

EXHIBIT 1

Part 1

Exhibit 1

I. INTRODUCTION

I have been asked to render an opinion as to whether certain information that was not disclosed to the examiner during prosecution of U.S. Patent No. 7,139,761 would have been material to the patentability of the claims. In particular, I have been asked to evaluate whether the following information would have been considered material to the patentability of claim 1¹ of U.S. Patent No. 7,139,761 had it been disclosed to the United States Patent and Trademark Office:

- Published thesis by Matthew Bianco entitled “An Interface for the Visualization and Manipulation of Asynchronous Collaborative Work within the DISCIPLE System,” dated January, 2000 (“Bianco thesis”);²
- “Lifestreams” project conducted prior to 2000 at Yale University by a team of researchers headed by Professor David Gelernter, and the commercialization of that project as the “Lifestream Office” product;
- Collaborative Virtual Workspace computing environment developed by The MITRE Corporation prior to 2000 (the “CVW system”); and
- iManage Document Management System (“DMS”), as it existed prior to December 2002.

I believe these facts and references are highly material to the patentability of claim 1 for the reasons provided below. My opinion is based on my own personal knowledge and experience. I am being paid at a billing rate of \$250 an hour for the time it takes me to perform this analysis and to testify.

II. QUALIFICATIONS

I earned a Bachelor of Science degree in Materials Science & Engineering, specializing in Electrical Engineering Materials, from Northwestern University. I also earned a Master of Science degree in Applied Biomedical Engineering from Johns Hopkins University and am currently a Juris Doctor candidate at The George Washington University Law School, from which I will graduate in May 2010.

¹ Because independent claims 9, 17, 21, 22 and 23 are very similar to claim 1 and address the same subject matter, my analysis of claim 1 applies equally to these other independent claims.

² Attached as Exhibit D.

I worked as a patent examiner at the U.S. Patent and Trademark Office (“USPTO”) from August of 2002 until May of 2009, and as a Primary Patent Examiner from October of 2008 until May of 2009. As a Primary Patent Examiner, I was granted authority to examine patent applications and to independently grant or deny patent rights in any art. My authorization also extended to the examination performed by junior examiners reporting to me. During my time at the USPTO, I examined over 500 patent applications and instructed examiners in the USPTO Training Academy on legal topics and USPTO procedures. I achieved 110% of my examination goals each year and earned five consecutive “outstanding” year-end performance ratings. After leaving the Patent Office, I was allowed to waive sitting for the patent agent examination. I have been a registered Patent Agent since August, 2009. Recently I authored an article entitled “Patent Law Through Patent Administration: The First Patent Superintendent’s Creation of Reissue Practice and Law,” which appeared in the Federal Circuit Bar Journal in June of 2009.³

III. PROCEDURE

In connection with this report, I analyzed the following:

- U.S. Patent No 7,139,761;
- Application No. 10/732,744 and its prosecution history;
- Provisional Application No. 60/432,255;
- All claim construction briefing and the Markman Order issued in this litigation;
- All of the prior art considered by the U.S. Patent and Trademark Office during the prosecution of Application No. 10/732,744;⁴
- Bianco thesis, which includes a description of the Lifestreams project and Lifestreams Office;

³ A copy of my curriculum vitae is attached as Exhibit A.

⁴ In the January 19, 2005 Information Disclosure Statement (“IDS”) from the prosecution history of Application No. 10/732,744, the applicant has listed as a piece of Non-Patent Literature an item called “International Written Opinion, PCT/US03/39421, mailed November 15, 2004.” I have attempted to locate this document, but was able to locate only the WIPO application (WO/2004/053658) documentation associated with Patent Cooperation Treaty Application No. PCT/US03/39421. Included in that application documentation is one “International Preliminary Examination Report” that has a different date from the International Written Opinion cited by Leader Technologies in their IDS. Facebook is seeking production of this document from Leader Technologies, and I reserve the right to supplement my report if and when that document is produced.

- Documents describing how the CVW reference worked in 1999;⁵
- *iManage DeskSite 6.0 User Reference Manual*, dated July 26, 2001;⁶
- Request for Inter Partes Reexamination submitted by Facebook, Inc. to the USPTO on November 13, 2009,⁷ which contains a claim chart comparing claims of U.S. Patent No. 7,139,761 to the *iManage DeskSite 6.0 User Reference Manual*; and
- Expert Report of Saul Greenberg, Ph.D in the instant litigation.⁸

I am very familiar with Patent Office guidelines and standards relating to an applicant's disclosure requirements and materiality, as they existed during the prosecution of U.S. Patent No. 7,139,761, as I was an examiner during the entire period of prosecution.

IV. BACKGROUND OF THE PATENT OFFICE PROCEDURE, EXAMINATION AND THE DUTY OF CANDOR

A. Patent Policy

A patent is the grant of a property right issued by the USPTO. It is a right to exclude others from making, using, selling or importing the invention without the inventor's consent. The government grants patent rights to foster innovation by allowing those with new and useful ideas to exclude others from practicing the invention for the term of the patent, typically twenty (20) years from its filing date. There are currently over seven million United States patents issued to inventors covering everything from the latest military and satellite technologies to processes for making complex pharmaceutical compounds.

Private enterprise drives our economy. While our society abhors private monopolies, our legal system teaches that patents issue, not for private benefit, but for public good. The law grants the limited patent monopoly as an incentive to encourage innovation and the disclosure of new ideas. Indeed, without the incentive, innovators would hide their discoveries choosing to exploit them as trade secrets. However, in exchange for patent rights, the law requires the inventor to provide a full disclosure of the manner and making of the invention. Upon the

⁵ Attached as Exhibit E.

⁶ Attached as Exhibit F.

⁷ Attached as Exhibit G.

⁸ Confidential information was redacted from the copy of the report that I reviewed.

expiration of the term, the public is free to use and build on the invention for the benefit of the public.

The law also requires the applicant to sign a legal oath agreeing to abide by his “duty of candor and good faith” in his communications with and representations to the Patent Office. The applicant’s candor and good faith is particularly important during the prosecution of a patent because of the ex parte nature of the process: there is no zealous advocate for the position against patentability, as there is in litigation, and therefore the patent examiner necessarily must trust that the applicant is being candid and truthful. Compliance with this duty is essential to the viability of the patent system and, accordingly, failure to do so carries very serious consequences, as explained in detail below.

