

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FACEBOOK, INC.
Petitioner

v.

BRUCE ZAK
Patent Owner

Case Nos.: IPR2017-00002
IPR2017-00003
IPR2017-00004
IPR2017-00005

U.S. Patent No. 9,141,720 B2
Issued September 22, 2015

DECLARATION OF WILLIAM HENRY MANGIONE-SMITH

I, William Henry Mangione-Smith, am over the age of 21 and I have personal knowledge of the statements set forth below:

A. Background

1. I have been retained by the Plaintiff, Bruce Zak (“Zak”), to provide information and opinions concerning U.S. Patent No. 9,141,720 entitled “System and Method For Managing Content On A Network Interface.” (the ‘720 Patent).
2. I am at least a person of ordinary skill in the art in connection with the type of systems as described in the ‘720 Patent. Some of my education and experience that is relevant to the technology of the ‘720 Patent is as follows. From roughly 1998 until 2002 I was responsible for product development of an Internet base consumer credit reporting service. This service provided a web portal for submitting report requests and reading completed reports. A database maintained lists of pending tasks, individual consumer data, credit transactions, and relational data associating all of the above. I am a prolific inventor with numerous issued U.S. Patents related to Internet, HTML and Database technologies. Additionally, while on the faculty at UCLA I was responsible for directing research by graduate students related to these technologies. My complete curriculum vitae is attached hereto as Exhibit 1.

3. My hourly rate for the services that I have provided to Zak is \$650. My compensation is in no way dependent upon either the substance of my opinions stated herein or the outcome of the pending IPR proceedings.
4. In connection with providing the opinions set forth below, I have reviewed the '720 Patent (including the claims), Facebook's Petitions for IPR2017-00002, IPR2017-00003, IPR2017-00004, and IPR2017-00005, and the exhibits that accompany Facebook's Petitions, which include the September 30, 2016 Declarations of David Klausner ("Klausner Declarations"), excerpts from Jim Boyce's book entitled "Microsoft Outlook Version 2002 Inside Out" ("Boyce"), U.S. Patent No. 5,729,734 to Parker et al. entitled "File Privilege Administration Apparatus And Methods" ("Parker"), U.S. Patent No. 7,433,832 to Bezos et al. entitled "Methods And Systems For Distributing Information Within A Dynamically Defined Community" ("Bezos"), International Patent Application Publication No. WO 01/063919 A1 to Weiss et al. entitled "Systems And Methods For Generating And Providing Previews Of Electronic Files Such As Web Files" ("Weiss"), U.S. Patent No. 5,960,406 to Rasansky et al. entitled "Scheduling System For Use Between Users On The Web" ("Rasansky"), and U.S. Patent No.

6,369,840 to Barnett et al. entitled “Multi-Layered Online Calendaring And Purchasing” (“Barnett”).

B. Person of Ordinary Skill in the Art

5. I have been informed by counsel that there are several factors that may be considered in determining the level of ordinary skill in the art, including: (1) the level of education and experience of persons working the field; (2) the types of problems encountered in the field; and (3) the sophistication of the technology. I understand that a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical person having qualities reflected by these factors.
6. In my opinion, a person of ordinary skill in the art in the area of technology described in the ‘720 Patent would typically have an undergraduate degree in Computer Science, Computer Engineering, Electrical Engineering or a closely related field of study. Such a person would typically have five years of professional work experience in the area of Web-based services and applications. A greater degree of formal training could serve to replace some degree of work experience but in my opinion some degree of professional experience would be necessary. Similarly, a greater amount of professional experience in the area of

Web-based services and applications could serve to replace some degree of formal education.

C. Claim Construction

7. I have been informed by counsel that the standard used for claim construction in an *inter partes* review proceeding is different from that used in U.S. district court litigation. I have been informed that in an *inter partes* review proceeding, the Board will adopt the “broadest reasonable interpretation” of a claim term in light of the patent specification. I am also informed that an assessment of the claims should be undertaken from the view point of a person of ordinary skill in the art at the time of the invention, which in this case occurred prior to February 13, 2003, the earliest effective filing date for the ‘720 Patent. I have applied these standards in my analysis below.
8. In its Petitions, Facebook has offered proposed constructions for the following claim terms: “profile information,” “profile,” “user profile,” “application,” “configurable application,” “link,” “configurable link,” “application link,” “biography application,” “biographical information,” “administrator portal,” “business rule,” and “communications application.” I have been informed by counsel that Zak only challenges Facebook’s proposed constructions for “application,” “configurable

application,” “link,” “configurable link,” and “application link.” Accordingly, the claim construction analysis that I provide below focuses on these disputed terms.

a. Broadest reasonable interpretation of the claim term “application”

9. I understand that Facebook alleges that the broadest reasonable interpretation of the claim term “application” is “unit of content on a network site.” In my opinion, Facebook’s proposed interpretation of the term “application” is unreasonably broad because the claims of the ‘720 Patent are directed to “a web site,” which is a subset of the “network sites” disclosed in the specification of the ‘720 Patent.
10. The specification of the ‘720 Patent describes an “application” as “a unit of content provided on the network site 34.” Col. 5:9-10 (emphasis added). The specification explains that “the network can be the Internet, the World Wide Web, an intranet, an extranet, a local area network (LAN), a wide area network (WAN), or any other form of network (collectively ‘web site’)” and that “[t]he network site 34 is made up of one or more locations 36. Just as a web site can include a wide variety of different web pages and areas on those pages, there can be a wide variety of different types of locations 36 on a single network site 34.” Col. 6:6-15.

11. The claims of the '720 Patent are directed to a web site, which is a particular type of network site. For example, independent claims 1 and 31 recite: "A system, including a computer, for managing content displayed on a web site." Col. 22:23-24; Col. 26:32-33. Independent claim 2 includes similar language: "A system, including a computer and a web site, for managing content displayable on the web site." Col. 22:52-53. Independent claim 7 provides for "A method for managing content that is stored on a system and that is displayable on a web site." Col. 23:44-45. In the same vein, independent claim 11 calls for: "A system, including a computer, for managing content displayable on a collection of web pages." Col. 24:42-43. With respect to claim 11, it is my opinion that a person of ordinary skill in the art would have understood that "a collection of web pages" is a "web site."
12. Based on the language of the specification and the claims quoted above, it is my opinion that the claims of the '720 Patent are not broadly directed to a network site. Instead, the claims are more narrowly directed to just one of the various types of network sites described in the specification – a web site. Accordingly, it is my opinion that the broadest reasonable interpretation of the claim term **"application"** is **"a unit of content provided on a web site."**

b. Broadest reasonable interpretation of the claim term “configurable application”

13. I understand that Facebook alleges that the broadest reasonable interpretation of the term “configurable application” is “application that can be modified or configured.” In my opinion, Facebook’s proposed interpretation of the term “configurable application” is unreasonably broad because the specification of the ‘720 Patent explicitly defines “configurable applications” as “those applications 30 that can be modified or configured by the content provider 22,” which is a user of the web site. See Col. 5:45-46. In my opinion, Facebook’s proposal that a “configurable application” is an “application that can be modified or configured” without limiting such modification or configuration to users of the web site is unreasonably broad.

14. The claims of the ‘720 Patent state that one of the configurable applications is “a biography application.” Independent claims 1 and 31 state that “one of the applications is a biography application comprising biographical information about users of the web site.” Col. 22:28-30; Col. 26:37-39. Independent claim 2 explains “one of the applications is a biography application that is managed by the computer and that displays biographical information that is received from and that is about one of the users of the system.” Col. 22:60-64. Similarly, independent claim 7

recites that “one of the applications is a biography application having biographical information that is received from and that is about one of the users of the system.” Col. 23:60-63. In the same vein, independent claim 11 states that “the first configurable application is a biography application that displays biographical information about the administrator of the collection of web pages.” Col. 24: 55-57. With respect to claim 11, the administrator is a user of the web site. See Col. 2:25-27. The patent specification explains that the biography application is configured by users of the web site – “A biography object 550 allows persons affiliated with an organization to manage the display of biographical information using the biography application 135 discussed above.” Col. 17:64-66.

15. The claims also explicitly state that the configurable applications are configured by users of the web site. For example, independent claims 1 and 31 state that “at least one of the plurality of configurable applications is generated by the computer at least in part based on inputs received from users of the web site.” Col. 22:31-67; Col. 26:40-42. Independent claim 2 includes similar language: “at least one of the configurable applications is generated by the computer at least in part based on inputs received from multiple users of the system.” Col. 22:23-24. Independent

claim 7 states “generation of at least one of the configurable applications is based at least in part on inputs received from multiple users of the system.” Col. 23:55-58. Independent claim 11 states “wherein the second configurable application is generated by the computer at least in part based on content received from the administrator and at least in part based on content received from one or more of the other users of the system...” Col. 24:58-62. Both the “administrator” and the “other users” recited in claim 11 are users of the web site.

16. Based on the language of the specification and the claims quoted above, it is my opinion that an application is “a configurable application,” within the context of the claims, when it can be modified or configured by users. Accordingly, it is my opinion that the broadest reasonable interpretation of the claim term “**configurable application**” is “**an application that can be modified and/or configured by users of the web site.**”

c. Broadest reasonable interpretation of the claim term “link”

17. I understand that Facebook alleges that the broadest reasonable interpretation of the claim term “link” is “mechanism to activate an application on a network site.” In my opinion, Facebook’s proposed interpretation of the term “link” is unreasonably broad because: (i) it does not tie the link to activation by a user, leaving open the possibility of

activation by a machine, and (ii) the claims of the ‘720 Patent are directed to a web site, which is narrower than a network site. See ¶9-11 above.

18. The specification of the ‘720 Patent states that “[a] link 32 is the mechanism by which the user 50 of a network site 34 activates the application 30.” Col. 5:53-55, emphasis added. In my opinion, it is unreasonable to jettison the “by which the user ... activates” language provided in the specification as Facebook suggests doing.
19. The language used in the claims of the ‘720 Patent also demonstrates that a “link” is a mechanism by which users activate an application. For example, independent claims 1 and 31 state that certain action is taken by the computer “in response to a user activating the generated application link.” Col. 22:50-51; Col. 26:59-60. Independent claim 7 recites the step: “selectively display content of one of the configurable applications in response to a selection of the configurable link that points to the configurable application by one of the users who is permitted to view the configurable application.” Col. 24:15-19. Independent claim 11 calls for: “at least one application link on at least one of the web pages that points to at least one of the plurality of configurable applications so as to

enable the users to selectively activate the configurable application to which the application link points.” Col. 24:63-67.

20. Based on the language from the specification and the claims quoted above, it is my opinion that claim term “link” is tied to user activation of an application. In my opinion, the broadest reasonable interpretation of “link” is a **“mechanism by which users activate an application on a web site.”**

d. Broadest reasonable interpretation of the claim terms “configurable link” and “application link”

21. I understand that Facebook alleges that the broadest reasonable interpretation of the terms “configurable link” and “application link” is a “link that can be modified or configured as permitted by any relevant business rules.” In my opinion, Facebook’s proposed interpretation of the terms “configurable link” and “application link” is unreasonably broad because it does not tie the configurability of the link to configurability by users, leaving open the possibility of machine configuration without any user input or activity. In my opinion, Facebook’s proposal that a “configurable link” and an “application link” is a “link that can be modified or configured as permitted by any relevant business rules” without tying the link to modification or configuration by users is unreasonably broad.

22. The specification of the '720 Patent explains that: "A configurable link 32 is a link 32 that can be modified or configured by the content provider 22 as permitted by any relevant business rules." Col. 5:62-64, emphasis added. The "by the content provider" language provided in the specification's definition of the term "configurable link" cannot be ignored as Facebook's suggests. In my opinion, a person of ordinary skill in the art would interpret the claim terms "configurable link" and "application link" as links that can be modified or configured by users because users are described as the content providers within the context of the claims.

23. Although the specification describes "a content provider" as "any person, machine, device or system that is responsible for providing content to a web site" (Col. 3: 53-55), the claims describe the content provider as users of the web site. For example, independent claims 1 and 31 recite "wherein at least one of the plurality of configurable applications is generated by the computer at least in part based on inputs received from users of the web site, the inputs including at least one of text, graphics, sounds, documents, and multi-media content." Col. 22:31-35; Col. 26:40-44. Independent claims 2 and 7 include nearly identical language. See Col. 22:65-Col. 23:2; Col. 23:55-60. Claim 11 provides

“wherein the second configurable application is generated by the computer at least in part based on content received from the administrator and at least in part based on content received from one or more of the other users of the system...” Col. 24:58-62.

24. In my opinion, a person of ordinary skill in the art would interpret the claim language set forth above as being directed to one of the preferred embodiments described in the specification where “the content provider 22 is a person responsible for managing web site content.” Col. 3: 55-56, emphasis added.

25. The claims also state that the “configurable link” and “application link” are generated based at least in part on a user configured business rule. For example, independent claims 1 and 31 state “wherein the at least one application link is generated by the computer based at least in part on a user-configured business rule.” Col. 22:39-41; 26:48-50. Independent claim 2 includes similar language: “wherein the at least one configurable link is generated by the computer based at least in part on a profile attributed to at least one user of the system and at least one rule that is configurable by a user.” Col. 23:14-17. Independent claim 7 explains that “the configurable link is based on information concerning a profile of at least one user of the system and a rule that is configurable by a

user.” Col. 24:7-10. In my opinion, a person of ordinary skill in the art would understand that the claimed “configurable link” and “application link” are configured by the user because they are generated based in part on a user configured business rule.

26. Based on the language of the specification and the claims quoted above, it is my opinion that the claim terms “configurable link” and “application link” refer to links that can be modified or configured by users of the web site. Accordingly, it is my opinion that the broadest reasonable interpretation of the claim terms **“configurable link”** and **“application link”** is a **“link that can be modified and/or configured by users as permitted by any relevant business rules.”**

D. Patentability Of The Challenged Claims

27. Facebook advances the following patentability challenges through its four Petitions:

- Claims 1-10 and 31 of the ‘720 Patent are allegedly unpatentable over Boyce in view of Parker under 35 U.S.C. §103(a) (Ground 1 of IPR2017-00002);
- Claims 11-30 of the ‘720 Patent are allegedly unpatentable over Boyce in view of Parker under 35 U.S.C. §103(a) (Ground 1 of IPR2017-00003);
- Claims 1-3, 5-7, 9, and 10 of the ‘720 Patent are allegedly unpatentable over Bezos in view of Weiss under 35 U.S.C. §103(a) (Ground 1 of IPR2017-00004);

- Claims 4 and 8 of the '720 Patent are allegedly unpatentable over Bezos in view of Weiss, in further view of Rasansky and Barnett, under 35 U.S.C. §103(a) (Ground 2 of IPR2017-00004);
- Claims 11-16, 18-23, and 28-30 of the '720 Patent are allegedly unpatentable over Bezos under 35 U.S.C. §103(a) (Ground 1 of IPR2017-00005); and
- Claims 26 and 27 of the '720 Patent are allegedly unpatentable over Bezos in view of Rasansky and Barnett, under 35 U.S.C. §103(a) (Ground 2 of IPR2017-00005).

