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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

MIRROR WORLDS TECHNOLOGIES, LLC Plaintiff, v. FACEBOOK, INC. Defendant.	Civil Action No. 1:17-cv-3473 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Mirror Worlds Technologies, LLC ("Mirror Worlds" or "Plaintiff"), by and through its counsel, for its complaint against Defendant Facebook, Inc. (referred to hereinafter as "Defendant" or "Facebook"), alleges as follows:

PARTIES

1. Mirror Worlds Technologies, LLC is a Texas limited liability corporation with a

place of business at 445 Park Avenue, Suite 912, New York, New York 10022.

2. On information and belief, Facebook Inc. is a Delaware corporation with a place of business at 770 Broadway, New York, New York 10003.

JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, 35 U.S.C. § 1, *et seq.*, including § 271. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

4. This Court has personal jurisdiction over Defendant because, among other reasons, Defendant has done business in this District, has committed acts of patent infringement in this District, and since at least 2012 maintains key engineering facilities in this District that support its acts of patent infringement. Defendant has established minimum contacts with this forum such that the exercise of jurisdiction over Defendant would not offend traditional notions of fair play and substantial justice. Defendant's contacts with this forum are systematic and continuous, and Defendant maintains a place of business in this district at 770 Broadway, New York, NY 10003, with over 300 employees. According to Facebook's own press release, this engineering facility was established in 2012 to "tap into the remarkable technical talent that the region has to offer."[1]

5. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(d) and 1400(b) because, among other reasons, Defendant is subject to personal jurisdiction in this District, and has committed acts of patent infringement in this District, which are the subject of this Complaint.

PATENTS

[1] *See, e.g., S*teve Kovak, *Facebook Opening Engineering Office in NY Early Next Year,* BUSINESS INSIDER, (Dec. 2, 2011 2:19 PM), *available at* http://www.businessinsider.com/facebook-opening-engineering-office-in-nyc-2011-12 (quoting Facebook Press Release).

6. Plaintiff is the exclusive assignee and/or licensee of all right, title, and interest to the patents-in-suit: U.S. Patent No. 6,006,227 (the "'227 Patent"), U.S. Patent No. 7,865,538 (the "'538 patent"), and U.S. Patent No. 8,255,439 (the "'439 Patent") (collectively hereinafter, "patents-in-suit"). A true and correct copy of each of the patents is attached as Exhibits A, B and C, respectively.

7. The '227 Patent was duly and legally issued on December 21, 1999, for an invention entitled "Document Stream Operating System," naming Drs. David H. Gelernter and Eric Freeman as inventors. Mirror Worlds is the sole owner of all rights granted in the '227 Patent. The '227 Patent expired on June 28, 2016.

8. The '538 Patent was duly and legally issued on January 4, 2011, for an invention entitled "Desktop, Stream-Based Information Management System," naming Dr. Gelernter, Dr. Freeman, Randy Prager, Peter Sparago, and Stephen Marcaurele as inventors. The'538 Patent incorporates by reference the '227 Patent, and is a continuation-in-part of the '227 Patent through other related patents and applications. Mirror Worlds is the assignee and sole owner of all rights granted in the '538 Patent. The '538 Patent expires on April 30, 2018.

9. The '439 Patent was duly and legally issued on August 28, 2012, for an invention entitled "Desk-top, Stream-Based Information Management System," naming Dr. Gelernter, Dr. Freeman, Randy Prager, Peter Sparago, and Stephen Marcaurele as inventors. The'439 Patent incorporates by reference the '227 and '538 Patents, and is a continuation of the '538 Patent, and a continuation-in-part of the '227 Patent through other related patents and applications. Its specification is nearly identical to the specification of the '538 Patent. Mirror Worlds is the sole owner of all rights granted in the '439 Patent. The '439 Patent expired on September 3, 2016.

BACKGROUND

10. Dr. Gelernter is a world-renowned professor of computer science at Yale University, where he joined the faculty in 1982, and is also an accomplished artist, writer, and political commentator whose work has been widely published in the *Wall Street Journal*, *New York Post*, *Los Angeles Times*, and *Weekly Standard*. Dr. Gelernter currently resides in Woodbridge, Connecticut.

11. Dr. Gelernter is widely credited with seminal contributions in the field of computer science and, in particular, parallel computation. As *The New York Times* reported in 2001, he "pioneered technologies in the 1980's at Yale University that allowed computers to collaborate – what is now known by the buzz phrase peer-to-peer computing."[2]

12. His contributions also extend to what is now known as "cloud computing." In 1991, Dr. Gelernter was working on the development of a parallel-programming language that would allow programs running on different machines to coordinate their actions. With colleagues at Yale, Dr. Gelernter interconnected multiple computers to operate as a single, more powerful machine. They demonstrated the value of this approach by linking 14 small workstation computers to create a cluster that was as powerful as a supercomputer, but cost a fraction of the price. This was a forerunner of the modern "cloud computing" approach in which firms such as Google and Amazon combine thousands or millions of machines to deliver computing services.[3]

13. As reported in *the Economist*, "Dr. Gelernter foresaw how computers would be woven into the fabric of everyday life. In his book 'Mirror Worlds,' published in 1991, he accurately described websites, blogging, virtual reality, streaming video, tablet computers, e-books, search engines and internet telephony. More importantly, he anticipated the consequences

[2] John Schwartz, *New Economy; Selling a Vision of the Future Beyond Folders,* The New York Times, Business Day (July 2, 2001) (available at http://www.nytimes.com/2001/07/02/business/new-economy-selling-a-vision-of-the-future-beyond-folders.html) (hereinafter "2001 New York Times Article").
[3] *Seer of the mirror word,* The Economist, Technology Quarterly, Vol. Q4 2011 (Dec. 3, 2011) (available at http://www.economist.com/node/21540383) (hereinafter, "2011 The Economist Article").

all this would have on the nature of social interaction, describing distributed online communities that work just as Facebook and Twitter do today."[4]

14. In the 1990s, building upon his computer science research, Dr. Gelernter co-developed inventions for a "document stream operating system and method" that are the subject of the three patents-in-suit.

15. The inventions provided a unique and nonconventional solution to the cumbersome file systems employed by computer systems at the time to organize and search for documents. The new type of system automatically organized documents into time-ordered streams that could be searched and filtered to organize, locate, and summarize incoming and newly created information.

16. This automatic system provided a replacement or complement for the traditional folder and directory structure, which required users to manually store and locate files while remembering file names and locations – a system that becomes unmanageable as the number of electronic files increases.

