screens are interactive. APPLE1001, 26:62-63 ("The redrawing of 2D computer screens onto *interactive* 3D objects"). When the images are webpages, the '868 patent explains that such images are "active page[s]" that upon selection can generate a new cluster of webpages that the active page links to. APPLE1001, 35:40-57. And because the '868 patent expressly notes that "displays graphics from the user's 2D finite desktop in 3D infinite space ... *retain[] the functionality of the 2D programs and documents,*" the '868 patent does not support PO's alleged distinction of 2D active windows and 3D inactive images. APPLE1001, 5:45-60.

18. PO also argues that an interaction with an image in 3D space "does not result in the corresponding application being opened but displaying the *previously*

opened version of the application including the application-specific data, so that the user can resume where they last left off.” POR, 35-36. This argument rises and falls with the above-noted PO arguments regarding active objects and inactive images. Moreover, no such limitation (of displaying a *previously* opened version of the application) is present in the claim. And even if it were, displaying a previously-opened window in the state that it was last interacted with was certainly well-known in the art. Thus, PO’s attempt to distinguish the claimed images in 3D space from the prior art is not rooted in language recited in the claims.

19. For at least the foregoing reasons, PO’s arguments that an image cannot be active are without merit and should be rejected.

III. THE CHALLENGED CLAIMS ARE ALL UNPATENTABLE

A. Grounds 1A/2A: PO Fails to Undercut HAC

1. HAC renders obvious claims 1-5, 9-14, and 18-20

20. PO argues that HAC does not render obvious the Challenged Claims and, in support, argues that, in HAC, “[t]here is no switching from one space to another” and that “everything occurs on a single 3D GUI.” POR, 33.

21. As a preliminary matter, this argument is irrelevant and has already been dismissed by the Board, which recognized that the claims do not recite switching from one space (e.g., 3D) to another (e.g., 2D). Institution Decision, 53

(“Patent Owner, however, does not explain adequately why the ‘replacing’ limitation’s ‘relationship to other claim limitations’ requires ‘switching from 3D space to 2D space,’ which is not recited in the claim or described in the Specification.”)

22. PO’s assertion that in Anthony and Hanggie “everything occurs on a single 3D GUI” is also incorrect. As explained in the petition, Hanggie discloses a compositing Desktop Window Manager (CDWM) that provides 3D graphics and a Legacy Graphical User Interface Subsystem 192 that provides 2D graphics services. APPLE1006, ¶¶[0039]-[0042]; APPLE1003, ¶¶[52]-[53]; Pet., 14-22. Hanggie’s “operating system in which the CDWM and legacy DWM are integrated inherently has the capability to render the desktop using the invalidation DWM (legacy DWM. 192a) or the compositing DWM (CDWM. 190).” APPLE1006, ¶[0092]. Selection of the compositing or legacy drawing mode can be made by the user. APPLE1006, ¶[0092]. When HAC’s system operates in the legacy DWM mode, a 2D GUI, not a 3D GUI, is used. Thus, PO’s understanding that, in HAC, “everything occurs on a single 3D GUI” is a significant error and misunderstanding of the prior art.

23. Ironically, PO accuses Petitioner of misleading the Board (*see e.g.*, POR, 51-52), while PO fails to rebut the Board’s straightforward analysis in recognizing that the claims do not recite switching from one space (e.g., 3D) to another (e.g., 2D). Institution Decision, 53. The *Markman* order also cannot save

the PO because the district court's analysis followed the specification, and the specification and claims do not support PO's "switching" argument which has no foundation in the '868 patent. *See* EX2012 (*Markman*), at 13-16. Moreover, the Petition explicitly noted the district court's constructions of 2D space and 3D space (*see* Pet., 9) and explains why HAC renders obvious objects in 2D space and images in 3D space, as recited in the claims. In the Institution Decision, the Board agreed, and PO has now responded by relying on arguments that are not rooted in the claim language.

2. HAC displays images in the 3D immersive space according to the claimed order

24. PO argues that Petitioner's mapping of feature [1c-2] fails because "the ordering is not based on the creation or editing of application-specific data (*e.g.*, a file or document), but *the opening or last interaction with a specific application*. Thus, *the claimed invention orders images in 3D space based on the most recently used applications—not the most recently used documents or files.*" POR, 13, 4-5.