28. Below, I address some of the deficiencies of these combinations of Boyce, Parker, Bezos, Weiss, Rasansky, and Barnett.

a. Applicable legal standard

29. I have been informed by counsel that a patent claim is invalid for obviousness under 35 U.S.C. §103 if the differences between the claimed subject matter and the prior art are such that the claimed subject matter as a whole would have been obvious, at the time the invention was made, to a person of ordinary skill in the art. I have also been informed by counsel that invalidity under 35 U.S.C. §103 is properly evaluated by considering: (1) the scope and content of the prior art, (2) the differences between the claimed invention and the prior art, (3) the level of ordinary skill in the art, and (4) objective indicia of nonobviousness (e.g., secondary considerations).

b. Facebook's combination of Boyce and Parker

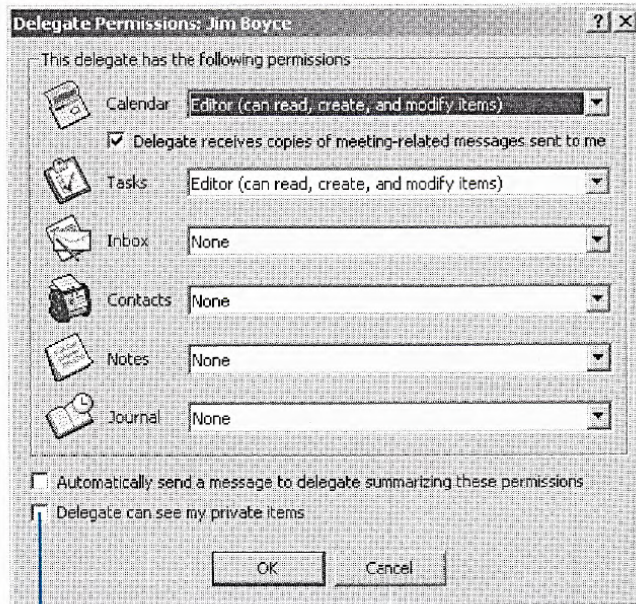
30. Facebook relies upon the combination of Boyce and Parker to challenge claims 1-10 and 31 (Ground 1 of IPR2017-00002) and claims 11-30 (Ground 1 of IPR2017-00003) under 35 U.S.C. § 103(a). I am of the opinion that the combination of Boyce and Parker does not render the challenged claims obvious under 35 U.S.C. § 103(a).
31. Even though Zak and Facebook offer slightly different constructions for the claim terms “link,” “configurable link,” and “application link,” Zak and Facebook agree that a “configurable link” / “application link,” is a link that can be modified or configured as permitted by any relevant business rules and that a “link” is a mechanism to activate an application. As such, regardless of which construction is adopted, the combination of Boyce and Parker must teach or suggest a mechanism, for activating an application, that can be modified or configured as permitted by any relevant business rules in order to satisfy the “configurable link” / “application link” limitation of the challenged claims. For the reasons expressed below, it is my opinion that the combination of Boyce and Parker fails to teach or suggest a link that has these requirements.

i. *Teachings of Boyce*

32. Boyce is a book that instructs readers on how to use the various features

of Microsoft Outlook 2002 (“Outlook”). Outlook is a software program that “serves as a personal information manager (PIM), an email application, fax machine, task manager, and much more.” Boyce, p. xli. Boyce explains that access to Outlook is available through two separate and different interfaces: (i) the traditional desktop software application (“Outlook/Exchange”); and (ii) Outlook Web Access (“OWA”). Boyce, pp. 28, 871. OWA is a web site based application that allows users to access most features of Outlook over the internet. Boyce, p. 872.

33. In connection with the Outlook/Exchange desktop software application, Boyce discloses a delegation feature that allows a mailbox owner to give other users read-only access or read-and-write access to their “Calendar,” “Tasks,” “Inbox,” “Contacts,” “Notes,” and “Journal” applications using the “Delegate Permissions” window displayed below:



Allow or deny access to private items

Figure 20-5. Use the Delegate Permissions dialog box to control the visibility of private items.

Boyce, p. 553.

34. Boyce also discloses using a window (depicted below) to set permissions for a particular folder and/or hide folders from view:

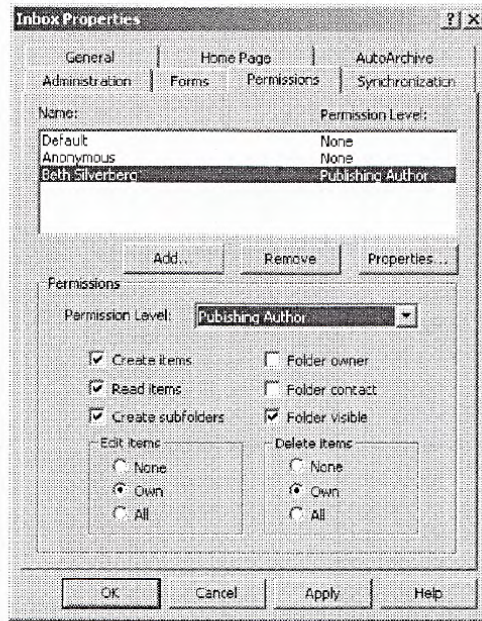


Figure 27-5. Use the Permissions tab to configure access permissions for the folder.

Boyce, p. 687.

35. Paragraph 132 of the Klausner Declaration for IPR2017-00003 states
“Boyce discloses and makes obvious that delegation functionality is incorporated into Outlook Web Access.” I disagree. Boyce does not disclose that the delegation features of the Outlook/Exchange desktop software application were carried over to OWA. Similarly, Boyce does not teach or suggest how these features could be incorporated into the OWA interface.
36. In Chapter 27, Boyce explains that when the delegation features of the Outlook/Exchange desktop software application are activated, delegates would access another person’s folders using the dialog box picture in

Figure 27-4:

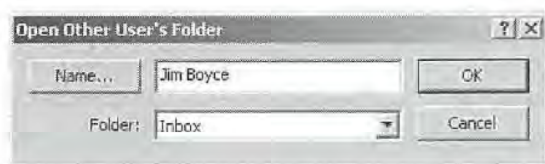


Figure 27-4. Use the Open Other User's Folder dialog box to open another person's Outlook folder.

Boyce, pp. 684.

37. Much later in the book, at Chapter 36, Boyce discusses the OWA interface, which is depicted in Figure 36-23:

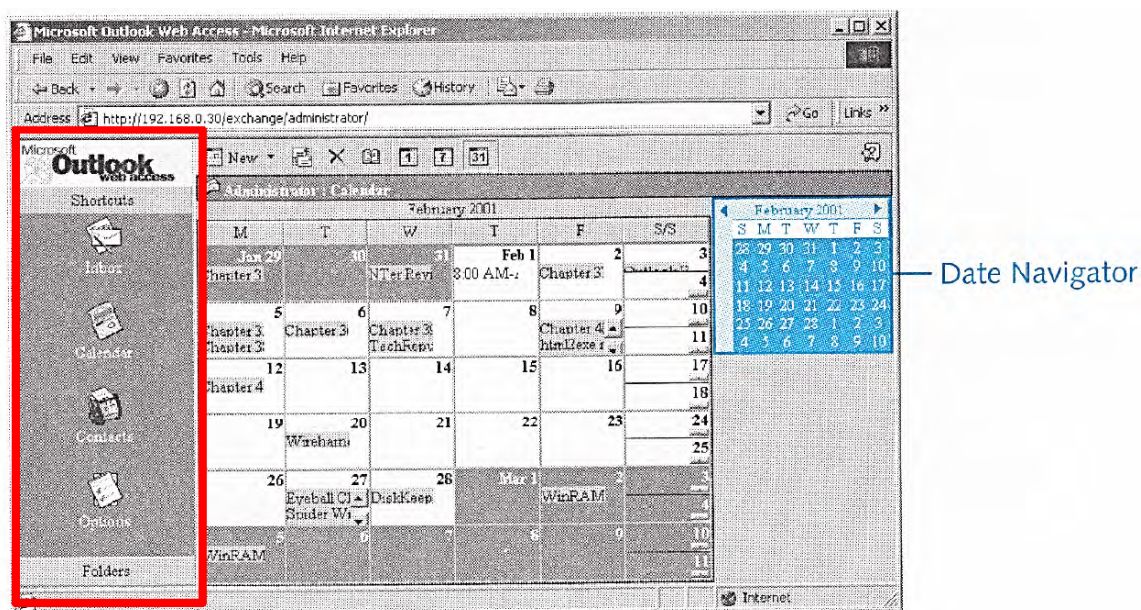


Figure 36-23. You can view and modify your schedule in OWA.

Figure 36-23 (above) illustrates the mailbox owner's view of their own "Inbox," "Calendar," "Contacts," and "Options" applications. Indeed, the URL address listed in Figure 36-23 is: <http://192.168.0.30/exchange/administrator>. Because each mailbox

owner always has access to their own “Inbox,” “Calendar,” “Contacts,” and “Options” applications, the clickable icons shown above in the red box in Figure 36-23 are displayed to every mailbox owner and are never hidden from view.

ii. *Boyce does not disclose the claimed “configurable link” / “application link”*

38. Paragraph 134 of the Klausner Declaration for IPR2017-00003 states

“Boyce fully discloses and suggests the claimed ‘at least one configurable link’ in the form of a clickable icon whose display depends on the privileges associated with the user accessing the OWA display.” I disagree. In my opinion, a person of ordinary skill in the art would not have concluded that the icons shown in Figure 36-23 were used to control delegate access to the inbox or other applications of another user. As noted above, there is nothing in Boyce that suggests that the delegation features of Outlook/Exchange were even accessible through OWA.

39. Even if a person of ordinary skill in the art were motivated to incorporate the delegation features of Outlook/Exchange into OWA, the most logical approach would have been to utilize a dialog box and drop-down menu similar to the one used in Outlook/Exchange (shown above in Figure 27-4). This dialog box and drop-down menu approach does not include any links that can be modified or configured and therefore would not reach

the limitations of the challenged claims.

40. In my opinion, a person of ordinary skill in the art would not have cast the existing dialog box and drop-down menu interface aside in favor of modifying the clickable icons displayed in Figure 36-23 as Facebook and Klausner suggest, particularly when Boyce does not provide any motivation for doing so. The representation of Facebook and Klausner that the application icons in OWA are displayed or hidden from view based on a user's access rights is not supported by the actual text of Boyce and goes far beyond what the reference would suggest to a person of ordinary skill in the art.

41. Even if Boyce did disclose or suggest clickable icons in OWA that are displayed or hidden from view based on a user's access rights, which it does not, that is not what is required by each of the challenged claims. Under the challenged claims, the link itself – the “mechanism by which a user of a web site activates an application” – must be configurable. Boyce does not disclose or teach that the hyperlinks underlying the clickable icons in the OWA are configurable.

42. The visual representations of the clickable icons in OWA are separate and distinct elements from the hyperlinks associated with clickable icons, which are the actual mechanisms that allow users to activate the

applications on the OWA web site. The specification of the ‘720 Patent explains that a link is “the mechanism by which the user 50 of a network site 34 activates the application 30,” and cites several examples such as a URL (uniform resource locator) or a TCP/IP address. Col. 5:53-57. Such URL or TCP/IP addresses are not comparable to the visual representation of the various clickable icons displayed in OWA. While an icon or shortcut may be associated with an underlying URL link, an icon or shortcut is an object (i.e., a graphic) and is not itself a link, such as a URL.

43. Those of ordinary skill in the art readily appreciate that there is a fundamental distinction between the graphic objects that are displayed on a web page and the links that may be associated with those objects. A person of ordinary skill in the art understands that graphical icons or shortcuts are not mechanisms that “point to” and “activate” configurable applications. Rather, they are merely images that are associated with – but separate and distinct from – the underlying links that actually point to and are used to activate the applications. The graphical icons themselves have no functionality other than visual esthetic purposes. It is the underlying hyperlink associated with the icon that provides the functionality. Accordingly, I am of the opinion that the clickable icons in

OWA, as disclosed in Boyce, are not “application links” or “configurable links” within the meaning of the challenged claims.

44. A hyperlink, whether present in a Web page on the Internet or a computer file stored locally, comprises three distinct elements: a link to a location, a reference to a visual representation, and an indication that the location reference and visual representation reference should be treated as a hyperlink.

45. The most common method of linking to a location is a Universal Resource Locator (URL). For example, a Web page that wants to provide a link to ESPN would use the URL “https://www.espn.com”. This URL comprises two components; the portion “www.espn.com” provides the specific location. This portion could be refined to further identify a particular page at the ESPN Web page rather than just the home page. The second portion, which occurs on the left side of the URL, indicates the network protocol that should be used to access the location. In this case the protocol “https” stands for secure hypertext transfer protocol. Activating an https hyperlink will cause a web browser to display the web page referenced in the URL. Other network protocols exist within various URLs, for example to compose an email message or add an event to a calendar. In the ‘720 Patent is it this portion, e.g., the

URL, that is the claimed “link” because it is this portion, e.g., the URL, that is the mechanism that “points to” and “activates” applications.

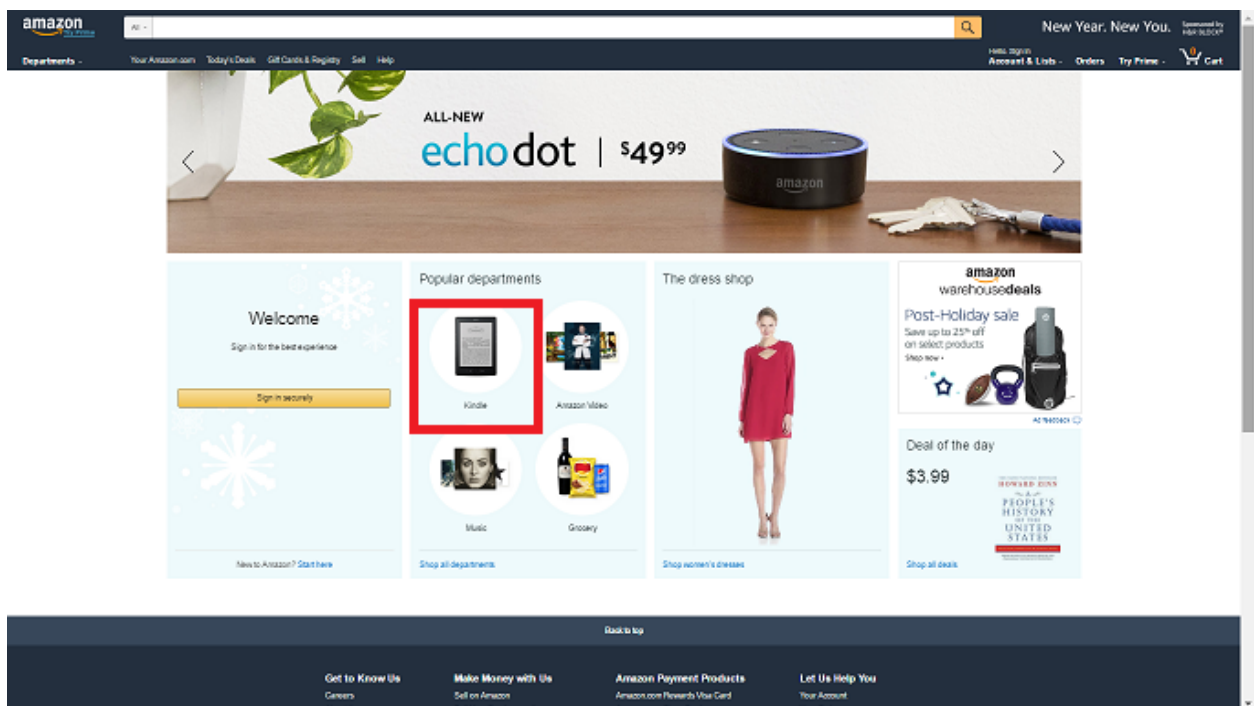
46. The visual representation reference of the hyperlink discussed above can take multiple forms. The most common visual representations references are text and icons. For example, the web page could simply display “ESPN” or “www.espn.com” or the ESPN logo and most people would know that the link activates the ESPN web page. However, in practice, any text or image could be used for the visual representation – an image for Yahoo! Sports could be displayed in association with a link to ESPN. There is no fundamental relationship between the location reference and the visual representation reference other than the fact that the hyperlink utilizes both. An HTML Web page that contains a hyperlink with a visual representation reference that points to a separate image will retrieve that separate image and display it on the web page so long as the hyperlink accurately references the location of that image.

47. The third component of the hyperlink is a command to create a hyperlink that is associated with the location reference and visual representation reference. I will show an example for an HTML hyperlink though similar but different syntax can be used to define hyperlinks in other environment.

