UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHOPIFY, INC.,
Petitioner,

v.

DDR HOLDINGS, LLC,
Patent Owner.

Case No.: Unassigned
INTER PARTES REVIEW OF U.S. PATENT NO. 9,639,876

DECLARATION OF MICHAEL SHAMOS IN SUPPORT OF PETITIONS FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,639,876

1. My name is Michael I. Shamos. I am over the age of twenty-one (21) years, of sound mind and capable of making the statements set forth in this declaration. I am competent to testify to matters set forth herein. All the facts and statements contained herein are within my personal knowledge and they are, to the best of my knowledge, true and correct.

2. I have been retained on behalf of Shopify, Inc. ("Petitioner") to offer opinions relating to the invalidity of U.S. Patent No. 9,639,876 (the "'876 Patent"), U.S. Patent No. 9,043,228 (the "'228 Patent), U.S. Patent No. 8,515,825 (the "'825 Patent") (collectively, the "DDR Patents"), which are assigned to DDR Holdings, LLC ("Patent Owner"), as well as opinions concerning references presented by Petitioner in this *inter partes* review ("IPR").

3. I am being compensated at the rate of $600 per hour for my work performed in connection with this matter. My compensation does not depend on the contents of this declaration, any testimony I may provide, or the ultimate outcome of this IPR proceeding or any other related proceeding involving the parties. I do not have a financial interest in any of the parties.

I. Education and Experience

4. I hold the title of Distinguished Career Professor in the School of Computer Science at Carnegie Mellon University in Pittsburgh, Pennsylvania. I am a member of two departments in that School, the Institute for Software

Research and the Language Technologies Institute. I was a founder and Co-Director of the Institute for eCommerce at Carnegie Mellon from 1998-2004 and since 2004 I have been Director of the eBusiness Technology graduate program in the Carnegie Mellon University of Computer Science.

5. I received an A.B. (1968) from Princeton University in Physics; an M.A. (1970) from Vassar College in Physics; an M.S. (1972) from American University in Technology of Management, a field that covers quantitative tools used in managing organizations, such as statistics, operations research and cost-benefit analysis; an M.S. (1973), an M.Phil. (1974) and a Ph.D. (1978) from Yale University in Computer Science; and a J.D. (1981) from Duquesne University.

6. I have taught graduate courses at Carnegie Mellon in Electronic Commerce, including eCommerce Technology, Electronic Payment Systems, Electronic Voting and eCommerce Law and Regulation, as well as Analysis of Algorithms. Since 2007, I have taught an annual course in Law of Computer Technology. I currently also teach Internet of Things and Electronic Payment Systems.

7. Since 2001, I have been a Visiting Professor at the University of Hong Kong, where I teach an annual course entitled Electronic Payment Systems.

8. From 1979-1987, I was the founder and president of two computer software development companies in Pittsburgh, Pennsylvania: Unilogic, Ltd. and Lexeme Corporation.

9. I am an attorney admitted to practice in Pennsylvania and have been admitted to the Bar of the U.S. Patent and Trademark Office since 1981. I have not been asked to offer any opinions on patent law in this review.

10. I have previously testified in numerous cases concerning computer technology. My C.V. in Appendix 1 contains a list of cases in which I have testified in the last ten years. I have been involved in multiple cases involving Internet technology and electronic messaging.

II. Technology Background

11. While the overview touches on a number of technology issues, it is out of necessity that provide only a brief overview in this declaration. I am prepared to explain these technological principles as they relate to the ’876 Patent in further detail should I be asked to do so.

12. In the section that follows, I discuss some of the general principles that are pertinent to the invalidity of the DDR Patents and of the related art.

A. Historical Evolution of Web-Based Commerce Systems

13. The modern, public Internet dates to 1993, when the Government began permitting its commercial use. As the number of Internet users increased, businesses

saw an opportunity to serve them, and by 1994 many new ecommerce companies were launched, such as CDnow.com.

14. Amazon.com took its first order in 1995, by which time the ecommerce revolution was well under way. Significantly, 1994/1995 saw the beginning of a significant ecommerce-service market, in which companies began providing software products and services to merchants in order to assist them in doing business online, such as "shopping cart" software, transaction-processing software, and ecommerce Web hosting.

15. For instance, Viaweb was founded in 1995, providing ecommerce software and hosting, enabling small merchants to set up ecommerce sites with little or no technical knowledge. The founder of Viaweb had been inspired by another company, marketplaceMCI (owned by the telecommunications company, MCI) which had started operations the year before serving mostly large companies. Both firms were ecommerce outsourcing companies; that is, a merchant would contract with these companies to operate the ecommerce systems required to run an online store on the merchant's behalf. Many merchants would maintain their own websites elsewhere, but let the outsource provider manage the more complicated ecommerce component for them.

B. Ecommerce and Affiliate Marketing Systems

16. Very soon after ecommerce took off on the Internet, entrepreneurs and merchants realized that applying a very old offline concept to online commerce would be helpful: that is, paying sales commissions to third parties who generated sales for a merchant. The concept of a sales commission is a familiar one, and thus it was a natural extension to pay commissions for online sales. Commonly known as affiliate marketing (though the world's largest system, owned by Amazon.com, actually uses the term associate rather than affiliate), the concept is simple. If website owner A sends a visitor from his website to the ecommerce site owned by website owner B, and if that visitor makes a purchase from B's website, then B pays A a commission on the sale. A merchant could multiply sales many times by having affiliates market his products.

17. Affiliate marketing on the Internet dates to at least 1994, when CDnow launched its first such program. However, some observers argue that online affiliate marketing really dates to 1989, when PC Flowers & Gifts launched a store on the Prodigy online network, and paid Prodigy a commission on all sales. In January of 1996, the founder of PC Flowers & Gifts filed for an affiliate-related

patent, U.S. Patent No. 6,141,666 ("'666 Patent")[1], and in July of that year Amazon.com launched its affiliate program, which would eventually recruit over a million affiliates.

C. Site Cobranding and Design Matching

18. One issue that arose soon after online activities began was that of brand identification. Web pages have a definitive look and feel, as do physical stores, and the customer must be given a consistent online experience. If an affiliate sells the products of many different merchants, it is critical for the customer to believe that he is shopping at the affiliate, not at the individual stores of multiple merchants. Otherwise, the affiliate's identity would be lost. It was therefore common for an affiliate to display product web pages using the affiliate's consistent look and feel, even if the product information was being provided from web servers belonging to different merchants.

19. Thus, very early on, as companies began splitting functions between Web servers, they would serve pages having the same design from the various

[1] The '666 Patent was applied in a rejection against claims of the '399 Patent, to which the '876 Patent claims priority, and Patent Owner traversed the rejections asserting, in various ways, that the '666 Patent did not disclose an outsource provider.

servers, and when ecommerce service providers began providing hosted ecommerce services to companies that already had websites, it was clear that customization was necessary so that visitor to the site would encounter a consistent look and feel. In addition, the concept of design matching was apparent to companies involved in affiliate marketing very early on; Company A could sell its products through an online store that appeared to be on Company B's website, and pay Company B a sales commission. Company A could easily operate hundreds, if not thousands, of customized stores for hundreds or thousands of different websites, and each store could match the appearance of the associated website.

20. The inventors of the DDR Patents were not the first to come up with the idea of design matching or providing a consistent online interface or, as the patents-in-suit describe it, maintaining "look and feel." For example, as explained below, certain claims of the '572 Patent, of which the '876 Patent is a continuation, were found by the Federal Circuit to be anticipated over Digital River's Secure Sales System (DR SSS). Digital River was in the business of managing software sales and software downloads for software publishers, wholesalers, and retailers and its DR SSS was publicly operating at least as early as April 1997. The DR SSS is an outsource ecommerce system that provides all ecommerce functions for the sale of software. Links from a software publisher's website would point to pages on the DR SSS server. Clicking one of these links would load a page from

the DR SSS server into the visitor's Web browser, but, as the pages are customized to match the referring site, visitors would be unaware that the new pages were, in fact, coming from a separate ecommerce server. Digital River advertised, and a person of ordinary skill in the art would have understood, that the DR SSS enabled "the entire transaction [to] take[] place in the selling environment you've created, surrounded by the look and feel of your identity, with your products presented the way you want them presented . . . customers simply hit the purchase icon at your site and the whole process unfolds smoothly. There's no sensation of being suddenly hustled off to another location." December 1997 Website.

21. In fact, the inventors of the DDR Patents appear to have derived their idea, at least in part, from a company called e-Merchant Group, Inc. For example, I have reviewed a document titled "MicroShops™ Business Plan", which references two of the inventors named in the DDR Patents (*e.g.*, Delano Ross, Jr. and Joseph Michaels) on the first page. I understand that MicroShops was a predecessor system to the Nexchange system disclosed in the '876 Patent. The MicroShops Business Plan identifies e-Merchant Group as a competitor and describes e-Merchant Group's system as follows, as:

> *e-Merchant Group's technology creates a mall-like template that allows various merchants and manufacturers to sell their products within a consistent online interface. Websites that wish to create a private label store can select from e-Merchant Group's list of merchant clients and build a customized, co-branded store by e-Merchant Group. e-Merchant Group can*

handle all order and payment processing, including credit card transactions, and can even take responsibility for warehousing and order fulfillment through e-Merchant Group partners.

In many ways, e-Merchant Group offers a very similar service to that offered by MicroShops™. The company's private label stores concept bears great similarity to MicroShops™ and the value propositions they present to merchants and manufacturers closely resemble those offered by MicroShops™. However, e-Merchant Group has built an extremely limited number of private label stores and has chosen to focus only on merchants with two industries: toys and outdoor gear.[2]

D. Outsourced Web Hosting and Ecommerce Hosting

22. At the time of the alleged invention, hosting merchant sites on an outsourced Web server was not novel; it was quite simply *the norm*. That is, the vast majority of companies had their websites, and the ecommerce functions of their websites, hosted by third-party, outsource companies known as *Web-hosting companies* and *ecommerce hosting companies*. This was necessary because most companies simply did not maintain their own server farms.

23. The use of outsourcing companies was not simply well known to one skilled in the art by early 1997—the first Web-hosting companies date to at least 1994—but was the most common way of setting up a website. Relatively few companies set up and managed their own Web servers, for either basic informational sites or for more complicated, transactional, ecommerce sites,

[2] Appendix 2 - MicroShops™ Business Plan, at 46-47.

because of the resulting expense and complexity. It was—and remains to this day—simpler and cheaper to outsource these functions. In fact, it was well known in 1997 that setting up an ecommerce site was "a huge pain in the butt" (*see* Digital River Brochure, at page 2), and thus should be left to the experts.

24. Ecommerce hosting began at least as early as July, 1995, as can be seen from the original business plan for Viaweb,[3] and was well known and widely available by early in 1997. For instance, one ecommerce-software developer, iCat, announced in April 1997 that it was working with 250 partner "Web development and Internet hosting companies"; that is, companies using its software to outsource ecommerce functions for businesses wishing to sell products online.[4]

25. In 1996 and early in 1997, Peter Kent wrote a book called Poor Richard's Web Site: Geek-Free Commonsense Advice on Building a Low-Cost Web Site. This book explained to companies wishing to do business online just how to do that, based on Peter Kent's experiences since late 1993.

26. In 1997 Que Computer Books published the book "Where to Put Your Web Site." This book warned readers that they should not set up their own Web server but rather should use the services of an outsource company—a Web-hosting company. ("If you don't know what it takes to set up a Web server, don't try it! ...

[3] http://paulgraham.com/vwplan.html

[4] https://www.thefreelibrary.com/iCat+Electronic+Commerce+Suite+3.0+ships-a019351856

It's obvious by now which method I think is the most suitable in most cases: you should set up a site with your own domain name at a Web-hosting company.")

27. Another chapter, titled "Taking Orders Online," advises readers to set up "shopping cart" software, and states: "Your Web-hosting company may already have such a system available for use. They may be using one of the free CGI scripts, or perhaps have an arrangement with a company, such as WebMate, that is licensing shopping-cart software to Web-hosting companies and ISPs." It also explains that businesses could find their own ecommerce software and install it on their Web server, which the book recommended should be an outsourced Web server.

28. The book also listed a number of shopping-cart systems readers could use. One, for instance, was a system named ShopSite Manager. The publisher of this software, iCentral, provided hosting services for companies wanting to outsource the creation and management of their shopping-cart systems ("We offer hosting for ShopSite software merchants. Everything you need for your site, including web site development and technical support."[5]) The company claimed that by September 26th, 1996, it was already hosting ecommerce sites for "over 200 merchants."[6]

[5] https://web.archive.org/web/19961106085510/http://icentral.com:80/
[6] https://web.archive.org/web/19961106085726fw_/http://icentral.com:80/press/

29. It was common by 1997 for companies setting up online stores to work with two outsourcing companies; one to host their primary, informational website and one to host the ecommerce portion of the site. For instance, in November, 1996 Amnesty International opened its online store hosted by ViaWeb (at http://www.ishops.com/aipubs/).[7] However, Amnesty International hosted its primary, informational website, elsewhere, on the Amnesty.org domain name.[8]

30. It was natural for companies to split their sites between informational and shopping-cart sites, due to the complexity of setting up and managing shopping-cart sites. However, many companies wanted all their Web pages, whether on a simple Web-hosting outsource server or on the shopping-cart outsource server, to appear to be hosted on a single site.

31. For example, Aardvark Cycles had a website identified using the domain name AardvarkCycles.com[9]; however, it also set up a store hosted by iCentral on the ShopSite.com domain in 1996[10]. The company had the same logo on both sites[11]; the underlying code of these archived pages shows that both sites contained an image, below and to the right of the logo, named ad.fiber.jpg; both

[7] https://web.archive.org/web/19970103071227/http://www.ishops.com:80/aipubs/
[8] https://web.archive.org/web/19961223044657/http://www.amnesty.org:80/
[9] https://web.archive.org/web/19970109212349/http://aardvarkcycles.com:80/
[10] https://web.archive.org/web/19970110135511/http://www.shopsite.com:80/aardvark/index.html
[11] The WayBackMachine often does not save all components of a Web page; however, the page on shopsite.com contains code inserting aardvarklogo.gif into the page, the same file used on AardvarkCycle.com.

had a smaller logo in the top-left corner of the page, little.bluelogo.125.gif; both had the same navigation links on the left side of the page (on the ShopSite.com server pointing back to the AardvarkCycles.com server); both had the same footer text and links at the bottom of the page; both used the same background image (blueback.gif); and so on.

E. Common Features of Ecommerce Websites

32. The DDR Patents use a variety of Web-design terms that merit explanation.

1. HTML

33. The DDR Patents describe the use of HTML to create Web pages. HTML (HyperText Markup Language) is a human readable coding language with which a Web designer can create Web pages. When a Web browser loads a Web page, it loads the HTML "instructions" that tell the browser how to display ("render") the Web page and include such information as the background color of the page, the text that will appear in the page, the color of the text and the typeface used, where images should be placed, a background image or a background color for the Web page, and so on. It is a set of instructions to the browser that describes the "page layout."

34. By the time of the alleged invention of the DDR Patents, the use of HTML was well understood by Web designers; indeed, it was not possible to

create Web pages *without* an understanding of HTML. Furthermore, the idea of re-using HTML code from one page on other pages within the same website—or even on different websites—was not a novel concept or difficult task; rather, it was something that any Web designer could and routinely did implement.

2. Headers & Footers

35. It was common in Web development at the time of the alleged invention of the DDR Patents, and remains so today, for a Web page to have a "header" and a "footer." (In fact, it is more common for Web pages to contain these features than not to contain them.)

36. The term "header" refers to the top portion of a Web page, which typically contains the name of the website or the company that owned the website; a company logo (usually either centered in the middle of the header or on the left of the header); and other components such as a phone number and contact email address. The header also frequently contains several links to other pages within the site; this collection of links is known in the Web-design business as a "navbar" (navigation bar).

37. The term "footer" refers to the bottom portion of a Web page, which frequently contains elements such as a copyright notice, more links to Web pages within the site, perhaps links to other websites owned by the site owner or partner sites, contact information, and so on.

38. Headers and footers were typically "site-wide." That is, a Web designer would create one header layout and one footer layout, and then use the same layout on all pages within the site; regardless of which page in the site a visitor was viewing, he or she would see the same information at the top and bottom of each page, and would be provided with the same "navigation" options, thus creating a consistent look and feel.

39. Any Web designer would have known how to create a header and a footer that could be used on all the pages of the website, or even on different websites.

3. Navigation Links

40. In several claims, the DDR Patents refer to "navigation links."

41. The World Wide Web (WWW) is based on the use of "hyperlinks" (also known as "links") to assist users in loading pages; the WWW is a "web" of pages linked together. In fact, it is the hyperlinks that create the "web" by allowing a user to move from one page to another by clicking links. A link is a mechanism by which a Web designer can associate one page with another, and by which a user may view the referenced page. Links are most commonly "activated" through the use of a computer mouse; the user points at a link in a Web page and clicks the mouse button to because the browser to request and load the referenced page.

42. Links can be with associated various different objects within a Web page (that is, different objects may be "hyperlinked"). A link may be associated with an image displayed within the page, or on a piece of text—one or more words—within the page. (These are the two most commonly "linked" elements in a Web page, though links may be added to other objects, such as videos.) So, for example, the Web designer creating Page X could put a link on an image in that page referencing Page Y; a user viewing Page X may point at the image and click the mouse button to load Page Y.

4. Left-Hand Navigation

43. It was very common at the time of the alleged invention of the DDR Patents to have a "left-hand navbar"; that is, a collection of links in a box on the left side of Web pages, effectively serving as a table of contents. This collection of links was typically placed onto all the various Web pages within a website. The links in the navbar would typically be used by site visitors to load different areas of a website and commonly needed Web pages, such as a Contact Us page, an About Us page, and so on. A left-hand navbar would likely be considered a primary element to carry over if one were to design a Web page to maintain the appearance of another website.

5. Company Logos

44. It was common in Web development at the time of the alleged invention of the DDR Patents, and remains so today, for Web pages owned by companies to include the company logo image at the top of the Web page, in the page header. This logo would typically be in the middle of the header, or on the left side of the header.

45. The company logo itself was frequently "hyperlinked"; that is, using the HTML code that formats the page, a hyperlink was associated with the logo image, so that when a visitor to the website pointed at the logo with his or her mouse pointer and then clicked the mouse button, the Home page (the main page) of the website would be loaded into the browser.

6. Web Page Data Storage

46. A Web page is created through the use of computer files; typically an HTML file (which is a form of text file containing the HTML instructions), perhaps Cascading Style Sheet files (text files containing more sophisticated page-layout instructions) and JavaScript files (text files containing programming instructions for interactive Web pages), graphic-image files for the pictures within the Web page, and so on. (At the time of the alleged invention of the DDR Patents Cascading Style Sheet files and JavaScript files were available but not frequently used.)

47. The DDR Patents refer to the storage of these files. When a user requests a Web page (by entering the page address—the URL—into a Web browser or by clicking on a link referencing the page), a message is sent to the Web server that hosts the Web page. The Web server retrieves the HTML file from its storage and sends this page to the user's browser.

48. The user's browser then reads the file. If the file references other files, then the browser requests them from the server, also. For example, perhaps the finished Web page (the "rendered" page, as it is known in the industry) will contain a composite of text and several images. The individual components do not need to come from the same Web server. The HTML will contain references to those images, instructions telling the browser where the images are stored and where they should be placed on the Web page. The browser will request those images from the Web server, and on receipt will insert the images into the Web page that is displayed in the user's browser window.

49. While all these files—the original HTML file and the associated image files—are often stored on hard-drive data storage inside the Web-server computer, or on hard-drive data storage connected to the Web-server computer, this is not always the case. One or more of those images, for instance, could be stored on a completely separate computer, perhaps in a completely different area of the world. (This is typically the case with advertising in Web pages; the images

are loaded from a Web server owned by the advertising company; not the server, owned by the Web-site owner, that delivered the HTML file to the server.)

7. Web-Based Ecommerce and Shopping Cart Technology

50. By the time of the alleged invention of the DDR Patents, Web-based ecommerce and shopping-cart technology had been in use for several years. Online commerce, on networks other than the World Wide Web, dates to as early as 1979, and on the Internet to as early as 1994 (both Books.com and CDNow.com launched in that year).[12]

51. By 1997, there were thousands of commercial websites selling both digital and tangible products, and many different ecommerce software programs were available that merchants could use to sell their products (*see*, for instance, a discussion of ViaWeb and iCat earlier in this report). Over time, various common features and conventions developed and were well known to persons of ordinary skill in the art.

52. Ecommerce software must allow a buyer to indicate which products he or she wishes to buy. Some of the early ecommerce systems employed to sell products on the Web were crude, allowing a shopper to buy a only single product at a time; the buyer would find a product he or she wanted, click on a

[12] https://en.wikipedia.org/wiki/Timeline_of_e-commerce#Timeline, https://en.wikipedia.org/wiki/CDNow

representation of the product, and then enter purchasing information in the Web page that would subsequently appear. The buyer might print a form that would be mailed to the seller along with a check with payment, for instance. In some systems, a page listing all the store's products would be displayed; the buyer would choose which of the products he or she wanted, and how many of each, and would then complete the purchase process by entering payment and shipping information.

53. Such one-product-at-a-time and all-products-on-one-page mechanisms have obvious limitations, and were quickly superseded by more flexible software, including systems that allowed users to browse through catalogs, view each product's details on a separate page, and select multiple products for purchase by placing them in a virtual "shopping cart." The shopping-cart metaphor was developed to describe the process of storing products for purchase, while continuing to view other products sold by the store. In other words, a buyer would encounter a product he or she wanted to buy, and would indicate to the ecommerce software that he or she wished to buy the product; the desired-purchase information would be stored by the ecommerce system, while the shopper continued viewing the store's other products, perhaps indicating the desired purchase of one or more additional products. The products for which the shopper indicated a desire to buy are said to be in the store's "shopping cart." It was also

common to allow a customer to remove products from the cart or to change the desired quantity of an item already in the cart.

54. Thus, the typical online-shopping process was commonly as follows: (i) a shopper loads a Web page from the store, and begins "browsing" through the store, viewing pages that provide information about products for sale; (ii) on finding a product he or she wishes to buy, the shopper indicates a desire to buy, often by clicking an Add to Cart button or Add to Shopping Cart button, or equivalent; (iii) the ecommerce software saves information indicating that the shopper wishes to buy that product—the product is said to be "in the shopping cart"; (iv) the shopper continues viewing information about the other products for sale; (v) the shopper may again indicate the desire to purchase one or more products, in which case the ecommerce system adds the products to the list of products the shopper wishes to buy; (vi) the shopper may wish to view the products in his or her shopping cart, and is able to do so by clicking a View Shopping Cart button or equivalent; (vii) the Shopping Cart page contains a Continue Shopping button or equivalent; clicking this button takes the shopper out of the Shopping Cart page and back to a product page; (viii) when the shopper wants to finish his or her shopping and complete the process, the shopper clicks a Checkout button or equivalent, whereupon the shopper is able to finalize the purchase using a designated payment method.

55. Thus, by the time of the alleged invention of the DDR Patents, a person of ordinary skill in the art would have been aware of this overall sales process, including the concepts of a "shopping cart" and the ability to add a product to the shopping cart and the ability to utilize a checkout link to finalize the sales transaction.

III. Level of Ordinary Skill in the Art

56. In determining the characteristics of a hypothetical person of ordinary skill in the art of the '876 Patent, I considered several factors, including the various approaches to outsourced ecommerce services employed in the prior art, the types of problems encountered, and the rapidity with which inventions were made. I also considered the sophistication of the technology involved, and the educational background and experience of those actively working in the field.

57. The '876 Patent defines its field of invention as follows:

> *The invention relates to a system and method supporting commerce syndication. More specifically, the invention relates to a system and method for computer-based information providers to receive outsourced electronic commerce facilities in a context-sensitive, transparent manner.*

'876 Patent, 1:27-31.

58. Based on the disclosure of the DDR Patents, a person of ordinary skill in the art (POSITA), in order to understand the DDR Patents and to be able to make and use the claimed inventions without undue experimentation, would need to be

familiar with the development of Web applications, including Web user-interface design, electronic catalogs and online payment processing. Such topics were not generally covered in University curricula at the time. Therefore, a POSITA would need to have an undergraduate degree in computer science or a related field, or equivalent experience, and, in addition, at least one year of experience with Web user-interface design, electronic catalogs and online payment processing

IV. Claim Construction Standard

59. I understand that, during an IPR, claims of an unexpired patent are given their broadest reasonable interpretation in light of the specification and prosecution history as it would be understood by a person of ordinary skill in the relevant art at the time of the alleged invention. I further understand that a term explicitly defined in the specification should be given that definition, even if a person of ordinary skill in the art might have interpreted it differently.

V. Obviousness Standard

60. I understand that a claim is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter of the claim as a whole would have been obvious at the time the invention was made to one of ordinary skill in the art. I further understand that this obviousness inquiry must be made in the context of: (a) the scope and content of

the prior art; (b) the differences between the claimed invention and the prior art; and (c) the level of ordinary skill in the pertinent art.

61. I understand that there must be some articulated reasoning with some rationale to support a conclusion of obviousness. I further understand that exemplary rationales that may support a conclusion of obviousness include: (1) simply arranging old elements in a way in which each element performs the same function it was known to perform and the arrangement yields expected results, (2) merely substituting one element for another known element in the field, and the substitution yields no more than a predictable result, (3) combining elements in a way that was "obvious to try" because of a design need or market pressure, where there was a finite number of identified, predictable solutions, (4) whether design incentives or other market forces in a field prompted variations in a work that were predictable to a person of ordinary skill in the art, and (5) that some teaching, suggestion, or motivation in the prior art would have led one of ordinary skill in the art to modify the prior art reference or to combine prior art references to arrive at the claimed invention, among other rationales.

62. I understand that certain objective indicia can be important evidence regarding whether a claim is obvious or nonobvious. Such indicia include: commercial success of products covered by the claim; a long-felt need for the claimed invention; failed attempts by others to make the claimed invention;

copying of the claimed invention by others in the field; unexpected results achieved by the claimed invention as compared to the closest prior art; praise of the claimed invention by the infringer or others in the field; the taking of licenses under the patent by others; expressions of surprise by experts and those skilled in the art at the time of the claimed invention; and the patentee proceeding contrary to the accepted wisdom of the prior art.

VI. Materials Considered

63. I considered the following materials in arriving at the opinions expressed in this declaration:

Description
Ex. 1001 - U.S. Patent No. 9,639,876 (’876 Patent)
Prosecution History of the ’876 Patent
Ex. 1001 – U.S. Patent No. 9,043,228 (’228 Patent)
Prosecution History of the ’228 Patent
Ex. 1001 – U.S. Patent No. 8,515,825 (’825 Patent)
Prosecution History of the ’825 Patent
U.S. Patent No. 7,818,399 (’399 Patent)
Prosecution History of the ’399 Patent
U.S. Patent No. 6,993,572 (’572 Patent)
Prosecution History of the ’572 Patent
U.S. Patent No. 6,629,135 (’135 Patent)
Prosecution History of the ’135 Patent
U.S. Patent Application No. 60/100,697
Ex. 1003 – Declaration of James Pichler
Ex. 1004 – Digital River Brochure
Ex. 1005 – Digital River April 1997 Website
Ex. 1006 – Digital River December 1997 Website
Ex. 1007 – Digital River Customer, Corel July 1998 Webpage
Ex. 1008 – Digital River Customer, 21 Software Drive April 1998 Webpage

Description
Ex. 1009 – Digital River Customer, 21 Software Drive April 1998 Webpage
Ex. 1010 – U.S. Patent No. 6,330,575 (Moore)
Ex. 1011 – U.S. Patent No. 6,016,504 (Arnold)
Ex. 1012 – Declaration of Nathaniel Borenstein
Ex. 1013 – Selling Online With… First Virtual Holdings, Inc., (*Loshin*)
Ex. 1014 – First Virtual Seller Programs
Ex. 1015 – First Virtual InfoHaus Guide
Ex. 1016 – First Virtual InfoHaus HelpMeister
Ex. 1017 – *DDR Holdings, LLC, v. Hotels.com, L.P., et al.*, 773 F.3d 1245 (2014)
Ex. 1018 – BPAI Decision, *Ex parte* DDR Holdings, LLC, Appeal No. 2009-0013987, Reexamination Control No. 90/008,374, U.S. Patent No. 6,993,572, April 16, 2010
Ex. 1019 – BPAI Decision, Ex parte DDR Holdings, LLC, Appeal No. 2009-0013988, Reexamination Control No. 90/008,375, U.S. Patent No. 6,629,135, April 16, 2010
Ex. 1020 – Affidavit of Christopher Butler
Ex. 1021 – Definition of "commission" - The American Heritage Collegiate Dictionary 280 (Robert B. Costello et al. eds., 3rd ed. 1997)
Ex. 1022 – Definition of "commission" - Webster's New World Basic Dictionary of American English 167-168 (Michael Agnes et al. eds., 1998)
Other materials, such as Web pages and definitions, explicitly cited herein

VII. Analysis of the DDR Patents

64. The '876 Patent claims priority to U.S. Patent No. 9,043,228, filed August 19, 2013, which in turn claims priority to U.S. Patent No. 8,515,825, filed October 18, 2010, which in turn claims priority to the '399 Patent, which itself claims priority to U.S. Provisional Application No. 60/100,697, filed September

17, 1998. I have not addressed whether the claims are entitled to this priority date because all prior art references in the Grounds pre-date the earliest possible priority date. I reserve the right to present such an argument if it becomes relevant.

65. The '876 Patent describes a system in which certain well-known e-commerce functionality is implemented by an outsource provider. '876 Patent, Abstract; *see also* Exs. 1018, 13 and 1019, 9-11 (noting that prior art systems provide functionality that achieves the same results as the alleged invention). In the '876 Patent, a host website includes links to "commerce objects" associated with a third party merchant. '876 Patent, 4:58-5:6. Activation of such a link causes a Web page having the appearance of the host website to be served to a user's Web browser. *Id*. The '876 Patent delegates certain processing functionality to an outsource provider ('876 Patent, 23:49-24:57), which was consistent with common industry practice at the time of the alleged invention.

VIII. Claim Construction

66. "commission" – The term "commission" appears in dependent claims 4 and 14 of the '876 Patent. At the time the grandparent '399 Patent was filed, the term "commission" was commonly understood as "[a] fee or percentage allowed to a sales representative or an agent for services rendered" (The American Heritage Collegiate Dictionary 280 (Robert B. Costello et al. eds., 3rd ed. 1997), or "a part of the money taken in on sales that is paid to the person making the sale."

Webster's New World Basic Dictionary of American English 167-168 (Michael Agnes et al. eds., 1998). These definitions are consistent with the broadest reasonable interpretation of "commission" as that term would be understood in light of the specification by a person of ordinary skill in the art at the time of the alleged invention. For example, the '399 Patent explains that the outsource provider manages payment of commissions to hosts based on relationships defined between the hosts and merchants. '399 Patent, at 23:11-19. The '399 Patent refers to "commissions" as money earned by a host for sales of a third-party merchant's products through the host's website. *See* '399 Patent, 12:28-30, 25:39-40. The '399 Patent does not limit the manner in which the commissions are calculated, earned, or paid. Therefore, the broadest reasonable interpretation in light of the specification of the term "commission" is "money earned by a host for sales of a third-party merchant's products through the host's website," and should not be limited to being earned based on any particular business arrangement.

67. "merchants" – The term "merchants" is defined by the '399 Patent as "producers, distributors, or resellers of the goods to be sold through the outsource provider." '399 Patent, at 22:17-19. Consistent with this definition, I understand that the Board of Patent Appeals and Interferences (BPAI), in reexamining the '572 Patent and the '135 Patent, which both share a common specification with the '399 Patent, found that the common specification "define[d] the term 'merchants'

as ‘producers, distributors, or resellers of the goods to be sold through the outsource provider.’” BPAI Decision, *Ex parte* DDR Holdings, LLC, Appeal No. 20090013987, Reexamination Control No. 90/008,374, ’572 Patent, April 16, 2010; *see also* BPAI Decision, *Ex parte* DDR Holdings, LLC, Appeal No. 2009-0013988, Reexamination Control No. 90/008,375, U.S. Patent No. 6,629,135, April 16, 2010. Because the term “merchants” is expressly defined in the Specification of the ’399 Patent, and the same definition appears in the ’876 Patent at 23:7-8, I have based my analysis on this definition.

68. “commerce object” – The term “commerce object” is defined by the ’399 Patent as “a product, a product category, a catalog or an indication that a product, product category or catalog should be chosen dynamically.” ’399 Patent, at 15:17-21. Consistent with this definition, I understand that the Board of Patent Appeals and Interferences (BPAI), in reexamining the ’572 Patent and the ’135 Patent, which both share a common specification with the ’399 Patent, found that the common specification “define[d] a commerce object as ‘a catalog, category, product or dynamic selection.’” BPAI Decision, *Ex parte DDR Holdings, LLC*, Appeal No. 2009-0013987, Reexamination Control No. 90/008,374, ’572 Patent, April 16, 2010. Because the term “commerce object” is explicitly provided in the Specification of the DDR Patents, including at 15:63-66 of the ’876 Patent, I have based my analysis on this definition.

IX. Prior Art Overview

1. Loshin (Selling With… First Virtual Holdings, Inc.)

69. I have reviewed the paperback book entitled "Selling With… First Virtual" by Pete Loshin, published by Charles River Media in 1996.

70. *Loshin* describes First Virtual InfoHaus ("InfoHaus"), an outsource provider which allowed sellers "to sell their information products without having to own their own Internet servers." Ex. 1013, 103, 126-127. InfoHaus was an "Internet hosting service" on which users could store their commercial opportunities (information products and hard goods) and "offer them for sale without the expense and effort associated with managing their own servers." Ex. 1013, 127, 207. Sellers could "upload [their] data to the InfoHaus, and buyers can browse [seller's] products (as well as those of other InfoHaus merchants) through the First Virtual Web site (or by other methods)." Ex. 1013, 127, 207.

71. Products uploaded to InfoHaus include a "free" portion which was a file describing the product being sold. Ex. 1013, 232-233. That file could contain text, images, audio, video, MIME, or "other" types of data. Ex. 1013, 234-235; Tables 8-11, 8-12.

```
---- MULTIPLE CHOICE QUESTION ----
What kind of data is in the file fvhint.txt?
                1  - text
                2  - image
                3  - audio
                4  - video
                5  - MIME
                6  - other
Please enter your choice as a number from 1 to 6.
Enter a blank line to use the default answer, 1
```

FIGURE 8-11 *Describing product files to the InfoHaus server. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

```
---- MULTIPLE CHOICE QUESTION ----
What kind of data is in the file fvhint.txt?
                1  - application/postscript
                2  - application/safe-tcl
                3  - other
                4  - unknown
Please enter your choice as a number from 1 to 4.
Enter a blank line to use the default answer, 1
```

FIGURE 8-12 *Describing "other" product file types to the InfoHaus server. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

72. *Loshin* also describes a typical ecommerce process flow. Ex. 1013, 194-95. First, "a merchant sets up an Internet storefront for consumers to browse" commercial opportunities. The web "page includes a description of the product as well as the product's price" and "a link from the offering screen to a transaction page[.]" Ex. 1013, 195.

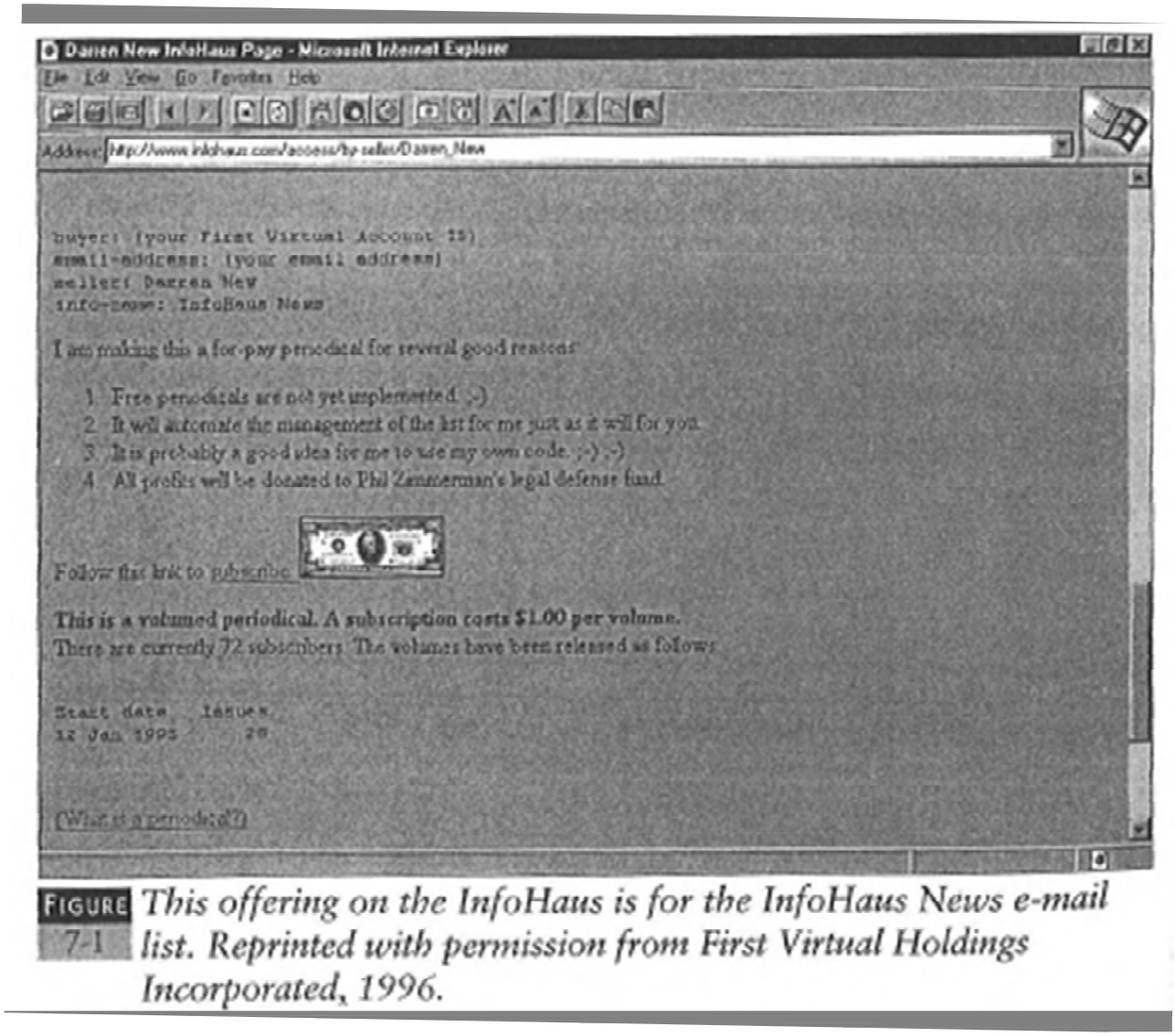


FIGURE 7-1 *This offering on the InfoHaus is for the InfoHaus News e-mail list. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

Ex. 1013, 195, Figure 7-1.

73. In the example disclosed above from *Loshin*, the product description is an image of a twenty-dollar bill. Ex. 1013, 194. Activating that "subscribe" link adjacent to the twenty-dollar bill redirects the user to a payment page to complete the purchase. Ex. 1013, 196.

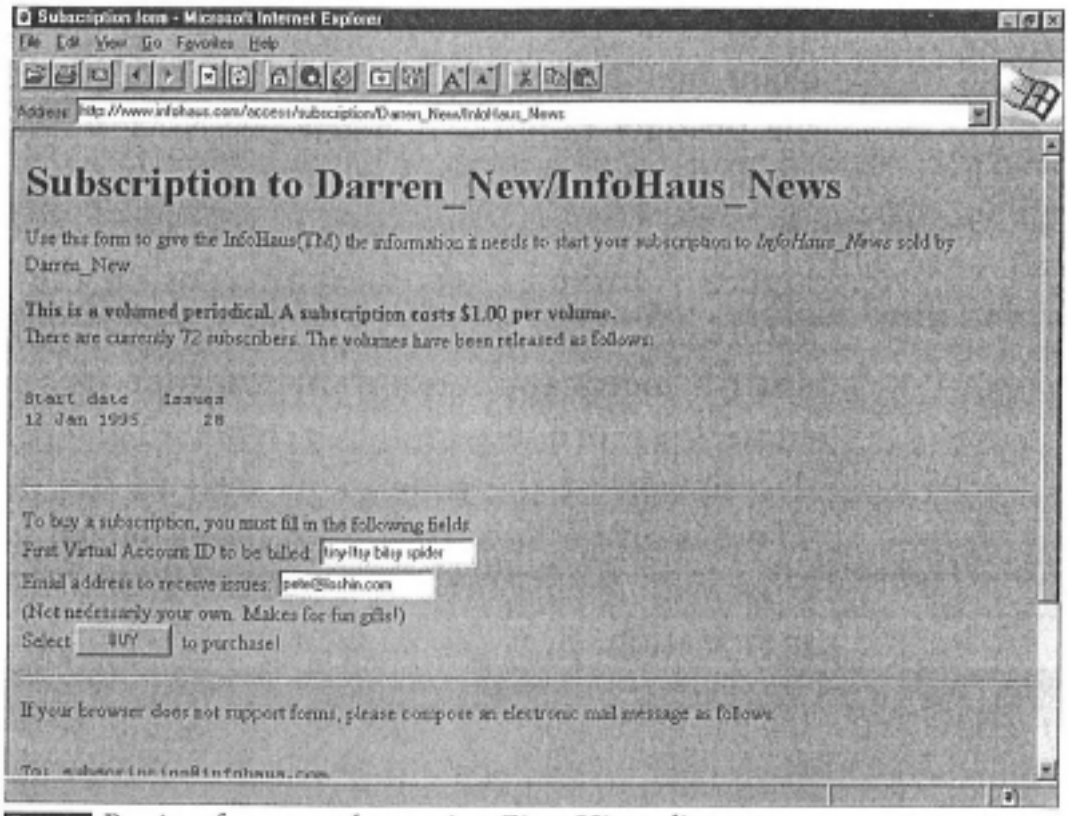


FIGURE 7-2 *Paying for a product using First Virtual's payment system. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

Ex. 1013, 196, Figure 7-2.

2. The InfoHaus Documents

74. I have reviewed Exhibits 1014-1016 of the Petition (collectively referred to as the "InfoHaus Documents"). As described above, InfoHaus was in use as part of First Virtual at least as early as June of 1997. I understand that rejections in *inter partes* proceedings are based solely on printed publications, and my description of InfoHaus and its application to the Challenged Claims is limited to the disclosures contained in the InfoHaus Documents and *Loshin*, and what a person of ordinary skill in the art would understand from such disclosures at the

time of the alleged invention. My opinions are not based on any information for speculation as to how the InfoHaus system actually performed.

3. InfoHaus Guide

75. InfoHaus Guide, last updated on May 1, 1996, provided merchants with guidance on how to "open your store, upload your information products, and start doing business" on InfoHaus. Ex. 1015, 2. InfoHaus Guide was available on the First Virtual Website (https://web.archive.org/web/19970615125011/http://www.fv.com:80/infohaus/guide/index.html) by at least June 25, 1997; Ex. 1012, ¶¶ 5-7.

4. InfoHaus HelpMeister

76. InfoHaus HelpMeister is a collection of Web pages which provided sellers with guidance on adding graphics, HTML designs, adding forms for transactions, creating subdirectories of products, and other various functions in relation to a seller's InfoHaus storefront. Ex. 1016, 2. The individual Web pages that comprise InfoHaus HelpMeister were available on the First Virtual Website (https://web.archive.org/web/19970615125017/http://www.fv.com:80/infohaus/helpmeister/index.html) as of June 15, 1997; Ex. 1012, ¶¶ 5, 6, 8.

5. InfoHaus Seller Program

77. InfoHaus Seller Program is a document which provided sellers with guidance to the various payment options offered by First Virtual. Ex. 1014, 2.

InfoHaus Seller Program was available on the First Virtual Website (https://web.archive.org/web/19970615124058/http://www.fv.com:80/selling/) as of June 15, 1997. Ex. 1012, ¶¶ 5, 6, 9.

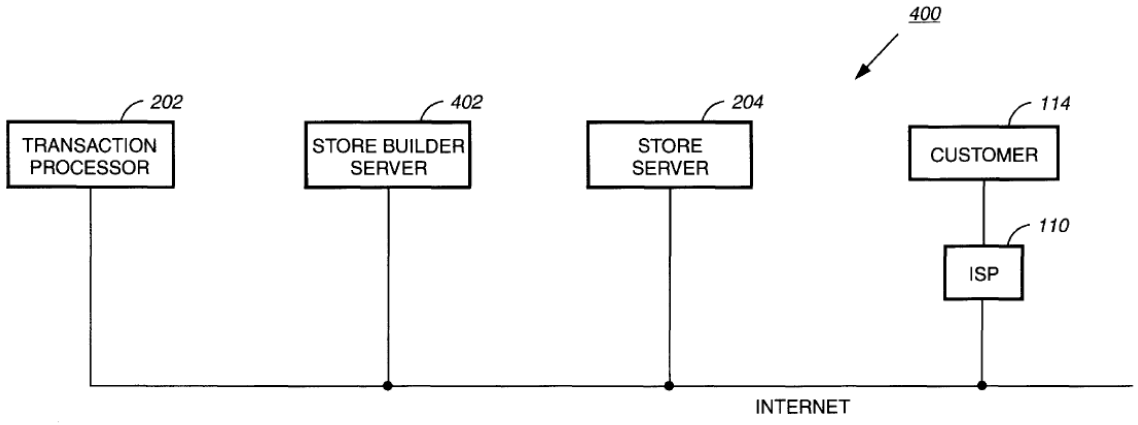
6. Summary of the InfoHaus Documents

78. A person of ordinary skill in the art, reading the disclosures of the InfoHaus Documents, alone or taking two or more together as a whole, would understand that InfoHaus fulfills the functionality purported to be inventive in the DDR Patents (*e.g.*, outsourcing specific ecommerce tasks, using customized Web pages to create the appearance that those tasks are performed from a single website, and facilitating commercial interaction and distribution of funds with third parties utilizing InfoHaus). A POSITA would understand that each of the InfoHaus Documents discusses a single system, namely InfoHaus. A POSITA would have further understood that the teachings of these publications represent a combined teaching (and would combine them accordingly) as of each of their respective publication dates. A POSITA would have been motivated to combine their teachings because they include an explicit motivation for doing so. In particular, each of these Web pages describes what purports to be a common system—InfoHaus and each individually touts the benefits of their respectively described features.

7. Moore (U.S. Patent No. 6,330,575)

79. I have reviewed U.S. Patent No. 6,330,575 to Moore (hereinafter "*Moore*"), entitled "Web Commerce Tool Kit for Distributed Payment Processing."

80. *Moore* discloses a system for designing Web pages to be hosted on an outsourced Web server which helps a merchant "become a part of a distributed electronic commerce system or Internet commerce system for doing business on the World Wide Web." Ex. 1010 at Abstract. Figure 4 of *Moore*, reproduced below, shows an example of a distributed electronic commerce system (prior to *Moore*) that includes a transaction processor/server operated by a transaction service provider (*e.g.*, an outsource provider), a store builder server, and a store server operated by a merchant.