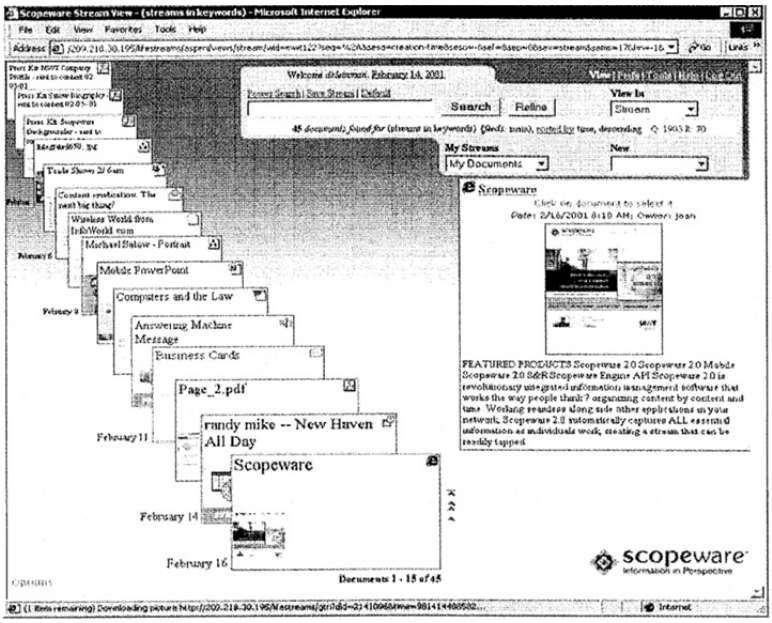
17. *The New York Times* described the system as "offer[ing] a way to break out of the numberless files and folders that clutter computer desktops and make information hard to find."[5]

18. Dr. Gelernter considered the traditional folder and directory structure, the "desktop" interface, as brilliant but obsolete. He criticized the "desktop" interface as wasting screen space on meaningless images and failing to provide adequate clues to what is inside the files represented by the "blurry little images." He analogized the "desktop" interface to a 1940s Steelcase file cabinet, requiring users to name every document and choose a folder location, and

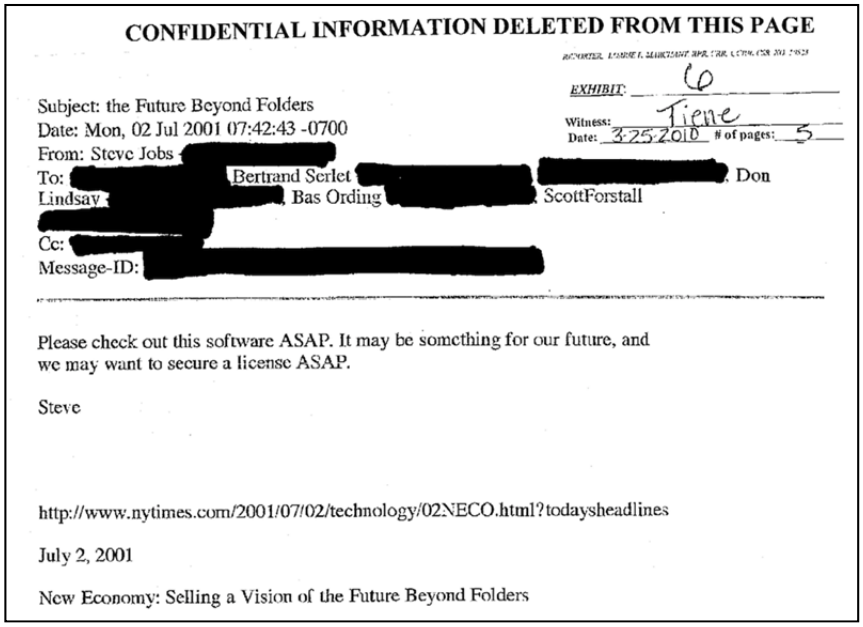
[4] *Id.*
[5] *See, e.g.,* John Schwartz, *Pursuing a Piracy Claim Against Apple*, The New York Times, (Nov. 4, 2011) (available at http://www.nytimes.com/2011/11/05/us/david-gelernter-discusses-patent-claim-against-apple.html); *see also* New York print edition of New York Times, p. A12 (Nov. 5, 2011).

transforming users into file clerks.

19. Dr. Gelernter and his co-inventors' unconventional stream-based solution was not just a vision. It was the focus of a commercial embodiment of the inventions called "Scopeware," which was launched in March 2001. It was hailed in the press (*e.g.*, *The New York Times*, and *Associated Press*) as an elegant system that could change the entrenched features that made file systems unmanageable.[6] A screenshot of Scopeware (circa 2001) is depicted below:



[6] 2001 New York Times Article, *supra*; Frank Bajal, *New Software Airms to Render Obsolete Tired Old File Folders Model*, Associated Press (April 5, 2001 (available at http://billingsgazette.com/business/technology/new-software-aims-to-render-obsolete-tired-old-file-folder/article_3e23f4dd-b9fa-5619-b2b5-0fe2fe71d78e.html



CONFIDENTIAL INFORMATION DELETED FROM THIS PAGE

EXHIBIT: 60
Witness: Tiene
Date: 3-25-2010 # of pages: 5

Subject: the Future Beyond Folders
Date: Mon, 02 Jul 2001 07:42:43 -0700
From: Steve Jobs
To: [redacted] Bertrand Serlet [redacted] Don Lindsay [redacted] Bas Ording [redacted] ScottForstall
Cc: [redacted]
Message-ID: [redacted]

Please check out this software ASAP. It may be something for our future, and we may want to secure a license ASAP.

Steve

http://www.nytimes.com/2001/07/02/technology/02NECO.html?todaysheadlines

July 2, 2001

New Economy: Selling a Vision of the Future Beyond Folders

20. Scopeware's unique and unconventional approach caught the eye of Apple's then-CEO, Steve Jobs. In 2001, Mr. Jobs circulated the 2001 *New York Times* article *supra*, about Scopeware to other Apple senior executives, instructing in the e-mail (excerpt shown below): "Please check out this software ASAP. It may be something for our future, and we may want to secure a license ASAP."[7] As reported in *The New York* Times, an Apple executive at the time commented that "this was the first time I recall having received a specific mail to look at a company or its technology" from Mr. Jobs.[8]

21. Scopeware took all the documents of a user – word-processing files, e-mails, calendar items, presentations, pictures, correspondence, bills, movies, voice mail, software programs, and any other type of data – to organize every document into a "stream" in the order the documents were created. Represented in a row of icons stretching into the past and future, users could slide the icons back and forth to view any document. As described in *The New York*

[7] John Schwartz, *Pursuing a Piracy Claim Against Apple*, The New York Times, (Nov. 4, 2011) (available at http://www.nytimes.com/2011/11/05/us/david-gelernter-discusses-patent-claim-against-apple.html).
[8] *Id.*

Times, in Scopeware, "Move the cursor over any document and a representation of it shows up in the lower right corner of the screen; a mouse click brings the full document up in its original form. The stream can be dipped into, and the documents sorted in a number of ways through powerful search tools."[9] George Gilder, the technology analyst, called it "elegant, easy, natural and beautiful," and predicted, "It will prevail."[10] The effect of having everything in one place, provided a new ease in finding individual documents that are scattered among many applications.[11]

22. Dr. Gelernter and his co-inventors' stream-based solution was envisioned as an electronic diary of a user's life. It would contain documents, photos, messages or web pages the user interacted with – all in a single, searchable stream, and held safely online. Individual items could be shared with other people. The stream could also blend with millions of other streams, with a simple way to control the flow of information so as not to overwhelm the user. It would represent the user's personal and public life, and function as a confidential electronic diary.