25. Yet again, PO misquotes the claimed features. First, the claims do not recite an "opening *or* last interaction *with a specific application.*" POR, 14. Rather, feature [1c-2] recites, among other features, "said plurality of images being displayed in said 3D immersive space and in an order based on a last time that said user one of (i) opened said first application and interacted with said first object, (ii)

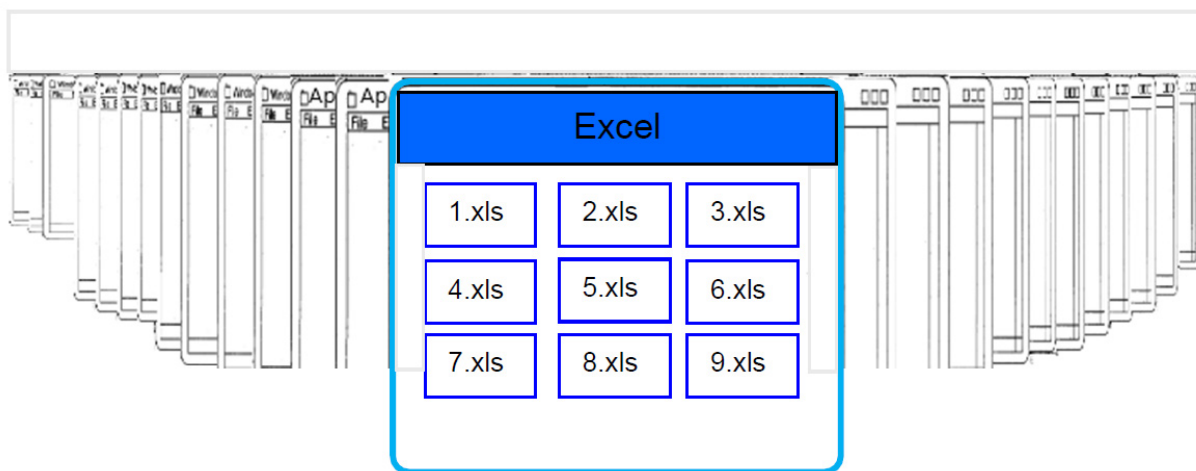
opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object,” and therefore would have been understood as encompassing the opening of *an application* and interacting with *an object* (for one of the first, second, third applications). APPLE1001, 39:3-20. Because PO’s argument is premised on language that cannot be found in the claims, PO’s argument is without merit.

26. Yet even if PO’s argument were to be considered, PO does not appear to dispute that HAC discloses a chronological ordering attribute based, e.g., on the date of edit or creation. POR, 36. Rather, PO focuses its arguments on (1) the claims allegedly requiring image ordering to be based on an “opening or last interaction with a specific application” (which as noted above is not required by the claims), and (2) the claimed ordering being for data objects, such as images, and not for applications. POR, 13, 36-38.

27. With respect to the first argument (even if considered), PO fails to explain how a user’s interaction with an application file or window (e.g., Excel or Word window) generated by an application (e.g., Microsoft® Excel or Microsoft® Word) is ***not*** an interaction with the application itself. Indeed, a POSITA would have understood that an application executable file is executed in order to display an application window and that if one were to enter a character in an application window, such an interaction would be with both the application and application

window because the software (executable file) running the application receives and provides instructions to display (and store) the character in the application window. Indeed, during his deposition, PO's expert, Dr. Schaefer explained that when running an application, e.g., Microsoft® Excel, an executable file is executed and a Microsoft® Excel application window captures user keyboard input. APPLE1031, 63:17-68:5. Thus, not only does PO's argument fly in the face of a well-known understanding in the art, but even PO's expert, Dr. Schaefer, provided testimony corroborating the notion that interacting with an application window (file) is also interacting with the application.

28. With respect to PO's second argument, PO contends that because "Anthony is for 'displaying files and folders,'" and Anthony "provide[s] that 'file type' can be an ordering attribute," "a more accurate annotation of Figure 4 would be as" shown below. POR, 37.



POR, 38.