B. Patent Examination

To obtain a patent, an inventor first must present to the Patent Office the full description of his invention in a patent application, as well as a signed oath to abide by the duty of candor. A patent examiner employed by the Patent Office then examines the application and can either issue a patent, reject the application, or require additional information before making a decision.

A patent examiner is a quasi-judicial civil servant employed by the Patent Office tasked with reviewing patent applications. An examiner must be a United States citizen, hold at least a Bachelor’s degree in the physical sciences, life sciences, engineering disciplines, or computer science, and have a demonstrated level of expertise in patent law. Advanced academic degrees and relevant work experience in the appropriate technical area are common.

The key function of an examiner is to research relevant technologies and compare inventions and disclosures already in the public domain (known as “prior art”) with the alleged invention claimed in the patent application. The examiner also reviews the application for compliance with legal requirements, determines the scope of the protection claimed and communicates findings to the applicant and its agents as to the possible patentability of the invention. The exchange between inventor and the Patent Office examiner during this process is referred to as “patent prosecution.”

C. Standards For Granting Patents and Prior Art

An examiner will issue a patent only if the applicant can convince him that the claimed invention is (1) novel, (2) useful, and (3) non-obvious to someone generally skilled in the art. Critically, the novelty requirement precludes the grant of a patent on any invention that has been publicly disclosed or used either, a) more than one year prior to the filing of the patent application, or b) at any time before the date of invention by the inventor. Public disclosure may take the form of disclosure, use, sale or offer of sale of the disclosed invention before the one-year grace period preceding the application date, or manifest in the form of prior art (*e.g.*, patents, books, articles, programs, products, *etc.* that both pre-date the invention and disclose the invention). The existence of a single prior art reference or a combination of prior art references that renders the invention either not novel or obvious to someone of ordinary skill in the art prohibits the invention from being patentable.

D. The Duty of Candor

During patent prosecution, the examiner, the Patent Office, and the entire patent system rely on the inventor to provide a complete, honest and thorough picture of the state of the art and disclose everything the inventor and its agents are aware of that might bear on the patentability of the invention. The inventor must explain how the invention meets the patentability requirements, and must disclose all known potential prior art (including prior public disclosures or offers for sale) that might disclose the claimed invention or contain elements of the claims.

To foster complete communication between inventor and examiner, and to ease the burden on patent examiners, especially in areas that involve “young art,” federal law imposes the “duty of candor and good faith” on all who are associated with the filing and prosecution of the application. The duty is codified in the Code of Federal Regulations, 37 C.F.R. §1.56 and is known as “Rule 56.” Rule 56 states, in part:

- (a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the [Patent] Office is aware of and evaluates the teachings of all information material to patentability. Each

individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the [Patent] Office, which includes a duty to disclose to the [Patent] Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. . . .

Rule 56 imposes this duty on: (1) each inventor named in the application; (2) each attorney or agent who prepares or prosecutes the application; and (3) every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. 37 C.F.R. §1.56(c). Under the rule, each of these individuals must disclose information known to them that is “material to patentability.”

Information is “material” when:

it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a *prima facie* case of unpatentability of a claim; or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A *prima facie* case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

37 C.F.R. § 1.56(b). Generally, information is material to the issue of patentability if it might have affected a decision of the examiner. Breach of this duty results in severe consequences, including unenforceability of any patent that might issue from the application. Rule 56 states: “no patent will be granted on an application in connection with which fraud on the Office was

practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct.” 37 C.F.R. §1.56(a).

An application for a patent will not be considered complete and will not be fully examined by the Patent Office until the inventor signs an oath or declaration that includes a statement that the person making the oath or declaration acknowledges the duty to disclose all information known to the person to be material to patentability as defined in 37 C.F.R. § 1.56. During the prosecution of the application that resulted in U.S. Patent No. 7,139,761 the applicants each signed an oath acknowledging the duty and his commitment to abide by it. *See* Exhibit B. The Patent Office also provides a form that may be used when citing material prior art. During the prosecution of the application that resulted in U.S. Patent No. 7,139,761 the applicant submitted such a form (albeit incomplete). *See* Exhibit C.

E. Examiners’ Heightened Reliance on Applicants’ Candor when Assessing Software and Internet Art

During the period in which U.S. Patent No. 7,139,761 was being examined, the duty imposed by Rule 56 was critical to patent examiners scrutinizing software and internet patent applications. Examiners rely for their knowledge of the state of any art on databases supplied by the Patent Office, which consist primarily of previously issued patents. However, by 2002, a limited number of software and internet patents had been granted. Hence, at that time, patent examiners relied heavily upon inventors and applicants to disclose what they understood to be the state of the art.

V. MATERIALITY

A. Prior Public Demonstrations and Offers for Sale

Public demonstrations and offers for sale of the claimed invention in the United States more than one year prior to the application date of a patent can act as a complete bar to the patentability of any invention under 35 U.S.C. § 102(b). As such, these activities would certainly have been material during the timeframe in which Application No. 10/732,744 was being prosecuted. Application No. 10/732,744 was filed on December 11, 2003, making any public

demonstrations or offers for sale occurring before December 11, 2002 (the “priority date”) material to examination of the application.

The priority date of a patent application can be extended backward by the filing of a provisional patent application that discloses the same invention within the one year period preceding filing of the patent application. If the patent owner can successfully show that the provisional patent application discloses the same invention as the granted patent, then the patent may claim a priority date equal to one year preceding the filing of the provisional patent application. In this case, I understand that Leader Technologies, Inc. claims that its patent can claim a priority date of December 11, 2001 based upon Provisional Application No. 60/432,255, which was filed by on December 11, 2002.

I have reviewed both Application No. 10/732,744 and Provisional Application No. 60/432,255, and I believe that the two are sufficiently different that there is a substantial question as to whether U.S. Patent No. 7,139,761 can properly claim a priority date of December 11, 2001. As such, assuming that any prior public demonstrations or offers for sale had been of a product that practices the claims of the patent as issued, it is my opinion that such demonstrations and offers for sale taking place before December 11, 2002 would have been material to the patentability U.S. Patent No. 7,139,761, despite the existence of Provisional Application No. 60/432,255.