48. For example, this HTML command defines a hyperlink that references the ESPN home page: ` `. The hyperlink does not contain the ESPN web page nor does it contain the image – it simply refers to the home page.

49. The “link” recited in the claims of the ‘720 Patent is the link to the location of the application, e.g., a URL, because it “points to” and “activates” an application. The reference to a graphics image in a hyperlink is not part of the “link” in the ‘720 patent that “points to” and “activates” an applications.

50. The following is an image/icon example from the Amazon Home Page:

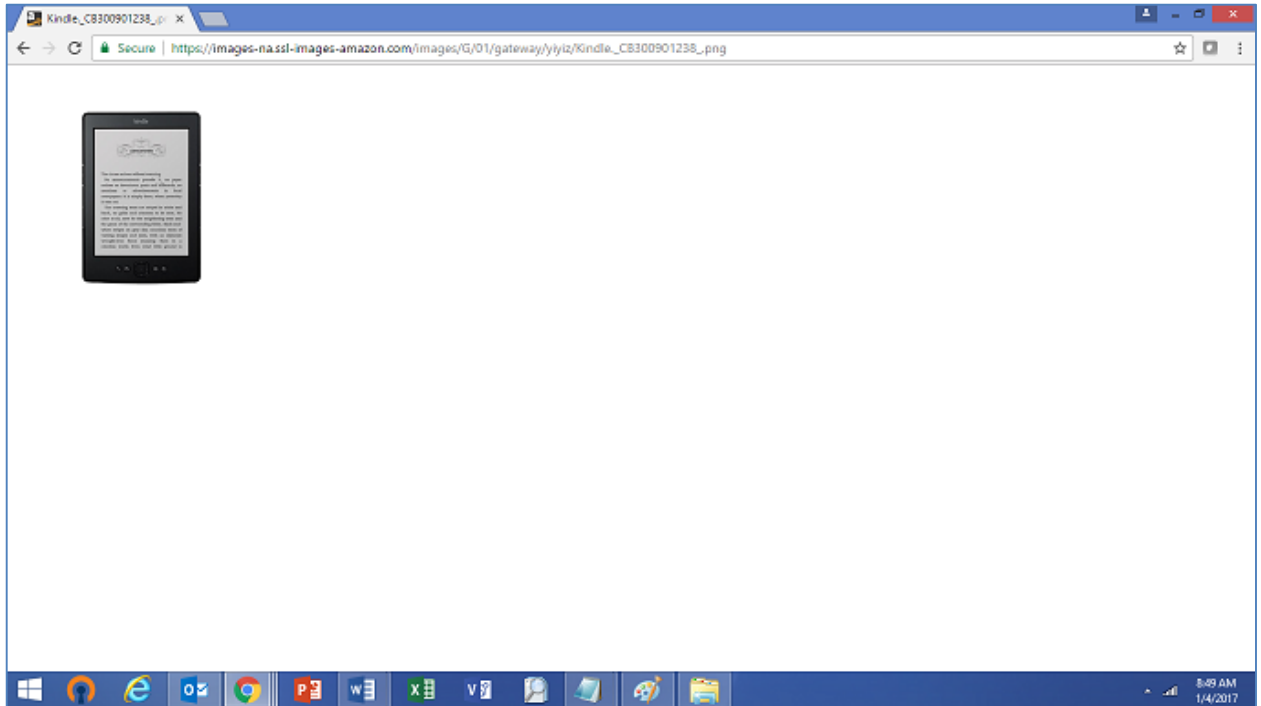


51. Please note that the red box has been added to identify the image/icon in

the example. The following is the relevant snippet of html source from the home page that manages the icon/image:

```
<div class="imageWithText">
  <a class="a-link-normal"
href="/b/ref=br_pdt_mgUpt?_encoding=UTF8&node=6669702011&pf_rd_m=AT
VPDKIKX0DER&pf_rd_s=&pf_rd_r=KASEQJS85G00KHY04ER0&pf_rd_t=36701
&pf_rd_p=9974eadb-3306-415d-bd0b-c251318255d0&pf_rd_i=desktop"></a>
  <div class="departmentTitle">
    <span class="a-size-base">
      Kindle
    </span>
  </div>
</div>
```

52. You will note that there are two relevant tags which are the “href” and the “img”. The href is the reference to the location and is independent from the img tag, which contains a reference to the visual representation (i.e. the image location). If you copy and paste the path for the graphics file from the img tag into a web browser the following image will be displayed:



53. It is important to note that the image file is displayed by the browser using the reference location – the image is not the reference location. Furthermore, the displayed image is not a link, causes no action to be taken when selected or clicked on, and does not activate any application.

54. Facebook and Klausner make the assertion that “Boyce also indicates that delegation functionality is incorporated into OWA...” EX 1002 [Klausner Decl. for IPR2017-00002], ¶115, ¶61. In an attempt to support this position, Facebook and Klausner cite the following sentence in Chapter 36 of Boyce: “Explicit logon is useful when you need to access a mailbox you don’t own but for which you have access permissions.” Boyce, p. 878. This sentence appears in a section of Chapter 36 titled “Topology Considerations for Deploying OWA,” which describes the

relative benefits of using multiple servers and employing a “front-end-back-end server scheme” when an organization provides access to its Exchange Servers through OWA (and other protocols, such as IMAP or POP3) on the Internet. See Boyce, pp. 876-877. The preceding sentences makes clear that “explicit logon” refers to a user logging into an Outlook account through the “back-end server” using a full URL (including the account ID), as opposed to an “implicit logon,” which refers to a user logging into an Outlook account through the “front-end server” using a shortened URL (not including the account ID). See Boyce, p. 878.

55. Boyce’s observation that “[e]xplicit logon is useful when you need to access a mailbox you don’t own but for which you have access permissions” at best suggests to a person of ordinary skill in the art that an Outlook user can explicitly and directly log into a different user’s account through OWA if they know that other user’s account ID and password. There is no suggestion in Boyce that a user logged into his/her own Outlook account through OWA would see selectively-displayed icons or shortcuts to other user’s folders in the Outlook Bar (left-hand pane).

iii. Teachings of Parker

56. Parker is not a web site based system, so the icons/shortcuts disclosed in Parker have no underlying links at all. The file service administration method disclosed by Parker is designed for use with locally networked computers, such as the computer network illustrated in Figure 1 of Parker:

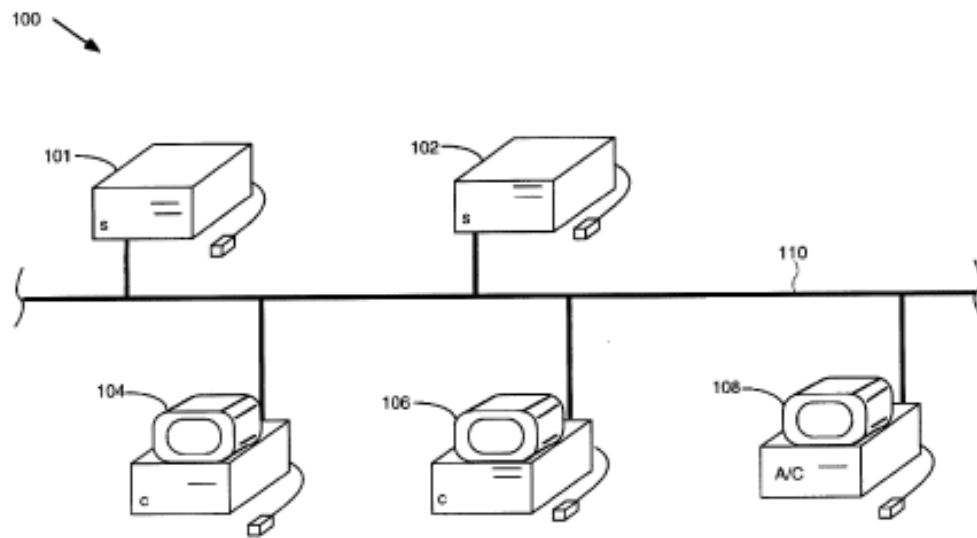


FIG. 1

Parker describes the network 100 as including one or more servers 101, 102 that are connected to one or more client terminals 104, 106 by a network bus 110. Parker, Col. 1:39-47. Parker teaches that access privileges to the network file service provided by the servers 101, 102 are controlled by a single administrator using an administrative console 108 that is also connected to the network bus 110. Parker, Col. 2:10-13.

57. As shown in Figure 7 of Parker, the administrative console 108 presents a screen where the visual representation of folder icons can be altered to

graphically indicate to the administrator what access privileges have been granted to a user:

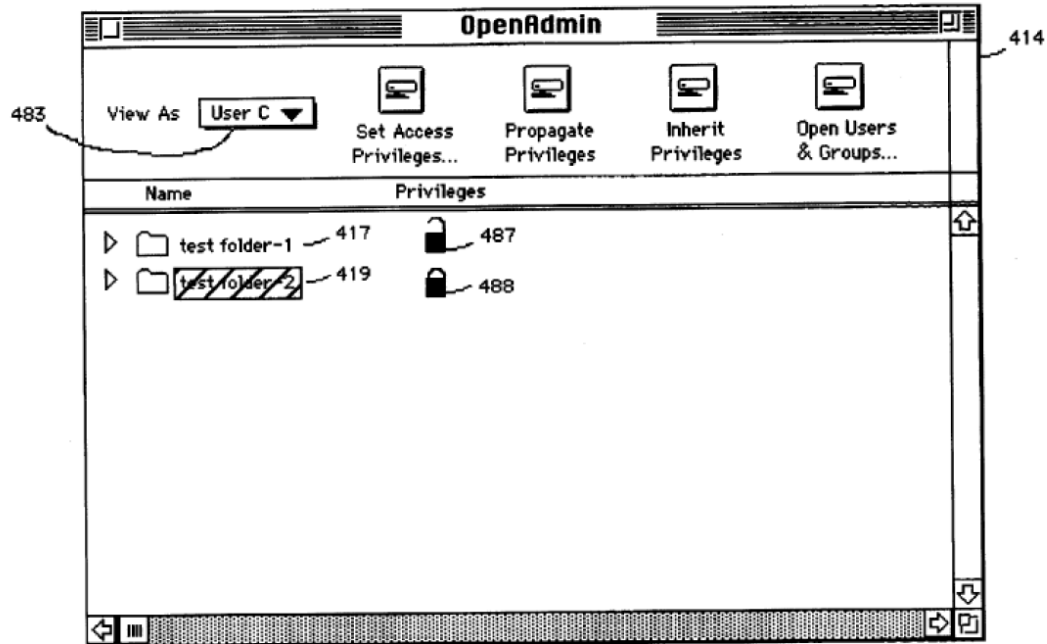


FIG. 7

58. Parker's graphical icons do not satisfy the requirements of a "link" in the challenged claims because they are not mechanisms that "point to" and that are capable of "activating" an application. Because Parker is not a web-based system, Parker does not employ hyperlinks or URLs. Instead, Parker's shared folders have folder names and are stored in conventional hierarchical directories, which is not a "link." Even if Parker's directory path associated with a shared folder were considered a "link," Parker does not disclose that it is "configurable" by users of the system. Parker does not appear to even use the types of hyperlinks that preceded Web

based systems, but rather simply relies upon ordinary graphical user interface techniques, such as dropdown lists, to collect information from a user that must then be processed in an application-specific manner that is not disclosed in Parker.

iv. *A person of ordinary skill in the art would not have combined Boyce and Parker in the manner that Facebook suggests*

59. Facebook and Klausner suggest that it would have been obvious to a person of ordinary skill in the art to adapt the “user interface techniques of Parker to Boyce” so that OWA, as disclosed in Boyce, would have the “additional ability to adapt the display of the clickable icons for each delegate, based on the permissions granted to the delegate.” Klausner Declaration for IPR2017-00003, ¶139. I disagree. In my opinion, there is no suggestion in Boyce that the delegate/permissions functionality was incorporated in the web-based OWA. Facebook and Klausner suggest using Parker to modify or enhance a functionality was not disclosed as being part of OWA in the first place. Therefore, the premise of Facebook’s position just does not make sense.

60. In my opinion, a person of ordinary skill in the art would not have been motivated to combine the teachings of Boyce and Parker in the manner asserted by Facebook because the technologies in Boyce’s OWA and

Parker's system are entirely different. Boyce describes OWA as a web-based system for end-users to organize email, contacts and calendars. This is entirely different from Parker's non-web-based system for a network administrator to control and monitor shared folders on a local area network. Indeed, the non-web-based Parker system does not even involve "links" that "point to" and "activate" applications at all.

61. Even if the delegation/permissions functionality of the conventional desktop version of Outlook/Exchange was disclosed as existing in the web-based OWA – which it was not – Facebook's suggestion that incorporating Parker's method of identifying all shared folders and visually indicating access permissions with different graphical icons would be impractical. Such a combination would result in a version of OWA wherein the Outlook Bar listed the Inbox, Calendar, Contacts, etc. for every user on the system, where the graphical icon for each application was different depending on whether the logged-in user had access permission or not. In an office setting with hundreds of users, the Outlook Bar would have hundreds of icons for Inbox, Calendar, Contacts, etc. The Outlook Bar would be essentially unusable.

- v. *The combination of Boyce and Parker does not satisfy the "configurable link" and "application link" limitations of the challenged claims*

62. Even if Boyce teaches or suggests icons that are displayed or hidden from view depending on a user's access rights, Boyce falls short of the challenged claims because the hyperlinks underlying the icons in OWA cannot be modified or configured by users. To the extent that Parker adds icons that change appearance based on a user's access rights, the configurability disclosed in Boyce and Parker still relates to the icons themselves and not to the underlying hyperlinks.

63. Because an icon/shortcut itself is not a link and because Boyce and Parker fail to disclose a link underlying an icon/shortcut that can be modified or configured by users, Facebook has not demonstrated that Boyce alone or in combination with Parker discloses or teaches an "application link," which is required by all of the challenged claims.

b. Facebook's combination of Bezos and Weiss

64. Facebook relies upon the combination of Bezos and Weiss to challenge claims 1-3, 5-7, 9, and 10 (Ground 1 of IPR2017-00004) under 35 U.S.C. § 103(a). Facebook adds Rasansky and Barnett to its combination of Bezos and Weiss to challenge claims 4 and 8 (Ground 2 of IPR2017-00004) under 35 U.S.C. § 103(a). I am of the opinion that the underlying combination of Bezos and Weiss does not render the challenged claims

obvious under 35 U.S.C. § 103(a). The addition of Rasansky and Barnett does not correct the deficiencies in the combination of Bezos and Weiss.

65. Even though Zak and Facebook offer slightly different constructions for the claim terms “link,” “configurable link,” and “application link,” Zak and Facebook agree that a “configurable link” / “application link,” is a link that can be modified or configured as permitted by any relevant business rules and that a “link” is a mechanism to activate an application. As such, regardless of which construction is adopted, the combination of Bezos and Weiss must teach or suggest a mechanism, for activating an application, that can be modified or configured as permitted by any relevant business rules in order to satisfy the “configurable link” / “application link” limitation of the challenged claims. For the reasons expressed below, it is my opinion that the combination of Bezos and Weiss fails to teach or suggest a link that has these requirements. Further, it is my opinion that it would not have been obvious to a person of ordinary skill in the art to modify Bezos in view of Weiss as alleged by Facebook and Klausner.

i. Teachings of Bezos

66. Bezos is directed to methods and systems for distributing information within a dynamically defined community and generally describes the

www.amazon.com web site. Bezos, Abstract; Figures 1A-12. Bezos discloses the use of text hyperlinks on the web site, embedded below a user's screen name, that are linked to the user's profile page. Col. 10:17-23; 6:58-61; 17:46-47.