23. As reported in *The Economist*, "[i]f that sounds an awful lot like Facebook, the similarities become almost eerie when Dr. Gelernter explains how he hoped to release [his stream-based solution] …. 'I wanted the company to build software for college students, who are eager early adopters. It would be designed not only to eliminate file systems but also to be a real-time messaging medium. Social networking was the most important aspect of it. Starting with Yale, we would give it away for free to get undergraduates excited about recommending it to their friends,' he says. But Mirror Worlds' investors decided that it would be better to focus on corporate clients, and the result was … Scopeware. It sold modestly to a few large American state agencies, but never took off. Mirror Worlds ceased operations in 2004, the same year that

[9] 2001 New York Times Article, *supra*.
[10] *Id.*
[11] *Id.*

Mark Zuckerberg launched Facebook."[12]

24. At the time of the inventions at issue, Dr. Freeman, co-inventor on the patents-in-suit, was a Ph.D student at Yale under Dr. Gelernter, and worked with him to commercialize the stream-based solution. Since then, Dr. Freeman has held positions at Disney (CTO, Disney Online), O'Reilly Media, NASA, Yale and a number of startups. He is also a top selling technology author and educator with over half a million books in print.

25. Mr. Sparago, co-inventor on the '439 and '538 Patents, has over thirty-five years of experience in commercial and enterprise software architecture, design, development and management. He was the Principal Software Architect and Development Manager for Mirror Worlds Technologies. Mr. Sparago currently resides in Cheshire, Connecticut.

26. Mr. Marcaurele, co-inventor on the '439 and '538 Patents, is a software engineer with a Bachelor of Science in Computer Engineering from the University of Connecticut. Mr. Marcaurele currently resides in Meriden, Connecticut.

27. Mr. Prager, co-inventor on the '439 and '538 Patents, has led software development and technology teams at both startup and established companies, including Scopeware, MarketXT and Bloomberg. He is known and followed widely in the technology community for his leadership in creating next-generation software platforms in electronic trading, securities analysis, and knowledge management. Mr. Prager is a graduate of Johns Hopkins University, where he double-majored in Economics, and Electrical & Computer Engineering. Mr. Prager currently resides in New York City.

THE PATENTS: NOVEL, NOT OBVIOUS, AND PATENT-ELIGIBLE

[12] 2011 The Economist Article, *supra*.

28. Dr. Gelernter and his co-inventors' stream-based solutions, as embodied in the patents, was groundbreaking.

29. Conventional computer systems were electronic versions of a 1940s Steelcase file cabinet.

30. Some of the disadvantages of conventional systems included:

(1) "a file must be 'named' when created and often a location in which to store the file must be indicated";

(2) "users are required to store new information in fixed categories, that is directories or subdirectories";

(3) "users throw out old data rather than undertaking the task of archiving and remembering how to get the data back";

(4) "users are forced either to use location on their graphical desktops as reminding cues or to use add-on applications";

(5) "accessibility and compatibility across data platforms is not provided"; and

(6) "many filenames are not only pointless but useless for retrieval." '227 Patent 1:40-2:7.

31. The stream-based solution offered a completely different and innovative technological implementation to document management on computer systems that overcame technological challenges found in conventional computer systems.

32. The U.S. Patent and Trademark Office ("PTO") and the Patent Trial and Appeal Board ("Board" or "PTAB") has confirmed the validity of the patents not only through prosecution, but also through numerous reexaminations and in a covered business method review proceeding. For instance, over 500 prior art references were cited or considered, and overcome

during the prosecution of the patents. In addition, the '227 Patent was the subject of two *ex parte* reexamination petitions filed by Apple, during which over 150 additional prior art references were cited or considered. As a result of those proceedings, all of the challenged claims of the '227 Patent were confirmed, and an additional 22 claims were granted.

33. The validity of the '227 Patent was also confirmed in *Mirror Worlds, LLC v. Apple, Inc.*, where a jury found that the claims of the '227 Patent were not invalid. Case No. 6:08-cv-00088-LED, D.I. 409 (October 1, 2010).

2. Did Apple prove by clear and convincing evidence that all of the infringed claims, if any, of each of the Mirror Worlds patents identified below are invalid?

Answer "Yes" or "No" for each listed patent:

'427 Patent: No
'227 Patent: No
'313 Patent: No

(Excerpt from Jury Verdict form).

34. Numerous other companies have recognized the patents as prior art in the fields of computerized data processing, databases, data mining, file management and data structures. The patents have been cited as prior art during the prosecution of approximately 500 patent applications from such companies. Those companies, which had knowledge of one or more of the patents and for which one or more of the patents were considered relevant to those applications before the U.S. Patent and Trademark Office, include a who's who of technology companies, such as Xerox, Cisco, Microsoft, Google, DEC, IBM, Ricoh, HP, Sony, Xilinx, NetApp, Lucent, Adobe, Oracle, Apple, Nokia, Sprint, Novell, EMC, Philips Electronics, Sharp, Sun Microsystems, Verifone, Canon, and Samsung.

35. At least two of those companies, Microsoft and Apple, have also licensed the Mirror Worlds patent, including the patents-in-suit. Mirror Worlds has achieved licensing revenue and other revenue of an aggregate of $47,150,000 which includes, among other things,

the license agreements with Apple and Microsoft.

36. The patented inventions provided novel solutions to the problems outlined in the patents with conventional computer systems through the use of new and innovative techniques that were not well-understood, routine, or conventional.

37. The '227 Patent, for instance, solves problems in conventional systems though a novel and unconventional approach of using a persistent main stream and substreams to organize data units on a computer system. The '538 and '439 Patents similarly present solutions to conventional systems through the use of unconventional and inventive main stream and substreams, and main collection and sub-collections, respectively. An embodiment of the main stream as depicted in the '227 Patent is below:

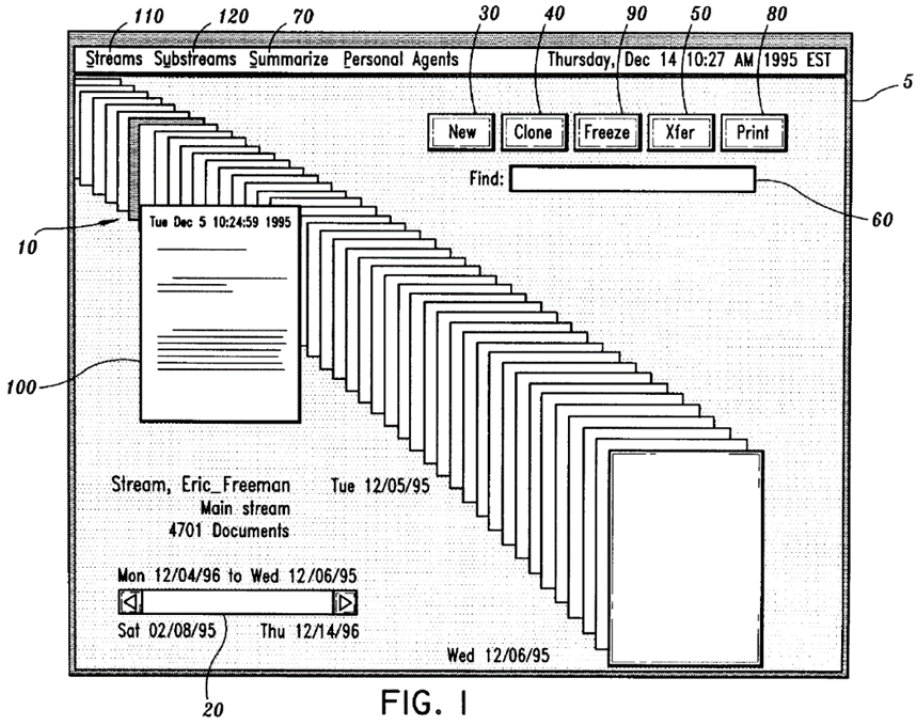


FIG. 1

And as depicted in the '538 and '439 Patents:

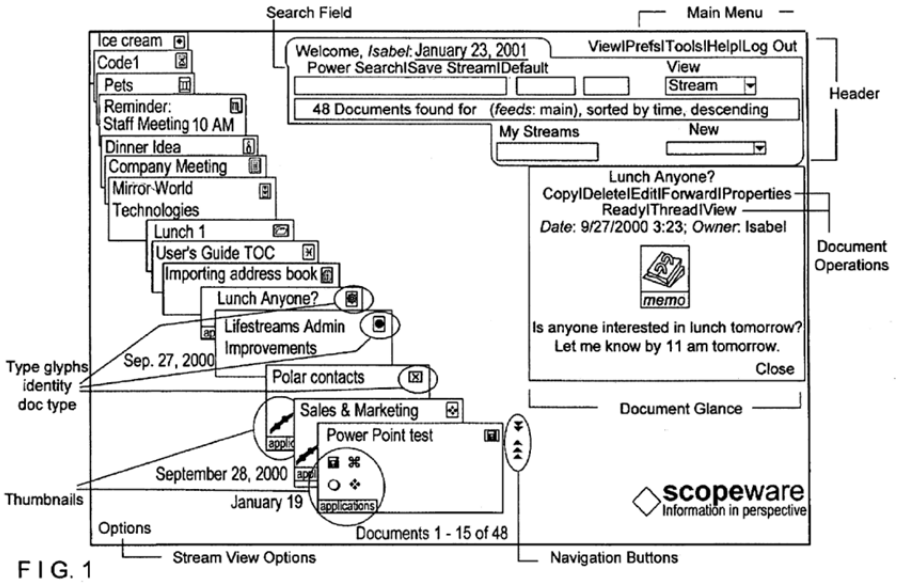


FIG. 1

38. The use of "streams" is repeatedly emphasized in the specifications of the patents, including, for example, the following references:

(1) "A solution to these disadvantages is to use a document stream operating system." '227 Patent at 2:6-7.

(2) "One object of the present invention is to provide a document stream operating system and method which solves many, if not all, of the disadvantages of conventional operating systems." *Id.* at 2:13-16.

(3) "Another object of the present invention is to provide a document stream operating system in which documents are stored in one or more chronologically ordered streams." *Id.* at 2:17-19.

(4) "This invention is a new model and system for managing personal electronic information which uses a time-ordered stream …." *Id.* at 3:62-64.

(5) "Substreams, unlike conventional, virtual or fixed directories which only list filenames, present the user with a stream 'view' of a document collection." *Id.* at 4:51-54.

(6) "Streams of the present invention are designed to work with conventional World Wide Web browsers …." *Id*. at 13:19-20.

39. The use of a main stream and substreams is included in every claim of the '227 and '538 Patents, and the main collection and sub-collections in every claim of the '439 Patent. For example, independent claim 13 of the '227 Patent requires "generating a main stream of data units and at least one substream, the main stream for receiving each data unit received by or generated by the computer system, and each substream for containing data units only from the main stream," "including each data unit … in at least the main stream," and "maintaining at least the main stream and substreams as persistent streams." '227 Claim 13 (emphasis added).

40. A "stream" is not merely a time-ordered set of documents. As recognized in the *Markman* decision in *Mirror Worlds, LLC v. Apple, Inc.*, Case No. 6:13-cv-419, Dkt. 266 at 4 (E.D. Tex. Jan. 14, 2015), a "stream" is a "time-ordered sequence of data units that functions as a diary of a person or an entity's electronic life and that is designed to have three main portions: past, present, and future." The chronological stack of documents saved on a computer (*e.g.*, a stack of court filings) is not "designed to have three main portions, past, present, and future." It relates only to the past. Nor does it "function as a diary of a person or an entity's electronic life."

41. A chronological stack of documents is not a "main stream," which is a "stream that is inclusive of every data unit received by or generated by the computer system." *Id.* at 8-9. A chronological stack of documents on a computer does not include every data unit received by or generated by the computer system. A chronological stack is also not a "persistent stream," which is a stream that is "dynamically updated." *Id.* at 4. A chronological stack of documents on a computer is not dynamically updated.

42. The use of a persistent main stream and substreams, or main collection and sub-

collections, on a computer system is not a fundamental truth, a mathematical algorithm, or a fundamental economic practice long prevalent in our system of commerce. Prior to the inventions, the long-standing practice was to use an entirely different style of computer system. *See, e.g.*, '227 Patent 1:21-2:9 (discussing how conventional systems were organized).

43. The claimed inventions are necessarily rooted in computer technology in order to overcome problems specifically arising in the realm of computer systems.

44. The specification of the '227 Patent, for example, expressly states "the present invention … provide[s] a document stream operating system and method which solves many, if not all, of the disadvantages of conventional operating systems." '227 Patent 2:13-16. Likewise, the speciation of the '538 Patent expressly states that "[i]n an effort to alleviate [the] … concerns with traditional storage and retrieval systems, and to provide a more effective and natural approach that better fits the way people tend to work with and think of items of information, a new system described herein uses approaches that rely primarily on an intuitive, time-associated way of dealing with information. The system is stream-based in that it creates time-ordered streams of information items or assets, beginning with the oldest and continuing through current and on to future items." '538 Patent 1:59-2:1. The problems addressed by the patents are rooted in computer technology and do not exist in paper document storage.

45. The patented inventions do not merely recite the performance of some business practice known from the pre-computing world. The use of a persistent main stream and substreams was not something done in the world of paper documents. There was no practice (much less a fundamental or long-standing practice) of preparing a time-ordered sequence of paper documents of different times (e.g., memos, letters, movies, songs, pictures, appointments, etc.) that functions as a diary of a person or an entity's electronic life and that is designed to have

three main portions: past, present, and future.