B. Prior Art

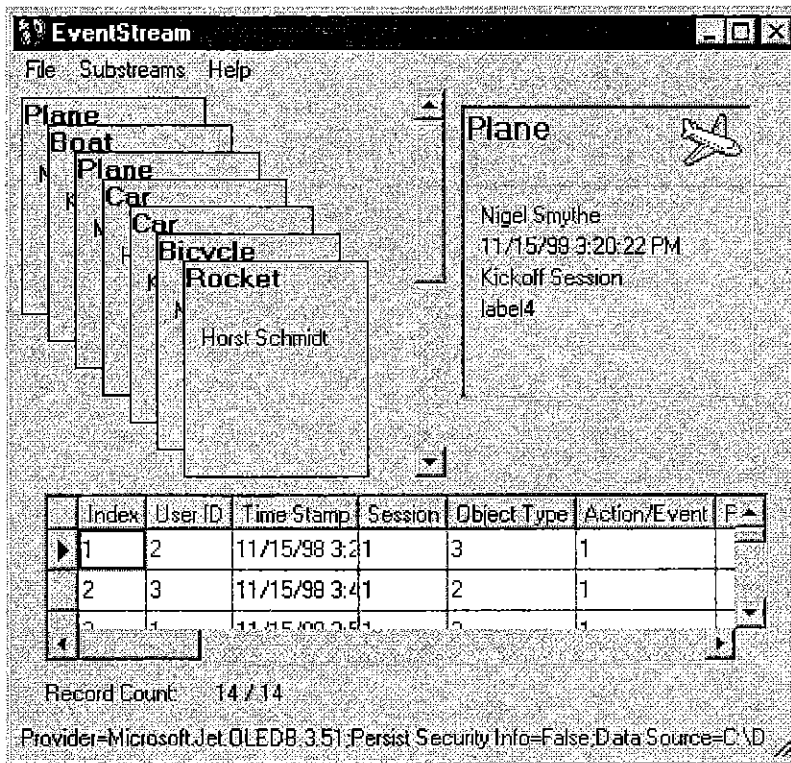
Claim 1 of U.S. Patent No. 7,139,761 is drawn to a “network-based system that facilitates management of data. . . .” The system captures and stores context information associated with user-defined data, tracks interaction of the user with data in different contexts, and captures and stores information about those interactions. In my opinion, any reference that discloses capturing and storing context information about a) data and b) user interaction with the data, would have been material to the patentability of claim 1 of U.S. Patent No. 7,139,761. The other independent claims of U.S. Patent No. 7,139,761 – claims 9, 17, 21, 22 and 23 – are very similar to claim 1, and therefore, the analysis I have done regarding claim 1 applies to them as well.

None of the prior art references considered during the examination of the application that resulted in U.S. Patent No. 7,139,761 disclose the system taught by the patent.⁹ In contrast to what was considered by the examiner, the Bianco reference, the Lifestreams project and Lifestreams Office and documents describing them, the CVW system and documents describing it, and iManage DMS (as it existed prior to December 2002) and documents describing it each disclose these features and are highly material to the patentability of the independent claims of U.S. Patent No. 7,139,761.

Bianco Thesis

The Bianco thesis describes a computing environment called “DISCIPLER,” which was “a real-time groupware environment that enables multiple participants in different locations to collaboratively access, manipulate, analyze, and evaluate multimedia data.” p. 3. The key to collaboration in the DISCIPLER system was the “EventStreams” interface, a series of visualization tools used to display the context of documents to the user. “The key to EventStreams’ ability to aid in the collaboration process is the fact that it can convey the context in which events occurred.” p. 38. In addition to retaining and displaying context information, DISCIPLER tracked all user interaction, which it termed “events,” with documents in the system. Every time an event occurred, the DISCIPLER system automatically communicated the occurrence to all other users of the system and recorded the event to a “history stream.” The history stream was an accumulated history of all events by all users in the system.

⁹ See *supra* note 4.

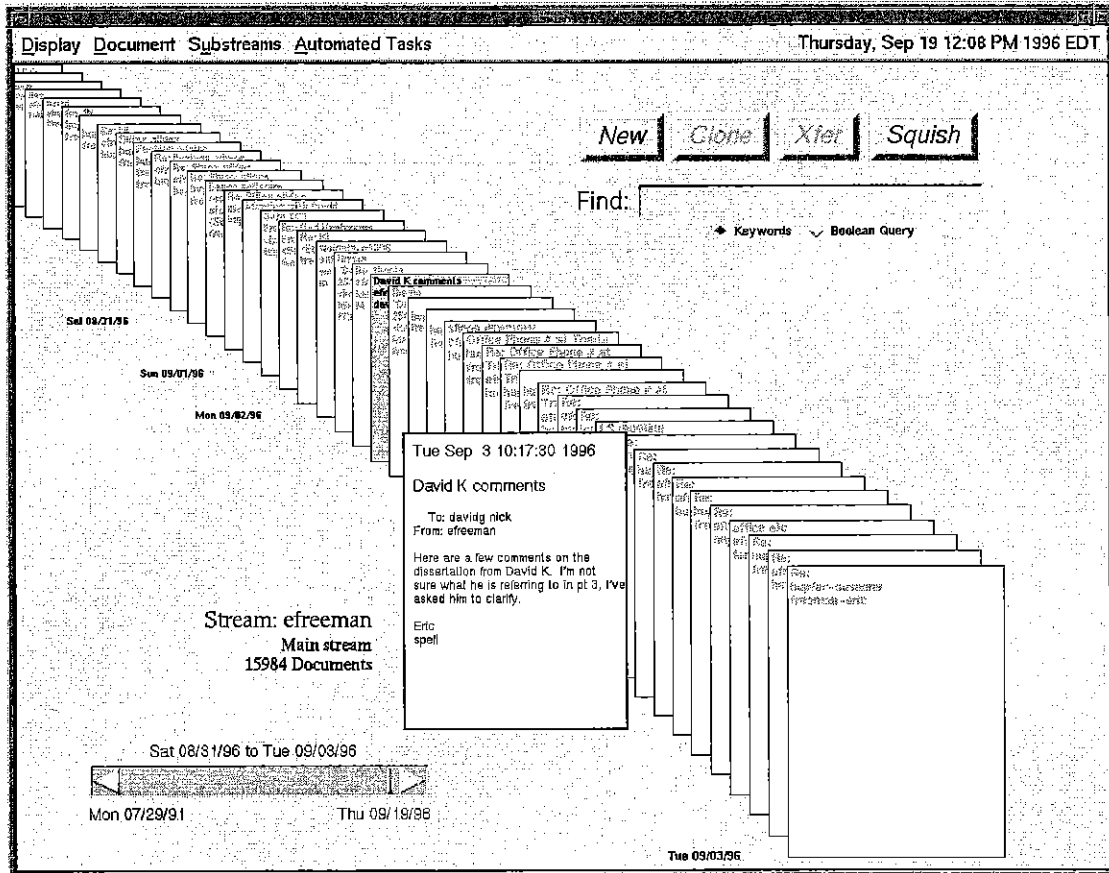


p. 22.