67. Bezos discloses a first aspect of the invention wherein customers have a profile page that may include, among other items, non-anonymous product reviews that the customer has authored. E.g., Col. 6:13-39. The customer may designate which items in his/her profile are "public" and which are "private." Col. 6:40-50. "Public" items are available for viewing by anyone visiting the merchant web site (e.g., www.amazon.com). *Id.* "Private" items are not available for viewing by the general public and may be selectively restricted to either the customer him/herself or to those specifically designated by the customer, who are coined "Trusted Friends." *Id.*

68. In Bezos, product reviews authored by a customer are displayed in conjunction with the offer of the product for sale. Col. 9:63-10:3. Non-anonymous reviews are displayed along with the customer/reviewer's name or nickname, which can be linked to the customer/reviewer's public profile page. *Id.* Thus, when a customer/viewer activates the link to the customer/reviewer's profile page, the customer/viewer will be

presented with the customer/reviewer's profile page, including the information that the customer/reviewer has designated as "public," but excluding the information that the customer/reviewer has designated as "private."

ii. *Bezos does not disclose the claimed "configurable link" / "application link"*

69. While Bezos teaches the use of hyperlinks, in my opinion, there is nothing in Bezos that would suggest to a person of ordinary skill in the art that the hyperlinks in Bezos are anything other than conventional static hyperlinks. Such hyperlinks are always the same each and every time they are generated and therefore lack the configurability of the claimed "application link" and "configurable link" because static hyperlinks cannot be modified or configured by users of the web site. Indeed, Facebook and Klausner admit that "Bezos does not appear to expressly disclose that the profile page link is 'configurable' by the profile page owner." Paragraph 101 of the Klausner Declaration for IPR2017-00004. Hence, Facebook and Klausner rely on Weiss for this alleged teaching.

iii. *Teachings of Weiss*

70. Weiss is directed to a system for previewing the content of a web file

before the entire web file is actually downloaded. *See* Weiss, Abstract. The system retrieves a portion of the contents and/or source code of a web file and generates a displayable preview of the contents of the web file. *Id.* The purpose of the Weiss system is to allow a user conducting a web search to preview a specific web page prior to actually accessing it, which enables the user to more quickly identify relevant web pages from the group of web pages returned by the search. As a result, users can avoid the time and cost associated with unnecessarily downloading irrelevant files from the search. *Id.*, pp. 14-15.

71. Weiss teaches that a preview image is “a viewable image file [that] can be created/saved by system 10 in any layout format type such as, for example, an image format type (e.g., PICT) or a vector format type, or any combination thereof.” *Id.*, p. 17. Figure 2 of Weiss depicts the results of a web search in the form of a list of titles and web addresses 50:

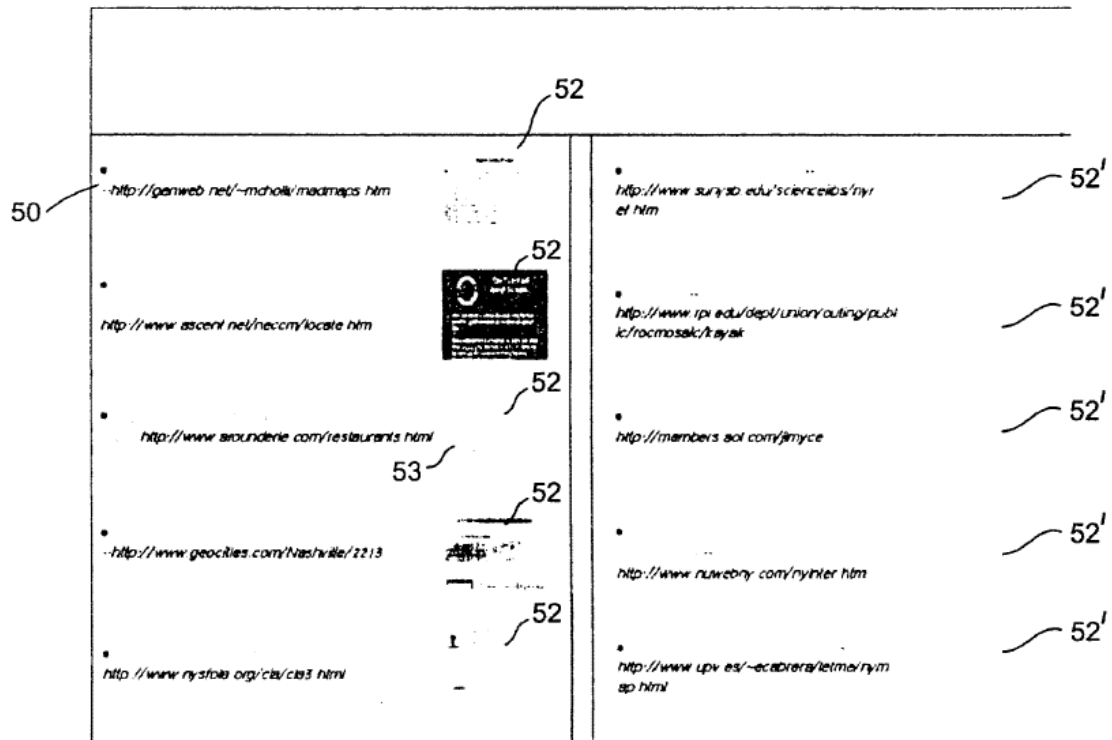


Fig. 2

A corresponding thumbnail image 52 that represents a portion of the content of the web page corresponding to the web address is displayed adjacent thereto. *Id.*, p. 25.

72. Weiss further discloses that activatable links can be embedded in the preview images 52, and the activatable links can link the image preview with the original file from which it was generated:

[T]he image preview is generated in a manner enabling the embedding of activatable inks therein. Such activatable links can be used to link the image preview with the original file from which it was generated. Embedding activatable links can be achieved using image maps, and/or using a file format that can accept commands, such as HTML and/or any suitable file formats. *Id.*, p. 18.

The preview image is an image file stored in an image format (e.g., PICT) or a vector format. *Id.*, p. 17. The preview image alone has no functionality and does not itself activate an application. Instead, the embedded activatable link is the mechanism by which users can activate the original file associated with the preview image.

iv. *A person of ordinary skill in the art would not have been motivated to combine Bezos and Weiss in the manner asserted by Facebook*

73. Facebook and Klausner identify two alleged rationales and motivations to combine Bezos with Weiss. *See* IPR2017-00004 Petition, pp. 39-40. First, they allege that “Weiss provides an express motivation by explaining that its system enables a user to preview the content of a specific web page prior to accessing it.” IPR2017-00004 Petition, p. 40; Klausner Declaration for IPR2017-00004, ¶113. Second, they allege that “the technique of Weiss would also have provided the benefit of enhancing the simple textual link in Bezos with a dynamic and descriptive graphical preview link, enhancing user experience and providing a further motivation to combine.” IPR2017-00004 Petition, pp. 40-41; Klausner Declaration for IPR2017-00004, ¶114. Neither of these reasons would motivate a person of ordinary skill in the art to modify Bezos’ admittedly static link to include Weiss’ graphical “preview.”

74. Weiss' graphical "previews" were intended to improve the efficiency with which a person is able to wade through an overwhelming amount of "hits" received from a general Internet search conducted using a search engine, such as Google, Lycos, Alta Vista, etc. Weiss, pp. 3-6. Weiss describes Internet searches conducted using search engines as returning large amounts of data, much of which is irrelevant, redundant, outdated, etc. Weiss teaches that inserting graphical "previews" along with the links to the web sites identified through a general Internet search can increase the efficiency with which the searcher can identify relevant information.

75. The problems addressed by Weiss simply are not present in Bezos. The "Bob" link on Bezos' Product Information Page (Figure 4) that Facebook and Klausner combine with Weiss' graphical "preview" points to Bob's personal profile. Using the example shown in Figure 4 of Bezos, a customer/viewer looking to potentially purchase the Mary Poppins DVD may read the two reviews at the bottom of the page, one of which was submitted by "Bob." Bob's review is viewable directly from the Product Information Page. If the customer/viewer is interested in who Bob is, the customer/viewer can activate the "Bob" link to see Bob's public profile. There is no ambiguity about what type of information the

customer/viewer will be able to access by clicking Bob's link. Further, there is only one link associated with "Bob" on the Product Information Page. There is simply no need for a customer/viewer to "preview" Bob's public profile page prior to activating the link and going directly to Bob's public profile page itself. The problems of sifting through large amounts of irrelevant, outdated and redundant search results that Weiss attempted to make more efficient simply do not exist in the Bezos system. Nothing in Weiss would motivate a person of ordinary skill in the art to modify the "Bob" link on Bezos' Product Information Page (Figure 4) to include Weiss' graphical "preview."

76. It is my opinion that a person of ordinary skill in the art would not have been motivated to modify Bezos' textual "Bob" hyperlink to include Weiss' graphical "preview" merely to enhance the simple textual link in Bezos to improve the user experience. To the extent that a graphical icon was desired instead of or in addition to the textual hyperlink to improve the user experience, there were much easier ways to accomplish this result. For example, a person of ordinary skill in the art could have simply added a static graphic to the "Bob" textual hyperlink, which would have been far less complicated than Weiss' graphical "previews", particularly where the problems that Weiss attempted to solve were not

present in the Bezos system.

77. Furthermore, it is my opinion that adding Weiss' graphical "preview" to the "Bob" link would detract from the user experience, and thus a person of ordinary skill in the art would be dissuaded from making the combination asserted by Facebook and Klausner. In particular, I note that Facebook and Klausner show Klausner's "mock-up" of the alleged "configurable link" of Bezos' "Bob" static link and Weiss' graphical "preview" alone, separate from the rest of the Product Information Page on which the alleged "configurable link" would appear. This is likely because adding Weiss' graphical "preview" to Bezos' "Bob" link would be untenable on Bezos' Product Information Page because there simply would not be enough room. Adding Weiss' graphical "preview" would necessarily cover other information on the Product Information Page and/or require the information to be spread over many pages. Making Weiss' graphical "preview" smaller would be useless because nobody would read any of the text in the "preview." Further, adding Weiss' graphical "preview" to every reviewer's link would make Bezos' Product Information Page confusing and cluttered. It is my opinion that adding Weiss' graphical "preview" would detract from the user experience and would not motivate a person of ordinary skill in the art to make the

combination of Bezos and Weiss alleged by Facebook and Klausner.

78. It is my opinion that there are specific reasons why a person of ordinary skill in the art would be motivated **not** to modify Bezos' "Bob" link to include Weiss' graphical "preview." One reason is that the modification of Bezos' textual link to include a "preview" of the customer/reviewer's profile page would undermine and destroy the very purpose of the ability in Bezos for a customer/reviewer to select which portions of his/her profile page are "public" (viewable by everyone) versus those portions that are "private" (viewable by the customer/reviewer), as set forth below.

79. One of the purposes Bezos' "Trusted Friends" is provide access "private" portions of a customer's profile page to a selected group of users, while maintaining those "private" portions unviewable by users who were not designated as "Trusted Friends." But modifying Bezos' textual "Bob" link to include Weiss' graphical "preview" would destroy this function of Bezos' "Trusted Friends."

80. Bezos' Product Information Page for a given product is accessible/viewable by the general public in an unrestricted way. Using the example in Figure 4 of Bezos, any member of the public can access the Product Information Page (Figure 4) for Mary Poppins.

Consequently, any member of the public, without restriction, would be able to view the alleged “configurable link” that includes Weiss’ graphical preview of the customer/reviewer’s profile page, including both those users that are Trusted Friends and those users who are not. That is, two different classes of users – Trusted Friends and non-Trusted Friends – would be able to see the same version of Weiss’ graphical preview of the customer/reviewer’s profile page.

81. If the alleged combination of Bezos and Weiss was configured such that Weiss’ graphical “preview” displayed the version of the customer/reviewer’s profile that is accessible/viewable by Trusted Friends only (i.e., including the “private” portions), then the customer/reviewer’s “private” information would be disclosed through Weiss’ graphical “preview” to members of the general public who are not Trusted Friends. This would destroy the purpose of a customer/reviewer designating portions of his/her profile as “private.”
82. If, on the other hand, the alleged combination of Bezos and Weiss was configured such that Weiss’ graphical “preview” displayed the version of the customer/reviewer’s profile that is accessible/viewable by all members of the public (i.e., not including the “private” portions), then Weiss’ graphical “preview” would not accurately reflect the information

that a Trusted Friend could access/view. In that case, the alleged motivation in Weiss of providing an accurate “preview” of the content contained on the target web page would be foiled.

83. Therefore, it is my opinion that a person of ordinary skill in the art would not be motivated to modify Bezos’ “Bob” link on the Product Information Page to include Weiss’ graphical “preview” of Bob’s profile page, as Facebook and Klaussner allege.

v. *The combination of Bezos and Weiss does not satisfy the “configurable link” and “application link” limitations of the challenged claims*

84. Paragraph 112 of the Klausner Declaration for IPR2017-00004 states:

“The combination of Bezos and Weiss discloses the ‘configurable link’ limitation because the preview image displays a shrunk-down version of the actual profile page that would be displayed if the viewing user activated the hyperlink ... the preview image exhibits the same ‘configurable’ characteristics as the profile page to which it points.” I disagree. In my opinion, a person of ordinary skill in the art would understand from the clear language of Weiss that the preview image and the embedded link are separate and distinct elements. While the image preview can be updated (i.e. can change) to match the content of the original file, Weiss does not disclose that the activatable link to the

original file is itself configurable or modifiable, as required of the “configurable link” and “application link” recited in the challenged claims. Therefore, even if Bezos were modified to include the preview image feature of Weiss, the resulting combination would still lack a “configurable link” / “application link” that can be modified or configured by users of the web site as required by the challenged claims.

vi. *Rasansky and Barnett do not make up for the deficiencies in Facebook’s combination of Bezos and Weiss*

85. Rasansky and Barnett do not make up for the deficiencies in Facebook’s combination of Bezos and Weiss. Rasansky discloses “[a] computer system for scheduling events between end users of the system” that includes “a unique password protected calendar ... [which] is generated from information stored in a database at a central server, and delivered to each end user as standard HTML sent through the Internet.” Rasansky, Abstract. Similarly, Barnett discloses “[a] computer-implemented method and system for generating and displaying a calendar containing user-selected events from user-selected categories” where “[e]vents are overlaid on a calendar unique to the user.” Barnett, Abstract. The computer based calendar applications disclosed in Rasansky and Barnett do not disclose “configurable links” / “application links.” Facebook has not argued that they do and only relies upon these references to challenge

dependent claims 4, 8, 26, and 27, all of which relate to “an events application.”

c. Facebook’s reliance on Bezos

86. Facebook relies on Bezos alone to challenge claims 11-16, 18-23, and 28-30 (Ground 1 of IPR2017-00005) under 35 U.S.C. § 103(a). Facebook combines Rasansky and Barnett with Bezos to challenge claims 26 and 27 (Ground 2 of IPR2017-00005) under 35 U.S.C. § 103(a). I am of the opinion that the teachings of Bezos do not render the challenged claims obvious under 35 U.S.C. § 103(a). The addition of Rasansky and Barnett does not correct the deficiencies in Bezos.
87. Even though Zak and Facebook offer slightly different constructions for the claim terms “application” and “configurable application,” Zak and Facebook agree that a “configurable application” is an application that can be modified or configured and that an “application” is a unit of content. As such, regardless of which construction is adopted, Bezos must teach or suggest an application in the form of a unit of content that can be modified or configured in order to satisfy the “configurable application” limitation of the challenged claims. Independent claim 11 requires two configurable applications – “a first configurable application” and “a second configurable application.” The claim language states that

“the second configurable application is generated by the computer at least in part based on content received from the administrator and at least in part based on content received from one or more other users of the system.” For the reasons expressed below, it is my opinion that Bezos fails to teach or suggest an application that meets the requirements of the “second configurable application” as claimed.