29. At the risk of stating the obvious, the figure above is not the combination presented in the Petition. As noted above and in the Petition, Hanggie's application windows replace Anthony's focal group windows. Pet., 22-34. Anthony explicitly discloses that:

all items stored in an operating system have certain properties (e.g. a time attribute) ascribed to them. *The term "item" is herein defined as a visual representation of a file, folder, virtual folder, or any other data object* that may be stored in an operating system and/or file system, for example, icons, thumbnails, and the like.

APPLE1007, ¶[0042].

30. A focal group, as shown in Anthony's FIG. 4, would thus also be understood to be an "item," which Anthony explains has an ordering attribute that is used to arrange "items chronologically, e.g., by using a date of creation or date of edit attribute as the ordering attribute." APPLE1007, ¶[0042]. And thus, when Hanggie's application windows replace Anthony's focal groups, it would have been obvious that the application windows would also have been arranged in a chronological order, e.g., based on the date of edit or modification.

31. Notably, this interpretation is consistent with PO's characterization of the Anthony's focal group being a folder. POR, 21, 23. Specifically, because Anthony discloses an ordering attribute for an item and makes clear that an item

could include a visual representation of a folder (which PO concedes a focal group is), it follows that Anthony's focal groups would also be ordered according to the ordering attribute for items.

32. Finally, PO points to the taskbar in Anthony's FIG. 4 as evidence of an "open application," and argues that the inclusion of an application icon in the taskbar is evidence that files, not applications, would be arranged in a chronological order in HAC and that arrangement of applications in the order they were last used would not have been obvious in HAC. POR, 39-40.

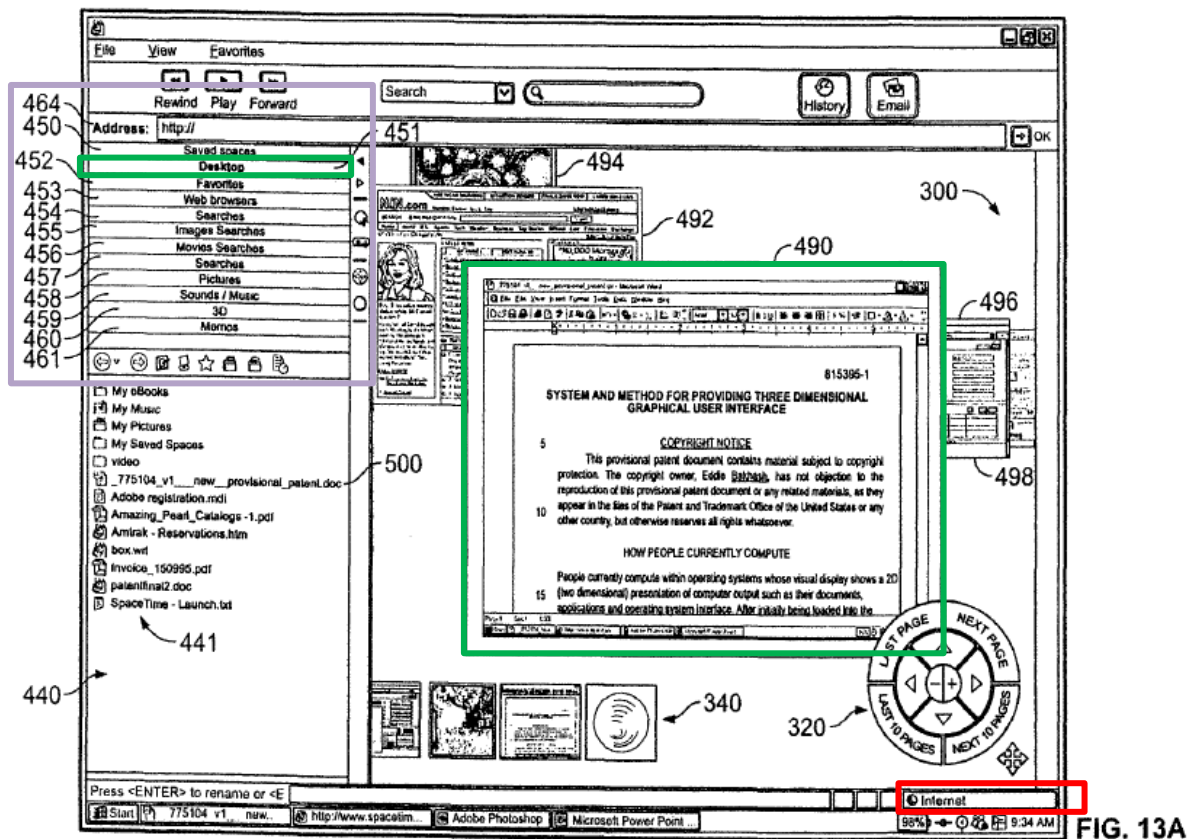
33. There are several problems with PO's arguments. First, the argument fails to appreciate that an interaction with an application file or window is also an interaction with the application, as explained above.