In my opinion, the Bianco thesis, and the DISCIPLE system described therein, disclose capturing and storing context information (“the context of documents,” history stream) about both data itself (documents) and interaction with the data (events). Because the thesis was published nearly four years before the filing date of Application No. 10/732,744, I would consider it material to the patentability of the U.S. Patent No. 7,139,761.

Lifestreams Project and Lifestreams Office

The Lifestreams project is described in the Bianco thesis as a source of inspiration for the DISCIPLE system. The project sought to create an alternative to traditional desktop operating systems which, instead of organizing documents in files and folders, organized documents by the order in which the user interacts with them. The “streams” of time-ordered documents could be divided into “substreams,” which were collections of time-ordered documents meeting a specified criteria. Whether in a “main stream” or “substream,” the Lifestreams interface allowed the user to see an accumulated history of all actions he has taken with documents in the system.



p. 9.

The Lifestreams project was commercialized by Professor Gelernter and his fellow researchers in a product called “Lifestream Office,” a browser-based document management system. According to the Bianco thesis, this product differed from traditional document management software in that documents could be “indexed, searched and retrieved based on their attributes and contents, not by a filename and location in a hierarchical directory tree.” p. 11. In addition, Lifestream Office featured the ability to “track[] updates and keep[] an historical record of activities” and “create views on the fly, which are updated dynamically whenever new activity takes place.” p. 12.

In my opinion, the Lifestreams project and the Lifestream Office product disclose capturing and storing context information (substream criteria, date and time of interaction) about both data itself (documents) and interaction with the data (activities). Because the Bianco thesis,

in which the Lifestreams system and Lifestream Office are described, was published nearly four years before the filing date of Application No. 10/732,744, and because the Lifestreams project and Lifestream Office were developed prior to 2000, I would consider them material to the patentability of the U.S. Patent No. 7,139,761.

CVW System

The CVW system was a prototype collaborative computing environment that organized documents into virtual “rooms.” These rooms “provide[] a context for communication and document sharing. . . . Users can place documents of different types into a room, allowing anyone else in that room to read the document or view information about the document (such as creator, description, creation date, modification date, last modified by).” p. 1. A single document in the CVW system can exist in a number of different rooms. Among the information collected about each document was tracking data, i.e., information about who has edited the document and when.

In my opinion, the CVW system and documents describing it disclose capturing and storing context information (“information about the document,” tracking data) about both data itself (documents) and interaction with the data (e.g., editing a document). Because the CVW system was developed and documents about the system were published on the Internet prior to 2000, I would consider it material to the patentability of the U.S. Patent No. 7,139,761.

iManage DMS

iManage DMS, as it existed as of July 26, 2001, was a suite of tools for managing documents on an enterprise-wide basis. The iManage system organized documents – and allowed searching for and retrieval of documents – on the basis of certain attributes, collectively termed “profile information.” Profile information included such data as Author, Operator, Type, Class Client, Matter, and Last User. In addition to storing attributes about each document, the iManage system also provided a Document History feature that tracked and stored information about user interactions with the documents. This information included “User, Application, Activity, Date-Time, Duration, Pages Printed, Location and Comments.” Chapter 5, p. 141.

In my opinion, iManage DMS and documents describing it disclose capturing and storing context information (profile information, history) about both data itself (documents) and interaction with the data (e.g., accessing a document). Because iManage DMS was publicly available and sold in the United States prior to December 2002, I would consider it material to the patentability of the U.S. Patent No. 7,139,761.

VI. CONCLUSION

As stated above, it is my opinion that the demonstrations and offers for sale of the claimed invention more than one year prior to the filing date of Application No. 10/732,744 would certainly have been material to the patentability of U.S. Patent No. 7,139,761. In addition, it is my opinion that the Bianco thesis – and the DISCIPLE system, the Lifestreams project and Lifestreams Office product described therein – the CVW system, and iManage DMS are all highly material to the patentability of the independent claims of U.S. Patent No 7,139,761. It is also my opinion that none of the prior art references considered during the examination of the application that resulted in U.S. Patent No. 7,139,761 disclose the system taught by the patent.¹⁰ As such, without these documents, the examiner was left with an incomplete view of the scope of the prior art while comparing what was being claimed to what was already in the public domain.

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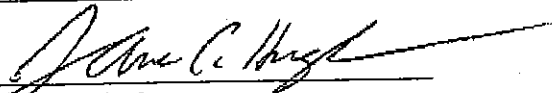
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¹⁰ See *supra* note 3.

Furthermore, as a patent examiner during the entire period during which Application No. 10/732,744 was being examined by the USPTO, I had authority to examine this application. If I had been assigned examination of Application No. 10/732,744, I would have considered these documents and systems highly material and I would have used these materials to reject at least all independent claims of the patent.

Date: April 8, 2010



James Patrick Hughes

CERTIFICATE OF SERVICE

STATE OF CALIFORNIA, COUNTY OF SANTA CLARA

I am employed in the County of Santa Clara, State of California. I am over the age of 18 and not a party to the within action. My business address is 3000 El Camino Real, Five Palo Alto Square, Palo Alto, CA 94306.