88. Even though Zak and Facebook offer slightly different constructions for the claim terms “link,” “configurable link,” and “application link,” Zak and Facebook agree that a “configurable link” / “application link,” is a link that can be modified or configured as permitted by any relevant business rules and that a “link” is a mechanism to activate an application. As such, regardless of which construction is adopted, Bezos must teach or suggest a mechanism, for activating an application, that can be modified or configured as permitted by any relevant business rules in order to satisfy the “configurable link” / “application link” limitation of the challenged claims. For the reasons expressed below, it is my opinion that Bezos fails to teach or suggest a link that has these requirements.

i. Bezos’ teaching of a “Personal Purchase Circle”

89. In Bezos, “customers can define a ‘Personal Purchase Circle’ set that includes a list or designation of people and/or groups that a customer has

given permission to see his or her purchases, opinions, and/or ratings.”

Col. 13:48-52, emphasis added. Bezos also explains that:

Once a person has been added to a customer's Personal Purchase Circle, a notification or invitation may be provided to the added person, also termed an invitee. For example, the added person may be notified via e-mail or a message on the merchant's Web site that she or he has been added to the customer's Personal Purchase Circle. The notification may contain a link to the customer's profile page, described below, to provide easy access.

...

A customer may selectively designate via the “profile page” which purchases, opinions and ratings are to be visible to customers within the customer's personal purchase circle ... By way of example: Brian and Warren can go to Ken's profile page to see his purchases and what Ken thought about each purchase in the form of a rating or other review-type. In one embodiment, the customer, Ken in this example, can edit his profile page and selectively remove and/or add information about individual item purchases to his profile page. In addition, the profile page may display other customer-related information, such as the customer's wish list, reviews, auctions, favorite artists, instant recommendations, shipping address, demographic information, other profile information, and so on.

Bezos, col. 13:66-14:5; col. 14:61-15:8.

90. In my opinion, a person of ordinary skill in the art would understand from the clear language of Bezos quoted above that the “Personal Purchase Circle set” lists the membership of a “Personal Purchase Circle” and is not a separate application that displays the reviews of everyone listed in the “Personal Purchase Circle set” as Facebook and Klausner

suggests. In contrast to Facebook’s allegations, Bezos discloses that members of the “Personal Purchase Circle set” can easily navigate to each other’s profile pages to view the purchases and product reviews within each member’s respective “Personal Profile” page.

ii. *The “Personal Purchase Circle set” of Bezos does not satisfy the “second configurable application” limitation of the challenged claims*

91. Paragraph 205 of the Klausner Declaration for IPR2017-00005 states

“the user’s Personal Purchase Circle may be generated based on content received from the administrator and other users of the system.”

(emphasis in original). I disagree. I am of the opinion that a person of ordinary skill in the art would not equate the “Personal Purchase Circle” of Bezos to the “second configurable application” of the challenged claims because the “Personal Purchase Circle” is not “generated by the computer at least in part based on content received from the administrator and at least in part based on content received from one or more of the other users of the system.” The “Personal Purchase Circle” of Bezos is an input to a business rule; it is not an application that displays content received from both the administrator and other users as required by the challenged claims.

iii. *Bezos does not otherwise disclose the “second configurable application” limitation of the challenged*

claims

92. In Bezos, to view content (e.g. purchases and product reviews) provided by other users, the account owner must go to the individual profile pages of the other users or to the account owner's "Friends & Favorites" page. In my opinion, a person of ordinary skill in the art would not equate the "Personal Profile" page or the "Friends & Favorites" page of Bezos to the "second configurable application" of the challenged claims because neither displays content received from both the administrator and other users. The "Personal Profile" page of each user only displays content received from that user and does not display content received from other users. *See* Col. 15:1-8; Fig. 3A. The account owner's "Friends & Favorites" page displays the reviews of the other users in the account owner's "Favorite People list," but this page does not display content that is received from the account owner (e.g. their own reviews).

iv. Bezos' teaching of a "Shared Purchases" hyperlinks

93. Two "Shared Purchases" hyperlinks are depicted in Figure 3A of Bezos (each hyperlink is identified in the red boxes added below):

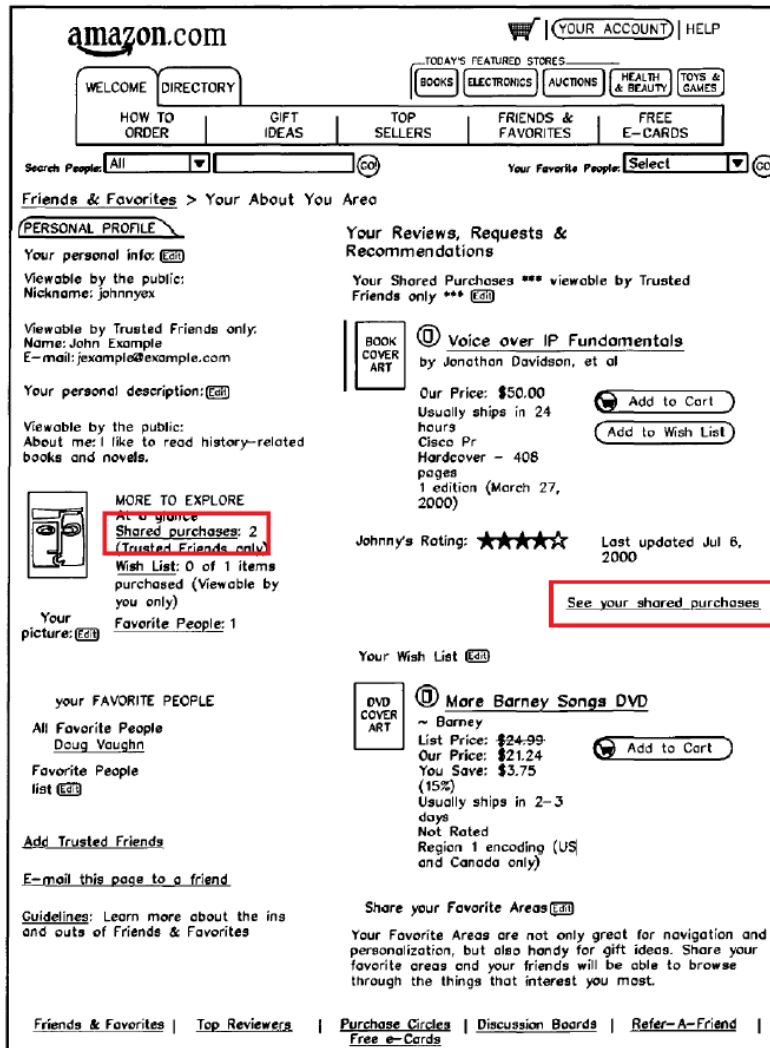


FIG. 3A

Bezos discloses that the “Shared Purchases” hyperlinks are displayed on an account owner’s “Personal Profile” page.

- v. *The hyperlinks in Bezos, including the “Shared Purchases” hyperlinks, do not satisfy the “configurable link” and “application link” limitations of the challenged claims*

94. Paragraph 209 of the Klausner Declaration for IPR2017-00005 states

“[t]he shared purchases link as shown in Figure 3A is configurable (i.e.

can be modified or configured as permitted by any relevant business rules) because, as shown in the figure above and by the excerpt on the right, the link is only available to users that the profile page owner has specified as his trusted friends.” I disagree. I am of the opinion that the “Shared Purchases” hyperlinks in Bezos (shown in the red boxes added to Figure 3A above) do not qualify as the claimed “application link” and “configurable link.” The “Shared Purchases” hyperlinks disclosed in Bezos are not configurable because they cannot be modified or configured by users. Bezos explains that “[v]iewing by customers of the shared purchases is restricted to customers specified by the user.” Col. 17:51-53. Bezos does not explain that access is restricted to shared purchases by displaying or hiding from view the “Shared Purchases” hyperlinks depending on a user’s viewing permissions as Facebook suggests. I note that one of the “Shared Purchases” hyperlinks depicted in Figure 3A of Bezos reads “See your shared purchases” (emphasis added), suggesting that these links are displayed to only the account owner when they open their own “Personal Profile” page and are not displayed or hidden from other users to control which other users can view the account owner’s shared purchases.

95. There are many ways in which viewing permissions can be

implemented. For example, if a person who is not permitted to view an account owner's shared purchases clicks on the "Shared Purchases" hyperlink, they may be directed to a page that informs them that they do not have access. It is unreasonable to conclude, as Facebook has, that access to an account owner's shared purchases could only be controlled by turning the visibility of the "Shared Purchases" hyperlinks on or off.

96. Even if Bezos did disclose "Shared Purchases" hyperlinks that are displayed or hidden from view depending upon viewing permissions, which it does not, the "Shared Purchases" hyperlinks would still not satisfy the requirements of the claimed "application link." There is nothing in Bezos that would suggest to a person of ordinary skill in the art that the "Shared Purchases" hyperlinks, or any of the other hyperlinks on the disclosed web site for that matter, are anything other than static hyperlinks. Such hyperlinks are always the same each and every time they are generated and therefore lack the configurability of the claimed "application link" and "configurable link" because static hyperlinks cannot be modified or configured by users of the web site.

97. I am also of the opinion that the "Shared Purchases" hyperlinks disclosed in Bezos do not qualify as an "application link" because they do not point to the first configurable application ("Personal Profile") or

the second configurable application (“Personal Purchase Circle”) as required by the challenged claims. Bezos explains that “[b]y activating the ‘Shared Purchases’ link, the user is presented with a list of the purchases the user has agreed to share with designated others, termed ‘trusted friends.’” Col. 16:59-62. The page displaying this list of the purchases the user has agreed to share with designated others is different from the two pages that Facebook has identified as the first configurable application (the “Personal Profile” page) and the second configurable application (the “Personal Purchase Circle”). Therefore, the “Shared Purchase” hyperlinks are not “application links” because they do not point to either one of the configurable applications as required by the challenged claims.

vi. *Rasansky and Barnett do not make up for the deficiencies in Facebook’s combination of Bezos and Weiss*


98. Rasansky and Barnett do not make up for the deficiencies of Bezos.

Rasansky discloses “[a] computer system for scheduling events between end users of the system” that includes “a unique password protected calendar ... [which] is generated from information stored in a database at a central server, and delivered to each end user as standard HTML sent through the Internet.” Rasansky, Abstract. Similarly, Barnett discloses “[a] computer-implemented method and system for generating and

displaying a calendar containing user-selected events from user-selected categories” where “[e]vents are overlaid on a calendar unique to the user.” Barnett, Abstract. The computer based calendar applications disclosed in Rasansky and Barnett do not disclose “configurable links” / “application links.” Facebook has not argued that they do and only relies upon these references to challenge dependent claims 4, 8, 26, and 27, all of which relate to “an events application.”

The statements set forth above are true and correct to the best of my knowledge, and I have made these statements under penalty of perjury.

Date: January 5th, 2017



William Mangione-Smith

EXHIBIT

1

William Henry Mangione-Smith

**4146 118th Ave NE
Kirkland WA, 98033
(425) 654-1424
billms@gmail.com**

Highlights

Reviewed and valued thousands of patents.
Priced over \$500M worth in patent portfolios.
Key technical support for licensing that has raised more than \$1B.
Significant experience developing claim charts and evidence of use.
Former tenured professor at the University of California.
Deposition and trial testifying experience.

Education

BSE (1987), MSE (1992), & Ph.D. University of Michigan
Doctoral Thesis 1992: Performance Bounds and Buffer Space Requirements for
Concurrent Processors

Employment

2009-Present	Sole Proprietor of Phase Two LLC – Consulting and intellectual property services All IP related work since 2009 has been conducted under the auspices of Phase Two
2012 May-June	CTO Computers and Consumer Electronics at IP Navigation Group
2005-2008	Intellectual Ventures, Bellevue Washington 2005 Patent valuation, licensing support, focus on computer patents 2006 Head of all IV valuation efforts – managed a team of 12 2007 Director of technology, outbound licensing in consumer electronics 2008 Director of investment strategy, inventor relations
2001-2005	Associate Professor, EE UCLA
1995-2001	Assistant Professor, EE UCLA Focus low power embedded multimedia communications systems
1993-1995	Motorola Wireless Data Group Systems architect for General Magic wireless PDA
1991-1992	Motorola Corporate Research

Parallel computer performance monitoring
Low power processor architecture

1986-1987 Chrysler Corporation
 Software Architect

Patents

9,230,601 Media markup system for content alteration in derivative works
9,219,815 Identifier technique for communication interchange
9,215,512 Implementation of media content alteration
9,191,341 Packet routing within an on-chip network
9,178,911 Evaluation systems and methods for coordinating software agents
9,158,771 Component information and auxiliary information related to information ...
9,152,928 Context parameters and identifiers for communication
9,092,928 Implementing group content substitution in media works
9,065,979 Promotional placement in media works
9,008,117 Cross-media storage coordination
9,008,116 Cross-media communication coordination
8,984,579 Evaluation systems and methods for coordinating software agents
8,984,133 Providing treatment-indicative feedback dependent on putative ...
8,966,630 Generating and distributing a malware countermeasure
8,949,337 Generation and establishment of identifiers for communication
8,943,267 Management of memory refresh power consumption
8,929,208 Conditionally releasing a communicate determined to be affiliated ...
8,924,975 Core selection for applications running on multiprocessor systems ...
8,913,753 Selective audio/sound aspects
8,910,033 Implementing group content substitution in media works
8,886,577 Feedback during surgical events
8,850,044 Obfuscating identity of a source entity affiliated with a communicate in ...
8,839,255 Scheduling of threads by batch scheduling
8,819,686 Scheduling threads on different processor cores based on ...
8,818,196 Data center with free-space optical communications
8,799,912 Application selection of memory request scheduling
8,774,637 Data center with free-space optical communications
8,732,087 Authorization for media content alteration
8,730,836 Conditionally intercepting data indicating one or more aspects ...
8,712,250 Data center with free-space optical communications
8,682,982 Preliminary destination-dependent evaluation of message content
8,655,187 Data center with free-space optical communications
8,640,248 Handling masquerading elements
8,640,247 Receiving an indication of a security breach of a protected set of files
8,627,402 Evaluation systems and methods for coordinating software agents
8,626,848 Obfuscating identity of a source entity affiliated with a communicate ...
8,626,731 Component information and auxiliary information related to ...
8,613,095 Smart distribution of a malware countermeasure
8,607,336 Evaluation systems and methods for coordinating software agents

8,607,234 Batch scheduling with thread segregation and per thread type marking caps
 8,601,530 Evaluation systems and methods for coordinating software agents
 8,601,207 Management of memory refresh power consumption
 8,601,104 Using network access port linkages for data structure update decisions
 8,588,618 Data center with free-space optical communications
 8,583,553 Conditionally obfuscating one or more secret entities with respect to ...
 8,559,307 Routing packets in on-chip networks
 8,555,396 Authenticatable displayed content
 8,549,077 Usage parameters for communication content
 8,539,581 Efficient distribution of a malware countermeasure
 8,516,300 Multi-voltage synchronous systems
 8,483,569 Data center with free-space optical communications
 8,483,568 Data center with free-space optical communications
 8,473,818 - Reliable communications in on-chip networks
 8,473,388 - Facilitating compensation arrangements providing for data tracking ...
 8,473,387 - Facilitating compensation arrangements between data providers and data ...
 8,468,073 - Facilitating compensation arrangements providing for data tracking ...
 8,452,182 - Data center with free-space optical communications
 8,442,440 - Hierarchical spectrum sensing for cognitive radios
 8,434,674 - Fiducial markers for augmented reality
 8,429,040 - Facilitating compensation arrangements for data brokering
 8,423,824 - Power sparing synchronous apparatus
 8,402,257 - Alteration of execution of a program in response to an execution- ...
 8,401,393 - Data center with free-space optical communications
 8,392,342 - Method and apparatus for predicting movement of a tool in each of four ...
 8,385,831 - Secure cognitive radio transmissions
 8,384,043 - Plasmon filter
 8,375,247 - Handling processor computational errors
 8,369,708 - Data center with free-space optical communications
 8,346,872 - Context parameters and identifiers for communication
 8,327,358 - Hypervisor driver management in virtual machine environments
 8,327,155 - Screening for masquerading content
 8,301,028 - Data center with free-space optical communications
 8,281,036 - Using network access port linkages for data structure update decisions
 8,255,745 - Hardware-error tolerant computing
 8,243,045 - Touch-sensitive display device and method
 8,224,930 - Signaling partial service configuration changes in appnets
 8,224,907 - System and method for transmitting illusory identification characteristics
 8,214,191 - Cross-architecture execution optimization
 8,209,755 - Signaling a security breach of a protected set of files
 8,209,524 - Cross-architecture optimization
 8,203,609 - Anonymization pursuant to a broadcasted policy
 8,191,140 - Indicating a security breach of a protected set of files
 8,161,232 - Periodically and empirically determined memory refresh intervals
 8,126,938 - Group content substitution in media works
 8,126,190 - Targeted obstrufication of an image

8,117,654 - Implementation of malware countermeasures in a network device
8,082,225 - Using destination-dependent criteria to guide data transmission decisions
8,065,404 - Layering destination-dependent content handling guidance
8,055,797 - Transmitting aggregated information arising from appnet information
8,055,732 - Signaling partial service configuration changes in appnets
8,055,648 - Managing information related to communication
7,972,557 - Plasmon filter
7,930,389 - Adaptive filtering of annotated messages or the like
7,877,584 - Predictive processor resource management
7,860,887 - Cross-media storage coordination
7,752,255 - Configuring software agent security remotely
7,739,524 - Power consumption management
7,653,834 - Power sparing synchronous apparatus
7,607,042 - Adjusting a processor operating parameter based on a performance criterion
7,519,995 - Programmable hardware for deep packet filtering
7,512,842 - Multi-voltage synchronous systems
7,493,516 - Hardware-error tolerant computing
5,793,991 - Method of equalizing loads on a computer bus

Patent Applications

Dr. Mangione-Smith has no known financial interest in any pending US patent applications other than some applications where he is listed as an inventor. The list of such published patent applications where he is a named inventor can be found by searching the online USPTO database or directly accessed via this link:
<http://goo.gl/Uq2q7Q>.