34. Second, PO's arguments are not rooted in the claim language. The claims do not recite arranging applications in an order. The claims recite displaying images, and not the applications themselves, in an order based on a last time the user opened an application and interacted with the object (associated with the application). As explained above and in the Petition, this feature is satisfied by HAC's images that are an application window.

35. Third, PO's focus on Anthony's displayed image files in FIG. 4 is nothing more than the PO attacking the references (here Anthony) individually while failing to consider the asserted combination that does not rely on Anthony's image

files. I have been informed by Petitioner's Counsel that a finding of obviousness cannot be overcome by attacking references individually, and thus, PO's arguments addressing Anthony individually are moot.

36. To the extent PO's argument relies on an inherent assumption that an open application can only be presented on a taskbar (and therefore files, not applications are presented in a timeline), the '868 patent contradicts such an assumption. POR, 39 ("it would make no sense, nor would it be obvious, to use the 3D timeline to present open applications in an order in which they were last used"). For instance, FIG. 13A of the '868 patent depicts an Internet Explorer web browser. APPLE1001, 21:12-14.



APPLE1001, FIG. 13A.

37. Within the Internet Explorer application window, icons related to numerous other helper applications 450-461 (highlighted in yellow) and even some windows corresponding to the helper applications (e.g., window 490 corresponding to the Desktop application—highlighted in green) are displayed. APPLE1001, 21:12-14. But icons of these open helper applications cannot be found on the taskbar. Thus, to the extent PO argues that open applications can only be displayed in a taskbar and an absence from the taskbar would indicate that no application (window) is displayed, such an argument is flatly contradicted by the disclosure in

the '868 patent.

3. HAC renders obvious feature [1d-2]

38. PO argues that HAC does not render obvious replacing images in 3D that include both object and application specific data. POR, 40-47. PO's arguments largely rely on the differentiating an "image" from an "active window." *Id.* (see e.g., POR, 43 ("Hanggie does not disclose presenting a plurality of images in 3D space, but a plurality of active windows")). However, as explained above, the claims do not recite the word "active," and nothing in the '868 patent prohibits the claimed "images" from being application windows that a user can interact with. Thus, PO's argument fails at least because PO's attempted differentiation has no relevance to the claims.

39. PO also argues that "switch[ing] from a 3D mode to a 2D mode" would not "reduce graphics processing and thereby conserve battery power" because, according to Dr. Schaefer, PO's expert, "images are much easier to manipulate in 3D space than active applications." POR, 43. I disagree. Even if images were more easily manipulated in 3D space as alleged by PO, this benefit does not takeaway from the benefit of switching from a 3D mode to a 2D mode, as explained in Hanggie. Specifically, Hanggie explains that selection of the legacy drawing mode (2D mode) can be based on power-conservation conditions, e.g., "when a portable device is disconnected from an AC power source and switches to battery power"

because “the video graphics processing unit (GPU) is less active and thus consumes less power.” APPLE1005, ¶[0092]. Thus, the motivation to switch from displaying images in 3D to an object in 2D is expressly provided in Hanggie, and neither Dr. Schaefer nor the PO provide any evidence indicating that Hanggie’s disclosure is incorrect other than uncorroborated statements from Dr. Schaefer that merely repeat what is stated in the POR.

40. Finally, PO argues that Petitioner allegedly is trying to “have it both ways” by mapping the *same* window to an image and to an object in the claims. POR, 46. This is incorrect and mischaracterizes Petitioner’s prior art mapping.