PRIOR ART

FIG. 4

81. In the distributed electronic commerce system of *Moore*, the merchant maintains a website providing a Web storefront for selling products to customers,

and the transaction service provider handles processing of payment transactions associated with purchases initiated via the merchant's Web storefront. Ex. 1010 at 4:43-56. In *Moore*, uniform resource locators (URLs), referred to as "price URLs," are created and embedded in the merchant's Web storefront. Ex. 1010 at 3:31-39, 6:12-22. The price URLs are configured to link to a second server (*e.g.*, the transaction server or the store builder server) and include information that enables the second server to generate a "buy page" (*e.g.*, a second Web page) that enables a customer to purchase a product from the merchant's Web storefront. *See* Ex. 1010 at 6:12-22, 8:10-26. *Moore* teaches that the "the price URLs, which allow the [second server] to build the Buy Pages, have to be included on the site, or elsewhere (*e.g.*, websites owned by a third-party), in order for the Web customer to place an order. The merchant can even totally remove the Web storefront, and simply post the price URLs on news groups or on another web site." Ex. 1010 at 8:28-61.

82. *Moore* discloses that the transaction server provides a development tool that enables a merchant to design Web pages for the merchant's Web storefront and the buy pages that are served in response to activation of the price URLs, including configuring the font background color, font size, font color, font styling (*e.g.*, bold, italics, etc.), Web page background color or image, locations for

displaying content, and the contents of the header and footer. Ex. 1010 at 5:27-35, 7:48-60, 12:23-24, Figs. 6-15.

83. *Moore* teaches many of the base technologies described in the DDR Patents (*e.g.*, the use of an outsource provider to process transactions using dynamically generated Web pages that maintain the look and feel of the website owner associated with an activated link, and the ability to initiate purchases of the products sold by the website owner from third-party Web pages).

X. Ground 1: Anticipation by *Loshin*

A. Claim Element 1.0 is taught by *Loshin*

84. *Loshin* teaches "*[a] method of an outsource provider serving web pages offering commercial opportunities.*" *Loshin* teaches an outsource provider, First Virtual, serving Web pages offering commercial opportunities. Ex. 1013, 103, 126-127, 207. *Loshin* allows sellers to "use the First Virtual InfoHaus service to sell their information products without having to own their own Internet servers." Ex. 1013, 103. Sellers "upload [their] data to the InfoHaus, and buyers can browse [their] products (as well as those of other InfoHaus merchants) through the First Virtual Web site (or by other methods)." Ex. 1013, 127.

B. Claim Element 1.1 is taught by *Loshin*

85. *Loshin* teaches "*with a computer system of an outsource provider*." Ex. 1013, 103, 126-127, 207. *Loshin* teaches an outsource provider, First Virtual, serving Web pages via InfoHaus, a web server. Ex. 1013, 127, 216-217, 238-239.

C. Claim Element 1.2 is taught by *Loshin*

86. Loshin teaches "upon receiving over the Internet of an electronic request generated by an Internet-accessible computing device of a visitor in response to selection of a uniform resource locator (URL) within a source web page that has been served to the visitor computing device when visiting a website of a host that is a third party to the outsource provider." Ex. 1013, 251. Loshin teaches an outsource provider, First Virtual, serving Web pages via InfoHaus, a web server. Ex. 1013, 251.

87. *Loshin* discloses a sample purchase conducted via InfoHaus whereby a buyer activates a link on a host web page, Darren New InfoHaus Page. Ex. 1013, 194-196, Fig. 7-1. "There is also a link from the offer screen to a transaction page with forms for the consumer to fill in with required information." Ex. 1013, 195 ("In this case, the consumer needs to follow the link associated with the image of the $20 bill shown on the InfoHaus Web page – there is also a text-only link for text-only browsers.").

88. *Loshin* teaches the use of URLs as a method of reaching a seller's products via the World Wide Web. Ex. 1013, 225. A POSITA would have understood that when a URL is activated, an HTTP GET request is generated and sent to the corresponding web server. RFC 2068, Jan. 1997, § 9.3 GET. *Loshin* teaches that the host, Darren New, is a third party to the outsource provider, First Virtual. Ex. 1013, 103, 126-127.

D. Claim Element 1.3 is taught by *Loshin*

89. Loshin teaches "wherein the URL correlates the source web page with a commerce object associated with at least one buying opportunity of a merchant that is a third party to the outsource provider."

90. *Loshin* discloses a sample purchase conducted via InfoHaus whereby a buyer activates a link on a host web page, Darren New InfoHaus Page. Ex. 1013, 194-196, Fig. 7-1. Loshin discloses "a link from the offer screen to a transaction page with forms for the consumer to fill in with required information." Ex. 1013, 195 ("Once you decide to purchase a product, follow instructions. In this case, the consumer needs to follow the link associated with the image of the $20 bill shown on the InfoHaus Web page – there is also a text-only link for text-only browsers.").

91. *Loshin* discloses the URL, http://www.infohaus.com/access/subscription/Darren_New/InfoHaus_News, correlates the source web page, http://www.infohaus.com/access/by-

seller/Darren_New, with a commerce object, Subscription to Darren_New/InfoHaus_News. Ex. 1013, 195-196, Figs. 7-1, 7-2. Loshin teaches that the host and merchant, Darren New, is a third party to the outsource provider, First Virtual. Ex. 1013, 103, 126-127.

E. Claim Element 1.4 is taught by *Loshin*

92. Loshin teaches "automatically serving to the visitor computing device first instructions directing the visitor computing device to display commerce object information associated with the commerce object associated with the URL that has been activated, which commerce object includes at least one product available for sale through the computer system of the outsource provider after activating the URL."

93. *Loshin* discloses a sample purchase conducted via InfoHaus whereby a buyer activates a link on a host web page, Darren New InfoHaus Page. *Loshin*, 194-196, Fig. 7-1. "There is also a link from the offer screen to a transaction page with forms for the consumer to fill in with required information." Ex. 1013, 195 ("Once you decide to purchase a product, follow instructions. In this case, the consumer needs to follow the link associated with the image of the $20 bill shown on the InfoHaus Web page – there is also a text-only link for text-only browsers.").

94. *Loshin* discloses that, once the link is activated, a web page, http://www.infohaus.com/access/subscription/Darren_New/InfoHaus_News, with

commerce object information is automatically loaded. Ex. 1013, 195-196, Figs. 7-1, 7-2. *Loshin* teaches the web page that is loaded contains instructions directing the buyer's computer to display information relating to the commerce object including at least the price, start date, and number of issues. Ex. 1013, 195-196, 227-232, Fig. 7-2. That is the manner in which a browser receives instructions to display a web page.

F. Claim Element 1.5 is taught by *Loshin*

95. Loshin teaches "wherein the commerce object information is displayed to the visitor computing device on a composite web page visually corresponding to the source web page." Loshin discloses that once the link is activated, a web page, http://www.infohaus.com/access/subscription/Darren_New/InfoHaus_News, with commerce object information is displayed to the buyer's computing device on a composite web page. Ex. 1013, 194-196, Figs. 7-1, 7-2.

96. Loshin discloses that the composite web page visually corresponds to the source web page. Ex. 1013, 194-196, Figs. 7-1, 7-2. Each of the Darren_New pages display the host's name on them. Ex. 1013, 194-196, Figs. 7-1, 7-2. Fig. 7-1 identifies the "seller" as Darren New. Fig. 7-2 informs the consumer that the "seller" is Darren_New. Ex. 1013, 194-196, Figs. 7-1, 7-2.

97. A POSITA would have understood that *Loshin* teaches personalizing the web-pages for individual sellers to provide visual correspondence. Figs. 7-1 and 7-2 provide a specific seller name in text. Ex. 1013, 196-197. To the extent that this textual information is deemed to not satisfy the "visually corresponding" aspect of this limitation, *Loshin* goes on to describe HTML to web pages, which would allow addition of images to a page. *Loshin* at 238-239. *Loshin* also shows pages on which the host / web page owner provides visual trademarks from the seller, for example First Virtual provides its own trademark in Figs. 7-5, 9-2 and 9-3. Ex. 1013, 198, 252-253. Such visual trademarks provide visual correspondence.

98. *Loshin* also describes setting up a storefront with default pages, which would visually correspond to one other. *Loshin* teaches various methods of setting up a seller's InfoHaus storefront without altering the appearance of the web page, *i.e.*, using the default storefront. Ex. 1013, 218-227, Fig. 8-9. A POSITA would also have understood that adding products to a seller's InfoHaus storefront without editing default HTML would result in visual correspondence from the composite web page and the source web page. Ex. 1013, 228-239.

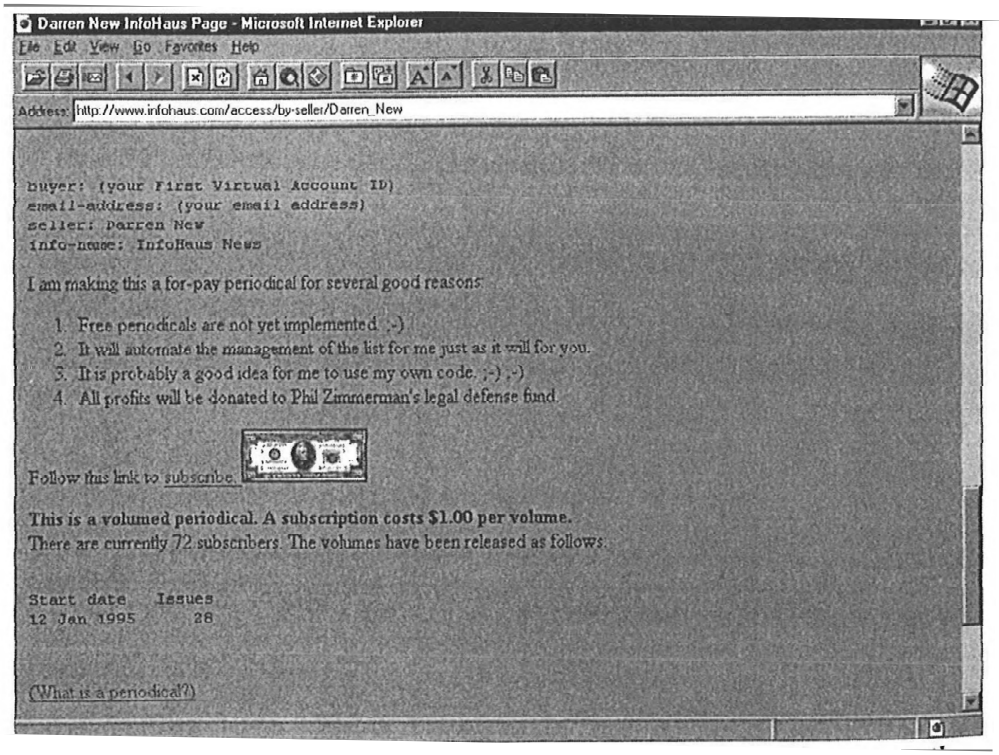
G. Claim Element 1.6 is taught by *Loshin*

99. Loshin teaches "wherein the visual correspondence relates to overall appearance of the composite web page as compared to the source web page, but

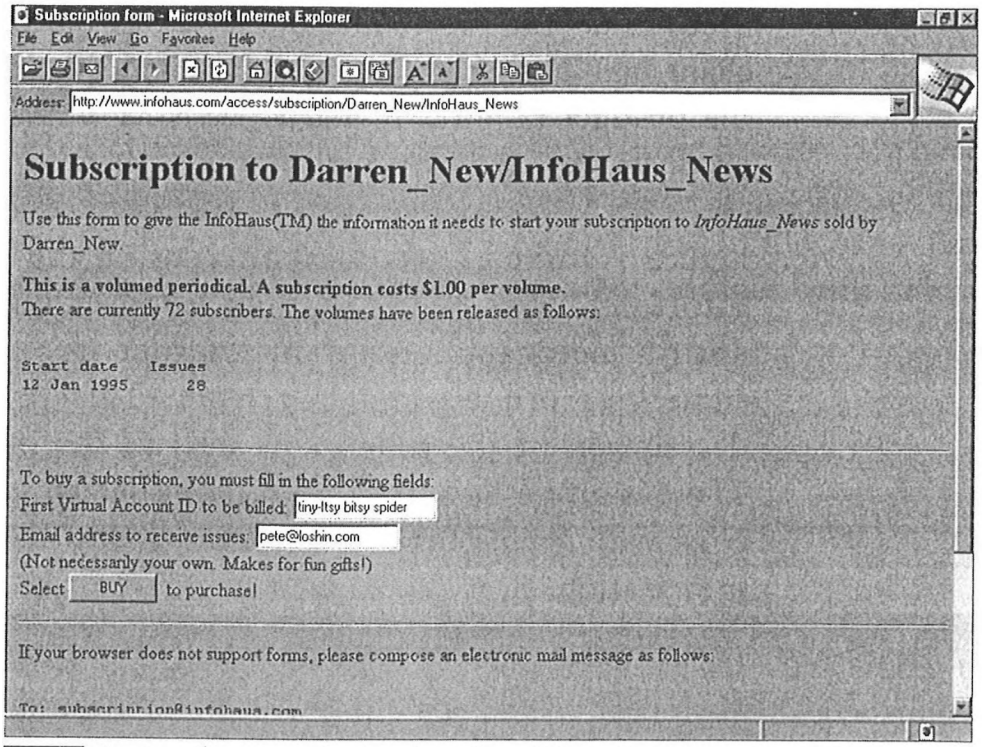
excluding the commerce object information and the URL." Loshin discloses that once the link is activated, a web page, http://www.infohaus.com/access/subscription/Darren_New/InfoHaus_News, with commerce object information is displayed to the buyer's computing device on a composite web page. Ex. 1013, 194-196, Figs. 7-1, 7-2.

100. Loshin discloses that the composite web page relates to the overall appearance as compared to the source web page excluding the commerce object information and URL. Ex. 1013, 194-196, Figs. 7-1, 7-2. The two web pages include a similar appearance and provide the same seller name, which directly links them together.

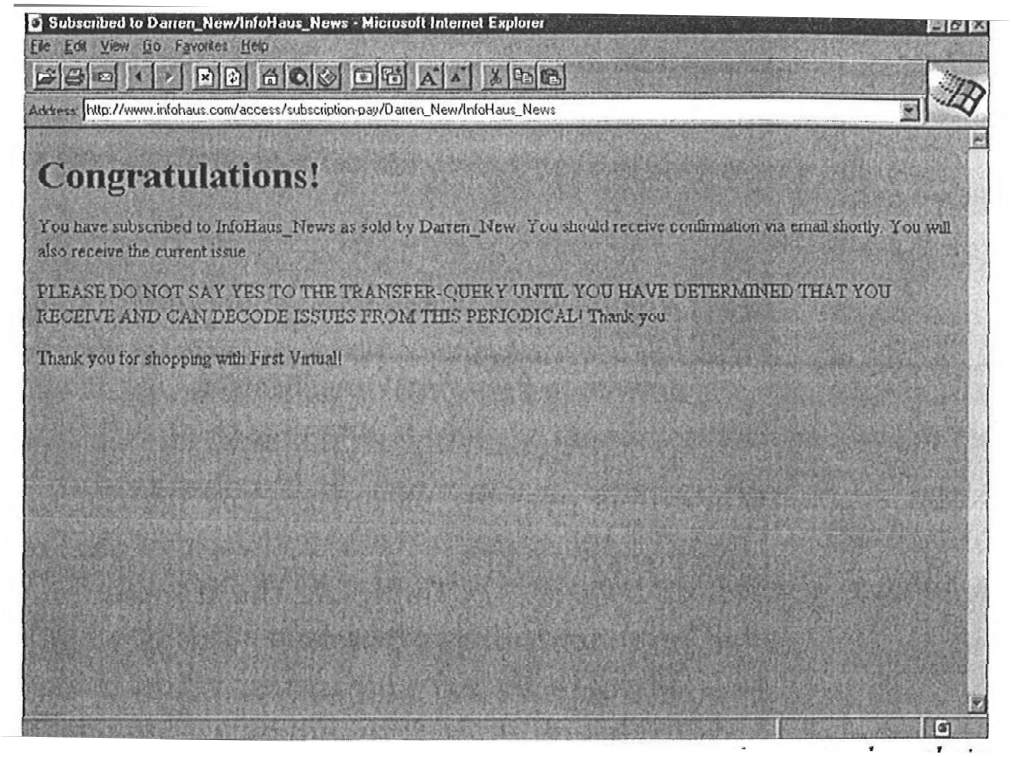
101. The pages shown in *Loshin* for Darren New have a similar appearance:



Ex. 1013, 194; Fig 7-1.



Ex. 1013, 196; Fig 7-3.



Ex. 1013, 196; Fig 7-3.

102. The textual composition of the web pages and overall look and feel of these pages are quite similar. Further, *Loshin* teaches personalizing the web-pages for individual sellers to provide visual correspondence. Figs. 7-1 and 7-2 provide a specific seller name in text. Ex. 1013, 196-197. To the extent that this textual information is deemed to not satisfy the "visually corresponding" aspect of this limitation, *Loshin* goes on to describe HTML to web pages, which would allow addition of images to a page. Ex. 1013, 238-239. *Loshin* also shows pages on which the host / web page owner provides visual trademarks from the seller, for example First Virtual provides its own trademark in Figs. 7-5, 9-2 and 9-3. Ex. 1013, 198, 252-253.

103. *Loshin* also describes setting up a storefront with default pages, which would visually correspond to each other. *Loshin* teaches various methods of setting up a seller's InfoHaus storefront without editing the appearance of the web page, *i.e.*, using the default storefront. Ex. 1013, 218-227, Fig. 8-9. A POSITA would also have understood that adding products to a seller's InfoHaus storefront without editing default HTML would result in visual correspondence from the composite web page and the source web page. Ex. 1013, 228-239. Such visual trademarks provide visual correspondence.

H. Claim Element 1.7 is taught by *Loshin*

104. *Loshin* teaches "wherein second instructions directing the visitor computing device to download data defining the overall appearance of the composite web page are accessible to the visitor computing device through the Internet." *Loshin* teaches serving webpages having information regarding one or more products from third party merchants that include retrieved data that visually corresponds to the source page. Ex. 1013, 249-251.

105. The web pages disclosed by *Loshin* may contain HTML, which does describe the visual appearance of the pages and provides for the display of trademarks and images related to the company controlling the web page. Ex. 1013, 198, 238-239, 252-253.

I. Claim 2 is anticipated by *Loshin*

106. Claim 2 depends from claim 1, which is anticipated by *Loshin*.

107. *Loshin* teaches "wherein the composite web page further contains a purchase URL associated with the commerce object information, which purchase URL, when selected, places data representing the commerce object into a virtual shopping cart managed by the computer system of the outsource provider."

108. *Loshin* shows a web page having a "BUY" option on the web page for purchasing a subscription. Ex. 1013, 196-197. The reference describes providing the customer with another pages once the buy screen is filled out correctly and the user clicks "BUY":

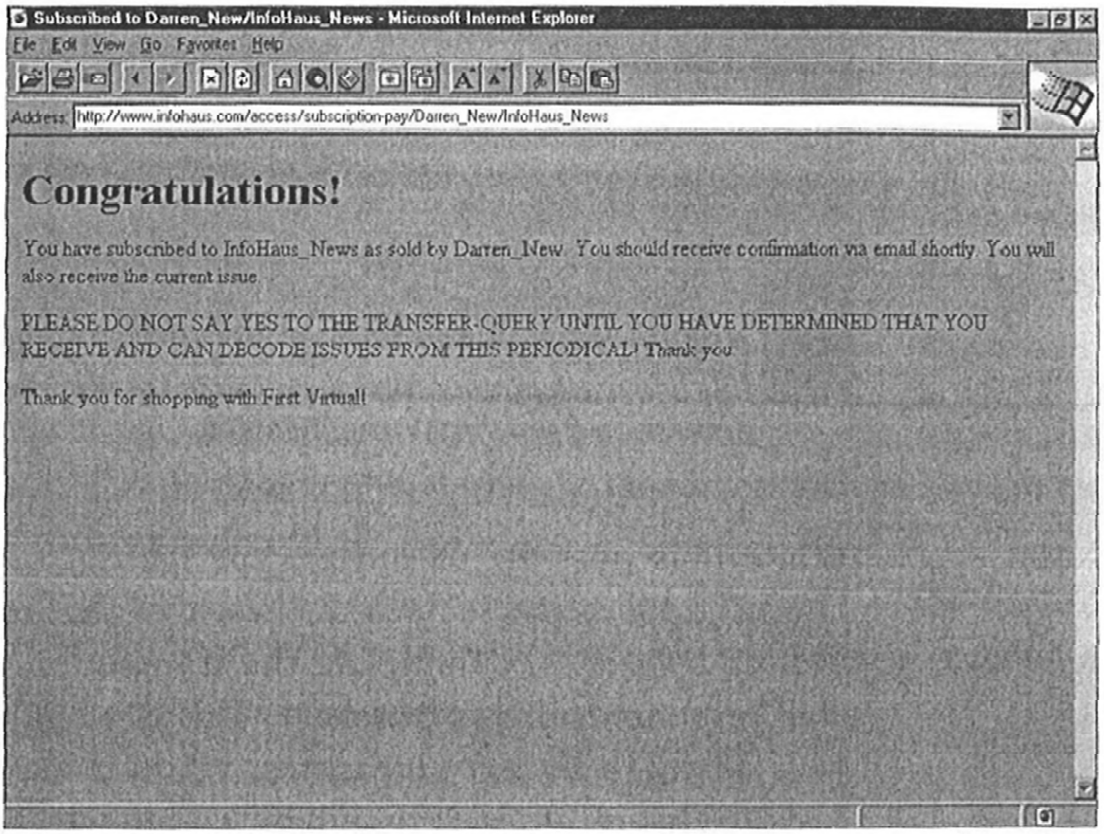


FIGURE 7-4 *Buyers of subscription products get this type of screen when their VirtualPIN is accepted. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

Ex. 1013, 197, Fig. 7-4.

109. Alternatively, *Loshin* discloses the use of a virtual shopping cart. Ex. 1013, 247 ("There are other tools you may want to add, even though they are not required: […] 'shopping cart' software to allow your customers to mark items they want to buy before making payment."). A POSITA would have understood *Loshin* as disclosing that the shopping cart software disclosed by *Loshin* could be used in the place of a page like Fig. 7-4 and combined with InfoHaus to process online transactions. Ex. 1013, 249 ("Another alternative is to continue to use the

InfoHaus to handle your transactions, but to use some other Web site to publish your products.").

J. Claim 3 is anticipated by *Loshin*

110. Claim 3 depends from claim 2, which is anticipated by *Loshin*.

111. *Loshin* teaches "automatically with the computer system of the outsource provider, accepting inputted payment information from the visitor computer, recording the payment information, and using the payment information to facilitate payment to the merchant for the commerce object when the computer system of the outsource provider detects selection of a checkout URL associated with the virtual shopping cart."

112. *Loshin* discloses that once the link to a commerce object is activated, a web page, http://www.infohaus.com/access/subscription/Darren_New/InfoHaus_News, with commerce object information is displayed to the buyer's computing device. Ex. 1013, 194-196, Figs. 7-1, 7-2. Loshin discloses that the outsource provider's computer system detects selection of a checkout URL, records the payment information entered by the buyer, and uses the buyer's payment information to facilitate payment to the seller. Ex. 1013, 194-196, Figs. 7-1, 7-2. "[S]imply enter a First Virtual Account ID (VirtualPIN), and an e-mail address for delivery of the subscription. When you are done, you click on the 'BUY' button, and the merchant can submit the transaction to First Virtual for

completion." Ex. 1013, 195, 253 ("FV API (First Virtual Application Programming Interface' scripts, which you can use to customize your own programs to perform First Virtual functions automatically.").

113. A POSITA would have understood that *Loshin* discloses the recording of payment information due to its discussion of the use of forms to input the buyer's VirtualPIN. Ex. 1013, 253. A POSITA would have understood that the use of the HTTP POST method causes form data to be stored on the web server. RFC 2068, Jan. 1997, § 9.5 POST.

K. Claim 4 is anticipated by *Loshin*

114. Claim 4 depends from claim 3, which is anticipated by *Loshin*.

115. *Loshin* teaches "The method of claim 3 wherein the host and the outsource provider are parties to a contract providing for payment to the host of a commission based on the level of sales made through activation of URLs displayed on the source web page, and further comprising, automatically with the computer system of the outsource provider, recording data to facilitate payment of the commission to the host following selection of the checkout URL." *Loshin* teaches that merchants can sign up for "the InfoHaus storefront hosting service to its merchants who prefer to have someone else manage the hardware, software, and services necessary to maintain an internet presence." Ex. 1013, 214.

116. *Loshin* goes on to explain how the service works and the costs associated with the service. Ex. 1013, 214-217. A POSITA would understand this disclosure to describe a commercial relationship, which would be governed by some type of contract. *See* Ex. 1013, 214-218. *Loshin* further describes that that "[t]he only extra charges for selling on the InfoHaus are a monthly charge of $1,50 per megabyte of data stored on the InfoHaus server, and an 8% "commission" on approved purchases." Ex. 1013, 217. According to *Loshin*, any sales level is charged the same 8% commission. Ex. 1013, 217.

L. Claim 5 is anticipated by *Loshin*

117. Claim 5 depends from claim 1, which is anticipated by *Loshin*.

118. *Loshin* teaches "The method of claim 1 wherein the computer system further serves a website of the outsource provider." *Loshin* discloses the InfoHaus service, which is provided by the company First Virtual. Ex. 1013, 214 ("First Virtual offers the InfoHaus storefront hosting service to its merchants.") Ex. 1013, 217. *Loshin* goes on to show some of the First Virtual webpages. Ex. 1013, 252-253.

119. Some of the First Virtual webpages are involved in the sales process:

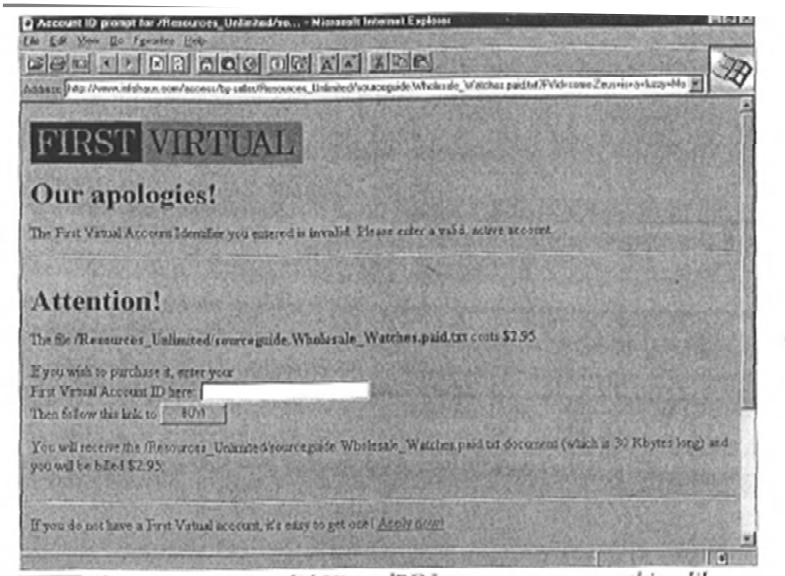


FIGURE 7-5 *If you enter an invalid VirtualPIN you may see something like this when attempting to make a purchase. Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

Ex. 1013, 198, 217. A POSITA can tell from the server name www.infohaus.com in the address bar of the browser window in Fig. 7-5 that the same server also served the other web pages pictured earlier.

M. Claim 7 is anticipated by *Loshin*

N. Claim Element 7.0 is taught by *Loshin*

120. Loshin teaches "wherein the commerce object correlated with the source web page is an electronic catalog listing a multitude of products offered for sale by the merchant through a website of an outsource provider." Loshin teaches providing an electronic catalog listing a multitude of products offered for sale by the merchant through InfoHaus, specifically "List item number one" and "List item number two" below. Ex. 1013, 239, Fig. 8-14.

```
Content-Type: multipart/fv-infohaus;
boundary="0987654321ZYX"

 - 0987654321ZYX
Content-Type: application/fv-infohaus;
                transaction=newseller-request

Doing-business-as: Wiggly Worm Weekly
Account-ID: buzz-eensy beensy spider
 - 0987654321ZYX
Content-type: text/html

<p>This is a paragraph.</p>
<ul>
<li>List item number one.
<li>List item number two.
</ul>
<p>Link to <A HREF="www.loshin.com">author's Web page</A></p>
 - 0987654321ZYX -
```

FIGURE 8-14 *The format to use when adding an HTML-tagged InfoHaus shop description in an e-mail message (the To:, From:, and Subject: headers are not shown here). Reprinted with permission from First Virtual Holdings Incorporated, 1996.*

121. *Loshin* discloses a plurality of ways by which a seller can organize an electronic catalog of multiple products offered for sale on its Web pages. *Loshin*, 230-231, Table 8-1.

TABLE 8-1 *Sample hierarchical InfoHaus product names.*

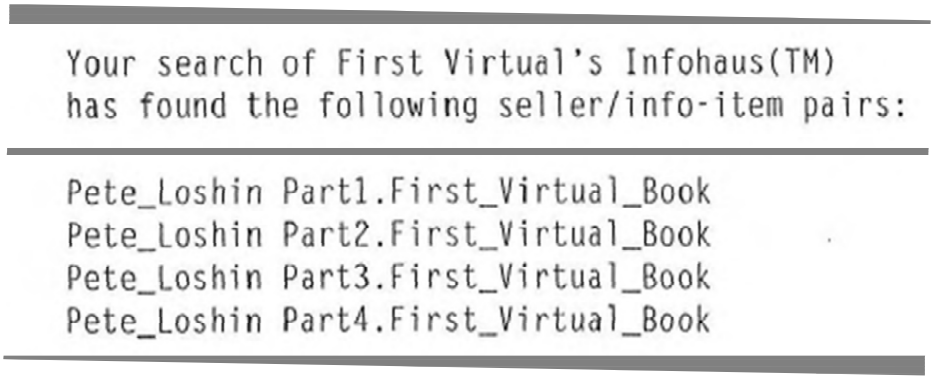
```
Documentation.Corporate.Mac_Spreadsheet
Documentation.Corporate.PC_Spreadsheet
Documentation.Personal.PC_Spreadsheet
Documentation.Personal.PC_Spreadsheet
Software.Corporate.PC_Spreadsheet_Program
Software.Corporate.Mac_Spreadsheet_Program
Software.Personal.Mac_Spreadsheet_Program
Software.Personal.PC_Spreadsheet_Program
Graphics.Animals.Chipmunk
Graphics.Animals.Deer
Graphics.Animals.Squirrel
Graphics.Animals.Zebra
Graphics.Trees.Ash
Graphics.Trees.Beech
Graphics.Trees.Oak
Graphics.Trees.Walnut
```

O. Claim Element 7.1 is taught by *Loshin*

122. *Loshin* teaches "wherein the composite web page contains one or more selectable URLs connecting a hierarchical set of additional web pages of the outsource provider website, each pertaining to a subset of the product offerings in the electronic catalog."

123. *Loshin* teaches listing a composite web pages containing a multitude of products offered for sale by the merchant through InfoHaus. Ex. 1013, 239, Fig. 8-14. The Figure 8-14 specifically shows two products listed in the web-page source code. "Product names appear on the InfoHaus as filenames under ftp, or as links on the InfoHaus Web pages." Ex. 1013, 230.

124. *Loshin* teaches that the products listed on InfoHaus can be organized into a hierarchical set of links to web pages of the InfoHaus website, with each link pertaining to a subset of the products offered. Ex. 1013, 230-231, Table 8-1 (table entitled "Sample hierarchical InfoHaus product names"). The search result page from *Loshin* also shows multiple products for sale on a single page:



Ex. 1013, 210. The search results page shows four products for sale.

P. Claim 8 is anticipated by *Loshin*

125. *Loshin* teaches "automatically with the computer system, (i) using search parameters inputted at the visitor computing device to search for specific products within the catalog, and (ii) serving to the visitor computing device additional instructions directing the visitor computing device to display the results of the search." *Loshin* teaches that the products listed on InfoHaus are searchable. Ex. 1013, 208-2011, Table 7-1. *Loshin* describes that the following search "would return any items sold by the merchant 'Peter Loshin' and checked into the InfoHaus for sale since January 1, 1996":

```
Seller: Pete Loshin
Date: 01 JAN 96
```

Ex. 1013, 210.

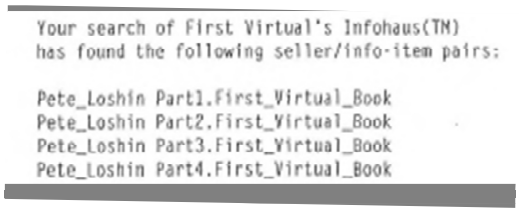
126. *Loshin* also provides a table with different structured search options:

TABLE 7-1 *Search options for e-mail shopping through the InfoHaus.*

Criterion	Description
Seller:	Name of InfoHaus merchant.
Keyword:	A keyword designated by the merchant to describe the product.
Topic:	A descriptive term for the merchant/product.
Date:	To retrieve items only stocked since the date indicated, using the form "DD MMM YY" where day and year are numbers, and the month is a three-letter abbreviation.

Ex. 1013, 210, Table 7-1. *Loshin* also describes receiving search results from the queries. Ex. 1013, 210. *Loshin* states that "In response you would receive a listing of items in the InfoHaus that meet the criteria you set in your initial search message.

127. For example, you might see something like this:"



Ex. 1013, 210.

Q. Claim 11 is anticipated by *Loshin*

128. Claim 11 is an apparatus claim reciting largely the same elements as are found in method claim 1. For the same reasons articulated above with respect to *Loshin* anticipating claim 1, *Loshin* also anticipates claim 11.

R. Claim 12 is anticipated by *Loshin*

129. Claim 12 is an apparatus claim reciting largely the same elements as are found in method claim 2. For the same reasons articulated above with respect to *Loshin* anticipating claim 2, *Loshin* also anticipates claim 12.

S. Claim 13 is anticipated by *Loshin*

130. Claim 13 is an apparatus claim reciting largely the same elements as are found in method claim 3. For the same reasons articulated above with respect to *Loshin* anticipating claim 3, *Loshin* also anticipates claim 13.

T. Claim 16 is anticipated by *Loshin*

131. Claim 16 is an apparatus claim reciting largely the same elements as are found in method claim 6. For the same reasons articulated above with respect to *Loshin* anticipating claim 6, *Loshin* also anticipates claim 16.

U. Claim 17 is anticipated by *Loshin*

132. Claim 17 is an apparatus claim reciting largely the same elements as are found in method claim 7. For the same reasons articulated above with respect to *Loshin* anticipating claim 7, *Loshin* also anticipates claim 17.

V. Claim 18 is anticipated by *Loshin*

133. Claim 18 is an apparatus claim reciting largely the same elements as are found in method claim 8. For the same reasons articulated above with respect to *Loshin* anticipating claim 8, *Loshin* also anticipates claim 18.

XI. Ground 2: The Challenged Claims are obvious in view of *Loshin* and the *InfoHaus Documents*

134. *Loshin* (Ex. 1013) and the InfoHaus Documents (Exs. 1014-1016) that describe concepts of InfoHaus were available to a POSITA before the earliest priority date of the ’876 Patent. Ex. 1012, ¶¶ 4-9. Taken together, *Loshin* and the *InfoHaus Documents* render the claims of the ’876 Patent obvious under 35 U.S.C. § 103(a).

(1) InfoHaus Guide

135. InfoHaus Guide, last updated on May 1, 1996, provides merchants with guidance on how to "open your store, upload your information products, and start doing business" on InfoHaus. Ex. 1015, 2. InfoHaus Guide was available on the First Virtual Website (https://web.archive.org/web/19970615125011/http://www.fv.com:80/infohaus/guide/index.html) by at least June 25, 1997; Ex. 1012, ¶¶ 5-7.

(2) InfoHaus HelpMeister

136. InfoHaus HelpMeister is a collection of Web pages which provide sellers with guidance on adding graphics, HTML designs, adding forms for transactions, creating subdirectories of products, and other various functions in relation to a seller's InfoHaus storefront. Ex. 1016, 2. The individual Web pages that comprise InfoHaus HelpMeister were available on the First Virtual Website (https://web.archive.org/web/19970615125017/http://www.fv.com:80/infohaus/helpmeister/index.html) as of June 15, 1997; Ex. 1012, ¶¶ 5, 6, 8.

(3) InfoHaus Seller Program

137. InfoHaus Seller Program is a document which provides sellers with guidance to the various payment options offered by First Virtual. Ex. 1014, 2. InfoHaus Seller Program was available on the First Virtual Website (https://web.archive.org/web/19970615124058/http://www.fv.com:80/selling/) as of June 15, 1997. Ex. 1012, ¶¶ 5, 6, 9.

(4) Motivation to Combine *Loshin* and the *InfoHaus Documents*

138. A POSITA, reading the disclosures of *Loshin* and the *InfoHaus Documents*, individually or as a whole, would have understood that InfoHaus fulfills the functionality purported to be inventive in the '876 Patent (*e.g.*, outsourcing specific ecommerce tasks, using customized Web pages to create the appearance such tasks are performed from a single website, and facilitating commercial interaction and distribution of funds with third parties on InfoHaus).

139. A POSITA would have understood that *Loshin* and each of the InfoHaus Publications discusses a single system—InfoHaus—and would therefore view these references as a combined teaching as of their respective publication dates. Moreover, *Loshin* describes the operation of the InfoHaus and reference First Virtual specifically. The *InfoHaus Documents* was presented together on the First Virtual Website as of June 15, 1997. Ex. 1016, 1 (the navigation links at the top of the InfoHaus HelpMeister Web page direct the user to the InfoHaus and InfoHaus Seller's Guide documents).

140. A POSITA would have been motivated to combine their teachings because they include an explicit motivation for doing so. In particular, these Web pages each describe what purports to be a common system—InfoHaus. Each of the InfoHaus Documents individually describes the benefits and provide instructions for using InfoHaus.

(a) *Claim 1 is rendered obvious by Loshin in view of the InfoHaus Documents*

A. Claim Element 1.0 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

141. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "*[a] method of an outsource provider serving web pages offering commercial opportunities.*" In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element. The *InfoHaus Documents* disclose an outsource provider, First Virtual InfoHaus which serves Web pages offering commercial opportunities. Ex. 1015, 4 ("The InfoHaus handles all the storage, distribution, subscription lists, billing, and accounting for information sellers, making it possible for anyone with Internet access to start an on-line business. Best of all, it eliminates the expense and hassle of running your own server on the Internet!").

B. Claim Element 1.1 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

142. *Loshin* in view of the InfoHaus Documents teaches/renders obvious "*with a computer system of an outsource provider.*" In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element. The *InfoHaus Documents* disclose an outsource provider, First Virtual

InfoHaus which serves Web pages from the InfoHaus server. Ex. 1015, 4 ("The InfoHaus is open everyday, 24 hours a day, and can be accessed from anywhere in the world via the World Wide Web, e-mail, or anonymous FTP.").

C. Claim Element 1.2 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

143. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "upon receiving over the Internet of an electronic request generated by an Internet-accessible computing device of a visitor in response to selection of a uniform resource locator (URL) within a source web page that has been served to the visitor computing device when visiting a website of a host that is a third party to the outsource provider." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element.

144. The *InfoHaus Documents* teach that InfoHaus generates Web pages (HTML) automatically for users. Ex. 1016, 5. Further, a POSITA would have understood that when a URL is activated, a GET request is generated and sent to the corresponding web server. RFC 2068, Jan. 1997, § 9.3 GET; Ex. 1015, 4.

D. Claim Element 1.3 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

145. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "wherein the URL correlates the source web page with a commerce object

associated with at least one buying opportunity of a merchant that is a third party to the outsource provider." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element. The *InfoHaus Documents* teach that InfoHaus generates Web pages (HTML) referred to as "storefront pages" automatically for users. Ex. 1016, 5.

146. The *InfoHaus Documents* disclose that InfoHaus generates product listings on the relevant storefront when the seller provides the required elements: (1) product name; (2) price; (3) uploaded product; and (4) advertisement or teaser relating to the product. Ex. 1015, 18-19, 24-25. The *InfoHaus Documents* also disclose that sub-pages relating to individual products or categories of products can be created. Ex. 1016, 10-11.

E. Claim Element 1.4 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

147. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "automatically serving to the visitor computing device first instructions directing the visitor computing device to display commerce object information associated with the commerce object associated with the URL that has been activated, which commerce object includes at least one product available for sale through the computer system of the outsource provider after activating the URL." In addition to the rationale provided above regarding this element in Ground 1 related to

Loshin, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element.

148. The *InfoHaus Documents* teach InfoHaus generates Web pages (HTML) referred to as "storefront pages" automatically for users. Ex. 1016, 5. The *InfoHaus Documents* disclose that InfoHaus generates product listings on the relevant storefront when the seller provides the required elements: (1) product name; (2) price; (3) uploaded product; and (4) advertisement or teaser relating to the product. Ex. 1015, 18-19, 24-25.

149. The *InfoHaus Documents* also disclose that sub-pages relating to individual products or categories of products can be created and the process for creating such sub-pages. Ex. 1016, 10-12. When buyers access the pages or sub-pages related to a product via the InfoHaus storefront, the buyers receive first instructions to display information associated with the commerce objects associated with the activated URL. Ex. 1015, 18-19, 24-25.

F. Claim Element 1.5 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

150. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "wherein the commerce object information is displayed to the visitor computing device on a composite web page visually corresponding to the source web page." In addition to the rationale provided above regarding this element in Ground 1

related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element.

151. The *InfoHaus Documents* disclose that sub-pages relating to individual products or categories of products can be created and the process for creating such sub-pages. Ex. 1016, 10-12. Each page or sub-page can be customized to visually correspond to the source web page (storefront). Ex. 1016, 5-6; Ex. 1015, 11, 27-31.

G. Claim Element 1.6 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

152. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "wherein the visual correspondence relates to overall appearance of the composite web page as compared to the source web page, but excluding the commerce object information and the URL." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element.

153. The *InfoHaus Documents* disclose that sub-pages relating to individual products or categories of products can be created and the process for creating such sub-pages. Ex. 1016, 10-12. Each page or sub-page can be customized to visually correspond to the source web page (storefront). Ex. 1016, 5-6; Ex. 1015, 11, 27-31.

H. Claim Element 1.7 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

154. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "wherein second instructions directing the visitor computing device to download data defining the overall appearance of the composite web page are accessible to the visitor computing device through the Internet." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element.

155. The *InfoHaus Documents* disclose that sub-pages relating to individual products or categories of products can be created and the process for creating such sub-pages. Ex. 1016, 10-12. Each page or sub-page can be customized to visually correspond to the source web page (storefront). Ex. 1016, 5-6; Ex. 1015, 11, 27-31. The *InfoHaus Documents* disclose that said pages and sub-pages (and HTML elements) are stored by InfoHaus and accessible via the Internet. Ex. 1015, 4 ("The InfoHaus handles all the storage … for information sellers, making it possible for anyone with Internet access to start an on-line business."); Ex. 1016, 5, 10.

I. Claim 7 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

J. Claim Element 7.0 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

156. *Loshin* in view of the *InfoHaus Documents* teaches/renders obvious "wherein the commerce object correlated with the source web page is an electronic catalog listing a multitude of products offered for sale by the merchant through a website of an outsource provider." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element. *Loshin* teaches providing an electronic catalog listing a multitude of products offered for sale by the merchant through InfoHaus. Loshin, 239, Fig. 8-14.

157. The *InfoHaus Documents* disclose that sub-pages relating to individual products or categories of products can be created and the process for creating such sub-pages. Ex. 1016, 10-12 ("For example, a shop's main page could have links named 'Articles', 'Photos', and 'Poems' that lead to pages containing those products."). The *InfoHaus Documents* also disclose that multiple products can be listed on a sub-page. Ex. 1016, 10.

K. Claim Element 7.1 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

158. Loshin in view of the *InfoHaus Documents* teaches/renders obvious "wherein the composite web page contains one or more selectable URLs connecting a hierarchical set of additional web pages of the outsource provider website, each pertaining to a subset of the product offerings in the electronic catalog."

159. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, the *InfoHaus Documents* provide additional disclosure teaching the subject matter of this element. The *InfoHaus Documents* disclose creation of a hierarchical set of additional web pages of the outsource provider website, each webpage pertaining to a subset of the product offerings within an electronic catalog. Ex. 1016, 10-11. The *InfoHaus Documents* disclose a hierarchical arrangement of additional web pages. InfoHaus, HelpMeister, 10 ("To make the 'articles' page link to sub-pages with 'politics' and 'travel' products on them, name your products like this: articles.politics.Congress_06[;] articles.politics.Senate_96[;] articles.travel.Paris_Highlights[;] articles.travel.Themepark_Bargains[.]").

L. Claim 11 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

160. Claim 11 is an apparatus claim reciting largely the same elements as are found in method claim 1. For the same reasons articulated above with respect to *Loshin* anticipating/rendering claim 1 obvious, *Loshin* also anticipates/renders obvious claim 11.

M. Claim 16 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

161. Claim 16 is an apparatus claim reciting largely the same elements as are found in method claim 6. For the same reasons articulated above with respect

to *Loshin* anticipating/rendering claim 6 obvious, *Loshin* also anticipates/renders obvious claim 16.

N. Claim 17 is rendered obvious by *Loshin* in view of the *InfoHaus Documents*

162. Claim 17 is an apparatus claim reciting largely the same elements as are found in method claim 7. For the same reasons articulated above with respect to *Loshin* anticipating/rendering claim 7 obvious, *Loshin* also anticipates/renders obvious claim 17.

2. Ground 3: The Challenged Claims are obvious in view of *Loshin* and *Moore*

163. *Loshin*, including its description of InfoHaus, and *Moore* were available to a POSITA before the earliest priority date of the ’876 Patent. Ex. 1010; Ex. 1012, ¶4. Taken together, *Loshin* and the *Moore* render the claims of the ’876 Patent obvious under § 103(a).

(a) *Summary of Moore*

164. *Moore* discloses an outsourcing system which helps a merchant “become a part of a distributed ecommerce system ... for doing business on the World Wide Web.” Ex. 1010, Abstract. Figure 4 of *Moore* (below) shows that the ecommerce system includes a transaction processor/server operated by a transaction service provider (e.g., an outsource provider), a store builder server, and a store server operated by a merchant. Ex. 1010, FIG. 4.

165. In *Moore's* system, the merchant maintains a website providing a Web storefront for selling products to customers, and the transaction service provider handles payment processing associated with purchases initiated via the merchant's Web storefront. Ex. 1010, 4:43-56. Uniform resource locators (URLs), referred to as "price URLs," are created and embedded in merchant Web storefronts. Ex. 1010, 3:31-39, 6:12-22. The price URLs are configured to link to a second server (e.g., the transaction server or the store builder server) and include information that enables the second server to generate a "buy page" (e.g., a second Web page) that enables a customer to purchase a product from the merchant's Web storefront. Ex. 1010, 6:12-22, 8:10-26.

166. *Moore* teaches that "the price URLs, which allow the [second server] to build the Buy Pages, have to be included on the site, or elsewhere (e.g., websites owned by a third party), in order for the Web customer to place an order. The merchant can even totally remove the Web storefront, and simply post the price URLs on news groups or on another [W]eb site." Ex. 1010, 8:28-61.

167. *Moore* discloses a development tool that enabled merchants to design Web pages for storefronts and buy pages served in response to activation of price URLs, including configuring the font background color, font size, font color, font styling, background color or image, locations for displaying content, and header/footer information. Ex. 1010, 5:27-35, 7:48-60, 12:23-24, Figs. 6-15.

168. Therefore, *Moore* teaches the technologies described in the '876 Patent (e.g., using an outsource provider to process transactions using dynamically generated Web pages that maintain the appearance of the website associated with an activated link, and the ability to initiate purchases of the products sold by the website owner from third party Web pages).