Expert Consultant in IP Matters

2016

Innovative Memory Solutions, Inc. (IMS) v. Micron Technology
District of Delaware - 14-cv-01480-RGA
Engaged by IMS via Cohen & Grace, LLC
Technology relates to semiconductor memory manufacturing

Zak v. Facebook
Eastern District of Michigan - 4:15-cv-13437
Engaged by Zak via Harness, Dickey & Pierce PLC
Technology relates to client-server software

2015

Advanced Silicon Technologies, LLC Delaware District Court and at the ITC (No matter number assigned)

Technology relates to programmable processor hardware

Accused parties:

Texas Instruments Incorporated 1:15-cv-01175

NVIDIA Corporation 1:15-cv-01177

Renesas Electronics Corporation et al. 1:15-cv-01176

Fujitsu Ten Limited et al. 1:15-cv-01174

Bayerische Motoren Werke AG et al. 1:15-cv-01178

VOLKSWAGEN AG 1:15-cv-01181

Harmon International Industries Incorporated et al. 1:15-cv-01173

Honda Motor Co., Ltd. et al. 1:15-cv-01179

Toyota Motor Corporation 1:15-cv-01180

FlatWorld Interactives LLC v. Samsung and LG

C.A. No. 12-804-LPS and C.A. No. 12-964-LPS

Engaged on behalf of FlatWorld

Technology relates to user interface design

Ericsson Inc. vs. Apple Inc.

EDTX 2:15-cv-290 and 2:15-cv-292

Engaged on behalf of Ericsson

Technology relates to peripheral devices

Synaptics vs. Goodix

US ITC 337-TA-957

Engaged on behalf of Goodix

Provided Expert Testimony via Report, Deposition and at Markman hearing

Technology relates to touch screens

Advanced Micro Devices Inc.

Engaged on behalf of AMD

IPR Defense

Provided testimony via expert report

Technology relates to digital video

Solocron Media LLC v. Verizon Communications, Inc., Cellco Partnership d/b/a/
Verizon Wireless, AT&T Mobility LLC, T-Mobile USA, Inc., and Sprint Spectrum L.P.

The Eastern District of TX, Case 2:13-cv-1059-JRG

Retained by tensegrity on behalf of Solocron

Technology relates to MMS and multi-media transcoding.

Prepared expert reports on infringement.

Enterprise Systems Technologies S.a.r.l v. Apple Inc., Cirrus Logic Inc., HTC

Corporation, LG Electronics, Inc., Samsung Electronics Co

The International Trade Commission of the United States of America

Inv. No. 337-TA-924

Retained by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo LLP for complainant.

Technology relates to device drivers.
Prepared expert reports and deposed.

Ziilabs Inc., LTD., v. Samsung and Apple
Case 2:14-cv-00203 In the Eastern District of Texas Marshall Division
Retained by Davis of Heim, Payne & Chorush, L.L.P. for Ziilabs
Technology relates to graphics systems.
Provided expert report on infringement as well as deposition testimony.

Packet Intelligence LLC v. Cisco
Case 2:2014cv00252 In the Eastern District of Texas Marshall Division
Retained by Heim, Payne & Chorush, L.L.P. for Packet Intelligence
Technology relates to secure networking.

Advanced Micro Devices, Inc. v. LG Corp., et al.
5:14-cv-01012 U.S. District Court for the Northern District of California
Retained by Robins, Kaplan, Miller & Ciresi LLP on behalf of Advanced Micro
Devices, Inc.
Technology relates to microprocessors and multimedia.

dunnhumby USA, LLC, et al. v. emnos USA Corp.
U.S. District Court for the Northern District of Illinois
Case No.: 1:13-cv-00399
Retained by Baker Hostetler who represents dunnhumby
Technology relates to databases.

Parthenon Unified Memory Architecture LLC, v. HTC CORPORATION and HTC
AMERICA, INC., LG ELECTRONICS, INC. and LG ELECTRONICS USA, INC.
Case No. 2:14-cv-690-JRG-RSP
Case No. 2:14-cv-691-JRG-RSP
Eastern District of Texas, Marshall Division
Technology relates to multimedia systems.
Retained on behalf of Parthenon

Parthenon Unified Memory Architecture LLC, v. SAMSUNG ELECTRONICS CO.,
LTD., ET AL. HUAWEI TECHNOLOGIES CO. LTD, HUAWEI TECHNOLOGIES
USA, INC. and HUAWEI DEVICE USA, INC. and MOTOROLA MOBILITY LLC
Case No. 2:14-cv-902-RSP
Case No. 2:14-cv-687-JRG-RSP
Case No. 2:14-cv-689-JRG-RSP
Eastern District of Texas, Marshall Division
Technology relates to multimedia systems.
Retained on behalf of Parthenon

NEXUS DISPLAY TECHNOLOGIES LLC, Plaintiff, v. DELL INC., LENO (UNITED
STATES) INC., PANASONIC CORP. OF NORTH AMERICA, EIZO CORP. AND

EIZO INC., NEC CORP. AND NEC DISPLAY SOLUTIONS OF AMERICA, INC.

Civil Action No: 2:14-cv-00762

Civil Action No: 2:14-cv-00762

Civil Action No. 2:14-cv-00763

Civil Action No. 2:14-cv-00764

Civil Action No. 2:14-cv-00765

Technology relates to communications circuits.

Retained on behalf of Parthenon

INTEL CORPORATION, v. FUTURE LINK SYSTEMS, LLC

C.A. No. 1:14-CV-00377-LPS

District Court for Delaware

Technology relates to communications circuits.

Retained on behalf of Future Link Systems

2014

Content Guard v. Apple Inc., Amazon.com Inc., BlackBerry Corporation, Huawei Device USA, Inc., Motorola Mobility LLC, BlackBerry Limited, HTC Corporation, HTC America, Inc., Huawei Technologies Co., Ltd., Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Telecommunications America, LLC

The Eastern District of TX, case 2:13-cv-01112-JRG

Retained by McKool Smith on behalf of Content Guard

Technology relates to digital right management.

Content Guard v. Google Inc.

The Eastern District of TX, Case 2:14-cv-00061-JRG

Retained by McKool Smith on behalf of Content Guard

Technology relates to digital right management.

Solocron Media LLC v. Verizon Communications, Inc., Cellco Partnership d/b/a/ Verizon Wireless, AT&T Mobility LLC, T-Mobile USA, Inc., and Sprint Spectrum L.P.

The Eastern District of TX, Case 2:13-cv-1059-JRG

Retained by tensegrity on behalf of Solocron

Technology relates to MMS and multi-media transcoding.

Enterprise Systems Technologies S.a.r.l v. Apple Inc., Cirrus Logic Inc., HTC Corporation, LG Electronics, Inc., Samsung Electronics Co

The International Trade Commission of the United States of America

Inv. No. 337-TA-924

Retained by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo LLP for complainant.

Technology relates to device drivers.

Ziilabs Inc., LTD., v. Samsung and Apple

Case 2:14-cv-00203 In the Eastern District of Texas Marshall Division

Retained by Davis of Heim, Payne & Chorush, L.L.P. for Ziilabs

Technology relates to graphics systems.

Packet Intelligence LLC v. Cisco

Case 2:2014cv00252 In the Eastern District of Texas Marshall Division

Retained by Heim, Payne & Chorush, L.L.P. for Packet Intelligence

Technology relates to secure networking.

Rockstar Consortium US v. Asustek, Google, HTC, LGE, Pantech, Samsung and ZTE

2:13-cv-00899 In the Eastern District of Texas Marshall Division

Retained by McKool Smith for Rockstar

Technology relates to user interfaces and messaging.

Advanced Micro Devices, Inc. v. LG Corp., et al.

5:14-cv-01012 U.S. District Court for the Northern District of California

Retained by Robins, Kaplan, Miller & Ciresi LLP on behalf of Advanced Micro Devices, Inc.

Technology relates to microprocessors and multimedia.

Pragmatus Mobile LLC v. Samsung Electronics Co. Ltd, etc.

U.S. ITC Inv. No. 337-TA-905

Retained by Flagship IP. P.C. on behalf of Complainant Pragmatus Mobile LLC

Technology relates to converged devices.

CallCopy Inc.

Assistance with Reexamination efforts related to Verint Americas Inc.

Retained by Baker Hostetler

Technology related to call systems and call center management.

Submitted declarations with the USPTO.

dunnhumby USA, LLC, et al. v. emnos USA Corp.

U.S. District Court for the Northern District of Illinois

Case No.: 1:13-cv-00399

Retained by Baker Hostetler who represents dunnhumby

Technology relates to database technology.

Graphics Properties Holdings, v. Panasonic et al.

ITC Inv. No. 337-TA-884

Retained by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo LLP for complainant.

Provided testimony through expert reports, deposition and at trial.

Technology relates to graphics hardware.

2013

Graphics Properties Holdings, v. Panasonic et al.

ITC Inv. No. 337-TA-884

Retained by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo LLP for complainant.

Provided testimony through expert reports and deposition.
Technology relates to graphics hardware.

CallCopy Inc.

Assistance with Reexamination efforts related to Verint Americas Inc.

Retained by Hahn Loeser & Parks LLP

Technology related to call systems and call center management.

Submitted declarations with the USPTO.

dunnhumby USA, LLC, et al. v. emnos USA Corp.

U.S. District Court for the Northern District of Illinois

Case No.: 1:13-cv-00399

Retained by Baker Hostetler who represents dunnhumby

Technology relates to database technology.

Microline, LLC v. INTEL CORPORATION, ACER, INC., ACER AMERICA CORPORATION, ADVANCED MICRO DEVICES, INC., APPLE, INC., DELL, INC., GATEWAY, INC., HEWLETT-PACKARD COMPANY, LENOVO GROUP, LTD, LENOVO (UNITED STATES), INC., NVIDIA CORPORATION, SONY COMPUTER ENTERTAINMENT AMERICA INC., TOSHIBA CORPORATION, TOSHIBA AMERICA INC., and TOSHIBA AMERICA INFORMATION SYSTEMS, INC.

Eastern District of Texas

Retained by Eugene M. Cummings, P.C.

Submitted reports regarding infringement, invalidity and claim construction along with numerous declarations. Appeared at the Markman hearing. Deposed.

Technology relates to microprocessor communications.

FlashPoint Technology, Inc. v. HTC Corporation, HTC America, Inc., Pantech Co., Ltd., Pantech Wireless, Inc., Huawei Technologies Co., Ltd., FutureWei Technologies, Inc. d/b/a Huawei Technologies (USA), ZTE Corporation, ZTE (USA) Inc.,
USA International Trade Commission

Certain Electronic Imaging Devices, Inv. No. 337-TA-850

Expert for FlashPoint, who is represented by Pepper Hamilton, LLP.

Submitted reports numerous declarations. Testified at the ITC. Deposed.

Technology relates to converged devices.

2012

FlashPoint Technology, Inc. v. HTC Corporation, HTC America, Inc., Pantech Co., Ltd., Pantech Wireless, Inc., Huawei Technologies Co., Ltd., FutureWei Technologies, Inc. d/b/a Huawei Technologies (USA), ZTE Corporation, ZTE (USA) Inc.,
USA International Trade Commission

Certain Electronic Imaging Devices, Inv. No. 337-TA-850

Expert for FlashPoint, who is represented by Pepper Hamilton, LLP.

Submitted reports numerous declarations. Testified at the ITC. Deposed.

Technology relates to converged devices.

Graphics Properties Holdings v. HTC et. al.
Graphics Properties Holdings v. LG Electronics et. al.
Graphics Properties Holdings v. Sony et. al.
Graphics Properties Holdings v. Samsung Electronics et. al.
Graphics Properties Holdings v. Apple
Graphics Properties Holdings v. Research In Motion et. al.
United States District Court for the District of Delaware
Testifying expert witness for GPH on matters related to invalidity.
Pepper Hamilton LLP and Mintz, Levin, Cohn, Ferris, Glovsky and Popeo LLP represent plaintiffs.
Subject matter relates to graphics systems and CPU microarchitecture.
Submitted reports numerous declarations. Deposed.

IPValue
Non-litigation related patent evaluation services.

TV Interactive Data Corporation v. Sony Corporation, Sony Computer Entertainment Inc, Sony Computer Entertainment America Inc, Sony Corporation of America, Sony Electronics Inc, Samsung Electronics Co Ltd, Samsung Electronics America Inc, Royal Philips Electronics NV, Philips Electronics North America Corporation, Toshiba Corporation, Toshiba America Inc., Toshiba America Consumer Products LLC, Panasonic Corporation, Panasonic Corporation of North America, Victor Company of Japan, LTD, JVC Americas Corp, LG Electronics Inc, LG Electronics USA Inc., Zenith Electronics LLC, Pioneer Corporation, Pioneer Electronics (USA) Inc., Sharp Corporation, Sharp Electronics Corporation, Funai Electric Co., Ltd., Funai Corporation, Inc., D&M Holdings Inc., D&M Holdings US Inc. and Denon Electronics (USA), LLC
United States District Court for the Northern District of California
Case 5:2010cv00475
Consultant for defendant Funai
Defendants Funai Electric Co. Ltd. and Funai Corporation, Inc. are represented by Kevin W. Kirsch, David A. Mancino, John F. Bennett, Matthew P. Hayden, and Hayes F. Michel of Baker Hostetler
Subject matter relates to DVDs and computer Operating Systems.

Interval Licensing LLC, v. AOL, Inc.,; Apple, Inc.; eBay, Inc.; Facebook, Inc.; Netflix, Inc.; Office depot, Inc.; Officemax, Inc.; Staples, Inc.; Yahoo! Inc.; and Youtube, LLC.
United States District Court for the Western District of Washington Case 2:10-cv-01385
Consultant for Interval Licensing LLC
Technology relates to user interfaces and data organization.

