

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,

v.

J&H WEB TECHNOLOGIES, LLC,
Patent Owner.

U.S. Patent No.: 8,935,342
Issued: January 13, 2015
Application No.: 13/417,174
Filed: March 9, 2012

Title: METHOD FOR DETECTING AND UNSUBSCRIBING
AN ADDRESS FROM A SERIES OF SUBSCRIPTIONS

DECLARATION OF LOREN G. TERVEEN, PH.D.

MICROSOFT CORP.
EXHIBIT 1003

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I, Loren G. Terveen, Ph.D., do hereby declare as follows:

I. INTRODUCTION AND ENGAGEMENT

1. I have been retained as an independent expert on behalf of Microsoft Corporation in connection with the above-captioned Petition for *Inter Partes* Review (“IPR”) to provide my analyses and opinions on certain technical issues related to U.S. Patent No. 8,935,342 (hereinafter “the ’342 patent”).

2. I am being compensated at my usual and customary rate for the time I spent in connection with this IPR. My compensation is not affected by the outcome of this IPR.

3. Specifically, I have been asked to provide my opinions regarding whether claims 1-17 (each a “challenged claim” and collectively the “challenged claims”) of the ’342 patent would have been obvious to a person having ordinary skill in the art (“POSITA”) as of March 9, 2012. It is my opinion that each challenged claim would have been obvious to a POSITA in view of the prior art discussed herein.

II. BACKGROUND AND QUALIFICATIONS

4. I am a Professor of Computer Science & Engineering at the University of Minnesota.

5. I received a B.A. in Computer Science, Mathematics, and History from the University of South Dakota in 1984, a M.S. in Computer Science from the

University of Texas in 1988, and a Ph.D. from the University of Texas in Computer Science in 1991.

6. I am a member of the Association for Computing Machinery (ACM), the oldest, largest, and most prestigious computing society in the world. From 2015-2018 I served as President of ACM's Special Interest Group on Computer-Human Interaction, one of its largest and most active special interest groups. I also am a member of the ACM Council, the highest governing body of the ACM. I received the ACM Distinguished Scientist Award in 2009.

7. My research and teaching focus on human-computer interaction, user interface design, and social computing. I have several decades of experience in these specialties of computer science in both industry and academia. I worked for AT&T Laboratories from 1991 through 2002, during which time I conducted research and developed systems that solved problems in software engineering, web information seeking and organization, and recommender systems. As part of this research, I developed a number of systems on the World Wide Web, which involved, among other things, collecting information from web pages, storing the information in databases, identifying patterns in the information using computational methods including text processing and categorization, generating HTML pages in response to user requests, and providing interactive functionality to users through the Common Gateway Interface (CGI). In all my research, I designed, implemented, and tested

graphical user interfaces. I have been employed full-time as a professor at the University of Minnesota since 2002, during which time I have taught classes in computer science, human-computer interaction and social computing, and have conducted, supervised, and published research in the field, much of which has involved web-based systems. My research has been published in numerous journal and conference papers, as well as in a book I co-authored entitled “Foundational Issues in Artificial Intelligence and Cognitive Science: Impasse and Solution.” I have served on the editorial board of ACM’s Transactions on Human-Computer Interaction and the Communications of the ACM, and have served as a reviewer for numerous journals, including ACM Computing Surveys, IEEE Transactions on Data and Knowledge Engineering, the International Journal of Human-Computer Studies, and the Journal of Computer-Supported Cooperative Work.

8. I am a listed inventor on nine patents, including several related to graphical interfaces and web-based systems.

9. I have consulted on over 10 intellectual property cases that have dealt with topics in user interface design, recommender systems, web information systems, and set top boxes. During these cases, I have testified before judges, been deposed, and written multiple expert reports.

10. I have attached a more detailed list of my qualifications as Appendix A. Based on my academic and professional experiences, I believe that I am qualified

in the technology fields pertaining to this proceeding (and described below), at least as a person of ordinary skill in the art.

III. MATERIALS CONSIDERED AND INFORMATION RELIED UPON REGARDING '342 PATENT

11. In preparing this declaration, I have reviewed the following materials bearing Exhibit Nos. that I understand are being referenced in the IPR to which my declaration accompanies:

LIST OF EXHIBITS

No.	Description
1001	U.S. Patent No. 8,935,342 (“ the '342 patent ”)
1002	File History of U.S. Patent No. 8,935,342
1004	U.S. Patent No. 7,831,707 (“ Bardsley ”)
1005	U.S. Patent No. 7,620,690 (“ Castelli ”)
1006	LashBack website excerpts, captured Jan. 25, 2009, through Feb. 13, 2009, and Dec. 15, 2006 (“ LashBack ”)
1007	U.S. Patent No. 7,873,996 (“ Emigh ”)
1008	U.S. Patent No. 6,029,192 (“ Hill ”)
1009	Return Path Research Study, <i>Keeping the Subscriber Experience Positive After “Unsubscribe Me,”</i> 2008 (“ Return Path ”).
1010	Constant Contact: Email List Management, captured Jan. 2, 2011 (“ Constant Contact ”)
1011	Chang, Ming-Wei; Yih, Wen-Tau; and McCann, Robert, <i>Personalized Spam Filtering for Gray Mail</i> , Proceedings of the 5th Conference on Email and Anti-Spam, Aug. 2008

No.	Description
1012	Yih, Wen-Tau; McCann, Robert; and Kolcz, Aleksander, <i>Improving Spam Filtering By Detecting Gray Mail</i> , CEAS 2007 – Fourth Conference on Email and Anti-Spam, Aug. 2-3, 2007
1013	Dietrich, Christian and Rossow, Christian, “ <i>Empirical research on IP blacklisting</i> ,” Fifth Conference on Email and Anti-Spam, CEAS 2008 (“ Dietrich ”)
1014	Affidavit of Nathaniel E. Frank-White
1015	Neufeld, G. and Nisto, Baer, J., “ <i>The Use of URLs as Meta-Syntax For Core Mail List Commands and their Transport through Message Header Fields</i> ,” Network Working Group Request for Comments: 2369, July 1998
1016	Duerst, M.; Masinter, L., and Zawinski, J., “ <i>The ‘mailto’ URI Scheme</i> ,” Internet Engineering Task Force Request for Comments: 6068, Oct. 2010
1017	U.S. Patent No. 7,644,126
1018	Unsubcentral.com: Suppression List, captured Jan. 4, 2011
1019	Jenkins, Simms, <i>The Truth About Email Marketing</i> , Pearson Education, Inc., 2009
1020	Interspire.com Email Marketer User Guide, 2008
1021	J&H Web Technologies, LLC’s Sur-Reply in Opposition to Motion to Dismiss, ECF 33, <i>J&H Web Techs., LLC v. Vade Retro Tech., Inc.</i> , no. 4:17-cv-00119 (S.D. Tex.), Apr. 21, 2017
1022	Tittel, Ed and James, Steve, <i>HTML for Dummies</i> , 2nd Ed., IDG Books Worldwide, Inc., 1996
1023	Designing, Coding & Delivering HTML Email: A beginners survival guide from MailChimp, 2009
1024	Bannan, Karen, “ <i>When They Say You Are a Spammer</i> ,” New York Times, May 24, 2007.
1025	Dictionary of Computing,” 4 th ed., Peter Collin Publishing, 2002 (excerpt)

No.	Description
1026	Newton's Telecom Dictionary, 25 th Updated and Expanded Anniversary Ed., 2009 (excerpt)
1027	Email Marketing Stats, Facts and Metrics – Metrics 2.0 Quick Pack, Metrics 2.0 Blog, Nov. 7, 2006.
1028	Abrams, Alan; Chaudhary, Tarun, and Deane, Jason, “ <i>A multi-industry, longitudinal analysis of the email marketing habits of the largest United States franchise chains</i> ,” Journal of Direct and Digital Marketing Practice, Vol. 11, No. 3, pp. 187-197.
1029	Singaraju, Gautam; Moss, Jeff, and Kang, Brent ByungHoon, “ <i>Tracking Email Reputation for Authenticated Sender Identities</i> ,” 5th Conference on Email and Anti-Spam, CEAS 2008.
1030	Hoffman, P.; Masinter, L.; and Zawinski, J., “ <i>The mailto URL scheme</i> ,” Network Working Group Request for Comments: 2368, July 1998

IV. UNDERSTANDING OF PATENT LAW

12. I am not an attorney. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law was provided to me by the Petitioner's attorneys.

13. I understand that when considering the scope of the claims of a patent that the patent claim terms should generally be given the ordinary meaning that the terms would have to a person of ordinary skill in the art in question after reading the patent as of the earliest claimed priority date.

14. I understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the term

appears, but in the context of the entire patent, including the specification. I further understand that the principal considerations regarding the scope and meaning of the claims are the plain language of the claim (including the surrounding claim language and context), the patent specification, and the prosecution history. I understand that while a claim is to be read in light of the specification, one must generally avoid importing limitations into the claim from the specification. I am also informed that the prosecution history can often inform the meaning of the claim by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be. I applied these understandings when considering the scope and meaning of the claims of the '342 patent.

15. I understand that a claim is unpatentable if it would have been obvious. Obviousness of a claim requires that the claim would have been obvious from the perspective of a POSITA at the time the alleged invention was made. I understand that a claim could have been obvious from a single prior art reference or from a combination of two or more prior art references.

16. I understand that an obviousness analysis requires an understanding of the scope and content of the prior art, any differences between the alleged invention and the prior art, and the level of ordinary skill in evaluating the pertinent art.

17. I further understand that a claim would have been obvious if it unites old elements with no change to their respective functions, or merely substitutes one element for another known in the field, and that combination yields predictable results. While it may be helpful to identify a reason for this combination, I understand that there is no strict requirement of finding an express teaching, suggestion, or motivation to combine within the references. When a product is available, design incentives and other market forces can prompt variations of it, either in the same field or different one. If a POSITA can implement a predictable variation, obviousness likely bars its patentability. For the same reason, if a technique has been used to improve one device and a POSITA would recognize that it would improve similar devices in the same way, using the technique would have been obvious. I understand that a claim would have been obvious if common sense directs one to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

18. I understand that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the descriptions found in the patent being considered.

19. I further understand that certain factors may support or rebut the obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the patented invention, skepticism of

those having ordinary skill in the art at the time of invention, unexpected results of the invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I understand that there must be a nexus—a connection—between any such secondary considerations and the alleged invention. I also understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.

20. I am not aware of any allegations by the named inventors of the '342 patent or any assignee of the '342 patent that any secondary considerations tend to rebut the obviousness of any challenged claim of the '342 patent.

21. I understand that other challenges to the patentability of a patent, including patent ineligibility, enablement, written description, and definiteness or clarity of claim language, cannot be raised in IPR proceedings before the Board.

22. I understand that Petitioner has the burden of proving unpatentability by a preponderance of evidence, which means that the claims are more likely than not unpatentable.

23. The analysis in this declaration is in accordance with the above-stated legal principles.

V. THE '342 PATENT

24. The '342 patent titled "METHOD FOR DETECTING AND UNSUBSCRIBING AN ADDRESS FROM A SERIES OF SUBSCRIPTIONS" issued on January 13, 2015, from U.S. Patent Application No. 13/417,174, filed on March 9, 2012. EX1001.

A. The Challenged Claims

25. Claim 1 recites a method for processing email subscriptions. Claims 14 and 16 are independent claims which recite a computing system and a computing apparatus. Claim 1 is reproduced below.

1. A method of processing subscriptions comprising:
identifying one or more email accounts;
accessing the mailboxes associated with the email accounts;
processing, at least a subset of the email messages in the mailboxes to
 identify those originating with a subscription list;
processing, at least one email message associated with a subscription
 list to identify methods of unsubscribing from the subscription;
wherein identifying methods of unsubscribing from the subscriptions
 further comprises:
identifying list-unsubscribe headers in a message header; or
identifying unsubscribe methods within the message body;
presenting to the user the subscriptions previously identified: and
unsubscribing from, at least a single subscription in response to a user
 requests;

wherein identifying unsubscribe methods within the message body further comprises:
collecting unsubscribe hyperlinks from the message body; and
identifying those hyperlinks as potential unsubscription methods.

B. The Specification

26. The '342 patent relates to systems that address the known problem of email mailboxes becoming overwhelmed with unwanted messages. EX1001, 1:57-63. The patent uses the term “subscriptions” to “describe[] the inclusions of a specific email address in an electronic mailing list.” *Id.*, 1:22-24. The specification purports to disclose “a method for detecting and unsubscribing an [email] address from a series of subscriptions.” *Id.*, 2:40-42.

27. At a high level, the '342 patent discloses identifying subscription email messages, determining methods that will allow them to be unsubscribed from, and presenting a list of subscriptions to a user. Then, the user selects any subscriptions she would like to unsubscribe from, and the system performs the unsubscription process. These steps are detailed in EX1001, Figs. 1-4 and at 2:40-4:50.

28. For example, the patent provides that the system is configured to access a user's email accounts and examine the accounts' contents. EX1001, 2:42-45. “The system attempts to identify emails which are from Subscription services and then to identify from the messages the method of unsubscribing from the messages.” *Id.*, 2:46-49. “In some instances, the method for unsubscribing will be readily apparent

as many Subscriptions provide convenient ways to unsubscribe through a ‘List-Unsubscribe’ header.” *Id.*, 3:42-45. Additionally, messages are examined for URL hyperlinks that are identified as unsubscribe links if they contain certain text associated with unsubscribing from subscriptions. *Id.*, 6:9-29. “Once the emails of one or more email accounts have been examined, the system presents to the user a list of all subscriptions identified for each email account. The user may select a plurality of Subscriptions to unsubscribe.” *Id.*, 3:4-7. “Once the user has determined which Subscriptions are to be unsubscribed, the system attempts to use any associated methods to unsubscribe from each Subscription.” *Id.*, 3:11-13.

29. The patent makes clear that the steps of the alleged invention do not need to proceed in any particular order:

[t]he flow diagrams in accordance with exemplary embodiments of the present invention are provided as examples and should not be construed to limit other embodiments within the scope of the invention. For instance, the blocks should not be construed as steps that must proceed in a particular order. Additional blocks/steps may be added, some blocks/steps removed, or the order of the blocks/steps altered and still be within the scope of the invention. Further, blocks within different figures can be added to or exchanged with other blocks in other figures.

Id., 8:27-36.

VI. LEVEL OF SKILL IN THE ART, AND STATE OF THE ART**A. Person Of Ordinary Skill In The Art (“POSITA”)**

30. The POSITA as of March 2012 would have possessed at least a bachelor’s degree in computer science, and two years of work experience in the design and implementation of electronic messaging and management systems. The POSITA would have been familiar with techniques for subscribing and unsubscribing to electronic mailing lists via the Internet as part of her education, work, or personal experience. A person could also have qualified as a POSITA with some combination of (1) more formal education (such as a Master of Science degree) and less technical experience; or (2) less formal education and more technical or professional experience in the fields listed above.

B. State Of The Art

31. Upon receiving emailed advertisements from a retailer or service provider they had previously purchased from or used, or newsletters that they had previously subscribed to, some people considered such emails welcomed information, and others considered them to be unwanted spam. EX1011; EX1012. One term for such emails was “gray mail.” *Id.*

32. A POSITA would have understood that there is not a firm boundary between what is “spam” and emails that are not “spam.”

33. For example, one prior art paper stated that “it has been estimated that two-thirds of email users prefer to receive unsolicited commercial email from senders with whom they’ve already done business, while one-third consider it spam.” EX1012, 1. The paper explained that it was “common for a user who tires of a particular newsletter to begin reporting it as spam rather than unsubscribing.” *Id.*

34. Another study described how whether email recipients consider a specific subscription-type email to be spam or not depends on who receives it. EX1011.

35. Consistently, the ‘342 patent’s Background of the Invention Section described the blurry line between an email list someone intentionally subscribes for and emails that are unsolicited or unwanted when it discusses how, e.g., “many people subscribe without realizing it,” and how a user may not have “intend[ed] to subscribe.” EX1001, 1:38-63.

36. Graymail had been recognized as a problem for a long time by the time the ’342 patent was filed. Many different methods had been implemented and proposed for dealing with graymail.

37. Robust systems for managing such subscription messages, including helping users minimize receiving unwanted messages by providing multiple mechanisms for unsubscribing from subscriptions were patented years before 2011. One system is described in U.S. Patent No. 7,831,707, titled “Methods, Systems,

And Computer Program Products For Managing Electronic Subscriptions,” which issued in 2010 (“Bardsley” or EX1004). Another system is described in U.S. Patent No. 7,620,690, titled “Privacy Control System For Electronic Communication,” which issued in 2009 (“Castelli” or EX1005). Another example is described in U.S. Patent No. 7,873,996, titled “Messaging Enhancements And Anti-Spam,” which issued on January 18, 2011 (“Emigh” or EX1007).

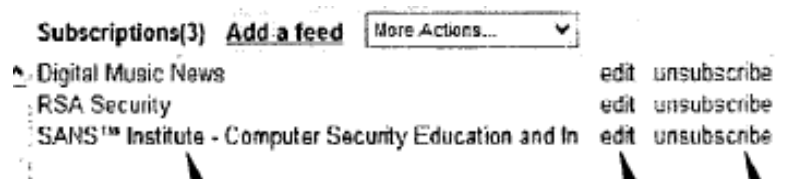
1. Bardsley

38. Bardsley discloses systems and methods for managing electronic subscriptions that address known problems with electronic subscriptions. For example, it was known that a “user may subscribe to more electronic content than the user has time to read,” which can result in many electronic messages that are never opened or read. EX1004, 1:29-32. It was also known that subscription messages can result in a user receiving redundant content. *Id.*, 1:45-54. Over time, this can result in unopened messages consuming and wasting a significant amount of memory of the user’s electronic device. *Id.*, 1:29-54. The inventions disclosed in Bardsley provide users with tools for managing such unwanted and redundant content, including mechanisms for unsubscribing from such subscriptions in order to reduce the amount of such messages.

39. Bardsley discloses an electronic subscription client that can take different forms, including that of an e-mail client, such as Outlook®, Yahoo!®, or

GMAIL®. EX1004, 2:51-60; *see also id.*, 25:1-7. Bardsley discloses an electronic subscription client having a means for monitoring the receipt of subscription messages associated with electronic subscriptions. *Id.*, 4:50-57. “Examples of subscription message monitoring include determining arrival of a subscription message, determining whether the subscription message is confirmation of a new subscription, determining subscription identification information in the subscription message, and determining information for unsubscribing to an electronic subscription.” *Id.*, 4:57-63.

40. The electronic subscription client also includes a means for presenting a prompt that allows the user to unsubscribe from selected subscriptions. *Id.*, 5:16-60. For example, Fig. 10 expressly illustrates presenting to the user subscriptions from which the user can unsubscribe:



Id., Fig. 10 (excerpted). Further, Bardsley discloses various features of its unsubscribe function:

For example, unsubscribe function 116 may identify unsubscribe information in a message carrying subscription content or confirming a subscription. ... In one example, unsubscribe function 116 may determine one of an address, a URI, and a link associated with the

electronic subscription for use in unsubscribing. ... In one example, unsubscribe function 116 may identify text in one or more subscription messages indicating information for unsubscribing. Examples of text associated with unsubscribing includes one or more of subscribe text, mailing list text, and unsubscribe text.

Id., 6:13-39.

2. **Castelli And LashBack**

41. U.S. Patent No. 7,620,690 (“Castelli”), issued November 17, 2009, and titled “Privacy Control System For Electronic Communication,” discloses a system “for managing unsubscribe requests to unsolicited communications.” EX1005, Abstract, 1:14-18. Castelli relates to a commercial system known as “LashBack.” Castelli explains that the disclosed system is “known as LASHBACK™,” which has four basic components: the participant registration process, the spam listener process, the unsubscribe probing process, and the notification engine process. *Id.*, 2:62-67. Figure 1 illustrates the flow of these components.

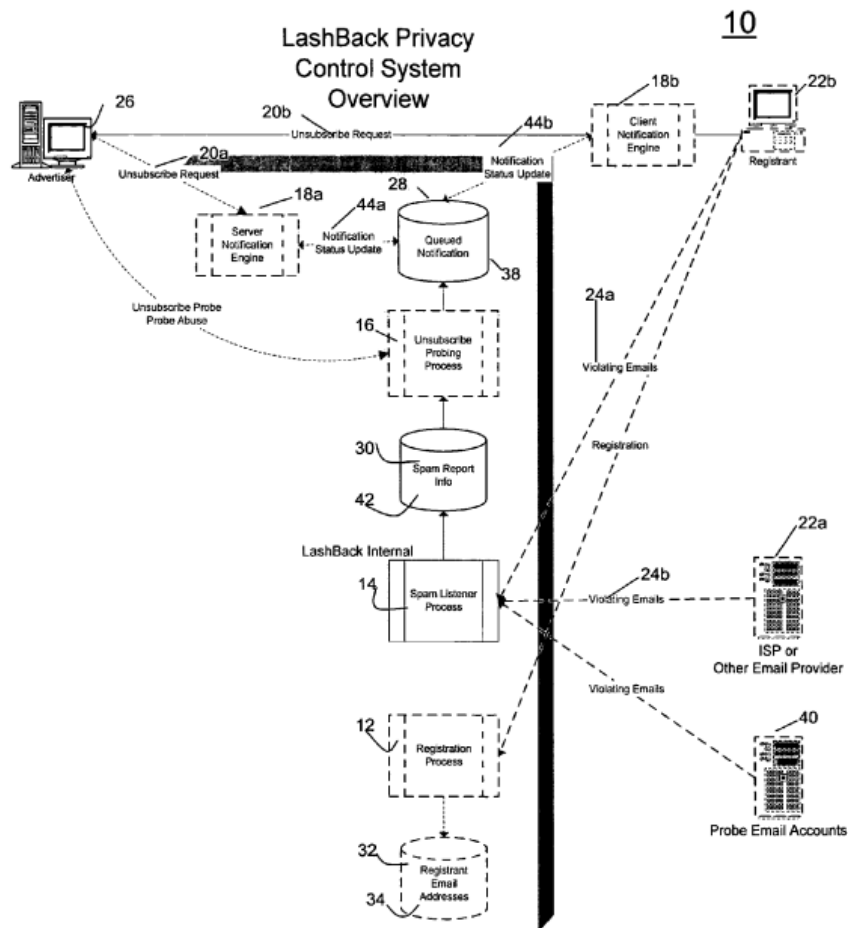


FIGURE 1

Id., Fig. 1.

42. Castelli discloses a “notification engine” that parses email messages in search of an opt-out (unsubscribe) mechanism. EX1005, 4:6-12. The notification engine may be downloaded to and run on a subscriber’s computer or run on a centralized system, or a combination thereof. *Id.*, 4:12-20. The system determines spam “based on key attributes of email messages,” identifies the unsubscribe mechanism, and then automatically handles the unsubscribe process. EX1005, 5:3-10, 6:22-37, 7:3-17, 7:31-36.

43. Excerpts from the 2009 version of LashBack's website provide additional pertinent disclosures. The excerpts are inter-linked pages of the same website directed at related products and systems; thus, a POSITA would find it obvious to combine the disclosures of the webpages with each other as well as with the Castelli patent that also relates to the same system. The LashBack pages explain that to help email users deal with unwanted email, LashBack offered a toolbar for Outlook where people could highlight a message and click a button to identify it as spam. EX1006, 1-3. LashBack would then automatically unsubscribe people from email lists they identified as spam, if LashBack determined that the sender's unsubscribe mechanism was legitimate and not simply a fake unsubscribe button used by spammers to identify valid email addresses. *Id.*

44. To help email users deal with unwanted email, LashBack offered a toolbar for Outlook where people could highlight a message and click a button to identify it as spam. EX1006. LashBack would then automatically unsubscribe people from email lists they identified as spam, if LashBack determined that the sender's unsubscribe mechanism was legitimate and not simply a fake unsubscribe button used by spammers to identify valid email addresses. *Id.*, 2-3.

45. LashBack discussed how "[t]here [were] currently no standard labeling practices in the world of email unsubscribe," so LashBack "use[d] multiple approaches" to identify unsubscribe links. EX1006, 8.

46. LashBack recommended that, for email senders using “email-based unsubscribe links . . . in the body of the email message,” that the sender should “include the word ‘unsubscribe’ in the email address itself (e.g., unsubscribe-newsletter1@domain.com)” in order to help LashBack identify the unsubscribe method. EX1006, 8-9.

3. **Emigh**

47. U.S. Patent No. 7,873,996 (“Emigh”), issued January 18, 2011, and titled “Messaging Enhancements And Anti-Spam,” discloses methods that improve the management of electronic messaging. EX1007, 1:23-30. Emigh recognizes that “[u]nsolicited commercial electronic messages and other unwanted messages can inundate users.” *Id.*, 1:25-28. Emigh discloses, among other things, a subscription subsystem for analyzing email messages to determine whether the message may be spam or non-spam. *Id.*, 3:48-4:10. Emigh teaches, for example, looking at the text prepended to an email’s subject, in determining whether a particular message may or may not be wanted. *Id.*, 4:55-58. It also taught that “message header lines such . . . ‘List-Unsubscribe’ may indicate use of a mailing list.” EX1007, 7:32-35.

C. **Summary Of Internet Data And Processing Methods**

48. Each of the references I have discussed above share a common set of computational methods, all of which would have been very familiar to a POSITA

long before 2012. It will be useful to summarize these here as a foundation for my conclusion that the '342 patent claims are obvious in light of prior art.

49. The references describe the task of identifying certain information in text data. *Text* is one of the basic types of data that computers represent and store, along with (among others) *integers* (whole numbers), *floats* (real numbers), and *Booleans* (True/False). Text data is just what it sounds like, strings of characters such as “This is my report”. (Technically, the data type that represents text is typically known as *String* data, but for ease of reference, I will continue to refer to this as text when that is more convenient.)

50. There are various well-known languages and formats of text data. The references I have cited mention several, including the Hypertext Markup Language (HTML) and email messages, which include both various ‘header fields’, such as **Subject:**, **To:**, **CC:**, as well as the message content or body.

51. In addition to these well-known header fields, various optional header fields can be included in an email message. Header fields have been described in “Request for Comments” (“RFC”) publications, which were documents published by an organization known as the Internet Society. The Internet Society is a standards organization that develops and publishes Internet standards in the form of RFC publications. RFC publications have thus defined the standards behind many popular

Internet technologies such as email, HTML, and the communications protocols used by the Internet and the World Wide Web (including without limitation HTTP).

52. Since at least the 1970s, RFCs have provided a definitive and authoritative source to developers for Internet standards. RFCs were (and remain to this day) widely disseminated and oft-cited sources of technical information about Internet-related technologies. RFCs have been made available through the IETF's website (at <http://www.ietf.org>) since at least the late 1990s, and widely distributed through other channels as well (including <http://rfc-editor.org>).

53. I personally recall working with RFCs since the 1990s, and during my decades of experience working with numerous RFCs, I know that each RFC includes a "Date" field that corresponds to when the RFC was disseminated and made available to the public. RFC 2369 contains a July 1998 date, which is consistent with my recollection of when RFC 2369 was widely disseminated and publicly accessible to skilled artisans. As shown at EX1014, RFC 2369 was available on the <http://www.ietf.org> website on, for example, May 4, 2010.

54. RFC 2369 describes **List-Unsubscribe** as an optional field in email headers. EX1015, 2. Its examples showed that a mailto: link or website link (see below for more details) could be included in this field. This would enable the recipient of an email recipient to click the link to send an email message or visit a

website to unsubscribe from the mailing list that the message originated from. *Id.* 4-5.

3.2. List-Unsubscribe

The List-Unsubscribe field describes the command (preferably using mail) to directly unsubscribe the user (removing them from the list).

Examples:

```
List-Unsubscribe: <mailto:list@host.com?subject=unsubscribe>
List-Unsubscribe: (Use this command to get off the list)
                  <mailto:list-manager@host.com?body=unsubscribe%20list>
List-Unsubscribe: <mailto:list-off@host.com>
```

Id.

55. Skilled artisans were well aware of RFC 2369 and incorporating the List-Unsubscribe field in email headers, and designing systems that could search for and identify this field was routinely done by skill artisans using ordinary skill as further discussed below.

56. HTML is a ‘markup’ language, as the name itself indicates: “HTML represents a way to take ordinary text and turn it into hypertext, just by adding special elements that instruct Web browsers how to display its contents. These special elements are called markup tags. The purpose of a markup language is to give either machines or humans clues about the structure, content, and behavior of a document.” EX1022, 57. “Hypertext” simply means that one text document can ‘link’ to another; over the past 30 years, this has become ubiquitous through the

World Wide Web, which is built on HTML. Links are represented in HTML using the *anchor* tag, for example (EX1022, 184):

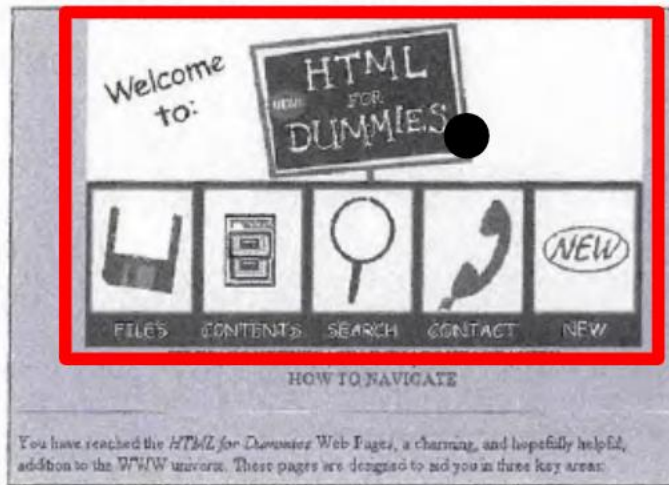
```
<A HREF="http://bluegoose.arw.r9.fws.gov/" >Blue Goose </A>
```

<A> indicates the beginning of the anchor tag hyperlink, and indicates the end. The value of the HREF attribute (in the example, "http://bluegoose.arw.r9.fws.gov/") indicates the destination web page, i.e., where a web browser would navigate to if the hyperlink is selected, and the text after the HREF and before the closing (in the example: Blue Goose) indicates the text that the web browser will display.