(b) *Motivation to Combine Loshin and Moore*

169. A POSITA, reading the disclosures of *Loshin* and *Moore*, individually or as a whole, would have understood that both references disclose systems that provide outsourcing specific ecommerce tasks, using customized Web pages to create the appearance such tasks are performed from a single website, and facilitating commercial interaction and distribution of funds with third parties on InfoHaus). A POSITA would have understood that *Loshin* and *Moore* both describe outsourced ecommerce systems and would therefore view these references as combinable as of their respective publication dates.

170. Further, a POSITA would have recognized the functionality provided by the merchants in *Moore* is the same functionality provided by InfoHaus as described in *Loshin*. Specifically, in *Moore*, the merchant system: (i) served web pages facilitating sales transactions; (ii) customized web pages that facilitate sales transactions to have the appearance of the referring pages; and (iii) processed sales transactions.

171. A POSITA would have recognized that the system disclosed in *Moore* performed substantially the same functions as the InfoHaus system disclosed in *Loshin*, as both systems are described as outsource providers. In view of those conceptual teachings, a POSITA would have found it advantageous to implement certain aspects of *Moore* as described by *Loshin*.

(c) *Claim Element 1.0 is rendered obvious by Loshin in view of Moore*

172. *Loshin* in view of *Moore* teaches/renders obvious "*[a] method of an outsource provider serving web pages offering commercial opportunities.*" In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

173. *Moore* discloses "A method of serving commerce information of an outsource provider in connection with host web pages offering commercial opportunities, the method comprising." *Moore* discloses "[m]ethods and systems for designing a Web page, to be hosted on a Web page server" which allows a merchant to join a distributed ecommerce system. Ex. 1010, Abstract. Specifically, "when the Web merchant desires to maintain its own Web storefront ... [the] merchant could use any of the many hosting service providers." Ex. 1010, 4:43-56.

174. In *Moore*, a merchant maintains a Web storefront and a transaction service provider handles processing of purchases from the merchant's storefront. Ex. 1010, 4:43-56. URLs, referred to as "price URLs," are created and embedded in the merchant's storefront. Ex. 1010, 3:31-39, 6:12-22. The price URLs link to a second server (*e.g.*, the transaction/builder server) and include information that enables the second server to generate a "buy page" *(e.g.*, a second Web page) that enables a customer to purchase a product. Ex. 1010, 6:12-22, 8:10-26.

(d) *Claim Element 1.1 is rendered obvious by Loshin in view of Moore*

175. *Loshin* in view *Moore* teaches/renders obvious "*with a computer system of an outsource provider.*" In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

176. *Moore* discloses "*with a computer system of an outsource provider*." *Moore* discloses "[m]ethods and systems for designing a Web page, to be hosted on a Web page server" which allows a merchant to join a distributed ecommerce system. Ex. 1010, Abstract. Specifically, "when the Web merchant desires to maintain its own Web storefront ... [the] merchant could use any of the many hosting service providers." Ex. 1010, 4:43-56. *Moore* discloses using servers to implement the system. Ex. 1010, Fig. 4.

(e) *Claim Element 1.2 is rendered obvious by Loshin in view of Moore*

177. *Loshin* in view of *Moore* teaches/renders obvious "upon receiving over the Internet of an electronic request generated by an Internet-accessible computing device of a visitor in response to selection of a uniform resource locator (URL) within a source web page that has been served to the visitor computing device when visiting a website of a host that is a third party to the outsource provider." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

178. *Moore* discloses "upon receiving over the Internet an electronic request generated by an Internet-accessible computing device of a visitor in response to selection of a uniform resource locator (URL) within a source web page that has been served to the visitor computing device when visiting a website of a host that is a third party to the outsource provider." *Moore* discloses "creating a link to the second server ... such that the link can be embedded into [a] Web page" of a merchant's webstore. Ex. 1010, 3:31-39, 6:12-22. *Moore* explains that when a customer selects a product "[t]he Store Server then jumps to the Store Builder Server by using a Uniform Resource Locator ('URL') 506[,]" as shown below in FIG. 5A. Ex. 1010, 6:12-22, FIG. 5A.

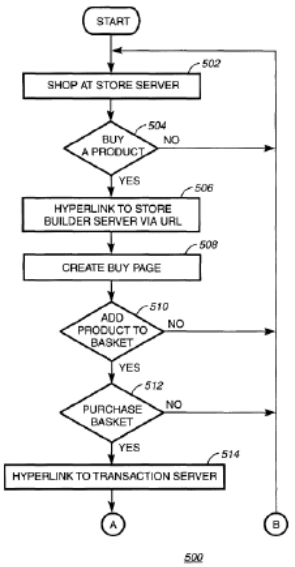


FIG. 5A

179. FIG. 5A illustrates the price URL as hyperlinking to the store builder server, but *Moore* explains that the transaction server can "perform[] the functions of the Store Builder Server ... [and] would receive the price URL." Ex. 1010, 8:10-26. Further, *Moore* discloses that the URL would be received "over the Internet." Ex. 1010, 1:10-14 (Field of the Invention). *Moore* describes the field of the invention as relating "generally to computer networks and more particularly to methods and apparatus for providing a scalable distributed Internet commerce system." *Id*. *Moore* also describes the Store Builder Server as being at any "Internet address." Ex. 1010, 8:12-14.

(f) *Claim Element 1.3 is rendered obvious by Loshin in view of Moore*

180. *Loshin* in view of *Moore* teaches/renders obvious "wherein the URL correlates the source web page with a commerce object associated with at least one

buying opportunity of a merchant that is a third party to the outsource provider." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

181. *Moore* discloses "wherein the URL correlates the source web page with a commerce object associated with at least one buying opportunity of a merchant that is a third party to the outsource provider." *Moore* discloses "creating a link to the second server ... such that the link can be embedded into [a] Web page" of a merchant's webstore. Ex. 1010, 3:31-39, 6:12-22. *Moore* explains that when a customer selects a product "[t]he Store Server then jumps to the Store Builder Server by using a Uniform Resource Locator ('URL') 506[,]" as shown below in FIG. 5A. Ex. 1010, 6:12-22, FIG. 5A.

182. *Moore* discloses "that **once the price URL is sent**, the location of the Store Server (or rather, the **location from which the price URL was sent**) is, and needs to be, **known**. Knowing where the price URL was sent from (typically a page from the Store Server) allows the Transaction Server or the Store Builder Server to hyperlink the Web customer back there to continue shopping." Ex. 1010, 5:49-67, 8:10-26, 9:49-61 (emphasis added). A POSITA would have understood that *Moore* taught a server (e.g., the transaction/builder server) of an outsource

provider uses URLs to recognize source pages (e.g., Web pages of the Web storefront) on which customers activated the price URLs.

183. Further, *Moore's* ecommerce system supports multiple first Web pages (e.g., a plurality of Web storefronts) each owned by one of multiple Web page owners (*e.g.*, a plurality of Web storefront owners). Ex. 1010 4:43-56, 6:8-7:21, 8:62-9:47. A POSITA would have known, based on these teachings, that each of these first Web pages includes a link (*e.g.*, a price URL) that enables the outsource provider to recognize the source page of the link.

(g) *Claim Element 1.4 is rendered obvious by Loshin in view of Moore*

184. *Loshin* in view of *Moore* teaches/renders obvious "automatically serving to the visitor computing device first instructions directing the visitor computing device to display commerce object information associated with the commerce object associated with the URL that has been activated, which commerce object includes at least one product available for sale through the computer system of the outsource provider after activating the URL." In addition to the rationale provided above regarding this element in Ground 1 related to Loshin, *Moore* provides additional disclosure teaching the subject matter of this element.

185. *Moore* discloses "automatically serving to the visitor computing device first instructions directing the visitor computing device to display

commerce object information associated with the commerce object associated with the URL that has been activated, which commerce object includes at least one product available for sale through the computer system of the outsource provider after activating the URL." *Moore* discloses two methods for automatically generating and transmitting, by a server, a second Web page (e.g., the buy page) to the Web browser of a customer. For example, *Moore* explains that either the store builder server or the transaction server could receive the price URL and build the buy page. Ex. 1010, 6:7-7:21, 12:1-24.

186. In *Moore*, the second Web page (*e.g.*, the buy page) includes information associated with a commerce object (*e.g.*, a product) associated with the link (e.g., a price URL) that has been activated. For example, FIG. 16 of *Moore*, reproduced below with annotations, illustrates (1) a buy page that includes (2) information associated with a commerce object (*e.g.*, the product) associated with an activated price URL. Ex. 1010, 12:25-32, FIG. 16.

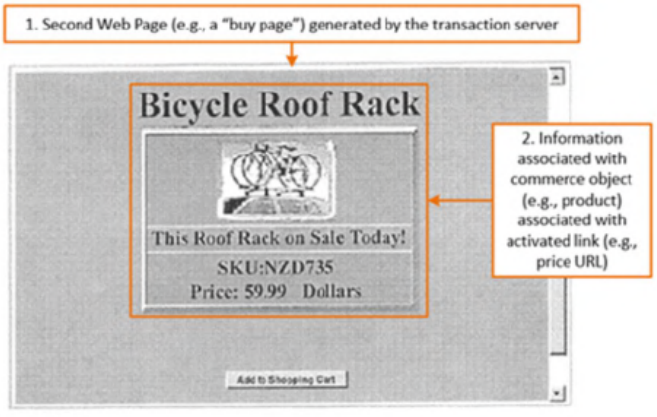


FIG. 16

(h) *Claim Element 1.5 is rendered obvious by Loshin in view of Moore*

187. *Loshin* in view of *Moore* teaches/renders obvious "wherein the commerce object information is displayed to the visitor computing device on a composite web page visually corresponding to the source web page." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

188. *Moore* discloses "wherein the commerce object information is displayed to the visitor computing device on a composite web page visually corresponding to the source web page." *Moore* discloses two methods for automatically generating and transmitting, by a server, a second Web page (e.g., the buy page) to the Web browser of a customer. For example, *Moore* explains that either the store builder server or the transaction server could receive the price URL and build the buy page. Ex. 1010, 6:7-7:21, 12:1-24 ("The Store-Builder Server receives the price URL, which is encrypted, and a Java "Buy Page" servlet builds a Buy Page from the received HTML 508.").

189. *Moore's* tool allows merchants to design Web pages of Web storefronts and buy pages. Ex. 1010, 7:48-60, 12:23-24, FIG. 15. *Moore* discloses that during the design process, header and footer information is collected for use on every page. Ex. 1010, 10:43-11:67, FIG. 7. Accordingly, a POSITA would

have understood that *Moore* discloses that all the Web pages, including the buy page(s), contain headers and/or footers that provide visually perceptible elements corresponding to the source page, such as company name, logo, URLs, and/or e-mail address information. Ex. 1010, 7:48-60, 12:23-24, FIG. 15.

(i) *Claim Element 1.6 is rendered obvious by Loshin in view of Moore*

190. *Loshin* in view of *Moore* teaches/renders obvious "wherein the visual correspondence relates to overall appearance of the composite web page as compared to the source web page, but excluding the commerce object information and the URL." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

191. *Moore* discloses "wherein the visual correspondence relates to overall appearance of the composite web page as compared to the source web page, but excluding the commerce object information and the URL." Moore's tool allows merchants to design Web pages of Web storefronts and buy pages. Ex. 1010, 7:48-60, 12:23-24, FIG. 15. *Moore* discloses that during the design process, header and footer information is collected for use on every page. Ex. 1010, 10:43-11:67, FIG. 7. Specifically, *Moore* describes the "page header and footer are typically used for the company name and logo." Ex. 1010, 11:5-6. *Moore* goes on to describe setting page styles, a default background, and the like. Ex. 1010, 10:44-11:11:67.

192. Accordingly, a POSITA would have understood that *Loshin* in combination with *Moore* discloses that all the Web pages, including the buy page(s), contain headers and/or footers that provide visually perceptible elements corresponding to the source page, such as company name, logo, URLs, and/or e-mail address information. Ex. 1010, 7:48-60, 12:23-24, FIG. 15.

(j) *Claim Element 1.7 is rendered obvious by Loshin in view of Moore*

193. *Loshin* in view of *Moore* teaches/renders obvious "wherein second instructions directing the visitor computing device to download data defining the overall appearance of the composite web page are accessible to the visitor computing device through the Internet." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

194. Moore discloses "wherein second instructions directing the visitor computing device to download data defining the overall appearance of the composite web page are accessible to the visitor computing device through the Internet." *Moore*'s tool allows merchants to design Web pages of Web storefronts and buy pages. Ex. 1010, 7:48-60, 12:23-24, FIG. 15. *Moore* discloses that during the design process, header and footer information is collected for use on every page. Ex. 1010, 10:43-11:67, FIG. 7. Specifically, *Moore* describes that the "page header and footer are typically used for the company name and logo." Ex. 1010,

11:5-6. *Moore* goes on to describe setting page styles, a default background, and the like. Ex. 1010, 10:44-11:11:67.

195. Accordingly, a POSITA would have understood that *Loshin* in combination with *Moore* discloses that all the Web pages, including the buy page(s), contain headers and/or footers that provide visually perceptible elements corresponding to the source page, such as company name, logo, URLs, and/or e-mail address information. Ex. 1010, 7:48-60, 12:23-24, FIG. 15. Further, *Moore* discloses that the second instructions would be provided "through the Internet." *Moore* describes the field of the invention as relating "generally to computer networks and more particularly to methods and apparatus for providing a scalable distributed Internet commerce system." Ex. 1010, 1:10-14 (Field of the Invention). *Moore* also describes the Store Builder Server as being at any "Internet address." Ex. 1010, 8:12-14.

(k) *Claim Element 2.0 is rendered obvious by Loshin in view of Moore*

196. *Loshin* in view of *Moore* teaches/renders obvious "wherein the composite web page further contains a purchase URL associated with the commerce object information, which purchase URL, when selected, places data representing the commerce object into a virtual shopping cart managed by the computer system of the outsource provider." In addition to the rationale provided

above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

197. *Moore* discloses a system "wherein the composite web page further contains a purchase URL associated with the commerce object information, which purchase URL, when selected, places data representing the commerce object into a virtual shopping cart managed by the computer system of the outsource provider." *Moore* discloses embedding price URLs in Web pages, where each price URL is used to build a buy page for an associated product. Ex. 1010, 6:12-22, 8:10-26.

198. *Moore* discloses that the buy pages include a link that can be activated to place data representing a product into a shopping cart. Ex. 1010, 12:25-32, FIG. 16. Further, *Moore* explains that a customer can "ADD PRODUCT TO BASKET" as shown below in FIG. 5A. Ex. 1010, 6:12-22, FIG. 5A.

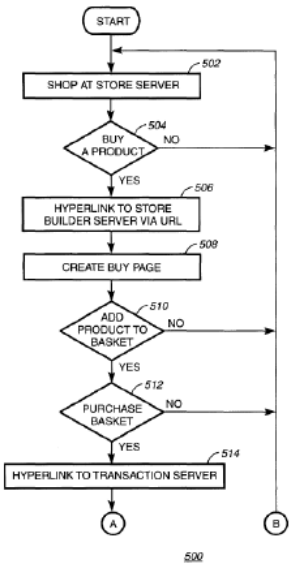


FIG. 5A

199. *Moore* describes that products can be added or removed from a purchase basket. Specifically, "If the buy operation is accepted the Store Builder Server then presents the customer with his entire shopping basket up to that point, which the Store Builder Server creates and maintains. The customer can now delete items from the basket, change the quantities, "purchase" the entire basket, or return to the Store Server to continue shopping 512." Ex. 1010, 6:29-35.

(l) *Claim Element 3.0 is rendered obvious by Loshin in view of Moore*

200. *Loshin* in view of *Moore* teaches/renders obvious "automatically with the computer system of the outsource provider, accepting inputted payment information from the visitor computer, recording the payment information, and using the payment information to facilitate payment to the merchant for the commerce object when the computer system of the outsource provider detects selection of a checkout URL associated with the virtual shopping cart." In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

201. *Moore* discloses "automatically with the computer system of the outsource provider, accepting inputted payment information from the visitor computer, recording the payment information, and using the payment information to facilitate payment to the merchant for the commerce object when the computer

system of the outsource provider detects selection of a checkout URL associated with the virtual shopping cart." *Moore* discloses that buy pages enable customers to place product data into shopping carts maintained by the transaction server, and that the shopping carts enable the customers to purchase (e.g., checkout) products in the shopping carts. Ex. 1010, 6:7-64.

202. *Moore* discloses that the transaction server verifies customer credit card information, authorizes payment amounts, transfers funds to merchants' accounts, and that the transaction service provider charges a fee for processing transactions. Ex. 1010, 6:64-7:9. Therefore, *Moore* provides checkout functionality and transferring funds from the customer to the merchant. See Ex. 1010, 6:44-55, 8:2-9.

(m) *Claim 4 is rendered obvious by* Loshin *in view of* Moore

203. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

204. *Moore* discloses the transaction server verifies customer credit card information, authorizes payment amounts, transfers funds to merchants' accounts, and that the transaction service provider charges a fee for processing transactions. Ex. 1010, 6:64-7:9. Further, *Moore* discloses that "Transaction Servers will want to keep track of sales so that they can bill the merchant's for their services, and

may want to store additional information and statistics about the merchants as well." Ex. 1010, 9:23-27. A POSITA, reading the teachings of *Moore*, would have understood *Moore* as disclosing a transaction server to share revenue generated by online transactions with each of the involved parties of a transaction.

205. A POSITA would implement such functionality with an outsource provider because, as described in *Moore*, processing transactions via the outsource provider reduces the burdens imposed upon ecommerce merchants. Ex. 1010, 2:4-64, 8:27-9:47. A POSITA would have understood *Moore* as describing revenue sharing on a markup-and-cost-basis or a cost-and-percentage-basis, each basis was well-known, would have been obvious to implement, and would utilize the same technical functionality. Selecting one basis over another basis would have been obvious as a matter of design choice based on the business preferences of the parties involved.

(n) *Claim 5 is rendered obvious by* Loshin *in view of* Moore

206. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element.

207. *Moore* describes the "the transaction service provider's web site can be considered to be a virtual cashier, spanning across a cashier server system comprised of one or more servers." Ex. 1010, 9:55-58. Therefore, the transaction

service provider, which provides the services of the outsource provider of the claims, serves a website from its servers.

(o) *Claim 7 is rendered obvious by* Loshin *in view of* Moore

(1) Claim Element 7.0 is rendered obvious by *Loshin* in view of *Moore*

208. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore provides* additional disclosure teaching the subject matter of this element. *Moore* teaches that Web pages were commonly utilized to present product catalogs. Ex. 1010, 1:55-3:20. *Moore's* ecommerce system includes a builder/transaction server providing functionality to create and embed links, which facilitate purchases of products from dynamically generated buy pages, within storefront Web pages. Ex. 1010, 3:31-39, 6:12-22, 8:28-61, 12:1-24. A POSITA would understand that the buy pages may offer a single or multiple products for sale (i.e., a single item or a group of items).

(2) Claim Element 7.1 is rendered obvious by *Loshin* in view of *Moore*

209. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element. *Moore* discloses buy pages providing a link (i.e., selectable URL) to add a product to a purchase basket. Ex. 1010, 6:25-27. The buy pages also provide a link (i.e., selectable URL) to a purchase basket, which, as described by *Moore*, can list a number of products for purchase. Ex. 1010, 6:29-

35. *Moore* goes on to describe a purchase process, which requires a number of additional web pages. Ex. 1010, 6:44-55 ("[i]f the customer decides to make the purchase, he is hyperlinked to the Transaction Server 514."), 6:56-7:21.

(p) *Claim 8 is rendered obvious by* Loshin *in view of* Moore

210. In addition to the rationale provided above regarding this element in Ground 1 related to *Loshin*, *Moore* provides additional disclosure teaching the subject matter of this element. *Moore* describes "[t]he Web storefront 106 acts as the virtual store for the customer 114, and contains whatever information the merchant has built into the Web-site (e.g. pictures, prices, search engines, etc.)" Ex. 1010, 5:27-30. A POSITA would understand that *Moore* is disclosing a search engine in a web storefront for searching for products. Normal operation of a search engine in the eyes of a POSITA would provide search results as required by the second clause of Claim 8.

(q) *Claim 11 is rendered obvious by Loshin in view of Moore*

211. Claim 11 is an apparatus claim reciting largely the same elements as are found in method claim 1. For the same reasons articulated above with respect to *Loshin* in view of *Moore* rendering claim 1 obvious, *Loshin* in view of *Moore* also renders obvious claim 11.

(r) *Claim 12 is rendered obvious by Loshin in view of Moore*

212. Claim 12 is an apparatus claim reciting largely the same elements as are found in method claim 2. For the same reasons articulated above with respect

to *Loshin* in view of *Moore* rendering claim 2 obvious, *Loshin* in view of *Moore* also renders obvious claim 12.

(s) *Claim 13 is rendered obvious by Loshin in view of Moore*

213. Claim 13 is an apparatus claim reciting largely the same elements as are found in method claim 3. For the same reasons articulated above with respect to *Loshin* in view of *Moore* rendering claim 3 obvious, *Loshin* in view of *Moore* also renders obvious claim 13.

(t) *Claim 14 is rendered obvious by Loshin in view of Moore*

214. Claim 14 is an apparatus claim reciting largely the same elements as are found in method claim 4. For the same reasons articulated above with respect to *Loshin* in view of *Moore* rendering claim 4 obvious, *Loshin* in view of *Moore* also renders obvious claim 14.

(u) *Claim 15 is rendered obvious by Loshin in view of Moore*

215. Claim 15 is an apparatus claim reciting largely the same elements as are found in method claim 5. For the same reasons articulated above with respect to *Loshin* in view of *Moore* rendering claim 5 obvious, *Loshin* in view of *Moore* also renders obvious claim 15.

(v) *Claim 17 is rendered obvious by Loshin in view of Moore*

216. Claim 17 is an apparatus claim reciting largely the same elements as are found in method claim 7. For the same reasons articulated above with respect

to *Loshin* in view of *Moore* rendering claim 7 obvious, *Loshin* in view of *Moore* also renders obvious claim 17.

(w) *Claim 18 is rendered obvious by Loshin in view of Moore*

217. Claim 18 is an apparatus claim reciting largely the same elements as are found in method claim 8. For the same reasons articulated above with respect to *Loshin* in view of *Moore* rendering claim 8 obvious, *Loshin* in view of *Moore* also renders obvious claim 18.

XII. Conclusion

218. In summary, I have found that the claims of the ’876 Patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention. This conclusion is based on my review of the prior art references which include multiple instances of teachings for each of the above-identified claim features of the ’876 Patent. Additionally, I have found that any minor modifications of the prior art to include, substitute, or incorporate various concepts disclosed in order to meet the claims would have been obvious and within the level of ordinary skill at the time of the earliest claimed priority date of the ’876 Patent. Further, the prior art references provide various teachings that would have motivated a person of ordinary skill in the art to make those modifications in the manner described above.

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

Executed on May 2, 2018 at Pittsburgh, Pennsylvania

By: Michael I. Shamos, Ph.D., J.D.

APPENDIX 1

Resume of Michael Ian Shamos

Current to April 19, 2018

Education

A.B. (1968) Princeton University (Physics). Thesis: "Gravitational Radiation Reaction." Advisor: John A. Wheeler.

M.A. (1970) Vassar College (Physics). Thesis: "An Absorber Theory of Acoustical Radiation." Advisor: Morton A. Tavel.

M.S. (1972) American University (Technology of Management).

M.S. (1973) Yale University (Computer Science).

M.Phil. (1974) Yale University (Computer Science).

Ph.D. (1978) Yale University (Computer Science). Thesis: "Computational Geometry". Thesis committee: David Dobkin, Martin H. Schultz, Stanley C. Eisenstat.

J.D. (1981) Duquesne University, *cum laude*.

Foreign Languages

French, Russian (good reading and technical translation skills, fair conversational ability).

Academic Experience

Distinguished Career Professor, Institute for Software Research and Language Technologies Institute, School of Computer Science, Carnegie Mellon University (2001-)
Principal Systems Scientist (1998-2001)
Principal Lecturer (2002-2003). Teaching Professor (2003-)
Faculty, Tepper School of Business, Carnegie Mellon University (1999-2004).
Co-Director, Carnegie Mellon Institute for eCommerce (1998-)
Vice-Chair, University Research Council (2000-2002)
Director, eBusiness Technology degree program (2003-)
Core faculty, Privacy Engineering degree program (2013-)
Director, Universal Library, Carnegie Mellon University (1998-)
Visiting Professor, Faculty of Engineering, The University of Hong Kong (2001-)Adjunct Faculty, Carnegie Mellon University, Department of Computer Science (1981-1998)
Assistant Professor, Carnegie Mellon University, Departments of Computer Science and Mathematics (1975-81), Dept. of Statistics (1978-81).

Courses taught (Carnegie Mellon):
Algorithm Design and Analysis 15-451 (Comp. Sci.)
Intellectual Capital and its Protection 45-886 (MBA)
Ecommerce Technology 20-751 (MSEC program)
Electronic Payment Systems 20-753 (MSEC program), 96-774 (MSIT program)
Ecommerce Law and Regulation 46-840 (MSEC program)
Electronic Voting 17-803
Ubiquitous Computing, 96-761 (MSIT Program)
Electronic Payment Systems (MSIT Program)
Law of Computer Technology, 08-732/08-632/08-532

Honors and Awards

Fellow, Society of the Sigma Xi (1974-83).

IBM Fellowship, Yale University (1974–75).

SIAM National Lecturer (1977–78).

Distinguished Lecturer (computer science), University of Rochester (1978); McGill University (1979).

Duquesne University Law Review (1980–81).

Black & White Scotch Achiever's Award (first annual, 1991, for contributions to bagpipe musicography).

Industry Service Award of the Billiard and Bowling Institute of America, 1996 (for contributions to billiard history).

Billiard Worldcup Association official referee (2001-)

Editorships

Editor-in-Chief, Journal of Privacy Technology (2003- 2006).

Member of Editorial Board, *Electronic Commerce Research Journal* (2000-).

Member of Editorial Board, *Pittsburgh Journal of Technology Law and Policy* (1999-2003).

Dr. Shamos has reviewed scientific papers for *Communications of the ACM*, *Mathematical Reviews*, *IEEE Computer*, *IEEE Transactions on Computers*, *Information Processing Letters*, *Journal of the ACM* and the *Journal of Computational Physics*.

Contributing Editor, *Billiards Digest* magazine (1990-).

Patents

Co-inventor with K. Srinivasan, U.S. Patent 7,330,839, "Method and System for Dynamic Pricing," issued February 12, 2008.

Co-inventor with K. Srinivasan, U.S. Patent 7,421,278, "Method and Apparatus for Time-Aware and Location-Aware Marketing," issued September 2, 2008.

Co-inventor with K. Srinivasan, U.S. Patent 7,747,465, "Determining the Effectiveness of Internet Advertising," issued June 29, 2010.

Co-inventor with K. Srinivasan, U.S. Patent 8,195,197, "Method and Apparatus for Time-Aware and Location-Aware Marketing," issued June 5, 2012.

Co-inventor with K. Srinivasan, U.S. Patent 8,280,773, "Method and Apparatus for Internet Customer Retention," issued October 2, 2012.

Legal Experience

Special Counsel, Reed Smith LLP (2000-2003), electronic commerce law.

Shareholder, The Webb Law Firm (1996-2000), intellectual property law. Associate (1990-95).

Private practice of law (1987-90), intellectual property

Associate, law firm of Buchanan, Ingersoll, P. C. (1985-87)(now Buchanan Ingersoll & Rooney, PC), Emerging Companies Department.

General Counsel, Carnegie Group, Inc. (1983-85), artificial intelligence company.

Private practice of law (1981-83), computer law.

Bar Admissions

Supreme Court of Pennsylvania (1981–).

United States District Court for the Western District of Pennsylvania (1981–).

United States Patent and Trademark Office (1981–).

United States Tax Court (1982–).

United States Court of Appeals for the Armed Forces (1982–).

United States Court of Appeals for the Third Circuit (1982–).

United States Supreme Court (1985–).

United States Court of Appeals for the Federal Circuit (1985–).

Expert Witness

Dr. Shamos has served as an expert witness in multiple computer software and electronic voting cases. He has participated in the cases listed below. "D" indicates deposition testimony; "R" indicates report, declaration or affidavit; "T" indicates trial testimony.

Total: 252 cases: 198 patent, 13 electronic voting, 12 trade secret, 10 copyright, 20 other.
Affidavits, reports or declarations submitted in 177 cases.
Deposed in 103 cases.
Testified at trial or hearing in 42 cases.
Participated in 3 reexams, 47 IPRs and 23 CBMs.

1. *C.W. Communications, Inc. v. International Research Service, Inc.*, Civil Action No. 84-890, (W.D. Pa. 1984), aff'd. Case No. 88-3331 (3d Cir., Oct. 31, 1988). Served as an expert for plaintiff publisher as to the fame of its "Computerworld" trademark. Result: permanent injunction entered against defendant. Judge McCune's Memorandum and Order states. "We accept the conclusion drawn by Dr. Shamos." Firm: Webb, Burden Robinson & Webb (now the Webb Law Firm). (D,T)

2. *E.F. Hutton, Inc. v. Gipson* (W.D. Pa. 1985). Served as an expert for defendant-counterclaimant physician as to fraud in the inducement by a computer hardware supplier. Plaintiff had provided capital financing for the purchase. Result: defendant was awarded compensatory damages + $250,000 punitive damages. (D,T)

3. *In re Comprehensive Business Systems,* 119 B.R. 573 (S.D. Ohio 1990). Served as an expert for a secured creditor in a bankruptcy case in which the creditor sought to obtain software still in development for which it had advanced over $2 million in funding. Dr. Shamos opined as to the value of the incomplete software. Result: the creditor was able to purchase the software from the Trustee for $67,500. The Court referred in its opinion to "the testimony of the eminent and impressive Dr. Shamos." (D,R,T)

4. *Levinson Steel Co. v. American Software, Inc. et al.*, Civil Action No. 96-282, W.D. Pa. (1996). Served as an expert for plaintiff in a case involving bad faith estimates of computer processing capacity resulting in delivery of an inadequate system. Result: settlement in favor of plaintiff in an undisclosed amount. Contact: Reed Smith LLP, 225 Fifth Ave., Pittsburgh, PA 15222. (D,R)

5. *ASE Limited v. INCO Alloys International, Inc.*, Civil Action No. 98-1266, (W.D. Pa. 1998). Served as an expert for defendant concerning breach of computer services contract by declaratory judgment plaintiff. Result: determination that defendant was free to seek services from a different vendor. Firm: Reed Smith LLP, 225 Sixth Ave., Pittsburgh, PA 15222. Attorney: Anthony Basinski, Esq. (D,T)

6. *Twentieth Century Fox Film Corp. v. iCraveTV.*, 53 U.S.P.Q. 2d 1831 (W.D. Pa. 2000). Served as an expert for Plaintiffs concerning Internet technology used to stream video from U.S. TV stations through web sites in Canada. Result: TRO and preliminary injunction issued against defendants prohibiting continued infringement in the U.S. Firm: Reed Smith LLP. Attorney: Gregory Jordan, Esq. (T)

7. Invited testimony before the British House of Lords, Subcommittee B of the European Union Committee, April 20, 2000. Subject: European regulation of eCommerce. View testimony.

8. *Universal Studios, Inc. v. Reimerdes*, 111 F. Supp. 2d 294 (S.D.N.Y. 2000), aff'd 273 F.3d 429 (2d Cir. 2001). Served as an expert for plaintiff movie studios concerning accused software for decrypting DVDs in the first case interpreting the Digital Millennium Copyright Act. Result: permanent injunction issued in favor of plaintiffs on August 17, 2000. Contact: William Hart, Esq., Proskauer Rose LLP. View testimony. View opinion. View appellate opinion. (D,T)

9. *MercExchange, L.L.C. v. eBay, Inc. et al.*, Case No. 2:01-CV-736 (E.D. Va. 2001). Served as an expert for defendant eBay in an infringement case concerning U.S. Patent 6,202,051 for Internet auctions. Following Dr. Shamos' reports, Defendants obtained a summary judgment of noninfringement of the subject patent. On the other patents, the case went to the U.S. Supreme Court, which ruled that injunctions are not automatic in patent cases. Contact: Tim Teter, Esq., Cooley LLP. (D,R)

10. *Powerquest Corp. v. Quarterdeck Corp. et al.*, Case No. 2:97-CV-0783 (D. Utah 1997). Served as an expert for plaintiff PowerQuest in an infringement case concerning U. S. Patents 5,675,769 and 5,706,472 for a method of resizing hard disk partitions. Dr. Shamos testified at the Markman hearing. Case settled when one of the defendants acquired plaintiff. Attorney: Gregg I. Anderson, Esq., formerly at Merchant & Gould, now an Administrative Patent Judge at the Patent Trial and Appeal Board. (R,T)

11. *Sightsound.Com Inc. v. N2K Inc. et al.*, C.A. 98-118 (W.D. Pa. 1998). Served as an expert for defendants, including a subsidiary of Bertelsmann AG, concerning validity of U.S. Patents 5,191,573 and 5,966,440 for distribution of digital audio via telecommunications lines. Case settled. Firm: Parcher, Hayes & Snyder, (no longer in existence). Contact: Steven M. Hayes, Esq., Simmons Hanley Conroy, LLC, 112 Madison Ave., New York, NY 10016. (D,R)

12. *Freemarkets, Inc. v. B2eMarkets, Inc.*, C.A. 02-162-SLR (D. Del. 2002). Served as an expert witness for plaintiff concerning infringement of U.S. patents 6,216,114 and 6,223,167, concerning methods of conducting electronic auctions. Case settled two weeks after expert

attended a demonstration of the accused product. Contact: D. Michael Underhill, Esq., Boies, Schiller & Flexner, LLP, Washington, DC.

13. *Lifecast.com, Inc. v. ClubCorp, Inc.*, AAA Case No. 71Y1170076301 (Dallas, TX). Served as an expert witness for respondent in a case alleging copyright infringement of Internet websites. Testified at arbitration. Result: Complainant's claims denied; award for respondent on counterclaims and for attorney's fees. Contact: Bill Whitehill, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. (T)

14. *IP Innovation LLC v. Thomson Learning, Inc. et al.*, Case H-02-2031 (S.D. Tex. 2002). Served as a expert for defendant The Princeton Review, Inc. concerning alleged infringement of U.S. Patent 4,877,404 relating to online delivery of educational courses. Summary judgment of non-infringement obtained for defendant after favorable Markman proceeding. Contact: Peter Vogel, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. (R)

15. *Starpay.com LLC et al. v. Visa International Service Association et al.*, Case 3-03-CV-976-L (N.D. Tex. 2003). Served as an expert for defendant Visa concerning alleged infringement of U.S. Patent 5,903,878 relating to online authentication of credit card customers. Dr. Shamos provided the court with a Markman tutorial in 2004 and a non-infringement and invalidity declaration in 2008. Case settled in February 2008. Contact: Stanley Young, Esq., Covington & Burling LLP, 333 Twin Dolphin Drive, Suite 700, Redwood Shores, CA 94065. (D,R,T)

16. *Safeclick LLC v. Visa International Service Association et al.*, Case C-03-5865 (N.D. Cal. 2003). Served as an expert for defendant Visa concerning alleged infringement of U.S. Patent 5,793,028 relating to online authentication of credit card customers. Summary judgment of noninfringement granted for Visa based on expert reports, affirmed after appeal to the Federal Circuit. Contact: Stanley Young, Esq., Covington & Burling LLP, 333 Twin Dolphin Drive, Suite 700, Redwood Shores, CA 94065. (D,R)

17. *Wells Fargo Bank Minnesota, NA et al. v. UBS Warburg Real Estate Securities, Inc.*, Case 02-2849 (192d Judicial District, Dallas Cty., Tex, 2002) and *LaSalle Bank, NA et al. v. UBS Warburg Real Estate Securities, Inc.*, Case 02-2899-G (134th Judicial District, Dallas Cty., Tex, 2002). Served as an expert for defendant UBS Warburg in an electronic discovery matter involving a case of first impression regarding Texas Discovery Rule 196.4 allocating costs of discovery of electronic records. Firm: Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. Contact: Dawn Estes, Esq., Taber, Estes Okon Thorne & Carr PLLC, 3811 Turtle Creek Blvd., Suite 2000, Dallas, TX 75219. (D, R)

18. *American Association of People with Disabilities et al. v. Shelley et al.*, Case No. CV04-1526 FMC (PJWx) (C. D. Calif., 2004). Served as an expert for plaintiff AAPD, which has brought a claim against the California Secretary of State that requiring DRE voting machines to be equipped with audit trails violates the rights of disabled persons. Plaintiffs' application for TRO and preliminary injunction denied. Firm: Howrey LLP, (no longer in existence). Attorney John E. McDermott is now a Magistrate Judge in the Central District of California. (R)

19. *Paul Ware v. Target Corp.*, CA 4:03-CV-0243-HLM (N.D. Ga., 2003). Served as an expert for defendant Target Corp., a large retailer, in a case involving U.S. patent 4,707,592, claiming a method of conducting credit card sales. Case settled during Markman preparations. Contact: Thomas P. Burke, Esq., Ropes & Gray LLP, 1211 Ave. of the Americas, New York, NY 10036.

20. *Viad Corp., v. C. Alan Cordial et al.,* No. 03-1408 (W.D. Pa., filed 2003). Served as an expert for defendants in an action alleging misappropriation of trade secrets relating to software for automating certain aspects of the exhibit booth and trade show industries. Status: case settled immediately before trial, after plaintiff's unsuccessful Daubert challenge of Dr. Shamos. Contact: Barbara Scheib, Esq., Cohen & Grigsby, P.C., 11 Stanwix Street, Pittsburgh, PA 15222. (D,R,T)

21. *Schade et al. v. Maryland State Bd. of Elections et al.*, Case No. C0497297 (Cir. Ct. Anne Arundel Cty. Md., 2004). Served as an expert for defendants in a case challenging the decision of the Board of Elections not to decertify Diebold AccuVote system. Result: Plaintiff's motion for preliminary injunction denied, upheld on appeal. Judge Manck's opinion cites Dr. Shamos' testimony as follows: "the court finds Dr. Shamos, Defendants' expert, to be the true voice of reason and the most credible expert in this matter." The denial of preliminary injunction was upheld by the Maryland Court of Appeals, which commented extensively on Dr. Shamos' testimony in its opinion. Contact: Michael Berman, Esq., (formerly Maryland Deputy Attorney General), Rifkin, Weiner, Livingston, Levitan & Silver, LLC. (R,T)

22. *Wexler et al. v. Lepore et al.*, Case No. 04-80216 (CIV-COHN) (S.D. Fla. 2004) . Served as an expert for defendants, various Florida election supervisors against claim by U.S. Congressman Robert Wexler that use of DRE voting machines without paper audit trails violates the equal protection clause of the U.S. Constitution. Dr. Shamos testified on Oct. 19, 2004. The trial judge rendered judgment in favor of defendants on Oct. 25. Contact: Jason Vail, Esq., then Assistant Attorney General, Department of Legal Affairs, The Capitol, Tallahassee, FL, now at Allen Norton & Blue, PA. Opinion. (T)

23. *Siemens Information and Communication Networks, Inc. v. Inter-Commercial Business Systems, Inc.*, Civil Action 3-03CV2171-L (N.D. Tex. 2004). Served as an expert for defendant against claim of copyright infringement based on reverse-engineered firmware resident in telephone switching systems. Status: case settled shortly after the submission of Dr. Shamos's rebuttal report on non-infringement. Contact: Bill Whitehill, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. (R)

24. *Soverain Software LLC v. Amazon.com, Inc.*, C.A. No. 6:04-CV-14 (E.D. Tex. 2004). Served as an expert for plaintiff regarding asserted patents 5,708,780, 5,715,314 and 5,909,492, relating to the shopping cart paradigm of electronic commerce. Status: settled in Sept. 2005 with Amazon paying $40 million to Soverain and taking a license under the patents in suit. Contact: Ognian Shentov, Esq., Jones Day, 222 E. 41st St., New York, NY 10017. (D,R)

25. *CollegeNET, Inc. v. The Princeton Review, Inc.*, Case '051205KI (D. Ore. 2005). Served as a expert for defendant The Princeton Review, Inc. concerning alleged infringement of U.S. Patent 6,460,042 relating to online delivery of educational courses. Case settled in December

2007. Contact: Peter Vogel, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. (R)

26. *CombineNet, Inc. v. Verticalnet. Inc.*, GD 05-018911 (Ct. Common Pleas, Allegheny Cty., PA). Served as an expert for plaintiff in an action for trade secret misappropriation relating to a system for conducting electronic auctions. Plaintiff won in arbitration. Contact: Mark Knedeisen, Esq., K&L Gates LLP, 210 Sixth Avenue, Pittsburgh, PA 15222-2613. (T)

27. *RealSource, Inc. v. Best Buy Co., Inc. et al.*, No. A04-CA-771-LY (W.D. Tex.). Served as an expert for defendant Lowe's Companies, Inc., against a claim of infringement of U.S. patent 5,732,136 relating to validation of point-of-sale debit card transactions. Provided a tutorial to the Court during Markman proceedings concerning debit card technology. Defendants won summary judgment of non-infringement, affirmed by the Federal Circuit. Defendants Lowe's settled and was not involved in the appeal. Contact: Michael S. Connor, Esq., Alston & Bird LLP, Bank of America Plaza, 101 South Tryon St, Suite 4000, Charlotte, NC 28280-4000. (R,T)

28. *DE Technologies, Inc. v. Dell, Inc. et al.*, No. 7:04-CV-00628 (W.D. Va.). Served as an expert for plaintiff DE Technologies, Inc., asserting a claim of infringement of U.S. patents 6,460,020 and 6,845,364, relating to a system for implementing international sales transactions. Case settled after and adverse summary judgment. However, the Court used Dr. Shamos' testimony in its opinion. Contact: David Marder, Esq., Robins Kaplan Miller & Ciresi LLP, 800 Boylston Street, 25th Floor, Boston, MA 02199. (D,R,T)

29. *Eaton Power Quality Corp. v. J.T. Packard & Associates*, No. 05 C 3545 (N.D. Ill. 2005). Served as expert for plaintiff in a claim of software copyright infringement involving a system for configuring industrial uninterruptible power supplies. Case settled in early 2007. Firm: Dewey & LeBoeuf. Contact: Keith P. Schoeneberger, Esq., Pasulka & Associates PC. (D,R)

30. *Taylor et al. v. Onorato et al.*, CA 06-481 (W.D. Pa 2006). Served as an expert for Commonwealth of Pennsylvania defendants in an action seeking to enjoin the use of electronic voting machines in Allegheny County, PA. Dr. Shamos testified at length in a preliminary injunction hearing held April 25-27, 2006 before Judge Lancaster. The injunction was denied on April 28. Suit was subsequently dropped by plaintiffs. Contact: Mark Aronchick, Esq., Hangley Aronchick Segal Pudlin & Schiller, One Logan Square, 18th & Cherry Streets, 27th Floor, Philadelphia, PA 19103. (T)

31. *FedEx Ground Package System, Inc. v. Applications International Corp.*, CA No. 03-1512 (W.D. Pa.). Served as an expert for defendant counterclaiming for copyright infringement and trade secret misappropriation relating to software for maintaining occupational health and safety records. Dr. Shamos's testimony was excluded because he was unable to perform a side-by-side comparison of the original and accused works. Case has settled. Contact: Ronald Hicks, Esq., Meyer, Unkovic & Scott LLP, 1300 Oliver Bldg., Pittsburgh, PA 15222. (D,R)

32. *NetMoneyIN, Inc. v. Verisign, Inc. et al.*, Cv-01-441-TUC-RCC (D. Ariz.). Served as an expert for defendants Bank of America Merchant Services, Inc. and Wells Fargo Bank, N.A., who

are accused of infringing claim 23 of U.S. patent 5,822,737, relating to an electronic payment system. Wells Fargo and Bank of America have settled. Contact: K&L Gates LLP, State Street Financial Center, One Lincoln Street, Boston, Massachusetts 02111-2950. (D,R)

33. *Contois Music Technology, LLC v. Apple Computer, Inc.*, 2:05-CV-163 (D. Vermont, filed Feb. 13, 2006). Served as an expert for plaintiff in an action alleging that the Apple iTunes software infringed U.S. patent 5,864,868, relating to a method for selecting music from an electronic catalog. Case settled after a favorable Markman order. Contact: John Rabena, Esq., Sughrue Mion PLLC, 2100 Pennsylvania Avenue, NW, Suite 800, Washington, DC 20037-3213.

34. *Banfield et al. v. Cortés*, 442 MD 2006 (PA Cmwlth. Ct.). Served as an expert for defendant Secretary of the Commonwealth of Pennsylvania in an action to compel the decertification of all electronic voting machines in Pennsylvania. In February 2008 Defendant successfully repelled an emergency motion for preliminary injunction. In August 2012, the Court denied Petitioners' motion for summary judgment, citing Dr. Shamos's expert report extensively. In October 2013, the Commonwealth Court granted summary judgment for the Secretary. The Pennsylvania Supreme Court affirmed on February 18, 2015. Contact: Steven E. Bizar, Esq., Buchanan Ingersoll & Rooney PC, Two Liberty Place, 50 S. 16th St., Philadelphia, PA 19102-2555. (D,R)

35. *Remote Inventory Systems, Inc. v. WESCO Distribution, Inc.*, AAA Case No. 55 171 00493 05 (Pittsburgh, PA). Served as an expert for respondent in a case alleging misappropriation of trade secrets in a computerized inventory system. Contact: Kirsten Rydstrom, Esq., Reed Smith LLP, 225 Fifth Ave., Pittsburgh, PA 15222. (D,R)

36. *SyncSort, Inc. v. Innovative Routines International, Inc.,* Civil Action No. 04-3623 (WHW) (D. New Jersey). Served as an expert witness for defendant in an action alleging misappropriation of trade secrets embodied in plaintiff's Unix sorting software. Dr. Shamos testified at a bench trial in January 2011. Case settled after an appeal to the Third Circuit was filed. Contact: David R. Fine, Esq., K&L Gates LLP, 17 N. Second Street, 18th Floor, Harrisburg, PA 17101-1507. (D,R,T)

37. *Digital Impact, Inc. v. Bigfoot Interactive, Inc.*, Civil Action C05 00636 (CW) (N.D. Cal.). Served as an expert witness for defendant in an action alleging infringement of U.S. Patent 6,449,634, relating to determining which file formats can be processed by an email client. Result: defendant obtained summary judgment of non-infringement, upheld by the Federal Circuit. Contact: Arthur Dresner, Esq., Duane Morris LLP, 1540 Broadway, New York, NY 10036. (D,R)

38. *Prism Technologies LLC v. Verisign, Inc. et al.*, CA 05-214-JJF (D. Del.). Served as an expert for plaintiff in an action alleging infringement of U.S. Patent 6,516,416, relating to use of a hardware key for authentication over networks. Defendants prevailed on summary judgment of non-infringement, which was upheld on appeal. Firm: Robins Kaplan Miller & Ciresi LLP. Contact: Dirk D. Thomas. Esq., McKool Smith, 1999 K Street, N.W., Suite 600, Washington, DC 20006. (R)

39. *AdvanceMe, Inc. v. Rapidpay LLC et al.*, Civil Action 6:05-cv-424 LED (E.D. Tex., Tyler Division). Served as an expert witness for plaintiff in an action alleging infringement of U.S. Patent 6,941,281, relating to an automated payment system for dividing credit card proceeds between a merchant and another party. Testified at a bench trial in July 2007 before Judge Davis, who held the patent infringed but invalid for obviousness. Firm: Paul, Hastings LLP, Five Palo Alto Sq., Palo Alto, CA 94306. Contact: Ronald S. Lemieux, Esq., Singularity LLP, 275 Shoreline Drive, Redwood Shores, CA 94065. (D,R,T)

40. *IBM Corp. v. Amazon.com, Inc.*, CA 9:06-CV-242-RHC (E.D. Tex., Lufkin Div.) and *IBM Corp. v. Amazon.com, Inc.*, CA 6:06-CV-452-LED (E.D. Tex., Marshall Div.). Served as an expert for IBM in related actions alleging infringement of U.S. Patents 5,319,542, 5,442,771, 5,446,891, 5,796,967 and 7,072,849, all concerning methods of conducting electronic transactions, and a counterclaim for infringement of U.S. Patent 5,826,258, concerning a method for querying semistructured data. Case settled early in discovery when the parties cross-licensed each other's patents. Contact: Mark J. Ziegelbein, Esq., Dentons US LLP, 2000 McKinney Ave., Suite 1900, Dallas, TX 75201-1858.