46. Nor was there any practice of having a main stream that is inclusive of every paper or electronic document (e.g., memos, letters, movies, songs, pictures, appointments, etc.) received by or generated by a computer system, while also simultaneously having subsets of those documents maintained in persistent and dynamically updated substreams. *See, e.g.*, '227 Patent 1:20-2:10. For example, using the streams-based approach, an email received by a computer is simultaneously available in both: (1) a main stream, and (2) any relevant substreams (such as one substream for all emails, another substream for documents relating to the subject of the email, and another for correspondence with the sender of the email). That is not a feature of traditional or conventional paper document storage. *See, e.g.,* '227 Patent, Claim 13 & 2:25-29 ("a conventional paper document can only be accessed in one place, but electronic documents can be accessed from multiple locations" at the same time). A paper letter would have been stored in one location (filed under the sender, subject, or date). There was no "well-known business practice" of using persistent streams and substreams prior to the inventions because it was not possible to use the streams-based approach with paper documents.

47. Moreover, while the concept of chronologically organizing paper documents may have been known, that practice did not have to account for problems in conventional systems such as the requirement of naming each file, storing files in fixed categories, lack of compatibility across data platforms, loss of historical context, and difficulty archiving. *See, e.g.*, *id.* at 1:41-2:7.

48. The patented inventions can neither be performed solely in the human mind, nor with pen and paper. The claims expressly recite the use of a "computer system" or computer readable media and include requirements in Claim 13 of the '227 Patent, for example, for

computer generated documents. This limitation is meaningful because it establishes that the problem being addressed by the invention is necessarily based in computer systems. A paper-based set of documents is not a "stream," and the streams-based approach requires that stored information be simultaneously available in multiple streams. This is impossible to do without the aid of computers.

49. The patented inventions also include concepts that were not well-understood, routine, or conventional at the time of the invention. For example, each of the claims of the '227 and '538 Patents require streams, main streams, and substreams. Those claims further require that a "main stream" and "at least one substream" be "maintain[ed] as persistent streams." These features were not routine or conventional. In fact, the very purpose of the inventions was to override the routine, conventional operation of computer systems, and instead use a streams-based computer system that is nonconventional. The use of streams, a main stream and substreams, and persistent streams are non-routine and unconventional approaches at the time of the inventions.

50. The patented inventions do not raise concerns of preemption. For example, the following methods of chronologically organizing documents would not infringe the claims:

(1) saving chronologically ordered documents in a filing cabinet;

(2) saving chronologically ordered documents electronically on a hard disk;

(3) saving documents electronically in memory with associated databases that includes a date field;

(4) scanning a set of chronologically ordered documents onto a computer and saving it as a pdf;

(5) saving four documents in chronological order in a folder by naming them "1," "2,"

"3" and "4";

(6) creating a table (electronic or on paper) and listing all documents in chronological order;

(7) creating a slideshow with chronologically ordered photos; and

(8) saving a copy of all court filings in chronological order in an electronic folder.

51. The patented inventions do not merely add operations that can be performed by any generic computer with conventional programming. For example, the purpose of the patented inventions of the '227 and '538 Patents was to avoid problems associated with conventional programming by using a streams-based approach. *See, e.g.,* '227 Patent 1:20-2:10; '538 Patent 1:47-2:1.

52. The streams-based approach of the patented inventions was so non-routine that the PTO found that the approach was novel and non-obvious when allowing the '227 Patent claims, and in confirming the claims in the two recent reexaminations. '227 Patent Ex Parte Reexamination Certificates. The PTO expressly found that "the prior art fails to teach or suggest generating a main stream of data units and at least on substream, the main stream for receiving each data unit received by or generated by the computer system, and each substream for containing data units only from the main stream." Notice of Intent to Issue Ex Parte Reexamination Certificate, Control Number: 90/010,506 (Jan. 28, 2011) at 4.

53. The display of only a selected segment of a collection or stream as disclosed in the '439 and '227 Patents was also a novel and inventive solution to problems with conventional computer systems, and which was not a well-understood, routine, or conventional operation. The PTAB, for instance, recognized, during the reexamination of a related Mirror Worlds patent, that the subject prior art failed to disclose displaying only a selected segment, and held that the

"Examiner [was] … therefore incorrect to read the claim language 'display only a selected segment' … and 'display only a segment' … on the display [disclosed in the prior art]." PTAB Decision in Reex. Control No. 90/011,347 (May 30, 2013) at 33.

54. In addition to the statutory presumption of validity that comes with the issuance of each of the patents-in-suit, a sister court and the PTAB have also already expressly rejected eligibility challenges to at least the '227 Patent.

55. In *Apple, Inc., et al. v. Mirror World Techs. LLC.,* the PTAB denied institution of a covered business method review petition for the '227 Patent. Case CBM2016-00019, Paper 12 (May 26, 2016). The Board recognized that "the challenged '227 patent claims do not recite an abstract idea," and that they "are directed to an improvement in computer functionality." *Id.* at 16-17. The Board was not persuaded by Apple's contention that (1) the claims are not rooted in computer technology and "merely recite[] the use of a general purpose computer"; (2) steps of the claims involve "the normal, well-known functioning of a computer"; and (3) the claims can be performed entirely by the human mind or with pen or paper. Instead, the Board found that the claims were like *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), in that they provided an "improvement in computer functionality," and were not directed generically to organizing and storing data, but instead to the particular use of streams and substreams. The Board concluded that Apple had not shown that a challenge to the '227 Patent's validity was likely to succeed.

56. Likewise, District Judge Richard Schroeder III upheld the eligibility under 35 U.S.C. §101 of the '227 Patent. The Court found that the '227 Patent addressed a problem "specific to the field of computer operating systems and the claimed solution purport[s] to improve the functioning of the computer itself," and that the asserted claim "is accordingly

rooted in computer technology in order to overcome a problem specifically arising in the realm of computers." *Mirror World Techs. LLC v. Apple, Inc., et al.*, Case No. 6:13-cv-00419 RWS, Dkt. No. 346 at 18 (E.D. Tex. July 7, 2015) (internal quotation marks omitted, brackets in original).

THE ACCUSED SYSTEMS

57. Nearly a decade after the conception of the patented inventions, and after the widely-publicized commercialization of exemplary embodiments of those solutions in Scopeware, Defendant first launched its website later known as Facebook (www.facebook.com).

58. Much of what Dr. Gelernter and his co-inventors envisioned has come true in Facebook. As reported in *the Economist*, Dr. Gelernter "anticipated the consequences [computers and the Internet would] have on the nature of social interaction, describing distributed online communities that work just as Facebook and Twitter do today."[13] As Dr. Gelernter recognized in 2001: "It would be crazy to predict that Scopeware will emerge as the winner in the changing world of information management …. But I will predict this: Scopeware's properties are the properties that a winning system will need, and the direction Scopeware points is the right direction."[14]

59. In its earliest days, Facebook was essentially a directory of profile pages. Users could list their favorite bands, post pictures or write on each others' profiles, but these activities were mostly discrete.[15]

60. In September 2006, two years after its founding, Facebook unveiled a simplified way to keep track of activity on the site, called News Feed, which would become the "epicenter

[13] 2011 The Economist Article, *supra*, (available at http://www.economist.com/node/21540383).
[14] 2001 New York Times Article, *supra*.
[15] *See, e.g.,* Victor Luckerson, *Here's How Facebook's News Feed Actually Works*, Time (July 9, 2015) (available at http://time.com/collection-post/3950525/facebook-news-feed-algorithm/) (hereinafter "2015 Time Facebook Article").