On April 8, 2010, I served the following document:

EXPERT REPORT OF JAMES PATRICK HUGHES

on the interested parties in this action follows:

<p><u>BY E-MAIL:</u></p> <p>Paul J. Andre, Esq. Lisa Kobialka, Esq. James Hannah, Esq. King & Spalding 333 Twin Dolphin Drive, Suite 400 Redwood Shores, CA 94065</p> <p>pandre@kslaw.com lkobialka@kslaw.com jhannah@kslaw.com</p>	<p><u>BY E-MAIL:</u></p> <p>Philip A. Rovner, Esq. Potter Anderson & Corroon LLP P.O. Box 951 Wilmington, DE 19899-0951</p> <p>provner@potteranderson.com</p>
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[XX] BY ELECTRONIC MAIL: I am personally and readily familiar with the business practice of Cooley Godward Kronish LLP for the preparation and processing of documents in portable document format (PDF) for e-mailing, and I caused said documents to be prepared in PDF and then served by electronic mail to the parties listed above.

I declare that I am employed in the office of a member of the bar of this Court at whose directions the service was made. I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on April 8, 2010 at Palo Alto, California.

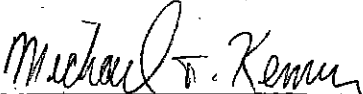

Michael Kenny

EXHIBIT A

JAMES PATRICK HUGHES

James.P.Hughes@gmail.com • (312) 961-2649 • 1824 Belmont Rd., NW Apt. 24 • Washington, DC 20009

EDUCATION

THE GEORGE WASHINGTON UNIVERSITY LAW SCHOOL, Washington, DC

J.D. candidate, May 2010 (evening division)

- Second Prize, Finnegan Intellectual Property Writing Competition, 2008
- Competitor, Giles Rich IP Moot Court Competition, 2008 & 2010
- Publication: *Patent Law Through Patent Administration: The First Patent Superintendent's Creation of Reissue Practice and Law*, 18 Federal Circuit Bar Journal 451.

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

M.S. in Applied Biomedical Engineering, May 2006

- Specialized in Medical Electronics, Medical Imaging and Semiconductor based Diagnostic Systems

NORTHWESTERN UNIVERSITY, Evanston, IL

B.S. in Materials Science & Engineering (with Philosophy double major), June 1999

- Specialized in Electrical Engineering Materials
- DERU Honor Society (top 1% of Senior Class leaders); NSF research grant

EXPERIENCE

U.S. INTERNATIONAL TRADE COMMISSION, Washington, DC

Law Clerk – Office of Unfair Import Investigations

Spring 2010

- Assisted Investigative Attorneys in trials, depositions, and researching § 337 related issues

THE HONORABLE RANDALL R. RADER, U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Judicial Intern

Fall 2009

- Wrote bench memos on claim construction, obviousness, infringement, expectancy damages and tax law

SIDLEY AUSTIN LLP, Washington, DC

Summer Associate

Summer 2009

- Wrote research memos on prosecution history disclaimer, PTO rule history and inequitable conduct

U.S. PATENT & TRADEMARK OFFICE, Alexandria, VA

Primary Patent Examiner, Masters Level – Semiconductors, Electrical and Optical Systems 2002 – 2009

- Examined over 500 applications in Fiber Optic, LCD, and Semiconductor Processing technologies
- Earned Negotiation and Full Legal Authority to grant U.S. Patent rights
- Achieved Masters Level Certification in class 385—Fiber Optics & Optical Waveguides
- Instructed Training Academy Examiners on legal topics and PTO procedures
- Achieved 110% of goals each year; Reg. No. 64,940

MARS & COMPANY CONSULTING, Greenwich, CT

Associate Consultant – Business Strategy Consulting

2001 – 2002

- Constructed IP based profitability model for \$2 billion medical device manufacturer

MITCHELL MADISON GROUP, Chicago, IL

Business Analyst – Business Strategy Consulting

1999 – 2001

- Presented and managed study for \$6 billion distributor used by client executives for new business strategy

MOTOROLA, Schaumburg, IL

R&D Engineering Co-op – Corporate Manufacturing Research Center

1996 – 1998

- Co-authored research paper on RF filter design in High Density Interconnect circuit boards

INTERESTS

Running (completed eight marathons), skiing, soccer (played on Northwestern's Club Team) and travel

EXHIBIT B

PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY

ATTORNEY DOCKET NO. LEADP102USA

LT DOCKET NO. 0308-5002/P-US

As a below named inventor, I hereby declare that:

My residence/post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **METHOD FOR DYNAMIC ASSOCIATION OF ELECTRONICALLY STORED INFORMATION WITH ITERATIVE WORKFLOW CHANGES** the specification of which is filed herewith unless the following box is checked:

was filed on _____ as US Application Serial No. or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES: ___ NO: ___
			YES: ___ NO: ___

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) associated with

Customer No. _____

to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Eric D. Jorgenson Reg. No. 46,002	Himanshu S. Amin Reg. No. 40,894	Gregory Turocy Reg. No. 36,952	Jeffrey R. Sadlowski Reg. No. 47,914
Jeffrey D. Hale Reg. No. 40,012	Deborah L. Corpus Reg. No. 47,753	Anthony DelZoppo Reg. No. 51,606	John Ling Reg. No. 51,216
Jeffrey Prulhiere Reg. No. 48,264	David Grillo Reg. No. 52,970	Vahid Sharifi Reg. No. 45,828	

Send Correspondence to:

Contact Name: Eric D. Jorgenson
 Firm Name: Amin & Turocy, LLP
 Firm Address: 1900 E. 9th Street, National City Center - 24th Floor
 City, State and Zip: Cleveland, OH 44114

Direct Telephone Calls To:

Contact Name: Eric D. Jorgenson
 Contact Phone Number: (216) 696-8730

DECLARATION AND POWER OF ATTORNEY

ATTORNEY DOCKET NO. LEADP102USA

LT DOCKET NO. 0308-5002/P-US

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

Full Name of Inventor: Michael T. McKibben

Citizenship: United States

Residence: Columbus, Ohio

Post Office Address: 1676 Tendril Court

Columbus, Ohio 43229

Michael T. McKibben Dec 10, 2003
Inventor's Signature Date

Full Name of Inventor: Jeffrey R. Lamb

Citizenship: United States

Residence: Westerville, Ohio

Post Office Address: 4300 Bitterroot Drive

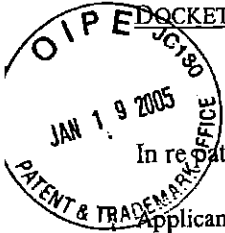
Westerville, Ohio 43081

Jeff R. Lamb Dec 9, 2003
Inventor's Signature Date

EXHIBIT C

IFW

DOCKET NO. 0308-5002/P-US/LEADP102USA



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Applicant: **Michael T. McKibben**