41. *The MathWorks, Inc. v. COMSOL AB et al.*, CA 6:06-CV-334 (E.D. Tex., Tyler Division). Served as an expert for plaintiff The MathWorks, providers of the mathematical software system MATLAB, in an action alleging copyright infringement and infringement of U.S. Patents 7,051,338 and 7,181,745 concerning methods for invoking object methods from external environments. After trial, the case settled with defendant admitting infringement, paying $12,000,000 in damages and waiving appeal rights. Contact: Krista Schwartz, Esq., Jones Day, 77 W. Wacker Dr., Chicago, IL 60601-1692.

42. *Avante Int'l. Technology Corp. v. Diebold Election Systems et al.,* Case 4:06-CV-0978 TCM (E.D. Mo., Eastern Division). Served as an expert for defendants Sequoia Voting Systems and Premier Election Systems in an action alleging infringement of U.S. Patents 6,892,944, 7,036,730 and 7,077,313 concerning electronic voting technology. Dr. Shamos testified at a 5-day trial in February 2009. Result: The jury found Plaintiff's asserted claims invalid as anticipated and obvious. Contact: Peter T. Ewald, Esq., Oliff & Berridge, PLC, 277 South Washington Street, Suite 500, Alexandria, VA 22314. (D,R,T)

43. *Netcraft Corp. v. eBay, Inc. and PayPal, Inc.*, Case 3:07-cv:00254-bbc (W.D. Wisc. 2007). Served as an expert for defendants in an action alleging infringement of U.S. Patents 6,351,739 and 6,976,008 concerning methods of billing for ecommerce transactions over the Internet. Defendants were granted summary judgment of non-infringement on Dec, 10, 2007, upheld on appeal. Firm: Irell & Manella LLP, 180 Avenue of the Stars, Los Angeles, CA 90067. Contact: Kenneth Weatherwax, Esq., Goldberg, Lowenstein & Weatherwax LLP, 1925 Century Park East, Suite 2120, Los Angeles, CA 90067.

44. *ACLU of Ohio et al. v. Brunner et al.*, Case 1:09 CV 0145 (N.D. Ohio 2008). Served as an expert witness in an action alleging that the use of central count optical scan voting should not be permitted in Cuyahoga County, as had been ordered by the county board of elections. A preliminary injunction was denied in February 2008. The case became moot and was dismissed in May 2008 when the Ohio Legislature granted by statute the relief requested by plaintiff,

prohibiting the use of central count opscan in Cuyahoga County. Contact: Meredith Bell-Platts, Esq., ACLU Voting Rights Project, 2600 Marquis One Tower, Atlanta, GA 30303. (R)

45. *Ariba, Inc. v. Emptoris, Inc.*, Civil Action 9:07-CV-90-RHC (E.D. Tex. 2007). Served as an expert for Ariba in an action alleging infringement of U.S. Patents 6,216,114 and 6,499,018, relating to the conduct of electronic auctions. Dr. Shamos testified in a jury trial on infringement and validity. Result: verdict finding all asserted claims valid and willfully infringed. Contact: Robert Fram, Esq., Covington & Burling LLP, One Front St., San Francisco, CA 94111. (D,R,T)

46. *EpicRealm Licensing, LP v. Autoflex Leasing Inc. et al.*, CA 5:07-CV-125 (E.D. Tex. 2005). Served as an expert for defendant Herbalife International of America, Inc. in an action alleging infringement of U.S. patents 5,894,554 and 6,415,335, relating to a system for managing generation of dynamic Internet web pages. All original defendants settled. See also the Oracle case below. Contact: Ognian Shentov, Esq., Jones Day, 222 E. 41st St., New York, NY 10017. Also served as an expert for defendant FriendFinder in a separate trial in this action. After a jury trial before Judge Folsom, the patents were found valid and infringed, but the jury awarded only $1.1M, the smallest amount testified to by defendant's damages expert. Contact: Michael J. Sacksteder, Esq., Fenwick & West LLP, 555 California St., San Francisco, CA 94104. (D,R,T)

47. *Oracle Corporation v. EpicRealm Licensing, LP,* CA 2-06-414 (D. Del. 2006), later *Oracle Corporation v. Parallel Networks, LLC.* Served as an expert for Oracle in a declaratory judgment alleging invalidity of U.S. patents 5,894,554 and 6,415,335, relating to a system for managing generation of dynamic Internet web pages. The patents are the same as those in the EpicRealm case, above. Oracle obtained summary judgment of non-infringement, reversed on appeal to the Federal Circuit. Case settled in May 2011 on the eve of trial. Firm: Kilpatrick Townsend & Stockton, LLP, 379 Lytton Ave., Palo Alto. CA 94301. Contact: Theodore T. Herhold, Singularity LLP, 275 Shoreline Drive, Redwood Shores, CA 94065. (D,R)

48. *Saulic v. Symantec Corporation et al.*, Case No. SA CV 07-610 AHS (C.D. Cal., Santa Ana Division, 2007). Served as an expert for defendant Symantec in a removal action alleging violation of California Civil Code §1747.8, relating to the collection of personal identification information in connection with credit card transactions. Case settled. Original firm: Heller Ehrman. Contact: Chad R. Fuller, Esq., Troutman Sanders LLP, 11682 El Camino Real, Suite 400, San Diego, CA 92121. (R)

49. *Gusciora et al. v. McGreevey et al.* (now *Gusciora v. Christie*), Docket No. MER-L-2691-04 (N.J. Super., Mercer County). Served as an expert for defendants, including the Governor and Attorney General of New Jersey, in a case alleging that the state's AVC Advantage voting machines are unconstitutionally insecure. A bench trial was held from January-May, 2009 before Judge Linda Feinberg. The Court's opinion adopts Dr. Shamos' testimony and comments on it extensively. Affirmed on appeal in October 2013. Contact: Leslie Gore, Esq., Asst. Atty. Gen'l., 25 Market Street, P.O. Box 112, Trenton, NJ 08625. (D,R,T)

50. *R.R. Donnelley & Sons Company v. Quark, Inc. et al.*, C.A. No. 06-00032-JJF (D. Del.). Served as an expert for plaintiff R.R. Donnelley in a case alleging infringement of U.S. Patents 6,205,452, 6,327,599, 6,844,940 and 6,952,801, relating to book assembly, imposition of graphics and control of electronic presses. Case has settled. Contact: Stuart W. Yothers, Esq., Ropes & Gray LLP, 1251 Avenue of the Americas, New York, NY 10020.

51. *MOAEC, Inc. v. Pandora Media, Inc. et al.*, Case No. 07-cv-654-bbc (W.D. Wisc.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 5,969,283, 6,232,539, 6,953,886 and 7,205,471, relating to systems for organizing and retrieving digital music. Two defendants obtained summary judgment of noninfringement; the remaining defendant settled. Contact: Joshua Krumholz, Esq., Holland & Knight, LLP, 10 St. James Avenue, 11th Floor, Boston, MA 02116. (D,R)

52. *Web.com, Inc. v. The Go Daddy Group, Inc.*, Case No. CV07-01552-PHX-MHM (D. Ariz.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 6,654,804, 6,789,103, 6,842,769 and 6,868,444, relating to methods for managing configuration of web servers and provision of Internet services. Case has settled. Firm: Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, CA 94304. Contact: Richard G. Frenkel, Esq., Latham & Watkins LLP, 140 Scott Drive, Menlo Park, CA 94025.

53. *Hummel et al. v. Dynacraft BSC, Inc. et al.*, Case No. CV 052214 (Cal. Super. Marin Cty.). Served as an expert for defendants in an action alleging breach of contract for web hosting services. Dr. Shamos provided four hours of trial testimony. Result: verdict for the defense. Contact: Joe B. Harrison, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Suite 3000, Dallas, TX 75201. (T)

54. *Tegg Corp. v. Beckstrom Electric Co. et al.*, Civil Action No. 2:08-CV-00435-NBF (W.D. Pa.). Served as an expert for defendants in a case alleging infringement of copyright in computer software for administering field maintenance of electrical equipment. Case has settled. Original firm: Reed Smith LLP. Contact: Richard D.Kelley, Esq., Bean Kinney & Korman, 2300 Wilson Blvd., Suite 700, Arlington, VA 22220.

55. *Cordance Corporation v. Amazon.com, Inc.*, Civil Action No. 06-491-MPT (D. Del.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 5,862,525, 6,088,717 and 6,757,710, relating to an infrastructure for conducting online transactions. In August 2009 a jury found the '717 patent valid but not infringed and the '710 patent infringed but invalid. The finding of invalidity of the '710 patent was vacated by the Court on judgment as a matter of law. The Federal Circuit reversed and reinstated the jury's finding. Contact: Robert M. Abrahamsen, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210. (D,R, T)

56. *Anthurium Solutions, Inc. v. MedQuist, Inc. et al.*, Case No. 2:07-vcv-484 (DF/CE) (E.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patent 7,031,998, relating to a distributed workflow system. Case settled ten days after responsive expert reports

were served. Contact: Joshua Krumholz, Esq., Holland & Knight, LLP, 10 St. James Avenue, 11th Floor, Boston, MA 02116. (R)

57. *Performance Pricing, Inc. v. Google, Inc. et al.*, Case No. 2:07-cv-432(LED) (E.D. Tex.). Served as an expert for defendant Yahoo! in a case alleging infringement of U.S. Patent 6,978,253, relating to determining prices for items sold online. Case has settled as to defendant Yahoo!. Contact: Michael A. Jacobs. Esq., Morrison & Foerster LLP, 425 Market Street, San Francisco, CA 94105. Also served as an expert for remaining defendants Google and AOL. In March 2010 the Court granted defendants' motion for summary judgment of noninfringement, affirmed by the Federal Ciruit. Contact: David A. Perlson. Esq., Quinn Emanuel Urquhart & Sullivan, LLP, 50 California Street, San Francisco, CA 94111. (D,R)

58. *Nationwide Power Solutions, Inc. et al., v. Eaton Electrical Inc.*, Case No. CV-8:07-0883-JVS (C.D. Cal.). Served as an expert for defendant/counterclaimant Eaton in a case alleging antitrust violations by Eaton arising out of proprietary servicing software in its uninterruptible power supplies. Case has settled. Contact: James L. Day, Esq., Latham & Watkins LLP, 505 Montgomery Street, Suite 2000 San Francisco, CA 94111.

59. *CBS Interactive, Inc. v. Etilize, Inc.*, Case No. C -6-05378 (MHP) (N.D. Cal.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 6,714,933 and 7,082,426, relating to web crawling technology to aggregate product information. Defendant consented to an injunction against further infringement and the case settled. Firm: Winston & Strawn, LLP, 101 California Street, San Francisco, CA 94111. Contact: Glenn E. Westreich, Esq., Hayes and Boone, LLP, 2033 Gateway Place, San Jose, CA 95110.

60. *Geographic Services, Inc. v. Anthony Collelo*, Case 2008-9961 (Fairfax Cty., Va.)Served as an expert for plaintiff in a case alleging misappropriation of trade secrets involving determining and proofing geographic names as applied to maps and satellite imagery. Case was dismissed by Judge Ney on technical legal grounds at the close of Plaintiff's case. The Virgina Supreme Court reversed and remanded the case for further proceedings. Case has settled. Contact: Mark W. Wasserman, Esq., Reed Smith LLP, 3110 Fairview Park Drive, Suite 1400, Falls Church, VA 22042. (D,R,T)

61. *ODS Technologies, LP v. Magna Entertainment Corp, et al.*, CV 07-03265 DDP (D. Del.). Served as an expert for defendants in a case alleging infringement of U.S. Patents 5,830,068, 6,004,211, 6,089,981, 6,554,709 and 7,229,354, relating to off-track wagering systems and methods for restricting wagering based on location. Dr. Shamos submitted a declaration in support of summary judgment. Case settled before expert reports were due. Contact: Virginia DeMarchi, Esq., Fenwick & West, LLP, 801 California Street, Mountain View, CA 94041. (R)

62. *Gannett Satellite Information Network, Inc. v. Office Media Network, Inc.*, C.A. No. 08-96-GMS (D.Del.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 6,288,688, 6,622,826, 6,981,576 and 7,270,219, relating to display of advertising information

on screens in elevators. Case settled shortly after Dr. Shamos's deposition. Contact: Steven R. Trybus, Esq., Jenner & Block LLP, 353 N. Clark St., Chicago, IL 60654. (D,R)

63. *Avante Int'l. Technology Corp. v. Premier Election Solutions et al.,* Case 4:06-CV-091367-ERW (E.D. Mo., Eastern Division). Served as an expert for defendants Sequoia Voting Systems and Premier Election Systems in an action alleging infringement of U.S. Patents 7,422,150, and 7,431,209 concerning electronic voting technology. Case settled in December 2009. Contact: Peter T. Ewald, Esq., Oliff & Berridge, PLC, 277 South Washington Street, Suite 500, Alexandria, VA 22314. (R)

64. *Accenture Global Services GmbH et al. v. Guidewire Software, Inc.*, Civ. No. 07-826-SLR (D. Del.). Served as an expert for Accenture in a case alleging misappropriation of trade secrets and infringement of U.S. Patents 7,013,284 and 7,017,111, relating to automated insurance claim handling. The District Court found the asserted system claims invalid under 35 U.S.C. §101, affirmed by the Federal Circuit at 2011-1486. Case settled in Oct. 2011. Original firm: Morrison & Foerster, LLP. Contact: L. Scott Oliver, Esq., K&L Gates LLP, 630 Hansen Way, Palo Alto, CA 94304. (D,R)

65. *Alexsam, Inc. v. Evolution Benefits, Inc. et al.,* Case No. 2:07cv288-TJW (E.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patent 6,000,608, relating to multifunction epayment cards. Case settled four weeks after Dr. Shamos's deposition. Original firm: Wolf, Greenfield & Sacks, P.C. Contact: James Foster, Esq., Hayes Messina Gilman Hayes LLC, 200 State St., 6th Floor, Boson, MA 02109. (D,R)

66. *Motivation Innovations, LLC v. DSW Inc. et al.*, C.A. No. 08-334-SLR (D. Del.). Served as an expert for defendant DSW, Inc. in a case alleging infringement of U.S. Patent 5,612,527, relating to a system for redeeming discount offers at point of sale. Case has settled. Contact: Drew Blatt, Ph.D., Esq., Wood, Heron & Evans LLP, 2700 Carew Tower 441 Vine Street Cincinnati, Ohio 45202.

67. *Discovery Communications, Inc. v, Amazon.com, Inc.*, C.A. No. 09-178-ER (D. Del.). Served as an expert for plaintiff Discovery Communications in a case alleging infringement of plaintiff's U.S. Patents 5,986,690, 6,657,173, 7,298,851, 7,299,501, 7,336,788 and 7,401,286, relating to electronic book viewers and electronic book selection and delivery systems, and defendant-counterclaimant's U.S. Patents 6,029,141 and 7,337,133, relating to Internet-based customer referral systems. Case has settled. Contact: Brent P. Lorimer, Esq., Workman | Nydegger, 1000 Eagle Gate Tower, 60 East South Temple Salt Lake City, UT 84111.

68. *Amazon.com v. Discovery Communications, Inc.*, No. 2:09-cv-0681-RSL (W.D. Wash.). Served as an expert for defendant Discovery Communications in a case alleging infringement of U.S. Patents 6,006,225, 6,169,986, relating to refinement of online search queries, and U.S. Patents 6,266,649 and 6,317,722., relating to generation of online recommendations. Case has settled. Contact: Brent P. Lorimer, Esq., Workman | Nydegger, 1000 Eagle Gate Tower, 60 East South Temple Salt Lake City, UT 84111.

69. *IMX, Inc. v. E-Loan, Inc. and Banco Popular North America, Inc.*, No. 09-cv-20965 (S.D. Fla.). Served as an expert for defendants in a case alleging infringement of U.S. Patent 5,995,947, relating to an interactive loan processing and mortgage trading system. Case was stayed pending reexamination. On appeal after reexamination, all but four of the asserted claims were cancelled. In CBM2015-00012, all asserted claims were found unpatentable under §101. Case has settled. Contact: Samuel A. Lewis, Esq., Feldman Gale, PA, One Biscayne Tower, 30th Floor, 2 South Biscayne Blvd., Miami, FL 33131. (D,R)

70. *Soverain Software LLC v. CDW Corp. et al.*, C.A. No. 6:07-CV-511 (E.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 5,715,314, 5,909,492, and 7,272,639, relating to methods of conducting electronic commerce. All defendants settled except Newegg, Inc. Dr. Shamos testified on validity at a jury trial in April 2010. Result: all claims valid; the '314 and '492 claims infringed, with a running royalty assessed against Newegg. After trial, the Court found the '639 patent infringed as a matter of law. In January 2013 the Federal Circuit found the asserted claims obvious as a matter of law, The Supreme Court declined review. Contact: Ognian Shentov, Esq., Jones Day, 222 E. 41st St., New York, NY 10017. (D,R,T)

71. *Netcraft Corp. v. AT&T Mobility LLC et al.*, C.A. No. 07-651-GMS (D. Del.). Served as an expert for defendants in a case alleging infringement of U.S. Patents 5,974,221, 6,351,738 and 6,411,940, relating to electronic commerce billing methods. Case settled two months after Dr. Shamos's deposition. Contact: H. Jonathan Redway, Esq., Dickinson Wright PLLC, 1875 Eye St., Washington, DC 20006. (D,R)

72. *ValueClick, Inc. v. Tacoda, Inc., AOL, LLC and Platform-A, Inc.*, Case No. 2:08-cv-04619 DSF (JCx) (C.D. Cal.). Served as an expert for defendants in a case alleging infringement of U.S. Patents 5,848,396 and 5,991,735, relating to software and methods for creating psychographic profiles of network users. Case settled in May 2010. Original firm: Orrick, Herrington & Sutliffe, LLP. Contact: Paul R. Gupta, Esq., DLA Piper, 1251 Avenue of the Americas, New York, NY 10020.

73. *SP Technologies, Inc. v. Garmin Limited et al.*, Civil Action No. 08-CV-3248 (N.D. Ill.). Served as an expert for defendant TomTom, Inc. in a case alleging infringement of U.S. Patent 6,784,873, relating to graphical keyboards on touchscreens. Defendants prevailed on summary judgment of invalidity. Contact: Brian Pandya, Esq., Wiley Rein LLP, 1776 K Street NW, Washington DC 20006. (D,R)

74. *ePlus, Inc. v. Lawson Software, Inc.,* Civil Action No. 3:09-cv-620 (E.D. Va.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 6,023,683, 6,055,516 and 6,505,172, relating to electronic procurement systems. Dr. Shamos testified at a jury trial in Richmond in January 2011. Result: No infringement as to most accused configurations; infringement as to others. Past damages were precluded by the Court. On appeal. the Federal Circuit found the system claims invalid as indefinite. Contact: Daniel McDonald, Esq., Merchant & Gould PC, 3200 IDS Center, 80 South Eighth Street, Minneapolis, MN, 55402. (D,R,T)

75. *Bed Bath & Beyond, Inc. v. Sears Brands*, LLC, Civil Action 08 CV 5839-SDW-MCA (D. N.J.). Served as an expert for plaintiff in a declaratory judgment action regarding alleged infringement of U.S. Patent 5,970,474, relating to retail gift registry systems. Case has settled. Contact: William Mentlik, Esq., Lerner David Littenberg, Krumholz & Mentlik LLP, 600 South Avenue West, Westfield, NJ 07090. (D,R)

76. *Transauction, LLC v. eBay, Inc.*, Case No. 3:09-cv-3705-SJ (N.D. Cal.). Served as an expert for defendant in a case alleging infringement of U.S. Patent 7,343,339, relating to guarantees in online auctions. Case settled after expert reports were submitted. Firm: Irell & Manella LLP, 1800 Avenue of the Stars, Suite 900, Los Angeles, CA 90067. Contact: Peter E. Gratzinger, Esq., Munger, Tolles & Olson LLP, 355 South Grand Avenue, Los Angeles, CA 90071. (R)

77. *SDG Corporation v. Patrizzi & Co. Auctioneers SA et al.*, ICDR Case No. 50 117 T 00313 09 (Int'l. Centre for Dispute Resolution). Served as an expert for claimant in an arbitration alleging breach of contract to produce software for operating online auctions. Dr. Shamos testified at arbitration in October 2010. Award for SDG on all claims and denial of all of Patrizzi's counterclaims. Contact: Bruce Fox, Esq., Obermayer Rebmann Maxwell & Hippel LLP, One Mellon Center, Suite 5240, Pittsburgh, PA 15219. (D,R,T)

78. *Walker Digital, LLC v. Capital One Services, LLC et al.*, Civil Action 1:10cv212 (JFA) (E.D. Va.). Served as an expert for defendants in a case alleging infringement of U.S. Patents 5,970,478 and 6,374,230, relating to customizing and pricing credit card accounts. Defendants prevailed on summary judgment of non-infringement supported by a declaration from Dr. Shamos. Affirmed by the Federal Circuit on July 28, 2011. Contact: Charles S. Barquist, Esq., Morrison & Foerster LLP, 555 West Fifth Street, Suite 3500, Los Angeles, CA 90013. (R)

79. *Voter Verified, Inc. v. Premier Election Solutions, Inc. et al.*, Case No. 6:09-cv-1968-19KRS (M.D. Fla.). Served as an expert for defendants, manufacturers of voting equipment, in a case alleging infringement of U.S. Patents 6,769,613 and RE40,449, relating to paper trail verification of ballots. The Court denied a Daubert motion to exclude testimony by Dr. Shamos. Summary judgment of non-infringement granted July 28, 2011, affirmed by the Federal Circuit November 5, 2012. Contact: Robert M. Evans, Jr., Esq., Senniger Powers LLP, 100 North Broadway, 17th Floor, St. Louis, MO 63102. (R)

80. *Elder et al. v. National Conference of Bar Examiners*, No. C 11-00199 SI (N.D. Cal.). Served as an expert for disabled plaintiffs in a case seeking an injunction to permit them to take the bar examination in electronic format. Preliminary injunction granted Feb. 16, 2011. Plaintiff took the bar exam, passed and was awarded $224,000 in attorney's fees. Contact: Daniel F. Goldstein, Esq., Brown, Goldstein & Levy, LLP, 120 E. Baltimore St., Suit 1700, Baltimore, MD 21202. (R)

81. *Ameranth, Inc. v. Menusoft Systems Corp., et al.*, Civil Action 2-07-CV-271 TJW/CE (E.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 6, 384,850, 6,871,325 and 6,982,733, relating to synchronous updating of restaurant menus on wireless devices. After trial, the jury found the patents not infringed. Case settled while an

appeal to the Federal Circuit was pending. Contact: John W. Osborne, Esq., Osborne Law LLC, 33 Habitat Lane, Cortlandt Manor, NY 10567. (D,R,T)

82. *BuyFigure.com, Inc. v. Autotrader.com et al.*, Case No. 06391 (Ct. of Common Pleas of Philadelphia County, PA, 2010). Served as an expert for defendants in a case alleging misappropriation of trade secrets concerning a method of selling automobiles over the Internet. Summary judgment was granted in Defendants' favor in August 2012. Contact: Howard D. Scher, Esq., Buchanan Ingersoll & Rooney, P.C., Two Liberty Place, 50 S. 16th Street, Philadelphia, PA 19102. (R)

83. *Soverain Software LLC v. J.C. Penney Corp., Inc. et al.*, C.A. No. 6:09-CV-274 (E.D. Tex.). Served as an expert for plaintiff on validity issues in a case alleging infringement of U.S. Patents 5,715,314, 5,909,492, and 7,272,639, relating to methods of conducting electronic commerce. The '639 patent was dropped before trial and all defendants settled except Avon Products and Victoria's Secret. After trial, the jury found all claims valid and infringed, and awarded damages of $9.2 million against Victoria's Secret and $8.7 million against Avon. Contact: Robert B. Wilson, Esq., Quinn Emanuel Urquhart & Sullivan, LLP, 51 Madison Avenue, 22nd Floor, New York, NY 10010. (D,R,T)

84. *AOL, LLC, et al. v. Yahoo! Inc. et al.*, No. 09 Civ. 3774 (WHP) (S.D.N.Y). Served as an expert for declaratory judgment plaintiff AOL in a case alleging infringement of U.S. Patents 6,078,866, 6,269,361, 6,546,386, 6,907,566, 7,043,483, 7,107,264, 7,373,599, and 7,702,541, relating to online advertising placement and targeted e-commerce. Case settled in Feb. 2011. Original firm: Orrick, Herrington & Sutliffe LLP. Contact: William B. Tabler II, Esq., Flextronics, 6201 America Center Drive, San Jose, CA 95002.

85. *Accenture Global Services GmbH et al. v. Guidewire Software, Inc.*, Civ. No. 09-848-SLR (D. Del.). Served as an expert for Accenture in a case alleging infringement of U.S. Patent 7,617,240, relating to automated insurance claim handling. Case settled in Oct. 2011. Original firm: Morrison & Foerster, LLP. Contact: L. Scott Oliver, Esq., K&L Gates LLP, 630 Hansen Way, Palo Alto, CA 94304. (D,R)

86. *Amdocs (Israel) Limited v. Openet Telecom, Inc. et al.*, Case 1:10-cv-00910-LMB-TRJ (D. Del.). Serving as an expert for Defendant Openet in a case alleging infringement of U.S. Patents 6,836,797 and 7,631,065, relating to aggregated billing for network services. Summary judgment of non-infringement granted in favor of Defendants in Sept. 2012. The Court's opinion cites Dr. Shamos' testimony. Judgment reversed on appeal in 2014, but on remand, all claims were invalidated as claiming non-statutory subject matter. After a second appeal, the §101 ruling was reversed. Contact: Brian Pandya, Esq., Wiley Rein LLP, 1776 K Street NW, Washington DC 20006. (D,R)

87. *Cross-Atlantic Capital Partners, Inc. v. Facebook, Inc. et al.*, Case 07-CV-2768 JP (E.D. Pa.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patent 6,519,629, relating to establishment of online communities. Asserted claims were cancelled upon reexamination. Case has been dismissed. Original firm: McShea/Tecce PC. Contact: Frederick

Tecce, Esq., Panitch Schwarze Belisario & Nadel LLP, One Commerce Square, 2005 Market Street, Suite 2200, Philadelphia, PA 19103. (R)

88. *Chavez et al. v. Bennett et al.*, CV 2006-007000 (Ariz. Super., Maricopa Cty.). Served as an expert for defendant Secretary of State of Arizona and county defendants in a case alleging that the electronic voting systems used in Arizona violated the rights of voters. Case was voluntarily dismissed by plaintiffs in May 2011. Contact: Laurence G. Tinsley, Jr., Esq, Senior General Counsel, Maricopa County Office of General Litigation Services, 301 W. Jefferson St., Phoenix, AZ 85003.

89. *Bonnette v. District of Columbia Court of Appeals and National Conference of Bar Examiners*, No. 11-cv-01053-CKK (D. D.C.). Served as an expert for a disabled plaintiff in a case seeking a preliminary injunction permitting her to take the bar examination in electronic format. Injunction granted. Case subsequently settled with Plaintiff receiving $141,000 in attorneys' fees and costs. Contact: Daniel F. Goldstein, Esq., Brown, Goldstein & Levy, LLP, 120 E. Baltimore St., Suit 1700, Baltimore, MD 21202.

90. *Jones v. National Conference of Bar Examiners et al.*, No. 5:11-cv-00174-cr (D. Vermont). Served as an expert for a disabled plaintiff in a case seeking an injunction permitting to take the bar examination using assistive technology. The preliminary injunction was granted. Plaintiff was awarded $275,000 in attorneys' fees and costs.. Contact: Daniel F. Goldstein, Esq., Brown, Goldstein & Levy, LLP, 120 E. Baltimore St., Suit 1700, Baltimore, MD 21202. (R)

91. *AlmondNet, Inc. v. Microsoft Corporation*, Case 10-CV-298 (W.D. Wisc.). Served as an expert for plaintiff and counterclaim defendant AlmondNet in a case alleging infringement of U.S. Patents 6,973,436, 7,072,853, 7,454,364 and 7,822,637 by Microsoft, relating to bidding for Internet ad placement, and infringement of U.S. Patent 6,632,248 by AlmondNet, relating to customization of network documents via a unique user identifier. Microsoft obtained summary judgment of non-infringement. Contact: Meredith Zinanni, Esq., Kirkland & Ellis LLP, 300 N. LaSalle, Chicago, IL 60604.

92. *Kelora Systems, LLC. v. Target Corporation et al.*, Case 10-CV-683 (W.D. Wisc.). Served as an expert for defendant Mason Companies, Inc. in a case alleging infringement of U.S. Patent 6,275,821, relating to guided parametric searching in online catalogs. Case settled as to this defendant in July 2011. The Court granted summary judgment of invalidity and non-infringement as to the other defendants, affirmed by the Federal Circuit. Contact: Shane A. Brunner, Esq., Merchant & Gould, 10 East Doty St., Suite 600, Madison, WI 53703.

93. *TNS Media Research, LLC et al. v. TRA Global, Inc.*, Case 1:2011-CV-4039 (SAS) (S.D. N.Y.). Served as an expert for declaratory judgment plaintiffs in case alleging infringement of U.S. Patent 7,729,940, relating to anonymous matching of program viewing data from television set-top boxes with purchase data from other sources. Patentee's motion for preliminary injunction was denied on Sept. 23, 2011. Plaintiffs' motion for summary judgment of non-infringement was granted on October 3, 2013. Reversed and remanded by the Federal

Circuit. Contact: Michael Albert, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210. (R)

94. *Accenture Global Services GmbH et al. v. Guidewire Software, Inc.*, Case 3:11-03563-JSW (N.D. Cal.); *Guidewire Software, Inc. v. Accenture PLC et al.*, Case 4:11-cv-04686-LB (N.D. Cal.). Served as an expert for Accenture in related cases alleging infringement by Guidewire of U.S. Patents 6,574,636, 7,409,355 and 7,979,382, relating to systems for insurance claim handling and alleging infringement by Accenture of U.S. Patents 5,630,069, 5,734,837, 6,058,413 and 6,073,109, relating to workflow management systems. Cases settled in Oct. 2011. Contact: Colleen Garlington, Esq., Kirkland & Ellis LLP, 300 N. LaSalle St., Chicago, IL 60604.

95. *XPRT Ventures, LLC v. eBay, Inc. et al.*, C.A. 1:2010-cv-595 (SLR) (D. Del.). Serving as an expert for Defendants eBay and PayPal in a case alleging infringement of U.S. Patents 7,483,856, 7,512,563, 7,567,937, 7,599,881, 7,610,244, 7,627,528, relating to methods of paying for items purchased through electronic auctions. Case has been stayed pending reexamination. Contact: Adrian Percer, Esq., Weil, Gotshal & Manges, LLP, 201 Redwood Shores Parkway, Redwood Shores, CA 94065. (D,R)

96. *Rich Media Club, LLC et al. v. Nikolai Mentchoukov et al.*, Civil No. 2:11-cv-01202-SA (D. Utah). Served as an expert for Plaintiffs in a case alleging breach of an employment contract, unfair competition concerning systems for placing advertisements on web pages and infringement of U.S. Patent 7,313,590, relating to communication between client and server computers without requiring a browser. Contact: Jared Richards, Esq., Bennett Tueller Johnson & Deere, LLC, 3165 East Millrock Drive, Suite 500, Salt Lake City, Utah 84121. (R)

97. *Franklin Inventions LLC v. Election Systems & Software, Inc.*, Case No: 2:09-cv-377 (E.D. Tex.). Served as an expert for Defendants in a case alleging infringement of U.S. Patents 6,986,999, 7,243,846 and 7,575,164, relating to voter-verifiable voting systems. Case settled after a declaration concerning invalidity was submitted by Dr. Shamos. Contact: Robert M. Evans, Jr., Esq., Senniger Powers LLP, 100 North Broadway,17th Floor, St. Louis, MO 63102. (R)

98. *Illinois Computer Research, LLC v. HarperCollins Publishers, LLC, et al.*, Case No.: 10-cv-9124 (S.D.N.Y). Served as an expert for Defendants in a case alleging infringement of U.S. Patent 7,111,252, relating to limiting access to electronic books. Case settled after Markman. Contact: Brian S. Rosenbloom. Esq., Rothwell, Figg, Ernst & Manbeck, P.C., 607 14th Street, N.W., Suite 800, Washington, DC 20005. (R)

99. *Realtime Data, LLC d/b/a IXO v. Morgan Stanley et al.,* Case No.: 11 Civ. 6696 (RJH), *Realtime Data, LLC d/b/a IXO v. CME Group Inc. et al.,* Case No.: 11 Civ. 6701 (RJH), *Realtime Data, LLC d/b/a IXO v. Thompson Reuters, et al.,* Case No.: 1:2011-cv-06704 (RJH) (S.D.N.Y). Served as an expert for Plaintiff in three consolidated cases alleging infringement of U.S. Patents 7,417,568, 7,714,747, and 7,777,651, relating to compression and decompression of financial data streams. Summary judgment granted for defendants, upheld by the Federal

Circuit. Contact: Dirk D. Thomas. Esq., McKool Smith, 1999 K Street, N.W., Suite 600, Washington, DC 20006. (D,R,T)

100. *Mulhern Belting, Inc. v. Tele-Data Solutions, Inc.*, Civil Action L-2258-10 (Sup. Ct. Bergen Cty. NJ). Served as an expert for defendant Vertical Communications, Inc. in a case alleging breach of contract and fraud in connection with the installation of an integrated voice-over-IP (VoIP) telecommunications system. Case has settled. Contact: John J. Abromitis, Esq., Courter, Kobert & Cohen P.C., 1001 Route 517, Hackettstown, NJ 07840. (R)

101. *Decision Support, LLC v. Election Systems & Software, Inc.*, Case No: 3:10cv90 (W.D. N.C.). Served as an expert for Defendants in a case alleging infringement of U.S. Patent 7,497,377, relating to electronic voter registration and pollbook systems. Case has settled. Contact: Robert M. Evans, Jr., Esq., Senniger Powers LLP, 100 North Broadway, 17th Floor, St. Louis, MO 63102. (R)

102. *Rovi Corporation et al. v. Amazon.com, Inc. et al.*, Case No. 11-cv-00003-RGA (D. Del.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patents 5,988,078, 6,275,268, 6,769,128, 7,493,643 and 7,603,690, relating to customized on-screen television guides. The parties stipulated to entry of judgment of noninfringement. Contact: Ragesh L. Tangri, Esq., Durie Tangri LLP, 217 Leidesdorff Street, San Francisco, CA 94111.

103. *Certain Products Containing Interactive Program Guide and Parental Control Technology*, USITC Inv. No. 337-TA-820. Served as an expert for Complainants Rovi Corporation et al. and against Vizio, Inc. et al. in an International Trade Commission proceeding involving alleged infringement of U.S. Patents 6,701,523, 7,047,547, 7,493,643 and RE41,993, relating to v-chips and electronic TV program guides. Case has settled. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. (R)

104. *Rovi Corporation et al. v. Roku, Inc.*, Case No. 12-cv-2185 EJD (N.D. Cal.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patent 6,898,762, relating to a client/server electronic television program guide. Voluntarily dismissed by plaintiff without prejudice. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. , 275 Middlefield Road Suite 100, Menlo Park, CA 94025.

105. *Rovi Corporation et al. v. LG Electronics, Inc. et al.*, Case No. 12-cv-00545-SLR (D. Del.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patents 6,898,762, 7,065,709, 7,225,455, 7,493,643 and 8,112,776, relating to electronic television program guides. Case has settled. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. .

106. *Rovi Corporation et al. v. Vizio, Inc.*, Case No. 12-cv-00546-SLR (D. Del.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patents 6,898,762, 7,065,709, 7,103,996 and 8,112,776, relating to electronic television program guides. Case has settled. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304.

107. *Rovi Corporation et al. v. Mitsubishi Electric Corp. et al.*, Case No. 12-cv-00547-SLR (D. Del.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patents 6,701,523, 7,225,455 and 7,493,643, relating to electronic television program guides. Case has settled. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. .

108. *Netflix, Inc. v. Rovi Corporation et al.*, Case No. 11-cv-06591-PJH (N.D. Cal.). Served as an expert for Defendants in a declaratory judgment case seeking a declaration of non-infringement of U.S. Patents 6,305,016, 6,898,762, 7,100,185, 7,103,906 and 7,945,929, relating to electronic television program guides. Summary judgment was granted declaring all asserted claims invalid under 35 U.S.C. §101, affirmed by the Federal Circuit. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. (R)

109. *Certain Products Containing Interactive Program Guide and Parental Control Technology*, USITC Inv. No. 337-TA-845. Served as an expert for Complainants Rovi Corporation et al. and against Netflix, Inc. et al. in an International Trade Commission proceeding involving alleged infringement of U.S. Patents 6,701,523, 6,898,762, 7,065,709, 7,103,906, 7,225,455, 7,493,643 and 8,112,776, relating to v-chips and electronic TV program guides. On Initial Determination, all claims Dr. Shamos testified about were found valid. The import requirement was found not satisfied and no infringement was found. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. (D,R,T)

110. *Yardi Systems, Inc. v. Realpage, Inc. et al.*, Case No. 2:11-cv-0090-ODW-JEM (C.D. Cal.). Served as an expert for Defendants in an action alleging misappropriation of trade secrets, unfair competition, violation of the Computer Fraud and Abuse Act, the Comprehensive Computer Data Access and Fraud Act (Cal. Penal Code §502) and the Digital Millennium Copyright Act, arising out of provision of cloud-based property management systems. Case has settled. Contact: Susan van Keulen, Esq., O'Melveny & Myers LLP, 2765 Sand Hill Road, Menlo Park, CA 94025.

111. *Long Range Systems, LLC v. HME Wireless, Inc.*, Civil Action 3:12-cv-03659-P (N.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patent 6,712,278, relating to a wireless system for locating a customer's table in a restaurant. Case was dismissed by plaintiff. Contact: David Cabello, Esq., Wong, Cabello, Lutsch, Rutherford & Brucculeri, LLP, 20333 SH 249, Suite 600, Houston, Texas 77070. (R)

112. *EdiSync Systems, LLC v. Centra Software, Inc. et al.*, Civil Action 03-cv-01587-WYD-MEH (D. Colo.). Served as an expert for Defendant Saba Software Inc. in a case alleging infringement of U.S. Patent 5,799,320, relating to multi-author document editing systems. Case has settled. Contact: Robert M. Abrahamsen, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210. (D,R)

113. *TecSec, Inc. v. IBM et al.*, Case No. 1:10-cv-115-LMB/TCB (E.D. Va.). Served as an expert for Defendant SAS Institute, Inc. in a case alleging infringement of U.S. Patents 5,369,702, 5,680,452, 5,717,755 and 5,898,781, relating to the Distributed Cryptographic Object Method, allowing embedding of encrypted objects within other objects. The Court entered judgment of non-infringement after Markman. Affirmed by the Federal Circuit at 2011-1303. Contact:

Thomas R. Goots, Esq., Jones Day, North Point, 901 Lakeside Avenue, Cleveland, Ohio 44114-1190.

114. *Integrated Technological Systems, Inc. v. Green Dot Corporation*, Civ. Action No. 2:11-cv-01626-GMN-(GWF) (D. Nev.). Served as an expert for Defendant in a case alleging infringement of U.S. Patent 7,912,786, relating to an electronic payment system for transferring money between debit card accounts. Case has settled. Contact: Benjamin J. Sodey, Esq., Bryan Cave LLP, One Metropolitan Square (211 North Broadway), Suite 3600, St. Louis, MO 63102-2750.

115. *Hausen et al. v. PS Illinois Trust*, Case No. 11-cv-06888 (N.D. Ill.). Served as an expert for Plaintiff in a case concerning the reasonableness of credit card and email notification practices employed by a public storage facility prior to selling customers' stored goods. Case has settled. Contact: Jeffrey S. Becker, Esq., Swanson, Martin & Bell, LLP, 330 N. Wabash, Suite 3300, Chicago, IL 60611. (D,R)

116. *Linksmart Wireless Technology, LLC v. T-Mobile, USA, Inc. et al.*, Case 2:08-cv-264-DF-CE (E.D. Texas). Served as an expert for Defendant Choice Hotels International, Inc. in a case alleging infringement of U.S. Patent 6,778,118, relating to rule-based redirection of Internet service requests based on a user ID. Case has settled. Contact: Gregory R. Lyons, Esq., Wiley Rein LLP, 1776 K Street NW, Washington DC 20006.

117. *SAP America, Inc. v. Purple Leaf, LLC et al.*, Case No. 4:11-cv-04601-PJH (N.D. Cal.). Served as an expert for declaratory judgment plaintiff SAP in a case alleging infringement of U.S. Patents 7,603,311 and 8,027,913, relating to methods for conducting payment transactions over the Internet. Case has settled. Original firm: Simpson Thatcher & Bartless LLP. Contact: Brian McCloskey, Esq., Greenberg Traurig, LLP, MetLife Building, 200 Park Ave., New York, NY 10166.

118. *Ameranth, Inc. v. PAR Technology Corp., et al.*, Civil Action 2-10-CV-294 JRG-RSP (E.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 6,384,850 and 6,871,325, relating to synchronous updating of hospitality applications and data on wireless devices. Case settled after expert reports were served. Contact: John W. Osborne, Esq., Osborne Law LLC, 33 Habitat Lane, Cortlandt Manor, NY 10567. (R)

119. *Digital-Vending Services International, LLC, v. The University of Phoenix, Inc. et al.*, Civil Action 2:09-cv-555-AWA-TEM (E.D. Va.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 6,170,014, 6,282,573 and 6,606,664, relating to content delivery methods particularly applicable to online courseware. Summary judgment of non-infringement granted October 4, 2013. Contact: Andrew G. DiNovo, Esq., DiNovo Price Ellwanger & Hardy LLP, 7000 N. MoPac Expressway, Suite 350, Austin, TX 78731. (D,R)

120. *Analytical Mechanics Associates, Inc. v. Rhythm Engineering, LLC et al.*, Case No. 4:12-cv-00008 (E.D. Va.). Served as an expert for defendants in a case alleging breach of a contract relating to development of an image processing system to detect vehicles at intersections and

control traffic signals. Case was resolved by binding arbitration. Contact: John K. Power, Esq., Husch Blackwell LLP, 4801 Main Street, Suite 1000, Kansas City, MO 64112. (D,R,T)

121. *Protegrity Corporation v. Voltage Security, Inc.*, Case No. 3:10-CV-755 (RNC) (D. Conn.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 6,321,201, 6,963,980 and 7,325,129, relating to methods of encrypting databases. Case settled during trial. Contact: Edward G. Poplawski, Esq., Wilson Sonsini Goodrich & Rosati Professional Corporation, 650 Page Mill Road, Palo Alto, CA 94304-1050. (D,R,T)

122. *Progressive Casualty Insurance Company v. Allstate Insurance Company et al.,* Case No. 1:11-cv-00082-BYP. Served as an expert for defendant Allstate in a case alleging infringement of U.S. Patent 6,064,970, relating to determining the cost of automobile insurance by monitoring the location and activity of a vehicle, and U.S. Patent 7,124,088, relating to online modification and quoting of insurance policies. Case has settled as to Allstate. Contact: James Medek, Esq., Kirkland & Ellis LLP, 300 North LaSalle Chicago, IL 60654.

123. *Symantec Corporation v. Acronis, Inc. et al.*, Case No. 3:11-cv-05310 EMC (N.D. Cal.). Served as an expert for plaintiff and infringement counterclaim defendant Symantec in a case alleging infringement of U.S. Patents 6,615,365, 7,047,380, 7,246,211 and 7,266,655, relating to online disk backup, imaging and recovery systems, U.S. Patent 7,093,086, relating to backup of virtual machines, U.S. Patent 7,322,010, relating to graphic views of computer configurations and U.S. Patent 7,565,517, relating to retargeting hardware configuration images to new hardware. Case has settled. Contact: Jennifer Kash, Esq., Quinn Emanuel Urquhart & Sullivan LLP, 50 California Street, 22nd Floor, San Francisco, California 94111. (D,R)

124. *Secure Axcess, LLC v. Bank of America Corp. et al.*, Civil Action No. 6:10-cv-670-LED (E.D. Tex.). Served as an expert for defendants Zions First National Bank and Amegy Bank N.A.. in a case alleging infringement of U.S. Patent 7,631,191, relating to authenticating web pages. Case has settled as to those defendants. Contact: Brian Pandya, Esq., Wiley Rein LLP, 1776 K Street NW, Washington DC 20006.

125. *The MoneySuite Company v. Insurance Answer Center, LLC et al.,* Case No. SACV 11-1847-AG (C.D. Cal.). Served as an expert for defendants, including The Allstate Corporation, in a case alleging infringement of U.S. Patent 6,684,189, relating to online quoting of insurance policy rates. Case has settled. Contact: Garret A. Leach, Esq., Kirkland & Ellis LLP, 300 N. LaSalle, Chicago. IL 60654. (D,R)

126. *e-LYNXX Corporation v. Innerworkings, Inc. et al.*, CA 1:10-cv-02535-CCC (M.D. Pa.). Served as an expert for defendants, including R.R. Donnelley & Sons Company, in a case alleging infringement of U.S. Patents 7,451,106 and 7,788,143, relating to electronic procurement of customized goods and services. The Court granted summary judgment of non-infringement in July 2013. Contact: James R. Nuttall, Esq., Steptoe & Johnson, LLP, 115 South LaSalle Street, Suite 3100, Chicago, IL 60603. (R)

127. *Vasudevan Software, Inc. v. Microstrategy, Inc.*, Case No. 3:11-cv-06637-RS-PSG (N.D. Cal.). Served as an expert for defendant in a case alleging infringement of U.S. Patents

6,877,006, 7,167,864, 7,720,861 and 8,082,268, relating to methods of online analytical processing (OLAP). The patents were found invalid on summary judgment. On appeal, the Federal Circuit upheld the Court's claim constructions and judgment of non-infringement. Declaratory judgment counterclaims voluntarily dismissed. Contact: Kevin A. Smith, Esq., Quinn Emanuel Urquhart & Sullivan, LLP, 50 California Street, San Francisco, CA 94111. (R)

128. *Digonex Technologies, Inc. v. Qcue, Inc.*, Case No. 1:12-cv-00801-SS (W.D. Texas). Served as an expert for plaintiff in a case alleging infringement of U.S Patents 8,095,424 and 8,112,303, relating to computerized methods for dynamic pricing. In a Markman order, the Court found the claims indefinite. Contact: David D. Schumann, Fenwick & West LLP, 555 California Street, 12th Floor, San Francisco, CA 94104. (D,R,T)

129. *Peter Mayer Publishers, Inc. v. Daria Shilovskaya et al.*, Case No. 12-CV-8867-PG (S.D. N.Y.). Served as an expert for declaratory judgment defendants in a case of first impression to determine whether a reliance party under 17 U.S.C. §104A(d)(3)(B) may issue an ebook version of a work to which copyright has been restored. The Court ruled that ebooks are not transformative and hence not derivative works. Contact: Timothy O'Donnell, Esq., 40 Exchange Place, 19th Fl., New York, NY 10005. (R)

130. *SIPCO, LLC v. Control4 Corporation et al.*, CA 1:11-cv-00612-JEC (N.D. Georgia). Served as an expert for defendants Schneider Electric Buildings Americas, Inc. and Schneider Electric USA, Inc. in a case alleging infringement of U.S. Patents 7,103,511, 7,468,661 and 7,697,492, relating to systems for monitoring remote sensors and controlling remote devices. Case has settled. Contact: Benjamin Bradford, Esq., Jenner & Block LLP, 353 N. Clark St., Chicago, IL 60654-3456.