of [its] success."[16] The blog post announcing the new feature described it as "highlight[ing] what's happening in your social circles on Facebook. It updates a personalized list of news stories throughout the day, so you'll know when Mark adds Britney Spears to his Favorites or when your crush is single again. Now, whenever you log in, you'll get the latest headlines generated by the activity of your friends and social groups."[17]

61. "News Feed appears on each user's homepage as a constantly updating list of news stories about their friends. It is a news aggregator that reports on activity in a user's social network and highlights relevant information about people, activities they have been involved in and other information they have chosen to share. News Feed is personalized to each user and is only viewable by that person."[18]

62. Just as Dr. Gelernter and his co-inventors envisioned with their stream-based solution, "[t]he news feed is simply the *stream* of information and content from all contacts that appears on every single Facebook user's home page."[19]

63. "[News Feed], which was initially controversial, has evolved into the most valuable billboard on Earth—for brands, for publishers, for celebrities and for the rest of us. For years, the News Feed has been fueled by automated software that tracks each user's actions to serve them the posts they're most likely to engage with. That proved successful in helping News Feed generate more revenue for Facebook than any other part of the site."[20]

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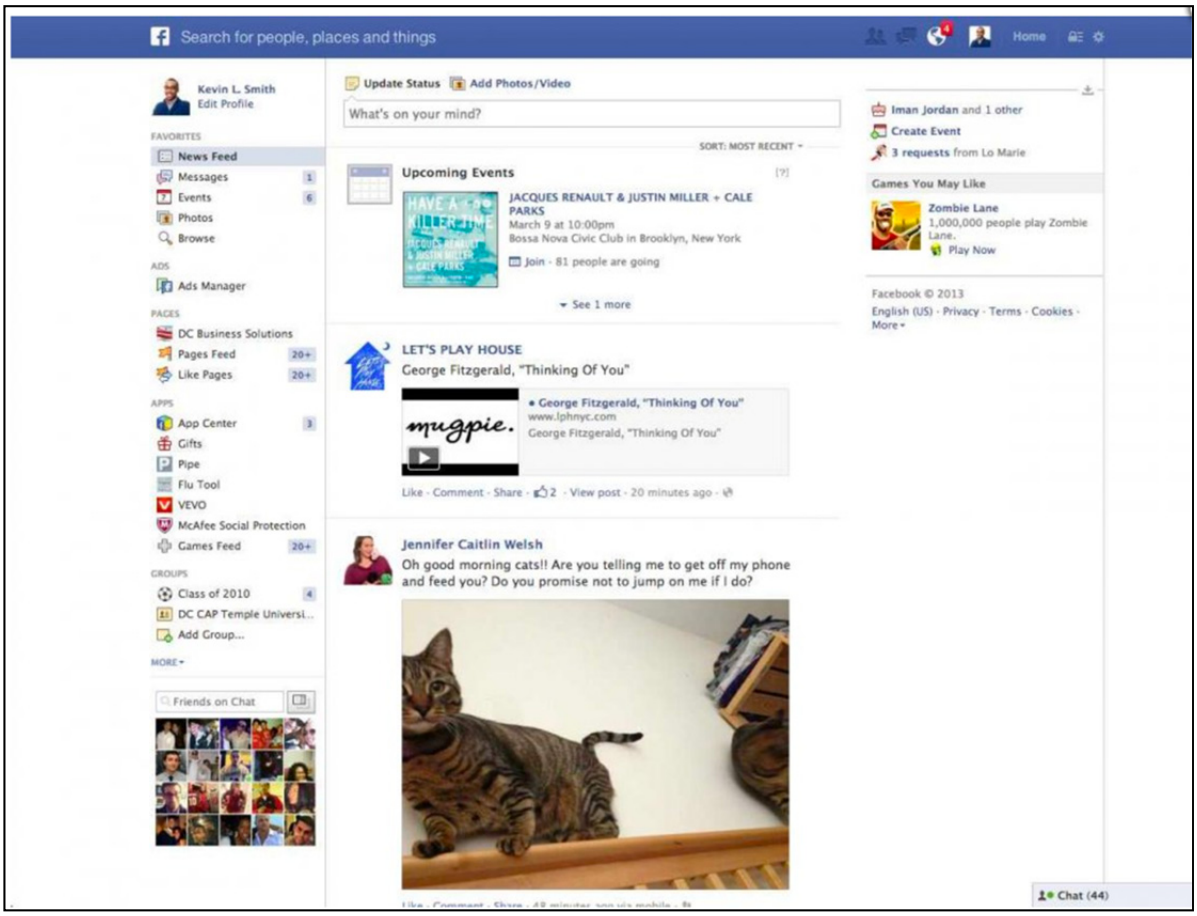
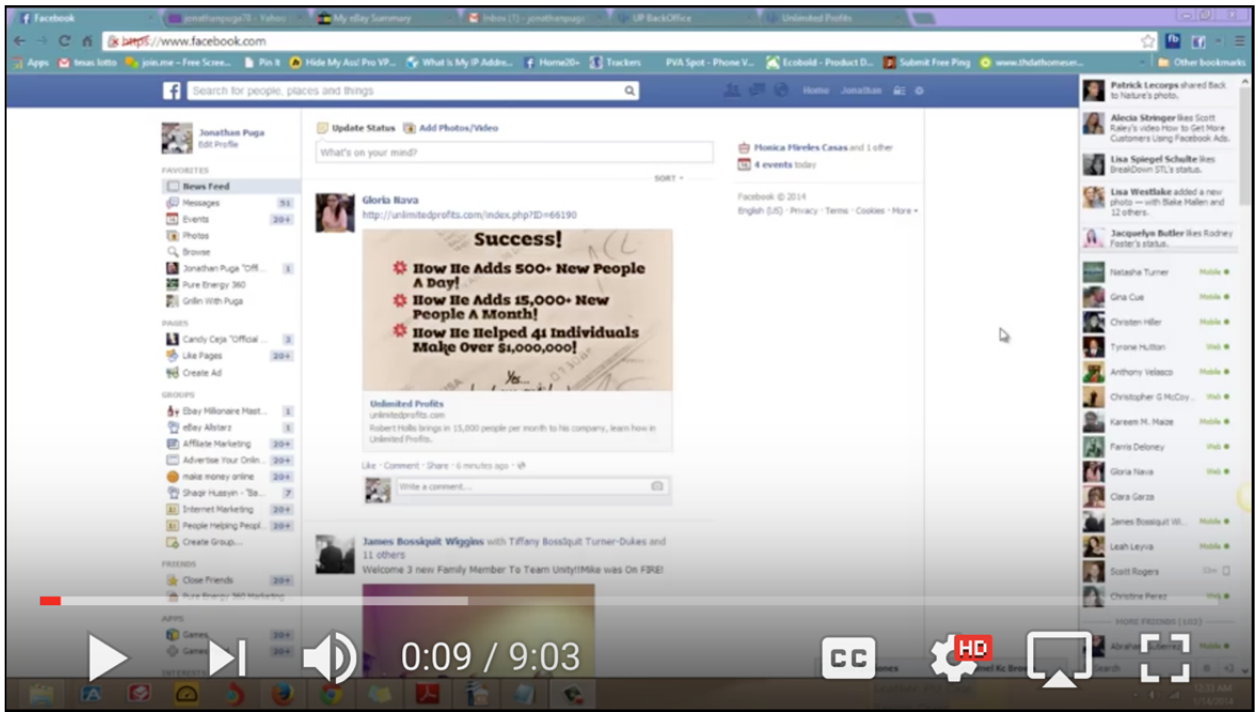
[16] *Id.*
[17] Ruchi Sanghvi, *Facebook Gets a Facelift* (Sept. 5, 2006 at 4:03 a.m.) (available at https://www.facebook.com/notes/facebook/facebook-gets-a-facelift/2207967130).
[18] *Facebook Launches Additional Privacy Controls for News Feed and Mini Feed*, Facebook Newsroom (Sept. 8, 2006) (available at https://newsroom.fb.com/news/2006/09/facebook-launches-additional-privacy-controls-for-news-feed-and-mini-feed/) (emphasis added).
[19] Wendy Boswell, *Facebook 101: A Beginner's Guide, Lifewire* (updated Dec. 18, 2016) (available at https://www.lifewire.com/facebook-beginners-guide-3482091) (emphasis added).
[20] 2015 Time Facebook Article, *supra*, (available at http://time.com/collection-post/3950525/facebook-news-feed-algorithm/)