Serial No.: **10/732,744**

Filed: **December 10, 2003**

For: **DYNAMIC ASSOCIATION OF ELECTRONICALLY STORED INFORMATION WITH ITERATIVE WORKFLOW CHANGES**

Art Unit: **2171**

Examiner: **Unknown**

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

1. Pursuant to 37 C.F.R. 1.97 and 1.98, and in compliance with 37 C.F.R. 1.56, the Office's attention is directed to the patents, publications and other information listed on the attached PTO-1449. A copy of each listed document is enclosed except for: (a) pending applications (b) those previously cited or submitted to the Office in the following application(s) upon which this application relies for an earlier filing date under 35 U.S.C. 120(c), or (c) U.S. Patent(s) and published application(s) since the subject application was filed after June 30, 2003:

Serial No.: 10/731,906

Filing Date: December 10, 2003

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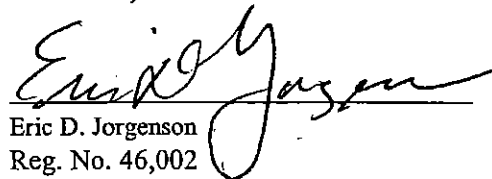
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By


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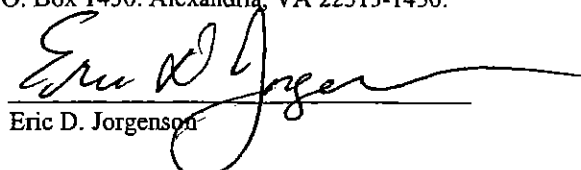
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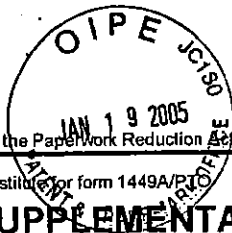
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	Application Number	10/732,744			
	Filing Date	December 10, 2003			
	First Named Inventor	Michael T. McKibben, et al.			
	Art Unit	2171			
	Examiner Name				
Sheet	1	of	2	Attorney Docket Number	LEADP102USA

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 2002/0001301 A1	01-03-2002	Sarkissian, et al.	
		US- 6,418,461 B1	07-09-2002	Barnhouse, et al.	
		US- 6,236,971 B1	05-22-2001	Stefik, et al.	
		US- 2003/0069849 A1	04-10-2003	Stefik, et al.	
		US- 6,154,465	11-28-2000	Pickett	
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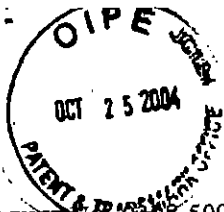
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DOCKET NUMBER: 03-5002/P-US/LEADP102USA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Applicant: **Michael T. McKibben**
Serial No.: **10/732,744**
Filed: **December 10, 2003**
For: **DYNAMIC ASSOCIATION OF ELECTRONICALLY STORED INFORMATION WITH ITERATIVE WORKFLOW CHANGES**
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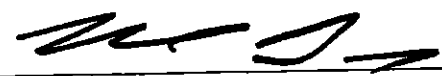
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Respectfully Submitted,
AMIN & TUROCY, LLP

By

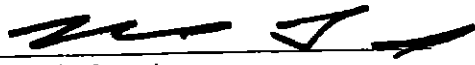

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Reg. No. 40,894

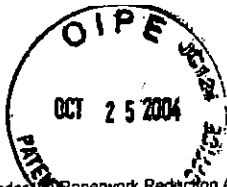
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Sheet 1 of 2

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Application Number	10/732,744
Filing Date	December 10, 2003
First Named Inventor	Michael T. McKibben
Art Unit	2171
Examiner Name	
Attorney Docket Number	0308-5002/P-US/LEADP102USA

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 6,539,371 B1	03-25-2003	Bleizeffer, et al.	
		US- 6,311,228 B1	10-30-2001	Ray	
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EXHIBIT D

**An Interface for the Visualization and Manipulation Of
Asynchronous Collaborative Work within the DISCIPLE
System**

By Matthew Bianco

A thesis submitted to the Graduate School-New Brunswick

Rutgers, The State University of New Jersey

in partial fulfillment of the requirements

for the degree of Master of Science

Graduate Program in Electrical and Computer Engineering

Written under the direction of

Professor Ivan Marsic

and approved by

New Brunswick, New Jersey

January, 2000

Abstract

The DISCIPLE environment is a collaboration-enabling framework which allows multiple team members in disparate, geographically diverse locations to work together on a project.[11] While it is a good platform for users to share a common workspace, there are many desirable groupware features which are presently lacking.

This thesis attempts to fill these voids through the implementation of a metaphor called “EventStreams” – a series of tools which aid in the visualization and review of a collaborative project. These tools provide a variety of graphical representations of each of the events that have occurred up to a given point in a project. They also provide a context that helps the participant assess the situation rapidly, which is necessary when such a voluminous amount of data is available.

Perhaps just as importantly, this new environment will help to foster new kinds of relationships among team members by keeping each individual aware of what other team members are responsible for. It will also encourage direct contact between participants, whether online or offline.

Finally, its ability to allow collaborators to dynamically specify exactly which items are of interest to them, and view only those items, is a powerful analytical tool. Without this feature, the user would be lost in a sea of data, and would not be able to discern any information from it.

The DARPA contract specifies a series of key “challenges” which must be addressed by the DISCIPLINE system. This paper will attempt to show that the EventStreams environment addresses (and meets) many of these in a manner that is intuitive and user-friendly.

Acknowledgements

I would like to extend my thanks to Professor Ivan Marsic for his help and advice with regard to my thesis. His comments on my initial premise, project development, and the writing of this paper have proven extremely valuable. In addition, I would like to thank the DISCIPLINE team as a whole for their help with various technical aspects of the project.

The research reported here is supported by the DARPA Contract No. N66001-96-C-8510 and by the Center for Advanced Information Processing (CAIP). The CAIP Center is supported by the New Jersey Commission on Science and Technology and the Center's industrial members.