41. As explained in the Petition (*see* Pet., 44-54), HAC’s computer generate a plurality of images in the form of *windows in 3D space that respectively correspond to the three windows in 2D space*. APPLE1003, ¶[97]; APPLE1006, ¶¶[0026], [0057] (“to draw the window in 3D, the CDWM may define the window anatomy using various components), [0058], [0059] (“[t]he CDWM may support multiple application created and rendered content areas, associated with a single window”); FIG. 3. Specifically, Hanggie discloses that an application can generate an application window and attach any number of content objects to the application window. APPLE1006, ¶¶[0049]-[0050], [0087]-[0092], FIGS. 2, 4. In generating a composited window in 3D space, the computer modifies various features of the (previous) window in 2D space such as the “content size, window position or scale,

or a change to the pixels of the contents diffuse texture.” APPLE1006, ¶[0050]. Accordingly, Petitioner’s mapping relies on images (windows) in the 3D immersive space that correspond to but are different from objects (windows) in the 2D space.

4. A POSITA Would have Combined Anthony and Hanggie

42. PO argues that “[i]f HAC (as proposed) did result in the presentation of images in 3D space, then there would be no motivation to switch from 3D to 2D as Petitioners contend.” POR, 48. In support, PO again relies on Dr. Schaefer’s uncorroborated and conclusory statements that switching from 3D to 2D would not result in more efficient system resource utilization, such as reduced graphics processing and conserving battery power. POR, 47-48, 43.

43. As explained above, Dr. Scheffer’s conclusory statements contradict the teachings of Hanggie and thus should not be given any weight. And, to the extent any alleged benefits (which Petitioner does not concede) may be available to keep a system operating in 3D (e.g., because active applications are difficult to manipulate in 3D space), the purported advantage of manipulating images in 3D does not negate the advantages of more efficient system resource utilization by transitioning from images in 3D space to an object in 2D space, as expressly disclosed by Hanggie. APPLE1006, ¶[0092].

44. PO also argues that each of the references also teaches away from the claimed invention. With respect to Hanggie, PO argues that “Hanggie actually

teaches away from the claimed invention in that the '868 Patent provides for a different solution to reduce power, *i.e.*, display images of open applications in 3D space.”

45. Yet again, PO's arguments find no support or basis in the '868 patent disclosure. As a preliminary matter, the '868 claims do not recite that the system has reduced power when images are displayed in 3D. Thus, any attempt to distinguish the '868 patent claims from HAC based on power cannot be sustained. In fact, the word “power” is not recited a single time in the '868 patent. Consequently, the '868 patent does not describe the purported solution PO alleges the claims provide.

46. To the extent the actually claimed features are considered (e.g., “said plurality of images being displayed in said 3D immersive space” and “replacing said plurality of images within said 3D immersive space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space in response to said selection”), a POSITA would have combined Anthony and Hanggie or Hanggie and Anthony for the reasons already explained in the Petition. *See* Pet., 44-57, 23-34.

47. With respect to Anthony, PO contends that Anthony teaches away from the claimed invention because (1) Anthony allegedly explains that, in circumstances in which thumbnails provide a visual indication of a file, it can still be difficult to

locate a desired file in a 2D folder, and (2) “Anthony’s ‘thumbnail’ approach does not suffer from the intensive processing and memory requirements as Hanggie.” POR, 50. These reasons have no relevance to the reasons a POSITA would have combined Anthony and Hanggie (*vice-versa*), as noted in the Petition.

48. For example, even if the use of thumbnails makes it difficult to locate files in a 2D folder if the folder has too many files, a POSITA would have understood that such a specific experience would not deter a user from replacing images in 3D space with an object in 2D space to save system resources, e.g., if battery power needs to be conserved. For instance, there may be circumstances in which saving battery power is more important than providing a user convenience with navigating through numerous files.

49. The difficulty to locate files, when files are presented as thumbnails, is also irrelevant to the combinations advanced in the Petition. As shown below in Anthony’s FIG. 2, the “thumbnail” disclosure is part of Anthony’s discussion of prior art, which is entirely different from Anthony’s timeline (shown in Anthony’s FIG. 4) that is part of HAC.