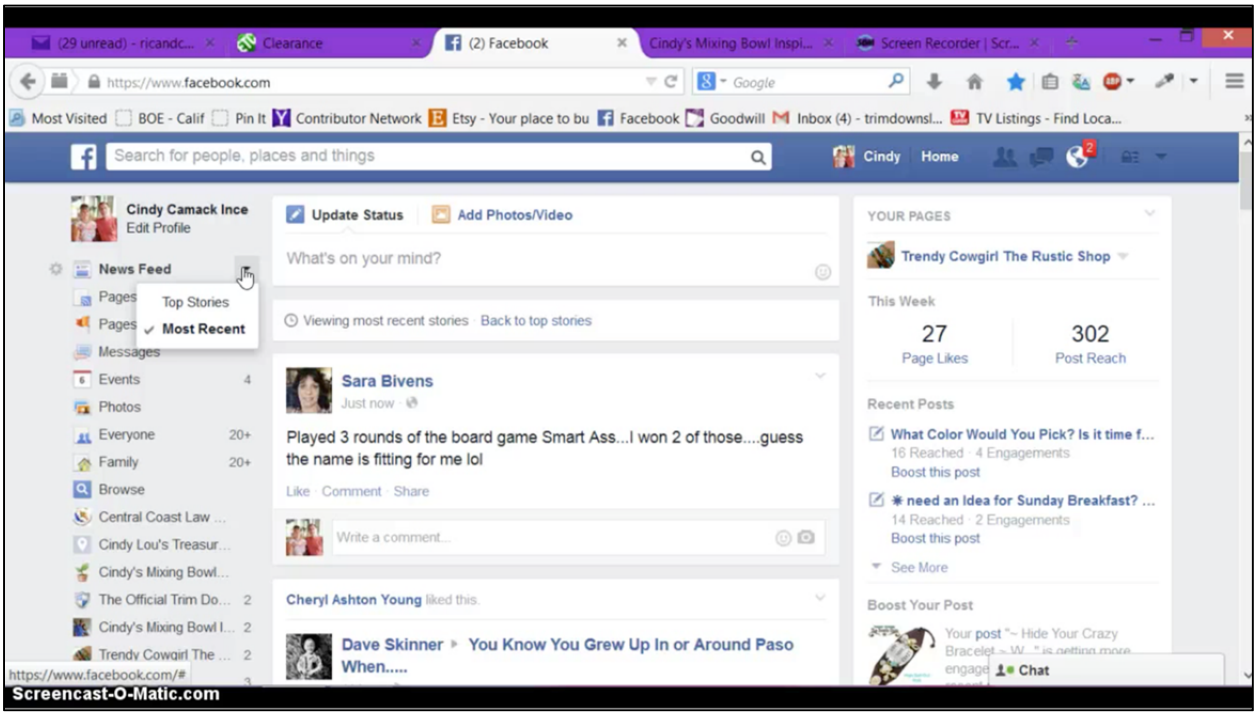
64. Examples of News Feeds generated by the Accused Systems (both web and mobile applications) are provided below. As depicted below, the "constantly updating" News Feeds display posts from the past (*e.g.,* "6 months ago"), the present (*e.g.*, "Just now"), and the future (*e.g.*, "Upcoming Events"), and are dynamically updated (*e.g.*, "New Story," "Just Now," and "Rick is running"). All such events are also depicted in users' Activity Logs.



Here's How Your Facebook News Feed Is Going To Be Ruined (Or Improved Depending Upon Your Perspective), Business Insider (Mar. 7, 2013 9:34 AM) (available at http://www.businessinsider.com/facebooks-new-news-feed-2013-3).

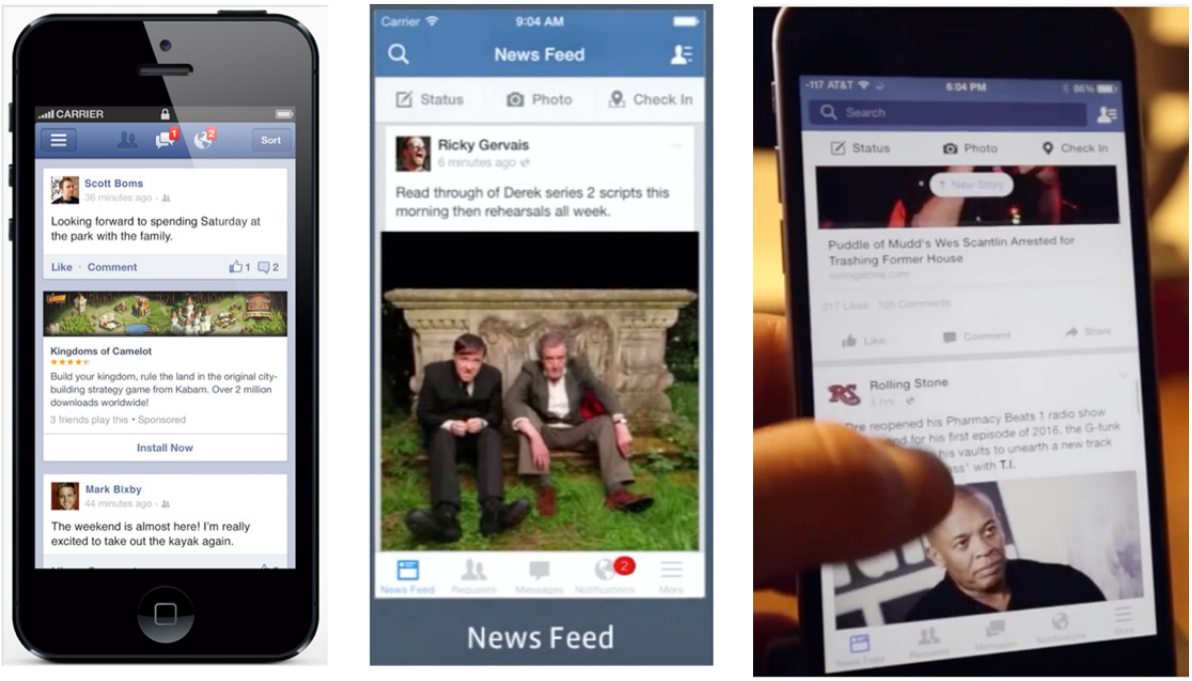


How to Use and Post On Facebook for Dummies, (Jan. 13, 2014) (available at https://www.youtube.com/watch?v=48_YIrTcQ0I).