57. Another standard feature of HTML hyperlinks is the ability to include an image. The effect of this is that the image is displayed in the web page and selecting (by clicking or tapping) the image navigates to a specified destination web page. HTML FOR DUMMIES (EX1022) is a basic reference for using HTML (Hypertext Markup Language), which is the computer language used to author webpages accessible via the World Wide Web. HTML FOR DUMMIES, (EX1022, 190-191) provides example HTML code for illustrating the use of images within hyperlinks (figures annotated):

As you can see in Figure 9-11, you don't have to use an image map to provide your users with nicely arranged, clickable images. This page differs only slightly in appearance from the primary home page and provides the same functionality.

Figure 9-11:
Another
view of the
*HTML For
Dummies*.



**Clickable
Images**

The following HTML code shows the lines necessary to display the "Welcome to HTML For Dummies" graphic and the Files, Contents, Search, Contact, and New graphics below it as clickable links to files. If you don't want to deal with image maps and don't mind the separation between the images, this kind of presentation is easy to achieve.

**HTML that produced
the clickable images**

```
<IMG ALIGN=MIDDLE WIDTH=60 HEIGHT=0
SRC=graphics/space.gif ALT=" ">
<A HREF="contents.htm"><IMG SRC=graphics/ht4logo1.gif
BORDER=0 ALT="HTML For Dummies Logo"></A><BR>
<IMG ALIGN=MIDDLE WIDTH=60 HEIGHT=0
SRC=graphics/space.gif ALT=" ">
<A HREF="ftpstuff.htm"><IMG SRC="graphics/ht4file1.gif"
BORDER=0 ALT="FILES"></A>
<A HREF="contents.htm"><IMG SRC="graphics/ht4cont1.gif"
BORDER=0 ALT="CONTENTS"></A>
<A HREF="search4d.htm"><IMG SRC="graphics/ht4sear1.gif"
BORDER=0 ALT="SEARCH"></A>
<A HREF="contact.htm"><IMG SRC="graphics/ht4tact1.gif"
BORDER=0 ALT="CONTACT"></A>
<A HREF="whatnew.htm"><IMG SRC="graphics/ht4new1.gif"
BORDER=0 ALT="NEW"></A>
<A HREF="ftpstuff.htm">FILES</A> &#32;&#124;
<IMG ALIGN=MIDDLE WIDTH=130 HEIGHT=0
SRC=graphics/space.gif ALT=" ">
```

```

<A HREF="contents.htm">CONTENTS</A> &#32;&#124;
<A HREF="search4d.htm">SEARCH</A> &#32;&#124;
<A HREF="contact.htm">CONTACT</A> &#32;&#124;
<A HREF="whatsnew.htm">NEW</A><BR>
<IMG ALIGN=MIDDLE WIDTH=240 HEIGHT=0 SRC=graphics/space.gif ALT=" ">
<A HREF="navigate.htm">HOW TO NAVIGATE</A></B><P>
<IMG WIDTH=100% SRC="graphics/line.gif"
  ALT=" " "><P>

```

58. To consider one example in detail, the top image on the page is the HTML For Dummies logo, and it was produced by the HTML:

```

<A HREF="contents.htm"> <IMG SRC=graphics/ht4logo.gif
  BORDER=0 ALT="HTML For Dummies Logo"><A>

```

The image to be displayed is contained in the file graphics/ht4logo.gif, and clicking on that image will cause the browser to load the page "contents.htm".

59. Notably, regardless of whether the hyperlink is or is not associated with an image, the system that collects hyperlinks (for example, as discussed in Bardsley, Castelli, and LashBack) and the browser that interprets and executes the links would behave the same.

60. In addition to a web page being indicated in an HREF, as in the above example, another option is to indicate an email address using a **mailto:** link. For example:

```

<A HREF="mailto:html4.dum@outer.net">HTML For Dummies at html
  4dum@outer.net</A>

```

The effect of this is to display the text “HTML For Dummies at html4dum@outer.net” in the web browser, again in the hyperlink format (e.g., underlined and in blue font), but in this case, web browser software would be programmed to react differently when a user clicked; instead of navigating to a web page, the web browser would know to bring up the user’s email program, with the **TO:** field filled in with the specified email address. So, in the example shown above, a user could send email to the publisher or author of the “HTML For Dummies” book.

61. The anchor (<A>) tag is just one of the elements of HTML that a POSITA would have been familiar with. Another example is the <FORM> element, which allows for users to input and submit information via web pages. A form begins with the <FORM> tag and ends with </FORM>. The elements in between the begin and end tags specify the type of input that is being collected by the form, the server and file on the server to which the input data is sent for processing, and the method by which the data is sent. Specific elements include the <INPUT> tag, which enables user interface objects like checkboxes, radio buttons textboxes, and a button to submit the results of the form; and the <TEXTAREA> tag, which enables longer text input. The ACTION attribute specifies a URL identifying a program on a server to which the input data is sent for processing. The METHOD tag specifies the way in which the input data is sent to that program, with GET and POST being the two

possible methods. *HTML FOR DUMMIES* (EX1022) provides more detailed explanations and examples at pp. 197-210.

62. HTML specifies how information on the World Wide Web is represented. HTTP is the Hypertext Transfer Protocol, which specifies how web browsers and web servers communicate and transfer information back and forth. A web browser and web server are in a client server relationship: the web browser sends requests for information to the web server, and the web server responds with the requested information. For example, when a user clicks on a hyperlink, the web browser submits a request for the destination URL (which is specified by the HREF attributed of the <A> tag) to the web server, and the web server responds by sending back the HTML content that comprises the destination URL. For another example, when a user clicks on a “Submit” button in a form that uses the POST method to send data to a server for processing, an HTTP request is generated and sent with the following structure:

POST / HTTP/<version>

Host: <Server to which the data is sent>

Content-Type: <the type of the data being sent>

Content-Length: <size of the data being sent>

attribute1=value1&attribute2=value2&...

where the *attributes* are the names of the input variables of the form, and the *values* are the data supplied for each of the variables. EX1022, 202-210, 247-253.

63. A POSITA would have been familiar with HTTP requests, including GET and POST requests produced by HTML forms, and would have been able to produce these requests in a program in order to automatically invoke a form with specified data; in other words, they could write a program that sent data to a server for processing just as if the data had been entered and submitted by a user from an HTML form.

64. As I mentioned, the references I cited describe the task of identifying certain information in text data, specifically in email messages and web pages (HTML documents). To take several examples:

- For example, Bardsley's unsubscribe function may identify text in one or more subscription messages indicating information for unsubscribing. Examples of text associated with unsubscribing includes one or more of subscribe text, mailing list text, and unsubscribe text. EX1004, 6:31-35.
- Castelli discloses that in parsing the received messages, key components are identified that relate to the unsubscribe mechanism. For example, a search can be performed to determine the unsubscribe

mechanism such as by searching for an email address that accepts unsubscribe requests. EX1005, 6:20-24.

- A message may be examined to see if a mailing list was used (603). Such a test may look for elements in a message indicative of processing by a mailing list. EX1007, 7:30-32.
- A message may be classified based on message content. *Id.*, 14:43-44.

65. This type of functionality would be implemented using a conventional programming language such as Python, C, C++, or Java.

66. Searching for information in text data (such as email messages and HTML documents) is a basic computational method that would be familiar to a POSITA, and therefore would be trivial for a POSITA to incorporate into email processing systems such as those described in Bardsley, Castelli, and LashBack. Generally speaking, this is referred to as *pattern matching*, which simply means searching for a pattern within a string of characters such as a text document. The simplest case would be determining whether one literal string occurs in another, e.g., does “sun” appear in “good day sunshine”. However, a more powerful version is based on the idea that the pattern can contain “wildcards”.

67. This is best explained with an example. Suppose we want to search for hyperlinks in an HTML document, and recall the general form of a hyperlink:

`<A HREF=url-to-navigate-to >text-to-display-in-web-browser </A>`

Intuitively, we are searching for patterns that start with the characters “<A” and ends with the characters “”, and everything in between is part of the hyperlink. *Regular expressions* are a standard way of expressing patterns, and programming languages such as Python contain functionality to process regular expressions. For the example of searching for a hyperlink, we could write the following regular expression:

`<A.\w+ </A>`

“\w” is a special sequence that matches any “word” (alphanumeric) character, and ‘+’ is a metacharacter (a character that has special meaning to the regular expression processor) that indicates matching one or more times. This regular expression therefore gives us the effect we want.

68. Regular expressions provide another powerful functionality: additional metacharacters enable the extraction of information that matches a pattern. With this, a POSITA could not just match hyperlinks, but also extract the URL that is being linked to (indicated by the “href” attribute) and the text that is being displayed (text immediately prior to the closing “<A>”). Of course, this is just one example, and significantly more complicated patterns can be defined.

69. The topic of searching for information in text data would be covered in classes through the undergraduate Computer Science curriculum, ranging from first and second year programming classes to more advanced undergraduate classes in

topics such as algorithms and artificial intelligence. For example, Python is a popular programming language, both in industry and education, and is often used in teaching the first few courses in the undergraduate computer science curriculum.

70. Python documentation has been available on the World Wide Web since well before the priority date of the '342 patent and was widely consulted by students and professionals. For example, the documentation for Python Version 3.2 was released on February 20, 2011, and is available at this URL: <https://docs.python.org/release/3.2/>. There is documentation describing simple built-in methods for searching within strings, such as determining whether one string occurs in another (e.g., does “sun” appear in “good day sunshine”), specifically with the **find** method described here: <https://docs.python.org/release/3.2/library/stdtypes.html#string-methods>. There also is documentation describing Python’s implementation of regular expressions: for example, <https://docs.python.org/release/3.2/library/re.html> and <https://docs.python.org/release/3.2/howto/regex.html#regex-howto>.

71. Moreover, as I said, the topic of searching textual data, including specifically through pattern matching, would be covered in a variety of undergraduate computer science classes. Evidence for this can be found in a 2001 report from ACM and IEEE, the two largest professional computing associations, laying out recommendations for the undergraduate computer science curriculum.

The report can be found here: <https://www.acm.org/binaries/content/assets/education/curricula-recommendations/cc2001.pdf> (Computing Curricula 2001 Computer Science – Final Report, Dec. 15, 2001 from The Joint Task Force on Computing Curricula IEEE Computer Society Association for Computing Machinery). Among other things, it recommends that pattern matching and string/text algorithms should be covered in an elementary (first or second year) course on Data Structures and Algorithms (p. 165) as well as an intermediate level course on Algorithm Design and Analysis (p. 204).

VII. CLAIM CONSTRUCTION

72. In performing my analyses herein, I applied the plain and ordinary meaning that a person having ordinary skill in the art (“POSITA”) as defined below would have of the claim language in the context of the ’342 patent. Below are some specific interpretations that I applied.

73. “**Subscription list**” should be construed as “email mailing list.” The ’342 patent recites that “subscriptions, as the term is utilized in this application, describes the inclusions of a specific email address in an electronic mailing list.” EX1001, 1:22-24. The patent goes on to say that “[a]n electronic mailing list is a special usage of email that allows for widespread distribution of information to many Internet users.” *Id.*, 1:24-26. Additionally, the patent explains that “[i]n common usage the term ‘electronic mailing list’ may refer to one of four things, the list of

email addresses (‘List’), the people (‘Subscribers’) receiving mail at those addresses, the publications (‘Email Messages’ or ‘Messages’) sent to those addresses, and the target email address (the ‘Reflector’).” *Id.*, 1:29-34. Thus, a POSITA would understand the phrase “subscription list” is used interchangeably with “email mailing list.” *See also id.*, 1:22-2:18 (using “mailing list” and “subscription list” interchangeably). A POSITA would understand that a subscription list is merely an electronic mailing list.

74. **“List-unsubscribe headers in [a/the] message header”** should be interpreted as “list-unsubscribe fields in [a/the] message header.” EX1001, Fig. 2 at 211 (referencing “standard ‘List-Unsubscribe’ header field”). A POSITA, who would have been very familiar with list-unsubscribe fields and how they were often located in email message headers, would have understood this recitation of a header within a header to mean a field in a header. A POSITA would have understood, for example, that email headers did not themselves contain headers. A POSITA would further understand that the recited “list-unsubscribe headers” in that context referred to “list-unsubscribe fields,” and that such fields were defined in Internet Standard RFC 2369. EX1002, 80; EX1015.

75. As discussed above, RFC 2369 proposed including a List-Unsubscribe field as an optional field in email headers. Its examples illustrated that a mailto: link or website link could be included in that List-Unsubscribe field to allow an email

recipient to click the link and send an email address or visit a website to unsubscribe from the email's mailing list. EX1015, 4-5; *see also* EX1007, 7:41-43 (“[M]essage header lines such . . . ‘List-Unsubscribe’ may indicate use of a mailing list.”).

76. “**List servers**” would be understood by a POSITA in the context of the ’342 patent to refer to automated mailing list systems. The ’342 patent does not define “list servers.” The Abstract describes examining emails and “determining if they are from a subscription/automated mailing/list server by examining the [email].” EX1001, Abstract; *see also, e.g., id.*, 2:41-57. Newton’s Telecom Dictionary defines “list server” as “[a]n automated mailing list distribution system.” EX1026, 3.

77. “[**P**]rocessing, at least a subset of the email messages” would be understood by a POSITA to mean processing one or more email messages. The specification explains, “[t]o scan a mailbox for Subscriptions is a complex process which starts (200) by examining the emails individually (201).” EX1001, 4:38-41; *see also* Figs. 2-3 (depicting emails processed individually, *e.g.*, “[s]elect next email” at step 202). Further, the specification teaches that processing only stops “[o]nce all emails have been processed,” meaning that processing will occur as long as there are one or more emails in the queue. *Id.*, 6:5-8; *see also* Fig. 2 (indicating processing proceeds beyond step 201 as long as there is a non-zero amount of

emails—*i.e.*, one or more); *see also* EX1025, 345 (defining “subset” as “small set of data items which forms part of another larger set”).

**VIII. GROUND 1: CLAIMS 1-3, 6-9, 13-14, AND
16 ARE OBVIOUS OVER BARDSLEY AND EMIGH**

78. As explained below, claims 1-3, 6-9, 13-14, and 16 are unpatentable as obvious over Bardsley in view of Emigh.

A. Bardsley + Emigh

79. Bardsley and Emigh would have been a natural combination because, like the '342 patent, they both relate to methods of managing emails from mailing lists. For example, Bardsley discloses methods, systems, and computer programs for managing electronic subscriptions, which includes monitoring for the receipt of subscription messages associated with such subscriptions. EX1004, Abstract. Relatedly, Emigh teaches techniques for mitigating the adverse effects of spam in electronic messaging, and one aspect of its teachings involves classifying messages as spam or not spam. *E.g.*, EX1007, 1:29-31, 2:66-3:17. A POSITA implementing Bardsley would have been motivated to look to a reference like Emigh for tools that aid in accurately identifying and managing subscription emails. Because Bardsley teaches automatically processing mailing list emails, the ability to accurately identify such emails would be important to a POSITA. A POSITA would have understood that Bardsley's system would be less effective if it only was able to automatically identify a small fraction of the subscription emails a user received, or

if it frequently misidentified non-subscription emails as subscriptions and offered to unsubscribe a user from emails sent by, for example, their grandmother or assistant. A method or system that did not accurately identify such emails would not be as effective at helping email recipients unsubscribe from unwanted email lists.

80. Examining emails for features indicating whether an email originated with a mailing list, as taught by Emigh, would improve the Bardsley system by providing additional tools for identifying email list messages and assist users in unsubscribing from unwanted emails. A POSITA would understand that, as there was not one distinct variable that consistently separated messages that were subscription messages from those that were not, that it would be necessary to take into consideration the various ways in which subscription messages could be identified, and that looking to art such as Emigh would be a helpful way to identify what the relevant variables would be.

B. Claim 1

[1.1]¹ A method of processing subscriptions comprising:

81. Bardsley discloses a method of processing subscriptions. Bardsley, for example, monitors subscription messages and utilizes unsubscribe methods in

¹ Reference numbers in the format of [claim#.element#] are added throughout and referred to later for ease of reference.

connection with managing electronic subscriptions. See EX1004, 4:57-63 (“Examples of subscription message monitoring include determining arrival of a subscription message, determining whether the subscription message is confirmation of a new subscription, determining subscription identification information in the subscription message, and determining information for unsubscribing to an electronic subscription.”); see also *id.*, Abstract, 1:7-10, 2:3-21, 4:28-30, 4:50-57, 5:43-14:40, 23:49-60, 24:50-26:33, Figs. 1-9B, 14-17; cf. EX1001, 4:17-18. A POSITA would have understood Bardsley as disclosing a method, system, or apparatus for processing email messages that a user had received as a result of a subscription.

[1.2] identifying one or more email accounts;

82. Bardsley discloses, for example, monitoring the receipt of subscription messages—such as email messages—in an electronic subscription client, such as an email client like Outlook, Yahoo!, or Gmail. EX1004, 2:51-60, 1:26-27, 4:57-63, 6:40-46; see also 25:1-7. Bardsley also discloses that it is interaction *by a given user* with the electronic subscription client that is being monitored (*Id.*, 2:15-16), and furthermore, that a given user may be presented with a prompt to unsubscribe from a subscription list. *Id.*, 2:28-31, 5:16-42. Therefore, a POSITA would have understood that a user has an associated email account, and that this email account then would have to be identified in order to determine which email account to

monitor for that user in order to process subscriptions associated with that user's account and prompt that user with an opportunity to unsubscribe from a particular subscription.

[1.3] accessing the mailboxes associated with the email accounts;

83. A POSITA would understand that the email processing functionality recited in Bardsley requires accessing the mailboxes associated with the email accounts. An email system, method, or apparatus operating locally (e.g., in an email client installed on a local desktop computer) would not be able to process the messages as recited in Bardsley without access to the user's email accounts. When an email recipient receives an email message, the message is stored in one or more mailboxes associated with the user's email account. A POSITA would have been well aware from, for example, her own use of email, that messages in an email account were typically stored in mailboxes associated with the email account. A POSITA would have known that a message, system, or apparatus for processing emails as recited in Bardsley would have required accessing such messages in order to perform its described message processing.

84. More specifically, as discussed above, Bardsley discloses an automated process for monitoring and processing email content that involves accessing the mailboxes associated with the email accounts. For example, Bardsley teaches "monitoring, at an electronic subscription client, receipt of one or more subscription

messages associated with an electronic subscription.” *Id.*, 6:43-46; *see also id.*, Fig. 2 (Block 200: “AT AN ELECTRONIC SUBSCRIPTION CLIENT, MONITOR RECEIPT OF ONE OR MORE SUBSCRIPTION MESSAGES ...”), 2:51-53 (“[T]he term ‘electronic subscription client’ refers to functionality for receiving and accessing subscription content.”), 4:57-63 (“Examples of subscription message monitoring include determining arrival of a subscription message, determining whether the subscription message is confirmation of a new subscription, determining subscription identification information in the subscription message, and determining information for unsubscribing to an electronic subscription.”); *see also id.*, 1:7-10, 2:3-21, 4:28-30, 4:50-5:4, 23:49-60, 24:50-67, 26:22-33; [1.1], [1.2]. Bardsley teaches that the “electronic subscription client” receiving subscription messages could be a local e-mail client, such as Microsoft Outlook, installed on a desktop or laptop computer. EX1004, 2:51-59. A POSITA would understand that such e-mail clients provide mailboxes associated with e-mail accounts to receive, organize, and manage incoming subscription messages, and that monitoring such a client for subscription messages involves accessing those mailboxes. Therefore, a POSITA would understand Bardsley to disclose accessing the mailboxes associated with the email accounts.

[1.4] processing, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;
--

85. As discussed above, “processing, at least a subset of the email messages” means one or more email messages. Bardsley discloses processing, at least a subset of the email messages received in mailboxes provided by a local email client, such as Microsoft Outlook, running on a desktop or laptop computer. EX1004, 2:51-59, 4:50-63, 6:43-46, Fig. 2 (Block 200). Bardsley additionally discloses that its subscription messages refer to an organization sending for example, newsletter e-mails. *Id.*, 2:39-47. A POSITA would understand such e-mails would have been sent from an e-mail list (subscription list) maintained by the sender. Such newsletter emails were a very common type of subscription list email in March 2011. *See also* EX1004, Figs. 10-13, 12:63-14:31, 15:42-49.

86. Bardsley further discloses determining in the locally maintained and managed mailboxes whether the message is confirmation of a new subscription, determining identification information in the message, and determining information for unsubscribing. *Id.*, 4:50-63, 7:7-33. Bardsley further discloses that such messages originate from a subscription list. *Id.*, 15:42-49 (unsubscribe action “removes the subscribers address from a subscription list”), Figs. 10-13, 12:63-14:31. Bardsley’s process for managing subscriptions begins by determining “whether a new subscription message has been received.” EX1004, 7:7-9. If a message is a “subscription message”, then a POSITA would understand the message originates with a subscription list.

87. Bardsley further discloses processing a group of messages (more than one) to identify subscription messages. For example, Bardsley determines “whether a received subscription message is redundant based on at least one of an identifier for the subscription message or content” *Id.*, 8:25-67. Bardsley discloses that such redundancy can be determined by comparing a group of subscription messages by, for example, using group identifiers such as sports or news. *Id.*, 21:47-56.

88. For all of these reasons, a POSITA would understand Bardsley discloses processing groups of subscription messages thus satisfying the element “processing, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list.”

[1.5] processing, at least one email message associated with a subscription list to identify methods of unsubscribing from the subscription;

89. A POSITA was well aware of several methods of unsubscribing. For example, some required users to send an email request to unsubscribe. EX1009, 2. Some included necessary information in the email such as “Please email [X address] to unsubscribe.” Others taught using mailto: links for unsubscribing. EX1015. As I explained above, a mailto: link indicates an email address, and when it is displayed in conventional email clients such as Outlook or Gmail, clicking on the link opens a user’s default email client and prepopulates a message with the email address that was included in the mailto: link. EX1016; EX1030.

90. As to Bardsley, it discloses processing at least one email message associated with a subscription list and using an unsubscribe function to identify ways to unsubscribe from future messages:

Unsubscribe function 116 may be configured to determine instructions or process information for unsubscribing a user from receiving future subscription messages associated with an electronic subscription. *For example, unsubscribe function 116 may identify unsubscribe information in a message carrying subscription content or confirming a subscription. In this example, a control or process in unsubscribe actions 118 can be configured to unsubscribe based on the identified unsubscribe information. . . .* In one example, unsubscribe function 116 may determine one of an address, a URI, and a link associated with the electronic subscription for use in unsubscribing.

EX1004, 6:13-25 (emphasis added); *see also, e.g., id.*, 6:25-39, 5:29-32, 15:42-49.

One exemplary unsubscribe action for an e-mail subscription client includes sending an e-mail to an electronic message subscription source with an appropriate unsubscribe subject line. Another exemplary unsubscribe action for an e-mail subscription client includes opening a web link contained in a subscription confirmation message that removes the subscribers

address from a subscription list when the HTML of the web link is loaded.

Id., 15:42-49.

[1.6] wherein identifying methods of unsubscribing from the subscriptions further comprises: identifying list-unsubscribe headers in a message header; or

91. Although Bardsley does not expressly disclose this element, a POSITA would have known that some subscription emails often included a list-unsubscribe field in a message header that could be used to unsubscribe from the subscription and a POSITA would have been motivated to ensure such headers were recognized. The '342 patent admits such headers were known in the art. EX1001, 3:45-48, 2:1-4.

92. Furthermore, Emigh taught identifying messages from a mailing list by looking for the list-unsubscribe header field. EX1007, 7:30-35 (“[M]essage header lines such . . . ‘List-Unsubscribe’ may indicate use of a mailing list.”).

93. A POSITA would understand that a message header is metadata that accompanies every email and contains information, such as the sender, receiver, subject, and timestamp. Mailbox and email service providers use email headers to authenticate the email senders and properly allocate an email in the inbox.

94. A POSITA implementing Bardsley would have been motivated to look to email filtering methods such as those disclosed by Emigh, including using the list-unsubscribe header field to identify mailing list emails, to ensure that the system

could identify such emails, identify such headers as unsubscribe methods, and use the headers to unsubscribe from subscription messages. This would increase the amount of unsubscribe information that could be identified, and therefore lead to a more useful system. *See, e.g.*, EX1005, 6:22-67 (disclosing identifying unsubscribe mechanisms in message body and headers). As discussed above, a POSITA was well aware of the RFC 2369 list-unsubscribe header field discussed in Emigh. A POSITA would have had a reasonable expectation of success in incorporating the use of the list-unsubscribe field into Bardsley. Message headers are always included with email messages, so Bardsley's functions would simply have had to examine the headers as well as the message body text (which they already were doing). And identifying a list-unsubscribe header is a trivial computational operation that would have taken merely ordinary skill. As I described above, it simply would have involved searching for a header field that began with the text "List-unsubscribe:".

[1.7] identifying unsubscribe methods within the message body;

95. A POSITA seeking to automate the processing of bulk emails would have been motivated to identify such methods in all the places where they would be located, so as to not overlook any and thus be unable to unsubscribe from such emails. A POSITA would have been aware that unsubscribe methods were often located in both the header and the body of emails sent from email lists, and thus have been motivated to look in both places to identify the unsubscribe methods in an

email. For example, one email program described that unsubscribe links were typically placed at the bottom of an email, but indicated that they could be placed anywhere in the email. See <https://www.youtube.com/watch?v=V3pde9nfk-k> ([Inserting an Unsubscribe Link within an Email Campaign in EM4C - YouTube](#)). In another example, A Client Success Story available on Return Path's website in 2010 for a dating website True.com described and depicted how emails sent by True.com included unsubscribe links in the body of the email, in the footer or near the top of the email:

96. Further, Bardsley expressly discloses reviewing “text of the . . . body of an e-mail message for key words, such as ‘subscribe’ . . . for determining that the message is a new subscription confirmation message.” EX1004, 14:25-30; *see also id.*, 6:16-18; [1.6].

97. Bardsley further explains that the information could be “a link associated with the electronic subscription for use in unsubscribing” or “text in one or more messages.” EX1004, 6:23-25, 6:29-33. Thus, a POSITA would understand that Bardsley's unsubscribe function includes identifying unsubscribe methods, including unsubscribe links and text, within the email message body.

[1.8] presenting to the user the subscriptions previously identified: and

98. Bardsley discloses this element. For example, Bardsley describes that the “unsubscribe function 116 may present a prompt with a control configured for

unsubscribing the user from receiving a future subscription message associated with the electronic Subscription.” EX1004, 7:62-65; *see also id.*, 5:16-56, Fig. 10, Abstract, 4:67-5:4, 7:62-8:9, 13:24-14:39, 17:34-56, 22:49-23:18, 23:49-26:33, 2:18-21. Bardsley provides an example of presenting the user with an opportunity to unsubscribe from identified subscriptions:

The following subscriptions contain much of the same information. Would you like to unsubscribe from one of them?	
Subscription Name	Unsubscribe (Check One)
Microsoft Security Newsletter	☐
Security Focus Newsletter	☐

Id., 20:1-15.

[1.9] unsubscribing from, at least a single subscription in response to a user requests;

99. Bardsley discloses, for example, that a user may select a prompt for operating a control to unsubscribe a user from receiving future messages, this corresponds to a user requesting to be unsubscribed. And Bardsley teaches that the actual unsubscribing is performed upon receipt of that request. Specifically, Bardsley discloses:

A user of electronic subscription client 108 may select the prompt for operating the control to unsubscribe the user from receiving future subscription messages associated with the electronic subscription. ... Unsubscribe function

116 may be configured to unsubscribe a user from receiving future subscription messages associated with an electronic subscription in response to receiving an input responsive to a prompt with a control for unsubscribing the user from receiving future subscription messages associated with the electronic subscription.

EX1004, 5:43-56; *see also id.*, Abstract, 2:18-21, 5:24-29, 5:56-60, 6:16-31, 15:42-16:23. A POSITA would understand that Bardsley teaches unsubscribing from at least a single subscription in response to a user request.

[1.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and

100. Bardsley discloses this element for the reasons discussed at [1.5] and [1.7].

[U]nsubscribe function 116 may identify unsubscribe information in a message. ... In one example, *unsubscribe function 116 may determine one of an address, a URI, and a link* associated with the electronic subscription for use in unsubscribing.

EX1004, 6:16-25 (emphasis added).

101. A POSITA would understand this to teach identifying any and all unsubscribe information in an email, such as hyperlinks, to be used in unsubscribing. Bardsley explains that its unsubscribe process “can be configured to unsubscribe based on the address, the URI, or the link, and the address, the URI, or the link may

be stored in database 120.” EX1004, 6:25-31. A POSITA would understand storing found unsubscribe links in a database to mean “collecting” links. Thus, a POSITA would understand this to satisfy “collecting unsubscribe hyperlinks from the message body.”

[1.11] identifying those hyperlinks as potential unsubscription methods.

102. As discussed at [1.7] and [1.10], Bardsley discloses this element in that it discloses identifying unsubscribe hyperlinks in email messages and determining that they were unsubscribe methods. A POSITA would understand these teachings of Bardsley as disclosing identifying the hyperlinks as potential unsubscription methods. EX1004, 6:16-35. (“[U]nsubscribe function 116 may identify unsubscribe information in a message. ... In one example, unsubscribe function 116 may determine one of an address, a URI, and a link associated with the electronic subscription for use in unsubscribing.”). A POSITA would understand this to disclose identifying hyperlinks as potential unsubscription methods.

C. Claim 2

[2.1] A method, as described in claim 1 wherein processing email messages further comprises: identifying non-subscriptions by text prepended to subjects; and/or

103. Dependent claim 2 requires “identifying non-subscriptions.” In the context of the ’342 patent, a POSITA would understand that the plain and ordinary meaning of “non-subscriptions” is email messages that are not subscription

messages, i.e., that are not from an email mailing list. The prefix “non” makes that clear.

104. Nonetheless, one of the Bardsley process’s first steps is checking for new subscription messages at step 302. EX1004, 7:1-9, Fig. 3A; *see* [1.4]. If the answer is no, the system goes back to the start. Fig. 3A. Bardsley does not expressly disclose details regarding messages that are not subscriptions. However, a POSITA implementing Bardsley would be motivated to look to other references for further details regarding identifying non-subscriptions. For example, because an important aspect of Bardsley is being able to identify subscription messages, a POSITA would be motivated to also consider identifying characteristics of non-subscriptions, as a POSITA would have known that email messages that are not subscription messages would be non-subscriptions. Being able to affirmatively identify either type of message more accurately would help identify both types. A POSITA further understood that it was common sense to check the negative of something to rule out whether something is or is not of interest for the system to consider. A POSITA understood that doing so in this context ensures that messages identified and processed as a subscription message is in fact a subscription message as checking for non-subscriptions weeds out any false positives.