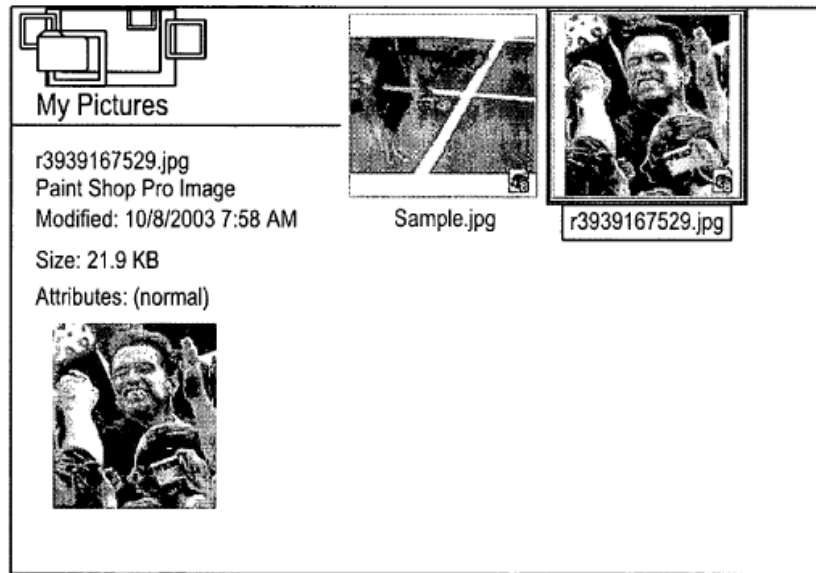


FIG. 2
PRIOR ART

APPLE1007, FIG. 2.

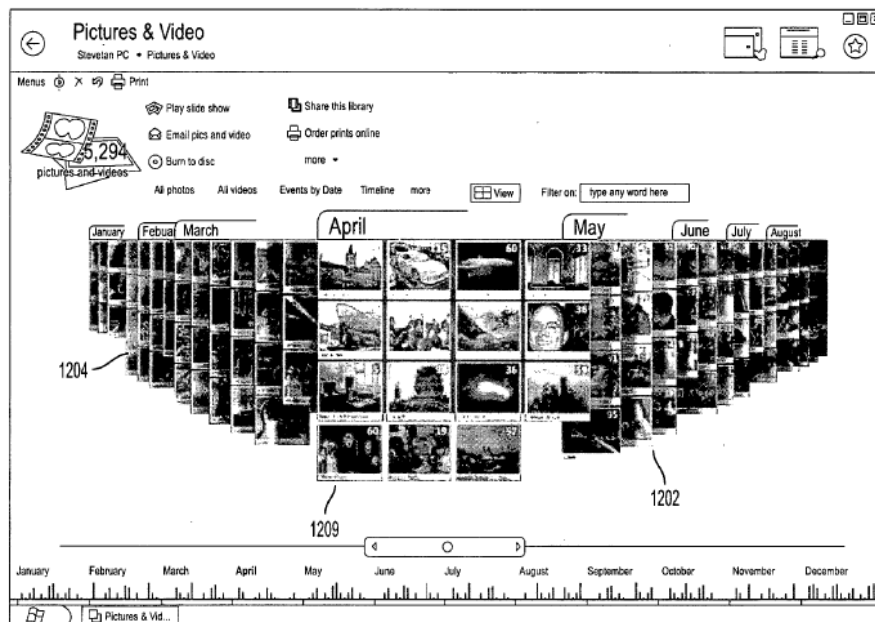


FIG. 4

APPLE1007, FIG. 4.

50. Other remarks addressing Anthony's disclosure on pages 50-51 of the POR rely on: (1) features that are not recited in the claims (e.g., "if you interact with any image in 3D space (foreground or background), the images are replaced with a corresponding active application"); or (2) attacking Anthony individually, without addressing the asserted HAC combination, which I have been informed by Petitioner's Counsel cannot be used to overcome a finding of obviousness. For these reasons, PO's arguments regarding Anthony are irrelevant and/or fail to demonstrate that Anthony teaches away from the claimed features.