Interval Licensing LLC is represented by Michael F. Heim, Eric J. Enger, and Nathan J. Davis of Heim, Payne & Chorush, L.L.P.
Subject matter relates to online search, advertising and data presentation.
Submitted declarations related to claim construction. Deposed.
Technology relates to user interfaces and data organization.

St. Clair Intellectual Property Consultants, Inc. v. Acer, Inc., Acer America Corporation, Dell Inc., Gateway Companies, Inc., Gateway, Inc., Lenovo Group, Limited and Lenovo (United States) Inc.

United States District Court for the District of Delaware - 1:2009cv00354

Consultant for St. Clair Intellectual Property Consultants

St. Clair is represented by R. Terrance Rader, Charles W. Bradley, Glenn E. Forbis, and Justin S. Cohen of Rader Fishman & Grauer PLLC

Subject matter relates to power management and graphics hardware.

Filed reports regarding validity and infringement and provided deposition testimony.

ST. CLAIR INTELLECTUAL PROPERTY CONSULTANTS, INC., v. APPLE, INC. HIGH TECH COMPUTER CORP., a/k/a HTC CORP., HTC (B.V.I.), HTC AMERICA, INC., EXEDEA, INC., RESEARCH IN MOTION LTD., and RESEARCH IN MOTION CORPORATION

United States District Court for the District of Delaware - 1:10-cv-00982-LPS

Consultant for St. Clair Intellectual Property Consultants

St. Clair is represented by R. Terrance Rader, Charles W. Bradley, Glenn E. Forbis, and Justin S. Cohen of Rader Fishman & Grauer PLLC

Filed a declaration.

Subject matter relates to cameras and messaging.

Red Chalk Group

Subject matter relates to patent analysis.

Siemens

Subject matter relates to patent analysis.

Phoenix Technologies

Subject matter relates to patent analysis.

2011

TV Interactive Data Corporation v. Sony Corporation, Sony Computer Entertainment Inc, Sony Computer Entertainment America Inc, Sony Corporation of America, Sony Electronics Inc, Samsung Electronics Co Ltd, Samsung Electronics America Inc, Royal Philips Electronics NV, Philips Electronics North America Corporation, Toshiba Corporation, Toshiba America Inc., Toshiba America Consumer Products LLC, Panasonic Corporation, Panasonic Corporation of North America, Victor Company of Japan, LTD, JVC Americas Corp, LG Electronics Inc, LG Electronics USA Inc., Zenith Electronics LLC, Pioneer Corporation, Pioneer Electronics (USA) Inc., Sharp Corporation, Sharp Electronics Corporation, Funai Electric Co., Ltd., Funai Corporation, Inc., D&M Holdings Inc., D&M Holdings US Inc. and Denon Electronics (USA), LLC

United States District Court for the Northern District of California

Case 5:2010cv00475

Consultant for defendant Funai

Defendants Funai Electric Co. Ltd. and Funai Corporation, Inc. are represented by Kevin W. Kirsch, David A. Mancino, John F. Bennett, Matthew P. Hayden, and Hayes F. Michel of Baker Hostetler
Subject matter relates to DVDs and computer Operating Systems.

Interval Licensing LLC, v. AOL, Inc.; Apple, Inc.; eBay, Inc.; Facebook, Inc.; Netflix, Inc.; Office depot, Inc.; Officemax, Inc.; Staples, Inc.; Yahoo! Inc.; and Youtube, LLC.
United States District Court for the Western District of Washington Case 2:10-cv-01385
Consultant for Interval Licensing LLC
Interval Licensing LLC is represented by Michael F. Heim, Eric J. Enger, and Nathan J. Davis of Heim, Payne & Chorush, L.L.P.
Subject matter relates to online search, advertising and data presentation.

St. Clair Intellectual Property Consultants, Inc. v. Acer, Inc., Acer America Corporation, Dell Inc., Gateway Companies, Inc., Gateway, Inc., Lenovo Group, Limited and Lenovo (United States) Inc.
United States District Court for the District of Delaware - 1:2009cv00354
Consultant for St. Clair Intellectual Property Consultants
St. Clair is represented by R. Terrance Rader, Charles W. Bradley, Glenn E. Forbis, and Justin S. Cohen of Rader Fishman & Grauer PLLC
Technology relates to power management.

ST. CLAIR INTELLECTUAL PROPERTY CONSULTANTS, INC., v. APPLE, INC. HIGH TECH COMPUTER CORP., a/k/a HTC CORP., HTC (B.V.I.), HTC AMERICA, INC., EXEDEA, INC., RESEARCH IN MOTION LTD., and RESEARCH IN MOTION CORPORATION
United States District Court for the District of Delaware - 1:10-cv-00982-LPS
Consultant for St. Clair Intellectual Property Consultants
St. Clair is represented by R. Terrance Rader, Charles W. Bradley, Glenn E. Forbis, and Justin S. Cohen of Rader Fishman & Grauer PLLC
Filed a declaration.
Subject matter relates to power management and graphics hardware.

Negotiated Data Solutions
Consultant for Negotiated Data Solutions
Negotiated Data Solutions is represented by Susman, Godfrey LLP.
Subject matter relates to IO devices.

Acqis LLC
Declarations filed with USPTO in response to a series of reexamination requests.
Deposed in a related case (Texas Eastern District Court 6:2009cv00148) as a consequence of declarations.
Acqis LLC is represented by Cooley, Godward, Kronish LLP
Subject matter relates to computer systems.

FlashPoint Technology, Inc. v. Nokia Corp. of Finland, Nokia, Inc. of Irving, Texas, Research In Motion Ltd. of Canada, Research In Motion Corp. of Irving, Texas, HTC

Corp. of Taiwan, HTC America, Inc. of Bellevue, Washington, LG Electronics of South Korea, LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey, and LG Electronics MobileComm U.S.A., Inc. of San Diego, California

US ITC Inv. No. 337-TA-726

Consultant for FlashPoint Technology, Inc.

FlashPoint Technology Inc. is represented by William D. Belanger, Gregory D. Len, and Frank Liu of Pepper Hamilton LLP.

Filed reports regarding validity and infringement and provided testimony both via deposition and in court.

Subject matter relates to camera systems.

MicroUnity, Inc.v. Texas Instruments Inc., Qualcomm, Inc., Samsung Electronics Co LTD, Motorola, Inc., Nokia Corporation, Palm, Inc., Samsung TeleCommunications America, LLC, Acer, Inc., HTC Corporation, Google Inc., LG Electronics Inc, Apple, Inc., Cellco Partnership d/b/a Verizon Wireless, Sprint Nextel Corporation and AT&T
2:2010cv00091

Consultant for MicroUnity, Inc.

Eastern District of Texas

MicroUnity, Inc., is represented by Heim, Payne, and Chorush LLP.

Subject matter relates to graphics hardware and microarchitecture.

2010

TV Interactive Data Corporation v. Sony Corporation, Sony Computer Entertainment Inc, Sony Computer Entertainment America Inc, Sony Corporation of America, Sony Electronics Inc, Samsung Electronics Co Ltd, Samsung Electronics America Inc, Royal Philips Electronics NV, Philips Electronics North America Corporation, Toshiba Corporation, Toshiba America Inc., Toshiba America Consumer Products LLC, Panasonic Corporation, Panasonic Corporation of North America, Victor Company of Japan, LTD, JVC Americas Corp, LG Electronics Inc, LG Electronics USA Inc., Zenith Electronics LLC, Pioneer Corporation, Pioneer Electronics (USA) Inc., Sharp Corporation, Sharp Electronics Corporation, Funai Electric Co., Ltd., Funai Corporation, Inc., D&M Holdings Inc., D&M Holdings US Inc. and Denon Electronics (USA), LLC

United States District Court for the Northern District of California

Case 5:2010cv00475

Consultant for defendant Funai

Defendants Funai Electric Co. Ltd. and Funai Corporation, Inc. are represented by Kevin W. Kirsch, David A. Mancino, John F. Bennett, Matthew P. Hayden, and Hayes F.

Michel of Baker Hostetler

Subject matter relates to DVDs and computer Operating Systems.

Interval Licensing LLC, v. AOL, Inc.,; Apple, Inc.; eBay, Inc.; Facebook, Inc.; Netflix, Inc.; Office depot, Inc.; Officemax, Inc.; Staples, Inc.; Yahoo! Inc.; and Youtube, LLC.

United States District Court for the Western District of Washington Case 2:10-cv-01385

Consultant for Interval Licensing LLC

Interval Licensing LLC is represented by Michael F. Heim, Eric J. Enger, and Nathan J.

Davis of Heim, Payne & Chorush, L.L.P.

Subject matter relates to online search, advertising and data presentation.

St. Clair Intellectual Property Consultants, Inc. v. Acer, Inc., Acer America Corporation, Dell Inc., Gateway Companies, Inc., Gateway, Inc., Lenovo Group, Limited and Lenovo (United States) Inc.

United States District Court for the District of Delaware - 1:2009cv00354

Consultant for St. Clair Intellectual Property Consultants

St. Clair is represented by R. Terrance Rader, Charles W. Bradley, Glenn E. Forbis, and Justin S. Cohen of Rader Fishman & Grauer PLLC

Subject matter relates to power management and graphics hardware.

Negotiated Data Solutions

Consultant for Negotiated Data Solutions

Negotiated Data Solutions is represented by Susman, Godfrey LLP.

Subject matter relates to IO devices.

Acqis LLC

Declarations filed with USPTO in response to a series of reexamination requests.

Deposed in a related case (Texas Eastern District Court 6:2009cv00148) as a consequence of declarations.

Acqis LLC is represented by Cooley, Godward, Kronish LLP

Subject matter relates to computer systems.

FlashPoint Technology, Inc. v. Nokia Corp. of Finland, Nokia, Inc. of Irving, Texas, Research In Motion Ltd. of Canada, Research In Motion Corp. of Irving, Texas, HTC Corp. of Taiwan, HTC America, Inc. of Bellevue, Washington, LG Electronics of South Korea, LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey, and LG Electronics MobileComm U.S.A., Inc. of San Diego, California

US ITC Inv. No. 337-TA-726

Consultant for FlashPoint Technology, Inc.

FlashPoint Technology Inc. is represented by William D. Belanger, Gregory D. Len, and Frank Liu of Pepper Hamilton LLP.

Subject matter relates to camera systems.

Filed reports regarding validity and infringement and provided testimony both via deposition and in court.

MicroUnity, Inc. v. Texas Instruments Inc., Qualcomm, Inc., Samsung Electronics Co LTD, Motorola, Inc., Nokia Corporation, Palm, Inc., Samsung TeleCommunications America, LLC, Acer, Inc., HTC Corporation, Google Inc., LG Electronics Inc, Apple, Inc., Cellco Partnership d/b/a Verizon Wireless, Sprint Nextel Corporation and AT&T

2:2010cv00091

Consultant for MicroUnity, Inc.

Eastern District of Texas

MicroUnity, Inc., is represented by Heim, Payne, and Chorush LLP.

Subject matter relates to graphics hardware and microarchitecture.

Saxon Innovations, LLC v. Apple, Inc., Gateway, Inc., Gateway Companies, Inc., Acer America Corp., Acer, Inc., Hewlett-Packard Co. and Dell, Inc
Eastern District of Texas 6:2008cv00265

Consultant for Saxon Innovations, LLC

Representing Saxon Innovations, LLC, who was represented by Heim, Payne, and Chorush LLP.

Subject matter relates to multiprocessors systems and computer systems.

Filed reports regarding validity and infringement and provided testimony both via deposition and in court.

Joel M. Geddis and Shaun Legacy v. Microsoft Corporation, Toshiba Corporation, Freescale Semiconductor, Inc., Wolfson Microelectronics, Inc., Wolfson Microelectronics PLC

Superior Court of Washington in and for King County 08-2-40731-4 SEA

Consultant for Toshiba Corporation

Toshiba Corporation is represented by Forsberg & Umlauf, P.S.

Subject matter relates to portable audio devices.

2009

Saxon Innovations, LLC v. LG Electronics Inc., LG Electronics USA Inc., LG Electronics Mobilecomm U.S.A., Inc., Samsung Electronics Co. Ltd, Samsung Electronics America Inc., Samsung Telecommunications America LLC, Palm Incorporated, Research in Motion Ltd, Research In Motion Corporation, Nintendo Co. Ltd, and Nintendo of America

Eastern District of Texas 6:07-CV-490

Prepared expert report regarding invalidity on behalf of Saxon Innovations, LLC.

Saxon Innovations, LLC, was represented by Pepper Hamilton LLP.

Subject matter relates to multiprocessors systems and computer systems.

Filed reports regarding validity and infringement and provided testimony both via deposition and in court.

Saxon Innovations, LLC, v. Nokia Corp., Research In Motion Ltd., High Tech Computer Corp., Palm, Inc., Panasonic Corporation,

US ITC 337-TA-667

Expert witness for Saxon Innovations, LLC.

Submitted reports, was deposed, and testified at trial regarding claim construction and invalidity.

Saxon Innovations, LLC was represented by William D. Belanger, Aaron J. Levangie, Gregory D. Len, and Charles H. Carpenter of Pepper Hamilton LLP.

Subject matter relates to multiprocessors systems and computer systems.

Advanced Micro Devices, Inc. v. Samsung Electronics Co, Ltd.

U.S. District Court for the Northern District of California 3:08-cv-00986-SI

Consultant for Advanced Micro Devices, Inc. Reverse engineering efforts to support infringement contentions.

Advanced Micro Devices, Inc is represented by Robins, Kaplan, Miller and Ciresi LLP.

Subject matter relates to memory devices.

Intellectual Ventures

Subject matter relates to patent analysis.

2005

Speedera Networks, Inc., v. Akamai Technologies, Inc.

U.S. District Court for the Northern District of California 5:02-cv-03050-JW

Consultant for Speedera Networks, Inc.

Reviewed depositions and provided review of computer security.

Speedera Networks, Inc. was represented by Jim Bowman of O'Melveny & Myers LLP.

Technology related to computer security.

Research in Motion Limited et al. v. Inpro II Licensing SARL

U.S. District Court for the Northern District of Texas 3:03-cv-02669-B

Consultant for InPro II Licensing SARL . Provided patent analysis.

InPro II Licensing SARL was represented by Dechert.

Technology related to IO devices.

Digi International, Inc. v. Lantronix, Inc., 0:04-cv-01560-DWF-SRN

U.S. District Court for the District of Minnesota

Consultant for Lantronix, Inc. Prepared expert reports.

Lantronix, Inc. was represented by Stradling Yocca Carlson & Rauth.

Technology related to IO devices.

2004

Intergraph Hardware Technologies Company, Inc v. Hewlett-Packard

U.S. District Court for the Eastern District of Texas *Company*6:04-cv-00214-LED

Expert for Intergraph Hardware Technologies Company, Inc. Prepared expert reports and claim charts.

Intergraph represented by McDermott, Will and Emery LLP.

Technology related to computer communications.

Mentor Graphics

Provided licensing support and IP valuation.

Technology related to emulation.

Veterinary Imaging Centers, Inc. v. Sound Technologies, Inc., et al., 1:02-cv-00282-DCN

U.S. District Court for the Northern District of Ohio

Consultant for Sound Technologies, Inc. Prepared expert reports.

Technology related to computer communication.

Interealty Corp. v. Superaltive, Inc., et al., 8:01-cv-00969-AHS-AN

U.S. District Court for the Central District of California

Consultant for Superlative, Inc. Matter involved software copyright. Prepared expert

reports and was deposed.

Superlative, Inc. was represented by Edward F. O'Connor with the law firm of Levin & O'Connor.

Technology related to databases.

All Computers, Inc. v. Intel Corporation, 1:04-cv-00586-GBL-LO

U.S. District Court for the Eastern District of Virginia

Consultant for All Computers, Inc. Filed numerous expert reports. Deposed by Ruffin Cordell of Fish & Richardson.

Plaintiff was represented by Edward F. O'Connor with the law firm of Levin & O'Connor.

Technology related to microprocessors.