105. One known method for identifying non-subscriptions was to look at text prepended to subjects. A POSITA would have known that markers were typically

inserted by mailers in response to actual users taking actions to reply to or forward a message. Here, a POSITA would have known that “Re” and “Fw:” were commonly prepended to subjects to indicate that emails were replies or forwards. A POSITA by 2011 would have personally sent and received many messages with the subjects prepended with “RE” and “FW,” and have been well familiar with what such text prepended to subjects meant. *See, e.g.*, EX1017 (U.S. Pat. No. 7,644,126), 7:11-16 (“it is common to prepend a predictable text string to the subject line 308 to indicate that the subsequent message is a reply or forward. Commonly, the term “Re:” is used to indicate a reply and the term “Fw:” is used to indicate a forward.).

106. A POSITA would also have known that mailing list emails were not commonly sent out by mailing list servers as forwards or replies, and that it was also common for an email recipient of a mailing list email to then forward the message on to someone else, which would potentially convert the message into effectively a non-mailing list email, as it would not have been sent directly from a mailing list server. As a result, a POSITA would know that such prepended text would likely identify non-subscriptions.

107. Additionally, a POSITA would have been motivated to look to Emigh for additional details about identifying whether messages were subscriptions. Emigh taught examining the subject line of emails for text prepended to subjects as part of identifying non-subscriptions and subscriptions. For example, a POSITA would

have understood Emigh's teachings about determining "whether a reply message is a reply to an actual message sent by a message recipient" as taking into consideration the "RE:" component of a subject line when identifying messages that were or were not spam. EX1007, 3:44-54; *see also id.*, 7:49-52 (teaching that subject lines prepended with "LIST-ID" indicated a mailing list email). A POSITA would understand these to be an example of identifying a message that is a non-subscription.

108. Emigh's statement about "whether a reply message is a reply to an **actual message sent by a message recipient**" (emphasis added) is consistent with the fact that a POSITA knew that sometimes a sender of spam emails would add "Re:" to the subject line of a spam message to try to improve their odds of getting past a spam filter because the spam senders would take into consideration such subject lines in a very simple way, and assume that a "Re" at the beginning of the subject line indicated that the email was a desired email. Emigh recognized this and taught that, when an apparent reply message was received—which a POSITA would understand to mean one that had "Re:" at the beginning of the subject line—that the message could be compared to other information, such as information about emails sent by the user, in order to determine whether it "is a reply to an actual message sent by a message recipient." *Id.*, 3:44-54.

109. An example illustrates how a POSITA would have understood this to work. For example, an email's subject line in a recipient's inbox might be "Re: Meeting next Tuesday." Emigh's system would have access to the "actual messages sent by the message recipient", and thus would know whether an email with the subject "Meeting next Tuesday" had previously been sent by the user. Emigh's system would take such information into consideration when determining whether a received email with a subject line that began with "Re" was a "reply to an actual message sent by a message recipient".

110. Incorporating this feature into Bardsley is an example of the basic processing of text data that I discussed above in Section VI.C. (¶¶ 49-55, 64-71). A POSITA implementing Bardsley would be motivated to incorporate the teachings of Emigh with Bardsley's expressed disclosure of examining subscription messages. Adding such functionality to examine prepended text to subjects in emails is an example of the use of text data discussed above which required ordinary skill and for which a POSITA would have had a reasonable expectation of success.

[2.2] identifying non-subscriptions by user address.

111. Bardsley discloses examining messages to identify subscription messages, and a POSITA implementing Bardsley would have been motivated to determine non-subscription messages, as doing so would aid in the analysis of whether a message is a subscription message. A POSITA would have understood

that subscriptions and non-subscriptions were the inverse of each other, and that an email that was not a subscription was a non-subscription. A POSITA would have understood that being able to effectively identify non-subscription emails could aid in the identification of subscription emails.

112. Because the '342 consistently refers to an email recipient as the “user,” a POSITA likely would have understood this claim as covering using the recipient’s address to identify non-subscriptions. The '342 patent discloses identifying non-subscriptions based on the recipient’s email address’s location in the email header (“CC” or “BCC” vs. “TO”). EX1001, 4:51-55.

113. A POSITA would have known about mailing list senders typically putting recipients in the “TO” field, and that the presence of a recipient’s address in the “CC” or “BCC” field would have suggested that the email was a non-subscription. For example, a POSITA likely would have been subscribed to some mailing lists and would have had the opportunity to observe their characteristics. For example, a MailChimp email guide explains that it was a newbie mistake for mailing list senders to CC copies of a message to their customers. EX1023, 8. The guide explains that, instead, “[w]hen an email marketing system (like MailChimp) sends your campaign, we take your message and send it one at a time to each recipient on your list (really, really fast).” *Id.*, 9.

114. A POSITA would have known that the address of the user of such a system could be relevant to determining whether an email was a non-subscription. There are only so many characteristics to consider about an email in attempting to automate a determination about whether it originated with a subscription list. It would have been common knowledge to a POSITA that, for example, a user's address would be less likely to be located in the CC or BCC field if the email was sent by an automated mailing list system such as MailChimp.

115. Additionally, Emigh taught additional ways to consider the address of a message recipient in determining whether a message originated from a mailing list. For example, Emigh teaches that “[e]xamples of other indications that a message was processed by a mailing list include a message ID originated from a domain other than that of the sender (for example, *the domain of the message addressee*), a precedence of ‘bulk,’ and the presence of *the recipient’s domain* early in the delivery path.” EX1007, 7:35-40; (emphasis added); *see also id.*, 7:46-8:52. A POSITA would have understood that the combination of Emigh’s teachings with Bardsley would naturally include and result in identifying messages that did not originate with a mailing list. For the reasons above, a POSITA would have been motivated to make this combination due to, for example, the need to effectively identify affected email, and POSITA would expect this combination to be successful for the reasons given above.

116. While claim 2 recites “user address,” Patent Owner might argue that this claim was intended to recite “sender address.” *See, e.g.*, EX1001, 4:51-5:32 (providing disclosure relevant to this claim). The ’342 specification discusses comparing “the sender’s Internet Protocol (“IP”) address . . . against a list of known harmful senders” to identify whether it is a subscription email. 5:4-5.

117. Therefore, to the extent this refers to identifying non-subscriptions by a sender’s address, a POSITA would have known that using whitelists of known non-spam senders was well known in the art. *See, e.g.*, EX1001, 4:48-50. Emigh, for example, discloses using a whitelist, which it describes as being a list of senders known (EX1007, 2:66-3:8); *see also id.*, 10:50-67, 9:23-14:67. A POSITA understood that if a sender’s address was on a whitelist, that the sender was less likely to send wanted email messages (i.e., non-subscription messages) as opposed to subscription messages that could be unsubscribed from. Thus, regardless of how the claim is interpreted, it would have been obvious over Bardsley in view of Emigh.

118. Emigh also taught about blacklists: “[a] blacklist may include a list of message attributes, such as a sender’s identity, that may be grounds for automatic categorization of a message as spam.” EX1007, 18:13-16. The MailChimp’s Field Guide discusses blacklists, and how server administrators used them to identify senders of spam messages. EX1023, 28.

119. A POSITA would have known that one method of identifying at least some subscription or non-subscription emails was to compare the email sender's address—which would be a key attribute of the email message—with blacklists of known spammers and whitelists of approved senders. *See, e.g.*, EX1001, 5:4-16 (acknowledging that blacklists were known). To the extent a POSITA may not have known this, Emigh explicitly taught the use of blacklists and whitelists.

120. Incorporating this feature into Bardsley is an example of the basic processing of text data that I discussed above in Section VI.C (¶¶ 49-55, 64-71). A POSITA implementing Bardsley would be motivated to incorporate Emigh's disclosure of blacklists and whitelists to aid in Bardsley's determination of whether a message was wanted or not wanted by the user. Examining various email header fields to identify sender and recipient email addresses, recording email addresses entries on a blacklist and whitelist, and then comparing the email address information in a specific message to the whitelist and blacklist are simple text processing computational tasks which required ordinary skill and for which a POSITA would have had a reasonable expectation of success.

D. Claim 3

3. A method, as described in claim 1 wherein processing email messages to identify those originating with a subscription list further comprises: identifying subscriptions by the inclusion of list-unsubscribe headers in the email header.

121. As discussed at [1.6], a POSITA would have been motivated by Emigh's disclosure of list-unsubscribe headers to use the presence of such headers as a method of identifying subscriptions. Thus, this claim is obvious over Bardsley in view of Emigh. A POSITA in 2011 would also have been well aware of such headers and would have known that they existed and were an effective way to identify subscription list emails.

122. Given that including a list-unsubscribe header was a well-known method employed by some senders of mass emails to allow recipients to unsubscribe, and that there would be no reason to include such a header in an email that was not a subscription-type email, a POSITA would understand that one way to identify subscriptions/emails originating with an email list would be to look in a message header for list-unsubscribe headers.

E. Claim 6

[6.1] A method, as described in claim 1 wherein identifying unsubscribe methods within the message body further comprise: collecting hyperlinks which are associated with images; and

123. Although Bardsley and Emigh do not expressly disclose this, a POSITA would understand that Bardsley disclosure of collecting unsubscribe hyperlinks would include collecting images associated with hyperlinks. A POSITA would have known that an unsubscribe link could have an associated image. In fact, EX1019 explicitly discourages the use of images as unsubscribe hyperlinks, which shows that

images were in fact being used for this purpose in a high enough volume to warrant attention. A POSITA would be motivated to make a system to catch as many subscription emails as possible.

124. In fact, associating hyperlinks with images has been possible and standard since the earliest days of HTML and the World Wide Web. For example, as I described in Section VI.C (¶¶ 56-60), “HTML FOR DUMMIES” provides a detailed explanation of how any hyperlink can have an associated image. EX1022, 186-91.

125. A POSITA also would have known that advertisers and other senders of subscription and unsubscription links did send unsubscribe links in images, and that it would therefore be useful for a system that monitors such messages to be able to recognize links in images. EX1019 (recognizing the possibility of using images as unsubscribe hyperlinks, while discouraging doing so to avoid image suppression)²; *see also* [1.10].

² That EX1019 suggests advertisers avoid using image links does not undermine the obviousness of this element because a POSITA would be motivated to allow the user-side monitoring system to be able accommodate all possible techniques, even if they were only used by poorly designed subscription lists.

126. Bardsley already discloses collecting hyperlinks to identify unsubscribe methods: “For example, unsubscribe function 116 may identify unsubscribe information in a message carrying subscription content or confirming a subscription. In this example, a control or process in unsubscribe actions 118 can be configured to unsubscribe based on the identified unsubscribe information, and the unsubscribe information may be stored in database 120. In one example, unsubscribe function 116 may determine one of an address, a URI, and a link associated with the electronic subscription for use in unsubscribing.” (EX 1002, 6:16-25.) Since a standard feature of hyperlinks is that they may have an associated image (as I described above), then Bardsley collecting unsubscribe links would also entail collecting the subset of unsubscribe links that happened to have associated images.

127. Functionality that looks for hyperlinks associated with images is no different than looking for text-based hyperlinks. Thus, since Bardsley discloses collecting hyperlinks as discussed above, a POSITA would understand Bardsley would also collect links associated with images. For example, implementing Bardsley to search for such links would have been trivial to a POSITA as it requires merely searching for text of the form `<a href = some-url.html> ...</a>` when examining the text of the email body. The “...” indicates the remaining content that can be included in a hyperlink, including text and/or image to be displayed. I provided multiple examples of the HTML format of hyperlinks in ¶¶ 56-58,

including examples that showed hyperlinks with associated images, and noting that pattern matching techniques like regular expressions can also extract matching content (such as the URL identified by the href attribute) for further processing.

[6.2] identifying those hyperlinks as potential unsubscription methods.

128. Bardsley discloses identifying any unsubscribe information in an email, regardless of type. See [1.7]. A POSITA would understand Bardsley's storing and use of unsubscribe hyperlinks as also identifying them as potential unsubscription methods, and this would apply to hyperlinks associated with images as well.

F. Claim 7

7. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: sending unsubscribe emails to sending email of subscription messages.

129. Bardsley discloses the added element of claim 7.

One exemplary unsubscribe action for an e-mail subscription client includes sending an e-mail to an electronic message subscription source with an appropriate unsubscribe subject line.

EX1004, 15:42-49. A POSITA would understand the added element of claim 7 to refer to sending unsubscribe emails to the source of the subscription. A POSITA would understand that "the sending email" of a subscription message would be the same thing as "an electronic message subscription source."

G. Claim 8

8. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: sending unsubscribe emails to mailto: address found in a list-unsubscribe header.

130. Bardsley combined with Emigh discloses the added element of claim 8. As discussed above, Emigh taught that subscription emails sometimes had a List-Unsubscribe: header field. EX1007, 7:32-35. A POSITA would have understood that a list-unsubscribe header field may include a “mailto” portion that specifies an email address to which unsubscribe requests should be sent. For example, a POSITA would have been aware of RFC 2369 (EX1015), which describes the List-Unsubscribe: email header field and taught that the field could include a mailto: link that would allow an email recipient to unsubscribe by clicking the link to send an email to the address found in that mailto: link. *See also* EX1004, 6:4-11. A POSITA would have been motivated to ensure that the system could accommodate this known “mailto” technique. As discussed herein, using features identified in various RFCs was routine to a POSITA; thus, including a “mailto” address in a list-unsubscribe header was trivial, taking ordinary skill.

131. In addition, a POSITA would have been aware of mailto: links and of the RFCs that related to those, RFC 6068 (“The ‘mailto’ URI Scheme”), dated October 2010 (EX1016), and RFC 2368 (“The mailto URI scheme”), dated July 1998 (EX1030). The existence of these RFCs supports that a POSITA would have

been easily able to identify and use mailto: links found in email messages. RFC 2369 included a list-unsubscribe field in email headers, and taught that the field could include a “mailto” link that would let an email recipient unsubscribe by clicking the link and sending an email.

H. Claim 9

9. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: processing one or more URLs found in a message to unsubscribe from subscriptions.

132. A POSITA would have understood that Bardsley discloses the added element of claim 9.

133. A POSITA would understand the “processing” in claim 9 is used consistently with its plain and ordinary meaning. As the ‘342 specification explains, “Other unsubscribe actions for subscriptions are controlled via a website. In such systems the user would need to visit a specific Universal Resource Locator ‘URL’ and may be required to take further actions such as submitting their own email address, or clicking on a ‘Unsubscribe’ button, etc. to affect the email settings.” EX1001, 2:65-3:3. A POSITA would further understand that “processing a URL” involves “visiting” or navigating to the URL and then possibly taking another action as specified by the (site reached via the) URL. This is consistent with the ’342 passage starting at 7:13, which states that: “To process the URLs in an automated fashion, the content of the selected URL is downloaded (410). ...”

134. A POSITA would understand that Bardsley discloses collecting unsubscribe information from email messages, including unsubscribe URLs, and processing the URLs. EX1004, 6:13-28, 15:54-16:23; *see also* [1.9]. Bardsley discloses the type of unsubscribe URL processing and webpages addressed in this element:

Another exemplary unsubscribe action for an e-mail subscription client includes opening a web link contained in a subscription confirmation message that removes the subscribers address from a subscription list when the HTML of the web link is loaded.

EX1004, 15:45-49.

135. A POSITA would understand that activating the unsubscribe links disclosed in Bardsley would trigger a series of steps, including opening a browser on the user's computer capable of interpreting and executing the URL using the HTTP protocol. *See* EX1022, 24-25 discussing URL navigation. The browser sends an HTTP request for the webpage identified in the URL, and then downloads that webpage. EX1022, 24-26.

I. Claim 13

13. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; presenting the webpage to the user for manual unsubscription from the subscription.

136. A POSITA would have understood the added element of claim 13 as referring to hyperlinks that unsubscribe a recipient by activating the link. EX1001, 7:13-21. Bardsley discloses the claimed “processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL” for the same reasons as discussed for claim 9.

137. Additionally, a POSITA would have known that not all unsubscribe forms could be entirely automated, such as those with a CAPTCHA, and that as a result, some forms would need to be presented to a user for manual unsubscription. EX1020, 215 (depicting an unsubscribe form that required entering a CAPTCHA). Indeed, Bardsley expressly discloses that manual unsubscription may be necessary:

In one embodiment, an unsubscribe function may present unsubscribe notification and steps for an unsubscribe action if unsubscribe actions cannot be generated by the unsubscribe function or a user, or unsubscribe actions are not stored. The user may manually implement the presented unsubscribe actions for unsubscribing to an electronic subscription.

EX1004, 23:1-6; *see also* claim 9.

J. Claim 14

[14.1] A computing system configured to process subscriptions to list servers, said configuration comprised of:

138. Bardsley discloses this element. As discussed above, a POSITA would understand “subscriptions to list servers” to refer to subscription emails received from an automated mailing list. Bardsley discloses that its electronic subscriptions refer to newsletter emails, daily horoscopes, etc., which a POSITA would understand to be distributed from automated mailing list systems (list servers). EX1004, 2:39-50, 4:41-49, 13:20-24.

139. Bardsley discloses a computing system for processing such subscriptions; specifically, an “[e]lectronic subscription client” that includes means for processing subscription messages. EX1004, 6:40-53. A POSITA would understand the “electronic subscription client” to correspond to the claimed computing system. EX1004, 4:28-30 (“The subject matter described herein includes methods, systems, and computer program products for managing electronic subscriptions.”).

140. Bardsley renders obvious the rest of 14 in combination with Emigh, as follows:

[14.2] identifying one or more email accounts;
--

[14.3] accessing the mailboxes associated with the email accounts; and
--

[14.4] processing, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;

141. Bardsley discloses elements [14.2]-[14.4] for the same reasons discussed at [1.2]-[1.4].

[14.5] processing the body text of at least one email message associated with a subscription list to identify mailto: and URLs to utilize to unsubscribe from the subscription;

142. As discussed at [1.7] and [1.10], Bardsley discloses using hyperlinks (URLs) found in the body text of email messages to determine unsubscribe information. As I discussed with respect to claim 8, a POSITA would have understood that a List-Unsubscribe header field (as disclosed by Emigh) may include a mailto: link. Moreover, a POSITA seeking to identify unsubscribe methods in emails would also have known that mailto: links could be included in the body text of a message. For example: “In the case of email-based unsubscribe links included in the body of the email message...” EX1006, 8. Therefore a POSITA would have been motivated to incorporate such teaching into Bardsley in order to identify mailto: links in the body text of a message associated with a subscription list to expand the range of ways a user could unsubscribe to a subscription list.

143. A POSITA would have had a reasonable expectation of success to incorporate mailto: link and URLs in an email message. As I explained above in Section VI.C (¶¶ 49-55, 64-71), email messages and HTML are both text data. The sender of an email message can include email links through several conventional methods, including typing them in manually and copying and pasting them from another application such as a web browser. And as I illustrated above, both mailto: links and URLs have standard formats that were well-known to a POSITA.

Therefore, it was well within the capabilities of a POSITA to write a program to scan the body text of an email message to search for mailto: links and URLs. As I explained above, this is a basic pattern matching task that would be taught in a variety of undergraduate Computer Science courses, and is implemented in a variety of well-known and widely used programming languages, including in the regular expression functionality of Python.

[14.6] presenting to a user the subscriptions previously identified; and
[14.7] unsubscribing from, at least a single subscription in response to a user request;
[14.8] presenting to the user the subscriptions previously identified; and
[14.9] unsubscribing from, at least a single subscription in response to a user requests;
[14.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and
[14.11] identifying those hyperlinks as potential unsubscription methods.

144. Bardsley discloses elements [14.6]-[14.11] for the same reasons as discussed at [1.8]-[1.11].

145. Elements [14.8] and [14.9] appear to be accidental duplications of [14.6] and [14.7]. To the extent this repetition requires these steps to occur twice, a POSITA would understand that the presentation and subsequent unsubscribing would likely need to occur more than once over time, as, for example, new subscription emails would likely continue to arrive as time passed.

K. Claim 16

146. Bardsley renders obvious claim 16 in combination with Emigh, as follows:

[16.1] A computing apparatus for processing subscriptions to list servers,
[16.2] wherein said apparatus: identifies one or more email accounts;
[16.3] accesses the mailboxes associated with the email accounts
[16.4] and processes, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;
[16.5] processes the body text of at least one email message associated with a subscription list to identify mailto: and URLs to utilize to unsubscribe from the subscription;
[16.6] presents to the user the subscriptions previously identified; and

147. Bardsley discloses elements [16.1]-[16.6] for the same reasons as discussed above at [14.1]-[14.6].

[16.7] in response to an initiation command from a user, automatically unsubscribes from, at least a single subscription;

148. A POSITA would understand “initiation command from a user” in [16.7] to mean the same thing as “a user request[,]” which is recited in [1.9], [14.7], [14.9], and [16.9]. Neither claim phrase is found in the specification, but the plain meaning of these phrases refers to a user selecting which subscription(s) she wants to unsubscribe from. *E.g.*, EX1001, 3:6-13, 4:4-15. A POSITA would understand Bardsley’s disclosure of effectuating the unsubscription in response to the user’s input (initiation command) to occur automatically. EX1004, 5:24-56 (“unsubscribe

function 116 may be configured to present a prompt with a control ... that allows the user to automatically unsubscribe ...”).

[16.8] presenting to the user the subscriptions previously identified; and

[16.9] unsubscribing from, at least a single subscription in response to a user requests;

[16.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and

[16.11] identifying those hyperlinks as potential unsubscription methods.

149. Bardsley discloses elements [16.8]-[16.11] for the same reasons as discussed above at [14.8]-[14.11].

IX. GROUND 2: CLAIM 4 IS OBVIOUS OVER BARDSLEY AND EMIGH IN VIEW OF DIETRICH

A. Claim 4

150. Claim 4 is unpatentable as obvious over Bardsley and Emigh in view of “Empirical research on IP blacklisting” (Dietrich). Dietrich is an article from the Fifth Conference on Email and Anti-Spam, held August 21-22, 2008. EX1013. In addition to the article, I reviewed additional materials regarding this conference. Based on my experience, I would understand that the Dietrich paper was made publicly available at least through the conference website and was then presented publicly at the conference. The conference would have been attended by skilled artisans interested in projects related to, among other things, systems directed at reducing unwanted email.

4. A method, as described in claim 1 wherein processing email messages to identify those originating with a subscription list further comprises: verifying senders are not included in an Unsubscribe Blacklist.

151. Bardsley and Emigh disclose claim 4 in combination with Dietrich.

152. A POSITA would understand “Unsubscribe Blacklist,” in the context of the ’342 patent, to refer to a list of Internet Protocol addresses known to be senders of harmful or malicious emails. EX1001, 5:4-15.

153. Although Bardsley and Emigh do not expressly disclose an Unsubscribe Blacklist, a POSITA would have known that one way to identify spam or emails from a subscription list was through the use of negative screening lists or blacklists. Dietrich explains that “IP blacklisting in the context of anti-spam describes collecting IP addresses in a list and prohibit[ing] any email communication attempts initiated from these addresses.” EX1013, 1.

154. A POSITA implementing Bardsley and Emigh would have been motivated to incorporate Dietrich’s teachings about blacklists to help determine whether using an unsubscribe method in an email would be an effective way to unsubscribe or would instead result in a user receiving unwanted or harmful messages from a certain sender. If a sender was on a blacklist, then the user would not want to send an unsubscribe request to the sender. A POSITA would have understood that any engagement with a blacklist sender could result in harm. A POSITA would have had a reasonable expectation of success in comparing senders

of email messages with those senders on a blacklist, as it would have required only basic computational methods as discussed in Section VI.C (¶¶ 49-55, 64-71).

X. GROUND 3: CLAIM 5 IS OBVIOUS OVER BARDSLEY AND EMIGH IN VIEW OF HILL

A. Claim 5

155. Claim 5 is unpatentable as obvious over Bardsley and Emigh in view of U.S. Patent No. 6,029,192 (“Hill”). Hill, titled “System and Method For Locating Resources On A Network Using Resource Evaluations Derived From Electronic Messages,” issued in 2000. Hill discloses inventions related to searching electronic messages to locate and evaluate network resources, including methods for identifying hyperlinks in electronic messages. *See, e.g.*, EX1008, 4:58-64, 12:1-28.

[5.1] A method, as described in claim 1 wherein identifying unsubscribe methods within the message body further comprises: searching for unsubscribe text in a message body;

156. Bardsley discloses this element. *See* [1.5] and [1.7] above. Bardsley teaches its “unsubscribe function 116 may identify text in one or more subscription messages indicating information for unsubscribing. Examples of text associated with unsubscribing includes one or more of subscribe text, mailing list text, and unsubscribe text.” EX1004, 6:31-35.

157. A POSITA would understand “unsubscribe text” to mean words such as “unsubscribe” or “opt out.” EX1001, 6:21-42. A POSITA would have known that sometimes such unsubscribe text would be in the message body. *See also* [1.5], [1.7].

[5.2] collecting hyperlinks which begin within a threshold amount after the unsubscribe text; and

158. Bardsley and Emigh discloses this element in combination with Hill.

159. A POSITA would have understood “a threshold amount” as meaning that a hyperlink needed to occur within a certain number of characters of unsubscribe text. EX1001, 6:19-59. A POSITA would have known that one way to locate potential unsubscribe hyperlinks would be to look for hyperlinks that occurred after unsubscribe text, within a threshold.

160. Although Bardsley does not expressly disclose “a threshold amount after the unsubscribe text,” a POSITA would have been motivated to incorporate Hill’s teachings as part of identifying unsubscribe methods, to more accurately identify such methods. For example, Hill discloses identifying hyperlinks in electronic messages by looking for certain text within a certain threshold of a hyperlink

The text of the message within from *one to fifty characters of the occurrence of the URL* includes at least one case-insensitive string from the group of you; check, find; see; visit; try; look and recommend 72. If any of the conditions of this second set of conditions is true, then the URL mention is classified as an evaluation.

EX1008, 7:55-61 (emphasis added).

161. A POSITA would have known that marketing emails often included a phrase like “click here to unsubscribe” near an unsubscribe link, such as immediately after the link or within a few words after it. *See, e.g.*, EX1023, 31 (explaining emails “might say something like, ‘click here to unsubscribe’”).

162. A POSITA would have known that one way to locate potential unsubscribe hyperlinks would be to look for hyperlinks that occurred after the word “unsubscribe,” within a threshold.

163. A POSITA would have been motivated to look to Hill as a way to aid in determining whether a hyperlink is an unsubscribe hyperlink, by incorporating Hill’s disclosure regarding how close a certain text indicator is to a URL. A POSITA would know that a URL located within a few words of text like “unsubscribe” or “opt out” would likely be an unsubscribe hyperlink. Incorporating such a technique would have taken ordinary skill and a POSITA would have had a reasonable expectation of success to do so, since it would require familiarity with only the basic text processing computational methods, as described above in Section VI.C (¶¶ 49-55, 64-71).

[5.3] identifying those hyperlinks as potential unsubscription methods.

164. A POSITA would understand Bardsley’s storing and use of unsubscribe hyperlinks as also identifying them as potential unsubscription methods, and that this would apply to hyperlinks within a threshold amount. *See also* [1.11].

**XI. GROUND 4: CLAIMS 10-12, 15, AND 17 ARE OBVIOUS
OVER BARDSLEY IN VIEW OF EMIGH AND RETURN PATH**

165. In my opinion, claims 10-12, 15, and 17 are obvious over Bardsley and Emigh in view of Return Path. These claims recite additional features related to processing unsubscribe URLs, including navigating to and opening the unsubscribe webpage and examining the webpage for user selection options. EX1001. Although the '342 patent does not provide specific examples of unsubscribe webpages, it explains that “form elements” include “checkboxes, radio buttons, input boxes, etc.” *Id.*, 7:15-17.

166. Return Path was a 2008 study that provides examples of webpages reached by activating unsubscribe hyperlinks—called unsubscribe landing pages—including pages that simply confirm unsubscribing as well as pages with button form elements. EX1009. A POSITA implementing Bardsley would have been motivated to investigate examples of common unsubscribe landing pages in order to configure Bardsley’s “control or process . . . to unsubscribe based on [a] link.” EX1004, 6:23-28. A POSITA seeking to implement an automatic unsubscribing system as described in Bardsley would have recognized that the system would need to accommodate itself to existing types of unsubscription processes. Because the system would interact with unsubscription methods existing in emails sent by third parties, a POSITA would have been motivated to determine what the options for such methods were. *Id.*

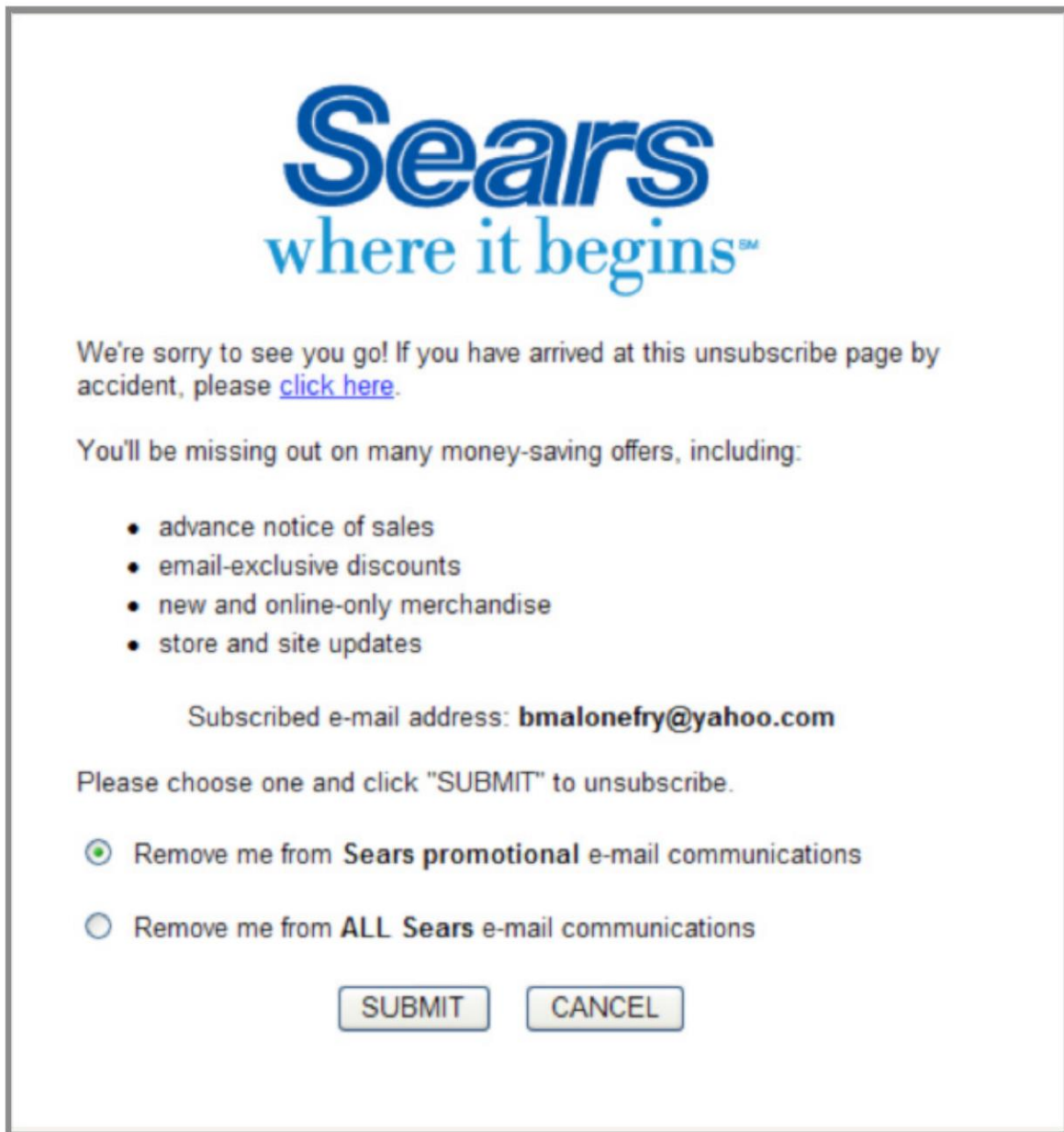
167. A POSITA also would have known that some webpages for setting a user's subscription preferences would include a single button to be pressed to, for example, confirm that the user wanted to unsubscribe. For example, the 2008 Return Path study provided a screen capture of a preference page reached by a link from a Travelocity email, which included a single button labeled "submit", which confirmed that the user wanted to unsubscribe from Travelocity email messages. EX 1009, 2.