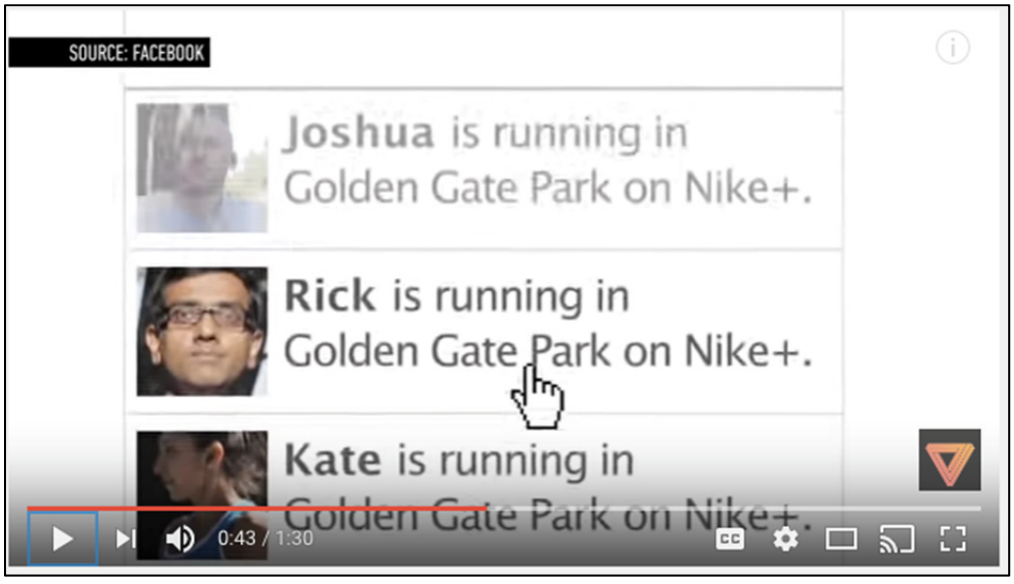


Facebook Timeline & News Feed or Home Page (Sept. 6, 2014) (available at:

https://www.youtube.com/watch?v=yPHF_kKVttY).

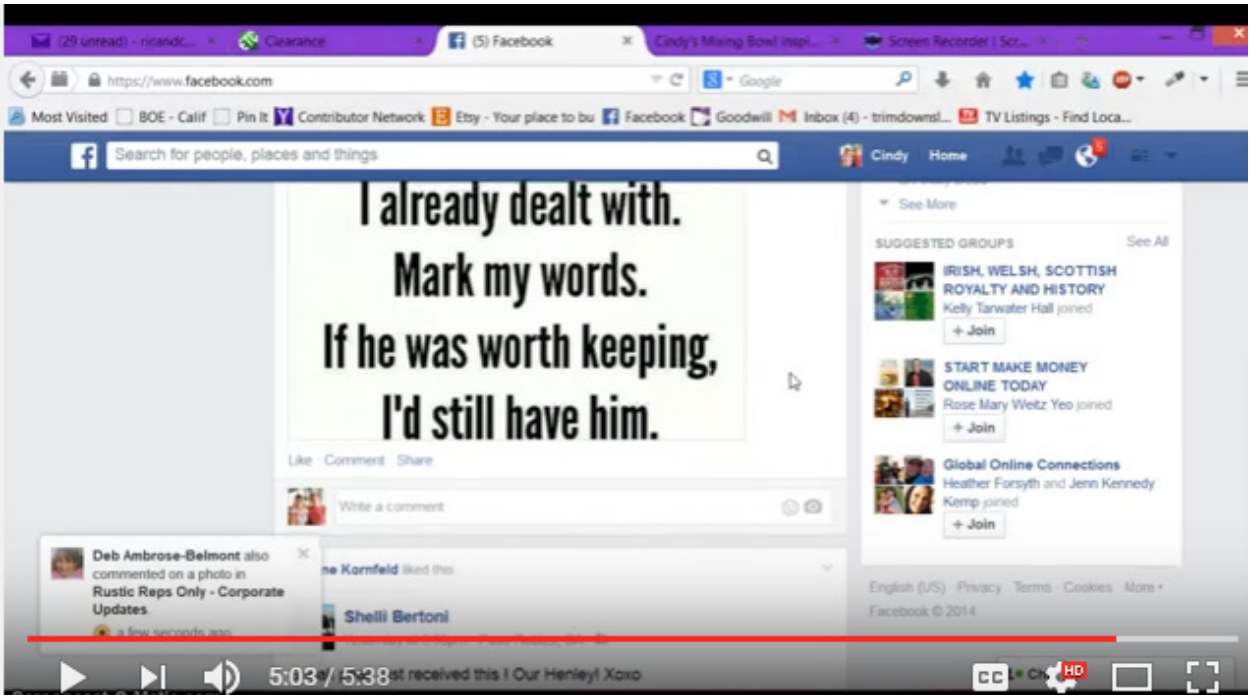


Left: *Facebook Wants To Dominate Paid Discovery By Now Letting Any Developer Buy Mobile App Install Ads,* TechCrunch (Oct. 12, 2012) (available at https://techcrunch.com/2012/10/17/facebook-mobile-app-install-ads/);
Center: Facebook's IOS Infrastructure – Mobile @ Scale, Facebook Code (Oct. 25, 2013) (available at https://code.facebook.com/videos/232867676889263/facebook-s-ios-infrastructure-mobile-scale/);
Right: *How to Use Facebook: App Tutorial* (Jan. 15, 2016) (available at: https://www.youtube.com/watch?v=ciSB5yoM0U0) (showing "New Story").



The Verge (May 27, 2014) (available at: https://www.youtube.com/watch?v=gltgI7RyWqY).

65. The News Feed is also dynamically updated through counters on the Home and Globe buttons, and alerts, examples of which are shown below:



Facebook Timeline & News Feed or Home Page (Sept. 6, 2014) (available at: https://www.youtube.com/watch?v=yPHF_kKVttY).

66. As reported by HubSpot, since at least December 2014, users can search their News Feed by using Facebook's Graph Search. Users can search for people, posts, photos, places, Pages, Groups, apps, and events using any keywords they like. If a user wanted to see pictures from his cousin's wedding, for example, he could search for "wedding" and results would appear for those terms. The results that will show up are personalized to the users. One of the ways the results will be ranked is on the strength of the relationship between the user and the person/Page publishing the posts. "The closer the connection, the higher a given piece of content