2001

Ikos Systems, Inc. v. Axis Systems, Inc., 5:01-cv-21079-JW

U.S. District Court for the Northern District of California

Filed numerous expert reports. Deposed by Ikos Counsel. Presented tutorial to Judge Ware. Deposed.

Axis Systems, Inc. was represented by George Riley of O'Melveny and Myers

Technology related to emulation.

Professional Activities

Member of ACM and IEEE

Program Chair 26'th International Symposium on Microarchitecture

General Chair 36'th International Symposium on Microarchitecture

Associate Editor of IEEE Transactions on Computers

Associate Editor of ACM Transactions on Embedded Computing Systems

Associate Editor of IEEE Computer

Program Committees: ISCA, MICRO, ISLPED, Network Processors Workshop, FPL, Complexity-Effective Design, RAW, Workshop on Mediaprocessors and DSP, FPT, INTERACT

Publications

Journal

1. W. H. Mangione-Smith, T.-P. Shih, S. G. Abraham, and E. S. Davidson, "Approaching a Machine-Application Bound in Delivered Performance on Scientific Codes," *Proceedings of the IEEE*, vol. 81, pp. 1166-1178, 1993.
2. C. Chien, S. Nazareth, P. Lettieri, S. Molloy, B. Schoner, W. A. I. Boring, J. Chen, C. Deng, W. H. Mangione-Smith, and R. Jain, "An Integrated Testbed for Wireless Multimedia Computing," *Journal of VLSI Signal Processing*, vol. 13, pp. 105-24, 1996.
3. K.-G. Chia, H. J. Kim, S. Lansing, W. H. Mangione-Smith, and J. Villasenor, "High Performance Automatic Target Recognition through Data-Specific VLSI," *IEEE*

- Transactions on VLSI*, vol. 6, pp. 364-372, 1998.
4. N. R. Shnidman, W. H. Mangione-Smith, and M. Potkonjak, "On-line Fault Detection for Bus-Based Field Programmable Gate Arrays," *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 6, pp. 656-66, 1998.
 5. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Low Overhead Fault-Tolerant FPGA Systems," *IEEE Transactions on Very Large Scale Integration*, pp. 212-21, 1998.
 6. D. Kirovski, C. Lee, M. Potkonjak, and W. H. Mangione-Smith, "Application-Driven Synthesis of Memory-Intensive Systems-on-Chip," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 18, pp. 1316-1326, 1999.
 7. W. H. Mangione-Smith, "Technical Challenges for Designing Personal Digital Assistants," *Design Automation for Embedded Systems*, vol. 4, pp. 23-39, 1999.
 8. D. Kirovski, J. Kin, and W. H. Mangione-Smith, "Procedure Based Program Compression," *International Journal of Parallel Programming*, vol. 27, pp. 457-475, 1999.
 9. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Enhanced FPGA Reliability through Efficient Run-Time Fault Reconfiguration," *IEEE Transactions on Reliability*, vol. 49, pp. 296-304, 2000.
 10. B. Kahng, J. Lach, W. H. Mangione-Smith, S. Mantik, I. L. Markov, M. Potkonjak, P. Tucker, H. Wang, and G. Wolfe, "Constraint-based Watermarking Techniques for Design IP Protection," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 20, pp. 1236-52, 2001.
 11. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Fingerprinting Techniques for Field-Programmable Gate Array Intellectual Property Protection," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 20, pp. 1253-61, 2001.
 12. C. Lee, J. Kin, M. Potkonjak, and W. H. Mangione-Smith, "Exploring Hypermedia Processor Design Space," *Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology*, vol. 27, pp. 171-186, 2001.
 13. J. Kin, C. Lee, W. H. Mangione-Smith, and M. Potkonjak, "Exploring the Diversity of Multimedia Systems," *IEEE Transactions on VLSI Systems*, vol. 9, pp. 474-485, 2001.
 14. J. Kin, M. Gupta, and W. H. Mangione-Smith, "Filtering Memory References to Increase Energy Efficiency," *IEEE Transactions on Computers*, vol. 49, pp. 1-15, 2002.
 15. G. Memik and W. H. Mangione-Smith, "Precise Instruction Scheduling", *To Appear in the Journal of Instruction-Level Parallelism*, 2005.

Conference

1. T. Conte and W. Mangione-Smith, "Determining Cost-Effective Multiple Issue Processor Designs," presented at International Conference on Computer Design, 1993.
2. W. H. Mangione-Smith, S. G. Abraham, and E. S. Davidson, "The Effects of Memory Latency and Fine-Grain Parallelism on Astronautics ZS-1 Performance," presented at Twenty-Third Hawaii International Conference on System Sciences, 1990.
3. W. H. Mangione-Smith, S. G. Abraham, and E. S. Davidson, "Architectural vs. Delivered Performance of the IBM RS/6000 and the Astronautics ZS-1," presented at Twenty-Fourth Hawaii International Conference on System Sciences, 1991.
4. W. H. Mangione-Smith, S. G. Abraham, and E. S. Davidson, "Vector Register Design for Polycyclic Vector Scheduling," presented at Fourth Conference on Architectural

- Support for Programming Languages and Operating Systems, 1991.
5. W. Mangione-Smith, S. G. Abraham, and E. S. Davidson, "Register Requirements of Pipelined Processors," presented at International Conference on Supercomputing, 1992.
 6. W. H. Mangione-Smith and B. Hutchings, "Configurable Computing: The Road Ahead," presented at Reconfigurable Architectures Workshop, Geneva, 1997.
 7. J. Kin, C. Lee, W. H. Mangione-Smith, and M. Potkonjak, "Hypermedia Processors: Design Space Exploration," presented at Multi-Media Signal Processing Conference, 1998.
 8. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Fingerprinting Digital Circuits on Programmable Hardware," presented at Second International Workshop on Information Hiding, 1998.
 9. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Signature Hiding Techniques for FPGA Intellectual Property Protection," presented at IEEE/ACM International Conference on Computer-Aided Design, 1998.
 10. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "FPGA Fingerprinting Techniques for Protecting Intellectual Property," presented at Custom Integrated Circuits Conference, 1998.
 11. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Efficiently Supporting Fault-Tolerance in FPGAs," presented at International Symposium on Field Programmable Gate Arrays, 1998.
 12. W. Mangione-Smith, "Configurable Computing: Concepts and Issues," presented at Thirtieth Hawaii International Conference on System Sciences, 1997.
 13. J. Villasenor, B. Schoner, C. Kang-Ngee, C. Zapata, K. Hea Joung, C. Jones, S. Lansing, and B. Mangione-Smith, "Configurable Computing Solutions for Automatic Target Recognition," presented at FPGAs for Custom Computing Machines, 1996.
 14. B. Mangione-Smith, "Low Power Communications Protocols: Paging and Beyond," presented at IEEE Symposium on Low Power Electronics, 1995.
 15. H. J. Kim, W. H. Mangione-Smith, and M. Potkonjak, "Protecting Ownership Rights of a Lossless Image Coder through Hierarchical Watermarking," presented at IEEE Workshop on Signal Processing Systems, 1998.
 16. B. Kahng, J. Lach, W. H. Mangione-Smith, S. Mantik, I. L. Markov, M. Potkonjak, P. Tucker, H. Wang, and G. Wolfe, "Watermarking Techniques for Intellectual Property Protection," presented at Design and Automation Conference, 1998.
 17. Rashid, J. Leonard, and W. H. Mangione-Smith, "Dynamic Circuit Generation for Solving Specific Problem Instances of Boolean Satisfiability," presented at FPGAs for Custom Computing Machines, 1998.
 18. D. Kirovski, C. Lee, M. Potkonjak, and W. Mangione-Smith, "Synthesis of Power Efficient Systems-on-Silicon," presented at Asia and South Pacific Design Automation Conference, 1998.
 19. J. Leonard and W. H. Mangione-Smith, "A Case Study of Partially Evaluated Hardware Circuits: Key-Specific DES," presented at Field-Programmable Logic and Applications, 1997.
 20. N. R. Shnidman, W. H. Mangione-Smith, and M. Potkonjak, "Fault Scanner for Reconfigurable Logic," presented at Advanced Research in VLSI, 1997.
 21. J. Kin, M. Gupta, and W. H. Mangione-Smith, "The Filter Cache: an Energy Efficient Memory Structure," presented at International Symposium on Microarchitecture, 1997.

22. D. Kirovski, J. Kin, and W. H. Mangione-Smith, "Procedure Based Program Compression," presented at International Symposium on Microarchitecture, 1997.
23. D. Kirovski, C. Lee, M. Potkonjak, and W. H. Mangione-Smith, "Application-Driven Synthesis of Core-Based Systems," presented at International Conference on Computer Aided Design, 1997.
24. Mangione-Smith, P. S. Ghang, S. Nazareth, P. Lettieri, W. Boring, and R. Jain, "A Low Power Architecture for Wireless Multimedia Systems: Lessons Learned from Building a Power Hog," presented at International Symposium on Low Power Electronics and Design, 1996.
25. Lee, J. Kin, M. Potkonjak, and W. H. Mangione-Smith, "Media Architecture: General Purpose vs. Multiple Application-Specific Programmable Processor," presented at Design Automation Conference, 1998.
26. Lee, M. Potkonjak, and W. H. Mangione-Smith, "MediaBench: a Tool for Evaluating and Synthesizing Multimedia and Communications Systems," presented at International Symposium on Microarchitecture, 1997.
27. Rashid, J. Asher, W. H. Mangione-Smith, and M. Potkonjak, "Hierarchical Watermarking for Protection of DSP Filter Cores," presented at IEEE 1999 Custom Integrated Circuits Conference, San Diego, CA USA, 1999.
28. H. Zou, H. J. Kim, S. Kim, B. Daneshrad, R. Wesel, and W. H. Mangione-Smith, "Equalized GMSK, Equalized QPSK, and COFDM, a Comparative Study for High Speed Wireless Indoor Data Communications," presented at International Vehicular Technology Conference, Houston, TX USA, 1999.
29. J. Kin, C. Lee, W. H. Mangione-Smith, and M. Potkonjak, "Power Efficient Mediaprocessors: Design Space Exploration," presented at Design Automation Conference, New Orleans, LA USA, 1999.
30. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Robust FPGA Intellectual Property Protection through Multiple Small Watermarks," presented at Design Automation Conference, 1999.
31. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Efficient Error Detection, Localization and Correction for FPGA-based Debugging," presented at Design Automation Conference, 2000.
32. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Algorithms for Efficient Runtime Fault Recovery on Diverse FPGA Architectures," presented at IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems, 1999.
33. Lee, J. Kin, M. Potkonjak, and W. Mangione-Smith, "Designing Power Efficient Hypermedia Processors," presented at International Symposium on Low Power Electronics and Design, 1999.
34. J. Lach, W. H. Mangione-Smith, and W. Potkonjak, "Enhanced Intellectual Property Protection for Digital Circuits on Programmable Hardware," presented at International Workshop on Information Hiding, 1999.
35. J. Lach, W. H. Mangione-Smith, and M. Potkonjak, "Runtime Logic and Interconnect Fault Recovery on Diverse FPGA Architectures," presented at Military and Aerospace Applications of Programmable Devices and Technologies, 1999.
36. Benyamin and W. Mangione-Smith, "Functional Unit Specialization through Code Analysis," presented at International Conference on Computer Aided Design, 1999.
37. J. Kin, C. Lee, W. H. Mangione-Smith, and M. Potkonjak, "A Technique for QoS-

- Based System Partitioning," presented at ASP-DAC, 2000.
38. S. Brown, C. Lee, and W. H. Mangione-Smith, "Offline Program Re-Mapping to Improve Branch Prediction Efficiency in Embedded Systems," presented at ASP-DAC, 2000.
 39. H. Kim and W. Mangione-Smith, "Factoring Large Numbers with Programmable Hardware," presented at International Symposium on Field Programmable Gate Arrays, 2000.
 40. G. Memik, W. Hu, and W. Mangione-Smith, "NetBench: A Benchmarking Suite for Network Processor," presented at Computer Aided Design, 2001.
 41. G. Memik, S. Memik, and W. Mangione-Smith, "Design and Analysis of a Layer Seven Network Processor Accelerator Using Reconfigurable Logic," presented at IEEE Symposium on FPGAs for Custom Computing Machines, 2002.
 42. G. Memik and W. Mangione-Smith, "A Flexible Accelerator for Layer 7 Networking Applications," presented at Design Automation Conference, 2002.
 43. Y. Cho, S. Navab, and W. Mangione-Smith, "Specialized Hardware for Deep Network Packet Filtering," presented at International Conference on Field Programmable Logic and Application, 2002.
 44. G. Memik and W. Mangione-Smith, "Improving Power Efficiency of Multi-Core Network Processors Through Data Filtering," presented at International Conference on Compilers, Architecture and Synthesis for Embedded Systems, 2002.
 45. G. Memik, G. Reinman, and W. Mangione-Smith, "Just Say No: Benefits of Early Cache Miss Determination," presented at International Symposium on High Performance Computer Architecture, 2002.
 46. G. Memik and W. Mangione-Smith, "NEPAL: A Framework for Efficiently Structuring Applications for Network Processors," presented at NP-2: The Second Workshop on Network Processors, Anaheim, CA, 2003.
 47. G. Memik, G. Reinman, and W. H. Mangione-Smith, "Reducing Energy and Delay Using Efficient Victim Caches," presented at International Symposium on Low Power Electronics and Design, Seoul, Korea, 2003.
 48. Young Cho and William H. Mangione-Smith, "Programmable Hardware for Deep Packet Filtering on a Large Signature Set." First Watson Conference on Interaction between Architecture, Circuits, and Compilers (P=ac 2), Yorktown, NY, Oct. 6-8, 2004
 49. Young Cho and William H. Mangione-Smith, "Deep Packet Filter with Dedicated Logic and Read-Only-Memories." IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM), Napa Valley / CA, April 2004.

Book Chapters

1. W. H. Mangione-Smith, "Register Requirements for High Performance Code Scheduling," in *The Interaction of Compiler Technology and Computer Architecture*, D. Lilja and P. Bird, Eds.: Kluwer Academic Press, 1994, pp. 51-84.
2. W. H. Mangione-Smith, "Performance Bounds for Rapid Computer System Evaluation," in *Fast Simulation of Computer Architectures*, T. Conte and C. Gimarac, Eds.: Kluwer Academic Press, 1995.
3. G. Memik and W. H. Mangione-Smith, "NEPAL: A Framework for Efficiently Structuring Applications for Network Processors," in *Network Processor Design*:

Issues and Practices, vol. 2, P. Crowley, M. A. Franklin, H. Hadimioglu, and P. Z. Onufryk, Eds.: Morgan Kaufman, 2003.

Magazine Articles

1. W. H. Mangione-Smith, S. G. Abraham, and E. S. Davidson, "A Performance Comparison of the IBM RS/6000 and the Astronautics ZS-1," in *IEEE Computer*, vol. 24, 1991.
2. W. H. Mangione-Smith, B. Hutchings, D. Andrews, A. DeHon, C. Ebeling, R. Hartenstein, O. Mencer, J. Morris, K. Palem, V. K. Prasanna, and H. A. E. Spaanenburg, "Seeking Solutions in Configurable Computing," in *IEEE Computer*, vol. 30, 1997, pp. 38-43.
3. W. H. Mangione-Smith, "Application Design for Configurable Computing," in *IEEE Computer*, vol. 30, 1997, pp. 115-17.
4. J. Villasenor and W. H. Mangione-Smith, "Configurable Computing," in *Scientific American*, vol. 276, 1997, pp. 54-9.
5. W. H. Mangione-Smith, "Mobile Computing and Smart Spaces," in *IEEE Concurrency*, vol. 6, 1998, pp. 5-7.
6. W. H. Mangione-Smith, "'Beauty Depends on Size'-Aristotle," in *IEEE Concurrency*, vol. 6, 1998, pp. 8-10.