The screenshot shows a web page from Travelocity. At the top, there is a blue header with the Travelocity logo on the left and a promotional banner on the right that says "Stress-Free Family Getaways Flight + Hotel From \$467" with a small image of a family. Below the header is a navigation bar with links: Home, Flights, Hotels, Cars/Rail, Vacations, Cruises, and Last Minute Deals. On the right of the navigation bar are links for "Customer Care" and "My Stuff". The main content area has the title "Remove From Promotional Email List" and a paragraph: "Please remove me from receiving ALL promotional email from Travelocity, which will include any subscriptions I may have to: Real Deals, Fare Watcher, and Easy Escapes." Below this text are two input fields. The first is labeled "Enter your first name here:" and contains the text "Bonnie". The second is labeled "Enter your email address here:" and contains the text "BMALONEFRY@YAHOO". Below these fields is a blue button labeled "Submit". At the bottom of the page, there is a small footer with copyright information: "© 1996-2004 Travelocity.com LP. All rights reserved. Travelocity and the Stars Design are trademarks of Travelocity.com LP. Use of this Web site constitutes acceptance of the Travelocity User Agreement and Privacy Policy. CSTX 250872-20."

The Return Path study stated that this landing page was “conveniently pre-populated” with the user’s name and email address. *Id.*

168. The Return Path study also provided an example of a Sears’ unsubscribe landing page that had four HTML INPUT elements (EX1009, 5). As I explained in Section VI.C (§§ 61-71), a POSITA would have known that INPUT elements are standard components that may be included within an HTML FORM element. As shown below, two of these input elements were radio buttons that

defined a choice for a user, and the other two were button elements that displayed clickable buttons. One of the buttons was labeled “Submit” and another was labeled “Cancel” (also standard for HTML buttons), as shown below:



Sears
where it beginsSM

We're sorry to see you go! If you have arrived at this unsubscribe page by accident, please [click here](#).

You'll be missing out on many money-saving offers, including:

- advance notice of sales
- email-exclusive discounts
- new and online-only merchandise
- store and site updates

Subscribed e-mail address: **bmalonefry@yahoo.com**

Please choose one and click "SUBMIT" to unsubscribe.

☒ Remove me from **Sears promotional** e-mail communications

☐ Remove me from **ALL Sears** e-mail communications

EX1009, 5.

169. The Return Path study also provided an example of a Clinique unsubscribe landing page that had five form elements, including one “Submit” button and four radio buttons, as shown below:

CLINIQUE

Clinique is sorry to see you unsubscribe.

We've enjoyed communicating Clinique special offers and in-store events to you, to unsubscribe you may do so below. Or if there is a special request or inquiry that we can assist you with, please email an online [Clinique Consultant](#) for further customer care. Clinique would like to keep in touch.

E-mail address to unsubscribe: *bmalonefry@yahoo.com*

Please make your selection below:

- ☐ I would like to ONLY receive in store Clinique Bonus Now and special event email alerts taking place at a counter nearest me.
- ☐ I would like to unsubscribe from ALL Clinique.com emails, including, complimentary shipping offers, new sampling programs, personalized expert beauty tips, early shopping opportunities and more.
- ☐ On second thought, please keep me on your mailing list.
- ☐ Please change my e-mail address to:

EX1009, 5.

170. A POSITA would have known that a webpage for setting a user’s preferences could include two buttons, one to confirm that a user wanted to unsubscribe and one to cancel the action. These are the standard “Submit” an

“Cancel” options (as shown in the Sears example above). In addition, the web page designer may choose to provide different labels for the buttons, as illustrated in the Constant Contact example below. Once again the form includes two buttons: the one labeled “Yes, unsubscribe me from all mailings” will submit the form, and thus lead to the user being unsubscribed, while the button labeled “Cancel” will cancel the form without taking any action. EX1010, 2-3. This form was available in the Constant Contact website at least as early as January 10, 2011.

The screenshot shows a web form titled "Please Confirm Your Unsubscribe" enclosed in a dashed border. The form contains the following text and elements:

- A blue arrow icon followed by the text: "Before unsubscribing, is this you?"
- The email address "c*****@gmail.com" in blue.
- A small line of text: "If this is not your email address, there is no need to unsubscribe. You have not been added to any mailing lists."
- A question: "Are you sure you wish to stop ALL emails from **Sunset Travel Online** sent to your email address?"
- Two buttons: "Yes, unsubscribe me from all mailings" and "Cancel".
- A footer line: "Sunset Travel Online uses SafeUnsubscribe® which guarantees the permanent removal of your email address from its mailing lists."

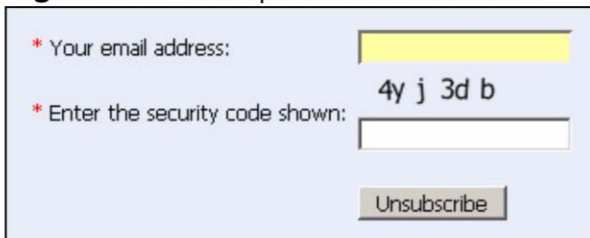
The form was archived by the Internet Archive, and the date that this was archived can be seen at <https://web.archive.org/web/20110110113748/http://www.constantcontact.com/email-marketing/email-list/index.jsp>, as well as https://web.archive.org/web/20110102213012/http://www.constantcontact.com/display_image.jsp?image_url=screenshots/EM_lists_safeunsubscribe.gif.

171. A POSITA would have understood that not all unsubscribe forms could be automated, so that some unsubscribe forms would likely need to be presented to a user for manual unsubscription. For example, the example unsubscribe form on

Interspire's Email Marketer User Guide required people to both enter their email address and solve a CAPTCHA before clicking an unsubscribe button.

Creating or Editing an Unsubscribe Form

Figure 205 Example Unsubscribe Form



The image shows a screenshot of an unsubscribe form. It has a light blue background. At the top, there is a label '* Your email address:' followed by a yellow rectangular input field. Below that, there is a CAPTCHA image showing the characters '4y j 3d b'. Under the CAPTCHA, there is a label '* Enter the security code shown:' followed by a white rectangular input field. At the bottom of the form, there is a grey button with the text 'Unsubscribe'.

Take the following steps to set up or edit an **Unsubscribe** website form. See the corresponding sections for information on how to complete each step.

EX1020, 215.

172. A POSITA implementing Bardsley would have been motivated to investigate what types of unsubscribe landing pages were common—such as those shown in Return Path and the other examples above—to aid in effectively configuring Bardsley's "control or process . . . to unsubscribe based on [a] link." EX1004, 6:23-28. A POSITA implementing Bardsley's automatic unsubscribing system would have recognized that the system would need to accommodate itself to existing unsubscription processes. Because the system would interact with unsubscription methods in emails sent by third parties, a POSITA would have been motivated to know and accommodate such methods. *Id.* A POSITA would have had a reasonable expectation of success in identifying and implementing the steps needed for its system to interact with various types of unsubscribe landing pages so

that the system could unsubscribe users who received emails including links to unsubscribe landing pages. This would have required only basic knowledge of the HTML language, the HTTP protocol, and text processing computational methods, all of which would be well within the capabilities of a POSITA, as I described in Section VI.C (¶¶ 61-71).

A. Claim 10

10. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; identifying a lack of form elements on the webpage.

173. A POSITA would understand that activating the unsubscribe links disclosed in Bardsley would trigger a series of steps, including opening a browser on the user's computer capable of interpreting and executing the URL pursuant to the http protocol. See EX1022, 24-25 (discussing URL navigation). The browser sends an http request for the webpage identified in the URL, and then downloads that webpage.

174. Bardsley discloses the type of unsubscribe landing page addressed in this element:

Another exemplary unsubscribe action for an e-mail subscription client includes opening a web link contained in a subscription confirmation message that removes the subscribers address from a subscription list when the HTML of the web link is loaded.

EX1004, 15:45-49.

175. A POSITA would have understood both this dependent claim and Bardsley's teaching above as referring to hyperlinks that unsubscribed a recipient just by a link being clicked. EX1001, 7:13-21. As Return Path described, such a link would open a webpage that simply informed the recipient that they had been unsubscribed. A notification-only page has no FORM elements; that is, it does not require the user to make choices, enter information, or click the "Submit" button. EX1009, 2 (depicting an unsubscribe confirmation landing page from Tiffany & Co.).

176. As I described above, A POSITA would have been aware that this type of unsubscription landing page was common, so any method for automating unsubscribing from an email list would need to process URLs that identified this type of page.

177. A POSITA would have understood that a method of processing this type of unsubscribe links would include identifying a lack of form elements on the webpage reached by activating the unsubscribe link; in other words, this would identify this webpage as a notification-only webpage that confirmed that the user had unsubscribed.

178. As I explained in Section VI.C (¶¶ 61-71), a POSITA would have been very familiar with the structure of HTML, including the relevant elements, tags, and

attributes necessary to enable user input, such as <FORM>, <INPUT>, “type = submit”, etc. A POSITA also would have been familiar with the basic pattern matching text processing methods such as regular expressions, which enabled searching through the HTML of a web page for a FORM element. Therefore, to ensure that Bardsley identifies a lack of form elements in the webpage that was downloaded simply requires code (e.g., in the well-known Python language) that searches through the downloaded HTML for FORM elements and, if it reaches the end of the HTML without finding a FORM element, then it reports that there was lack of form elements on the webpage.

179. A POSITA would have been motivated to design a system to accommodate known unsubscribe landing pages and also in view the CAN-SPAM rule. Under that rule, senders of commercial email were prohibited from requiring that email recipients wishing to unsubscribe “take any other steps except sending a reply electronic mail message or visiting a single Internet Web page.” 16 C.F.R. § 316.5 (2008). In addition, this rule would have motivated a POSITA designing a system to help users unsubscribe to accommodate both of those permitted options for unsubscribing.

B. Claim 11

11. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at
--

the URL; identifying only a single button element on the webpage; and executing the button on the webpage.

180. Claims 11 and 12 contain language about “executing” a button. A POSITA would have known that sometimes a webpage reached by an unsubscribe hyperlink would include an HTML FORM element with a single button (indicated by an INPUT tag) to be pressed; this single button could, for example, confirm that a user wanted to unsubscribe. A POSITA would have known that to accommodate such webpages, methods to unsubscribe users from emails that included links to such webpages would need to include an appropriate HTTP request to the webpage that resulted in the button being executed. I described how such an HTTP request (specifically, a POST request) would be generated in Section VI.C (¶¶ 62-63).

181. More specifically, Return Path depicts an example form pre-populated with a recipient’s information that included a single button (“Submit”) requiring a user to confirm that the user intended to unsubscribe:

travelocity

Stress-Free Family Getaways
Flight + Hotel From \$467

Customer Care | My Staff

Home Flights Hotels Cars/Rail Vacations Cruises Last Minute Deals

Remove From Promotional Email List

Please remove me from receiving ALL promotional email from Travelocity, which will include any subscriptions I may have to: Real Deals, Fare Watcher, and Easy Escapes.

Enter your first name here:

Enter your email address here:

[Security Guarantee](#) | [Read More Taxes & Fees Additional](#) |
© 1999-2004 Travelocity.com LP. All rights reserved. Travelocity and the Star Design are trademarks of Travelocity.com LP. Use of this Web site constitutes acceptance of the Travelocity [User Agreement](#) and [Privacy Policy](#). CST# 256572-00

EX1009, 2.

182. A POSITA would understand that a method of automating the use of unsubscribe links leading to such a single-button form would include both identifying the fact that a form included a single button and then executing the single button. This would be well within the capabilities of a POSITA. As I explained in Section VI.C (¶¶ 61-71), basic pattern matching techniques, such as the use of regular expressions, would enable the identification of a FORM element in an HTML page and the extraction of the information included in the form, including an INPUT button to submit the form's data, the server and program to which the data is to be sent, and the method (GET or POST) by which to send it. Once this is done, an HTTP request could be constructed following the standard structure I showed in Section VI.C (¶¶ 61-71) and then sent to the specified server.

183. As discussed at [16.7] and claims 1, 9, and 10, Bardsley discloses collecting unsubscribe links from messages and presenting them to the user for unsubscription, and automatically unsubscribing in response to the user's input. A POSITA implementing Bardsley would be aware of webpages such as those shown above and would be motivated to configure the system such that when the user chooses to unsubscribe from this subscription, the Bardsley system would execute the link, examine the page for a single button, and execute the button by sending the appropriate http request to the web page that leads to the button being executed, as I described above. This way, once the user has chosen to unsubscribe, the user does not have to actually view the page herself and execute the unsubscribe button.

C. Claim 12

12. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage.

184. A POSITA would have known that sometimes a webpage reached by an unsubscribe hyperlink would include a form having two buttons, one of which asks the user to confirm that she wanted to unsubscribe. While Return Path does not depict an unsubscribe landing page with only two buttons, it depicts landing pages with 0, 1, 4, and 5 buttons. EX1009, 2, 5. Given this disclosure, a POSITA would have understood that 2-button unsubscribe forms on landing pages were also an

option. See EX1010, 2-3 (depicting a two-button unsubscribe landing page form). For example, Return Path's Sears example depicts two radio buttons, and SUBMIT and CANCEL buttons:



The image shows a screenshot of a Sears unsubscribe landing page. At the top is the Sears logo with the tagline "where it begins™". Below the logo, a message reads: "We're sorry to see you go! If you have arrived at this unsubscribe page by accident, please [click here](#)." This is followed by the text: "You'll be missing out on many money-saving offers, including:". A bulleted list follows, listing: "• advance notice of sales", "• email-exclusive discounts", "• new and online-only merchandise", and "• store and site updates". Below the list, it says "Subscribed e-mail address: bmaloney@yahoo.com". Then, it asks: "Please choose one and click 'SUBMIT' to unsubscribe." There are two radio button options: the first is selected and reads "Remove me from Sears promotional e-mail communications", and the second is unselected and reads "Remove me from ALL Sears e-mail communications". At the bottom are two buttons: "SUBMIT" and "CANCEL".

Id., 5.

185. Given this disclosure, a POSITA would have understood that two-button unsubscribe forms on landing pages were an obvious option. EX1010, 2-3 (depicting a two-button unsubscribe landing page form). Indeed, the two basic types for buttons in HTML forms are a “Submit” button to submit the form’s data, and a “Reset” button to cancel without taking any action (EX1022, 203). Therefore, upon

identifying only two buttons on a webpage, a system would examine each button and identify that one of the button's TYPE attribute was "Submit".

186. As I discussed at claim 11, a POSITA implementing Bardsley would be motivated to configure the system to handle these types of unsubscribe links so that the process of unsubscribing could be automated by the system, thus freeing the user from the task of doing so. And as I explained at claim 11, configuring Bardsley's system in this way would be well within the capabilities of a POSITA, requiring only basic knowledge of HTML, HTTP, and text processing methods.

D. Claim 15

15. A system, as described in claim 14 wherein unsubscribing from, at least a single subscription further comprises: sending unsubscribe emails to sending emails of subscription messages; sending unsubscribe emails to mailto: address found in a list-unsubscribe header; processing one or more URLs found in a message to unsubscribe from subscriptions, wherein said processing comprises: retrieving the contents of a webpage associated with the URL; identifying a lack of form elements on the webpage; or identifying only a single button element on the webpage; and executing the button on the webpage; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage; or presenting the webpage to the user for manual unsubscription from the subscription.

187. Claim 15 adds to claim 14 the added elements of dependent claims 7-13, albeit the elements are separated by "or." A POSITA would understand this claim, reciting a list separated by "or" and "unsubscribing from, at least a single subscription" as requiring only one of these to occur. Nonetheless, Bardsley and Emigh in view of Return Path discloses each alternative as discussed at Ground 1,

claims 7-9 and 13-14, and Ground 4, claims 10-12. Note that a POSITA would understand claim 15's and 17's "retrieving the contents of webpage associated with the URL" to mean the same thing as claim 10's "downloading the webpage located at the URL" because downloading the webpage is a way to retrieve the contents of a webpage.

E. Claim 17

17. An apparatus as described in claim 16 wherein automatically unsubscribing from, at least a single subscription in response to a user request further comprises: sending unsubscribe emails to sending emails of subscription messages; sending unsubscribe emails to mailto: address found in a list-unsubscribe header; processing one or more URLs found in a message to unsubscribe from subscriptions, wherein said processing comprises: retrieving the contents of a webpage associated with the URL; identifying a lack of form elements on the webpage; or identifying only a single button element on the webpage; and executing the button on the webpage; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage; or presenting the webpage to the user for manual unsubscription from the subscription.

188. Claim 17 adds to claim 16 the added elements of dependent claims 7-13. Bardsley and Emigh and further in view of Return Path disclose each alternative as discussed at Ground 1, claims 7-9, 13-14, 16, and Ground 4, claims 10-12.

**XII. GROUND 5: CLAIMS 1, 3-4, 6-9, 13-14,
AND 16 ARE OBVIOUS OVER CASTELLI ALONE
AND CASTELLI IN COMBINATION WITH LASHBACK**

189. In my opinion, claims 1, 3-4, 6-9, 13-14 and 16 are obvious over Castelli alone. As discussed above, Castelli references the LashBack system, and a POSITA would understand Castelli and the LashBack website to be describing

related subject matter. Thus, the teachings of LashBack further support my opinion that the claims are obvious.

A. Castelli + LashBack

190. A POSITA implementing Castelli would have been motivated to look to LashBack. Castelli calls the privacy control system it describes “LashBack,” and the patent was assigned to LashBack, LLC. EX1005, 2:61-63, Fig. 1. The disclosures of the Castelli patent relate closely to the products described on the LashBack website. *Cf.* EX1005; EX1006.

191. A POSITA seeking to implement Castelli’s teachings would be motivated to look to LashBack’s website to learn additional implementation details about the system the patent was related to.

192. Further, a POSITA implementing Castelli’s teachings about identifying unsubscribe mechanisms would look to art like LashBack for its teachings about the same subject matter. A POSITA would have had a reasonable expectation of success in combining these references, as they describe either the same or very similar systems, and it would have been trivial for a POSITA using ordinary skill to combine their teachings. As further detailed below, the claims are obvious over Castelli alone as well as in combination with LashBack.

B. Claim 1

[1.1] A method of processing subscriptions comprising:
--

193. Castelli and LashBack disclose it. Castelli teaches “a centralized process for managing unsubscribe requests.” EX1005, Abstract. Its “system can unsubscribe an individual or group of individuals through the centralized process.” *Id.*; *see also id.* 1:14-17, 5:3-10, 6:22-37, 7:3-17. LashBack discloses a free Outlook toolbar that processes spam. EX1006, 1-3.

194. A POSITA would have understood that the emails that Castelli and LashBack describe as “spam” would often include “subscriptions.” A POSITA would have understood that there is not a firm boundary between emails that are and are not “spam.” A POSITA would understand that, for example, that while not all emails received via subscription lists are spam, that subscription lists are often used to generate spam email, and that sometimes people lose interest in a subscription list they subscribed to and then begin to consider its emails spam.

195. The ’342 patent’s Background section addresses this blurry line, describing how, e.g., “many people subscribe without realizing it,” and how a user may not have “intend[ed] to subscribe.” EX1001, 1:38-63.

196. LashBack defines spam as “unwanted email,” and describes its toolbar as unsubscribing people from “unwanted junk email.” EX1006, 1-3. Castelli specifically discusses identifying email as “spam,” which it defines as “a general reference to unsolicited bulk communications.” EX1005, 3:46-74; *see also* 1:20-29 (describing spam as “unsolicited advertisements”). In addition, Castelli describes

how its system could “be used for other types of unwanted electronic correspondence, not just traditional email,” including “any type of electronic communication . . . such as unsolicited mass mailings.” EX1005, 8:2-4. Castelli describes that some senders of what it describes as “spam” honor unsubscribe requests, indicating that they are not all “unscrupulous spammers.” *E.g., id.*, 3:63-4:5; 1:20-29; 1:56-2:2. Moreover, a POSITA would understand that, in the context of the ’342 patent, Castelli, and LashBack, no technical distinction existed between spam emails and emails that originated as a subscription. Therefore, Castelli and Lashback’s method to unsubscribe from a spam email message from a subscription list could be applied equally to any email message from a subscription list. To the extent there is any difference between spam emails and subscription emails, a POSITA would have been motivated to use Castelli and LashBack’s teachings to unsubscribe from subscription emails in the same ways they discuss unsubscribing from spam email in order to capture the same benefits.

[1.2] identifying one or more email accounts;

197. Castelli discloses that participants sign up to use the system by providing “the email address or email addresses 32 for which unsubscribe requests are to be processed.” EX1005, 3:25-29; *see also* EX1005, 5:3-10. LashBack discloses that email users can download an Outlook toolbar, which a POSITA would understand is an email application. EX1006, 1-3, 16-17. A POSITA would

understand that Castelli and LashBack users have associated email accounts, which would have to be identified in order to process subscriptions associated with that email account.

[1.3] accessing the mailboxes associated with the email accounts;

198. Castelli discloses that an application may be “installed with the user’s email client” that “automatically filters and determines spam based on key attributes of email messages.” EX1005, 5:3-10. Castelli discloses that such an application may automatically forward a copy of some emails which the user receives. *Id.* Castelli also recites that “[s]ome have proposed offering programs that tie into the email client that provide[] the option of automatically deleting spam and unsubscribing from the source.” EX1005, 2:3-5; *see also id.*, 3:48-55, 4:59-67. In view of these disclosures of, for example, “filtering” and “forwarding” email messages, a POSITA would have found it obvious that the system would also access the relevant mailboxes, since an email mailbox is where the email messages are stored. Although Castelli discloses this element alone, LashBack further discloses using its “unsubscribe toolbar” with email clients. EX1006, 1-3. Thus, a POSITA would understand Castelli and LashBack to disclose “accessing the mailboxes associated with the email accounts.”

[1.4] processing, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;

199. Castelli discloses that participants register with the system to identify and process messages that the participant may want to unsubscribe from. EX1005, 3:25-37. Castelli discloses a spam listener process that records information used to identify unsolicited emails. *Id.*, 3:48-54. The process parses spam messages to determine a spam report that includes, among other things, hyperlinks and identification information in the message. *Id.*, 4:32-58. Castelli further discloses that it can process multiple messages together in batches. Specifically, Castelli provides “[t]his process may be performed real time as reports or made, or requests could be queued and sent on a batch basis.” *Id.*, 4:67-5:2. Castelli further discloses that it “automatically filters and determines spam based on key attributes of email messages” at the user’s email client. *Id.*, 5:3-10.

200. Castelli discloses a “notification engine” that parses emails to identify messages having an “opt-out mechanism” (i.e., subscription messages that can be unsubscribed from) and further that the “notification engine” can be downloaded and executed at the user’s local client. EX1005, 4:6-20, 5:62-6:9; “The notification engine 8 retrieves queued requests 38 to unsubscribe from a centralized location through the centralized process and/or a client-based process.” EX1005, 6:10-12.

201. LashBack discloses offering an unsubscribe button that consumers can click to unsubscribe from spam emails, with a “Toggled” option that will only present the button to users when the software determines that the message is a

mailing list message from which the user can safely unsubscribe. EX1006, 1-3, 17-24.

202. A POSITA would understand that what a user can “opt out” of or “unsubscribe” from is a subscription list; therefore, they would understand that Castelli and Lashback are identifying messages that originate with a subscription list.

[1.5] processing, at least one email message associated with a subscription list to identify methods of unsubscribing from the subscription;

203. Castelli discloses parsing received messages associated with a subscription list (spam) to identify unsubscription methods. EX1005, 6:20-21; *see also, e.g., id.*, 5:62-6:9, 4:6-8, 4:47-58, 3:48-55; [1.1]. LashBack discloses that it processed emails using “multiple approaches” to identify methods of unsubscribing. EX1006, 8.

204. Castelli lists seven different types of searches in the email message or spam report—which is a compilation of information parsed from the email message—that “can be performed to determine the unsubscribe mechanism.” EX1005, 6:22-37, 4:32-36. For example, Castelli lists “searching for an email address that accepts unsubscribe requests.” *Id.*, 6:22-24. Castelli explains that “[i]f an email address is provided in the spam message along with key indicators in the email, this may be assumed to be an opt-out mechanism.” *Id.*, 6:38-40; *see also, e.g.,*

id., 6:47-67 (providing further details). LashBack recommends senders use a list-unsubscribe header or the word “unsubscribe” in unsubscribe email addresses or links to help “ensure LashBack is able to find [their] unsubscribe link.” EX1006, 8.

[1.6] wherein identifying methods of unsubscribing from the subscriptions further comprises: identifying list-unsubscribe headers in a message header; or

205. Castelli discloses both searching within a message for an email address or web page that accepts unsubscribe requests, and that some unsubscribe methods would be “embedded in the headers of email.” EX1005, 6:22-67; *see also* EX1006, 8. LashBack also teaches identifying list-unsubscribe headers. *See* [1.5] above.

206. A POSITA would have known that the only unsubscribe method that was “embedded in email headers” as recited by Castelli, or at least the only commonly known one, was the list-unsubscribe header field.

207. Castelli notes that its teachings were based on “currently known unsubscribe mechanisms [which] are typically email-based or web-based,” but that “new types of unsubscribe mechanisms” would likely be developed, including “mechanisms embedded into the headers of email or other third-party methods for unsubscribe not yet developed.” EX1005, 6:60-67.

208. A POSITA would have been aware of RFC 2369 (EX1015), which describes the List-Unsubscribe: email header field and taught that the field could

include a mailto: link that would allow an email recipient to unsubscribe by clicking the link to send an email to the address found in that mailto: link.

209. In addition, as applicant-admitted art, the Background of the Invention section of the '342 patent admits that “some mailers include a list-unsubscribe header which requires the user to respond to the mailer with certain keywords in the subject or body.” EX1001, 2:1-4. Given that this was a known method for unsubscribing, a POSITA would understand that one method of identifying methods for unsubscribing in an email would be to look in a message header for unsubscribe headers. A POSITA would have been very familiar with the use of list-unsubscribe headers in email messages from mailing lists, as they were commonly used by March 2011.

210. Given Castelli's broad disclosure of identifying email and web-based unsubscribe methods, including within email headers, and the existence of RFC 2369, a POSITA would understand Castelli's disclosure that some unsubscribe methods would be “embedded in the headers of email” to include identifying list-unsubscribe headers in a message header.

[1.7] identifying unsubscribe methods within the message body;
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211. LashBack recommends that email senders using email-based or web-based unsubscribe links “in the body of the email message” use the word

“unsubscribe” in their links or email addresses to ensure LashBack can find them. LashBack. EX1006, 8; *see also* [1.5]; ¶ 92.

212. Castelli disclosure that *sometimes* unsubscribe mechanisms would be found in email headers indicates that, on the other hand, *sometimes* they would be found in the email body. EX1005, 6:22-67. Similarly, Castelli discusses parsing spam emails in search of “an opt-out email address, form, or other mechanism . . . in the email or on the web pages referenced in the email.” *Id.*, 4:6-10, 3:48-55. A POSITA would understand such “parsing” as connoting processing the entire email and not just the headers, as, for example, a “form . . . in the email” or “web pages referenced in the email” would be in the message body.

213. The '342 patent's Background section admits that “some mailers require the user click an[] ‘opt out’ ... link *at the bottom of an email.*” EX1001, 2:4-6 (emphasis added). A POSITA would understand the link at the bottom of the email would be in the message body. Given that it was known that methods for unsubscribing could be located within the message body, a POSITA would have understood that it would be important to look there for such methods, in addition to looking in the email's header.

[1.8] presenting to the user the subscriptions previously identified: and

214. Castelli and LashBack disclose multiple ways of presenting subscriptions to users. Castelli recites that a service or application could allow users to see this information so the user could choose subscriptions to unsubscribe from:

[A] service or application could allow users to see a list of the stored spam attributes[such as] the email address of known spammers, the URLs of known products or advertisers, or other unique identifiers of spam. The user could then choose which advertisers or senders they want to post unsubscribe requests for based on this information.