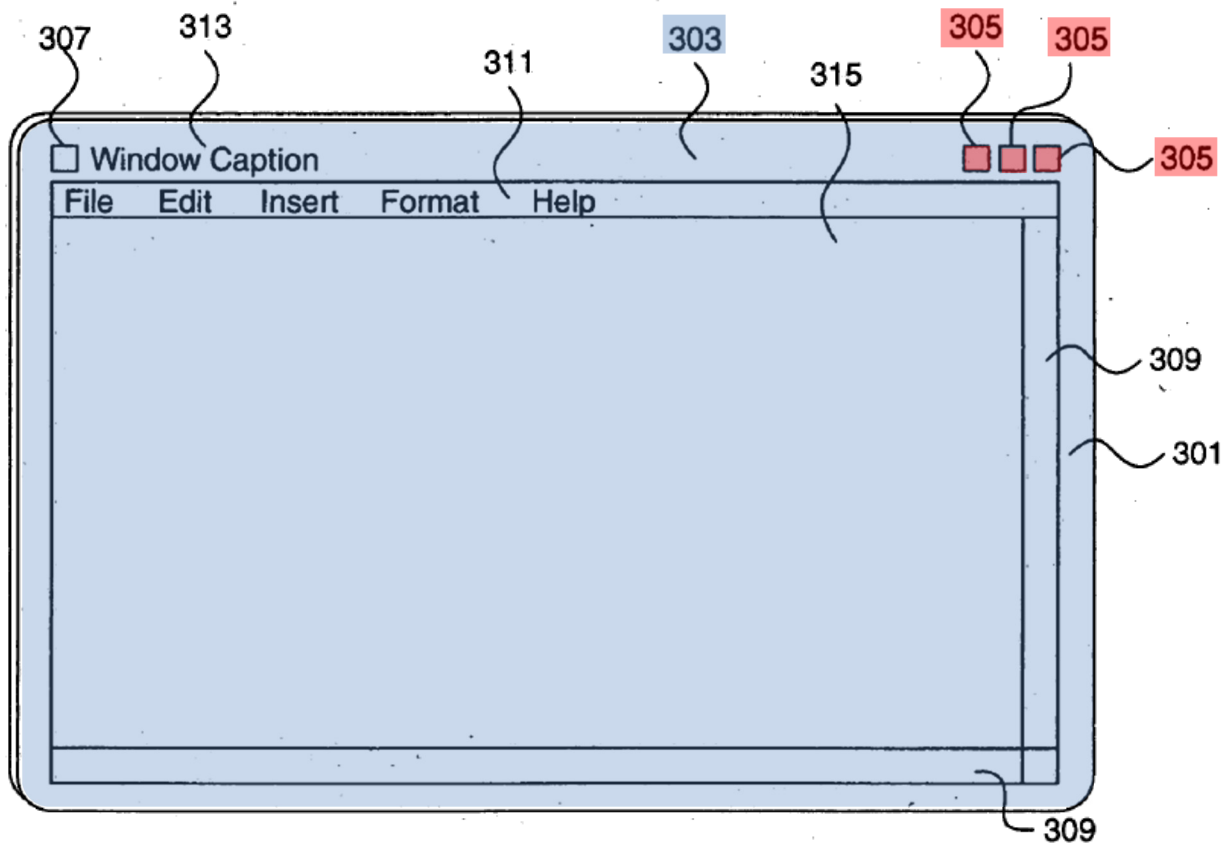
5. HAC Renders Obvious Claims 9, 18, and 20

51. PO's arguments with respect to claims 9, 18, and 20 rise and fall with PO's attempt to distinguish between 1) windows and images, and 2) active and inactive windows. For the reasons noted above in Section II, these arguments fail and claims 9, 18, and 20 stand rendered obvious by HAC for the reasons noted in the Petition. Pet., 67, 75, 77.

6. HAC Renders Obvious Claim 13

52. Claim 13 recites, *inter alia* "further comprising the step of receiving a request from said user to switch from said 2D space to said 3D space, wherein said step of replacing said object in said 2D space with said plurality of images further comprises replacing said object in said 2D space with said plurality of images in response to receiving said request to switch from said 2D space to said 3D space."