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1 Introduction

Prior to entering into a discussion of the new capabilities which the EventStreams metaphor brings to the DISCIPLE environment, it would be instructive to look at the types of work that have already been done in the groupware arena and the type of issues that remain.

1.1 *Computer Supported Cooperative Work*

CSCW (also commonly written as *computer-supported collaborative work*) is generally taken to be "...a generic term which combines the understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software, services and techniques." [15] The term was coined in 1984 by Irene Greif and Paul Cashman. Many other buzzwords are used in the literature, all having slightly different semantic meanings, but revolving around the same concept. Robert Johansen lists the following as phrases in use in addition to CSCW [19]:

- Technological support for work group collaboration
- Collaborative systems
- Workgroup computing
- Group decision support systems (GDSS)
- Interpersonal computing

- Departmental computing
- Augmented knowledge workshops
- CAC (Computer-assisted communications)
- Group Process Support System
- Teamware
- Decision Conferences
- Coordination Technology
- Flexible interactive technologies for multi-person tasks

The software built to address these issues is generally termed *groupware*. Examples of groupware tools include group decision support systems, project management tools, electronic conferencing systems, and shared editors (all of which exist, to one degree or another, in DISCIPLÉ).

According to the Asynchronous Learning Network organization, “CSCW practitioners seem to have a strong technical focus, ... including theories of coordination and collaboration, work practice studies of collaboration, workplace design to support collaboration, methodologies and tools for analyzing cooperative work, impact of technology on individuals or organizations, and technologies or architectures to support collaboration”. [15]

CSCW can be performed either synchronously (when multiple users work together in real-time) or asynchronously (where each participant contributes at a time that is convenient for them – “surreal time”).

1.2 The DISCIPLINE Project

DISCIPLINE (Distributed System for Collaborative Information Processing and Learning) is a real-time groupware environment that enables multiple participants in different locations to collaboratively access, manipulate, analyze, and evaluate multimedia data.[11]

The system can be divided into the following important modules:

- A shared workspace, which allows public and private views.
- A server which coordinates interaction among the clients and archives sessions.
- A knowledge-based system for resource management, control of Quality of Service, and decision-making.

Thus, it can be seen that much effort has been put into technical communication and infrastructure requirements, but the user interface has not been developed to the same degree.

1.3 Terminology

Prior to this point, actions in the DISCIPLE system were recorded in a serial fashion, and this has sufficed, as the only mechanism to examine past work was the replay mechanism provided by the Archive Server. However, if the participants are to have greater control over the environment, additional structure needs to be imposed on the data. Thus, in order to more precisely define the terminology, the following diagram shows the taxonomy that will be used in this document:

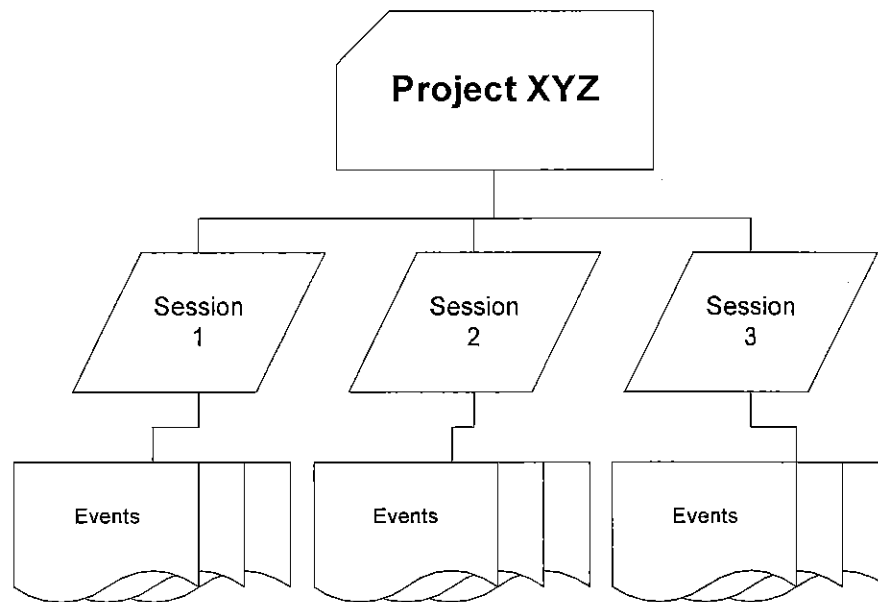


Figure 1 Taxonomy of EventStreams-related terms

The top-most level of the hierarchy is the project. This encompasses an entire planned undertaking, from specification of requirements to attainment of the final goals. This may stretch over an extended period of time (weeks, months or years).

A project is made up of one or more sessions. Any number of individuals may participate in a session, from a single person working alone, to the entire project team. Sessions have much shorter time frames (minutes or hours), and should have some specific goal.

The finest level of granularity is composed of a series of events. Each session may consist of one or more events, which have a time associated with them (but no duration; they are considered to occur at a point in time). Many additional pieces of information are recorded about each event as it occurs in order to allow them to be presented with as much detail as possible.

1.4 Research Motivation

The work done by the DISCIPLÉ team thus far has been concentrated primarily in building the robust infrastructure which is necessary to enable reliable, real-time communication among a widely scattered team. The collaboration bus, while providing many indispensable services, exists “behind the curtain”. [18] The user sees only his shared whiteboard application, and thus his interaction with the system is limited to the functionality that this program provides.

The goal of this project is to enhance the DISCIPLÉ system's ability to add value to a collaborative effort by addressing the following challenges:

- **Allow asynchronous collaboration** – The DISCIPLÉ collaboration bus is a means of achieving synchronous cooperative work. However, it can often be difficult to arrange a common time to work (especially when the project team is distributed over a wide geographic area). The Archive Server adds some support for asynchronous collaboration, but it is limited and more work needs to be done in this area.
- **Visualize the collaboration process** – Users need to be able to quickly ascertain the status of a project, and assimilate activity that has taken place during a time when they might not have been involved. One should be able to understand not only what has actually taken place, but also the thought process behind the decisions.
- **Discovery of relevant collaborators and information** – In a large project, much work may have taken place on a topic which might be very germane to the problem at hand. Alternatively, there may be other group members who have extensive knowledge on the subject. However, if this expertise is not utilized, then it may as well not exist. Large, unwieldy volumes of *data* will need to be sifted to create manageable, meaningful bits of *information*.