131. *Unified Messaging Solutions LLC v. Google, Inc. et al.*, Case 1:12-cv-06286 (N.D. Ill.). Served as an expert for defendant eBay, Inc. in a case alleging infringement of U.S. Patents 6,857,074, 7,836,141, 7,895,306, 7,895,313, and 7,934,148, relating to message storage and delivery systems. Case has settled as to defendant eBay, Inc. Contact: Yar R. Chaikovsky, Esq., McDermott Will & Emery LLP, 275 Middlefield Road, Suite 100, Menlo Park, CA 94025.

132. *Credit Card Fraud Control Corporation v. PayPal, Inc.*, Case No. 9:12-CV-81143 (S.D. Fla.). Served as an expert for defendant PayPal in a case alleging infringement of U.S. Patent 8,229,844, relating to reduction of fraud in online transactions. Plaintiff dismissed the case with prejudice based on prior art located by PayPal. Contact: Adrian Percer, Esq., Weil, Gotshal & Manges, LLP, 201 Redwood Shores Parkway, Redwood Shores, CA 94065.

133. *Comscore, Inc. v. Integral Ad Science, Inc.*, Civil Action 2:12-cv-00351-HCM-DEM (E.D. Va.). Served as an expert for defendant Integral in a case alleging infringement of U.S. Patents 6,108,637, 6,115,680, 6,327,619, 6,418,470, 7,386,473, 7,613,635, 7,716,326 and 7,756,974, relating to determining whether a portion of a displayed page is visible to a user. Case has settled as to defendant Integral. Contact: Robert M. Abrahamsen, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210.

134. *Ariba, Inc. v. Coupa Software, Inc.*, Case No. 3:12-cv-01484 JST (N.D. Cal.). Served as an expert for plaintiff Ariba in a case alleging infringement of U.S. Patent 7,117,165, relating to electronic methods for approving requisitions and generating purchase orders. Case has settled. Contact: Amy Van Zant, Esq., Covington & Burling LLP, 333 Twin Dolphin Drive, Redwood Shores, CA 94605-1418. (D,R)

135. *Lowe v. National Board for Respiratory Care, Inc. et al.*, Docket 1:12-cv-00345-DBH (D. Maine). Served as an expert for disabled plaintiff in a case seeking an injunction permitting to take a professional qualification examination using assistive computer technology. Case settled shortly after Dr. Shamos's declaration in support of preliminary injunction was filed. Contact: Kristin Aiello, Esq., Managing Attorney, Disability Rights Center, 24 Stone St., Augusta, ME 04338. (R)

136. *Checkfree Corporation et al. v. Metavante Corporation et al.*, Case No. 3:12-cv-15-J-34JBT (M.D. Fla.) Served as an expert for defendant Metavante in a case alleging infringement of U.S. Patents 7,383,223, 7,792,749, 7,853,524 and 7,966,311, relating to transferring funds in electronic payment networks. Defendants have counterclaimed, alleging infringement of U.S. Patents. 7,370,014, 7,734,543 and 7,958,049, relating to electronic invoice presentment. All claims of all four patents asserted by Plaintiff have been found invalid by the Patent Office. Case was stayed pending appeal, followed by voluntary dismissal by Plaintiff. Contact: Jeffrey A. Berkowitz, Esq., Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., Two Freedom Square, 11955 Freedom Drive, Reston, VA 20190-5675. (D,R)

137. *PPS Data, LLC v. Passport Health Communications, Inc.*, Case No. 2:12-cv-00438-DN (C.D. Utah). Served as an expert for defendant Passport in a case alleging infringement of U.S. Patents 6,341,265 and 7,194,416, relating to preparing and correcting health insurance claim forms. Case settled shortly after Dr. Shamos's claim construction report was served. Contact: Edward J. Pardon, Esq., Merchant & Gould, 10 East Doty Street, Suite 600, Madison, WI 53703. (R)

138. *Lodsys, LLC v. Combay, Inc. et al.*, Civil Action 2:11-cv-272 (E.D. Texas). Served as an expert for defendant Symantec Corporation in a case alleging infringement of U.S. Patents 7,222,078 and 7,620,565, relating to gathering feedback from products through a user interface. Case settled two weeks after Dr. Shamos's deposition. Contact: David D. Schumann, Fenwick & West LLP, 555 California Street, 12th Floor, San Francisco, CA 94104. (D,R)

139. *Long Range Systems, LLC v. HME Wireless, Inc.*, Civil Action 3:12-cv-04162M (N.D. Tex.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 6,542,751 and 7,062,281, relating to methods of paging customers at a restaurant. Case was dismissed by plaintiff after a tentative Markman ruling. Contact: David Cabello, Esq., Wong, Cabello, Lutsch, Rutherford & Brucculeri, LLP, 20333 SH 249, Suite 600, Houston, Texas 77070. (R)

140. *Symantec Corporation v. Veeam Software Corporation*, Case No. 3:12-cv-0700-SI (N.D. Cal.). Served as an expert for plaintiff Symantec in a case alleging infringement of U.S. Patents 6,931,558, relating to methods for restoring network devices after failure, 7,024,527, relating to methods of backing up disk while applications are active, 7,093,086, relating to methods for

backing up virtual machines, 7,254,682, relating to snapshot disk backup, 7,480,822, relating to restoring running states of computing systems, 7,831,861, relating to restoring application data and 8,117,168, relating to virtual disk backups. Case is stayed pending PTAB review. All asserted claims have been found unpatentable. On appeal to the Federal Circuit, the PTAB's claim construction and obviousness determinations were upheld, case remanded to allow amendment of claims. Case subequently settled. Contact: Jennifer Kash, Esq., Quinn Emanuel Urquhart & Sullivan LLP, 50 California Street, 22nd Floor, San Francisco, California 94111. (R)

141. *EMG Technology, LLC v. Green Mountain Coffee Roasters and Keurig*, Inc., Case No. 6:13-cv-144 (E.D. Texas) (Lead case: 6:13-cv-134). Served as an expert for Defendants in a case alleging infringement of U.S. Patent 7,441,196, relating to a method of navigating a Web page linked to a sister web site. Case has settled. Contact: Michael A. Albert, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210.

142. *eDirect Publishing, Inc. v. Live Career, Ltd., et al.*, Case No. 12-CV-1123-JAH-JMA (S.D. Cal.). Served as an expert for plaintiff eDirect in a case alleging infringement of U.S. Patents 6,363,376 and 6,757,674, relating to automatic submission of information to career websites. Case has settled. Contact: Ryan Baker, Esq., Baker Marquart LLP, 10990 Wilshire Blvd., Los Angeles, CA 90024. (D,R)

143. *Motivation Innovations, LLC v. Ulta Salon Cosmetics and Fragrance, Inc. et al.*, C.A. No. 11-615-SLR-MPT (D. Del.). Served as an expert for defendant Ulta in a case alleging infringement of U.S. Patent 5,612,527, relating to a system for redeeming discount offers at point of sale. The Court granted summary judgment of noninfringement. Contact: Julie Heaney, Esq., Morris, Nichols, Arsht & Tunnell, LLP, 1201 North Market Street, Wilmington, DE 19899-1347. (D,R)

144. *Computer Software Protection, LLC v. Autodesk, Inc.*, C.A. No. 12-452-SLR (D. Del.). Served as an expert for Defendant Autodesk in a case alleging infringement of U.S. Patent 6,460,140, relating to unlocking the use of software remotely using validation number, a registration key and a license key. Case has settled. Contact: Cheryl T. Burgess, Esq., Knobbe, Martens, Olson & Bear, L.L.P., 2040 Main Street, 14th Floor Irvine, CA 92614. (R)

145. *Voltage Security, Inc.* v. *Protegrity Corporation*, CBM2014-0024, Patent Trial and Appeal Board. Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 8,402,281, relating to methods of encrypting databases. Matter has settled. Contact: Matthew Argenti, Esq., Wilson Sonsini Goodrich & Rosati Professional Corporation, 650 Page Mill Road, Palo Alto, CA 94304-1050. (R)

146. *United Video Properties, Inc. et al. v. Haier Group Corp. et al.*, C.A. No. 11-1140-KAJ (D.Del.). Served as an expert for Plaintiffs in a case alleging infringement of U.S. Patents 6,701,523 and 7,047,547, relating to television parental control technology. Case has settled. Contact: Hong S. Lin, Esq., Paul Hastings LLP, 1117 S. California Avenue, Palo Alto, CA 94304. (D,R)

147. *Droplets, Inc. v. E*TRADE Financial Corporation et al.*, Case No.: 1:12-CV-02326-CM (S.D.N.Y.). Serving as an expert for defendants in an action alleging infringement of U.S. Patents 6,687,745 and 7,502,838, and 8,402,115, relating to delivering interactive links for presenting applications on a client computer. Defendants prevailed on a summary judgment of non-infringement on the '745 Patent. All claims of the '115 and '838 Patents were found invalid after IPRs. Case is stayed during Federal Circuit appeal. Contact: Michael Levin, Esq., Wilson Sonsini Goodrich & Rosati Professional Corporation, 650 Page Mill Road, Palo Alto, CA 94304-1050. (D,R,T)

148. *Symantec Corporation v. Acronis, Inc. et al.*, Case No. 3:11-cv-05331 JST (N.D. Cal.). Served as an expert for plaintiff and infringement counterclaim defendant Symantec in a case alleging infringement by Symantec of U.S. Patents 7,366,859 and 7,831,789, relating to incremental disk backup, and infringement by Acronis of U.S. Patent 7,024,527, and 7,996,708, relating to disk backup and restore, U.S. Patent 7,454,592, and U.S. Patent 7,941,459, relating to single instance disk storage, and U.S. Patent 7,680,957, relating to modifiable representations of computer configurations. Case has settled. Contact: Jennifer Kash, Esq., Quinn Emanuel Urquhart & Sullivan LLP, 50 California Street, 22nd Floor, San Francisco, California 94111. (D,R)

149. *Jazz Pharmaceuticals, Inc. v. Roxane Laboratories, Inc.*, CA 2:10-cv-06108-ES-MCA (D. N.J.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 7,668,730, 7,765,106, 7,765,107, 7,797,171 and 7,895,059, relating to methods of controlling the distribution of sensitive drugs. Case has settled. Contact: Alan B. Clement, Esq., Locke Lord LLP, Brookfield Place, 200 Vesey Street, 20th Floor, New York, NY 10281-2101. (R)

150. *TuitionFund, LLC v. SunTrust Banks, Inc. et al.*, CA 3:11-cv-00069 (M.D. Tenn.). Served as an expert for defendants Cardlytics, Inc., Regions Financial Corp., and Regions Bank in a case alleging infringement of U.S. Patents 7,499,872, 7,653,572 and 7,899,704, relating to methods for awarding rebates for credit and debit card purchases. Case settled. Contact: Michael S. Connor, Esq., Alston & Bird LLP, Bank of America Plaza, 101 South Tryon Street, Suite 4000, Charlotte, NC 28280-4000. (D,R)

151. *Pollin Patent Licensing, LLC et al. v. AT&T Corporation et al.*, Case No. 1:11-cv-07855 (N.D. Ill.). Served as an expert for defendants in a case alleging infringement of U.S. Patent 7,117,171, relating to verifying financial institution identification in electronic payment systems. Case has settled. Contact: James L. Howard, Esq., Kilpatrick Townsend & Stockton LLP, 1001 West Fourth Street Winston-Salem, NC, 27101.

152. *PPS Data, LLC v. Bluepoint Solutions, Inc.,* Case 2:13-cv-01351 (D. Nev.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 7,181,430, 7,216,106, 7,440,924, 7,624,071 and 8,126,809, relating to methods for processing check images in electronic payment systems. Case has settled. Contact: Anthony H. Son, Esq., Andrews Kurth LLP, 1350 I Street NW, Washington, DC 20005. (Original firm: Wiley Rein).

153. *e-LYNXX Corporation v. Ariba, Inc.*, CA 1:12-cv-01771-CCC (M.D. Pa.). Served as an expert for defendant Ariba, in a case alleging infringement of U.S. Patents 7,451,106, 7,788,143

and 8,209,227, relating to electronic procurement of customized goods and services. Case has settled. Contact: Amy Van Zant, Esq., Covington & Burling LLP, 333 Twin Dolphin Drive, Redwood Shores, CA 94605-1418.

154. *EMG Technology, LLC v. AutoZone, Inc.*, C.A. 6:13-cv-134 (E.D. Tex.) (Lead case: 6:12-cv-543). Served as an expert for defendant AutoZone in a case alleging infringement of U.S. Patent 7,441,196, relating to transcoding web sites into mobile sites. Defendant obtained summary judgment of non-infringement. Contact: Terry L. Clark, Esq., Bass, Berry & Sims PLC, 1201 Pennsylvania Ave. N.W., Washington, D.C. 20004. (R)

155. *In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010,* MDL No. 2179 (E.D. La.). Served as an expert for litigants BP Exploration & Production Inc. et al. on an issue relating to identification of an anonymous person through Internet searching. Contact: Mark. J. Nomellini, Esq., Kirkland & Ellis LLP, 300 N. LaSalle, Chicago, IL 60654. (R)

156. *EC Data Systems, Inc., v. J2 Global, Inc. et al.*, CV 12-07544 (C.D. Cal.). Served as an expert for declaratory judgment plaintiff EC Data Systems in a case alleging infringement of U.S. Patents 6,208,638 and 6,350,066, 6,597,688 and 7,020,132, relating to electronic distribution of faxes through email. Case has settled. Contact: Matthew Spohn, Esq. Norton Rose Fulbright LLP., Tabor Center, 1200 17th Street, Suite 1000, Denver, Colorado 80202.

157. *MoneyCat, Ltd. v. PayPal, Inc.*, CA 1:13-cv-01358-RGA (D. Del.), now 3:14-cv-02490-PSG (N.D. Cal.). Served as an expert for defendant PayPal in a case alleging infringement of U.S. Patents 7,590,602, 8,195,578 and 8,051,011, relating to issuance and transfer of electronic currency. On CBM review, the PTAB found all asserted claims of all three patents invalid, affirmed by the Federal Circuit. Case was subsequently dismissed. Contact: Adrian Percer, Esq., Weil, Gotshal & Manges, LLP, 201 Redwood Shores Parkway, Redwood Shores, CA 94065. (D,R)

158. *GSI Commerce Solutions, Inc.* v. *Clear With Computers, Inc.*, Patent Trial and Appeal Board Case CBM2013-00055. Served as an expert for petitioner, an eBay company, in a covered business method review of U.S. Patent 8,266,015, relating to methods of presenting lists of product customization options. Review was instituted but the CBM was terminated by settlement. Contact:Contact: Scott McKeown, Esq., Ropes & Gray, L.L.P., 2099 Pennsylvania Avenue, Washington, DC 20006-6807. (D,R)

159. *Fidelity National Information Services, Inc. v. Cashedge, Inc. and Checkfree Corporation*, Patent Trial and Appeal Board Cases CBM2013-00028, 30, 31 and 32. Served as an expert for petitioner in covered business method reviews of of U.S. Patents 7,383,223, 7,792,749, 7,853,524 and 7,966,311, relating to transferring funds in electronic payment networks. Reviews have been instituted. All claims of the four patents were invalidated by the PTAB in December 2014. Appeal was taken to the Federal Circuit but terminated by agreement. Contact: Jeffrey A. Berkowitz, Esq., Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., Two Freedom Square, 11955 Freedom Drive, Reston, VA 20190-5675. (D,R)

160. *Boku, Inc. v. Xilidev, Inc.*, Patent Trial and Appeal Board Cases CBM2014-00140 and CBM2014-00148. Served as an expert for petitioner in two covered business method reviews of of U.S. Patent 7,273,168, relating to authorizing payments via handheld devices. Result: claims 1-18 and 20-23 found invalid. Claim 19 cancelled. Contact: Frank Pietrantonio, Esq., Cooley LLP, One Freedom Square, 11951 Freedom Drive, Reston, VA 20190. (R)

161. *Protegrity Corporation v. Phoenix Payment Systems, Inc. d/b/a Electronic Payment Exchange*, Case No. 3:13-CV-1386-VKB (D. Conn.). Served as an expert for defendant in a case alleging infringement of U.S. Patents 6,321,201 and 8,402,281, relating to methods of encrypting databases. Case has settled. Contact: David J. Wolfsohn, Esq., Duane Morris LLP, 20 South 17th Street, Philadelphia, PA 19103. (R)

162. *Ameranth, Inc. v. Genesis Gaming Solutions, Inc. et al.*, Case No. SACV 8:11-0189-AG (C.D. Cal.). Served as an expert for Ameranth in a case alleging infringement of U.S. Patents 7,431,650, 7,878,909 and 8,393,969, relating to systems for managing casino operations, particularly in poker rooms. Case has settled. Contact: John W. Osborne, Esq., Osborne Law LLC, 33 Habitat Lane, Cortlandt Manor, NY 10567. (D,R)

163. *Telebuyer, LLC v. Amazon.com, Inc.*, Case No. 2:13-cv-01677-BJR (W.D.Wash.). Served as an expert for Telebuyer in a case alleging infringement by Amazon.com of U.S. Patents 6,323,894, 7,835,508, 7,835,509, 7,839,984, 8,059,796, 8,098,272, and 8,315,364, relating to systems for interfacing buyers and sellers via communication networks. Summary judgment was entered declaring all asserted claims invalid under 35 U.S. §101. Contact: Brian Berliner, Esq., O'Melveny & Myers LLP, 400 South Hope Street, Los Angeles, CA 90071. (D,R)

164. *GlobeRanger Corporation v. Software AG, et al.*, Civil Action No. 3:11-CV-403-B (N.D. Texas). Served as an expert for GlobeRanger in a case alleging misappropriation of trade secrets and civil conspiracy involving radio-frequency identification (RFID) software and business processes. Result: jury verdict of $15 million in favor of GlobeRanger, upheld on appeal to the Fifth Circuit. Contact: Ophelia Camiña, Esq., Susman Godfrey, L.L.P., 901 Main St., Suite 5100, Dallas, TX 75202-3775. (D,R,T)

165. *In re: ProvideRx of Grapevine, LLC and CERx Pharmacy Partners, LP v. Provider Meds, LP, et al.*, Adv. Proc. No. 13-03015-BJH (Bankr. N.D. Tex). Served as an expert for creditor CERx in a Chapter 7 bankruptcy case involving security interests in software for remote dispensing pharmacies and whether certain licenses constitute encumbrances under Texas law. Case has settled. Contact: Bill Whitehill, Esq., Gardere Wynne Sewell LLP, 1601 Elm St., Dallas, TX 75201. (R)

166. *Square, Inc. v. Protegrity Corporation*, CBM2014-00182, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 8,402,281, relating to methods of encrypting databases. Result: all claims invalid under §101. Contact: Matthew Argenti, Esq., Wilson Sonsini Goodrich & Rosati Professional Corporation, 650 Page Mill Road, Palo Alto, CA 94304-1050. (D,R)

167. *VigLink, Inc. v. Linkgine, Inc.*, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in covered business method petitions 2014-00184 and 2014-00185 seeking review of U.S. Patents 7,818,214 and 8,027,883, relating to modifying affiliate links on webpages. Result: all challenged claims found invalid. Affirmed by the Federal Circuit at 2016-2087, 2016-2088. Contact: Robert C. Hilton, Esq., McGuireWoods LLP, 2000 McKinney Ave., Suite 1400, Dallas, TX 75201. (R)

168. *Juhline et al. v. Ben Bridge Jewelers Inc. et al.*, Case 11-cv-2096-GPC-NLS (S.D. Cal.). Served as an expert for defendant Ben Bridge in a class action alleging violation of California Civil Code §1747.8, relating to the collection of personal identification information in connection with credit card transactions. Case has settled. Contact: Rosemarie T. Ring. Esq., Munger, Tolles & Olson LLP, 560 Mission St., 27th Fl., San Francisco, CA 94105.

169. *Catch Curve, Inc. v. Integrated Global Concepts, Inc. v. j2 Global Communications, Inc. et al.*, Case 1:06-CV-02199 (N.D. Ga.). Served as an expert for defendant and counterclaim plaintiff Integrated Global Concepts in a case alleging infringement of U.S. Patents 4,994,926, 5,291,302, 5,459,584, 6,643,034, 6,785,021, 7,365,884 and 7,525,691, relating to store-and-forward fax systems. Infringement claims were dropped. The issue at bar is whether j2 Global had an objective basis to believe that Integrated Global was infringing. Case has settled. Contact: James Heiser, Esq., Chapman and Cutler, LLP, 111 West Monroe St., Chicago, IL 60603. (D,R)

170. *Phoenix Payment Systems, Inc. v. Protegrity Corporation*, CBM2014-00121, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 8,402,281, relating to methods of encrypting databases. Underlying litigation settled before CBM could be instituted. Contact: Contact: David J. Wolfsohn, Esq., Duane Morris LLP, 20 South 17th Street, Philadelphia, PA 19103. (R)

171. *Informatica Corporation v. Protegrity Corporation*, CBM2015-00010, CBM2015-00021, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in two covered business method petitions seeking review of U.S. Patents 8,402,281 and 6,321,201, relating to methods of encrypting databases. Result: all claims found invalid under 35 U.S.C. §101. The Board's opinions in the '201 case and the '281 case comment favorably on Dr. Shamos's testimony. Contact: Mark S. Kaufman, Esq., Reed Smith LLP, 1301 K Street N.W., Washington, DC 20005. (D,R)

172. *Qualtrics, LLC v. OpinionLab, Inc.*, IPR2014-00314, IPR2014-00356, IPR2014-00366, IPR2014-00406, IPR2014-00420, and IPR2014-00421, Patent Trial and Appeal Board (2014). Served as an expert for patent owner OpinionLab, Inc. in *inter partes* reviews of U.S. Patents 6,421,724, 6,606,581, 8,041,805, 7,085,820, 7,370,285 and 8,024,668, relating to methods of soliciting page-specific feedback regarding web pages. All challenged claims have been found invalid except as to the '805 patent. '724 was not instituted. Contact: Chris Kennerly, Esq., Paul Hastings LLP, 1117 S. California Ave., Palo Alto, CA 94304. (D,R)

173. *Callwave Communications, LLC v. AT&T Mobility, LLC et al.*, Case 1:12-cv-01788-RGA (D. Del.). Served as an expert for defendant Research In Motion, Corp. in a case alleging

infringement of U.S. Patent 7,907,933, relating to methods of billing for purchases by placing a call to a pay-per-call service. Plaintiff stipulated to non-infringement for appeal purposes, but the Federal Circuit upheld on January 10, 2017. Contact: John V. Gorman, Esq., Morgan, Lewis & Bockius LLP, 1701 Market Street, Philadelphia, PA 19103.

174. *SoftVault Systems, Inc. v. Dassault Systèmes Solidworks Corporation*, Case 5:14-cv-03221-LHK (N.D. Cal.). Served as an expert for defendant Solidworks. in a case alleging infringement of U.S. Patents 6,249,868 and 6,594,765 relating to embedded agents for protecting computer systems against theft. Case has settled. Contact: Cheryl T. Burgess, Esq., Knobbe, Martens, Olson & Bear, L.L.P., 2040 Main Street, 14th Floor Irvine, CA 92614.

175. *PPS Data, LLC v. TransCentra, Inc.,* Case 13-359-LPS (D. Del.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 7,181,430, 7,440,924, 7,624,071 and 8,126,809, relating to methods for processing check images in electronic payment systems. Case has settled. Contact: Anthony H. Son, Esq., Andrews Kurth LLP, 1350 I Street NW, Washington, DC 20005. (Original firm: Wiley Rein).

176. *Clear With Computers, Inc. v. Spanx, Inc.*, C.A. 6:12-cv-950-LED (E.D. Texas). Served as an expert for defendant, an eBay company, in a case alleging infringement of U.S. Patent 8,266,015, relating to methods of presenting lists of product customization options. Judgment on the pleadings was granted, invalidating the asserted claims under 35 U.S.C. §101. Case was appealed to the Federal Circuit, but the appeal with withdrawn. Case has settled. Contact: Scott McKeown, Esq., Oblon, Spivak, McClelland, Maier & Neustadt, L.L.P., 1940 Duke Street Underpass, Alexandria, VA 22314.

177. *Integrated Global Concepts, Inc. v. Advanced Messaging Technologies, Inc.*, IPR2014-01027 and IPR2014-01028 Patent Trial and Appeal Board (2014). Served as an expert for petitioner seeking *inter partes* review of U.S. Patents 6,020,980, relating to delivering faxes through electronic mail. The PTAB declined to institute review. Contact: Robert J. Schneider, Esq., Taft Stettinius & Hollister LLP, 111 East Wacker, Suite 2800, Chicago, IL 60601. (R)

178. *athenahealth, Inc. v. AdvancedMD Software, Inc.*, Civil Action 1:11-cv-11260-GAO (D. Mass.). Served as an expert for plaintiff athenahealth, Inc. in a case alleging infringement of U.S. Patents 7,617,116 and 7,720,701, relating to detecting errors in medical insurance claim submissions and automated configuration of medical practice management systems. Case has settled. Contact: Robert M. Abrahamsen, Esq., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210.

179. *CEATS, Inc. v. Orbitz Worldwide, Inc.*, Civil Action 2:13-cv-01385-MMD-PAL (D. Nev.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 7,548,667, 7,640,178, 7,660,727, 8,219,448, 8,229,774 and 8,244,561, relating to systems and methods for managing airline seat reservations. Case has settled. Contact: Jared Bunker, Esq., Knobbe, Martens, Olson & Bear, L.L.P., 2040 Main Street, 14th Floor Irvine, CA 92614.

180. *Audatex North America, Inc. v. Mitchell International, Inc.*, Civil Action 3:13-cv-01523-BEN (BLM) (S.D. Cal.). Served as an expert for plaintiff in a case alleging infringement of U.S.

Patents 7,912,740, 8,200,513 and 8,468,038, relating to systems and methods for determining the valuation of a damaged vehicle for insurance purposes. Claims found invalid after CBM review, affirmed by the Federal Circuit. Contact: David McPhie, Esq., Irell & Manella LLP, 840 Newport Center Dr., Newport Beach, CA 29660. (R)

181. *Skimlinks, Inc. et al. v. Linkgine, Inc.*, Patent Trial and Appeal Board (2015). Served as an expert for petitioners in covered business method petitions 2015-00086 and 2015-00087 seeking review of U.S. Patents 7,818,214 and 8,027,883, relating to modifying affiliate links on webpages. Result: all claims found invalid, affirmed by the Federal Circuit. Contact: Richard F. Martinelli. Esq., Orrick, Herrington & Sutcliffe LLP, 51 West 52nd St.., New York, NY 10019. (R)

182. *Advanced Auctions, LLC. v. eBay, Inc.*, Case 12-cv-1612-BEN (JLB) (S.D. Cal.). Served as an expert for defendant eBay in case alleging infringement of U.S. Patent 8,266,000, relating to methods of conducting Internet auctions. Defendant obtained judgment of invalidity on the pleadings under 35 U.S.C. §101. Contact: Adrian Percer, Esq., Weil, Gotshal & Manges, LLP, 201 Redwood Shores Parkway, Redwood Shores, CA 94065.

183. *MaxMind, Inc. et al. v. Fraud Control Systems.com Corporation*, CBM2015-00094, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 8,630,942, relating to methods of determining whether a payment transaction may be fraudulent based on IP addresses. Review was instituted on §101 grounds and Patent Owner requested adverse judgment. Contact: Anthony H. Son, Esq., Andrews Kurth LLP, 1350 I Street NW, Washington, DC 20005. (R)

184. *Square, Inc. v. Unwired Planet, LLC*, CBM2014-00156, Patent Trial and Appeal Board (2014). Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 7,711,100, relating to conducting point-of-sale transactions based on the location of a wireless device. Challenged claims found invalid. Contact: Sasha G. Rao, Esq., Maynard Cooper and Gale PC, 275 Battery St., San Francisco, CA 94111 (D,R)

185. *Unified Patents, Inc. v. Finnavations LLC*, IPR2015-01209, Patent Trial and Appeal Board (2015). Served as an expert for petitioner in an inter partes review of U.S. Patent 8,132,720, relating to verifying online transaction data through a graphical user interface. Status: not instituted. Contact: Paul C. Haughey, Esq., Kilpatrick Townsend & Stockton LLP, Eighth Floor, Two Embarcadero Center San Francisco, CA 94111 (R)

186. *Hoskin Hogan et al. v. BP West Coast Products LLC et al.,* Case BC 460880 (Super. Ct. Los Angeles Cty. CA, 2011). Served as an expert for defendant Retalix Ltd., alleging negligence in the development and testing of software for processing point-of-sale transactions. Summary judgment granted in favor of Retalix. Contact: Richard H. Zelichov, Esq., Katten Muchin Rosenman LLP, 2029 Century Park East, Suite 2600, Los Angeles, CA 90067-3012. (D,R)

187. *In re U.S. Patent Application 12/912,726* (USPTO). Serving as an expert for applicant AlmondNet, Inc. in an application for a patent relating to distributing digital advertising based on a recipient profile. Contact: Louis J. Hoffman, Esq., Hoffman Patent Firm. (R)

188. *Wickfire, LLC v. TriMax Media, Inc. et al.*, C.A. 1:14-CV-34 (W.D. Tex). Served as an expert for defendants in a case alleging click fraud in Internet advertising. Jury verdict for Plaintiff, now on appeal to the Fifth Circuit. Contact: Barry M. Golden, Esq., Miller, Egan, Molter & Nelson LLP, 2911 Turtle Creek Blvd., Suite 1100 Dallas, TX 75219. (D,R,T)

189. *Square, Inc. v. Unwired Planet, LLC*, CBM2015-00148, Patent Trial and Appeal Board. Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 7,711,100, relating to conducting point-of-sale transactions based on the location of a wireless device. Not instituted because claims were found invalid under §101 in CBM2014-00156. Contact: Sasha G. Rao, Esq., Maynard Cooper and Gale PC, 275 Battery St., San Francisco, CA 94111. (D,R)

190. *Datatrak International Inc. v. Medidata Solutions, Inc.*, C.A. 1:11-cv-00458-PAG (N.D. Ohio). Served as an expert for defendant in a case alleging infringement of U.S. Patent 7,464,087, relating to federated database queries. Defendant obtained summary judgment of invalidity under 35 U.S.C. §101. Contact: Duane-David Hough, Esq., Mayer Brown LLP, 1675 Broadway, New York, NY 10019. (R)

191. *SNMP Research, Inc. et al. v. Avaya, Inc.*, C.A. 1:12-cv-00191-RGA-MPT (D. Del.). Served as an expert for Avaya in an action alleging breach of contract, trade secret misappropriation and copyright infringement involving software implementing the Simple Network Management Protocol (SNMP). Case has settled. Contact: Joshua Krumholz, Esq., Holland & Knight, LLP, 10 St. James Avenue, 11th Floor, Boston, MA 02116. (D,R)

192. *Certain Automated Teller Machines and Point of Sale Devices and Associated Software Therefor*, USITC Inv. No. 337-TA-958. Served as an expert for Respondents NRT Technology Corp. et al. in an International Trade Commission proceeding brought by Complainant Global Cash Access Inc. involving alleged infringement of U.S. Patent 6,081,792, relating to structuring ATM and POS transactions with respect to withdrawal limits. Result: all claims found invalid as indefinite. In affirming this determination, the Commission wrote: "should the extrinsic evidence be considered, the Commission finds NRT's expert testimony credible, see Rebuttal Expert Report of Michael Shamos Regarding Claim Construction ¶¶ 52-58, and that Everi's expert's testimony is not credible." Contact: Colby B. Springer, Esq., Polsinelli LLP (formerly at Lewis Roca Rothgerber LLP), Three Embarcadero Center, Suite 1350, San Francisco, CA 94111. (D,R)

193. *Better Mouse Company, L.L.C. v. SteelSeries ApS, Inc. et al.,* C.A. 2:14-cv-198-JRG (E.D. Texas). Served as an expert for defendant in a case alleging infringement of U.S. Patent 7,532,200, relating to computer mouse whose resolution can be set without external software. Dr. Shamos testified at trial on non-infringement. The jury found for defendant on non-

infringement. Contact: Joshua M. Masur, Esq., Turner Boyd LLP, 702 Marshall Street, Suite 640, Redwood City, California 94063. (R,T)

194. *Vesta Corporation v. Amdocs Management Limited et al.*, No. 3:14-cv-01142-HZ (D. Ore.). Serving as an expert for defendants in a case alleging misappropriation of trade secrets relating to billing in the prepaid mobile phone payment processing market. Contact: Yonaton M. Rosenzweig, Esq., Katten Muchin Rosenman LLP, 2029 Century Park East, Suite 2600, Los Angeles, CA 90067-3012. (D,R)

195. *Benefit Funding Systems, LLC et al. v. U.S. Bancorp*, CA 1:12-cv-00803-LPS (D.Del.). Served as an expert for defendant U.S. Bancorp in an action alleging infringement of U.S Patent 6,625,582, relating to a method of establishing a financial account based on the present value of future retirement payments. All asserted claims were found invalid under 35 U.S.C. §101, a decision affirmed by the Federal Circuit. Contact: Anthony H. Son, Esq., Andrews Kurth LLP, 1350 I Street NW, Washington, DC 20005. (Original firm: Wiley Rein).

196. *Telesign Corporation v. Twilio, Inc.*, C.A. 2:15-cv-03240-PSG-SS (C.D. Cal.). Serving as an expert for defendant Twilio in an action alleging infringement of U.S. Patent 7,945,034, relating to verification of telephone users based on characteristics of the telephone number, such as carrier and geographic location. Defendant successfully resisted issuance of a preliminary injunction. Case is stayed pending PTAB review. Contact: Thomas J. Friel, Jr., Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

197. *Cronos Technologies, LLC v. Expedia, Inc.*, C.A. 13-1538-LPS (D. Del.), *Cronos Technologies, LLC v. Priceline.com, Inc.*, C.A. 13-1541-LPS (D. Del.) and *Cronos Technologies, LLC v. Travelocity.com L.P.*, C.A. 13-1544-LPS (D. Del.). Served as an expert for defendants in three cases, consolidated for some purposes, in actions alleging infringement of U.S. Patent 5,664,110, relating to a remote ordering system enabling a user to build lists of products to be ordered. The Court found non-infringement on summary judgment, affirmed by the Federal Circuit. Contact: Matthew C. Acosta, Esq., JacksonWalker LLP, KPMG Plaza at Hall Arts, 2323 Ross Avenue, Suite 600, Dallas, TX 75201. (D,R)

198. *Ex Parte Reexamination of U.S. Patent 7,333,430*, Control No. 90/013,532. Served as an expert for patent owner Fortinet, Inc. in a reexamination of U.S. Patent 7,333,430, drawn to distributing network packets for intermediate security processing based on the ultimate destination of the packet. Result: all challenged claims and newly presented claims patentable. Contact: Michael A. DeSanctis, Hamilton DeSanctis & Cha LLP, Financial Plaza at Union Square, 225 Union Boulevard, Ste. 150, Lakewood, CO 80228. (R)

199. *Inter Partes Review of U.S. Patent 7,027,411*. Case IPR2015-00717. Served as an expert for patent owner Hewlett-Packard Company in an inter partes review of U.S. Patent 7,027,411, drawn to efficient determination of changes in network topology. Status: settled. Contact: Monica Grewal, Esq., Wilmer Cutler Pickering Hall and Dorr LLP, 60 State Street, Boston, MA 02109. (D,R)

200. *Intellectual Ventures I LLC v. Nextel Operations, Inc. and Sprint Spectrum L.P.*, C.A. No. 13-1634 (D.Del) and related cases 13-1635; *Intellectual Ventures I LLC v. T-Mobile USA, Inc. et al.*, C.A. No. 13-1632; 13-1633; *Intellectual Ventures I LLC v. United States Cellular Corporation*, C.A. No. 13-1636 and related case 13-1637, all D. Del. Served as an expert for defendants Sprint, T-Mobile and U.S. Cellular in related cases alleging infringement of U.S. Patent 6,115,737, drawn to use of an Internet gateway for processing customer service requests to a web server. The Court invalidated the '737 patent on §101 grounds. Contact: Jason W. Cook, Esq., McGuireWoods LLP, 2000 McKinney Ave., Suite 1400, Dallas, TX 75201. (D,R)

201. *Ex Parte Reexamination of U.S. Patent 7,968,744*, Control No. 90/013,533. Served as an expert for patent owner Fortinet, Inc. in a reexamination of U.S. Patent 7,968,744, drawn to systems and methods for allowing execution of authorized computer code and for protecting computer systems and networks from unauthorized code execution. Result: challenged claim and 14 new claims determined patentable. Contact: Michael A. DeSanctis, Hamilton DeSanctis & Cha LLP, Financial Plaza at Union Square, 225 Union Boulevard, Ste. 150, Lakewood, CO 80228. (R)

202. *Ex Parte Reexamination of U.S. Patent 7,376,125*, Control No. 90/013,531. Served as an expert for patent owner Fortinet, Inc. in a reexamination of U.S. Patent 7,376,125, drawn to a virtual routing engine for software-based packet routing. Result: newly presented claims patentable. Contact: Michael A. DeSanctis, Hamilton DeSanctis & Cha LLP, Financial Plaza at Union Square, 225 Union Boulevard, Ste. 150, Lakewood, CO 80228. (R)

203. *Inter Partes Review of U.S. Patent 7,945,034*, Case IPR2016-00360. Served as an expert for requester Twilio in an *inter partes* review of U.S. Patent 7,945,034, relating to verification of telephone users based on characteristics of the telephone number, such as carrier and geographic location. Challenged claims confirmed. Contact: Thomas J. Friel, Jr., Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (D,R)

204. *Twilio, Inc. v. Telesign Corporation*, IPR2016-00450, Patent Trial and Appeal Board (2016). Served as an expert for petitioner in an *inter partes* review of U.S. Patent 8,462,920, relating to verification of telephone users based on characteristics of the telephone number, such as carrier and geographic location. Trial was not instituted. Contact: Contact: Carrie J. Richie, Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

205. *Smart Systems Innovations, LLC v. Chicago Transit Authority, et al.*, C.A. 14-cv-08053 (N.D. Ill.). Served as an expert for defendants in an action alleging infringement of U.S. Patent 5,828,044, relating to a radio-frequency ID (RFID) credit card system. Defendant successfully resisted issuance of a preliminary injunction. All claims invalidated as non-statutory under 35 U.S.C. §101. Affirmed by the Federal Circuit in October 2017. Contact: Jeffrey M. Connor., Esq., formerly at Kilpatrick Townsend & Stockton LLP, now IP counsel at Honeywell. (D,R)

206. *Unwired Planet LLC v. Google, Inc.*, C.A. 3:12-cv-00504 (D. Nevada). Serving as an expert for Google in an action alleging infringement of U.S. Patents 6,292,657, 6,654,786, 6,662,016, 6,684,087, 6,895,240, 6,944,760, 7,024,205, 7,035,647, 7,203,752 and 7,463,151, relating to provision of wireless services. All asserted claims of the '151, '205 and '751 patents have been

found invalid by the Patent Trial and Appeal Board. After appeal to the Federal Circuit, the case continues with respect to certain claims of the '752 Patent. Contact: Peter E. Gratzinger, Esq., Munger, Tolles & Olson LLP, 355 South Grand Avenue, Los Angeles, CA 90071.

207. *Xilidev, Inc. v. Boku, Inc. et al.*, C.A. 3:13-cv-02793 (S.D. Cal.). Served as an expert for defendants in an action alleging infringement of U.S. Patent 7,273,168, relating to point-of-sale billing on handheld devices. Claims 1-18 and 20-23 of the '168 patent have been found invalid by the Patent Trial and Appeal Board. Plaintiff agreed to a voluntary dismissal with prejudice. Contact: Frank Pietrantonio, Esq., Cooley LLP, One Freedom Square, 11951 Freedom Drive, Reston, VA 20190.

208. *Intellectual Ventures II LLC v. Commerce Bancshares, Inc. et al.*, C.A. 2:13-CV-04160 (W.D. Mo.). Served as an expert for defendants in an action alleging infringement of U.S. Patents 5,745,574, relating to security in electronic transactions, 6,314,409 and 6,826,694, relating to controlling access to digital property, 6,715,084, relating to intrusion detection, and 7,634,666, relating to a cryptographic engine. All asserted claims have been declared invalid by the Patent Trial and Appeal Board. Decision affirmed by the Federal Circuit in December 2016. Contact: Mark Vander Tuig, Esq., Senniger Powers LLP, 100 North Broadway, 17th Floor, St. Louis, MO 63102.

209. *Hy-Vee, Inc. v. Inmar Digital Promotions Network, Inc.*, C.A. 4:15-cv-00275 (S.D. Iowa). Served as an expert for defendant in an action seeking indemnity for infringement of U.S. Patents 8,219,445, 8,370,199 and 8,538,805, relating to point-of-sale processing of promotions, such as coupons. Hy-Vee had been sued for infringing these patents in *Advanced Marketing Systems, LLC v. Hy-Vee, Inc.*, C.A. 3:15-cv-00103 (W.D. Wisc.). Both cases have settled. Contact: Richard J. Keshian, Esq., Kilpatrick Townsend & Stockton LLP, 1001 West Fourth Street Winston-Salem, NC, 27101. (R)

210. *Motivation Innovations, LLC v. PetSmart, Inc.*, C.A. 1:13-cv-00957 (D.Del.). Served as an expert for defendant in an action alleging infringement of U.S. Patent 5,612,537, relating to a system for redeeming discount offers at point of sale. On motion for judgment on the pleadings, all asserted claims were found invalid under 35 U.S.C. §101. Contact: Kevin A. Zeck, Esq., Perkins Coie, LLP, 1201 Third Avenue, Suite 4900, Seattle, WA 98101-3099.

211. *PPS Data, LLC v. VSoft Corporation et al.,* Case 1:15-cv-00084 (N.D. Ga.). Served as an expert for plaintiff in a case alleging infringement of U.S. Patents 7,181,430, 7,216,106, 7,440,924, 7,624,071 and 8,660,956, relating to methods for processing check images in electronic payment systems. Case has settled. Contact: Anthony H. Son, Esq., Andrews Kurth LLP, 1350 I Street NW, Washington, DC 20005.

212. *Sally Beauty Holdings et al. v. Intellectual Ventures I LLC*, CBM2016-00029, Patent Trial and Appeal Board. Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 5,969,324, relating to accounting methods utilizing a non-predictable bar code. Trial was instituted, the PTAB writing in its decision: "We credit the

testimony of Dr. Michael Shamos." Case has settled. Contact: Derek Swanson, Esq., McGuireWoods LLP, Gateway Plaza, 800 East Canal Street, Richmond, VA 23219. (R)

213. *Square, Inc. v. Protegrity Corporation*, CBM2015-00014, Patent Trial and Appeal Board (2016). Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 6,321,201, relating to methods of encrypting databases. Result: all challenged claims found invalid under 35 U.S. §§101 and 103. Contact: Matthew Argenti, Esq., Wilson Sonsini Goodrich & Rosati Professional Corporation, 650 Page Mill Road, Palo Alto, CA 94304-1050. (R)

214. *T-Mobile US, Inc. v. Intellectual Ventures II LLC*, CBM2016-00083, Patent Trial and Appeal Board. Served as an expert for petitioner in a covered business method petition seeking review of U.S. Patent 6,115,737, relating to use of an Internet gateway for processing customer service requests to a web server. The PTAB determined that the patent did not claim a covered business method. Contact: Alison R. Watkins, Esq., Gibson, Dunn & Crutcher LLP, 1881 Page Mill Road, Palo Alto, CA 94304-1211. (R)

215. *Twin Peaks Software, Inc. v. IBM Corporation*, Case 3:14-cv-03933-JST (N.D. Cal.). Served as an expert witness for defendant IBM in an action alleging infringement of U.S. Patent 7,418,439, relating to a system for storing and sharing networked files. All asserted claims found invalid during claim construction. Contact: Andrew Bramhall, Esq., Quinn Emanuel Urquhart & Sullivan, LLP, 555 Twin Dolphin Drive, 5th Floor, Redwood Shores, CA 94065-2139.

216. *Live Face on Web, LLC v. The Control Group Media Company, Inc. et al.*, Case 2:15-cv-01306 (E.D. Pa.). Served as an expert witness for defendants in an action alleging breach of contact and infringement of copyrights relating to web media players and video productions in which recorded actors promote products for websites. Case has settled. Contact: Damon W.D. Wright, Esq., Venable LLP, 575 Seventh St. N.W., Washington, DC 20004.

217. *Nomadix, Inc. v. Hospitality Core Services, LLC*, Case 2:14-cv-08256-DDP (C.D. Cal.) Served as an expert witness for defendant in a case alleging infringement of U.S. Patents 6,636,894 and 6,868,399, relating to network gateways, U.S. Patent 7,698,432, relating to bandwidth management, U.S. Patent 7,953,857, relating to dynamic data transfer over networks, U.S. Patent 8,266,266, relating to dynamic network authorization, and U.S. Patents 8,156,246, 8,266,269, 8,364,806, 8,725,888 and 8,788,690, relating to providing network content. Case has settled. Contact: Michael J. Mehrman, Merhman Law Office, P.C., 150 Spalding Creek Court, Sandy Springs, GA 30350.

218. *Certain Digital Video Receivers and Hardware and Software Components Thereof*, USITC Inv. No. 337-TA-1001. Serving as an expert for Complainants Rovi Corporation et al. against Comcast Corporation et al. in an International Trade Commission proceeding involving alleged infringement of U.S. Patents 8,006,263 , 8,046,801 and 8,578,413, relating to remote and local electronic TV program guides. On Initial Determination, a violation was found with respect to the '263 and '413 patents. Contact: Richard A. Kamprath, Esq., McKool Smith, 300 Crescent Court, Suite 1500, Dallas, TX 75201. (D,R,T)

219. *ZKey Investments, LLC v. Facebook, Inc.,* Case 2:16-cv-00782-RSWL-KS (C.D. Cal.). Served as an expert for defendant in a case alleging infringement of U.S. Patent 6,820,204, relating to providing granular control over access to data. Result: all claims found invalid under §101. Affirmed by the Federal Circuit on Jan. 10, 2018. Contact: Andrew C. Mace, Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

220. *In re: The Matter of the 2016 Presidential Election,* 659 MD 2016 (Pa. Cmwlth. Ct., 2016). Served as an expert for intervenors opposing an action brought seeking a recount of votes in Pennsylvania on the grounds that the state's voting systems are unsecure and vulnerable to hacking by foreign actors. Petitioners discontinued the suit before hearing, refusing to post the required bond. Contact: Lawrence J. Tabas, Esq., Obermayer Rebmann Maxwell & Hippel LLP, One Penn Center, 19th Floor, 1617 John F. Kennedy Blvd., Philadelphia, PA 19103.