EX1005, 7:27-36. *See also* [1.4]. Castelli’s references to “advertisers or senders” from which the user can “unsubscribe” makes it clear that these “advertisers or senders” were the sources of subscriptions.

215. LashBack teaches offering an unsubscribe button that consumers can click to unsubscribe from spam emails, with a “Toggled” option that will only present the button to users when the software determines that the user can safely unsubscribe from the message. EX1006, 1-3, 17-24.

[1.9] unsubscribing from, at least a single subscription in response to a user requests;

216. Castelli discloses that a “notification engine posts [an] unsubscribe request” based on a user’s choice of “which advertisers or senders they want to post unsubscribe requests for.” EX1005, 7:27-36. Castelli also discloses that a user’s request to unsubscribe from a subscription may be determined by presenting a user

with a list of options to choose from, (*id.*), or by the user flagging a specific email for unsubscription, (*e.g., id.*, 3:48-64, 4:6-24). Castelli teaches at least five different ways that its system can unsubscribe a user. *Id.*, 7:3-17.

217. LashBack teaches that its toolbar unsubscribes users from “unwanted junk email” when they click the “LashBack” button. EX1006, 1-3.

[1.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and

218. Castelli and LashBack disclose this element. See above, [1.7]. Castelli recites that “[e]ach Uniform Resource Indicator (URI) for each hyperlink in the reported message is determined, logged, and associated with the spam report by parsing the actual text of the message.” EX1005, 4:47-50; *see also id.*, 4:50-53. Castelli then explains that “each URL listed in the email is examined” as part of the process for identifying mechanisms for unsubscribing, and that each corresponding webpage is examined, “searching for opt-out mechanisms.” *Id.*, 6:47-49. Similarly, Castelli teaches that the spam emails are parsed to determine whether “an op-out email address, form, or other mechanism is found . . . on the web pages referenced in the email.” *Id.*, 4:6-10.

219. LashBack discloses searching for unsubscribe links “in the body of the email message.” EX1006, 8.

[1.11] identifying those hyperlinks as potential unsubscription methods.

220. As noted above, Castelli discloses that “each URL listed in the email is examined” as part of the process for identifying mechanisms for unsubscribing, and that each corresponding web page is examined, “searching for opt-out mechanisms.” EX1005, 6:47-49. LashBack also teaches that some links are unsubscribe methods or ways to reach an unsubscribe method.

Unsubscribe Links vs. Unsubscribe Mechanisms

It is important that the distinction between unsubscribe links and unsubscribe mechanisms be made. An unsubscribe mechanism is the final email address or web page that an unsubscribe request is submitted to, ignoring any parameters. An unsubscribe link is the link the user selected to reach that mechanism. For email-based unsubscribes, the unsubscribe mechanism and unsubscribe link are considered the same. However, in web cases, the link clicked in an email (the unsubscribe link) and the ultimate page the unsubscribe is posted to (the unsubscribe mechanism) is generally different. The following example clarifies the distinction between an unsubscribe link and an unsubscribe mechanism:

Step 1 - Consumer clicks the following link in an email to unsubscribe:
<http://www.domain.com/unsubscribe.htm>

Step 2 - Consumer is automatically redirected to another page to fill in an email address and submit a form to unsubscribe:
<http://www.domain.com/unsubscribeform.htm>

Step 3 - Consumer submits the unsubscribe form which is posted to:
<http://www.domain.com/processunsubscribe.cgi>

Step 4 - Consumer is taken to a confirmation page indicating a successful unsubscribe:
<http://www.domain.com/unsubsuccess.htm>

In the above scenario, <http://www.domain.com/unsubscribe.htm> is considered the unsubscribe link and <http://www.domain.com/processunsubscribe.cgi> is considered the unsubscribe mechanism.

EX1006, 8-10.

C. Claim 3

3. A method, as described in claim 1 wherein processing email messages to identify those originating with a subscription list further comprises: identifying subscriptions by the inclusion of list-unsubscribe headers in the email header.

221. Castelli and LashBack disclose the added element of claim 3. See above, [1.6]. Castelli teaches determining spam “based on key attributes of email messages,” and that some unsubscribe methods would be “embedded in the headers of emails.” EX1005, 5:3-10; 6:22-67. A POSITA would have thus understood Castelli and LashBack to disclose that one method of identifying subscription emails was the inclusion of a list-unsubscribe header. *See also* [1.6].

222. Given that including a list-unsubscribe header was a well-known method employed by some senders of mass emails to allow recipients to unsubscribe, and that there would be no reason to include such a header in an email that was not a subscription-type email, a POSITA would understand that one way to identify subscriptions/emails originating with an email list would be to look in the message header for the list-unsubscribe header field.

D. Claim 4

4. A method, as described in claim 1 wherein processing email messages to identify those originating with a subscription list further comprises: verifying senders are not included in an Unsubscribe Blacklist.

223. Claim 4 is the one claim where LashBack expressly discloses a feature of the claim that is not expressly disclosed by Castelli. Nonetheless, the claim is obvious over Castelli, and the combination of Castelli and LashBack disclose claim 4.

224. Castelli describes determining which parties abuse unsubscribe requests and “suppressing unsubscribe requests for users from being made to these mechanisms.” EX1005, 3:63-4:5. This teaching supports that a POSITA would have known that, for some email senders, using the unsubscribe method such senders provided in their emails would not be effective to unsubscribe a user and instead would result in a user receiving more unwanted emails. Because Castelli teaches “suppressing unsubscribe requests” from being made to such senders, Castelli renders this claim obvious.

225. In addition, a POSITA would have known that one way to identify spam or subscription emails would have been to use negative screening list or blacklist, as taught by LashBack. EX1006, 13-16.

226. LashBack taught that “[s]ome spammers make fake unsubscribe buttons/links and use clicks to determine which email addresses are valid – so that they can continue to spam them.” EX1006, 3. LashBack maintained a list it called the Unsubscribe Blacklist, which were senders it described as “unsubscribe abusers” who “send email to addresses which have been harvested from suppression lists.” *Id.*, 13. A POSITA would understand a suppression list as referring to a list of unsubscribe requests. EX1018.

227. A POSITA implementing Castelli would have been motivated to incorporate LashBack’s teachings of an “Unsubscribe Blacklist” to help determine

whether using an unsubscribe method in an email would be an effective way to unsubscribe or would instead result in a user receiving unwanted or harmful messages from a certain sender. EX1006, 3-4. A POSITA would have had a reasonable expectation of success in comparing senders of email messages with those senders on a blacklist, as it would have required only basic computational methods as discussed in Section VI.C (¶¶ 49-55, 64-71).

E. Claim 6

[6.1] A method, as described in claim 1 wherein identifying unsubscribe methods within the message body further comprise: collecting hyperlinks which are associated with images; and

228. Although Castelli and LashBack do not disclose hyperlinks associated with images, this element would have been obvious over Castelli (with or without LashBack). A POSITA implementing Castelli would have been motivated to, and reasonably expect to be able to accommodate image hyperlinks for the same reasons discussed with respect to claim 6 of the Bardsley reference.

229. Specifically, a POSITA would understand that Castelli's disclosure of collecting unsubscribe hyperlinks would include collecting images associated with hyperlinks. A POSITA would have known that an unsubscribe link could have an associated image. In fact, EX1019 explicitly discourages the use of images as unsubscribe hyperlinks, which shows that images were in fact being used for this

purpose in a high enough volume to warrant attention. A POSITA would be motivated to make a system to catch as many subscription emails as possible.

230. As discussed above, associating hyperlinks with images has been possible and standard since the earliest days of HTML and the World Wide Web. For example, as I described in Section VI.C (¶¶ 56-60), “HTML FOR DUMMIES” provides a detailed explanation of how any hyperlink can have an associated image. EX1022, 186-91.

231. As also discussed above, a POSITA also would have known that advertisers and other senders of subscriptions and unsubscription links did send unsubscribe links in images, and that it would therefore be useful for a system that monitors such messages to be able to recognize links in images. EX1019 (recognizing the possibility of using images as unsubscribe hyperlinks, while discouraging doing so to avoid image suppression); *see supra* p. 63, note 2; *see also* [1.10].

232. Castelli already discloses collecting hyperlinks to identify unsubscribe methods: “[e]ach Uniform Resource Indicator (URI) for each hyperlink in the reported message is determined, logged, and associated with the spam report by parsing the actual text of the message.” EX1005, 4:47-50; *see also id.*, 4:50-53. Since a standard feature of hyperlinks is that they may have an associated image (as I

described above), then Castelli collecting unsubscribe links would also entail collecting the subset of unsubscribe links that happened to have associated images.

233. As discussed above, functionality that looks for hyperlinks associated with images is no different than looking for text-based hyperlinks. Thus, since Castelli discloses collecting hyperlinks as discussed above, a POSITA would understand Castelli would also collect links associated with images. For example, implementing Castelli to search for such links would have been trivial to a POSITA as it requires merely searching for text of the form `<a href = some-url.html> ...</a>` when examining the text of the email body. The “...” indicates the remaining content that can be included in a hyperlink, including text and/or image to be displayed. I provided multiple examples of the HTML format of hyperlinks in ¶¶ 56-58, including examples that showed hyperlinks with associated images, and noting that pattern matching techniques like regular expressions can also extract matching content (such as the URL identified by the href attribute) for further processing.

[6.2] identifying those hyperlinks as potential unsubscription methods.

234. Castelli and LashBack disclose identifying any unsubscribe information in an email, regardless of type. *See* [1.7]. A POSITA would understand Castelli and LashBack’s use of unsubscribe hyperlinks as also identifying them as potential unsubscription methods.

F. Claim 7

7. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: sending unsubscribe emails to sending email of subscription messages.

235. Castelli discloses this added element of claim 7, teaching identifying an unsubscribe mechanism by “searching for key attributes indicative that a reply action to the initial sending email address is required for unsubscribe.” EX1005, 6:25-26. Castelli also teaches that one way of unsubscribing would be “sending an email on the behalf of the reporting email address to the email address determined in the mechanism search process.” *Id.*, 7:5-7; *see also, e.g., id.*, 6:38-46, 6:60-7:2. A POSITA would understand the added element of claim 7 to refer to sending unsubscribe emails to the source of the subscription.

G. Claim 8

8. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: sending unsubscribe emails to mailto: address found in a list-unsubscribe header.

236. Castelli discloses the added element of claim 8. Castelli discloses searching for an email address accepting unsubscribe requests, and that some unsubscribe methods would be “embedded in the headers of emails.” EX1005, 6:22-67. As discussed at [1.6], a POSITA would have known that the only unsubscribe method embedded in email headers, or at least the only commonly known one, was a list-unsubscribe header and that list-unsubscribe headers sometimes included a

“mailto” link specifying an email address to receive an unsubscribe request. Castelli also teaches that one way of unsubscribing would be “sending an email on the behalf of the reporting email address to the email address determined in the mechanism search process.” *Id.*, 7:5-7; *see also, e.g., id.*, 4:47-53, 6:38-49, 6:60-7:2.

H. Claim 9

9. A method, as described in claim 1 wherein unsubscribing from a subscription comprises: processing one or more URLs found in a message to unsubscribe from subscriptions.

237. Castelli discloses the added element of claim 9. See above, [1.7], [1.9]. Castelli teaches that “[i]f an opt-out . . . form, or other mechanism is found . . . on the web pages referenced in the email, then an opt-out request can be submitted for each user through the mechanism provided by the advertiser.” EX1005, 4:8-12. Castelli teaches at least three ways of automatically unsubscribing a user by processing URLs:

- posting an email address to a web-based removal form . . . ;
- navigating an email preference web page or sequence of web pages and performing actions . . . ; and
- navigating to a specific hyperlink in the message, which completely handles the unsubscribe process without additional variable input.

Id., 7:3-17. Castelli teaches that an “automated web crawling process can be used for determining complex unsubscribe processes that do not require input of an email address, but the setting of email preferences through a web site.” *Id.*, 6:56-59.

I. Claim 13

13. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; presenting the webpage to the user for manual unsubscription from the subscription.

238. A POSITA would have understood the added element of claim 13 as referring to hyperlinks that unsubscribe a recipient by activating the link. EX1001, 7:13-21. As discussed at claim 13 in Ground 1, a POSITA would understand that activating unsubscribe links would trigger a series of steps, including opening a browser and downloading the webpage pursuant to the http protocol. A POSITA would understand that the processing of URLs as discussed at claim 9 would include opening a browser, navigating to the URL, and downloading the webpage located at the URL. A POSITA would further understand that some unsubscribe forms would require manual unsubscription. That is, a POSITA would have known that not all unsubscribe forms could be entirely automated, such as those with a CAPTCHA, and that as a result, some forms would need to be presented to a user for manual unsubscription. EX1020, 215 (depicting an unsubscribe form that required entering a CAPTCHA). Other examples that might require manual unsubscription might

include unsubscribe forms that asked a user to do something more difficult than, for example, selecting a single button labeled “submit” to confirm that the user wanted to unsubscribe. Indeed, Castelli teaches that [p]referably, a computer program automatically determines the unsubscribe function, although the function could also be determined manually.” EX1005, 7:20-22.

J. Claim 14

[14.1] A computing system configured to process subscriptions to list servers, said configuration comprised of:

239. Castelli discloses this element. As discussed above, “subscriptions to list servers” refers to subscription messages received from an automated email distribution system. Castelli discloses that its subscription messages (spam) originate from advertisers, which a POSITA would understand are processed via an automated distribution system. EX1005, Fig. 1, Item 26, 2:60-3:34.

240. Castelli teaches that its processing can be performed by a notification engine located on a user’s computer or a centralized system including one or more servers. EX1005, 4:6-20, 5:62-6:9. Castelli teaches that “[p]referably a computer program automatically determines the unsubscribe function.” *Id.*, 7:20-21; *see also id.*, 3:48-62, Fig. 1 (depicting computers and servers).

241. Castelli renders obvious the rest of 14 as follows:

[14.2] identifying one or more email accounts;

[14.3] accessing the mailboxes associated with the email accounts; and

[14.4] processing, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;

242. Castelli and LashBack disclose elements [14.2]-[14.4] for the same reasons discussed at [1.2]-[1.4].

[14.5] processing the body text of at least one email message associated with a subscription list to identify mailto: and URLs to utilize to unsubscribe from the subscription;

243. As discussed at [1.7] and [1.10], Castelli and LashBack disclose identifying hyperlinks (URLs) found in the body of emails to use to unsubscribe. As discussed at claim 8, a POSITA also would have understood that a list-unsubscribe header field may include a mailto: link. A POSITA seeking to identify unsubscribe methods in emails would have known that sometimes unsubscribe methods were email-based, including “mailto” links, and that sometimes “mailto” links would be included in an email body. *E.g.*, EX1006, 8; EX1009, 2. A POSITA would have been motivated to incorporate such teachings into Castelli and LashBack in order to look for such links, as doing so would allow it to process emails more effectively. A POSITA designing a system to help a user automatically unsubscribe from emails would have been motivated to design the system to look for unsubscribe links and methods wherever they were known to be located. The more unsubscribe methods that such a system could identify, the more emails that the system could potentially unsubscribe a user from.

[14.6] presenting to a user the subscriptions previously identified; and
[14.7] unsubscribing from, at least a single subscription in response to a user request;
[14.8] presenting to the user the subscriptions previously identified; and
[14.9] unsubscribing from, at least a single subscription in response to a user requests;
[14.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and
[14.11] identifying those hyperlinks as potential unsubscription methods.

244. Castelli and LashBack disclose elements [14.6]-[14.11] for the same reasons as discussed at [1.8]-[1.11].

K. Claim 16

245. Castelli discloses or renders obvious claim 16, alone or in combination with LashBack, as follows:

246. Castelli and LashBack render obvious claim 16:

[16.1] A computing apparatus for processing subscriptions to list servers,
[16.2] wherein said apparatus: identifies one or more email accounts;
[16.3] accesses the mailboxes associated with the email accounts
[16.4] and processes, at least a subset of the email messages in the mailboxes to identify those originating with a subscription list;
[16.5] processes the body text of at least one email message associated with a subscription list to identify mailto: and URLs to utilize to unsubscribe from the subscription;
[16.6] presents to the user the subscriptions previously identified; and

247. Castelli and LashBack disclose elements [16.1]-[16.6] for the same reasons as discussed above at [14.1]-[14.6].

[16.7] in response to an initiation command from a user, automatically unsubscribes from, at least a single subscription;

248. Castelli and LashBack disclose this element for the same reasons as discussed above at [1.9]. A POSITA would understand Castelli's and LashBack's disclosures of effectuating the unsubscription in response to the user's input (initiation command) to occur automatically. EX1005, 2:26-29 (disclosing "process for automatically performing unsubscribe actions"), 3:48-64, 4:6-24, 7:27-36; EX1006, 1-3.

[16.8] presenting to the user the subscriptions previously identified; and

[16.9] unsubscribing from, at least a single subscription in response to a user requests;

[16.10] wherein identifying unsubscribe methods within the message body further comprises: collecting unsubscribe hyperlinks from the message body; and

[16.11] identifying those hyperlinks as potential unsubscription methods.

249. Castelli and LashBack disclose elements [16.8]-[16.11] for the same reasons as discussed above at [14.8]-[14.11]

**XIII. GROUND 6: CLAIM 2 IS OBVIOUS OVER
CASTELLI AND LASHBACK IN VIEW OF EMIGH**

A. Claim 2

[2.1] A method, as described in claim 1 wherein processing email messages further comprises: identifying non-subscriptions by text prepended to subjects; and/or

250. Castelli alone, as well as with LashBack render this claim obvious, in further view of Emigh. Castelli, LashBack, and Emigh would have been a natural combination because they all relate to methods of managing electronic messages from mailing lists. Castelli discloses examining messages to identify subscription messages, and a POSITA implementing Castelli would have been motivated to determine non-subscription messages, as doing so would aid in the analysis of whether a message is a subscription message. A POSITA would have understood that subscriptions and non-subscriptions were the inverse of each other, and that an email that was not a subscription was a non-subscription. A POSITA would have understood that being able to effectively identify non-subscription emails could aid in the identification of subscription emails.

251. A POSITA implementing Castelli (with or without LashBack) would have been motivated to look to other references, such as Emigh, for further details regarding identifying non-subscriptions. Because an important aspect of Castelli is being able to identify subscription messages, a POSITA would have been motivated to also consider identifying characteristics of non-subscriptions, as a POSITA would

have known that email messages that are not subscription messages would be non-subscriptions. Being able to affirmatively identify either type of message more accurately would help identify both types. A POSITA further understood that it was common sense to check the negative of something to rule out whether something is or is not of interest for the system to consider. A POSITA understood that doing so in this context ensures that messages identified and processed as a subscription message is in fact a subscription message as checking for non-subscriptions weeds out any false positives.

252. One known method for identifying non-subscriptions was to look at text prepended to subjects. A POSITA would have known that markers were typically inserted by mailers in response to actual users taking actions to reply to or forward a message. Here, a POSITA would have known that “Re” and “Fw:” were commonly prepended to subjects to indicate that emails were replies or forwards. A POSITA by 2011 would have personally sent and received many messages with the subjects prepended with “Re” and “Fw,” and have been well familiar with what such text prepended to subjects meant. *See, e.g.*, EX1017 (U.S. Pat. No. 7,644,126), 7:11-16 (“[I]t is common to prepend a predictable text string to the subject line 308 to indicate that the subsequent message is a reply or forward. Commonly, the term “Re:” is used to indicate a reply and the term “Fw:” is used to indicate a forward.).

253. A POSITA would also have known that mailing list emails were not commonly sent out by mailing list servers as forwards or replies, and that it was also common for an email recipient of a mailing list email to then forward the message on to someone else, which would potentially convert the message into effectively a non-mailing list email, as it would not have been sent directly from a mailing list server. As a result, a POSITA would know that such prepended text would likely identify non-subscriptions.

254. Additionally, a POSITA would have been motivated to look to Emigh for additional details about identifying whether messages were subscriptions. Emigh taught examining the subject line of emails for text prepended to subjects as part of identifying non-subscriptions and subscriptions. For example, a POSITA would have understood Emigh's teachings about determining "whether a reply message is a reply to an actual message sent by a message recipient" as taking into consideration the "RE:" component of a subject line when identifying messages that were or were not spam. EX1007, 3:44-54; *see also id.*, 7:49-52 (teaching that subject lines prepended with "LIST-ID" indicated a mailing list email). A POSITA would understand these to be an example of identifying a message that is a non-subscription.

255. Emigh's statement about "whether a reply message is a reply to an **actual message sent by a message recipient**" (emphasis added) is consistent with

the fact that a POSITA knew that sometimes a sender of spam emails would add “Re:” to the subject line of a spam message to try to improve their odds of getting past a spam filter because the spam senders would take into consideration such subject lines in a very simple way, and assume that a “Re” at the beginning of the subject line indicated that the email was a desired email. Emigh recognized this and taught that, when an apparent reply message was received—which a POSITA would understand to mean one that had “Re:” at the beginning of the subject line—that the message could be compared to other information, such as information about emails sent by the user, in order to determine whether it “is a reply to an actual message sent by a message recipient.” *Id.*, 3:44-54.

256. As discussed above, an example illustrates how a POSITA would have understood this to work. For example, an email’s subject line in a recipient’s inbox might be “Re: Meeting next Tuesday.” Emigh’s system would have access to the “actual messages sent by the message recipient”, and thus would know whether an email with the subject “Meeting next Tuesday” had previously been sent by the user. Emigh’s system would take such information into consideration when determining whether a received email with a subject line that began with “Re” was a “reply to an actual message sent by a message recipient”.

257. Determining the use of “Re” in subject lines is an example of the basic processing of text data that I discussed above in Section VI.C (¶¶ 49-55, 64-71). A

POSITA implementing Castelli would be motivated to incorporate the teachings of Emigh with Castelli's expressed disclosure of examining subscription messages. Adding such functionality to examine prepended text to subjects in emails is an example of the use of text data discussed above which required ordinary skill and for which a POSITA would have had a reasonable expectation of success.

258. Because Castelli and LashBack teach automatically processing mailing list emails, the ability to accurately identify such emails would be important to a POSITA. A POSITA would have understood that the systems described in Castelli and LashBack would be less effective if they only were able to automatically identify a small fraction of the subscription emails a user received, or if they frequently misidentified non-subscription emails as subscriptions and offered to unsubscribe a user from emails sent by, for example, their grandmother or assistant. Castelli, LashBack, and Emigh would have been a natural combination because they all relate to methods of managing electronic messages from mailing lists

[2.2] and/or identifying non-subscriptions by user address.

259. As discussed above, because the '342 consistently refers to an email recipient as the "user," a POSITA likely would have understood this claim as covering using the recipient's address to identify non-subscriptions. The '342 patent discloses identifying non-subscriptions based on the recipient's email address's location in the email header ("CC" or "BCC" vs. "TO"). EX1001, 4:51-55.

260. A POSITA would have known about mailing list senders typically putting recipients in the “TO” field, and that the presence of a recipient’s address in the “CC” or “BCC” field would have suggested that the email was a non-subscription. For example, a POSITA likely would have been subscribed to some mailing lists and would have had the opportunity to observe their characteristics. For example, a MailChimp email guide explains that it was a newbie mistake for mailing list senders to CC copies of a message to their customers. EX1023, 8. The guide explains that, instead, “[w]hen an email marketing system (like MailChimp) sends your campaign, we take your message and send it one at a time to each recipient on your list (really, really fast).” *Id.*, 9.

261. A POSITA would have known that the address of the user of such a system could be relevant to determining whether an email was a non-subscription. There are only so many characteristics to consider about an email in attempting to automate a determination about whether it originated with a subscription list. It would have been common knowledge to a POSITA that, for example, a user’s address would be less likely to be located in the CC or BCC field if the email was sent by an automated mailing list system such as MailChimp.

262. Additionally, Emigh taught additional ways to consider the address of a message recipient in determining whether a message originated from a mailing list. For example, Emigh teaches that “[e]xamples of other indications that a message

was processed by a mailing list include a message ID originated from a domain other than that of the sender (for example, *the domain of the message addressee*), a precedence of ‘bulk,’ and the presence of *the recipient’s domain* early in the delivery path.” EX1007, 7:35-40; (emphasis added); *see also id.*, 7:46-8:52. A POSITA would have understood that the combination of Emigh’s teachings with Castelli would naturally include and result in identifying messages that did not originate with a mailing list. For the reasons discussed above, a POSITA would have been motivated to make this combination due to, for example, the need to effectively identify subscription emails, and a POSITA would expect this combination to be successful for the reasons given above.

263. While claim 2 recites “user address,” Patent Owner might contend that this claim was intended to recite “sender address.” *See, e.g.*, EX1001, 4:51-5:32 (providing disclosure relevant to this claim). The ’342 specification discusses comparing “the sender’s Internet Protocol (“IP”) address . . . against a list of known harmful senders” to identify whether it is a subscription email. *Id.*, 5:4-5.

264. Therefore, to the extent this refers to identifying non-subscriptions by a sender’s address, a POSITA would have known that using whitelists of known non-spam senders was well known in the art. *See, e.g.*, EX1001, 4:48-50. Emigh, for example, discloses using a whitelist, which it describes as being a list of senders known (EX1007, 2:66-3:8); *see also id.*, 10:50-67, 9:23-14:67. A POSITA

understood that if a sender's address was on a whitelist, that the sender was less likely to send wanted email messages (i.e., non-subscription messages) as opposed to subscription messages that could be unsubscribed from. Thus, regardless of how the claim is interpreted, it would have been obvious over Castelli and optionally also LashBack, in view of Emigh.

265. Emigh also taught about blacklists: “[a] blacklist may include a list of message attributes, such as a sender's identity, that may be grounds for automatic categorization of a message as spam.” EX1007, 18:13-16. The MailChimp's Field Guide discusses blacklists, and how server administrators used them to identify senders of spam messages. EX1023, 28.

266. As discussed above, a POSITA would have known that one method of identifying at least some subscription or non-subscription emails was to compare the email sender's address—which would be a key attribute of the email message—with blacklists of known spammers and whitelists of approved senders. *See, e.g.*, EX1001, 5:4-16 (acknowledging that blacklists were known). Additionally, Emigh explicitly taught the use of blacklists and whitelists.

267. Incorporating this feature into Castelli is an example of the basic processing of text data that I discussed above in Section VI.C (¶¶ 49-55, 64-71). A POSITA implementing Castelli would be motivated to incorporate Emigh's disclosure of blacklists and whitelists to aid in Castelli's determination of whether a

message was wanted or not wanted by the user. Examining various email header fields to identify sender and recipient email addresses, recording email addresses entries on a blacklist and whitelist, and then comparing the email address information in a specific message to the whitelist and blacklist are simple text processing computational tasks which required ordinary skill and for which a POSITA would have had a reasonable expectation of success.

**XIV. GROUND 7: CLAIM 5 IS OBVIOUS OVER
CASTELLI AND LASHBACK IN VIEW OF HILL**

A. Claim 5

268. Claim 5 is unpatentable as obvious over Castelli and LashBack in view of Hill. A POSITA would have been motivated to combine Hill with Castelli (and LashBack) for the same reasons as discussed about at Ground 3 regarding combining Hill with Bardsley and Emigh. Hill discloses methods for identifying hyperlinks in electronic messages. *See, e.g.*, EX1008, 12:1-28. A POSITA implementing Castelli (or Castelli in view of LashBack) would have been motivated to look to art such as Hill in order to better identify which hyperlinks in an email were unsubscribe hyperlinks.

[5.1] A method, as described in claim 1 wherein identifying unsubscribe methods within the message body further comprises: searching for unsubscribe text in a message body;
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269. Castelli alone or alternatively in combination with LashBack discloses this element.

270. A POSITA would have known that Castelli’s parsing of an email message to identify unsubscribe methods would include looking for “unsubscribe text.”

271. Castelli states that “[i]f an email address is provided in the spam message along with key indicators in the email, this may be assumed to be an opt-out mechanism.” EX1005, 6:38-40 (emphasis added). Castelli’s reference to an “opt-out mechanism” means an unsubscribe method. Both the email address and the key indicators could be mapped to the recited “unsubscribe text.” For example, a POSITA would have known that one “key indicator” would be unsubscribe text such as the word “unsubscribe,” and that some unsubscribe mechanisms would be located in the message body. Thus, a POSITA would understand Castelli and LashBack disclose this element. *See also* [1.5], [1.7].

272. Similarly, LashBack teaches that, when a sender includes either an email-based or web-based unsubscribe method in the body of an email, that the sender was recommended to include the word “unsubscribe” in the unsubscribe link. EX1006, 8-9.

[5.2] collecting hyperlinks which begin within a threshold amount after the unsubscribe text; and
--

273. Castelli and LashBack render this element obvious in combination with Hill.

274. A POSITA would have understood “a threshold amount” as meaning that a hyperlink needed to occur within a certain number of characters of unsubscribe text. EX1001, 6:19-59. A POSITA would have known that one way to locate potential unsubscribe hyperlinks would be to look for hyperlinks that occurred after unsubscribe text, within a threshold.

275. As noted, Castelli discloses that an unsubscribe email address being provided “along with” the key indicators could be assumed to be an opt-out mechanism. It would have been obvious to a POSITA that the same analysis would apply to unsubscribe hyperlinks. This teaching in Castelli supports that an unsubscribe mechanism could be identified by its proximity to unsubscribe text. Consistently, LashBack’s recommendations to subscription email senders to include the word “unsubscribe” in any email-based or web-based unsubscribe method, EX1006, 8-9, is also a teaching about identifying unsubscribe mechanisms by their proximity. As a result, this added element would have been obvious to a POSITA in view of Castelli alone or Castelli in combination with LashBack.

276. Although Castelli and LashBack disclose collecting unsubscribe links, they do not expressly disclose doing so in the precisely claimed way, “within a threshold amount after the unsubscribe text. Hill does, however, as discussed above with regard to Ground 3., A POSITA implementing Castelli and LashBack would have been motivated to incorporate Hill’s teachings regarding analyzing text within

one to fifty characters of a URL as a part of identifying unsubscribe methods, in order to more accurately identify such methods. Incorporating such technique would have taken ordinary skill and a POSITA would have had a reasonable expectation of success to do so for the same reasons as discussed above with regard to Ground 3.

277. A POSITA would have been motivated to incorporate Hill's teachings as part of identifying unsubscribe methods, to more accurately identify such methods. For example, Hill discloses identifying hyperlinks in electronic messages by looking for certain text within a certain threshold of a hyperlink

The text of the message within from *one to fifty characters of the occurrence of the URL* includes at least one case-insensitive string from the group of you; check, find; see; visit; try; look and recommend 72. If any of the conditions of this second set of conditions is true, then the URL mention is classified as an evaluation.