53. As explained in the Petition (*see* Pet., 14-17, 44-49), the CDWM may use a compositing engine **based on Direct3D®** and DirectX® technology that “*enables 3D graphics and animation*, ... and other rich visual features on the desktop.” APPLE1006, ¶[0040]; APPLE1003, ¶[52]. The 3D Graphics Interface 195 provides an abstract interface to display devices 197 in a multiple-display system via multiple device drivers 196. APPLE1006, ¶[0043]. Hanggie explains that “[t]he CDWM may render the base portion of the application window 301 as a three-dimensional (3D) object.” APPLE1006, ¶[0065]. The base portion 303 (blue) includes the control buttons 305 (red), as shown in Hanggie’s FIG. 3 below. APPLE1006, ¶[0058].



APPLE1006, FIG. 3.

54. Hanggie also discloses that the “Legacy Graphics Device Interface 192b *provides 2D graphics services to both legacy applications as well as the Legacy Window Manager.*” APPLE1006, ¶[0042]; APPLE1003, ¶[53]. As explained in the Petition (Pet., 40-44), multiple objects can be displayed in 2D space through the legacy mode using the Legacy Window Manager 192a. APPLE1006, ¶[0087], FIG. 4. Thus, Hanggie’s system supports 2D displays of legacy applications as well as 3D displays. APPLE1003, ¶[54].

55. Hanggie teaches that “[t]he CDWM and/or the operating system may

allow a user to select whether the compositing or legacy drawing mode should be used.” APPLE1006, ¶[0092]. Through its selection capability, Hanggie explicitly discloses that a user can request the CDWM mode (3D) mode or the legacy drawing mode (2D).

56. It would have been obvious to a POSITA that when the HAC system is displaying one or more objects in 2D space in the legacy drawing mode, and the user selects the CDWM mode to be used, the HAC system “*receiv[es] a request from said user to switch from said 2D space to said 3D space*” at least because the legacy drawing mode displays windows in 2D space and the CDWM mode displays images in 3D immersive space. A POSITA would have also understood that in response to receiving this request, the HAC system would have then generated corresponding windows (images) in 3D space and *replace* the windows (“*said objects*”) *in 2D space with* corresponding windows (“*the plurality of images*”) in 3D space, as explained in the Petition. Pet., 44-49.

57. PO’s arguments with respect to claim 13 are again misplaced and rely on features not recited in the claims. For instance, PO’s argument appears to import a requirement that the *entire* 2D space must be switched with the *entire* 3D space. But no such requirement is present in the claims. Instead claim 13 recites “replacing said *object in said 2D space* with said *plurality of images*,” which is rendered obvious in HAC by the replacement of legacy windows in 2D space with CDWM

windows that are in 3D space.

58. PO also incorrectly contends that there would be no motivation to switch from 2D to 3D space. As is well-known, a power level and processing state of HAC's computer device (e.g., portable and hand-held devices, laptop PCs) is transient and thus power levels and processing capabilities change over time. APPLE1006, ¶[0029]; APPLE1007, ¶[0032]. Accordingly, a user who may have earlier been mobile and subsequently found a power socket for the device implementing HAC's system, would want to switch from 2D to 3D to enjoy 3D viewing because a power source is available. When the user decides to move again and can no longer remain connected to a power source, the user can transition back to 2D viewing.

B. Grounds 1B/2B and 1C/2C: Claims 6-8 and 15-17 are obvious

59. PO copy-pastes its arguments regarding Matthews and claims 6-8 and 15-17 from its POPR into the POR. *Compare* POPR, 50-52 with POR 62-64. The Board found that "Patent Owner's argument is unavailing because none of the features argued by Patent Owner are recited in claims 8 and 17. On their faces, claims 8 and 17 do not recite any of the features argued by Patent Owner." Institution Decision, 69-71. Because Patent Owner has done nothing to address the Board's statements and concerns, claims 6-8 and 15-17 should continue to be found invalid.

IV. CONCLUSION

60. After reviewing the POR and Patent Owner's expert declaration, I was not persuaded by any of the arguments therein. As such, I still conclude that the Challenged Claims are obvious.

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

Executed this 18th day of January, 2024.



Henry Fuchs, PhD