221. *Stein v. Cortés.,* Case 2:16-cv-06287-PD (E.D. Pa.). Serving as an expert for defendant Secretary of the Commonwealth of Pennsylvania in an action for mandatory injunction to compel a recount and forensic examination of voting systems. Result: injunction denied. The Court's memorandum comments favorably on Dr. Shamos's qualification and testimony. Contact: Timothy Gates, Esq., Chief Counsel, PA Department of State, 3306 North ffice Bldg., Harrisburg, PA 17120. (R,T)

222. *Free Stream Media Corp. v. Alphonso Inc.*, Case No. 3:17-cv-02107 (N.D. Cal., transferred from E.D. Tex.). Serving as an expert for defendant Alphonso in an action alleging infringement of U.S. Patents 9,026,668 and 9,386,356, relating to a system for targeting data, such as advertising, to a device, such as a tablet, based on content that is identified as playing on a different device, such as a television. Contact: Tigran Guledjian, Esq., Quinn Emanuel Urquhart & Sullivan, LLP, 865 S. Figueroa St., 10th Floor, Los Angeles, CA 90017. (D,R)

223. *Copart, Inc. v. Sparta Consulting, Inc.*, Case 2:14-cv-00046-KJM-CKD (E.D. Cal.). Serving as an expert for defendant Sparta in an action alleging misappropriation of trade secrets relating to imaging batches of items to be offered at auction. Contact: Frederick Brown, Esq., Gibson, Dunn & Crutcher LLP, 555 Mission Street, Suite 3000, San Francisco, CA 94105. (D,R)

224. *Apple Inc. v. Masa LLC.*, IPR2016-00748, Patent Trial and Appeal Board (2016). Served as an expert for patent owner in an *inter partes* review of U.S. Patent 8,519,834, relating to a wearable device to alert a user to an incoming cellphone call. All challenged claims found invalid. Contact: Robert M. Evans, Jr., Esq., Senniger Powers LLP, 100 North Broadway, 17th Floor, St. Louis, MO 63102. (R)

225. *Tele-Publishing, LLC v. Facebook, Inc. et al.,* Case 1:09-cv-11686-DPW (D. Mass.). Served as an expert for defendants in a case alleging infringement of U.S. Patent 6,253,216, relating to controlling access to information on personal web pages. Result: all claims found invalid under §101; judgement for defendants. Case settled during appeal to the Federal Circuit. Contact: Reuben Chen, Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

226. *Groupon, Inc. v. International Business Machines Corporation,* Case 1:16-cv-5064 (N.D. Ill.). Serving as an expert for Groupon in a case alleging infringement of U.S. Patent 7,856,360,

relating to gathering information from attendees at a venue. Contact: Saina Shamilov, Esq., Fenwick & West LLP, 801 California Street, Mountain View, CA 94041. (R)

227. *Stingray Digital Group Inc. v. Music Choice*, Patent Trial and Appeal Board. Serving as an expert for petitioner in five *inter partes* reviews of U.S. Patents 7,320,025 (IPR2017-00888) and 9,351,045 (IPR2017-01191), relating to providing supplementing a broadcast media service with an on-demand, personalized media service and U.S. Patents 8,769,602 (IPR2017-01192), 9,357,245 (IPR2017-1193), relating to providing a visual complement to an audio program, and 9,414,121 (IPR 2017-1450), relating to systems and methods for providing on-demand entertainment. Trial has been instituted in '025, '045, '121 and '602. '245 is pending. Contact: Heath Briggs, Esq., Greenberg Traurig, LLP, 1200 17th St., Suite 2400, Denver, CO 80202. (D,R)

228. *Music Choice v. Stingray Digital Group Inc. et al.,* C.A. No. 2:16-CV-0586-JRG-RSP (E.D. Texas). Serving as an expert for defendants in a case alleging infringement U.S. Patents 7,320,025 and 9,351,045, relating to providing supplementing a broadcast media service with an on-demand, personalized media service, U.S. Patents 8,769,602 and 9,357,245, relating to providing a visual complement to an audio program, and U.S. Patent 9,414,121, relating to systems and methods for providing on-demand entertainment. Contact: Joshua Raskin, Esq., Greenberg Traurig, LLP, MetLife Bldg., 200 Park Avenue, New York, NY 10166. (R)

229. *LivePerson, Inc. v. 24[7] Customer, Inc.*, IPR2017-00609, Patent Trial and Appeal Board. Serving as an expert for patent owner in an *inter partes* review of U.S. Patent 6,970,553, relating to converting a voice call into a chat session. Trial has been instituted. Contact: Bill Trac, Esq., O'Melveny & Myers LLP, Two Embarcadero Center, 28th Floor, San Francisco, CA 94111. (R)

230. *Blackberry Limited v. Blu Products, Inc.*, Case 1:16-cv-23535-FAM (S.D. Fla.). Served as an expert for defendants in a case alleging infringement of 15 patents, including U.S. Patent 6,271,605, relating to a battery disconnect system, U.S. Patent 8,169,449, relating to a multilayer graphics controller, and U.S. Patent 8,411,845, relating to the display of call logs on mobile phones. Case has settled. Contact: Victor Castellucci, Esq., Cozen O'Connor, 2 South Biscayne Blvd., 30th Floor, Miami, FL 33131. (R)

231. *Twitter, Inc. v. YouToo Technologies, LLC.*, Patent Trial and Appeal Board. Serving as an expert for patent owner in two *inter partes* reviews of U.S. Patent 9,083,997 (IPR2017-0829, IRP2017-00830), relating to publishing content on social media sites. Trial has been instituted. Contact: Samuel E. Joyner, Esq., Carrington, Coleman, Sloman & Blumenthal, LLP, 901 Main Street, Suite 5500, Dallas, TX 75202. (R)

232. *IPDEV Co. v. Ameranth, Inc.*, Case No. 3:14-cv-01303-GPC-JLB (S.D. Cal.). Serving as an expert for defendant in an action to determine priority of invention among interfering patents involving U.S. Patents 6,384,850 and 6,871,325, assigned to Ameranth and relating to synchronous updating of restaurant menus on wireless devices, and U.S. Patents 5,991,739 and 8,738,449, relating to Internet ordering methods. Consolidated with Case 233, below. On

summary judgment, the Court awarded priority to Ameranth. Contact: John W. Osborne, Esq., Osborne Law LLC, 33 Habitat Lane, Cortlandt Manor, NY 10567. (D,R)

233. *In re: Ameranth Patent Litigation*, Case No. 3:11-cv-01810-DMS-WSG (S.D. Cal.). Serving as an expert for Ameranth in an action against numerous defendants alleging infringement of U.S. Patents 8,146,077, relating to synchronous updating of restaurant menus on wireless devices. Contact: John W. Osborne, Esq., Osborne Law LLC, 33 Habitat Lane, Cortlandt Manor, NY 10567. (D,R)

234. *Google Inc. v. Spring Ventures, Ltd.*, IPR2017-01652 and 01653, Patent Trial and Appeal Board. Serving as an expert for petitioner in *inter partes* reviews of U.S. Patent 8,661,094, relating to WWW addressing. Trial instituted in 2017-01653, denied in 2017-01652. Contact: Scott McKeown, Esq., Ropes & Gray, L.L.P., 2099 Pennsylvania Avenue, Washington, DC 20006-6807. (D,R)

235. *Rovi Guides, Inc. et al. v. Comcast Corporation et al.*, Case No. 1:16-cv-09278-JPO (S.D.N.Y.). Serving as an expert for plaintiffs in an action alleging infringement of U.S. Patent 8,713,595, relating to electronic TV program guides and 9,172,987, relating to the use of markup language to alter the functionality of set-top boxes. Case is stayed pending IPR. Contact: Richard A. Kamprath, Esq., McKool Smith, 300 Crescent Court, Suite 1500, Dallas, TX 75201. (D,R)

236. *StrikeForce Technologies, Inc. v. Entrust, Inc. et al.*, Case No. 1:17-cv-00309-LMB-TCB (E.D. Va.). Served as an expert for plaintiff in an action alleging infringement of U.S. Patents 8,484,698, and 8,713,701, relating to out-of-band authentication using mobile devices. Case has settled. Contact: Josef Schenker, Esq., Ropes & Gray LLP, 1211 Avenue of the Americas, New York, NY 10036. (R)

237. *Level One Technologies, Inc. v. Penske Truck Leasing Co, Inc. and Penske Logistics, LLC*, Case No. 4:14-cv-1305-RWS (E.D. Mo.). Serving as an expert for defendant in an action alleging trade secret misappropriation and contractual breach of confidentiality relating to a computer system for invoicing and rendering electronic payments in the trucking industry. Contact: Douglas Y. Christian, Esq., Ballard Spahr LLP, 1735 Market Street, 51st Floor, Philadelphia, PA 19103. (D,R)

238. *Uniloc USA Inc. et al. v. Netsuite Inc.*, Case No. 2:16-cv-00862-RWS (E.D. Texas) and *Uniloc USA Inc. et al. v. Nutanix Inc.*, Case No. 2:16-cv-01193-RWS (E.D. Texas). Served as an expert for plaintiff on claim construction issues in an action alleging infringement of U.S. Patent 6,324,578, relating to management of configurable application programs on network. Later, the asserted claims were found invalid under 35 U.S.C. § 101. Contact: James J. Foster, Esq., Prince Lobel Tye LLP, One International Place, Suite 3700, Boston, MA 02110. (R)

239. *Muransky v. The Cheesecake Factory, Inc. et al.*, Case 2:17-cv-07569-CJC-RAO (C.D. Cal). Serving as an expert for defendants in a case involving alleged violations of the Fair Credit Reporting Act, 15 U.S.C. § 1681 ("FCRA") arising from display of more than five digits of a credit

card number on customer receipts. Contact: John L. McManus, Esq., Greenberg Traurig, P.A., 401 E. Los Olas Blvd., Suite 2000, Fort Lauderdale, FL 33301. (R)

240. *Twilio, Inc. v. Telesign Corporation*, IPR2016-00451, Patent Trial and Appeal Board (2016). Served as an expert for petitioner in an *inter partes* review of U.S. Patent 8,687,038, relating to verifying an online registration via an out-of-band telephone connection. Trial was not instituted. Contact: Contact: Carrie J. Richie, Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

241. *Twilio, Inc. v. Telesign Corporation*, IPR2016-01688, Patent Trial and Appeal Board (2016). Serving as an expert for petitioner in an *inter partes* review of U.S. Patent 9,300,792, relating to verification of telephone users based on characteristics of the telephone number, such as carrier and geographic location. Trial has been instituted. Contact: Contact: Carrie J. Richie, Esq., Cooley LLP, 3175 Hanover Street, Palo Alto, CA 94304. (R)

242. *EdiSync Systems, LLC v. Adobe Systems, Inc.*, Civil Action 12-cv-02231-MSK-MEH (D. Colo.). Served as an expert for Defendant Adobe in a case alleging infringement of U.S. Patent 5,799,320, relating to multi-author document editing systems. Case has settled. Contact: David Sipiora, Esq., Kirkpatrick Townsend & Stockton LLP, Suite 600, 1400 Wewatta Street, Denver, CO 80202.

243. *Ford Motor Company v. Versata Software, Inc. et al.*, Case No. 2:15-cv-106280-MFL-EAS (E.D. Mich.). Serving as an expert for defendant/counterplaintiff Versata in a declaratory jugment action relating to alleged infringement of U.S. Patents 5,825,651, 6,405,308 and 6,675,294, relating to product configuration through a graphical user interface; U.S. Patent 7,882,057, relating to complex product configuration using submodels; U.S. Patents 7,200,582 and 7,464,064, relating to checking the consistency of a product configuration model using set equations; and U.S. Patent 8,805,825, relating to product configuration in which attributes are prioritized. Contact: Steve Mitby, Esq., Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing P.C., 1221 McKinney, Suite 2500, Houston, TX 77010. (D,R)

244. *Improved Search LLC v. Microsoft Corporation*, C.A. No. 16-cv-650-JFB-SRF (D.Del.). Serving as an expert for plaintiff in an action alleging infringement of U.S. Patents 6,604,101 and 7,516,154, relating to methods and systems for translingual searching. Contact: Robert Yorio, Esq., Carr & Ferrell LLP, 120 Constitution Drive, Menlo Park, CA 94025. (D,R)

245. *Comcast Cable Communications, LLC v. Rovi Guides, Inc.*, IPR2017-00866, IPR2017-00867, Patent Trial and Appeal Board. Serving as an expert for patent owner in *inter partes* reviews of U.S. Patent 8,713,595, relating to electronic television program guides. Review has been instiuted. Contact: Josef B. Schenker, Ropes & Gray LLP, 1211 Avenue of the Americas, New York, NY 10036. (D,R)

246. *Comcast Cable Communications, LLC v. Rovi Guides, Inc.*, IPR2017-00950, IPR2017-00951, IPR2017-00952, Patent Trial and Appeal Board. Serving as an expert for patent owner in *inter partes* reviews of U.S. Patent 8,006,263, relating to electronic television program

guides. Review has been instituted. Contact: Josef B. Schenker, Ropes & Gray LLP, 1211 Avenue of the Americas, New York, NY 10036. (D,R)

247. *Unified Patents, Inc. v. Anuwave LLC.*, IPR2018-00223, Patent Trial and Appeal Board. Serving as an expert for petitioner in *inter partes* reviews of U.S. Patent 8,295,862, relating to enabling short message system (SMS) communication without using IP services. Review has not yet been instituted. Contact: Robert High, Esq., Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, 271 17th St. N.W., Suite 1400, Atlanta, GA 30363-6209. (R)

248. *Comcast Cable Communications, LLC v. Rovi Guides, Inc.*, IPR2017-01048, IPR2017-01049, IPR2017-01050, Patent Trial and Appeal Board. Serving as an expert for patent owner in *inter partes* reviews of U.S. Patent 8,578,413, relating to electronic television program guides. Review has been instituted. Contact: Josef B. Schenker, Ropes & Gray LLP, 1211 Avenue of the Americas, New York, NY 10036. (D,R)

249. *Comcast Cable Communications, LLC v. Rovi Guides, Inc.*, IPR2017-01065, IPR2017-01066, IPR2017-01143, Patent Trial and Appeal Board. Serving as an expert for patent owner in *inter partes* reviews of U.S. Patent 8,046,801, relating to electronic television program guides. Review has been instituted. Contact: Josef B. Schenker, Ropes & Gray LLP, 1211 Avenue of the Americas, New York, NY 10036. (D,R)

250. *DevFactory FZ-LLC v. Magnitude Software, Inc.*, Arbitration WIPOA300617. Serving as an expert for Claimant DevFactory in an arbitration relating to a claim of breach of a software Technology Services Agreement. Contact: Steve Mitby, Esq., Ahmad, Zavitsanos, Anaipakos, Alavi & Mensing P.C., 1221 McKinney, Suite 2500, Houston, TX 77010.

251. *BookIT Oy Ajanvarauspalvelu v. Bank of America Corporation et al.*, 3:17-cv-02577-K (N.D. Texas). Serving as an expert for BookIT in an action alleging infringement of U.S. Patents 8,589,194 and 9,177,268, relating to mediating communications betwen a service provider and a user in a telecommunications network. Contact: Richard A. Kamprath, Esq., McKool Smith, 300 Crescent Court, Suite 1500, Dallas, TX 75201. (R)

252. *Promptu Systems Corporation v. Comcast Corporation et al.*, 2:16-cv-06516-JS (E.D. Pa.). Serving as an expert for plaintiff in an action alleging infringement of U.S. Patents 7,047, 196, 7,260,538 and RE44,326, relating to voice control of television set-top boxes. Contact: Robert Yorio, Esq., Carr & Ferrell LLP, 120 Constitution Drive, Menlo Park, CA 94025. (D,R)

253. *Snap Inc. v. Vaporstream, Inc.*, IPR2018-00200, IPR2018-00312, IPR2018-00369, IPR2018-00397, IPR2018-00404, IPR2018-00408, IPR2018-00416, IPR2018-00439, IPR2018-00455, IPR20018-00458, Patent Trial and Appeal Board. Serving as an expert for patent owner in *inter partes* reviews of U.S. Patents 8,886,739, 8,935,351, 9,306,885, 9,306,886, 9,313,155, 9,313,156, 9,313,157, 9,338,111 and 9,413,711, relating to reducing traceability of electronic messages. Contact: Thomas Kohler, Esq., Downs Rachin Martin PLLC, Courthouse Plaza, 199 Main Street, Burlington, VA 05402-0190. (R)

Legislative Testimony

Testimony before the Texas Legislature concerning electronic voting, Austin, Texas, 1987. Result: passage of the Texas Electronic Voting Law.

Invited testimony before the British House of Lords, Subcommittee B of the European Union Committee, April 20, 2000. Subject: European regulation of eCommerce.

Testimony before the Pennsylvania Legislature State Government Committee concerning electronic voting, Philadelphia, March 10, 2004.

Testimony before the United States Commission on Civil Rights concerning electronic voting, Washington, DC, April 9, 2004.

Testimony before the U.S. House of Representatives Committee on Science concerning voting system certification, Washington, DC, June 24, 2004.

Testimony before the U.S. House of Representatives Committee on House Administration concerning voting system security, Washington, DC, July 7, 2004.

Testimony before the U.S. House of Representatives Committee on Government Reform concerning electronic voting technology, Washington, DC, July 20, 2004.

Testimony on DREs and paper trails before the Virginia Legislature Study Commission on Voting System Certification and Security, Richmond, VA, August 16, 2004.

Testimony before the Election Assistance Commission, Technical Guidelines Development Committee, Subcommittee on Computer Security and Transparency, Gaithersburg, MD, Sept. 20, 2004.

Testimony before the House Ways and Means Committee of the Maryland General Assembly on voting machine paper trails, Annapolis, MD, December 7, 2004.

Testimony before the U.S. House of Representatives Committee on House Administration concerning paper trails, Washington, DC, September 28, 2006.

Testimony before the U.S. Election Assistance Commission concerning the Voting System Testing and Certification Program, Washington, DC, October 26, 2006.

Testimony before the Georgia State Board of Elections, Powder Springs, GA, December 21, 2007.

Testimony before the Maryland House of Delegates Ways and Means Committee, Annapolis, MD, January 18, 2007.

Testimony before the U.S. Senate Committee on Rules and Administration on the Ballot Integrity Act of 2007, Washington, DC, July 25, 2007.

Arbitration

Dr. Shamos has served as an arbitrator in computer-related disputes for the American Arbitration Association.

Electronic Voting

Dr. Shamos has served as an examiner of electronic voting systems and consultant on electronic voting.

Member, Sarasota Source Code Audit Task Force, Florida Secretary of State (2007-2008)

Consultant to the Pennsylvania Secretary of the Commonwealth (2004-).

Consultant to the Massachusetts Secretary of the Commonwealth (2006).

Project SERVE Security Peer Review Group (2003).

Attorney General's Designee for electronic voting examinations, State of Texas (1987-2000).

Statutory Examiner for electronic voting, Commonwealth of Pennsylvania (1980-1996).

Consultant to Montgomery County, Pennsylvania (1996).

Consultant to the Secretary of State of Nevada (1996).

Consultant to the Delaware Legislature (1989).

Consultant to the Secretary of State of West Virginia (1984).

Business Experience

President, Expert Engagements LLC, expert witness firm (2003-present).

President, Unus, Inc., database publishing software (formerly Unilogic, Ltd.) (1990-1992)

President, Notifax Corporation (1989-1994). Automated notification by facsimile.

President, Lexeme Corporation (1984-87), software language translation products.

Managing Partner, Shamos and Tchen (1978-82), computer consulting firm.

Supervisory Programmer, National Cancer Institute (1970-72), while a commissioned officer in the United States Public Health Service (O-3).

Associate Engineer, IBM Corporation (1968-70) (Components Division), design of manufacturing information systems.

Consulting

Morgan Stanley Dean Witter (2000-2002) (now Morgan Stanley).

McKinsey & Co. (1999-2001).

Bell Atlantic Corporation (1999-2008) (now Verizon).

LG-CNS, South Korea (2002-). Project to automate the Korean court system.

Directorships

Unilogic, Ltd. (1979–87) (later Unus, Inc. d/b/a Cygnet Publishing Technologies, 1987-2013). Database publishing software.

The Billiard Archive (1983–). Historical nonprofit foundation.

Lexeme Corporation (1984-1987). Computer source language translation.

Notifax Corporation (1989-1994)

Insurance Technology Corporation (1992–1995). IT consulting for the insurance industry.

Personal Data

Date of birth: April 21, 1947.

Married to Julie Shamos (formerly Julie Van Allen), August 12, 1973.

Children: Josselyn (born May 20, 1982), Alexander (born August 3, 1984).

Grandchildren: Harlow Elizabeth Crane (born April 9, 2010), Bishop Moses Crane (born July 13, 2012)

Military Status: Veteran (Commissioned Officer, U.S. Public Health Service, 1970-72).

Contact Information

Contact should be by email. Letters and packages should be sent to the Home Address:

Home Address:
605 Devonshire Street
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6707 Gates Hillman Complex
5000 Forbes Avenue
Carnegie Mellon University
Pittsburgh, PA 15213
Office Telephone: 412-268-8193
Office Fax: 412-268-6298
Email: shamos@cs.cmu.edu

Publications

SCIENCE

Books

1. *Computational Geometry: An Introduction*, with F. P. Preparata. Springer-Verlag (1985, revised ed., 1991), 390 pp. ISBN 0387961313. According to CiteSeer in 2012, this is the 93rd most cited work in the field of computer science.

2. *Вычислительная геометрия: введение*. Russian translation of "Computational Geometry: An Introduction." Moscow: Mir Publishers (1989). ISBN 5030010416.

3. *Keisan kikagaku nyumon*. Japanese translated by T. Asano and T. Asano of *Computational Geometry: An Introduction*, with F. P. Preparata. Soken Shuppan (Jul. 1992). ISBN 4795263213.

4. *Handbook of Academic Titles*. 193 pp. (Jan. 2011). An encyclopedia of various academic designations used at over 1000 colleges and universities in the United States.

5. *Geometria obliczeniowa. Wprowadzenie*. Polish translation of "Computational Geometry: An Introduction." Warsaw: Helion (2003) 392 pp. ISBN 83-7361-098-7.

6. *Shamos's Catalog of the Real Numbers*. A list, patterned after Sloane & Plouffe, The Encyclopedia of Integer Sequences, Academic Press (1995). Over 10,000 interesting real numbers arranging in lexical order by decimal expansion, with accompanying formulas.

Book Chapters

1. "Privacy and Public Records." Chapter 16 in *Personal Information Management*, Jones & Teevan, eds., Univ. of Washington Press (2007), ISBN978-0-295-98737-8.

Articles

1. "On the Piezoelectric Effect in Bone," with M. H. Shamos and L. S. Lavine. *Nature* **197**:81 (1963).

2. "An Absorber Theory of Acoustical Radiation," with M. A. Tavel. *Journal of the Acoustical Society of America* **54**:46–49 (1973).

3. "Problems in Computational Geometry." Unpublished book manuscript (1974, revised 1977). Distributed in photocopy.

4. "Geometric Complexity." *Proceedings of the Seventh Annual ACM Symposium on Automata and Theory of Computation* (May 1975) 224–233.

5. "Closest-point Problems," with D. J. Hoey. *Proceedings of the Sixteenth IEEE Symposium on Foundations of Computer Science* (Oct. 1975) 151–162.

6. "Divide and Conquer in Multidimensional Space," with J. L. Bentley. *Proceedings of the Eighth Annual ACM Symposium on Automata and Theory of Computing* (May 1976) 220–230.

7. "Geometric Intersection Problems," with D. J. Hoey. *Proceedings of the Seventeenth Annual IEEE Symposium on Foundations of Computer Science* (Oct. 1976) 208–215.

8. "Lower Bounds from Complex Function Theory," with G. Yuval. *Proceedings of the Seventeenth Annual IEEE Symposium on Foundations of Computer Science* (Oct. 1976) 268–273.

9. "Geometry and Statistics: Problems at the Interface." In *Algorithms and Complexity: New Directions and Recent Results*, J. F. Traub, ed., Academic Press (1976) 251–280.

10. "Divide and Conquer for Linear Expected Time," with J. L. Bentley. *Information Processing Letters* 7 (1977) 87–91.

11. "A Problem in Multivariate Statistics: Algorithm, Data Structure, and Applications," with J. L. Bentley. *Proceedings of the Fifteenth Allerton Conference on Communications, Control and Computers* (Sep. 1977) 193–201.

12. "Optimal Algorithms for Structuring Geographic Data," with J. L. Bentley. *Proceedings of the Harvard Conference on Topological Data Structures for Geographic Information Systems* (Oct. 1977) 43–51.

13. "Computational Geometry." Ph.D. Thesis, Yale University (1978). University Microfilms, Ann Arbor, MI.

14. "Time and Space," with A. R. Meyer. In *Perspectives on Computer Science*, A. K. Jones, ed. Academic Press (1978).

15. *Combinatorics on Graphs I: Graph Polynomials*. Unpublished book manuscript (1978).

16. "Robust Picture Processing Operators and Their Implementation as Circuits." *Proceedings of the Fall 1978 Workshop on Image Processing*, Carnegie Mellon University (1978).

17. "A practical system for source language translation," with T. R. Kueny and P. L. Lehman. *Proceedings of the National Conf. on Software Reuseability and Maintainability*, pp. B-1 – B-12, Washington, DC (Sep. 1986).

18. "The Early Years of Computational Geometry – A Personal Memoir." *Advances in Discrete and Computational Geometry* (B. Chazelle, J. E. Goodman, and R. Pollack, eds.), *Contemporary Mathematics*, Amer. Math. Soc., Providence (1998).

19. "A Multiparty Computation for Randomly Ordering Players and Making Random Selections," with Latanya Sweeney. Carnegie Mellon Univeristy School of Computer Science Technical Report CMU-ISRI-04-126 (July 2004)

20. *Overcounting Functions*. A systematic method of transforming certain multiple summations into single summations, with new number-theoretic results.

21. *Property Enumerators and a Partial Sum Theorem*. A new result allowing rapid symbolic evaluation of certain types of double summations.

DIGITAL LIBRARIES

Articles

1. "Machines as readers: a solution to the copyright problem." J. Zhejiang Univ. Science 6A, 11, pp. 1179-1187 (Nov. 2005).

Book Chapters

1. "The Universal Digital Library: Intelligent Agents and Information on Demand," with Raj Reddy. Chapter 6 in Emerging Communication Technologies and the Society, by N. Balakrishnan, Indian National Science Academy (2000). ISBN 81-7319-341-X.

Reports

1. "Japanese Digital Information Policy, Intellectual Property and Economics," in "Digital Information Organization in Japan," International Technology Research Institute (1999).

ELECTRONIC VOTING

Books

1. "Glossary of Electronic Voting."

Articles

2. "Voting System Certification — An Examiner's View." Invited paper presented at the Election Center Conference, Reno, Nevada (Sep. 1989).

3. "Electronic Voting — Evaluating the Threat." Proc. Third ACM Conf. on Computers, Freedom & Privacy, San Francisco, CA (Mar. 1993).

4. "Paper v. Electronic Voting Records — An Assessment." Proc. 14th ACM Conf. on Computers, Freedom & Privacy, Berkeley, CA (Apr. 2004).

5. "Evaluation of Voting Systems," with P.L. Vora, B. Adida, R. Bucholz, D. Chaum, D. Dill, D. Jefferson, D. Jones, W. Lattin, A. Rubin and M. Young, Commun. ACM 47(11):144 (2004).

6. "Voting as an Engineering Problem." *The Bridge* (publication of the National Academy of Engineering), Summer 2007, pp. 35-39.

7. "Realities of E-Voting Security," with A. Yasinsac. IEEE Security and Privacy 10:5 (Sep/Oct 2012), pp. 16-17. Also guest editor of that issue, devoted to E-voting Security.

8. "Why our voting systems are safe." Op-ed in the Pittsburgh Post-Gazette, Dec. 31, 2016.

Published Reports

9. "Software and Security Analysis of the ES&S iVotronic 8.0.1.2 Voting Machine Firmware," with Yasinsac et al., February 23, 2007. Review commissioned by the Secretary of State of Florida to investigate irregularities in the Florida Congressional District 13 election of 2006.

BILLIARDS

Books

1. *Pool.* New York: Mallard Press division of Bantam-Doubleday-Dell Promotional Book Company (Aug. 1991). 128 pp. ISBN 0-7924-5310-7.

2. *Le billard et le billard américain*. Paris: Minerva, 1992, reprinted 1997. 128 pp. Translation by Jean-Yves Prate of the author's American book, *Pool*. ISBN 2–8307–0160–7 (1992), 2-8814-3135-6 (1997).

3. *The Illustrated Encyclopedia of Billiards*. New York: Lyons & Burford (1993). 310 pp. ISBN 1-55821-219-1.

4. *Pool Snooker Carambola*. Padua: Facto Edizioni (1993). 128 pp. Italian translation of *Pool*. Translated by Elisabetta Bezzon. ISBN 88-85860-20-6. The first English-language billiard book ever published in Italian.

5. *Pool*. New York: Friedman/Fairfax (Jun. 1994). 128 pp. ISBN 1-56799-061-4. Paperback edition of the author's 1991 *Pool*.

6. *Shooting Pool: The People, the Passion, the Pulse of the Game*, with photographs by George Bennett. New York: Artisan (Jun. 1998). 144 pp. ISBN 1-885183-95-X. A photographic survey of pool in the U.S. in 1997. A Book-of-the-Month Club bonus selection (Fall, 1998).

7. *Setting the Stage for Fifty Years*. Coralville, IA: Billiard Congress of America (Jun. 1998). 88 pp. A history of the Billiard Congress of America.

8. *The New Illustrated Encyclopedia of Billiards*. New York: Lyons Press (1999). 320 pp. ISBN 1-55821-797-5. An expanded and revised edition of *The Illustrated Encyclopedia of Billiards*.

9. *The Complete Book of Billiards*. New York: Gramercy Books (2000). 306 pp. ISBN 0-517-20869-5. Reissue of author's 1993 *The Illustrated Encyclopedia of Billiards*.

In Preparation

SCIENCE

Articles

1. *A Graph-Theoretic Model of Electronic Payment Systems*.

LAW

Books

1. *A Dictionary of American Intellectual Property*.

Invited Talks

ELECTRONIC COMMERCE

"The Future of eCommerce." Address to the Association for Corporate Growth, Pittsburgh, PA (Dec. 2001).

"The U.S., Korea and the Internet Bubble." Korea International Trade Association (Seoul, July 2003).

"Electronic Judiciary Services in the United States." Address at the Supreme Court of Korea (Dec. 2004).

"eGovernment in the United States." Public address at the University of Hong Kong (Feb. 2005).

"Global SCM as a Cross-Border eCommerce Model," Korea International Trade Association, Seoul, Korea (Mar. 2007).

"Innovate or Die." Invited talk at the Verizon Leadership Meeting, Morristown, NJ (Jun. 2007).

"A Formula for Innovation." Public address at the University of Hong Kong (Feb. 2008).

"Ask My Robot: How Computers Answer Questions." University of Hong Kong (Feb. 2013).

"How Bitcoin Works: A Non-Technical Introduction." University of Hong Kong (Mar. 2014).

"What's a Bitcoin? A Non-Technical Introduction." Carnegie Mellon University (Oct. 2014).

COMPUTER SCIENCE

"Surprises in Experimental Mathematics." Carnegie Mellon University Mathematics Seminar (Feb. 2002).

"Learning by Doing or Learning by Listening?" University of Hong Kong (Feb. 2007).

"Discoveries in Experimental Mathematics." University of Hong Kong (Feb. 2009).

"How Did It (Computational Geometry) Start?" Keynote address at the 20th Canadian Conference on Computational Geometry, Montreal, Canada (Aug. 2008).

"The Internet of Everything." University of Hong Kong (Mar. 2015).

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"Machines as readers: a solution to the copyright problem." 1st Int'l Conf. on Universal Digital Library, Hangzhou, China (Nov. 2005).

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"How Big a Problem is Copyright"? USAIN Conference, Cornell University, Ithaca, NY (Oct. 2006).

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"Google and the Death of Books." University of Hong Kong (Feb. 2010).

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"Swiping the iPhone: Billions Lost With the Stroke of a Pen." University of Hong Kong (Feb. 2012).

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"What's Happing in Florida?" Carnegie Mellon University (Nov. 2001)."

"Electronic Voting: The Technology of Democracy." Hong Kong University (Feb. 2004).

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"HAVA: Are We Ready?" Panel at the League of Women Voters National Convention, Washington, DC (Jun. 2004).

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"Is Electronic Voting Reliable?" Talk to the Kiwanis Club of Dubuque, Iowa (Feb. 2005).

"The Top Ten Problems in Practical Electronic Voting." Int'l Workshop on Mathematics and Democracy, Ettore Majorana Centre, Erice, Sicily (Sept. 2005).

"Why Don't We Have Paper Trails in Pennsylvania?" Carnegie Mellon Univ. CyLab Seminar, Pittsburgh, PA (Jan 2006).

"Paper Trails and the Pennsylvania Certification Process." County Commissioners Association of Pennsylvania 2006 Spring Conference, Harrisburg, PA (Mar. 2006).

"The 2006 Elections: Are We Ready?" Panel at the American Enterprise Institute, Washington, DC (Sept. 2006).

"What's Right with Electronic Voting?" University Lecture Series, Carnegie Mellon University (Oct. 12, 2006).

"What Happened in Yesterday's Election?" Center for Research on Computation and Society, Harvard University (Nov. 8, 2006).

"What Happened in Sarasota County"? Council on Government Ethics Laws, New Orleans, LA (Dec. 6, 2006).

"What Happened to 18,000 Votes? Results of the Sarasota Source Code Audit." Carnegie Mellon University (Apr. 16, 2007).

"Opscan Voting: The Good, the Bad and the Ugly." Florida State Association of Supervisors of Elections, Destin, Florida (May 24, 2007).

"Voting Machine Fraud." University of Pittsburgh (Nov. 11, 2008)

APPENDIX 2

MicroShops™
BUSINESS PLAN

March 1998

Delano Ross, Jr. Joseph Michaels
Principals
1000 Abernathy Road, Suite 1420
Atlanta, GA 30328
Phone: (770) 668-2334 Fax: (770) 668-2330
E-mail: Microshops@centurytech.com
www.microshops.com

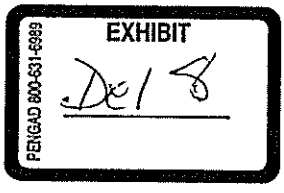
CONFIDENTIAL INFORMATION

Business Plan #:_____ Provided To: _____

Signature: _____

Company: _____

Date: _____



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I. Executive Summary

Mission & Business Model

Our company's mission is to develop and deliver the leading affiliate/pay-per-sale program management service in the Internet commerce marketplace. Our flagship product, MicroShops™, helps companies sell smarter on the Internet.

MicroShops™ enables Merchants (retailers and manufacturers) to market their products to the ever-expanding Internet user population through a network of third-party Hosts (affiliate websites) who are compensated on a pay-per-sale basis. This is accomplished through a proprietary application built on a relational-database, secure-commerce platform designed for ease of use, reliability, flexibility, and responsiveness.

MicroShops™ is a new venture of Century Technology Group, a Limited Liability Corporation located in Atlanta, Georgia at the address 1000 Abernathy Road, Suite 1420, Atlanta, GA 30328.

With the financing contemplated herein, our company expects to achieve $0.6 million in sales and $0.35 million in pretax losses in 1998 and achieve $3.5 million in sales and $1.4 million in pretax profits in 1999. The funds raised at this time will allow us to develop the MicroShops™ Engine, build a staff of sales, marketing, and technical professionals, and increase the number of Merchant and Host participants in MicroShops™ programs. Revenues will come in the form of setup fees and transaction fees, paid by Merchant clients. Projected revenues for each type of revenue are described in the following table:

	1998	1999	2000
Revenues			
Gross Transaction Fees	$ 449,400	$ 3,096,000	$ 7,200,000
Setup Fees	147,000	403,000	544,000
Total Revenues	$ 596,400	$ 3,499,000	$ 7,744,000

The Internet Commerce market is expected to reach $208 billion by 2001. (Iconocast) Century Technology Group expects that affiliate/pay-per-sale programs such as MicroShops™ may account for as much as 15% of this total market by 2001, but a recent study by Ernst & Young indicates that such programs (called "entry portals" by E&Y) **already** account for 12% of total business-to-consumer sales. Management of these affiliate/pay-per-sale programs will be done through in-house as well as outsourced solutions. Today, only a few companies offer outsourced affiliate/pay per sale program creation and management. It is anticipated that up to 50% of all affiliate/pay per sale programs will be outsourced, and for manufacturers and small merchants, an even higher

percentage will be outsourced. Affiliate/pay per sale programs provide the following advantages to manufacturers, merchants, and affiliates:

- Merchants leverage 3rd party marketing efforts on a straight commission basis
- Manufacturers and merchants receive higher margins through affiliate sales as a result of reduced overhead and disintermediation.
- Affiliates earn incremental revenues while providing additional value-added content to their visitors, enhancing the appeal of their content website.

The MicroShops™ Engine is now under development. Several companies have expressed interest in participating in MicroShops™ programs. Now Century Technology Group is at a point where it can expand MicroShops™ into a significant player in the electronic commerce/Internet commerce marketplace. To implement our plans we require an investment totaling $1 million for the following purposes:

- To build the MicroShops™ Engine according to the project plan (already developed, detailed, and proofed).
- To hire the remaining members of the executive management team, including a Chief Technical Officer and a Chief Financial Officer.
- To recruit marketing, sales, and administrative staff to support prolonged growth and development.
- To initiate a comprehensive publicity and promotion campaign to build product and brand awareness.
- To develop a reseller program through web developers, Internet Service Providers, and other Internet professionals.
- To create Customer Support services to handle the increased demands created by the influx of new Hosts and broader coverage of existing accounts.
- To increase R&D to create follow-on products as well as improve our competitive advantages.
- Retirement of prior debt (seed and bridge capital) financing.

Our Products/Services

MicroShops™ technology consists of a database-driven, web-enabled secure commerce application operating in a Windows NT environment. MicroShops™ enables merchants and manufacturers to sell goods and services online through third-party, complementary websites on a revenue-sharing basis. In effect, this dramatically extends the marketing reach of MicroShops™ clients while delivering value-added incremental revenue sources to the third party "affiliates," called MicroShops™ Hosts.

MicroShops™ offers a unique value proposition to both Merchants and Hosts. The strength of this value proposition makes MicroShops™ a superior alternative to our competitors and to in-house solutions. These unique factors include:

- Superior tracking and reporting for Hosts and Merchants, eliminating disputes and providing both parties with 24-hour access to real-time reporting
- Hosts retain control and ownership of the website visitor, providing them with a significant asset in addition to their sales commission
- Merchants store product information on MicroShop servers and can adjust product or service offerings in real time to reflect changes in pricing, packaging, inventory, and marketing strategy
- Recruiting of Hosts and Merchants can be done actively (efforts of Merchant personnel and Century Technology Group sales force), passively (MicroShops™ website promotion), or through Value Added Resellers (Web and e-commerce developers, Internet service providers, software companies)
- Hosts may offer products from a variety of Merchants; likewise, Merchants can sell products through a large collection of Hosts recruited and managed by Century Technology Group

Century Technology Group also has an advantage in the marketplace because of our early recognition of the market opportunity and resulting speed to market. Critical factors in the delivery of our service are merchant responsiveness & reliability, secure payment processing, and efficient settlement.

Presently, MicroShops™ is in the introductory stage. We have the opportunity to follow the MicroShops product/service with line extensions such as private labeling/licensing of MicroShops technology, order fulfillment and inventory capabilities, and electronic commerce transaction processing services. Additionally, although MicroShops will work exclusively with U.S. companies in the near term, Merchants and Hosts in other regions of the world have also demonstrated interest in affiliate/pay-per-sale technology, creating strong opportunities to expand MicroShops sales to international markets.

Market Definition

We define our market as a segment of the Internet commerce market. The Internet Commerce market was approximately $10.7 billion in 1997, according to International Data Corporation and is expected to grow to $208 Billion by the year 2001. Jupiter Research predicts that our segment, affiliate/pay-per-sale programs, represents up to 25% of the total Internet commerce market. To date, many Merchants have experienced results that surpass these projections, and some experts have predicted that higher penetration is possible. For the purposes of our own forecasts, Century Technology Group projects that an average of 15% of Internet commerce transactions will be initiated and processed through affiliate/pay-per-sale programs.

MicroShops™ customers, called MicroShops™ Merchants, are the original equipment manufacturers, producers, and wholesale distributors of products and services. It is anticipated that MicroShops™ early Merchant clients will come from the following industry groups, based largely upon the Industries which have been successful in Internet sales to date (Forrester Research):

- PC hardware and computer electronics
- Entertainment
- Gifts, flowers, and greetings
- Hardware (i.e., tools & accessories)
- Toys and games
- Foods and beverages
- Pet supplies
- Apparel
- Jewelry

The success of Merchants in these categories has been influenced by a number of factors. In addition to the importance of brand recognition on Internet sales success, the above-mentioned categories share the following characteristics:

- Products or services is readily understood, sight unseen
- Proven online marketability
- Definable consumer segments
- Merchants with direct fulfillment capabilities

Merchants will be attracted to MicroShops™ by the potential for incremental sales with a substantially improved profit margin. In some cases (small businesses), MicroShops™ may represent a primary sales channel as a result of its low entry costs and high potential. Medium-sized Merchants will probably invest in self-managed Internet commerce efforts which are augmented by MicroShops™ sales. MicroShops™ will also appeal to larger merchants simply because the administrative and economic requirements of establishing and maintaining a successful affiliate/pay-per sale program make an outsourced solution more attractive. The growing Internet user population will increase the attraction of MicroShops™ and other Internet commerce solutions (over 60,000,000 unique users access the Internet each week as of December 1997 [Iconocast]). Ultimately, MicroShops™ is attractive because it enables the Merchant to focus on its core competencies – producing and delivering quality products – without being distracted by the need to develop and maintain new competencies in Internet marketing or direct sales.

MicroShops™ will penetrate this market through a combination of direct solicitation and resellers. Revenues will be generated through setup fees and commissions from sales made through MicroShops™. These revenues will be shared with resellers as they are realized by MicroShops™.

Competition

We compete directly with LinkShare, Be Free, e-Merchant Group, and ProActive Marketing Group, all of which create and manage affiliate/pay-per-sale programs for a

variety of Merchants. MicroShops™ competitive advantages are derived from our superior value proposition to Merchants and Hosts. Our branding efforts (to make MicroShops™ a well-known industry solution) will help to solidify and expand our advantages.

Management Team

Our team has the following members to achieve our plan.

- **Delano Ross, Jr., co-Chief Executive Officer and Chief Operating Officer –** Del is a published expert in the field of Internet commerce strategy and implementation. Prior to launching Century Technology Group as a graduate student at the Wharton School of the University of Pennsylvania, Del was an associate in the Financial Services division of Coopers & Lybrand consulting. Before this, he served as an officer of MBNA Corporation. At MBNA, he worked as an assistant to the Chief Financial Officer, overseeing the design and implementation of strategic projects, conducting in-depth financial analyses, and contributing to corporate strategies. Before joining MBNA, he ran a successful technology consulting practice, in which he advised and assisted companies in the selection, implementation, and management of information technology investments. Del, 29 years old, holds a Masters of Business Administration degree from the Wharton School and a Bachelors degree from Georgetown University in Washington, DC.
- **Joseph Michaels, co-Chief Executive Officer and Chief Marketing Officer –** Joe is a published expert in the field of Internet commerce strategy and implementation. Prior to launching Century Technology Group as a graduate student at the Wharton School of the University of Pennsylvania, Joe worked as a within the Greenhouse division of America Online, where he developed several high-profile online ventures. Before AOL, he served as an independent producer of television programs for international audiences. His experience also includes several years as a marketing and media consultant to various political organizations and media companies. Joe, 29 years old, holds a Masters of Business Administration degree from the Wharton School and a Bachelors degree from Georgetown University in Washington, DC.

  Joe and Del share more than 10 years experience in entrepreneurship, technology, and marketing strategy and implementation. Together they officially launched Century Technology Group in 1996. They have been working to deliver robust Internet strategies for companies since 1995.

- **Robert Keith Welch, Chief Technology Officer –** Keith is an accomplished architect and designer of online systems and applications. Currently at work on his third book on programming, Keith has led mission-critical projects for such companies as Equifax, Bell South, Ceridian Employer Services, and Melita International. His familiarity with commerce applications and a range of relevant technologies, including client/server, legacy mainframe, relational and object-oriented database, and such Internet technologies

as Java, CGI, and CORBA, suit him to lead the management of MicroShops technology development.

- **Chief Financial Officer** – TBA

Capital Requirements

We seek $1,000,000 of additional financing which will enable us to build the MicroShops™ organization so that it can fully exploit the tremendous potential that is represented by the affiliate/pay-per-sale segment of the Internet commerce market. We can provide an exit for this investment within 3 years by a public offering or the sale of the company.

Financial Plan

Sales Summary

Projections for sales and income are based upon the results of comparable companies within our market segment. Century Technology Group believes that the potential exists to surpass these projections if we are able to accelerate our time-to-market and begin full-scale promotion and publicity more quickly.

($000)	1998	1999	2000
Total Revenues	$ 596,400	$3,499,000	$7,744,000
Total Expenses	$ 941,900	$2,125,300	$3,368,820
Net Income Before Taxes	$(345,500)	$1,373,700	$4,375,180

Current Balance Sheet Summary

($000)	1998	1999	2000
Total Assets	1,100	2,028	4,785
Total Liabilities	285	222	171
Book Value	815	1,806	4,615

Currently, companies such as DoubleClick (an Internet advertising and clickthrough-tracking service company which has yet to turn a profit), have shares being publicly traded at 10 times revenues or higher. We believe that Century Technology Group, as a result of MicroShops™, may be able to capture some of the benefits of such an aggressive and optimistic market valuation in the future.

II. The Company

A. Mission

Our goal is to become the premier provider of electronic commerce affiliate/pay per sale program management services in the world.

We aspire to carry a reputation in the marketplace for developing and delivering powerful electronic commerce marketing solutions which exceed the expectations of our customers, partners, and system users. We can achieve this by maintaining a cutting edge product (the MicroShops™ Engine), developing and maintaining a close understanding of market trends and needs, implementing innovative and profitable marketing and publicity campaigns, and delivering superior service to our customers.

In pursuit of our goal, we resolve to treat stakeholders, customers, and the community with respect and with confidence in the integrity of our company and its products and services. These groups see our company as providing beneficial services which foster their growth and well-being at a fair price.

To accomplish our goal, Century Technology Group needs seed capital, additional personnel, equipment upgrades, and eventually a new facility.

B. Legal Business Description

Century Technology Group was founded in September, 1996 and has been providing top-quality Internet and electronic commerce strategies and solutions to companies in various industries. The legal name of the business is Century Technology Group, LLC.

It is a Georgia Limited Liability Corporation. Our principal offices are located at 1000 Abernathy Road, Suite 1420. We have approximately 300 square feet of office space. This space is currently rent-free as part of an incubation/support arrangement entered into as a part of a prior funding round. Space will be an important consideration upon receipt of funding and full implementation of this business plan. It is anticipated that the favorable terms currently enjoyed by the firm will continue into the near future, subsequent to the space made available to Century Technology Group by its current landlord/host, Composit Communications International.

C. Strategy

Internet Commerce is anticipated to be a $200+ billion market within the next 3 years. Some estimates indicate that affiliate-type programs may account for as much as 25% of this market. Conservatively estimating the affiliate-type percent at 15% of the total with 30% outsourced to third party processors, the MicroShops™ target market should reach $9 billion by the year 2001. This represents a revenue opportunity for the target market of as much as $900 million per year (assuming a 10% commission on gross sales),

excluding setup fees. In 1998, it is estimated that the MicroShops™ target market will reach $80 million, increasing substantially in 1999 to $200 million or more.

It is anticipated that setup fees will provide additional revenues which will offset the costs of sales and the costs incurred at the outset of a MicroShops™ relationship. It is further anticipated that the setup fee may eventually be increased to provide a profit source as well as a cost-recovery source. This, however, will occur only insofar as market forces allow.