EX1008, 7:55-61 (emphasis added).

278. A POSITA would have known that marketing emails often included a phrase like "click here to unsubscribe" near an unsubscribe link, such as immediately after the link or within a few words after it. *See, e.g.*, EX1023, 31 (explaining emails "might say something like, 'click here to unsubscribe'").

279. A POSITA would have known that one way to locate potential unsubscribe hyperlinks would be to look for hyperlinks that occurred after the word "unsubscribe," within a threshold.

280. A POSITA would have been motivated to look to Hill as a way to aid in determining whether a hyperlink is an unsubscribe hyperlink, by incorporating Hill's disclosure regarding how close a certain text indicator is to a URL. A POSITA would know that a URL located within a few words of text like "unsubscribe" or "opt out" would likely be an unsubscribe hyperlink. A POSITA implementing Castelli or Castelli in combination with LashBack would want to ensure that unsubscribe hyperlinks were accurately identified. Incorporating such a technique would have taken ordinary skill and a POSITA would have had a reasonable expectation of success to do so, since it would require familiarity with only the basic text processing computational methods, as described above in Section VI.C (¶¶ 49-55, 64-71).

[5.3] identifying those hyperlinks as potential unsubscription methods.

281. Castelli and LashBack disclose this element for the same reasons discussed at Ground 5, [1.11].

282. As noted above, Castelli discloses that "each URL listed in the email is examined" as part of the process for identifying mechanisms for unsubscribing, and that each corresponding web page is examined, "searching for opt-out mechanisms." EX1005, 6:47-49. LashBack also teaches that some links are unsubscribe methods or ways to reach an unsubscribe method.

Unsubscribe Links vs. Unsubscribe Mechanisms

It is important that the distinction between unsubscribe links and unsubscribe mechanisms be made. An unsubscribe mechanism is the final email address or web page that an unsubscribe request is submitted to, ignoring any parameters. An unsubscribe link is the link the user selected to reach that mechanism. For email-based unsubscribes, the unsubscribe mechanism and unsubscribe link are considered the same. However, in web cases, the link clicked in an email (the unsubscribe link) and the ultimate page the unsubscribe is posted to (the unsubscribe mechanism) is generally different. The following example clarifies the distinction between an unsubscribe link and an unsubscribe mechanism:

Step 1 - Consumer clicks the following link in an email to unsubscribe:
<http://www.domain.com/unsubscribe.htm>

Step 2 - Consumer is automatically redirected to another page to fill in an email address and submit a form to unsubscribe:
<http://www.domain.com/unsubscribeform.htm>

Step 3 - Consumer submits the unsubscribe form which is posted to:
<http://www.domain.com/processunsubscribe.cgi>

Step 4 - Consumer is taken to a confirmation page indicating a successful unsubscribe:
<http://www.domain.com/unsubsuccess.htm>

In the above scenario, <http://www.domain.com/unsubscribe.htm> is considered the unsubscribe link and <http://www.domain.com/processunsubscribe.cgi> is considered the unsubscribe mechanism.

EX1006, 8-10. A POSITA would understand Castelli's collecting and use of unsubscribe hyperlinks as also identifying them as potential unsubscription methods, and that this would apply to hyperlinks within a threshold amount.

XV. GROUND 8: CLAIMS 10-12, 15, AND 17 ARE OBVIOUS OVER CASTELLI AND LASHBACK IN VIEW OF RETURN PATH

283. Castelli and LashBack renders obvious claims 10-12, 15, and 17 in combination with Return Path.

284. A POSITA would have understood the "processing" in claims 9-13 of the '342 patent is used consistently with its plain and ordinary meaning. As the '342 specification explains, "Other unsubscribe actions for subscriptions are controlled via a website. In such systems the user would need to visit a specific Universal

Resource Locator ‘URL’ and may be required to take further actions such as submitting their own email address, or clicking on a ‘Unsubscribe’ button, etc. to affect the email settings.” EX1001, 2:65-3:3.

285. A POSITA would have further understood that “processing a URL” involves “visiting” or navigating to the site reached via the URL and then possibly taking another action as specified by the site reached via the URL. This is consistent with the ’342 passage starting at 7:13, which states that: “To process the URLs in an automated fashion, the content of the selected URL is downloaded (410). ...” EX1001, 7:13-8:14.

286. Given this understanding, we see that this is precisely what Castelli discloses, including navigating to a page identified by a URL and possibly taking another action as specified by the page reached by the URL:

Accordingly, the notification engine 18 can automatically post unsubscribe requests according to any one or more of the following mechanisms: ...

(3) navigating an email preferences web page or sequence of web pages and performing actions as determined by the mechanism search process on behalf of the reporting user [i.e., an additional action required];

(4) navigating to a specific hyperlink in the message, which completely handles the unsubscribe process without

additional variable input; [i.e., no additional action is required]...

EX1005, 7:2-15.

287. A POSITA implementing Castelli and LashBack would have been motivated to investigate examples of what types of unsubscribe landing pages were common, in order that Castelli's system might be able to, for example, "navigat[e] an email preference web page or sequence of web pages and perform[] actions" to unsubscribe someone. EX1005, 7:10-13. A POSITA seeking to implement an automatic unsubscribing system as described in Castelli and LashBack would have recognized that the system would need to accommodate itself to existing types of unsubscription processes. As discussed above with regard to Ground 4, Return Path provides specific examples of unsubscribe webpages and form elements that a POSITA implementing Castelli would have been motivated to accommodate.

288. A POSITA also would have known that some webpages for setting a user's subscription preferences would include a single button to be pressed to, for example, confirm that the user wanted to unsubscribe. For example, the 2008 Return Path study provided a screen capture of a preference page reached by a link from a Travelocity email, which included a single button labeled "submit", which confirmed that the user wanted to unsubscribe from Travelocity email messages. EX1009, 2.

The Return Path study stated that this landing page was “conveniently pre-populated” with the user’s name and email address. *Id.*

289. The Return Path study also provided an example of a Sears’ unsubscribe landing page that had four HTML INPUT elements (EX1009, 5). As I explained in Section VI.C (¶¶ 61-71), a POSITA would have known that INPUT elements are standard components that may be included within an HTML FORM element. As shown below, two of these input elements were radio buttons that defined a choice for a user, and the other two were button elements that displayed clickable buttons. One of the buttons was labeled “Submit” and another was labeled “Cancel” (also standard for HTML buttons), as shown below:

Sears
where it beginsSM

We're sorry to see you go! If you have arrived at this unsubscribe page by accident, please [click here](#).

You'll be missing out on many money-saving offers, including:

- advance notice of sales
- email-exclusive discounts
- new and online-only merchandise
- store and site updates

Subscribed e-mail address: **bmalonefry@yahoo.com**

Please choose one and click "SUBMIT" to unsubscribe.

☒ Remove me from **Sears promotional** e-mail communications

☐ Remove me from **ALL Sears** e-mail communications

EX1009, 5.

290. The Return Path study also provided an example of a Clinique unsubscribe landing page that had five form elements, including one “Submit” button and four radio buttons, as shown below:

CLINIQUE

Clinique is sorry to see you unsubscribe.

We've enjoyed communicating Clinique special offers and in-store events to you, to unsubscribe you may do so below. Or if there is a special request or inquiry that we can assist you with, please email an online [Clinique Consultant](#) for further customer care. Clinique would like to keep in touch.

E-mail address to unsubscribe: **bmalonefry@yahoo.com**

Please make your selection below:

☐ I would like to ONLY receive in store Clinique Bonus Now and special event email alerts taking place at a counter nearest me.

☐ I would like to unsubscribe from ALL Clinique.com emails, including, complimentary shipping offers, new sampling programs, personalized expert beauty tips, early shopping opportunities and more.

☐ On second thought, please keep me on your mailing list.

☐ Please change my e-mail address to:

EX1009, 5.

291. A POSITA would have known that a webpage for setting a user's preferences could include two buttons, one to confirm that a user wanted to unsubscribe and one to cancel the action. These are the standard "Submit" and "Cancel" options (as shown in the Sears example above). In addition, the web page designer may choose to provide different labels for the buttons, as illustrated in the Constant Contact example below. Once again the form includes two buttons: the one labeled "Yes, unsubscribe me from all mailings" will submit the form, and thus lead to the user being unsubscribed, while the button labeled "Cancel" will cancel the

form without taking any action. EX1010, 2-3. This form was available in the Constant Contact website at least as early as January 10, 2011.

Please Confirm Your Unsubscribe

► Before unsubscribing, is this you?
c*****@gmail.com

If this is not your email address, there is no need to unsubscribe. You have not been added to any mailing lists.

Are you sure you wish to stop ALL emails from **Sunset Travel Online** sent to your email address?

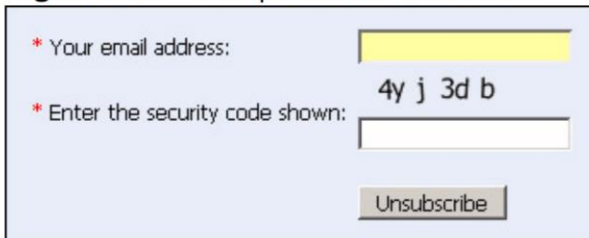
Sunset Travel Online uses SafeUnsubscribe® which guarantees the permanent removal of your email address from its mailing lists.

The form was archived by the Internet Archive, and the date that this was archived can be seen at <https://web.archive.org/web/20110110113748/http://www.constantcontact.com/email-marketing/email-list/index.jsp>, as well as https://web.archive.org/web/20110102213012/http://www.constantcontact.com/display_image.jsp?image_url=screenshots/EM_lists_safeunsubscribe.gif.

292. A POSITA would have understood that not all unsubscribe forms could be automated, so that some unsubscribe forms would likely need to be presented to a user for manual unsubscription. For example, the example unsubscribe form on Interspire's Email Marketer User Guide required people to both enter their email address and solve a CAPTCHA before clicking an unsubscribe button.

Creating or Editing an Unsubscribe Form

Figure 205 Example Unsubscribe Form



* Your email address:

* Enter the security code shown: 4y j 3d b

Take the following steps to set up or edit an **Unsubscribe** website form. See the corresponding sections for information on how to complete each step.

EX1020, 215.

293. A POSITA implementing Castelli would have been motivated to investigate what types of unsubscribe landing pages were common—such as those shown in Return Path and the other examples above—to aid in effectively configuring Castelli’s system to navigate to a specific hyperlink to automatically unsubscribe. EX1005, 7:15. A POSITA implementing Castelli’s automatic unsubscribing system would have recognized that the system would need to accommodate itself to existing unsubscription processes. Because the system would interact with unsubscription methods in emails sent by third parties, a POSITA would have been motivated to know and accommodate such methods. *Id.* A POSITA would have had a reasonable expectation of success in identifying and implementing the steps needed for its system to interact with various types of unsubscribe landing pages so that the system could unsubscribe users who received emails including links to unsubscribe landing pages. This would have required only basic knowledge of the

HTML language, the HTTP protocol, and text processing computational methods, all of which would be well within the capabilities of a POSITA, as I described in Section VI.C (§§ 62-63).

A. Claim 10

10. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; identifying a lack of form elements on the webpage.

294. Castelli (with or without LashBack) combined with Return Path discloses the added element of claim 10. A POSITA would have understood both this dependent claim and Castelli's teaching of "navigating to a specific hyperlink in the message, which completely handles the unsubscribe process without additional variable input" as referring to one-click unsubscribe links. EX1005, 7:13-15. Such hyperlinks often open a webpage that says something like "You have been unsubscribed."

295. A POSITA would have understood both this dependent claim and Castelli's teaching above as referring to hyperlinks that unsubscribed a recipient just by a link being clicked. EX1001, 7:13-21. Above for Ground 4, I explain example webpages shown in Return Path. As with Bardsley above, a POSITA implementing Castelli would be motivated to accommodate pages and links such as those presented by Return Path. And in doing so, the added elements of claim 10 would be obvious in that a POSITA would understand that the URL processing in Castelli would

include opening a browser, navigating to the URL, downloading the webpage, and identifying a lack of form elements as discussed at with regard to Ground 4, and, specifically, claim 10.

296. A POSITA would understand that activating the unsubscribe links disclosed in Castelli would trigger a series of steps, including opening a browser on the user's computer capable of interpreting and executing the URL pursuant to the http protocol. See EX1022, 24-25 (discussing URL navigation). The browser sends an http request for the webpage identified in the URL, and then downloads that webpage.

297. Castelli discloses the type of unsubscribe landing page addressed in this element, with its teaching of “navigating to a specific hyperlink in the message, which completely handles the unsubscribe process without additional variable input.” EX1005, 7:13-15.

298. A POSITA would have understood both this dependent claim and Castelli's teaching above as referring to hyperlinks that unsubscribed a recipient just by a link being clicked. EX1001, 7:13-21. As Return Path described, such a link would open a webpage that simply informed the recipient that they had been unsubscribed. A notification-only page has no FORM elements; that is, it does not require the user to make choices, enter information, or click the “Submit” button.

EX1009, 2 (depicting an unsubscribe confirmation landing page from Tiffany & Co.).

299. As I described above, A POSITA would have been aware that this type of unsubscription landing page was common, so any method for automating unsubscribing from an email list would need to process URLs that identified this type of page.

300. A POSITA would have understood that a method of processing this type of unsubscribe links would include identifying a lack of form elements on the webpage reached by activating the unsubscribe link; in other words, this would identify this webpage as a notification-only webpage that confirmed that the user had unsubscribed.

301. As I explained in Section VI.C (¶¶ 61-71), a POSITA would have been very familiar with the structure of HTML, including the relevant elements, tags, and attributes necessary to enable user input, such as <FORM>, <INPUT>, “type = submit”, etc. A POSITA also would have been familiar with the basic pattern matching text processing methods such as regular expressions, which enabled searching through the HTML of a web page for a FORM element. Therefore, to ensure that Castelli identifies a lack of form elements in the webpage that was downloaded simply requires code (e.g., in the well-known Python language) that searches through the downloaded HTML for FORM elements and, if it reaches the

end of the HTML without finding a FORM element, then it reports that there was lack of form elements on the webpage.

302. A POSITA would have been motivated to design a system to accommodate known unsubscribe landing pages. Further, the CAN-SPAM rule would have been relevant to a POSITA's motivation to design a system to accommodate unsubscribe webpages and a POSITA's reasonable expectation of success in doing so. Under that rule, senders of commercial email were prohibited from requiring that email recipients wishing to unsubscribe "take any other steps except sending a reply electronic mail message or visiting a *single* Internet Web page." 16 C.F.R. § 316.5 (2008) (emphasis added). Because web-page unsubscribe methods could only require that an email recipient visit "a single webpage," this limited the complexity of programming needed for a system to be programmed to interact with web-page unsubscribe methods.

B. Claim 11

11. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; identifying only a single button element on the webpage; and executing the button on the webpage.

303. Castelli (with or without LashBack) combined with Return Path discloses the added element of claim 11. Castelli teaches "navigating an email

preference web page . . . and performing actions as determined by the mechanism search process on behalf of the reporting user.” EX1005, 7:10-13.

304. Although Castelli and LashBack do not describe executing a single button on an unsubscribe webpage, a POSITA would have been motivated to look to Return Path for specific examples. As discussed above in connection with the Bardsley reference, a POSITA implementing Castelli and LashBack would be motivated to look to and incorporate the teachings of Return Path to be able to accommodate these types of pages, including automatically identifying and executing a single button to unsubscribe. See Ground 4, and specifically, claim 11 above, and Ground 8, claim 10.

305. As discussed above, claims 11 and 12 contain language about “executing” a button. A POSITA would have known that sometimes a webpage reached by an unsubscribe hyperlink would include an HTML FORM element with a single button (indicated by an INPUT tag) to be pressed; this single button could, for example, confirm that a user wanted to unsubscribe. A POSITA would have known that to accommodate such webpages, methods to unsubscribe users from emails that included links to such webpages would need to include an appropriate HTTP request to the webpage that resulted in the button being executed. I described how such an HTTP request (specifically, a POST request) would be generated in Section VI.C (¶¶ 62-63).

306. As discussed above, Return Path depicts an example form pre-populated with a recipient's information that included a single button ("Submit") requiring a user to confirm that the user intended to unsubscribe:

The screenshot shows a web page from Travelocity. At the top, there is a blue header with the Travelocity logo on the left and a promotional banner on the right that says "Stress-Free Family Getaways Flight + Hotel From \$467". Below the banner is a navigation bar with links: Home, Flights, Hotels, Cars/Rail, Vacations, Cruises, and Last Minute Deals. On the right side of the navigation bar are links for "Customer Care" and "My Stuff".

The main content area has a heading "Remove From Promotional Email List". Below the heading is a paragraph: "Please remove me from receiving ALL promotional email from Travelocity, which will include any subscriptions I may have to: Real Deals, Fare Watcher, and Easy Escapes." Below this paragraph are two input fields. The first is labeled "Enter your first name here:" and contains the text "Bonnie". The second is labeled "Enter your email address here:" and contains the text "BMALONEFRY@YAHOC". Below these fields is a blue button labeled "Submit".

At the bottom of the page is a dark blue footer containing small text: "Security Guarantee" and "More Some Taxes & Fees Additional". Below this is a copyright notice: "© 1999-2004 Travelocity.com LP. All rights reserved. Travelocity and the Star Design are trademarks of Travelocity.com LP. Use of this Web site constitutes acceptance of the Travelocity User Agreement and Privacy Policy. CST9 200412-00".

EX1009, 2.

307. A POSITA would understand that a method of automating the use of unsubscribe links leading to such a single-button form would include both identifying the fact that a form included a single button and then executing the single button. This would be well within the capabilities of a POSITA. As I explained in Section VI.C (¶¶ 61-71), basic pattern matching techniques, such as the use of regular expressions, would enable the identification of a FORM element in an HTML page and the extraction of the information included in the form, including an INPUT button to submit the form's data, the server and program to which the data

is to be sent, and the method (GET or POST) by which to send it. Once this is done, an HTTP request could be constructed following the standard structure I showed in Section VI.C (¶¶ 62-63) and then sent to the specified server.

308. As discussed at [16.7] and claims 1, 9, and 10, Castelli discloses collecting unsubscribe links from messages and presenting them to the user for unsubscription, and automatically unsubscribing in response to the user's input. A POSITA implementing Castelli would be aware of webpages such as those shown above and would be motivated to configure the system such that when the user chooses to unsubscribe from this subscription, the Castelli system would execute the link, examine the page for a single button, and execute the button by sending the appropriate http request to the web page that leads to the button being executed, as I described above. This way, once the user has chosen to unsubscribe, the user does not have to actually view the page herself and execute the unsubscribe button.

C. Claim 12

12. A method, as described in claim 9 wherein processing a URL comprises: opening a browser; navigating to the URL; downloading the webpage located at the URL; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage.

309. Castelli (with or without LashBack) combined with Return Path discloses the added elements of claim 12.

310. Although Castelli and LashBack do not illustrate identifying two buttons on an unsubscribe webpage and executing the unsubscribe button, a POSITA would have been motivated to look to Return Path for exemplary unsubscribe webpages. As discussed at claim 12 for Ground 4, Return Path teaches multiple button elements on unsubscribe webpages. Thus, a POSITA would have found this claim obvious over Castelli and LashBack in view of Return Path.

311. A POSITA would have known that sometimes a webpage reached by an unsubscribe hyperlink would include a form having two buttons, one of which asks the user to confirm that she wanted to unsubscribe. While Return Path does not depict an unsubscribe landing page with only two buttons, it depicts landing pages with 0, 1, 4, and 5 buttons. EX1009, 2, 5. Given this disclosure, a POSITA would have understood that 2-button unsubscribe forms on landing pages were also an option. See EX1010, 2-3 (depicting a two-button unsubscribe landing page form). For example, Return Path's Sears example depicts two radio buttons, and SUBMIT and CANCEL buttons:

Sears
where it begins™

We're sorry to see you go! If you have arrived at this unsubscribe page by accident, please [click here](#).

You'll be missing out on many money-saving offers, including:

- advance notice of sales
- email-exclusive discounts
- new and online-only merchandise
- store and site updates

Subscribed e-mail address: **bmalenefy@yahoo.com**

Please choose one and click "SUBMIT" to unsubscribe.

☒ Remove me from **Sears promotional** e-mail communications

☐ Remove me from **ALL Sears** e-mail communications

Id., 5.

312. Given this disclosure, a POSITA would have understood that two-button unsubscribe forms on landing pages were an obvious option. EX1010, 2-3 (depicting a two-button unsubscribe landing page form). Indeed, the two basic types for buttons in HTML forms are a “Submit” button to submit the form’s data, and a “Reset” button to cancel without taking any action (EX1022, 203). Therefore, upon identifying only two buttons on a webpage, a system would examine each button and identify that one of the button’s TYPE attribute was “Submit”.

313. As I discussed at claim 11, a POSITA implementing Castelli would have been motivated to configure the system to handle these types of unsubscription

links so that the process of unsubscribing could be automated by the system, thus freeing the user from the task of doing so. And as I explained at claim 11, configuring Castelli's system in this way would be well within the capabilities of a POSITA, requiring only basic knowledge of HTML, HTTP, and text processing methods.

314. As discussed at claim 11, a POSITA implementing Castelli would be motivated to configure the system to handle these types of unsubscription links by examining the webpage for two buttons and executing the unsubscribe button so that the user can unsubscribe via the Castelli interface. A POSITA would have a reasonable expectation of success in doing so as it would have required merely using known HTML elements and functionality as discussed above. *See also* claims 1, 9, and 10.

D. Claim 15

15. A system, as described in claim 14 wherein unsubscribing from, at least a single subscription further comprises: sending unsubscribe emails to sending emails of subscription messages; sending unsubscribe emails to mailto: address found in a list-unsubscribe header; processing one or more URLs found in a message to unsubscribe from subscriptions, wherein said processing comprises: retrieving the contents of a webpage associated with the URL; identifying a lack of form elements on the webpage; or identifying only a single button element on the webpage; and executing the button on the webpage; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage; or presenting the webpage to the user for manual unsubscription from the subscription.

315. Claim 15 adds to claim 14 the added elements of dependent claims 7-13, albeit the elements are separated by "or." A POSITA would understand this

claim, reciting a list separated by “or” and “unsubscribe from, at least a single subscription” as requiring only one of these to occur. Nonetheless, Castelli (with or without LashBack) in view of Return Path discloses each alternative recited in claim 15 as discussed above at Ground 5, claims 7-9, 13-14, and Ground 8, claims 10-12.

E. Claim 17

17. An apparatus as described in claim 16 wherein automatically unsubscribing from, at least a single subscription in response to a user request further comprises: sending unsubscribe emails to sending emails of subscription messages; sending unsubscribe emails to mailto: address found in a list-unsubscribe header; processing one or more URLs found in a message to unsubscribe from subscriptions, wherein said processing comprises: retrieving the contents of a webpage associated with the URL; identifying a lack of form elements on the webpage; or identifying only a single button element on the webpage; and executing the button on the webpage; identifying only two button elements on the webpage; determining the unsubscribe button; and executing the unsubscribe button on the webpage; or presenting the webpage to the user for manual unsubscription from the subscription.

316. Claim 17 adds to claim 16 the added elements of dependent claims 7-13. Castelli (with or without LashBack) in view of Return Path discloses each alternative recited in claim 17 as discussed at Ground 5, claims 7-9, 13, 16; and Ground 8, claims 10-12.

I, Loren G. Terveen, Ph.D., do hereby declare and state, 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.

Dated: November 9, 2023



Signature

APPENDIX A

Loren G. Terveen

terveen@umn.edu	University of Minnesota	(612) 624-8310
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Address	Department of Computer Science and Engineering University of Minnesota Minneapolis, MN 55455		
Education	Ph.D. in Computer Sciences	University of Texas	1991
	M.S. in Computer Sciences	University of Texas	1988
	B.A. in Computer Science, Mathematics, History	University of South Dakota	1984
Affiliations	Member of ACM, ACM/SIGCHI		
Research Interests	Human-Computer Interaction, Social Computing, Artificial Intelligence		
Professional Experience	Professor	University of Minnesota	2002 --
	Distinguished McKnight University Professor		2017 --
	Principal Member of Technical Staff	AT&T Labs - Research	1996-2002
	Member of Technical Staff	AT&T Bell Labs	1991-1996
	Graduate Research Intern	Microelectronics and Computer Corporation	1986-19991
	Teaching Assistant	University of Texas at Austin	1985

AWARDS AND MAJOR ROLES

ACM Distinguished Scientist (awarded 2009)

ACM SIGCHI Academy (2019)

ACM SIGCHI Lifetime Service Award (2023)

ACM SIGCHI President (2015-2018)

ACM Council, SIG Governing Board Representative (2016 – 2018)

RESEARCH

External Funding

NSF:CISE: Community-Engaged Design and Implementation of a Framework for Ethical Online Communities Research (**Co-PI**, with Svetlana Yarosh PI, Stevie Chancellor Co-PI, Joseph Konstan Co-PI, Kangjie Lu Co-PI), \$400,000 for 01/01/2023 to 12/31/2025.

Cisco: Detecting and Reducing Bias in Collaborative Virtual Meetings (**Co-PI**, with Stevie Chancellor PI). **\$177,915** for 9/1/2021 to 12/31/2022.

NSF:CHS:Small: Incorporating and Balancing Stakeholder Values in Algorithm Design (UMN **PI**), Award Total \$500,000, UMN Share \$243,941 for 8/1/2019 to 7/31/2022.

NSF: EAGER: AI-DCL: Capture, Explain and Negotiate the Inherent Trade-offs in Machine Learning Algorithms (UMN **co-PI**), Award Total \$295,713, UMN Share \$103,267 for 10/1/2019 to 9/30/2022.

NSF:CHS: Small: Collaborative Research: Structured Data Peer Production: Addressing Challenges and Leveraging Opportunities (**PI**), \$249,738 for 9/1/2018 - 8/31/2021.

National Cancer Institute (NCI): Restore: Improving sexual outcomes of gay and bisexual prostate cancer survivors (R. Simon Rosser **PI**; my role: **Co-PI**); \$2,039,220 (directs) \$3,039,541 (total), 2017-2022.

NSF: “PFI:BIC: Smart Human-Centered Collision Warning System: sensors, intelligent algorithms and human-computer interfaces for safe and minimally intrusive car-bicycle interactions” (Co-PI, with Rajesh Rajamani (PI), Max Donath, and Nichole Morris), \$999,773 for September 1, 2016 to August 31, 2019.

NSF: “Computer-Supported Cooperative Work Doctoral Colloquium” (**PI**), \$25,000 for 03/01/2016 to 02/28/2017.

National Institute on Drug Abuse: “A Technology-Delivered Peer-to-Peer Support ARB Adherence Intervention for HIV+ Adults”, (Co-PI, with Keith Horvath (PI) and Darin Erickson), \$3,302,62 for 07/01-2015 to 05/31/2020.

NSF: “HCC: Tools and Mechanisms to Support Social Participation Efforts”, (**PI**), \$499,399 for 10/01/2012 to 09/30/2015.

NSF: “SoCS: Collaborative Research: Novel Algorithms and Interaction Mechanisms to Enhance Social Production”, (**PI**), \$527,140, for 7/01/2012 to 06/30/2015.

NSF: “Collaborative Research: Supporting Newcomer Socialization in Online Production Communities”, (**PI**), \$301,135.00 for 08/2011 to 08/31/2015.

Minnesota Department of Transportation: “Statewide Cycloplan: A Bicycle Planning Tool with Participatory GIS”, **(PI)**, \$130,000, for 10/01/2011 to 06/30/2013.

Metropolitan Council: “Cycloplan II”, **(PI)**, \$71,350, for 08/15/2011 to 05/31/2012.

NSF: “Wikisym Doctoral Consortium”, **(PI)**, \$13,163, for 05/01/2011 to 04/30/2012.

IBM: “Mobile Crowdsensing”, **(PI)**, \$100,000 awarded 04/01/2011

NSF: “Social-Computational Systems (SoCS) Community Meeting” **(PI)**, \$48,801 for 09/01/2010 to 08/31/2011

NSF: “SoCS: Collaborative Research: Information Framing: Intelligent Interfaces for an Online Production Community”, **(PI)**, \$375,000 for 09/15/2010 to 08/31/2015.

NSF: “Collaborative Research: Guiding Folksonomy Development to Enable Novel Tagging Applications” **(PI)**, with J. Riedl and S. Sen (Macalester College)). \$949, 788 for 04/1/2010 to 03/31/2014 (UMN Share).

Minnesota Department of Transportation: Bike, Bus, and Beyond: Extending Cyclopath to Enable MultiModal Routing **(PI)**, \$60,627, for 07/08/2010 to 01/31/2012

NIH: An Interactive Website to Promote Communication about Sexual Health and Dating Relationships between Parents and Teens **(Co-PI)**, with Sonya Brady (PI), Simon Rosser, and Renee Sieving), \$679,500 for 09/30/2009 to 08/31/2011.

Metropolitan Council: “Cycloplan” **(PI)**, \$185,000, October 2009 – March 2011.

NSF “Collaborative Research: Understanding Online Volunteer Communities: Toward Theory-Based Design” **(co-PI)**, with J. Riedl, J. Konstan, M. Snyder, & Y. Ren; R. Kraut (CMU) \$2,400,000 for 08/01/2008 to 07/31/2013.

NSF: “Recommender Systems Doctoral Consortium” **(PI)** \$15,415, 2007-2008.

NSF: “Mining Spatiotemporal Data: From Personal Use to Community Knowledge” **(PI)** \$449,570 for 12/1/2005 to 11/30/2009.

NSF: “Collaborative Research: Mark This! - Operationalizing the notion of "place" for interactive community systems” **(PI)**, with Q. Jones (NJIT) and S. Whittaker (Univ. of Sheffield)). \$173,411 for 6/1/2003 to 5/31/2007 (UMN share).

NSF: “Being There: Mobile Devices for Community and Commerce” **(PI)**, with J. Konstan, J. Riedl, and S. Shekhar). \$120,000 for 9/1/2002 to 8/31/2005.