The MicroShops™ market strategy is to become established as the leading provider of affiliate/revenue-sharing program management and related services which allow Merchants and manufacturers to market products and services directly to consumers over the Internet at a better margin than is possible in a traditional marketing channel.

MicroShops™ will leverage its core technology (the MicroShops™ Engine, knowledge and expertise in the Internet affiliate/revenue sharing program management market segment to become a dominant provider in this segment. Three strategic product lines are identified which will enable early penetration (leading to domination) of the target market segment. These product lines all share the common characteristics of

- Known goods or services that can be bought sight-unseen, such as are currently sold in print catalogs
- Established brands from reliable companies
- "Impulse" items or business-to-business items where placement and convenience are key sales drivers
- Large margin between retail price and cost of production

1. *MicroShops™ Program*

Affiliate/revenue sharing programs represent a relatively new market segment for Internet commerce which widespread yet targeted product promotion and sales for manufacturers and Merchants. As discussed above, the projected market for Internet commerce is substantial, and with the increased competition for visitor traffic combined with the diminishing appeal of banner advertisements, revenue-sharing programs which allow affiliated partners to retain visitors as well will be increasingly attractive.

2. Future Services

MicroShops™ Engine licensing

Development of an in-house solution for affiliate/pay-per-sale program management comparable to MicroShops™ is an expensive undertaking. For major merchants which will not consider an outsourced solution but which are interested in the MicroShops™ approach, Century Technology Group will consider selling licenses to the MicroShops™ Engine for standalone implementations. This will provide an added revenue stream for Century Technology Group without creating new outsourcing competitors or

Order Fulfillment

MicroShops™ will initially only be available to Merchants with order fulfillment capabilities. Ultimately, MicroShops™ may offer fulfillment services, including inventory management, shipping, and tracking, as an add-on service to the core marketing & clearinghouse functions. This service will be accomplished through partner firms, such as UPS, FedEx, or another company with warehousing and shipping capabilities, enabling MicroShops™ to focus on its core business.

E-commerce Processing Services

Electronic commerce processing services is an alternate application of the capabilities of the MicroShops™ Engine. This service, which enables merchants to accept electronic payments within their own websites without technology or other infrastructure investments, will appeal to companies which do not have the ability to accomplish this internally. Additionally, Century Technology Group can offer a virtual hosting-type service, similar to that offered by ViaWeb (www.viaweb.com), to those companies which do not have or wish to create an independent company website. This is not expected to be a primary offering, but it is expected to be very profitable and appealing to smaller Merchants.

D. Technology

The MicroShops™ Engine is a proprietary application built upon a commercial database platform with a customized, web-enabled front-end. The Engine is protected by trade secrets and copyrights, where possible. The MicroShops™ Engine will operate on a Windows NT® platform using a combination of powerful relational database software, customized Java and/or C++ scripts, and commercially available dynamic HTML generation tools. The open standards upon which MicroShops™ is built will enable Century Technology Group to offer specialized services to sophisticated Merchants that request full integration of the order entry and settlement processes into in-house systems. (Such services will be offered at an additional cost to the merchant priced on a case-by-case basis.)

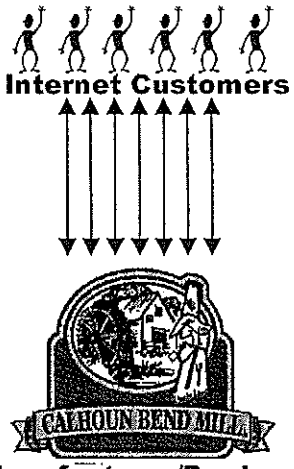
The MicroShops™ Engine has a scalable, modular structure which will enable Century Technology Group to implement program enhancements without substantial reengineering of the system. The scalability of the application also will allow Century Technology Group to process an unlimited number of simultaneous transactions without failure system fault.

E. The MicroShops™ Story

MicroShops™ are a type of affiliate/pay per sale program through which companies are able to expand their online marketing reach by leveraging the marketing efforts of other website owners. MicroShops™ enable merchants to sell products online without investing excessive time or money into marketing or establishing expertise in new technologies. MicroShops™ enable website owners to offer quality merchandise to their visitors, create incremental revenue sources, and retain visitors.

The Internet was once thought to be the harbinger of doom for intermediaries. With the low barriers to entry, any producer of a good or service could create a "storefront" and

Diagram 1 – Merchant has limited success attracting customers to Internet storefront



sell directly to its customers. In fact, this has proven to be only a half-truth. While it is inexpensive and relatively easy to create a commerce-enabled presence on the Internet's World Wide Web, it is very difficult to attract customers to this presence and even harder to encourage them to transact. The very same low barriers to entry are the source of this difficulty – there are literally millions of active websites today, all of which are competing for the same limited (albeit growing) audience. Many of these "rival" websites are not competitors at all, but since they distract the user, and in some cases discourage them (as a result of unscrupulous operators and scam-artists), they stifle the results of the average producer.

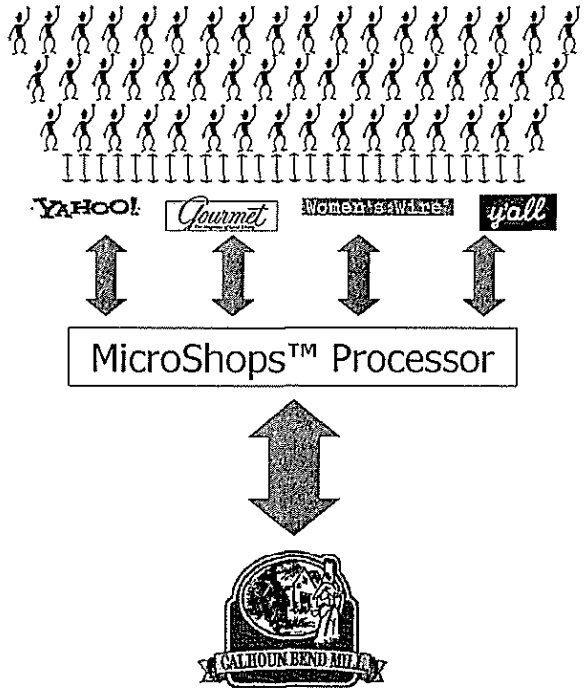
It is possible to cut through these distractions and communicate the marketing message of a corporation through the Internet effectively, but this requires a dedicated effort to develop a new competency in Internet marketing. Such an effort is time-consuming, resource-draining, and ever changing. Unlike other new distribution channels, the pace of change in the e-business world is incredibly rapid. For the average producer of a good or service, this capability is well outside the core competencies of that organization. These core competencies typically revolve around production and customer care, and the addition of a new competency in Internet marketing is a distinct departure from past efforts. The ultimate conclusion from these facts is that, while the Internet presents a lucrative opportunity to market products directly to customers, the keys to success often require a prohibitively large investment in time, people, and resources.

MicroShops™ presents an alternative approach. MicroShops™ lets producers take advantage of the Internet marketing competencies of 3rd party website operators. These 3rd parties – MicroShops™ Hosts – while attracting visitors to their own Internet destinations, simultaneously attract potential customers to the products of the manufacturer – the MicroShops™ Merchant. The Merchant thus realizes the benefits of e-business direct sales without incurring the true marketing costs of these sales. Diagrams 1 and 2 illustrate the relative effectiveness of independent Internet marketing/sales efforts versus that achieved through MicroShops™ programs.

F. Internet Commerce History

To fully understand the MicroShops™ concept, it is important to understand certain aspects of Internet history. The World Wide Web began as a simple interface to the Internet using HTML (hypertext markup language) as a means of linking documents together. This allowed a researcher (for example) to imbed "active" references in his/her documents which, if selected, would enable the reader to review the source of the reference first-hand. Programmers quickly capitalized on this technology, creating "web sites" which reflected less staid purposes, laying the groundwork for the literal "web" of content and interactive applications which exists today. In the early stages, website programmers increased visitor traffic by placing "links" within their websites to other websites, usually related in content or function, in exchange for a reciprocal link. Additionally, directories of websites, such as Yahoo, and search engines, such as WebCrawler, began to appear in an attempt to organize the content of the Internet so that its users could create "custom links pages" of sorts related to topics they entered.

Diagram 2 – Internet marketing effectiveness is greatly improved through MicroShops™ program



In these early days, the Web was mostly trafficked by programmers and "techies", and a commune-like "share and share alike" mindset prevailed. As a result, people were happy to litter their sites with links, knowing that, odds were, others would do the same for them and it would at the very least balance out. So, despite the fact that by including and promoting a "links" page they were effectively encouraging people to leave their website, it was pretty much the standard to do this anyway.

Early commercialization

Then the entrepreneurs and other business-oriented individuals came along and introduced capitalism to the Internet. Profit-oriented website operators began to seek visitors wherever they could find them, and opportunistic owners of popular sites began to realize that they had an increasingly scarce resource – visitors. Such website owners began to sell the links they had previously offered for free and remove the links to "competing" websites. Search engines and directories became increasingly popular for several reasons:

1. There were a lot more websites on the Internet, so it was harder for users to find what they wanted.
2. Since reciprocal links were either going away or were being replaced by links to

non-competing websites (no more "Other _____ sites"), search engines and directories were the only way to find multiple resources for a single topic.

3. Search engines and directories generated as much or more traffic than anyone, so they were selling more links, now evolved to ads, than anyone as well.

Emergence of Affiliate/pay-per-sale Programs

In the past year, some of the successful e-commerce websites, led by Amazon.com and CDNow, began to take an alternative approach to the purchase of banner ads (which were increasingly less effective). They offered commissions for all visitor referrals that resulted in a product sale. To provide a stronger incentive than a simple banner ad, these companies let 3rd party website owners offer a subset of their goods (e.g., 10 of Amazon.com's millions of books, selected by the website owner) and promote them as they chose within their websites. These were the first affiliate/pay per sale programs.

The benefits of these affiliate/pay per sale programs were significant. To the website owner, they were able to provide additional content and valuable services without investing in inventory or infrastructure. They would also receive revenues from a new source without necessarily reducing their available ad inventory (the space within their sites allotted for ads). However, the greater benefit accrued to Amazon.com and its cohorts. Not only did they benefit from the marketing resources of the affiliate operators; they also were able to lure the visitor traffic away from the affiliate. At best, affiliates were able to use "frames" to keep a shell of their own website around the vendor's site, but this was only a marginally effective solution.

Meanwhile, search engines and directories continued to increase in their usefulness and popularity, and old-style links continued their rapid demise.

Since then, little has changed with affiliate/pay per sale program models. Some alternatives have arisen, such as "web rings," which are little more than old-style reciprocal links disguised as banners, but none of these alternatives have been able to address a fundamental criticism of the affiliate/pay per sale programs – the loss of the visitor to the vendor. At best, some affiliate/pay per sale vendors have begun placing "return to referring website" links on their order confirmation screens.

MicroShops™ - The best of both worlds

MicroShops™ represent the new paradigm of co-marketing on the Internet. Not only do MicroShops™ provide their hosts with the added value and incremental revenues of traditional affiliate/pay per sale programs, but they also enable the hosts to retain the customers all the way through the transaction. At the same time, MicroShop™ merchants receive the same benefits as before – increased marketing potential, incremental sales, and new customer relationships, without the built-in disincentive to the host websites.

Additionally, MicroShops™ can actually relieve the need for some merchants to invest in their own unique Internet presence. For manufacturers and originators of goods, this will enable them to focus on product development, production, and order fulfillment, leaving

the exploration of the Internet to experienced experts. The resulting cost savings and operational efficiencies compound the potential benefits of the Internet while actually reducing the initial costs.

G. Board of Directors

An external Board of Directors, including qualified business and industry professionals and experts, will assist our management team in making appropriate decisions and taking the most effective action; however, they will not be responsible for management decisions. This Board has not been finalized, but it is expected to include representatives of our shareholders who are uniquely qualified to provide guidance and support in the field of electronic commerce on the Internet.

H. Alliances and Relationships

Strategic Reseller Relationships

Century Technology Group is creating a reseller program that will enable 3rd party Internet developers to offer the MicroShops™ solution to their clients. There are thousands of Internet developers in operation today, offering services ranging from website design to full-scale application development. MicroShops™ will complement their service offerings, providing an incremental source of near-term revenues (setup fees) as well as ongoing revenues (transaction fees) without requiring investment in technology infrastructure development and maintenance.

To date, Century Technology Group has negotiated preliminary reseller relationships with several Atlanta-area Internet developers. Among these are Kinetic Design, Objectware Inc., and others. Century Technology Group will target the larger e-commerce and web development companies as well, including such well-known firms as iXL, USWeb, K2D, and various "Silicon Alley" developers.

The standard reseller agreement is that the reseller receives 80% of all setup fees plus up to 20% of net transaction fees (after payment processing and other pass-through expenses) as long as the MicroShops™ relationship is in force. Research has indicated that this combination is attractive to resellers, especially given the increased competition in this market and the resulting reduction in profit margins.

I. Intellectual Property Strategy

The Company plans to protect and exploit its proprietary core application, the MicroShops™ Engine. It will rely on a combination of copyright, trademark and trade secret laws, and contractual provisions to protect its intellectual property rights in its products. The Company does not currently hold patents for its techniques but will apply for this additional protection as it becomes advisable to do so. As a result of our decision to use commercial tools for the construction of the MicroShops™ Engine, we increase the ability of our competitors to copy our approach. However, given the importance of marketing and brand creation, our relatively early entry into the market combined with well-managed promotional campaigns should raise the effective barriers to entry.

Additionally, the reseller program should eliminate some of the pressure to copy, simply as a result of the convenience factor and the cost of implementation.

J. Facilities

Our headquarters and primary facility is located in Atlanta, Georgia. We are utilizing "incubation space" provided by Composit Communications International, a Web development client and call center technology company. This space is currently rent-free and will be available to us until the space requirements of Composit increase to the point at which the space Century Technology Group occupies becomes needed.

This location will provide needed space for initial production and expansion to meet projected demand over the next 10 months. We anticipate our total staffing requirements in the first year to be less than 10 people, increasing by 25-50% per year for the following 3 years. Unless it becomes necessary to relocate before then, we do not anticipate entering into a lease obligation prior to January 1999.

Selection of the future site will take into account the following:

- Cost of space
- Convenience to the city of Atlanta and the major commercial centers around the city
- Availability of high-bandwidth Internet connectivity within building
- Availability of expansion space

K. Risks

MicroShops™ has limited operating history

Although the MicroShops™ concept is relatively new to Century Technology Group, the firm has been in operation since October of 1996 and has learned a great deal about the operation of successful commerce-oriented Internet businesses through its consulting engagements, internal ventures, research, and analysis

Potential failure to market concept effectively to Hosts and Merchants.

Century Technology Group has developed a comprehensive marketing plan to maximize the success of these marketing efforts. In addition to relying upon an internal sales force, MicroShops™ will be marketed by 3rd parties such as web design firms and through strategic alliances with online virtual communities such as Tripod, GeoCities, and others.

Growth of electronic commerce, and sales through affiliate websites in particular, may not maintain the rapid pace predicted by analysts.

Although past results cannot guarantee future results, ample historical evidence exists that the market for goods and services sold through the Internet will grow at a sufficiently large pace to be attractive to Century Technology Group. The following success stories support our belief in the potential of MicroShops™:

- LinkShare Corporation – LinkShare, founded by a brother & sister team in 1996, launched the LinkShare affiliate network management product in October, 1997. In the first 5 months of operation, they have been able to attract 80 Merchants and over 4,000 affiliates. Their Merchants include such well-known companies as L'Eggs,

Omaha Steaks, and Avon.

- BeFree Corporation – Launched their affiliate program management service in the summer of 1997 with their flagship client, Barnes & Noble. They have since added 2 other Merchants to their high-cost, high-profile solution, and they have attracted over 1,000 Hosts for Barnes & Noble in that time. They continue to grow in terms of both Merchants and Hosts.
- ProActive Marketing – With a markedly inferior product (the FWIW system) and limited marketing resources, this small New England company has successfully attracted 6 Merchants and over 120 Hosts since their full launch in January, 1998.

Low technological barriers to entry and imitation
To the knowledge of Century Technology Group, no companies currently offer precisely the services described in this business plan. However, electronic commerce is a highly competitive market space and promises to remain so. Other companies that already offer similar products and value propositions may acquire MicroShops™ -style capabilities over time.

Century Technology Group anticipates this important risk and will maintain competitive advantages over other companies through exclusive relationships with Merchants and Hosts, technology which remains more powerful, scalable and easier-to-use than others' systems, and aggressive strategic marketing. The costs of development which any potential competitor would face, estimated to be up to $250,000 for a comparable product, will also be a significant barrier to small competitors, who may be attracted to our partner/reseller program instead.

Rapid changes in Internet technology could render MicroShops partially or entirely obsolete.
Internet and electronic commerce technologies rise and fall in popularity for various, often unpredictable reasons. The risk exists that previously unknown or unforeseen electronic commerce technologies, such as Java-powered commerce-enabled web banners, will contribute to the irrelevance of MicroShops™. To combat this risk, Century Technology Group will monitor new Internet and electronic commerce technologies as they emerge and make adjustments in MicroShops™ to the greatest extent possible and appropriate.

Poor performance of development contractors
Century Technology Group plans to outsource some of the technical development required for MicroShops™ as well as certain specified public relations and marketing roles. Should the companies recruited for these functions fail to produce optimal results, the quality of the MicroShops™ technology or sales results could be adversely affected. Century Technology Group will establish and verify the reliability, integrity, and quality of all vendors and contractors prior to engaging them. Additionally, Century Technology Group will create a "back-up" portfolio of companies which can perform critical functions in case of failure or other problems with any vendors

The MicroShops™ product/service has few handicaps. These are:

- Initial promotion and brand-building – MicroShops™ is a new concept and an unknown brand. It is critical that we establish brand equity and market awareness as soon as possible before competing solutions capture the spotlight.
- Host education – the recruiting process for Hosts must evolve based upon our early experiences. While affiliate/revenue-sharing programs are not a new concept, the MicroShops™ approach is relatively new and may present additional opportunities to website operators which other programs did not offer.
- Merchant education and sales – The sales cycle is expected to be proportional to the relative Internet-savvy of the Merchant prospect and the size of the Merchant organization. Small, fast moving companies will quickly grasp the concept and the potential and should be relatively easy to persuade. Larger companies will have hurdles (policies, politics, and precedent) to cross which will slow the process.

With a carefully managed sales and marketing strategy, we should be able to overcome all of these product weaknesses. MicroShops™ has the potential to become the market leader in a very short period of time, and Century Technology Group is prepared to take whatever steps are required to make this happen.

Corporate weaknesses, at present, consist only of limited capital and personnel. Our fundraising efforts will alleviate the former and enable Century Technology Group to address the latter through intensive recruitment. The company has already identified several employee candidates who will be suitable for our purposes. Environmental threats such as declining markets, consumer trends, and a changing economy are also potential weaknesses for which we can prepare by maintaining a top-quality product and a solid value proposition.

III. Products and Services

A. The MicroShops™ Concept – Roles

There are three main parties in every MicroShops™ relationship, excluding the customer. These are MicroShops™ Merchants, MicroShops™ Hosts, and the MicroShops™ Processor.

1. MicroShops™ Merchants

MicroShops™ Merchants are the producers of the goods to be sold through MicroShops™. The primary responsibilities of a MicroShops™ Merchant are to

- Fulfill all orders received from the MicroShops™ Processor
- Provide all customer support and customer service to MicroShops™ customers
- Track all orders and invoice the Processor on a monthly or bi-monthly basis for all filled orders
- Inform MicroShops™ Processor of any backlogs, fulfillment delays, product changes, or other significant situations
- Provide assistance to the Processor regarding promotional strategies by supplying marketing literature and materials as well as any sales incentives. The Merchant *owns* the marketing literature and materials, and may access and modify these items as they find it necessary to do so.

2. MicroShops™ Host

A MicroShops™ Host is the operator of a website which is participating in one or more MicroShops™ programs. MicroShops™ Host responsibilities include:

- Maintain the website which is "hosting" the MicroShops™ program
- Promote transactions on the MicroShops™ hosted by the website
- Regularly review the Merchant offerings for which they have been approved in order to take advantage of new products and to review sales and promotional strategies made available to them by the Merchant

3. MicroShops™ Processor

Century Technology Group is the MicroShops™ Processor. The Processor's role includes:

- Developing the MicroShops™ engine, including the code required for Hosts' websites, creation of promotional text and images
- Creating customer-transparent Host processing "pages" on a secure server to receive order and payment information
- Authorizing credit card transactions
- Processing of credit card payments for orders received
- Payment of commissions to MicroShops™ Hosts for orders received on a monthly basis
- Transmission of orders to the MicroShops™ Merchants
- Payment of MicroShops™ Merchants' invoices
- Development of all MicroShops™ modules, including order tracking and other functions.
- Marketing and recruitment of MicroShops™ Hosts
- Maintenance and service of MicroShops™ Hosts relationships

B. The MicroShops™ Concept – Transaction Flow

This section describes the order entry and settlement process from the initial promotion on a MicroShops™ Host website all the way through to fulfillment, payment processing, commission payment, and Merchant payment. The accompanying flow diagrams provides a pictorial representation of the various parts of the process.

1. MicroShops™ Order Placement, Fulfillment, and Settlement Overview

The overall transaction process is very straightforward. The following is a list of the steps involved in receiving and processing an order request.

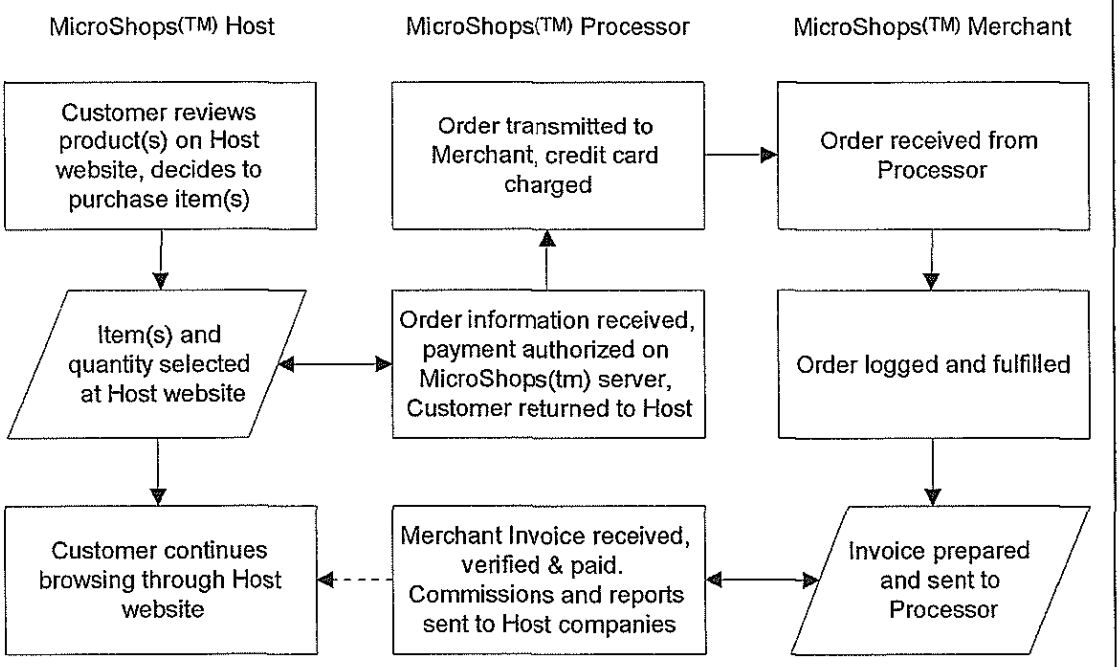
a) A customer visits a MicroShops™ Host website and becomes interested in a product that is being sold.
b) The customer selects the item(s) that he/she wishes to purchase, indicats the quantity desired of each item selected and clicks "place order."
c) The MicroShops™ Processor secure order entry form appears, customized to appear as part of the Host's website. The customer completes the order form, confirms the information to be submitted, and submits the form for processing.
d) Assuming the payment method is authorized, the customer is returned to the

Host's website (to an URL designated by the Host).

e) The Processor passes the order to the MicroShops™ Merchant, assigning a unique ID number to the order. Simultaneously, the Processor submits the charge to the customer's credit card.
f) The Merchant receives and logs the order from the Processor.
g) The Merchant then assembles and ships the order to the customer.
h) Periodically, the Merchant will prepare a cumulative invoice, itemized by order ID number and amount due, which will be sent to the Processor.
i) Finally, the Processor will pay the invoice from the Merchant. In a similar process, the Processor will send commission payments accompanied by transaction reports to the various Hosts which have had sales referrals over the prior period.

Figure 1 (below) illustrates the overall process flow:

Figure 1 – MicroShops™ Order Placement, Fulfillment & Settlement



2. MicroShops™ Host Process Flow

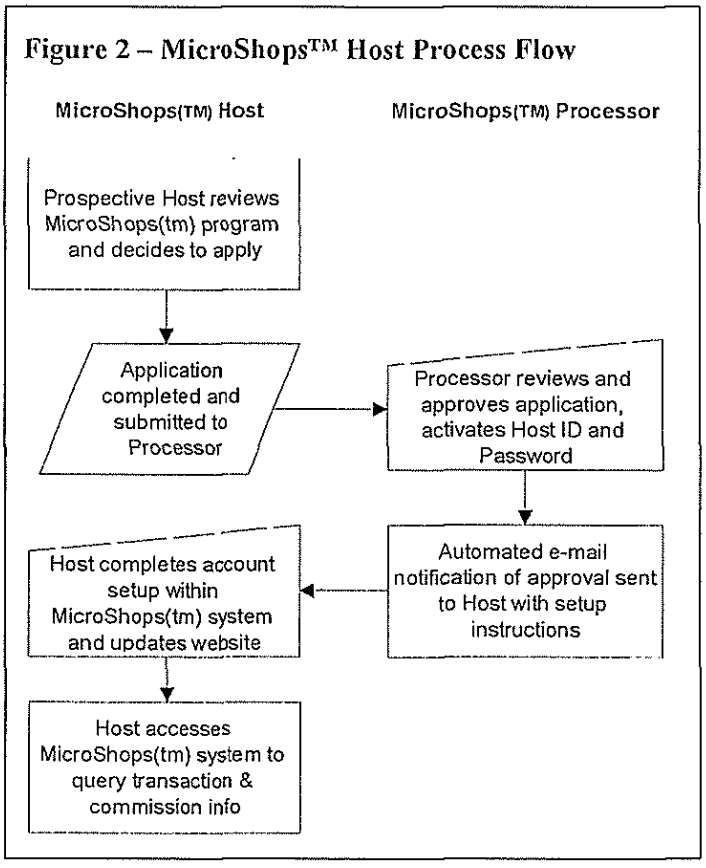
The most critical success factor for a MicroShops™ program is the recruitment of MicroShops™ Hosts. Century Technology Group will be responsible for the promotion of MicroShops™ programs, using a variety of marketing techniques to attract prospective

Hosts.

The process flow for a prospect to become a MicroShops™ Host and fully able to accept transactions is as follows (illustrated in Figure 2):

a) Prospect goes to appropriate section of MicroShops™ website. The prospect is given an overview of the MicroShops™ program, its benefits.
b) Prospect completes MicroShops™ Host application form, providing information about the type of website(s) that will become the Host, some traffic statistics about the website and general visitor demographics, and complete contact information. The prospect also selects a MicroShops™ system user ID and password which will later be used to access the system, retrieve important Hosting information and proramming, and modify the custom materials in the MicroShops™ transaction processing engine.
c) The MicroShops™ Processor receives the application, reviews the information therein, and approves the application (assuming that all is well). After approval, the Host ID and password are activated, and an automated message is sent to the new Host informing them of their approval. This message will also contain instructions for accessing the MicroShops™ system, setting up their custom transaction page, and inserting MicroShops™ data into their website(s).
d) MicroShops™ Host accesses MicroShops™ system, uploads graphics and text to custom transaction interface setup screen, downloads product images, text, and CGI/HTML code for their own website. Host then completes changes to website and activates new content. MicroShops™ Hosts are free to promote their MicroShops™ program as they feel is suitable to the product, provided that they do not misrepresent the products, warrantees accompanying product purchase, or other non-authorized claims about the product or its

Figure 2 – MicroShops™ Host Process Flow



manufacturer.

e) MicroShops™ Hosts will be able to access up-to-date reports about transaction volme including number of users, average purchase amount per user, number of purchases on specified days or within specified date ranges. Hosts may also be able to access information about the month-to-date commissions earned/due to the Host.

3. MicroShops™ Processor Transaction Flow

The MicroShops™ Processor is essentially a clearinghouse for all orders. The Processor must have a real-time interface with a credit card authorization & processing service and a robust database engine which is able to process transactions, record all transaction activities, generate reports used for commission payments and auditing of Merchant invoices, and track order status. The transaction flow for the MicroShops™ Processor is directly related to the structure of the underlying database.

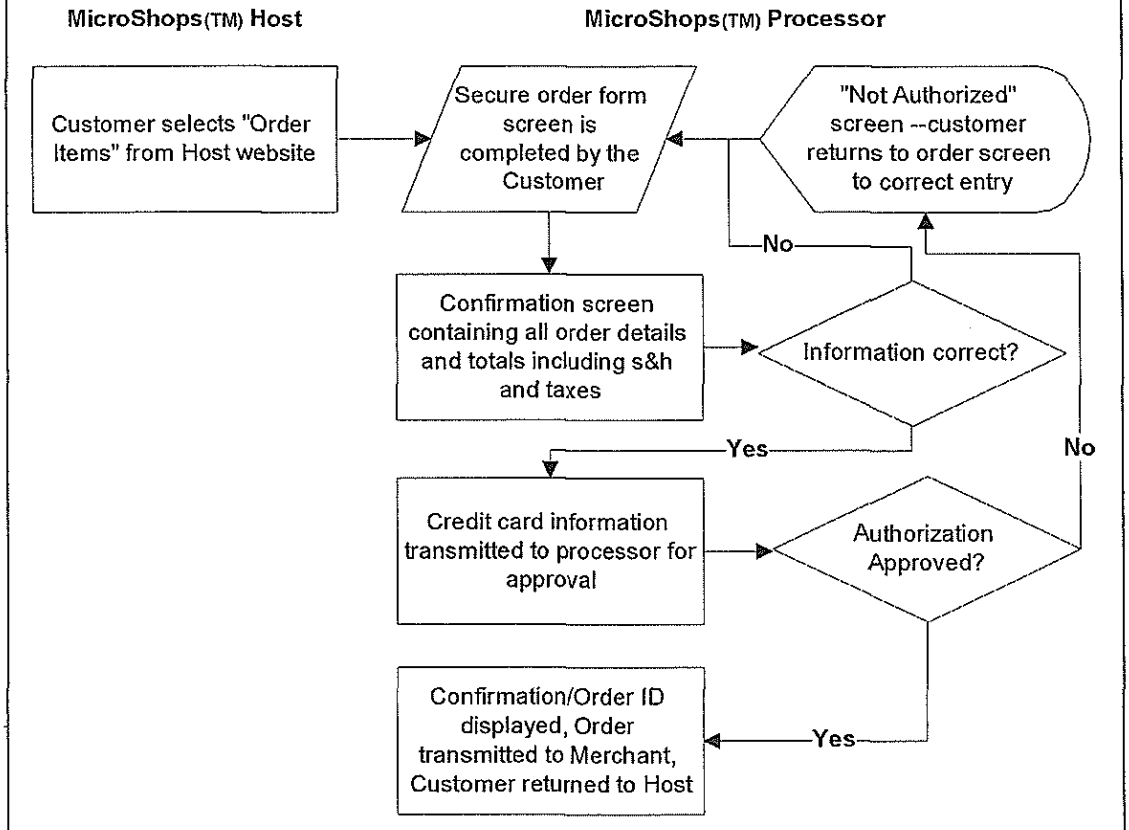
This flow can be described as follows (also illustrated in Figure 3):

a) Customer, visiting MicroShops™ Host, selects "Order Item(s)" for MicroShops™ product(s).

b) Script opens new, secure web page containing order form (listing available items for that MicroShops™ Host) and essential customer information, including credit card data. Shipping and handling calculation method is described.

c) Customer selects "Complete Order" button. Confirmation screen is generated, containing items ordered and respective quantities, total with shipping and

Figure 2 – MicroShops™ Processor Transaction Flow, Part 1



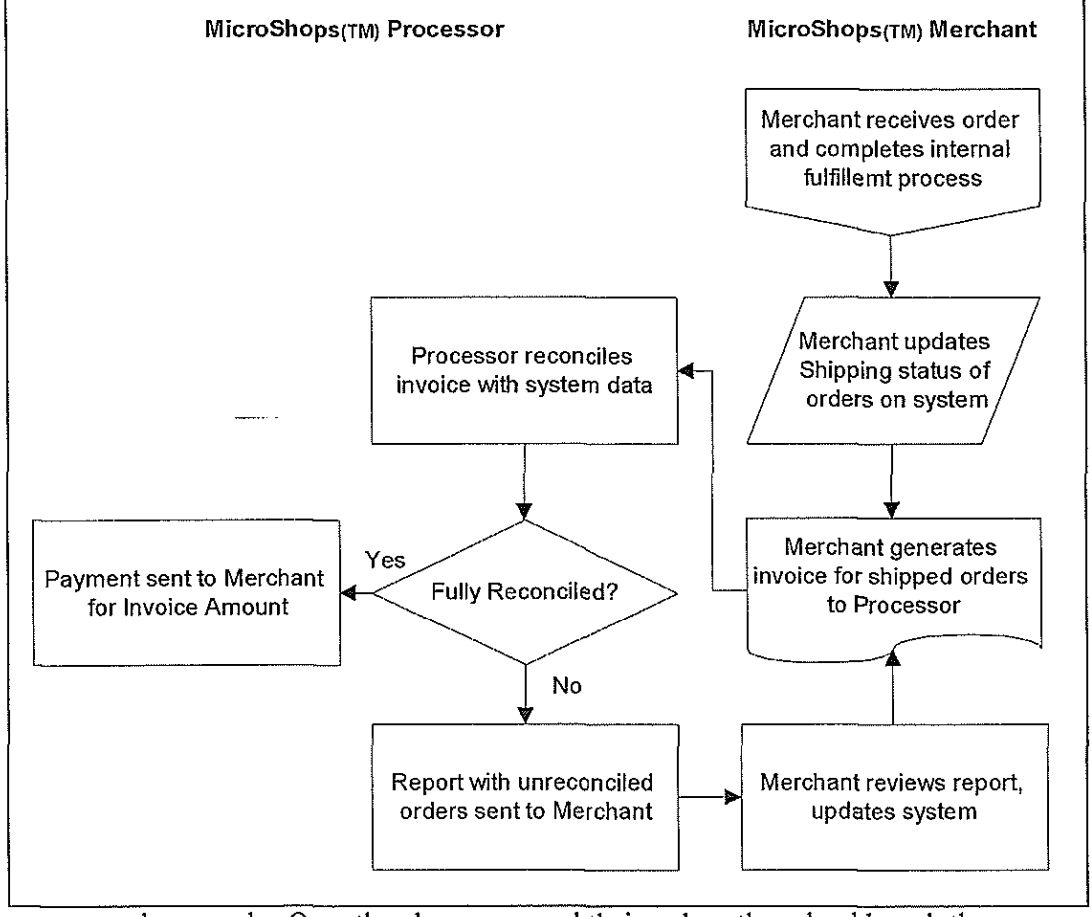
handling, Georgia sales tax for customers with Georgia billing addresses, and all customer information including credit card data.

d) Customer selects either "Confirm/Submit Order" or "Modify Order" button. If the former is selected, process continues to step 5. If the latter option is chosen, step 2 is repeated with previously entered information pre-filled (pretty much a "back" button). [Note: above the "Confirm/Submit Order" button will be a statement notifying the customer that submission may take up to a few minutes to process.]
e) While the Customer is waiting, the credit card and charge information is transmitted to payment processor via secure interface for authorization. If approved, the customer sees a new screen which thanks them for the order, reminds them of approximately how long it will take for the order to be fulfilled, and provides a confirmation number (order ID?) and the MicroShops™ Merchant's toll-free phone number for questions about the order. If the validation fails, the customer is informed of the problem with their credit card information and is instructed to return to the order form (step 2) to review and correct the supplied information.
f) If the order is approved, the confirmation/approval screen will contain a "Retuen to [MicroShops™ Host] Website" button.
g) When the order is confirmed, the MicroShops™ system should create a new order record containing the customer's complete data record, including the order details, credit card authorization code, the last four digits of the account number, the date on which the order was submitted, and the dynamically generated Order ID/confirmation number from step 6. A copy of this record should be automatically sent to the appropriate MicroShops™ Merchant's e-mail account.

The second part of the MicroShops™ Processor transaction process pertains to reconciliation and settlement with the MicroShops™ Merchants (Figure 4).

a) As orders are fulfilled by the MicroShops™ Merchants, each Merchant should access the MicroShops™ system via a password-protected interface to their own

Figure 4 – MicroShops™ Processor Transaction Flow, Part 2



order records. Once they have accessed their orders, they should mark the appropriate orders as "shipped" and enter a shipping date and possibly a tracking number, if a non-US Postal service carrier was used.

b) At each month's end, the MicroShops™ Processor will run a report from the MicroShops™ system detailing all order activity, sorted by order ID and status (shipped/not shipped), for each of the MicroShops™ Merchants.

c) When the monthly invoice is received from the merchant, their order records listed on the invoice should be reconciled with the report generated in step 9. [Note: This may ultimately be done via an automatic process, if possible.] Ideally, there should be a "reconciled" field within the database which is only accessible and updatable by the MicroShops™ Processor.

d) If there are unreconciled items, the MicroShops™ Processor should provide a list of the unreconciled orders to the Merchant, who can then verify the status of the

indicated orders and update the MicroShops™ system as needed. At this point the Merchant can either generate a revised invoice or request that the Processor re-reconcile the original invoice.

e) Once there are no unreconciled items on the Merchant invoice, the Processor will remit payment to the Merchant to satisfy the amount due.

The final part of the MicroShops™ Processor transaction process pertains to the payment of commissions to MicroShops™ Hosts (Figure 5).

f) Each month, the MicroShops™ Processor will run reports for each Host outlining the total number of fulfilled transactions and the total of all charges from each Host's MicroShops™ customer.

g) The MicroShops™ Processor will then send checks to each MicroShops™ Host for the appropriate amount along with a copy of the transaction & total report for the month.

4. MicroShops™ Merchant Transaction Flow

The role of the MicroShops™ Merchant is critical. Each Merchant must be committed to fulfilling every order received through MicroShops™ within a designated time frame. Merchants must also be able to track certain information regularly and accurately.

Century Technology Group and its partner firms will recruit MicroShops™ Merchants for MicroShops™ programs based upon the appropriateness of their products for online sales, volume projections, and willingness to participate. There will be a separate process for setting up a new MicroShops™ Merchant relationship which may vary from Merchant to Merchant depending upon the vagaries of the sales process.

The steps of the MicroShops™ Merchants transaction flow after they have been established within the system are as follows (see Figure 4):

a) The designated recipient of MicroShops™ orders within the MicroShops™ Merchant organization will check for new orders at least on a daily basis, if not more frequently.

b) If an order is received, it should be processed according to whatever internal process flow is used by the Merchant.

c) Once the order has been shipped to the customer, the MicroShops™ Merchant should access the MicroShops™ system and update the records for each of the filled orders by marking them as "shipped," indicating the shipping method (if more than one) and entering the tracking number (or equivalent).

d) Each month, the Merchant should prepare an invoice, itemized by order ID, for the MicroShops™ Processor based upon their own records of fulfilled orders. It is possible for the Merchant to reconcile this invoice with the MicroShops™ system manually in order to speed the settlement of the invoice by the Processor.

e) If the Processor informs the Merchant that there are unreconciled items on the invoice, the Merchant can either update the MicroShops™ system as needed or send a revised invoice reflecting the reconciled total.

C. The MicroShops™ Concept – Critical Success Factors

In order for a MicroShops™ program to be a success the following must be accomplished

- The MicroShops™ engine must be built, housed on a robust server with secure transaction processing capabilities
- MicroShops™ Merchants must be recruited. Attractive MicroShops™ Merchants share these characteristics:
  - Individual items with high appeal, potential for "impulse buy"
  - Bundled packages which offer "out of the box" benefits to buyer
  - Strong commitment to timely order fulfillment and customer service
  - Basic technological competence and capabilities (Internet access and e-mail)
- MicroShops™ Hosts must be recruited for each of MicroShops™ Merchant program. Success in recruiting will depend upon the quality of the sales effort, the supporting materials (including the microshops.com website), the reputation of the programs as disseminated by word of mouth an published testimonials, and traditional promotions.
- MicroShops™ Hosts must be able to promote the MicroShops™ products offered within their website

D. The MicroShops™ Concept – Benefits

Benefits to MicroShops™ Merchants include:

- Increased marketing exposure through MicroShops™ Host presence
- Incremental sales
- Hassle-free payment processing & invoicing
- Freedom to focus on core capabilities rather than on implementing and maintaining a comprehensive online marketing campaign
- Potential to offer products online without investing in proprietary website and online purchasing system
- Scalability

Benefits to MicroShops™ Hosts are:

- Addition of value-added content and offerings to website
- Creation of incremental revenue stream
- Retention of website visitor throughout sales & order process
- Possibility of repeat sales to each visitor as a result of association with product
- Ability to offer secure transaction processing without investment in additional technology, infrastructure, or payment processing relationships.

Ultimately, the benefits to the MicroShops™ Hosts will be directly proportional to their ability to market the products offered within their website, assuming that the products themselves have appeal to the visitors.

E. Future Products & Services Plans

Responding to market needs, we plan to follow MicroShops™ with extensions to our line which include electronic commerce processing services and, potentially, fulfillment services. The electronic commerce processing market is better established than the affiliate/pay per sale program management market, but it is anticipated that the need for reliable, secure, real-time order and payment processing will increase at a rate that exceeds the overall penetration of the market by competitors. Providing this functionality will not require a substantial incremental investment in technology since it can be achieved using the basic MicroShops™ architecture.

Fulfillment is considered to be one of the keys to Internet commerce, according to Ernst & Young. Manufacturers, interested in the advantages of direct sales via the Internet, will require third-party order fulfillment or face a costly investment in systems and resources which may eliminate the benefits of the new sales channel. Century Technology Group may partner with a shipping company such as UPS or FedEx to provide turnkey warehousing and fulfillment services. This can provide a substantial source of incremental revenues and will not distract MicroShops™ from its core mission.

F. Service & Support

1. Merchant Service

MicroShops™ Merchants will require personalized service if they are to remain fully satisfied with their participation in the MicroShops™ program. Each Merchant will be assigned a designated account representative from among the MicroShops™ staff. There will be a MicroShops™ Merchant hotline, e-mail merchant service, and bulletin boards for resolution of common issues among merchants. It is anticipated that the sales and service functions will overlap initially, but as Century Technology Group grows, dedicated service representatives will be hired for this function.

2. Host Service

MicroShops™ will be designed so that setup and maintenance of a MicroShops™ Host relationship will be as simple and clear as possible. Ultimately, the goal is to have each Host's needs satisfied through various self-service alternatives. Initially, it is anticipated that new Hosts will require a large amount of support adding MicroShops™ functionality to their existing websites. This support will be provided off-site, via telephone, e-mail, and fax. Century Technology Group can minimize these requests by continually refining the Host setup process so that it is as easy to use as possible.

3. Customer Service

Individuals who purchase a product or service through MicroShops™ will be served by the individual merchants. This will be made clear throughout the ordering, confirmation, and fulfillment process. Merchants will be required to provide e-mail, phone, fax, and regular mail customer service to its customers as a condition of MicroShops™ participation.

IV. Market Analysis

A. Market Description

We expect to compete in the affiliate/revenue-sharing segment of the Internet commerce market. The Internet commerce market was approximately $10.7 billion in 1997, according to International Data Corporation. Ernst & Young reported in their January 1998 study of Internet commerce that 12% of Internet commerce was facilitated by "entry portals" such as affiliate programs. The dominant trends in Internet commerce indicate that this segment is poised for significant growth over the next 5 years. Some companies, including Alt.bookstore (a leading online vendor) project that sales through affiliate/pay per sale program participants will contribute 25% of total online revenues within the next few years. Other online retailers have indicated similar or greater expectations, but no formal research has been conducted in this area. Century Technology Group assumes that its target market segment will account for at least 15% of total Internet commerce by the year 2001. Using a consensus projection of $208 billion in total Internet Commerce in 2001, MicroShops™ target market will be $31 billion. The table below provides year-to-year projections for the total Internet commerce market:

	1997	1998	1999	2000	2001
Total Internet Commerce ($B)	10.6	28.9	62.5	123.3	223.0

Source: IDC, 1998

Other industry sources concur with the IDC projections. Piper Jaffray estimates the 2001 Internet commerce market to be $228 billion, and Jupiter Communications has produced a similar estimate. 75-90% of Internet commerce is expected to fall into the business-to-business classification, with the remainder being business-to-consumer transactions (Piper Jaffray). The MicroShops™ segment will represent a cross section of the total Internet commerce market.

It is difficult to predict accurately the total opportunity presented by MicroShops™. Certain undisputed factors support Century Technology Group's expectations:

- The growth in Internet domain registrations, with over 30,000,000 domains registered worldwide (source: Network Solutions), and in unique websites, with 5,000,000 worldwide (Network Solutions), indicates increased competition for Internet users.
- The total Internet user population is expected to grow by 20% or more in 1998. Current estimates (see table below) of Internet users range from 42 million to 70 million, with consesus estimates at around 60 million.

Definition*	Location	Source	Published	Pop.	% of total Population
Adults ?	U.S.	Louis Harris	02/18/98	70M	36%
Adults 16+	U.S.	IntelliQuest	02/08/98	62M	30%
Adults 16+	No.Am.	Nielsen Media	12/11/97	58M	27%

Adults 16+	U.S.	Cyber Dialogue	01/30/98	42M	21%

Source: Feb-98 ICONOCAST
** Used the Internet in past 12 months (Nielsen: 3 mos.)*

- In March 1997 (the latest period for which figures are available), a Yankelvich Partners study revealed that 23% of all Internet users conduct online purchasing transactions. This was a dramatic improvement over the previous year, and many analysts expect this number to double or triple by the end of 1998.
- Two-thirds of US companies will offer Internet commerce alternatives in 1998 (source: CMP research), increasing the pool of potential MicroShops™ clients dramatically. Each of these companies will face the same challenge of attracting Internet visitors to their product and service offerings, and each will be forced to either develop new marketing competencies or risk failure in the attractive Internet commerce marketplace.

These factors combine to produce a market which will welcome the value proposition offered by MicroShops™. Content-oriented websites, as Hosts, will appreciate the ability to co-brand their MicroShops™ program and retain visitors. As the "inventory" of available content and advertising space on Hosts' sites becomes more scarce, MicroShops™ will have an advantage over traditional banner ads or referral-based affiliate/pay per sale programs.

B. Target Market

We define our target customers as manufacturers, distributors, and certain retailers. These customers are called MicroShops™ Merchants. Currently, the market for these customers is shared by 6 competitors: LinkShare, BeFree, Spree, E-Merchant, FWIW, and internally developed solutions. All of the competing outsourcing solutions are newcomers to the market, and none have insurmountable leads in the market.