NSF: “ITR: Collaborative Research: Designing On-Line Communities to Enhance Participation” (co-PI, with J. Konstan & J. Riedl, R. Kraut & S. Kiesler (CMU), P. Resnick and Y. Chen (Univ. of Michigan)). \$1,246,017 for 9/1/2003 to 8/31/2009 (UMN share).

AT&T: “VURI: Collaborative Filtering and Intelligent Interface Design for Enhanced TV Applications” (PI). \$35,000 for November 1, 2008 to October 31, 2009.

AT&T: “VURI: Collaborative Filtering and Intelligent Interface Design for Enhanced TV Applications” (PI). \$35,000 for June 1, 2007 to May 31, 2008.

Internal Funding

Minnesota/China Collaborative Research Grant: "Expertise Oriented Mining for Web Community". \$10,000 for July 1, 2007 to June 30, 2008 (PI, with Jie Tang, Tsinghua University, Beijing China).

University of Minnesota TEL grant: “The Next Generation Online Learning Environment: Designing for Community and Collaboration”. \$10,000 for September 2006 to May 2007. (co-PI, with Joan Hughes, David Ernst, and Ann Ooms, College of Education and Human Development).

University of Minnesota Digital Technology Center: “Indoor Navigation Aids for Visually Impaired People”. \$25,67 for June 2005 to December 2006. (co-PI, with S. Shekhar and G. Legge).

University of Minnesota Digital Technology Center: “Eye-Tracking Research on Community Websites: Photo Directories and Building Social Networks”. \$19,300 for June 2004 to June 2005. (co-PI, with J. Konstan).

University of Minnesota Grant-In-Aid: “Facilitating Participation in Online Communities”. \$20,397 for 1/1/2003 to 6/30/2004.

Books

1. Bickhard, M.H. and Terveen, L.G. Foundational Issues in Artificial Intelligence and Cognitive Science: Impasse and Solution, (1995), Elsevier Science.

Refereed Journal Papers

2. Mo Houtti, Moyan Zhou, Loren Terveen, and Stevie Chancellor. “All of the White People Went First”: How Video Conferencing Consolidates Control and Exacerbates Workplace Bias. *PACM Human-Computer Interaction* (2023).
3. Mo Houtti, Isaac Johnson, Joel Cepeda, Soumya Khandelwal, Aviral Bhatnagar, and Loren Terveen. 2022. “We Need a Woman in Music”: Exploring Wikipedia’s Values on Article Priority. *PACM Human-Computer Interaction* 7, (2022).
4. Charles Chunkai Zhang*, Mo Houtti*, C, Estelle Smith, Ruoyan Kong, and Loren Terveen. Working for Invisible Machines or Pumping Information into an Empty Void? An Exploration of Wikidata Contributors’ Motivations. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 6 (2022). (* co-first authors)
5. C. Estelle Smith, William Lane, Hannah Miller Hillberg, Daniel Kluver, Loren Terveen, and Svetlana Yarosh. Effective Strategies for Crowd-Powered Cognitive Reappraisal Systems: A

- Field Deployment of the Flip*Doubt Web Application for Mental Health. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 5 (2021). **Best Paper Honorable Mention.**
6. C. Estelle Smith, Avleen Kaur, Katie Z. Gach, Loren Terveen, Mary Jo Kreitzer, and Susan O’Conner-Von. What is Spiritual Support and How Might It Impact the Design of Online Health Communities? In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 5 (2021).
 7. Levonian, Z., Dow, M., Erickson, D.R., Ghosh, S., Miller Hillberg, H., Narayanan, S., Terveen, L. and Yarosh, L. Patterns of Patient and Caregiver Mutual Support Connections in an Online Health Community. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 4 (2020).
 8. Zhu, H., Yu, B., Halfaker, A., and Terveen, L. Value-Sensitive Algorithm Design: Method, Case Study, and Lessons. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 2, No. 2 (2018).
 9. Miller Hillberg, H., Levonian, Z., Terveen, L., and Hecht, B. What I See is What You Don’t Get: Effects of Seeing Emoji Rendering Differences Across Platforms. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 2, No. 2 (2018).
 10. Hall, A., Terveen, L., and Halfaker, A. Bot Detection in Wikidata Using Behavioral Cues. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 2, No. 2 (2018).
 11. Sheppard, S.A., Turner, J., Thebault-Spieker, J., Zhu, H., and Terveen, L. Never Too Old, Cold or Dry to Watch the Sky: A Survival Analysis of Citizen Science Volunteerism. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 1, No. 2 (2017).
 12. Thebault-Spieker, J., Kluver, D., Klein, M., Halfaker, A., Hecht, B., Terveen, L., and Konstan, J. Simulation Experiments On (The Absence of) Ratings Bias in Reputation Systems. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 1, No. 2 (2017).
 13. Yu, B., Wang, X., Lin, A.Y., Ren, Y., Terveen, L., and Zhu, H. Out With The Old, In With The New? Unpacking Member Turnover in Online Production Groups. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 1, No. 2 (2017).
 14. Nguyen, T.T., Harper, F.M., Terveen, L., and Konstan, J. User Personality and User Satisfaction with Recommender Systems. In *Information Systems Frontiers* (2017).
 15. Filson Moses, J., Dwyer, P.C., Fugelstad, P.T., Kim, J.S., Maki, A., Synder, M., and Terveen, L. Encouraging Online Engagement: The Role of Interdependent Self-Construal and Social Motives in Fostering Online Participation. In *Personality and Individual Differences* (2017).
 16. Thebault-Spieker, J., Terveen, L., and Hecht, B. Towards a Geographic Understanding of the Sharing economy: Systemic Biases in UberX and TaskRabbit. In *ACM Transactions on Computer-Human Interaction* (2017).
 17. Brady, S.S., Sieving, R.E., Terveen, L.G., Rosser, R. S., Kodet, A.J., and Rothberg, V.D. An Interactive Website to Reduce Sexual Risk Behavior: Process Evaluation of TeensTalkHealth, JMIR Research Protocols (2015).
 18. Ren, Y., Harper, F.M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., and Kraut, R.E. (2012). Building Member Attachment in Online Communities: Applying Theories of Group Identity and Interpersonal Bonds. *Management Information Systems Quarterly*.
 19. Jones, Q., Grandhi, S., Karam, S., Whittaker, S., Zhou, C., and Terveen, L. Geographic ‘Place’ and Community Information Preferences, in *Computer-Supported Cooperative Work*.
 20. Zhou, C., Frankowski, D., Ludford, P., Shekhar, S., Terveen, L., Discovering Personally Meaningful Places from Location Data: An Interactive Clustering Approach. *ACM Transactions on Information System*, 25, 3 (July 2007).

21. Ling, K., Beenen, G., Ludford, P.J., Wang, X., Chang, K., Li, X., Cosley, D., Frankowski, D., Terveen, L., Rashid, A.M., Resnick, P., and Kraut, R.E. Using Psychology to Motivate Contributions to Online Communities. *Journal of Computer-Mediated Communication*, 10, 4 (June 2005).
22. Terveen, L. and McDonald, D. Social Matching: A Framework and Research Agenda. *ACM Transactions on Computer-Human Interaction*, 12, 3 (2005), 401-434.
23. Whittaker, S., Jones, Q., Nardi, B., Creech, M., Terveen, L., Isaacs, E., and Hainsworth, J. ContactMap: organizing communication in a social desktop, in *ACM Transactions on Computer-Human Interaction*, 11, 4 (December 2004), 445-471.
24. Jones, Q., Grandhi, S., Terveen, L., and Whittaker, S. People-To-People-to-Geographical-Places: The P3 Framework for Location-Based Community Systems. in *Computer-Supported Cooperative Work*, 13, 3-4 (August 2004), 249-282.
25. Herlocker, J.L., Konstan, J.A., Terveen, L.G., and Riedl, J.T. Evaluating Collaborative Filtering Recommender Systems, *ACM Transactions on Information Systems* (2004).
26. Amento, B., Terveen, L., Hill, W., Hix, D., and Schulman, R. Experiments in Social Data Mining: The TopicShop System, in *ACM Transactions on Computer-Human Interaction*, 10, 1 (March 2003), 54-85.
27. Whittaker, S., Terveen, L.G., and Nardi, B.A. Let's stop pushing the envelope and start addressing it, in *Human-Computer Interaction*, 15, 2-3 (Sep 2000), 75-106.
28. Terveen, L.G., Hill, W.C., and Amento, B. Constructing, Organizing, and Visualizing Collections of Topically Related Web Resources, in *ACM Transactions on Computer-Human Interaction*, 6, 1 (Mar. 1999), 67-94.
29. Selfridge, P.G. and Terveen, L.G. Knowledge Management Tools for Business Process Support and Reengineering, in *Journal of Intelligent Systems in Accounting, Finance, and Management* (Jan. 1996).
30. Terveen, L.G. An Overview of Human-Computer Collaboration, in *Knowledge-Based Systems*, 8, 2-3 (1995), 67-81.
31. Terveen, L.G., Selfridge, P.G., and Long, M.D. Living Design Memory: Framework, System, and Lessons Learned, in *Human-Computer Interaction*, 10, 1 (1995), 1-37.
32. Terveen, L.G. Intelligent Systems as Cooperative Systems, in *International Journal of Intelligent Systems*, 3, 2-4 (1993), 217-250.
33. Brachman, R.J., Selfridge, P.G., Terveen, L.G., Altman, B., Borgida, A., Halper, F., Kirk, T., Lazar, A., McGuinness, D.L., and Resnick, L.A. Integrated Support for Data Archaeology, in *International Journal of Intelligent and Cooperative Information Systems*, 2, 2 (1993), 159-185.

Refereed Conference Papers

34. Zhang, C and Terveen, L. Quantifying the Gap: A Case Study of Wikidata Gender Disparities. In *Proceedings of OpenSym 2021*, the 17th International Symposium on Open Collaboration
35. Yu, B., Ye, Y., Terveen, L., Wu, Z.S., Forlizzi, J., and Zhu, H. Keeping Designers in the Loop: Communicating Inherent Algorithmic Trade-offs Across Multiple Objectives. In *Proceedings of DIS 2020*, the ACM Conference on Designing Interactive Systems.
36. Smith, C.E., Yu, B., Srivastava, A., Halfaker, A., Terveen, L., and Zhu, H. Keeping Community in the Loop: Understanding Wikipedia Stakeholder Values for Machine

- Learning-Based Systems. In *Proceedings of CHI 2020, the ACM Conference on Human Factors in Computing Systems*. **Best Paper Honorable Mention.**
37. Levonian, Z., Erikson, D., Luo, W., Narayanan, S., Rubya, S., Vachher, P., Terveen, L. and Yarosh, S. Bridging Qualitative and Quantitative Methods for User Modeling: Tracing Cancer Patient Behavior in an Online Health Community. In *Proceedings of ICWSM 2020, AAAI Conference on the Web and Social Media*.
 38. Cheng, H.F., Yu, B., Fu, S., Zhao, J., Hecht, B., Konstan, J., Terveen, L., Yarosh, S., and Zhu, H. Teaching UI Design at Global Scales: A Case Study of Designing Collaborative Capstone Projects for MOOC Students, in *Proceedings of ACM Learning at Scale 2019*.
 39. Hall, A., Thebault-Spieker, J., Sen, S., Hecht, B., and Terveen, L. Exploring the Relationship Between “Informal Standards” and Contributor Practice in OpenStreetMap. In *Proceedings of OpenSym 2018*.
 40. Thebault-Spieker, J., Halfaker, A., Terveen, L., and Hecht, B. Distance and Attraction: Gravity Models for Geographic Content Production. In *Proceedings of CHI 2018, the ACM Conference on Human Factors in Computing Systems*.
 41. Thebault-Spieker, J., Hecht, B., and Terveen, L. Geographic Biases are ‘Born, not Made’: Exploring Contributors’ Spatiotemporal Behavior in OpenStreetMap. In *Proceedings of ACM Group 2018*.
 42. Kang, J., Condiff, K., Chang, S., Terveen, L., Konstan, J., and Harper, F.M. Understanding How People Use Natural Language to Ask for Recommendations, in *RecSys 2017*.
 43. Miller, H., Kluver, D., Thebault-Spieker, J., Terveen, L., and Hecht, B. Understanding Emoji Ambiguity in Context: The Role of Text in Emoji-Related Miscommunication. In *Proceedings of ICWSM 2017, AAAI Conference on the Web and Social Media*.
 44. Hall, A., McRoberts, S., Thebault-Spieker, J., Lin, A.Y., Sen, S., Hecht, B., and Terveen, L. Freedom versus Standardization: Structured Data Generation in a Peer Production Community. In *Proceedings of CHI 2017, the ACM Conference on Human Factors in Computing Systems (CHI 2017)*.
 45. Yu, B., Ren, Y., Terveen, L., and Zhu, H. Predicting Member Productivity and Withdrawal from Pre-Joining Attachments in Online Production Groups. In *Proceedings of CSCW 2017, The ACM Conference on Computer-Supported Cooperative Work and Social Computing*.
 46. Chang, S., Harper, M., and Terveen, L. Crowd-Based Personalized Natural Language Explanations for Recommendations In *Proceedings of RecSys 2016, The ACM Conference on Recommender Systems*.
 47. Chang, S., Harper, M., He, L., and Terveen, L. CrowdLens: Experimenting with Crowd-Powered Recommendation and Explanation. In *Proceedings of ICWSM 2016, AAAI Conference on the Web and Social Media*.
 48. Miller, H., Thebault-Spieker, J., Chang, S., Johnson, I., Terveen, L., and Hecht, B. “Blissfully happy” or “ready to fight”: Varying Interpretations of Emoji. In *Proceedings of ICWSM 2016, AAAI Conference Web and Social Media*.
 49. Zhao, Q., Huang, Z., Harper, F.M., Terveen, L., and Konstan, J. “Precision Crowdsourcing: Closing the Loop to Turn Information Consumers into Information Producers”. In *Proceedings of CSCW 2016, The ACM Conference on Computer Supported Cooperative Work and Social Computing*.

50. Harper, F.M., Xu, F., Kaur, H., Condiff, K., Chang, S., and Terveen, L. Putting Users in Control of their Recommendations. In *Proceedings of RecSys2015, The ACM Conference on Recommender Systems*.
51. Kapoor, K., Kumar, V., Terveen, L., Konstan, J.A., and Schrater, P. "I like to explore sometimes" – Adapting to Dynamic User Novelty Preferences. In *Proceedings of RecSys2015, The ACM Conference on Recommender Systems*.
52. Warncke-Wang, M., Ranjan, V., Terveen, L., and Hecht, B. Misalignment Between Supply and Demand of Quality Content in Peer Production Communities. In *Proceedings of the International Conference on Weblogs and Social Media (ICWSM'15)*.
53. Chang, S., Harper, F.M., and Terveen, L. Using Groups of Items to Bootstrap New Users in Recommender Systems. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing (CSCW '15)*. ACM, New York, NY, USA.
54. Miller, H., Chang, S., and Terveen, L. "I LOVE THIS SITE!" vs. "It's a little girly": Perceptions of and Initial User Experience with Pinterest. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing (CSCW '15)*. ACM, New York, NY, USA.
55. Thebault-Spieker, J., Terveen, L., and Hecht, B. 2015. Avoiding the South Side and the Suburbs: The Geography of Mobile Crowdsourcing Markets. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing (CSCW '15)*. ACM, New York, NY, USA.
56. Warncke-Wang, M., Hecht, B., and Terveen, L. The Success and Failure of Quality Improvement Projects in Peer Production Communities. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing (CSCW '15)*. ACM, New York, NY, USA.
57. Panciera, K., Masli, M., and Terveen, L. Crème de la Crème: Elite contributors in an online community, in *Proceedings of the 10th International Symposium on Open Collaboration (OpenSym 2014)*.
58. Kumar, V., Kluver, D., Terveen, L., and Riedl, J. More Efficient Tagging Systems with Tag Seeding, in *Proceedings of IEEE SocialCom 2014*.
59. Nguyen, T., Hui, P., Harper, F.M., Terveen, L., and Konstan, J. Exploring the Filter Bubble: The Effect of Using Recommender Systems on Content Diversity, in *Proceedings of WWW 2014*.
60. Halfaker, A., Geiger, S., and Terveen, L. Snuggle: Designing for Efficient Socialization and Ideological Critique, in *Proceedings of CHI 2014*.
61. Chang, S., Kumar, V., Gilbert, E., and Terveen, L. Specialization, Homophily, and Gender in a Social Curation Site Findings from Pinterest, in *Proceedings of CSCW 2014*.
62. Grevet, C., Terveen, L., and Gilbert, E. Managing Political Differences in Social Media, in *Proceedings of CSCW 2014*.
63. Masli, M., and Terveen, L. Leveraging the Contributory Potential of User Feedback, in *Proceedings of CSCW 2014*.
64. Sheppard, S.A., Wiggins, A., and Terveen, L. Capturing Quality: Retaining Provenance for Curated Volunteer Monitoring Data, in *Proceedings of CSCW 2014*.
65. DeLong, C., Terveen, L., and Srivastava, J. (2013). TeamSkill and the NBA: Applying Lessons from the Virtual World to the Real World, in *Proceedings of ASONAM 2013*.

66. Torre, F., Liu, Y., Liu, Z., and Terveen, L. (2013). Local Knowledge Matters for Crowdsourcing Systems: Experience from Transferring an American Site to China, in Proceedings of ICWSM 2013.
67. Gilbert, E., Bakshi, S., Chang, S., and Terveen, L. (2013). "I Need to Try This!": A Statistical Overview of Pinterest, in Proceedings of CHI 2013.
68. Torre, F., Pitchford, D., Brown, P., and Terveen, L. (2012). Matching GPS Traces to (Possibly) Incomplete Map Data: Bridging Map Building and Map Matching, in ACM SIGSPATIAL GIS 2012.
69. Dunne, L., Zhang, J., and Terveen, L. (2012). An Investigation of Contents and Use of the Home Wardrobe, in UbiComp 2012.
70. Dong, Z., Shi, C., Sen, S., Terveen, L., and Riedl, J. (2012). War Versus Inspirational in Forrest Gump: Cultural Effects in Tagging Communities, in ICWSM 2012.
71. Masli, M. and Terveen, L. (2012) Evaluating Compliance-Without-Pressure Techniques for Increasing Participation in Online Communities, in CHI 2012.
72. Fuglestad P.T., Dwyer, P.C., Filson Moses, J., Kim, J.S., Mannino, C.A., Terveen, L., and Snyder, M. (2012) What Makes Users Rate (Share, Tag, Edit...)? Predicting Patterns of Participation in Online Communities, in CSCW 2012.
73. Nathan, M., Topkara, M., Lai, J., Pan, S., Wood, S., Boston, J., and Terveen, L. (2012) In Case You Missed It: Benefits of Attendee-Shared Annotations for Non-attendees of Remote Meetings, in CSCW 2012.
74. Priedhorsky, R., Pitchford, D., Sen, S., and Terveen, L. (2012), Recommending Routes in the Context of Bicycling: Algorithms, Evaluation, and the Value of Personalization, in CSCW 2012.
75. Lam, S.K., Uduwage, A., Dong, Z., Sen, S., Musicant, D.R., Terveen, L., and Riedl, J. (2011). WP:Clubhouse? An Exploration of Wikipedia's Gender Imbalance, in Wikisym 2011. **Best Paper Winner.**
76. Panciera, K., Masli, M., and Terveen, L.G. (2011). "How Should I Go from __ to __ without Getting Killed? Motivations and Benefits in Open Collaboration", in Wikisym 2011.
77. Priedhorsky, R., and Terveen, L.G. (2011). Wiki Grows Up: Arbitrary Data Models, Access Control, and Beyond, in Wikisym 2011.
78. Sheppard, S.A. and Terveen, L.G. (2011). Quality is a Verb: The Operationalization of Data Quality in a Citizen Science Community, in Wikisym 2011.
79. Masli, M., Priedhorsky, R., and Terveen, L. (2011). Task Specialization in Social Production Communities: The Case of Geographic Volunteer Work, in the Proceedings the 4th International AAAI Conference on Weblogs and Social Media (ICWSM 2011).
80. Torre, F., Sheppard, S.A., Priedhorsky, R., and Terveen, L. (2010) bumpy, caution with merging: An Exploration of Tagging in a Geowiki, in GROUP 2010.
81. Panciera, K., Priedhorsky, R., Erickson, T., and Terveen, L. (2010). Lurking? Cyclopaths? A Quantitative Analysis of User Behavior in a Geowiki, in CHI 2010. **Best of CHI Nominee.**
82. Priedhorsky, R., Masli, M., and Terveen, L. (2010). Eliciting and Focusing Geographic Volunteer Work, in CSCW 2010.
83. Panciera, K., Halfaker, A., and Terveen, L. (2009). Wikipedians are Born, Not Made: A Study of Power Editors on Wikipedia, in GROUP 2009. *36% Acceptance Rate.*
84. Reily, K., Ludford Finnerty, P., and Terveen, L. Two Peers are Better than One: Aggregating Peer Reviews for Computing Assignments is Surprisingly Accurate, in GROUP 2009. *36% Acceptance Rate.*

85. Ludwig, M., Priedhorsky, R., and Terveen, L. (2009). Path Selection: A Novel Interaction Technique for Mapping Applications, in CHI 2009. *24% acceptance rate.*
86. Priedhorsky, R., and Terveen, L. (2008). The Computational Geowiki: What, Why, and How, in CSCW 2008. *23% acceptance rate. Best of CSCW Nominee.*
87. Drenner, S., Sen, S., and Terveen, L. (2008). Crafting the Initial User Experience to Achieve Community Goals, in RecSys 2008. *30% acceptance rate.*
88. Reily, K., Ludford, P., and Terveen, L. (2008). Sharescape: An Interface for Place Annotation, in NordiCHI 2008. *30% acceptance rate.*
89. Nathan, M., Harrison, C., Yarosh, S., Terveen, L., Stead, L., and Amento, B. (2008), CollaboraTV: Making Television Viewing Social Again, in uxTV 2008.
90. Priedhorsky, R., Jordan, B., and Terveen, L. (2007), How a Personalized Geowiki Can Help Bicyclists Share Information More Effectively, in WikiSym 2007. *50% acceptance rate.*
91. Priedhorsky, R., Chen, J., Lam, A., Panciera, K., Terveen, L., and Riedl, J. (2007), Creating, Destroying, and Restoring Value in Wikipedia, in ACM Group 2007.
92. Rouben, A. and Terveen, L. (2007), Speech and Non-Speech Audio: Navigational Information and Cognitive Load, in International Conference on Auditory Displays (ICAD).
93. Ludford, P., Priedhorsky, R., Reily, K., and Terveen, L. (2007), Capturing, Sharing, and Using Local Place Information, in CHI 2007. *25% acceptance rate.*
94. Cosley, D., Frankowski, D., Terveen, L., and Riedl, J. (2007), SuggestBot: Using Intelligent Task Routing to Help People Find Work in Wikipedia, in IUI 2007. *22% acceptance rate.*
95. Harper, F.M., Frankowski, D., Drenner, S., Ren, Y., Kiesler, S., Terveen, L., Kraut, R., and Riedl, J. (2007), Talk Amongst Yourselves: Inviting Users To Participate In Online Conversations, in IUI 2007. *22% acceptance rate.*
96. Frankowski, D., Cosley, D., Sen, S., Terveen, L., and Riedl, J. You Are What You Say: Privacy Risks of Public Mentions, in SIGIR 2006. *19% acceptance rate.*
97. Ludford, P.J., Frankowski, D., Reily, K., Wilms, K., and Terveen, L., Because I Carry My Cell Phone Anyway: Functional Location-Based Reminder Applications, in *Proceedings of CHI 2006*. *23% acceptance rate.*
98. Cosley, D., Frankowski, D., Terveen, L., and Riedl, J., Using Intelligent Task Routing and Contribution Review to Help Communities Build Artifacts of Lasting Value, in *Proceedings of CHI 2006*. *23% acceptance rate.*
99. Drenner, S., Harper, M., Frankowski, D., Riedl, J., and Terveen, L. Insert Movie Reference Here: A System to Bridge Conversation and Item Oriented Web Sites, in *Proceedings of CHI 2006* (Tech Note).
100. Zhou, C., Ludford, P., Frankowski, D., and Terveen, L. How Do People's Concepts of Place Relate to Physical Locations? In *Proceedings of INTERACT 2005*. *27% acceptance rate.*
101. D. Cosley, D. Frankowski, S. Kiesler, L. Terveen, J. Riedl. How Oversight Improves Member-Maintained Communities. In *Proceedings of CHI 2005*, Portland, OR, 2005. *25% acceptance rate.*
102. Jones, Q., Grandhi, S., Whittaker, S., Chivakula, K., and Terveen, L. Putting Systems into Place: A Qualitative Study of Design Requirements for Location Aware Community Systems, in *Proceedings of CSCW 2004*. *30% acceptance rate.*
103. Zhou, C., Ludford, P., Shekhar, S., and Terveen, L. Discovering Personal Gazetteers: An Interactive Clustering Approach, in *ACM GIS 2004* (12th International Symposium on Geographic Information Systems). *33% acceptance rate.*

104. Ludford, P., Cosley, D., Frankowski, D., and Terveen, L.G. Think Different: Increasing Online Community Participation Using Uniqueness and Group Dissimilarity, in *Proceedings of CHI 2004*. 16% acceptance rate.
105. Cosley, D., Ludford, P. and Terveen, L.G. Studying the Effect of Similarity in Online Task-Focused Interactions, *Proceedings of GROUP 2003*. 35% acceptance rate.
106. Ludford, P. and Terveen, L.G. Does an Individual's Myers-Briggs Type Indicator Preference Influence Task-Oriented Technology Use?, *Proceedings of Interact 2003*. 34% acceptance rate.
107. Whittaker, S., Jones, Q., and Terveen, L.G. Contact Management: Identifying Contacts to Support Long-Term Communication, *Proceedings of CSCW 2002*, 216-225. 20% acceptance rate.
108. Terveen, L.G., McMackin, J., Amento, B., and Hill, W. Specifying Preferences Based On User History, *Proceedings of CHI 2002*, 315-322. 15% acceptance rate.
109. Whittaker, S., Jones, Q., and Terveen, L.G. Managing Long Term Conversations: Conversation and Contact Management, *Proceedings of HICSS 2002*. 50% acceptance rate.
110. Amento, B., Terveen, L., Hill, W., and Hix, D. TopicShop: Enhanced Support for Evaluating and Organizing Collections of Web Sites, *Proceedings of UIST 2000*. 26% acceptance rate.
111. Amento, B., Terveen, L., and Hill, W. Does 'Authority' Mean Quality? Predicting Expert Quality Ratings of Web Documents, *Proceedings of SIGIR 2000*. 27% acceptance rate.
112. Amento, B., Hill, W., Terveen, L., Hix, D., and Ju, P. An Empirical Evaluation of User Interfaces for Topic Management of Web Sites, *Proceedings of CHI 1999*, 552-559. 25% acceptance rate.
113. Terveen, L.G and Hill, W.C. Evaluating Emergent Collaboration on the Web, *Proceedings of CSCW 1998*, 355-362. 19% acceptance rate.
114. Whittaker, S., Terveen, L.G, Hill, W.C., and Cherny, L. The Dynamics of Mass Interaction, *Proceedings of CSCW 1998*, 257-264. 19% acceptance rate.
115. Terveen, L.G and Hill, W.C. Finding and Visualizing Inter-site Clan Graphs, *Proceedings of CHI 1998*, 448-455. 23% acceptance rate.
116. Terveen, L.G and Hill, W.C. Involving Users in Continuous Design of Web Content, in *Proceedings of DIS 1997*, ACM Press, 137-145. 41% acceptance rate
117. Terveen, L.G., Hill, W.C., Amento, B., McDonald, D., and Creter, J. Building Task-Specific Interfaces to High Volume Conversational Data, *Proceedings of CHI 1997*, 226-233. 23% acceptance rate.
118. Hill, W.C. and Terveen, L.G Using Frequency-of-Mention in Public Conversations for Social Filtering, *Proceedings of CSCW 1996*, 106-112.
119. Terveen, L.G. and Murray, L. Helping Users Program Their Personal Agents, *Proceedings of CHI 1996*, 355-361. 23% acceptance rate.
120. Terveen, L.G. and Tuomenoksa, M.L. DynaDesigner: A Tool for Rapid Creation of Device-Independent, *Proceedings of INTERACT 1995*, 386-389.
121. Terveen, L.G. and Selfridge, P.G. Intelligent Assistance for Software Construction: A Case Study, *Proceedings of Knowledge-Based Software Engineering 1994*, 14-21.
122. Terveen, L.G., Selfridge, P.G., and Long, M.D. From 'Folklore' to 'Living Design Memory', in *Proceedings of INTERCHI 1993*, 15-22. 19% Acceptance Rate.

123. Terveen, L.G. Interface Support for Data Archaeology, *ISMM International Conference on Information and Knowledge Management (CIKM'93)*. (acceptance rate for 1992 unknown; average is 24%).
124. Brachman, R. J., Selfridge, P.G., Terveen, L.G., Altman, B., Borgida, A., Helper, F., Kirk, T., Lazar, A., McGuinness, D.L., and Resnick, L. A., Knowledge Representation Support for Data Archaeology, *ISMM International Conference on Information and Knowledge Management (CIKM'92)*. (acceptance rate for 1992 unknown; average is 24%).
125. Selfridge, P.G., Terveen, L.G., and Long, M.D. Managing Design Knowledge to Provide Assistance to Large-Scale Software Development, *Proceedings of Knowledge-Based Software Engineering 1992*, 154-162.
126. Terveen, L.G. and Wroblewski, D.A. A Tool for Achieving Consensus in Knowledge Editing, *Proceedings of AAAI 1991*, 74-79. 24% acceptance rate.
127. Terveen, L.G., Wroblewski, D.A., and Tighe, S.N. Intelligent Assistance Through Collaborative Manipulation, *Proceedings of IJCAI 1991*, 9-14. (acceptance rate for 1991 unknown; typically in low 20s).
128. Terveen, L.G. and Wroblewski, D.A. A Collaborative Interface for Browsing and Editing Large Knowledge Bases, *Proceedings of AAAI 1990*, 491-496. 18% acceptance rate.