Potential MicroShops™ Merchants share the following characteristics:

	Products Currently Selling Well	**Emerging Products**	**Wait and See**
Attributes	• High relative value • Non perishable • Information intensive • High tech	• Customization is highly valued • Personal information allows for differentiation • Price secondary to features/functions	• Lower value • Undifferentiated • Higher distribution costs as a percentage of sales
Examples	• Computers/Software • Books • CDs • Consumer Electronics	• Greeting Cards • Shoes • Apparel Products	• Food and beverage • Health and Beauty • Household Cleaning
Comment	The Internet is a major	Personalization and custom	Accumulation

	retail channel, and will obsolete some existing channels in time.	creation through technology can redefine value and create unwaivering loyalty.	distribution represents a new frontier that will unlock the potential of this channel.

Source: Ernst & Young, LLP 1997 Internet Commerce Study

They are motivated to establish a MicroShops™ program because of the high potential for incremental high-margin sales which the program enables. We know this from the experiences of other companies employing other affiliate/revenue-sharing programs, direct feedback from potential MicroShops™ Merchants, and industry news soources. Our customers will perceive our products as a good value, requiring little upfront investment and low variable costs with high returns.

Internet commerce has proven to be an effective distribution method for many different types of products in several different industries. These products include (in descending order according to sales volume):

- Computer hardware and software
- Travel
- Entertainment
- Books and music
- Gifts, flowers, and greetings
- Apparel and footwear
- Food and beverages
- Jewelry
- Sporting goods
- Consumer electronics
- Other (toys, home products, etc.)

Source: Forrester Research

MicroShops™ will initially focus on the following types of products:

- Office Equipment
- Specialty Foods and Food-related products

These categories have been selected because they meet the characteristics outlined above and are relatively untapped by any competing companies. The MicroShops™ beta clients will come from these categories. Additional product categories will be added as opportunities arise.

The office equipment category within the target market segment includes photocopy machines, facsimile machines, other document production equipment, supplies, and certain computer equipment. Retail prices are expected to range from $500 to $5,000, and MicroShops™ anticipates a commission of 5-10% net on all products sold through the MicroShops™ program. Possible MicroShops™ Merchants include:

- Xerox, Canon, Epson, Kodak, and other document production vendors
- UniCoil, VeloBind, and other document binding equipment and supplies vendors

- Quill, Acco, , and other direct marketers of office supplies
- Dell, Gateway 2000, Micron, Monorail, and other computer manufacturers

The food & related products category includes a broad range of lower-priced items ranging from actual food products including mixes, sauces, and gourmet specialty items to cookbooks and food preparation equipment. Retail prices will range from $10 to $100 with MicroShops™ commissions of 10-15%. Examples of potential Merchants within this category include:

- Calhoun Bend Mill, Chelsea Mill, Tabasco, Maine Lobster Co., and other food producers
- Cookbook publishers, privately published cookbooks
- Cuisinart, Magic Chef, Toastmaster, and other food-preparation equipment manufacturers

The majority of sales in each category will be handled by Hosts which will have been selectively recruited through MicroShops™ direct marketing efforts, while the minority of sales will be conducted using screened, passive recruiting such as search engine management, revenue-sharing program meta-sites, and referrals.

C. Value Propositions

MicroShops™ deliver value to all parties involved in the MicroShops program, including Merchants, Hosts, and Internet shoppers.

1. Merchant Value Proposition

Merchants, defined as producers, manufacturers, and select distributors of products or services, are strongly attracted to the sales potential of the Internet. As a distribution channel, the Internet is superior to other channels in several ways:

- Lower overhead and sales-related costs, resulting in larger profit margin
- Growing customer base that is enthusiastic about the sales channel
- 24x7 availability of channel – an automated sales "force" that never sleeps

There are several barriers to success, however, which a Merchant must overcome in order to reap the full potential of this new channel. These barriers include:

- Low barriers to entry – if it is easy for one company to create an electronic storefront, it will be easy for its competitors to do so as well. Additionally, even non-competing online merchants must "compete" for visibility and traffic online, without which there will be no sales.
- Security – building and maintaining a secure transaction interface can be costly, and establishing real-time payment processing capabilities also requires new competencies which many organizations will not possess nor wish to develop.
- Order entry process – merchants must create a simple, effective, and easy-to-use order entry system which captures all required information without confusing the customer. This must also include a confirmation system for the customer and a method for detecting and filtering fraudulent orders. Record keeping systems,

enabling tracking of Internet-derived orders, is another essential function which requires additional investment if achieved in-house.

- Marketing – although the number of Internet users is growing rapidly (60 million is the current consensus), there are an ever increasing number of websites competing for this audience. Even merchants with tightly deifined customers must identify how these customers are using the Internet and how best to attract them to the Merchant website to transact. Few merchants have the ability or inclination to develop (or recruit) this skillset and then maintain it, and even those that do are daunted by the increasing costs of such efforts.
- Channel confilct – many Merchants are concerned that direct sales will cause consternation within their traditional distribution channels. This concern often prevents an investment in Internet commerce even if the financial rewards are certain to be high.

MicroShops™ directly addresses these challenges and concerns. MicroShops™ Merchants outsource all of these functions to MicroShops™ at a far lower cost while increasing the benefits which can be accrued by the Merchant through the Internet channel. MicroShops™ enable Merchants to focus on their core competencies – product/service design, production, and fulfillment – without the distraction and expensive learning curve mandated by in-house management of an Internet channel.

MicroShops™ enables Merchants to tap into the marketing efforts of third party websites, essentially using these sites as "virtual storefronts" or sales agents. Such websites are able to maintain a much higher level of competency in this area and, if such websites (the MicroShops™ Hosts) are properly matched with the Merchants, they will be far more effective in terms of sales conversions (% of visitors who purchase) than the Merchants themselves, simply as a result of the context-appropriateness of the website setting. This third party approach also helps to mitigate channel conflicts. Since MicroShops™ and the MicroShops™ Hosts are actually making the sales and processing the payments, the Merchant can avoid the appearance of competing directly with its other channel partners while still benefiting from an improved profit margin.

Analogy – The Taco Bell Story
20 years ago, Taco Bell was like most other fast food restaurants – individual, single-store locations competing for passing traffic and hungry customers. Innovators within the company decided to centralize cooking and food preparation in each region, enabling restaurants to have smaller kitchens (now just assembly rooms with microwave ovens) and larger eating areas. This innovation led to the creation of mini-stores, located within the space of other, non-competing retailers. Today, Taco Bell food can be purchased from within WalMart and other retailers without taking up a lot of space and inconveniencing the "Host" store. Benefits to Taco Bell – low-cost locations with high traffic volume and low marketing costs capable of high-volume sales. Benefits to WalMart and other retailers – ability to offer valuable service at a profit to existing customers, keeping them in the store longer, without requiring an investment in developing a restaurant concept and food-preparation expertise.

MicroShops™ enable this real-world approach to joint marketing and partnership to be applied to the virtual world of the Internet. MicroShops™ Hosts receive the benefits of no-cost valuable content, added revenue streams, and better-served customers without the inconvenience of developing new capabilities. MicroShops™ Merchants capitalize on the marketing/traffic-building expertise of the Hosts while focusing on the quality of their own products and services and the profitability of the new online sales source.

Other affiliate/revenue-sharing program providers offer similar value propositions, but MicroShops™ will dominate because of the following:

- More complete offering – other programs, such as LinkShare, offer little more than an advertisement tracking service, leaving the vendor responsible for payment processing, affiliate settlement, and order processing. In a MicroShops™ program, Merchants are only required to fulfill orders in a timely manner, update their product offerings periodically, and track MicroShops™-generated orders for invoicing purposes.
- More attractive to Hosts – the value proposition to prospective Hosts (discussed below) is superior to that of most competitors, making MicroShops™ participation more attractive and more likely to be selected among such programs. Additionally, the targeted solicitation of prospective Hosts as well as manual screening of Host applicants will result in **better** affiliates as well as **more** affiliates.
- Ease of use – the Merchant management interface is graphical and easy to use, enabling Merchants to update product offerings, enter order fulfillment data, run transaction reports, view Host information, and other functions online, in real-time. The interface is intuitive and requires only limited training.
- MicroShops™ central – each Merchant will be provided with a Host presence in the MicroShops™ gallery, located on the MicroShops™ public server. This will be an incremental source of sales for which the Merchant only commissions the MicroShops™ Processor (Century Technology Group) instead of both the Host and the Processor. For Merchants without a proprietary website or online commerce engine, this bonus presence can serve as their "virtual" Internet website to which they can direct interested buyers.

Century Technology Group has validated this Merchant value proposition through careful analysis of best practices complemented by direct questioning of current and prospective Internet Merchants. For both MicroShops™ and competing offers, Merchant education is a primary barrier to sales, but with the strong value proposition coupled with Century Technology Group's experience with consultative sales, MicroShops™ is poised to dominate.

MicroShops™ Merchants Value Proposition

MicroShops™ offer Merchants the following value propositions:

- Increased distribution –

Instead of relying solely on their own corporate website to generate online sales,

Merchants can use the global network of MicroShops™ Hosts to market, promote and sell their products. For Merchants that do not currently own or operate any commerce-enabled websites, MicroShops™ can serve as an exclusive, inexpensive, and far-reaching distribution channel.

- Improved profit margin –

Selling through MicroShops™ enables Merchants to increase the gross margin on their goods and services, especially compared to the margins they receive selling through traditional distribution channels such as wholesalers and distributors.

- Improved productivity –

Merchants can outsource the management and marketing of their affiliate/pay per sale programs by using MicroShops™, requiring less time from their employees and freeing resources for other purposes.

2. MicroShops™ Host Value Proposition

MicroShops™ offer Hosts the following value propositions:

- New revenue sources –

Content-oriented websites typically rely upon advertising as a business model. Many of these websites would like to engage in electronic commerce but do not wish to carry inventory, process online transactions, or handle other electronic business functions. MicroShops™ create an entirely new revenue source for these websites and do not require them to assume any major responsibilities related to electronic commerce.

- New content sources –

Information and entertainment websites must continually refresh their web content in order to motivate visitors to make repeat visits. MicroShops™ serve as an instant source of new content that websites can add, modify, and increase as desired.

- Increased customer retention –

Websites must devote a great deal of time, energy, and money to the cause of attracting visitors. Visitors are the central asset of the content-oriented website, and this asset is commonly bought and sold (through advertising arrangements). Once their visitors arrive, websites seek to have the visitors remain within the site for as long as possible in order to view more content and increase the value of this asset. MicroShops™ enable the Host to capture the value of their principal asset without having to relinquish this asset to a third party. In a MicroShops™ relationship, **the Host owns the visitor**. Not only does the Host have the unique opportunity to convert an asset into capital, they also can tout MicroShops™ content as an additional valuable resource offered to their visitors, increasing the appeal of their site and subsequently attracting more visitors. **No other in-house or outsourced approach to affiliate programs provides this significant benefit to the Hosts.**

3. Consumer/Purchaser Value Proposition

To Internet Consumers/purchasers, MicroShops™ offer the following value propositions:

- More convenient access to electronic commerce –

  MicroShops™ bring shopping to the popular websites Internet shoppers already visit, rather than requiring them to locate and visit special Internet malls or commerce-enabled corporate websites. Participants in virtual community websites that focus on extremely specific topics such as gourmet cooking or entrepreneurship are particularly likely to purchase related products from MicroShops™.

- Instant order confirmation –

  MicroShops™ customers receive instant confirmation that their credit card has been accepted and their transaction processed. Many commerce-enabled websites process credit card transactions in batches, creating inconvenience for shoppers whose credit cards fail and who must then resubmit their orders.

D. Market Penetration & Sales Volumes

Century Technology Group expects the affiliate/revenue-sharing segment to contribute 15% of all sales volume within the larger Internet commerce market by the year 2001. A recent Ernst & Young study estimated that "entry portal" sales, including the affiliate/revenue-sharing segment, banner ads, and links, represented 12% of Internet commerce in 1997. Mark Welch, publisher of www.markwelch.com and recognized expert in affiliate/revenue-sharing programs, believes that the segment may account for as much as 50% or more of the Internet commerce market. Alt.Bookstore, the company which operates the online bookstore "BooksNow" claims that affiliate sales already represent 25% of total sales.

Consensus estimates of the Internet commerce market place total Internet commerce transactions at $207.06 billion annually by 2001. Using this as the basis for our market analysis, the affiliate/revenue-sharing segment will reach $31.06 billion by 2001. Century Technology Group estimates that 60-70% of this segment will be processed by in-house solutions. Of the remaining 30%, the target market share for MicroShops™ is 5%, or $465 million per year. With a strong reseller program and potential licensing arrangements with retailers and manufacturers, this target penetration may be surpassed. **If it is reached, however, transaction fees alone will generate $46 million per year in revenues for MicroShops™ by 2001.**

Consensus ($B)	1997	1998	1999	2000	2001	2002
Business-to-business	7.50	25.44	65.48	138.07	183.0	327.0
Consumer transactions	1.35	2.53	5.97	14.76	24.06	37.5
Total	**8.85**	**27.97**	**71.45**	**152.83**	**207.06**	**364.5**

Source: Iconocast, February 1998

V. Sales and Marketing

A. Recruiting

The MicroShops business model is structured in such a way that Century Technology Group earns its revenue when MicroShops Hosts sell large volumes of MicroShops Merchants' products. Since Century Technology Group plays only a small role in the actual marketing, promotion and sales of the products to end consumers, the primary product that Century Technology Group markets and sells is its own service, the MicroShops program. Thus, the critical success factor of our Sales and Marketing efforts will be the recruitment of strong Merchants and Hosts.

We will use three primary methods to recruit Merchants and Hosts:
1) Active recruiting through direct sales force
2) Active recruiting through resellers
3) Passive recruiting

1. Merchant Recruiting

- Active recruiting through direct sales force – Using a combination of traditional and new marketing methods, our sales force will call upon target Merchants to recruit them for MicroShops™ programs. Initially, the principals of the company will manage this new business development. Sales personnel will be added as soon as feasibly possible and tasked with targeting merchants in specific vertical industries. These direct sales reps will develop MicroShops marketing collateral to recruit Merchants and will be expected to meet or exceed industry norms in productivity and sales per rep.
- Active recruiting through resellers – the MicroShops™ affiliate/revenue-sharing program will also be sold through independent third parties. Century Technology Group will recruit Web developers, e-commerce application developers, Internet service providers, and Internet marketing companies to become partners who sell MicroShops™ programs in exchange for a share in setup fees and transaction fees. These resellers will represent a powerful addition to our direct sales force because:
  - They will greatly broaden the reach of our direct sales force, enabling Century Technology Group personnel to focus on selected core segments.
  - By compensating these resellers in a fair and timely fashion, their incentive to duplicate the MicroShops™ Engine and business model for the purpose of competing with MicroShops will be diminish
  - Large-scale growth can be achieved without a proportionate increase in direct sales personnel. This will increase the return on investment substantially. It is anticipated that additional MicroShops personnel will be required to recruit and manage relationships with resellers.
- Passive recruiting – the MicroShops™ website will include a section inviting Merchants to sign up for participation online. These Merchants will be attracted to the website through word of mouth, press releases, search engine management, referrals, and perhaps paid web banner advertising. All passively-recruited

Merchants will be screened by the sales department for suitability to MicroShops™.

2. Host Recruiting

Hosts can be broken down into two classifications: high-traffic and low-traffic.

The recruiting of high-traffic Hosts will be primarily active, with dedicated sales people creating unique arrangements with high-profile website operators such as Yahoo, Snap, CNN, ESPN SportsZone, and others. High-traffic Hosts are attractive because of the increased sales volume that will likely result from completing such arrangements. The sales cycle for these Hosts is expected to be long, however, and may require revenue guarantees which might be difficult to make in the early stages of the MicroShops™ program.

Low-traffic Hosts, defined as having between 10,000 and 100,000 unique visitors per month, will primarily be recruited passively, via referrals to the Merchant programs, advertising campaigns, and general publicity. Low-traffic Hosts, representing the vast majority of website operators on the Internet, will generate far fewer sales on a per-Host basis. In the aggregate, however, they are expected to contribute a substantial number of sales. Such Hosts are also less likely to require revenue guarantees. The varying degrees of sophistication among low-volume Hosts will require a greater amount of technical support from MicroShops™ staffers, but this will decrease as individual Hosts gain experience with MicroShops™ and the market becomes more educated in general. To minimize support expenses, we will strongly encourage low-volume Hosts to use automated, cost-effective means of support, including online sign-up, tracking, reporting, and technical support.

Other companies will also have financial incentives to recruit Hosts of all sizes. Many of our 3rd party resellers, for example, will be able to independently sell customized MicroShops interfaces to Hosts they recruit. MicroShops Merchants will also be encouraged to identify and recruit Hosts that have a particularly strong fit with the Merchant's products and will be capable of boosting sales.

B. Pricing

The MicroShops pricing system is based fundamentally on a pay-per-transaction approach, and is designed to appeal to both Merchants and Hosts while generating ample profit margins for Century Technology Group.

Merchant Pricing
Merchants pay a one-time setup fee to have their products included in the MicroShops program. It is anticipated that this fee will be $5,000. Merchants will also pay Century Technology Group a percentage of ongoing sales revenue. From this percentage, Century Technology Group covers the fees associated with credit card processing and the share of

revenue to which the Host is entitled. The total percentage Merchants will be required to share will usually not exceed 20-25%. This 20% will probably break down as follows:

- 10% allocated to the MicroShops Host responsible for generating the sale
- 3% allocated for credit card transaction costs
- 7% allocated to Century Technology Group as a fee for managing the *MicroShop sales process*

Merchants may be subject to minimum monthly revenues, and may also be required to sign contracts granting Century Technology Group exclusive rights to distribute and sell products through online affiliates.

Century Technology Group has structured the pricing structure to appeal to Merchants with experience selling through distributors and wholesalers. For many Merchants, selling products through a MicroShops program will be significantly more profitable than selling through traditional retail sales channels. Whereas many wholesalers and distributors require manufacturers to sell products at 40 to 60 percent of manufacturer's suggested retail price, a MicroShops program enables manufacturers to sell these same products at 80 percent of manufacturer's suggested retail price.

This pricing system resembles that of many MicroShops competitors in the affiliate/revenue-sharing program industry. One key difference between these programs and a MicroShops program, however, is that MicroShops tends to charge a higher percentage of revenues. For example, the LinkShare program requires only a 2-3% share of revenues vs. MicroShops' 7%. Century Technology Group manages more of the affiliate program workload than LinkShare, including the active recruitment of relevant Hosts and the Host reimbursement process, thereby justifying the pricing difference.

We arrive at our pricing based on the following:

- Cost – since we pass through all credit card processing costs, we must include this amount (anticipated to be roughly 3% of transaction amount) in our pricing system
- Market prices – our pricing system approximates current market rates for comparable services
- Perceived value – we charge a premium for our services, leveraging the perceived value of managing a Merchant's affiliate program process from end-to-end

We will review this pricing quarterly to ensure the system's appropriateness and proximity to ideal market price points.

C. Positioning

1. Merchant Positioning

We will position the MicroShops program as the most powerful, yet simple and cost-

effective, technology Merchants can use to expand product sales online. The unique technical and operational advantages of a MicroShops program will be stressed to create this perception in the Merchant's mind. Specifically, MicroShops represent:

- The most customizable tool Hosts can use to sell products online, a factor that encourages Hosts to sell more products and directly benefits the Merchant
- The best option for Merchants who currently have no online presence, since MicroShops are set up separately from a Merchant's current online store
- The most comprehensive outsourcing service available to Merchants who wish to create an affiliate/revenue-sharing program; Merchants need only set up system and fill orders, while MicroShops takes care of the rest.

2. Host Positioning

We will position the MicroShops program as the most powerful way for Hosts to add co-branded, revenue-sharing commerce capabilities to their websites. The unique technical and operational advantages of MicroShops will be stressed to create this perception in the mind of the Host. Specifically, MicroShops represent:

- The best way for Hosts to retain their visitors throughout the shopping experience, retaining them after purchases have been completed
- The most customizable tool Hosts can use to sell the products of various Merchants through their websites
- As cost-effective as any available affiliate program, i.e., free for qualifying Hosts
- An ideal way to add useful content to their websites while receiving aggressive compensation in the form of revenue sharing.

D. Branding

Century Technology Group will conduct a branding campaign to create a strategic MicroShops brand image. This brand image will communicate MicroShops' leading attributes:

- Reliability
- Value as an outsourcing solution
- Power as a sales tool
- Security
- Simplicity

This branding effort will be accomplished initially by strategically placing a "Powered by MicroShops" logo on all screens throughout the MicroShops purchasing process and will be accomplished over time through brand-building advertisements. Such a branding strategy aims to achieve several goals:

First, it will promote consumer awareness and recognition of the MicroShops service, creating the image of MicroShops as a widespread, dependable, and trustworthy electronic shopping system. Second, as the logo will be a clickable link that explains the benefits of becoming a MicroShops Host or Merchant, it should aid in the recruitment of both Hosts and Merchants.

It should be noted that these MicroShops self-serving branding efforts, while expected to be visible and consistent, will not overshadow the critical Host-Merchant co-branding of each individual MicroShop interface.

E. Marketing Communications

Century Technology Group recognizes that marketing success for MicroShops will depend upon extensive promotion. To accomplish our sales goals, we will require the services of a highly capable advertising agency/public relations firm. Upon funding, an appropriate agency will be selected and, with its assistance, a comprehensive advertising and promotion plan will be drafted. Our publicity efforts will position us at the leading edge in providing products for the online affiliate sales/revenue-sharing market.

Under the agency's guidance, the company will likely be involved in several marketing communications programs to promote awareness of the MicroShops program and its benefits. These programs may include:

1. Print Advertising

Century Technology Group will develop print media ad campaigns targeted at journals with appropriate editorial emphasis. The current list of journals includes major trade publications that cover Internet Marketing, Sales, and Retailing such as Mecklermedia's *Internet World* and Ziff Davis' *ZD Internet Computing*. Additionally, we will seek media coverage in industry publications covering targeted vertical industries that may be sources of MicroShops Merchants.

2. Research Firms

It will be important for us to stay in close contact with analysts at research firms such as Jupiter Communications, Forrester Research, and Zona Research. These companies wield considerable influence upon media coverage and perceptions among the high-tech investment community. In conjunction with our ad agency/public relations firm, key analysts within top research firms will be identified and provided with current information and insights about MicroShops.

3. Press Releases

Century Technology Group will attract coverage and placement of news through our contacts in the media and well-placed press releases. We will obtain contractual agreements with key Merchants and Hosts to cooperate with us in co-publicized announcements of new contracts, positive results, and other publicity-oriented information.

4. Conferences/Seminars

Century Technology Group will present papers at domestic and international industry forums, boosting MicroShops' exposure to potential merchants, hosts, resellers, and strategic partners for reasonable cost. Century Technology Group will also attend several trade shows, conferences, and seminars on free exhibition-only passes, in order to examine competitive and complementary products. As warranted, Century Technology

Group may become a paid exhibitor at shows specifically centered around electronic commerce and retailing. These shows might include the Internet Commerce Expo, Comdex, and Internet World.

5. Internet Promotion

Perhaps the most important form of marketing communication for MicroShops will be Internet Promotion. The marketing of MicroShops over the Internet will take several forms:

- Clickable MicroShops logos – graphics located throughout the MicroShops shopping process which, when clicked, will take users to customized web pages that encourage them to become Hosts and Merchants
- Advertising Banners, Interstitial Ads, Website Sponsorships, and other established online marketing channels – these will be targeted to reach website owners, Internet-savvy merchants, web developers and other parties that can benefit Century Technology Group; they will always be linked directly to promotional information about MicroShops on the MicroShops website
- MicroShops website – the primary source for promotion of the program and a system through which websites can apply to become MicroShops Hosts

6. Trade Journal Articles

Joe Michaels and Del Ross, Century Technology Group's principals, are often sought out as credible spokespersons for the Internet Marketing industry. Each has contributed articles to trade journals and electronic magazines and will continue to do so. Future writings will discuss and promote MicroShops wherever possible.

F. International Market

Century Technology Group will initially have a strong U.S. focus. We will only target Merchants with headquarters in the U.S., for example. Also, we will only pay Host commissions in U.S. dollars. In a few years, after garnering ample experience operating the business in the U.S., it will be possible for Century Technology Group to expand internationally. English-speaking countries including Canada, England, Australia, New Zealand and others will be an obvious first step. The main challenge for these countries will be adding a currency conversion engine to our transaction processing capabilities. Additional major international markets such as Japan, France, Germany, and others will follow and will require a language conversion module. Third-party technology firms have developed necessary tools to accomplish both the currency and language conversion. These tools will be customized to work in conjunction with the MicroShops engine.

VI. Competitive Analysis

MicroShops™ offer retail merchants – both online and offline – the ability to leverage multiple, 3rd party websites as a sales channel for their products. Companies that compete in this market are:

A. LinkShare

95 Horatio Street, Suite 107
New York, NY 10014
www.linkshare.com

Founded in 1997 by Stephen and Heidi Messer, LinkShare offers sales referral tracking software that facilitates commission-based agreements between online merchants and website owners.

LinkShare uses web banners to link online merchants to other websites and their visitors. When website visitors click on a LinkShare banner, LinkShare software sends them to the advertised online merchant, tracks all purchases made by that visitor on the merchant's site, and makes the information privately available to both the online merchant and website owner.

LinkShare charges online merchants a one-time setup fee of $5,000 and takes 2-3 percent of ongoing revenues from sales made through the LinkShare system. Alternative terms replace the transaction-based fees with a flat monthly charge for participation. Currently, LinkShare has 80 online merchants signed up and 4,000 affiliate websites. LinkShare plays no role in the shopping or purchasing process, handles no payment processing, carries no inventory, and refuses to settle disputes between online merchants and their affiliate websites. LinkShare has been successful in attracting several high-quality merchants, including Omaha Steaks and L'Eggs. LinkShare is in the process of developing a reseller/partner program.

LinkShare's current competitive advantages:

- For online merchants – LinkShare has something of a head start in the affiliate-based electronic commerce market with an established network of 4,000 affiliate websites
- For affiliate websites – the LinkShare system is extremely simple for affiliate websites to incorporate, and LinkShare currently offers, among several obscure brands, a few impressive merchants such as Omaha Steaks, Avon cosmetics, and L'Eggs hosiery.

LinkShare's current competitive disadvantages:

- For online merchants –LinkShare does not offer its merchants a way to handle online ordering or payment processing, thereby restricting its potential customers to online merchants that already possess these capabilities.
- For hosts -- since LinkShare only uses banner ads to link online merchants with websites, affiliate websites must "lose their visitors" in large numbers in order to make any money.

B. BeFree, Inc.

210 Grant Street, Suite 200

Pittsburgh, Pennsylvania 15219-2105
www.befree.com

BeFree provides an end-to-end solution for online merchants who wish to sell products through content websites. The solution is comprised of a link serving technology (called "BFAST") that connects websites to online merchants and an advertising delivery technology (called "BFIT") that targets links to the customers most likely to buy.

BeFree adds extra value by assuming responsibility for nearly all aspects of the merchant's affiliate program, including enrollment of affiliate websites, a buyer tracking system, a system for accounting and reporting results, and the payment of affiliate commissions. BeFree's tracking system reveals what customers see in each storefront, how often they see it, and what they are most interested in buying.

The BeFree business model requires Merchants to pay a setup fee which is substantially higher than that charged by LinkShare or Gold Rush. In addition, Merchants are charged a volume-based fee (either per-transaction or per-clickthrough) which must meet or exceed a predesignated monthly minimum amount. BeFree will manage and process all Host settlement at an additional cost to the Merchant. Merchants are required to commit exclusively to BeFree for a 2-3 year minimum period in order to participate in their program. To date, BeFree has established three client relationships:

- Barnes & Noble – representing perhaps the largest affiliate/pay-per-sale program outsourcing deal currently active on the Internet. The Barnes & Noble affiliate program has approximately 1,000 affiliates.
- Electronic Newstand – actually the first client of BeFree, this is a magazine subscription program with relatively high-yield revenue sharing terms for affiliates.
- Artuframe – this program, launched in February 1998, is the newest client of BeFree. The company, a custom framing and artwork retailer, retained Mark Welch as an affiliate program expert to assist them in the selection of an outsourcing solution.

<u>BeFree's Competitive Advantages:</u>

1) Better tracking and accounting functionality than most similar programs offer
2) Exclusivity contracts with merchants
3) Early successes with big-name merchants: Barnes & Noble, Public Broadcasting, Electronic Newstand, Artuframe

<u>BeFree's Competitive Disadvantages:</u>

1) Cookie-based tracking system -- can deny affiliate websites a portion of commissions
2) Expensive and risky proposition for merchants: no risk-sharing by BeFree: pricing model is based on number of impressions BeFree delivers instead of sales commissions, plus, there are minimum revenues due to BeFree

C. Spree

381 Brinton Lake Road
Thornton, PA 19373
www.spree.com

Spree is an online variety store that sells books, music, flowers, coffee, and gifts, and that rewards 3rd party websites for referring paying customers to Spree.

When a website becomes a "Spree Independent Partner" (or SIP), the site receives 10% to 29% of Spree's gross profits on any sales that site brings to Spree. Spree's compensation plan also includes a multi-level marketing scheme in which Spree encourages its SIPs to recruit new SIPs, paying out cash bonuses based on the new SIPs' sales. Spree also offers two value-added services to its SIPs:

- Two megabytes of free web server space to create a homepage that can be used to promote Spree products
- 3 free reminder services: an online Address Book, a reminder service called "Never Forget," and an online Gift Assistant service that recommends Spree gifts.

While Spree claims to be in search of merchants interested in selling their products through the Spree online store, Spree's primary interest appears to be finding additional SIPs to sell the products it currently offers.

Spree's Competitive Advantages:

1) Ease and simplicity of sign-up process
2) Potential for websites to earn large percentages through network marketing
3) Lead in developing value-added reminder technologies for its partners

Spree's Competitive Disadvantages:

1) Partner websites have limited access to tracking, accounting functions
2) Negative image associated with multi-level marketing scheme
3) Limited opportunity for merchants to sell products through partner websites

D. e-Merchant Group, Inc.

10940 NE 33rd Place, Suite 200
Bellevue, WA 98004
www.e-merchant-group.com

e-Merchant Group has three specialties: building commerce-enabled websites for merchants and manufacturers, aggregating these websites into industry-specific malls, and creating "private label stores" for content-oriented websites who wish to tap into these malls.

e-Merchant Group's technology creates a mall-like template that allows various merchants and manufacturers to sell their products within a consistent online interface. Websites that wish to create a private label store can select from e-Merchant Group's list of merchant clients and build a customized, co-branded store hosted by e-Merchant Group. e-Merchant Group can handle all order and payment processing, including credit

card transactions, and can even take responsibility for warehousing and order fulfillment through e-Merchant Group partners.

In many ways, e-Merchant Group offers a very similar service to that offered by MicroShops™. The company's private label stores bear great similarity to MicroShops™ and the value propositions they present to merchants and manufacturers closely resemble those offered by MicroShops™. However, e-Merchant Group has chosen to focus only on merchants within two industries: toys and outdoor gear. They also work closely with various Scandinavian companies. According to CEO Lars Asbjornsen, e-Merchant Group intends to remain focused on these limited industries, with the intent of building reputation, expertise, and exclusive arrangements within each.

e-Merchant Group claims to have developed a technology that enables manufacturers to compensate their current retail distributors financially for online sales. This tool will assist them in their efforts to attract large manufacturers that have long sold goods through established retail channels whom the manufacturers might offend by selling products directly to consumers online.

e-Merchant Group's competitive advantages:

1) Established relationships with merchants in specific industries
2) Co-branded private label stores "retain" site visitors
3) Technology that compensates traditional channels for online sales could make solution more appealing to manufacturers

e-Merchant Group's competitive disadvantages:

1) Merchants fall into limited industry categories; excessive dependence upon Scandinavian merchants to date
2) Limited experience building co-branded stores
3) Inferior shopping interface – unattractive, cluttered, barely co-branded with host sites

E. ProActive Web Marketing

PO Box 146
Beverly, MA 01915
www.pactive.com/fwiw

ProActive Web Marketing has a reseller program called "For What I'm Worth," or FWIW. Like LinkShare, this program enables Hosts to send their visitors to fully functional online merchants and receive 5% of sales revenues. FWIW offers websites a unique feature: Hosts are able to mark up the sales price of any goods sold above the retail price offered by the Merchant and receive 100% of this premium.

FWIW offers Hosts the opportunity to resell the products of only 7 online merchants representing products from live lobsters to jewelry. To date, less than 200 Hosts have signed up to become FWIW resellers, although their short history (less than 3 months in March, 1998, makes this low figure more impressive).

Hosts that wish to participate in FWIW use a unique reseller code which they embed in the link to FWIW online merchants. Also included in this link is the amount that the Host wishes to automatically mark up the merchant's prices (up to the maximum 50% markup).

One of FWIW's major limitations is their "trust me" model for tracking, reporting, and payment. Websites have no way to monitor the amount of money they earn. ProActive promises to contact a participating website through e-mail on the first of every month if that site has earned a commission and reimburse that site within an unspecified timeframe.

FWIW's online merchants are mostly commerce-enabled websites created and operated by ProActive Web Marketing itself. The company has no evident plan to recruit new online merchants.

ProActive's Competitive Advantages

1) Unlike Like LinkShare, it is extremely easy for FWIW websites to sign up and become resellers

ProActive's Competitive Disadvantages

2) Unlike LinkShare, the company has a very limited network of both online merchants and affiliated websites
3) Poor tracking/reporting features
4) Inferior and unprofessional appearance

F. Realm One

Realm One is the newest entrant into the affiliate/pay-per-sale program management market. The product is intended to be the low-cost solution in the market, and the level of service offered is lower than that offered by other companies. Their product, called the Gold Rush Affiliate Tracking System, uses an ID# system to enable them to track referrals and sales. This information is compiled into a database which is accessible to both Merchants and Hosts to determine commissions accrued to each Host.

Realm One offers three pricing alternatives. The first requires a $250 setup fee and imposes a $12 fee to each Host/affiliate (paid directly to Realm One) that wishes to participate in a Merchant's Gold Rush program. The second requires a $650 charge and a monthly service fee, charged to the Merchant, depending upon the number of active affiliates in a given month. This second option includes a higher level of technical assistance and 2-week promotion on the Gold Rush website. The following table illustrates the schedule of monthly fees per # of affiliates:

# of Affiliates	*Monthly Charge*
Up to 75	$100
75 - 100	$150
100 - 125	$200
125 - 175	$250

175 - 200	$300
200 - 225	$350
225 - 250	$400
More than 250	$400 + $2/affiliate over 250

Source: Realm One website

The third pricing alternative requires a $2,000 setup fee plus monthly charges based upon the same price schedule outlined above. This alternative includes creation of the Merchant's website and satisfaction of all technical requirements required to implement the system and to commerce-enable the Merchant.

The Gold Rush Affiliate Tracking System has only been available since January 1, 1998, and it has only been actively promoted since March 1, 1998. The company has been able to attract USA Auction.com, one of several online auction companies, as well as a few other unnamed Merchants.

Realm-One's Competitive Advantages

1. Price – The Gold Rush system is the least expensive alternative available to Merchants.
2. Speed of implementation – Realm One states that they can implement a Gold Rush system within a matter of days

Realm-One's Competitive Disadvantages

1. Level of service – Gold Rush is purely a tracking system. The company does not provide marketing assistance, affiliate relations assistance, or analysis of affiliate results. Merchants must have a commerce-enabled website in order to use the service.
2. Pricing method – Under the first pricing option, Merchants are likely to have little success in attracting some types of Hosts, who will likely balk at paying an upfront fee to participate. In the other pricing scenarios, Merchants become obligated to pay fees even if they are not warranted by the sales generated by affiliates.
3. Sales strategy – Realm One is clearly targeting a lower caliber of Merchant than other providers. The pricing of the service and the descriptions provided by the company do not impart a sense of professional integrity, and the newness of the program will exacerbate this factor. However, if the company is able to survive, its longevity will mitigate this disadvantage.

G. In-house Solutions

Century Technology Group estimates that 50% of affinity/pay-per-sale programs will be created and maintained internally by Merchants. The attraction of this alternative is the added control this provides, the incremental knowledge about the online market which is gained through active, direct participation, and the desire to control external expenditures.

Ultimately, many companies which initially pursue an in-house solution may elect to

replace their internal approach with an outsourced solution. This will give them the advantages of retaining the central benefits of an affiliate/pay-per-sale program (increased sales) without having to keep pace with technological developments. Additionally, such companies will also benefit from being able to outsource the servicing of Hosts, enabling them to focus on servicing the customers gained through the sales of the products.

H. Other Competitors

Some companies that wish to boost online sales will develop and manage their own affiliate sales program internally, thereby becoming an indirect competitor to MicroShops™. Amazon.com and Cyberian Outpost, for example, have built their own solutions and not outsourced any portions to 3rd party firms. Likewise, as other online merchants, manufacturers, and retailers develop competencies in the field of electronic commerce, internally designed and operated affiliate program solutions may become an increasingly popular option.

Additionally, companies that specialize in managing other parts of the electronic commerce process, including web design firms, e-commerce software and solutions providers, online credit card transaction processors, and online malls, could conceivably create similar programs to those proposed by MicroShops™.

MicroShops™ possesses the necessary resources and strategies to compete effectively with the above-listed competitors. Sources of MicroShops'™ competitive advantages include: superior MicroShops™ technology, completeness of MicroShops™ end-to-end solution, aggressive MicroShops™ partner/reseller strategy, exclusivity contracts with MicroShops™ Merchants, and breadth of MicroShops™ Hosts and Merchants network.

Feature/Function Analysis

Feature/Function Analysis	**Your Product**	Competitive Product 1	Competitive Product 2	Competitive Product 3
General				
Highly graphical interface	ü		ü	
Easy, fun to use	ü		ü	
Low overhead	ü		ü	
Quick, doesn't requireÉÉ..	ü		ü	ü
Seamless integration with XYZ Environments	ü			ü
Specific				
Allows comparisons between successive runs	ü		ü	
Collects all run statistics each time the program is updated	ü			partial
Profiles third-party libraries and components	ü	partial		
Feature X	ü	ü		
Feature Y	ü		ü	
Feature Z	ü			partial
Functions				
Function 1	ü	ü		ü
Function 2	Release 2	ü		ü
Function 3	ü		ü	
Function 4	Release 2			
MoreÉÉ.				

II. FINANCE

A. Financial Summary

A. Revenue Sources

A. Funding Requirements

How Funds Will Be Used

Exit/Payback Strategy

A.

B. Projected Income Statements

VII. Appendix

Exhibits

Online Advertising: Building Customer Loyalty

Jan 20 1998: According to Jason Olim's, "Case History: Customer Loyalty is the Name of the Game" the kind of customer loyalty that can be achieved in online business is unparalleled in other traditional mediums.

CDNow, which sell music online have implemented a number of promotional incentive schemes directed at online customers. These include award systmes, promotions and information on shopping opportunities.

According to Jason Olim, customers who are used to shopping online will spend 1.5 times more time online than a newcomer to the site. In addition loyal customers not only spend more time shopping on each site they come accross, but that they attract others to the site.

In his case study he identified four key elements of customer loyalty. The capability of the Internet to provide a unique shopping experience, an efficient and user friendly site design, the provision of meaningful followup and continued dialog in after sales support.

Supporting Research – Quotes from relevant studies

INTERNET REVENUE
(From Computerworld.com)

{PRIVATE}U.S. Internet revenue, 1997	$8.5B
U.S. Internet revenue, 2001	$155B
Western Europe Internet revenue, 1997	$1.1B
Western Europe Internet revenue, 2001	$26B

Source: International Data Corp.
Date posted: Dec. 29, 1997

{PRIVATE}Worldwide Internet revenue, 1997	$13.3B
Percent that is generated via sales of products and services	85%

Source: ActivMedia, Inc.
Date posted: Dec. 29, 1997

{PRIVATE}Revenue from U.S. security market (firewalls, encryption tool kits, payment security software, ID tokens, intrusion detection software), 1996	$525M
Revenue in 1997	$868M
Revenue in 2001	$2.8B
Average annual growth, '96-2001	39%

{PRIVATE}Revenue from U.S. electronic payments market (payment processing, electronic bill payments, digital currency), 1996	$8.3B
Revenue in 1997	$10B
Revenue in 2001	21.2B
Average annual growth, '96-2001	21%

{PRIVATE}Revenue from US. financial services software market (Internet banking software, online trading software, financial management software), 1996	$900M
Revenue in 1997	$1.2B
Revenue in 2001	$2.9B
Average annual growth, '96-2001	26.7%

{PRIVATE}Revenue from U.S. business commerce software market (electronic catalog software, EDI software/services), 1996	$1.1B
Revenue in 1997	$1.6B
Revenue in 2001	$4.4B
Average annual growth, '96-2001	33%

{PRIVATE}Revenue from U.S. commerce content (books, CDs, wine, industrial supplies, plastic resin), 1996	$0.9B
Revenue in 1997	$3.8B
Revenue in 2001	$228B
Average annual growth, '96-2001	217%

Source: Piper Jaffray, Inc.
Date posted: Dec. 29, 1997

Techweb: Companies expect quick pay-offs from E-Commerce.

Dec 8 1997: "Nearly two thirds of US companies will be conducting E-Commerce within a year and 68 percent of all companies believe that E-Commerce demands a reevaluation of traditional business models, according to a survey by CMP Research. The number of large and medium-sized companies engaging in E-commerce will increase by up to 50 percent in the next year. 40 percent of US companies currently conduct business on the Internet and a further 23 percent intend on starting in the next year. Of those currently conducting E-Commerce and those intending to go online, 64 percent expect that costs will be paid off within a year. 48 percent of current users use public Internet and 42 percent use private Internet Protocol networks or virtual networks. "

Paul Kagan & Associates: Internet Related Revenue to USD46.5bn by 2007

Jul 31 1997: "Media Analysts Paul Kagan Associates see the Internet as key to driving the consumer interactive media market to over USD46.5bn in the US within the next 10 years. Both the ease of Internet distribution and a move from on-demand content pull to push will further drive the market, according to Kagan who see revenue from new media such as Internet access, Internet advertising, e-commerce and video quickly overtaking revenue from more conventional forms such as TV and Radio advertising. Predicted

figures in the US by 2007 include: e.commerce $11.7bn; Internet advertising $6.6bn; Internet access $12.7bn. "

Computer Science Corp: Future Of E-Commerce

Jun 11 1997: "The results of a survey jointly conducted by Computer Sciences Corp. [NYSE:CSC] and Retail Info Systems News found online shopping was a priority among the 300 information services (IS) directors surveyed. About 5 percent of those retailers surveyed in 1995 offered online shopping, compared to 11 percent in 1996 and 18 percent in this most recent study. An additional 39 percent of respondents say they plan to have an operational virtual storefront by 1999, the survey said. The heaviest users of the Web for shopping transactions, according to the study, are book and music retailers, grocery and department store chains, and non-apparel specialty stores that offer a "catch-all" of retail goods."

Cnet: Managers Still Don't Get It

Feb 24 1998: Marketing managers still have not realised that the Web is an entirely different medium to preceding public information channels. Companies don't need to go out and spend more money on the latest technologies, rather they need to think more about what kind of experience they want to offer the online customer and start tailoring their online resources to facilitate that.

A report released by Shelley Taylor & Associates, a group based in Palo Alto, California, indicates that although companies are spending time and money developing Web sites, they are frequently inadequate and even counterproductive to the company. That is, they don't serve their client base, their investors, the general public or potential employees. The author, Shelley Taylor, studied over 100 corporate websites spanning 14 different industries in 11 separate countries. The conclusion was that there is an ever increasing gap between the potential of the Internet to ameliorate a company's selling strategy and public image and the actual realisation of this potential by companies.

Speaking to a Reuters correspondent, Taylor commented, "Corporate Web sites do not serve the audience they are designed for, nor do they reflect business strategies of the companies that create them".

Some companies may not only be falling short of the full potential for garnering larger markets, but in some cases are alienating existing customers. Automated responses to queries and FAQ's by companies who pride themselves in individual customer attention shows a fundamental lack of understanding of the available technologies and does nothing to help customer relations or sales.

The report found that online purchasing has not taken off yet with only 20 percent of websites providing electronic purchasing channels. Less than 50 percent provided contact information or general information on the company. 49 percent provided information on employment within the company but only 28 percent provided online application forms.

Perhaps because of their years of experience with Minitel, French companies were rated higher than other countries and were noted for providing the most comprehensive information on their Web sites. Sun Microsystems, AT&T and Bell Atlantic were also noted for their excellence."

Business Week: The Future of Online Grocery Shopping

Feb 16 1998: Anderson Consulting in conjunction with 29 other companies, have released a study on the future of selling groceries online in the US. The report concludes that it may take some time for both grocery shopping and the purchase of household

items online to really take off.

Despite this, the group project that grocery shopping and the purchase of general household items on the Internet will escalate from a value of USD100 million in 1997 to USD85 billion in 2007.

It's expected that as many as many as 20 million people, 15 percent of households in the US, will favour Internet shopping over going to a store to shop by 2007.

The study was conducted over a two year period using data from 1,800 US consumers and 800 online shoppers with the intention of finding out to what extent shopping habits are changing as a result of the Internet.

Techserver: SMEs Embrace the Internet in the US

Feb 12 1998: A survey carried out to ascertain the extent of penetration of the Internet on US SME's found that awareness of the potential of the Internet for business is increasing.

Of the 550 Small to Medium sized businesses surveyed in Dun & Bradstreet's latest survey, 47 percent said they had access to the Internet, this is compared to last year when a paltry 5 percent said they saw the Internet as a important tool for a business.

35 percent of those surveyed maintain a website and one third of those actively engage in online business transactions. Senior Vice President of D&B commented, "The anticipated march to the World Wide Web has undeniably begun by the critical mass of American businesses, however, for some, the "march" has evidently begun with just a few small steps."

Cnet: Car Sales Popular on the Web

Feb 2 1998: The amount of people willing to buy a car over the Internet more than doubled this year, according to a survey by Dohring Company.

In addition, the number of people willing to buy a car from a second hand car store dropped, falling from 15 percent to 8 percent in twelve months. Those who said they would buy a new car or truck without a test drive was up 4 percent from 1997.

32 percent of repsondents said they had used the Internet to find information on buying cars. The most sought for information was prices and followed by information on specific models and features.

Of those who said they would use the Internet to help them purchase a car, a quarter were 50 years or over, 38 percent were aged between 35 and 49 while 37 percent were aged between 18 and 34 years.

Nearly half said they may buy a car online this year.

Cowles/SimbaNet: Music Retailers Are Getting Rich

Feb 13 1998: A study by Cowles/Simba Information has found that revenue for the top five music websites has leaped from USD21.5 million in 1996 to USD52 million at the end of 1997, representing a 141.9 percent increase.

The study, Multimedia Entertainment and Technology Report, found that as more venture

capitalists scramble online for a piece of music cake, companies are being forced to spend more on promotion in a bid to stand out from the crowd.

Partnership deals with search engines and online shopping malls are seen as a viable means to maintain the edge on usurpers.

CDnow, one of the most trafficked music sites, forged a deal with Yahoo and grossed USD15 million in 1997. In exchange for keyword placement and an exclusive banner, CDnow paid Yahoo! USD3.9 million. They also signed a deal with Excite, to the tune of USD4.5 million, for the exclusive position of designated online music retailer in Webcrawler.

Meanwhile N2K gave AOL USD18 million to be the only retailer on AOLs music channel plus a permanent banner on AOLs Shopping Channel for the duration of two years.

According to Jim Coane, president of N2K, the ability to build a brand on the Web,is crucial to the prosperity of online music retailers and the current partnerships being struck up are a guarantee for prominent placement thus effective branding.

He commented, "Those deals are an effective, pre-emptive barrier to entry for competition. Brand is a critical success factor, and it may be too late for small entrepreneurs to capture the mindshare necessary,".

VIII. Glossary