Book Chapters

129. Terveen, L., Riedl, J., Konstan, J., and Lampe, C. (2014) "Study, Build, Repeat: Using Online Communities as a Research Platform", in *Human Computer Interaction Ways of Knowing*, edited by Judith S. Olson and Wendy Kellogg, New York: Springer.
130. Amento, B., Harrison, C., Nathan, M., and Terveen, L. (2009), Asynchronous Communication – Fostering Social Interaction with CollaboraTV, in Cesar, P., Geerts, D., and Chorianopoulos, K. (ed.), *Social Interactive Television: Immersive Shared Experiences and Perspectives* (2009), Information Science Reference.
131. Amento, B., Terveen, L.G and Hill, W. From PHOAKS to TopicShop: Experiments in Social Data Mining, in Lueg, C. and Fisher, D. (ed.), *From Usenet to CoWebs: Interacting with Social Information Spaces* (2002), Springer.
132. Whittaker, S., Terveen, L.G, Hill, W.C., and Cherny, L. The Dynamics of Mass Interaction, in Lueg, C. and Fisher, D. (ed.), *From Usenet to CoWebs: Interacting with Social Information Spaces* (2002), (this chapter is a reprint of Whittaker et al 1998), Springer.
133. Terveen, L.G and Hill, W. Beyond Recommender Systems: Helping People Help Each Other, in Carroll, J. (ed.), *HCI in the New Millennium* (2001), Addison Wesley.
134. Terveen, L.G. Computer-Mediated Collaboration, in *More than Screen Deep: Toward Every-Citizen Interfaces to the Nation's Information Infrastructure* (1997), National Academy Press.

Other Publications

135. Konstan, J.A., and Terveen, L.G. Human-centered recommender systems: Origins, advances, challenges, and opportunities. *AI Magazine*, 2021.
136. Terveen, L. "Autonomous" agents? What should we worry about? What should we do? *Human-Computer Interaction*.
137. Kaur, A., Smith, C. E., and Terveen, L. Sway Together, Stay Together: Visualizing Spiritual Support Networks Through the SoulGarden Prototype. In *Extended Abstracts of CSCW 2021*.

138. Kaur, H., Johnson, I., Miller, H., Terveen, L., Lampe, C., Hecht, b., and Lasecki, W. Oh The Places You'll Share: An Affordances-Based Model of Social Media Posting Behaviors. In *Extended Abstracts of CHI 2017* (ACM Conference on Human Factors in Computing Systems). 40% acceptance rate.
139. Masli, M. and Terveen, L. Geographical Social Production: Lessons from Cyclopath, in CHI 2013 GeoHCI Workshop.
140. Masli, M., Bouman, L., Owen, A., and Terveen, L. Geowiki + route analysis = improved transportation planning, CSCW 2013 Interactive Poster.
141. Brady, S. S., Sieving, R. E., Terveen, L. G., Rosser, B. R. S., Kodet, A. J., & Rothberg, V. D. (2012, October). *TeensTalkHealth: An interactive website to promote healthy relationships and prevent STIs*. Paper presented at the annual meeting of the American Public Health Association, San Francisco, CA.
142. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "The role of community orientation in promoting online participation" (with J. S. Kim, P. C. Dwyer, J. Filson Moses, P. T. Fuglestad, C. A. Mannino, R Davies, & M. Snyder)
143. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "Applying a functional approach to participation in online groups" (with P. T. Fuglestad, P. C. Dwyer, J. Filson Moses, J. S. Kim, C. A. Mannino, R Davies, & M. Snyder)
144. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "Past volunteerism predicts amount of content contributed in an online community" (with P. C. Dwyer, J. Filson Moses, P. T. Fuglestad, J. S. Kim, C. A. Mannino, R Davies, & M. Snyder)
145. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "Social motives and personality as predictors of online participation" (with J. Filson Moses, P. C. Dwyer, P. T. Fuglestad, J. S. Kim, C. A. Mannino, R Davies, & M. Snyder)
146. Kapoor, N., Frankowski, D., Konstan, J., and Terveen, L. Lessons Learned in Implementing the CHIplace Online Community, in *Proceedings of Human-Computer Interaction International 2005*.
147. Zhou, C., Ludford, P., Frankowski, D., and Terveen, L. An Experiment in Exploring How People Describe Places, Short Paper in *Proceedings of Pervasive 2005*.
148. Zhou, C., Ludford, P., Frankowski, D., and Terveen, L. An Experiment in Discovering Personally Meaningful Places from Location Data, Short Paper in *Proceedings of CHI 2005*.
149. Kapoor, N., Konstan, J., and Terveen, L. How Peer Photos Influence Member Participation in Online Communities, Short Paper in *Proceedings of CHI 2005*.
150. Amento, B., Hill, W., and Terveen, L. The Sound of One Hand: A Wrist-mounted Bio-acoustic Fingertip Gesture Interface, Short Paper in *Proceedings of CHI 2002*, 724-725. 33% acceptance rate.
151. Terveen, L., Hill, W., and Amento, B. Collaborative Filtering to Locate, Comprehend, and Organize Collections of Websites, in SIGART Bulletin, 9, 3&4 (1998), 10-17.
152. Terveen, L., Hill, W., Amento, B., McDonald, D., and Creter, J. 1997. PHOAKS: a system for sharing recommendations. *Commun. ACM* 40, 3 (Mar. 1997), 59-62.
153. Terveen, L.G., Stolze, M., and Hill, W. From 'Model World' to 'Magic World', in *SIGCHI Bulletin*, 27, 4 (1995), 31-34.
154. Terveen, L.G., Papavero, E., and Tuomenoksa, M. DynaDesigner: A Tool for Rapid Design and Deployment of Device-Independent Interactive Services, Refereed Formal Demonstration in *Adjunct Proceedings of CHI'95*, 29-30.

155. Terveen, L.G. Person-Computer Cooperation through Collaborative Manipulation. Ph.D. Thesis, University of Texas Department of Computer Sciences, 1991.

Invited Presentations

Carnegie Mellon University

Northwestern University

The University of California Irvine

Carleton College

Twin Cities MetroGIS Policy Board

Hennepin County Bicycle Advisory Committee

University of Minnesota Digital Humanities Collaborative

University of Minnesota Advanced Transportation Technologies Seminar Series

Georgia Tech

University of Minnesota Urban Ecosystems Symposium

University of Minnesota New Media

IBM T.J. Watson Research

University of Illinois

University of Maryland

University of Washington

Carnegie-Mellon University

Swedish Institute of Computer Science / Royal Institute of Technology

Uppsala University, Sweden

New Jersey Institute of Technology

Microsoft Research

Vassar University

Rensselaer Polytechnic Institute

University of Colorado

Virginia Tech

University of Nebraska

Conference Presentations

- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2014.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2012.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2002.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 1998.
- ACM Conference on Human Factors in Computing Systems (CHI), 1998.
- ACM Conference on Design of Interactive Systems, 1997.

- ACM Conference on Human Factors in Computing Systems (CHI), 1997.
- ACM Conference on Human Factors in Computing Systems (CHI), 1996.
- IFIP TC13 International Conference on Human-Computer Interaction (INTERACT), 1995.
- IEEE Conference on Knowledge-Based Software Engineering, 1994.
- ACM Conference on Human Factors in Computing Systems (CHI), 1993.
- Conference on Information and Knowledge Management, 1993.
- Conference on Information and Knowledge Management, 1992.
- National Conference on Artificial Intelligence (AAAI), 1991.
- International Joint Conference on Artificial Intelligence (IJCAI), 1991.
- National Conference on Artificial Intelligence (AAAI), 1990.

Workshop Presentations

- CHI 2013 GeoHCI Workshop
 - “Geographical Social Production: Lessons from Cyclopath”
- CSCW 2002 Workshop on “The Role of Place in Shaping Virtual Communities”:
 - “Place-Based Community Information Systems”.
- CHI 99 Workshop on “Interacting with Recommender Systems”:
 - “Visualization Interfaces for Recommender Systems”.
- 1999 Human-Computer Interaction Consortium Workshop:
 - “A Reference Task Agenda for Human-Computer Interaction”.
- 1998 AAI Workshop on “Recommender Systems”:
 - “The PHOAKS Recommender System”.
- 1997 Human-Computer Interaction Consortium Workshop:
 - “The PHOAKS Recommender System”.
- 1995 Lifelike Computer Characters Workshop:
 - “Hidden Hands, not Talking Heads: The Magic World Interaction Paradigm”.
- 1995 Lifelike Computer Characters Workshop:
 - “Moving Agent-User Voice Dialogue towards Natural Conversation”.
- CHI 95 Workshop on “‘Model World’ to ‘Magic World’: Making Visual Objects the Medium for Intelligent Design Assistance”:
 - “The ‘Magic World’ Approach to Human-Computer Collaboration”.
- 1993 AAAI Fall Symposium: “Human-Computer Collaboration: Reconciling Theory, Synthesizing Practice”:
 - “A Framework for Human-Computer Collaboration”
- 1993 AI-ED Workshop on “Collaborative Problem Solving: Theoretical Frameworks and Innovative Systems”:

- “Collaborative Problem Solving in Interactive Systems”.
- 1992 CAIA Workshop on “Applying AI To Software Problems: Assessing Promises and Pitfalls”:
 - “Representing and Disseminating Software Design Knowledge”.
- 1992 AAAI Spring Symposium on “Cognitive Aspects of Knowledge Acquisition”:
 - “In The Footprints of The Masters: Embedding Knowledge Acquisition in Organizational Activity”.
- AAAI 90 Workshop on “Complex Systems, Ethnomethodology, and Interaction Analysis”:
 - “Resources for Person-Computer Collaboration”.
- 1990 AAAI Spring Symposium on “Knowledge-Based Human-Computer Communication”:
 - “Tools for Human-Computer Collaboration”.

Patents

U.S. Patent # 5,388,188. Apparatus and methods for providing design advice. (with P. Selfridge). Issued February 7, 1995.

U.S. Patent #5,659,724. Interactive data analysis apparatus employing a knowledge base. (with A. Borgida, R.J. Brachman, T. Kirk, and P. Selfridge). Issued August 19, 1997.

U.S. Patent #5,680,530. Graphical environment for interactively specifying a target system (with P. Selfridge). Issued October 21, 1997.

U.S. Patent #5,806,060. Interactive data analysis employing a knowledge base. (with A. Borgida, R.J. Brachman, T. Kirk, and P. Selfridge). Issued September 8, 1998.

U.S. Patent # 5,809,492. Apparatus and method for defining rules for personal agents. (with L. Murray). Issued September 15, 1998.

U.S. Patent # 5,953,393. Personal Telephone Agent. (With P. Culbreth, P. Danielsen, R.J. Hall, E. Papavero, and M. Tuomenoksa). Issued September 14, 1999.

U.S. Patent #6,029,192. System and method for locating resources on a network using resource evaluations derived from electronic messages. (with W.C. Hill). Issued February 22, 2000.

U.S. Patent #6,244,873. Wireless myoelectric control apparatus and methods. (with W.C. Hill, F.C. Pereira, and Y. Singer). Issued June 12, 2001.

U.S. Patent #6,256,648. System and method for selecting and displaying hyperlinked information resources. (with W.C. Hill). Issued July 3, 2001.

U.S. Patent #9,430,043. Bioacoustic Control System, Method, and Apparatus. (with B. Amento and W.C. Hill). Issued August 30, 2016.

CONSULTING

I provide details for matters that have become public. In other cases, I provide general descriptions.

- (2023) Retained by Unified Patents. General technology area: online advertising. Writing declaration in support of inter partes review petitions.

- (2023) Retained on behalf a consumer and information technology company. General technology area: graphical and touch-based user interfaces. Writing declaration in support of inter partes review petitions.
- (2023) Retained on behalf of a computer software, hardware, and consumer electronics company. General technology areas: graphical user interfaces for web information access. Writing declaration in support of inter partes review petitions.
- (2022) Retained on behalf of a computer software company. General technology areas: map-based user interfaces, mobile computing, messaging. Writing declarations in inter partes review proceedings involving patents owned by the company.
- (2022) Retained as expert witness on behalf of a computer software and hardware company. General technology area: group collaboration systems. Writing declaration in support of inter partes review petitions.
- (2022) Retained as expert witness on behalf of a consumer electronics company. General technology area: graphical user interfaces. Analyzed possible infringements of the company's patents.
- (2022) Retained as expert witness on behalf of a computer software company. General technology areas: Web-based and mobile user interfaces.
- (2022) Retained as expert witness on behalf of a computer software company. General technology areas: Web-based and mobile user interfaces.
- (2021) Retained to write declaration in support of inter partes review petitions. General technology area: information discovery.
- (2021) Retained on behalf of a computer software and hardware company. General technology area: graphical user interfaces. Writing declaration in support of inter partes review petitions.
 - **Deposed: September 2022**
- (2021) Retained on behalf of a computer software and hardware company. General technology areas: web information access, voice interaction, home automation. Writing declaration in support of inter partes review petitions.
- (2021) Retained on behalf of a computer software company. General technology area: multimedia messaging. Analyzing potential infringement of company's patents.
- (2021) Retained on behalf of a computer software company. General technology areas: map-based user interfaces, mobile computing, messaging. Writing declarations in support of patent holder's position in *ex parte* reexaminations.

- (2020) Retained on behalf of a computer software and hardware company. General technology area: information processing, hypertext, inference. Writing expert reports.
- (2020) Retained on behalf of a computer software and hardware company. General technology area: graphical user interfaces. Analyzed potential invalidity of patents.
- (2020) Retained by on behalf of a consumer electronics company. General technology area: graphical user interfaces. Analyzed possible infringements of the company's patents.
- (2020) Retained by Erise IP on behalf of Apple
 - Worked on *Inter Partes* review declaration
 - **Deposed: December 2020**
- (2019) Retained on behalf of Comcast. General technology area: interactive program guide systems. Writing expert reports.
 - **Deposed July 2021**
 - **Testified July 2022**
 - **Testified at jury trial April 2022:** Judge William Jung of the U.S. District Court for the Middle District of Florida granted judgment as a matter of law of no infringement for Comcast.
- (2019) Retained on behalf of a computer and internet software company. General technology area: information search. Did not write expert reports.
- Retained by O'Melveny & Myers on behalf of Google (2019)
- Retained by Erise IP on Behalf of Unified Patents, Inc. (2018)
 - Worked on *Inter Partes* review declaration
 - **Deposed: September 2019**
- Retained by Maynard, Cooper & Gale for an *Ex Parte* Reexamination (2018)
- Retained by Klarquist Sparkman on behalf of LinkedIn (2018)
 - Worked on an *Inter Partes* review declaration
- Retained by Klarquist Sparkman on behalf of Microsoft (2017-2018)
 - Worked on multiple *Inter Partes* review declarations and a Post Grant Review declaration
- Microsoft Corporation and Microsoft Mobile, Inc. vs. Koninklijke Philips N.V.
 - Retained as expert on behalf of Microsoft by Perkins Coie (2017-2019)
 - PTAB Case No. IPR2018-00023
 - Wrote an *Inter Partes* Review declaration
 - **Deposed: July 2018**
 - District Court Case

▪ **Deposed: July 2019**

- Retained by Perkins-Coie on behalf of Microsoft (vs. Cypress Lake Software)
 - Wrote a Post Grant Review declaration
- TiVo Inc. v. Samsung Electronics
 - Retained as expert on behalf of TiVo by Irell & Manella (2016)
 - Case No. 2:15-cv-1503 (E.D. Tex.)
- Netflix v. Rovi 4:11-cv-06591
 - Retained as expert on behalf of Netflix by Keker Van Nest (2014-2015)
 - **Presented technology tutorial to Judge, March 2015**
- Clear with Computers vs. Vermeer
 - Clear with Computers, LLC vs. Vermeer Corporation*
Civil Action No. 13-cv-00167 (E.D. Texas)
 - Retained by Faegre, Baker, and Daniels
- Clear with Computer vs. Manitowoc Cranes, LLC.
 - Clear with Computers, LLC vs. Vermeer Corporation*
Civil Action No. 13-cv-00167 and related cases (E.D. Texas)
 - Retained by Baker Botts
- Clear with Computers vs. Terex Corporation
 - Clear with Computers, LLC v. Terex Corporation*
Civil Action No. 6:12-cv-00634 (E.D. Texas)
 - Retained by Fish & Richardson
- Clear with Computers vs. Valmont Industries, Inc.
 - Clear with Computers, LLC v. Valmont Industries, Inc.*
Civil Action No. 6:13-cv-00166 (E.D. Texas)
 - Retained by Fish & Richardson
 - During the first half of 2014 I was retained by three different firms on behalf of four different clients to work on invalidity. I also worked on non-infringement on behalf of Vermeer.
- Intellectual Ventures vs. U.S. Bancorp and U.S. Bank
 - Intellectual Ventures II LLC v. U.S. Bancorp and U.S. Bank*
Civil Action No. 13-2071 (U.S. District of Minnesota, Fourth Division)
 - Retained by Winthrop & Weinstine on behalf of U.S. Bancorp and U.S. Bank
 - Consulted on non-infringement and invalidity from late 2013 through mid 2014
- “Products Containing Interactive Program Guide and Parental Control Technology”:
Rovi vs. LG Electronics, Mitsubishi, Netflix, Roku, and Vizio.
 - Case No. ITC 337-TA-845
 - International Trade Commission
 - Retained as expert on behalf of respondents Netflix and Roku by Keker Van Nest (2012-2013)

- **Deposed: 2013**
- **Testified in court: 2013**
- Motorola Mobility vs. Microsoft and Microsoft vs. Motorola Mobility (Counterclaim)
 - Case No. 1:10-CV-24063-MORENO
 - United States District Court Southern District of Florida
 - Retained as expert on behalf of Microsoft (2011-2012) by Sidley Austin
 - **Deposed: 2011**
- Interval Licensing LLC vs. Aol, Inc.; Apple, Inc.; eBay, Inc.; Facebook, Inc.; Google, Inc.; Netflix, Inc.; Office Depot Inc.; OfficeMax Inc.; Staples, Inc.; Yahoo, Inc.; and YouTube, LLC.
 - Case No. 2:10-cv-01385-MJP
 - United States District Court Western District of Washington at Seattle
 - Retained as expert of behalf of four of the respondents – eBay Inc.; Netflix, Inc.; Office Depot, Inc.; and Staples, Inc. – by Klarquist Sparkman (2011)
- Microsoft vs. Tivo
 - Case No. 5:10-cv-00240-RS
 - United States District Court Northern District of California
 - Retained as expert on behalf of plaintiff by Perkins Coie (2010-2011)
- Elsevier B.V., Elsevier Inc., and Mosby, Inc. vs. UnitedHealth Group, Inc. etc.
 - 09 Civ. 2124
 - United States District Court Southern District of New York
 - Retained as expert on behalf of respondent by Dorsey & Whitney (2010)
- NORTHBROOK DIGITAL LLC vs. Vendio Services, Inc.
 - Civil File No. 07-CV-2250
 - United States District Court District of Minnesota
 - Retained as expert on behalf of plaintiff by Dorsey & Whitney (2009)

SERVICE

University of Minnesota Committees

- College of Science & Engineering Consultative Committee: 2015-2018
- College of Science & Engineering Honors & Awards Committee, 2017-2020

External Professional Activities

ACM Special Interest Group on Computer Human Interaction

- President: 2015-2018
- Executive Committee: Adjunct Chair for Awards, 2012 – 2015.

- Executive Committee: Vice President for Membership and Communication, 2009 – 2012.

Conference Chair

- CHI 2002: ACM Conference on Human Factors in Computing Systems
- IUI 1998: ACM Conference on Intelligent User Interfaces.

Program Committee Chair

- CSCW 2004: ACM Conference on Computer-Supported Cooperative Work.
- CSCW 2013: ACM Conference on Computer-Supported Cooperative Work.

Computer Supported Cooperative Work (CSCW) Steering Committee

- Chair, 2012-2014 (First elected Chair of the committee that oversees the CSCW Conference and the general CSCW and Social Computing research community.)

Awards Committee Chair

- CSCW 2008: ACM Conference on Computer-Supported Cooperative Work.

Journals Edited

- Special Issue of *Knowledge-Based Systems* on Human-Computer Collaboration, Vol. 8, No. 2-3, 1995.

Proceedings Edited

- Proceedings of the 2002 ACM Conference on Human Factors in Computing Systems (CHI 2002).
- Proceedings of the 1998 ACM Conference on Intelligent User Interfaces (IUI 1998).

Editorial Boards

- Communications of the ACM, 2009-present.
- ACM Transactions on CHI, 2000-2006.
- Knowledge-Based Systems, 1993-2009.
- ACM *intelligence*, 1998-2001.

Program Committees

- ACM Conference on Human Factors in Computing Systems (CHI): 1999-2004, 2006, 2016.
- ACM Conference on Computer-Supported Cooperative Work (CSCW): 2000, 2006, 2008, 2010, 2011, 2012, 2015.
- ACM Conference on Intelligent User Interfaces (IUI): 1997-2000, 2004.
- ACM Recommender Systems Conference: 2007, 2008, 2009, 2010, 2013.
- ACM GROUP Conference: 2007, 2009, 2010.

- ACM SIGIR Conference: 2008.
- AAAI Conference on the Web and Social Media: 2011, 2012, 2016.
- User Modeling, Adaptation, and Personalization: 2011, 2016.
- NordiCHI 2008, 2010.
- Communities and Technology: 2009.
- Computer-Supported Cooperative Learning 2002.
- User Modeling: 2001.
- International Conference on Knowledge Capture 2001.
- Knowledge-Based Software Engineering (KBSE): 1994-1999.
- Intelligent Data Analysis: 1997.
- National Conference on Artificial Intelligence (AAAI): 1996-1997.
- IEEE Conference on Artificial Intelligence for Applications (CAIA): 1994.
- International Workshop on Privacy-Aware Location-based Mobile Services: 2007.
- SIGIR Workshop on Future Challenges in Expertise Retrieval: 2008.

Other conference leadership positions

- ACM Conference on Computer-Supported Cooperative Work Doctoral Consortium Co-Chair, 2016 and 2011.
- The 2nd AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2014) Doctoral Consortium Co-Chair.
- International Symposium on Wikis and Open Collaboration Doctoral Symposium Chair, 2011.
- ACM Conference on Recommender Systems Doctoral Consortium, Co-Chair, 2007.
- International Joint Conference for Artificial Intelligence Doctoral Consortium, Co-Chair, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, Co-Chair, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, Co-Chair, 1996.

Reviewer

Journals

- ACM Computing Surveys.
- IEEE Transactions on Data and Knowledge Engineering.
- IEEE Expert.
- Information Systems.
- International Journal of Human-Computer Studies.
- Journal of Computer-Supported Cooperative Work.

Conferences

- Ninth IFIP International Conference on Human-Computer Interaction (INTERACT): 2003.
- ACM Conference on Human Factors in Computing Systems (CHI): 1995-1998.
- ACM Conference on Computer-Supported Cooperative Work (CSCW): 1998.
- ACM Symposium on User Interface Software and Technology (UIST): 1996.
- ISSM Conference on Information and Knowledge Management: 1993.

National Science Foundations Panels

Served on panels in 1996, 1998, 2001, 2003, 2005, 2010, 2012, 2013.

Workshops Organized

- ACM Wikis and Open Collaboration Doctoral Symposium, 2011.
- Social Computational Systems Community Workshop, 2011.
- ACM Computer Supported Cooperative Work Doctoral Consortium, 2011.
- International Conference on Ubiquitous Computing (UbiComp): “Multi-device Interfaces for Ubiquitous Peripheral Interaction”, 2003.
- ACM Conference on Human Factors in Computer Systems (CHI): “Interacting with Recommender Systems”, 1999.
- International Joint Conference for Artificial Intelligence Doctoral Consortium, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, 1996.
- ACM Conference on Human Factors in Computer Systems (CHI): “‘Model World’ to ‘Magic World’: Making Visual Objects the Medium for Intelligent Design Assistance”, 1995.
- ACM Conference on Human Factors in Computer Systems (CHI): “New Uses and Abuses of Interaction History”, 1994.
- AAAI Fall Symposium: “Human-Computer Collaboration: Reconciling Theory, Synthesizing Practice”, 1993.
- World Conference on Artificial Intelligence and Education: “Collaborative Problem Solving: Theoretical Frameworks and Innovative Systems”, 1993.
- Conference on AI for Applications: “Applying AI To Software Problems: Assessing Promises and Pitfalls”, 1992.

Other Professional Service

- Member of SIGCHI Publications Board and Conference Management Committee, 2002-2004.
- ACM Special Interest Group on Artificial Intelligence Conference Chair (1995-1999); originated and co-organized Doctoral Consortia held in conjunction with AAAI and IJCAI.

Internal Service

- Associate Department Head, 2019-
- Chair, Department Head Search Committee, 2015.
- Chair, Strategic Planning Committee, 2013-2014.
- Chair, Social Computing Faculty Search Committee, 2013-2014.
- Curriculum Committee, 2012-2013.
- Chair, Strategic Planning Committee / Faculty Recruiting Committee, 2011-2012.
- Director of Graduate Studies: 2007-2010.
- Communications Committee: 2007
- Newsletter/Brochure Committee (chair): 2006-2007
- Research Opportunities Committee: 2005-2007
- Curriculum Committee: 2003-2005.
- Hosted Robert Kraut, Cray Colloquium speaker: October 2003.
- Participated in recruiting and admission activities.
- Information, Technology, and Everyday Life Initiative: Committee Member.

TEACHING AND ADVISING

Ph.D. Students Advised

- Dan Cosley (co-advised with John Riedl): completed PhD July 2006, currently an Associate Professor at Cornell University; on leave as Program Director at NSF.
- Pamela Ludford: completed PhD September 2007, currently an independent consultant.
- Reid Priedhorksy: completed PhD August 2010, currently employed at Los Alamos National Laboratories.
- Colin Delong: completed PhD October 2013 (co-advised with Jaideep Srivastava)
- Mikhil Masli: completed PhD July 2013, currently employed at IBM.
- Aaron Halfaker (co-advised with John Riedl): completed PhD September 2013, currently employed at Microsoft.
- Katie Panciera: completed PhD August 2014; currently Assistant Professor at Milwaukee School of Engineering.
- Fernando Torre: completed PhD September 2014; founder of a startup.
- Shuo (Steven) Chang: completed PhD August 2016; currently employed at Facebook.
- Tien Nguyen (co-advised with Joe Konstan): completed PhD August 2016; currently employed at Facebook.
- Morten Warncke-Wang (co-advised with Brent Hecht): completed PhD December 2016, currently employed at the Wikimedia Foundation.
- Andrew Sheppard: completed PhD December 2017, currently employed at Houston

Engineering.

- Jacob Thebault-Spieker (co-advised with Brent Hecht): completed PhD December 2017; currently Assistant Professor at The University of Wisconsin.
- Hannah Miller (co-advised with Brent Hecht): completed PhD August 2018; currently Assistant Professor at University of Wisconsin Oshkosh.
- Vikas Kumar (co-advised with Joe Konstan), completed PhD August 2018, currently employed at KenSci.
- Andrew Hall: completed PhD August 2019; currently employed at 3M.
- Bowen Yu (co-advised with Haiyi Zhu), completed PhD December 2018, currently employed at Facebook.
- C. Estelle Smith: completed PhD December 2020; currently Assistant Professor at the Colorado School of Mines.
- Zach Levonian (co-advised with Lana Yarosh): completed PhD July 2022.
- Charles Chuankai Zhang (entered program Fall 2019).
- Mohammed (Mo) Houtti (entered program Fall 2019)
- Moyan Zhou (entered program Fall 2021)
- Ava Bartolome (entered program Fall 2022; co-advised with Stevie Chancellor)

M.S. Students Advised

- Tyler Danielsen – received degree in 2016
- Jie Kang – received degree in 2016
- Zahra Eslami – received degree in 2015
- Yanjie Liu – received degree in 2013
- Renji Yu – received degree in 2012
- Carol Drysdale – received degree in 2011
- Jingwen Zhang – received degree in 2011
- Jisu Oh – received degree in 2010
- Sara Drenner – received degree in 2008
- Anna Rouben – received degree in 2006
- Arjun Sundararajan – received degree in 2006
- Pamela Ludford – received degree in 2005
- Rahul Akolkar – graduated May 2004

Undergraduate Honors / Senior Thesis Students Advised

- Moyan Zhou 2021
- Avleen Kaur 2020

- Harmanpreet Kaur, 2016
- Arlo Siemsen, 2014
- Johnathan Frenz, 2013
- David Pitchford - 2012
- Michael Ludwig - 2010
- Jordan Focht – 2010
- Kurt Wilms - 2005
- John Murphy – 2004

Other Committees

- Hanlin Li, PhD: Member of final examination committee (Northwestern University).
- Matheus Araújo, PhD: Member of preliminary and final examination committees
- Hao-Fei Cheng, PhD: Member of preliminary and final examination committees
- Catherine Grevet, PhD: member of preliminary and final examination committees (Georgia Tech).
- Loxley Wang, PhD: member of preliminary and final examination committees.
- Abigail Bakke, PhD: member of preliminary and final examination committees
- Tahir Sousa, MS: member of final examination committee
- Tony Lam, PhD: member of preliminary examination committee.
- Michael Janseen, PhD: member of preliminary examination committee.
- Haleh Hagh Shenassas, PhD: member of preliminary & final examination committees.
- Julie Beilfuss, MS: member of final examination committee.
- Liv Knatterud, MS: member of final examination committee.
- Sean McNee, MS: member of final examination committee.
- Shankar Subrahmanian, MS: member of final examination committee.
- Vamsee Venuturumilli, MS: member of final examination committee.
- Eric Gilbert, Ph.D. Preliminary and Final Examination Committees (UIUC, 2009/2010): member of thesis committee.
- Yi (Jenny) Zhang, Ph.D. (New Jersey Institute of Technology, 2004): member of thesis committee.
- Brian Amento, Ph.D. (Virginia Tech, 2001): member of thesis committee.
- David McDonald, Ph.D. (UC Irvine, 2000): member of thesis committee.

Courses taught

A list of all the classes I have taught, in most cases multiple times.

- CSCI 8115: Human-Computer Interaction and UI Technology

- CSCI 5125: Collaborative and Social Computing
- CSCI 5116: GUI Toolkits and Their Implementation
- CSCI 5115: User Interface Design, Implementation, and Evaluation
- HSEM 2519H: Honors Seminar on Crowdsourcing
- CSCI 1902: Structure of Computer Programming II
- CSCI 1901H: Introduction to Computer Science (Honors)

Tutorials

“Intelligent User Interfaces: Issues, Approaches, Evaluation”, offered at 1993 Conference on Artificial Intelligence for Applications.