- **Create a context in which the team's actions can be placed** – In many cases, the juxtaposition and timing of certain activities are as important as the activities themselves. A good interface will convey this information to the user in a natural fashion.
- **Assist team members in sharing meaning** – While groupware environments are, in general, very good at sharing digitally-encoded documents (spreadsheets, faxes, videos, etc.), they tend to lack the ability to convey semantic information about that data. A means of conveying relationships among that data is necessary.
- **Enabling control and review procedures** – In many secure environments, the ability to create an audit trail is a necessity. Activities of team members may be subject to examination at any time, so a mechanism for this must be put in place.

The purpose of this paper is to describe EventStreams system, and explain how it addresses, partially or totally, each of these key challenges.

2 Related Work

The EventStreams system borrows concepts from several other research efforts. These are listed here in order to provide background and to credit the originators of these ideas.

2.1 *The Yale Lifestreams Project*

A team of researchers at Yale University, led by David Gelernter, have been developing a new metaphor for the organization and storage of electronic documents.[8] This project, called Lifestreams, is an alternative to the traditional desktop paradigm and its associated folder and file based storage system. Instead, it consists of a time-ordered stream of documents, which may or may not be related, and which may have originated from a wide array of sources.[16]

A user's Lifestream will contain all electronic documents that are related to him, whether created by himself or by others. Examples include such diverse types of content as memos, faxes, video clips, stock quotes, bills, voice mail, and appointment reminders. Most of these documents exist in the past, forming a diary of the user's "electronic life". Some, however, may exist in the future (e.g. the appointment reminders).[6] Thus, a Lifestream inherently provides an historical context for its contents which is not available from traditional user interfaces.

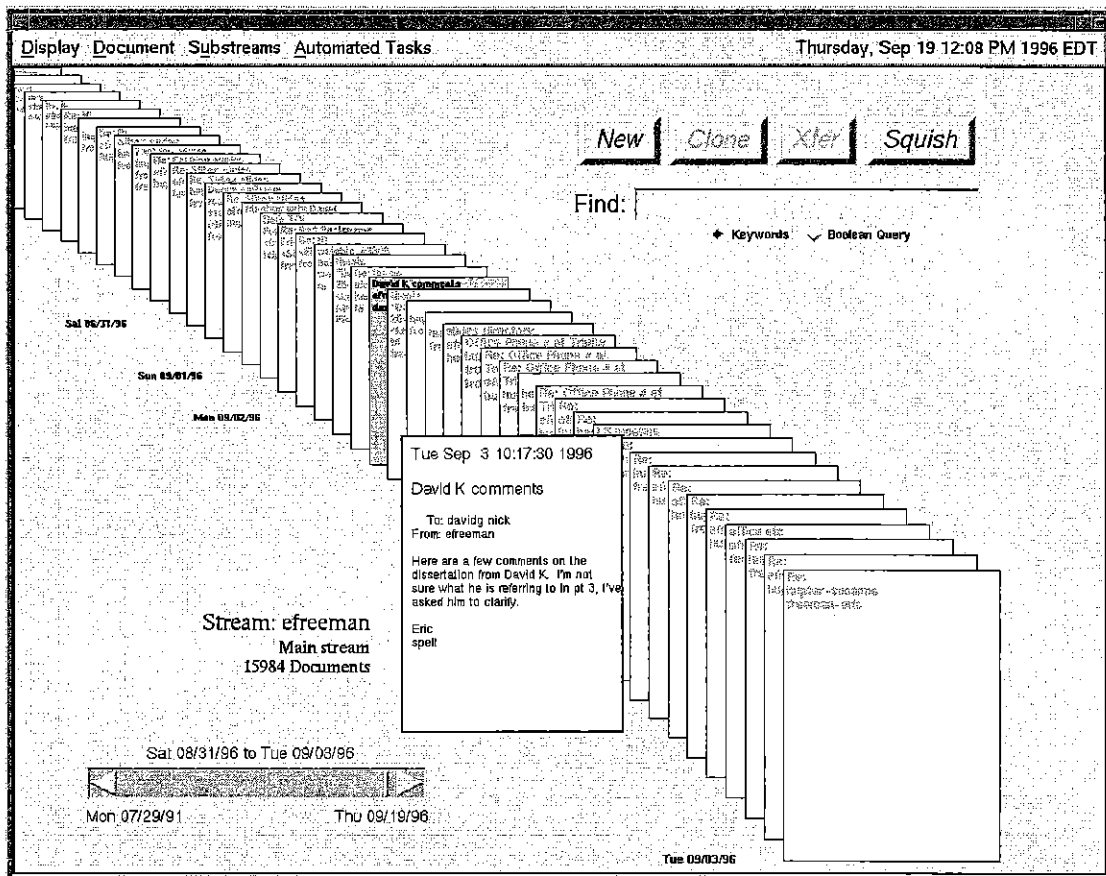


Figure 2 Lifestream user interface

The real power of this metaphor comes from two key concepts: substreams and “squish” agents.

A *substream* allows the user to create a view of his Lifestream, in which all documents will meet the criteria specified in a particular query (e.g. all documents relating to Y2K compliance efforts). A key point is that no permanent alterations are made to any of the user's data, but rather it is simply presented in a different manner. Substreams can be created and destroyed in an ad-hoc fashion. A given document may appear in zero, one or many substreams, depending on the search criteria. They are also dynamic in nature, meaning that as new documents are created, they will appear in all substreams for which they meet the query criteria.[5]

Substreams may be transient, in which case they are created for a very specific use, and then discarded when no longer needed. Alternatively, a substream may be created which a user wants to retain permanently, and these can be saved by the system. An example might be a stream which displays all unread e-mail messages.

The other interesting feature of this interface is what the development team refers to as "*squish*" technology. This is an agent that acts on one or more documents to summarize the information that they contain. The example that the developers like to give is that of a Lifestream which contains the closing stock prices of a its owner's portfolio. The agent would then summarize this data into a graph of the historical performance of that portfolio. Squish agents "know" about certain documents (i.e. they understand the structure and contents), and use this knowledge to add value.[13]

As I will attempt to show in this document, I feel that the concepts embodied by the Lifestreams interface can be adapted to aid in the visualization of the collaborative sessions which are the basis of the DISCIPLÉ project.

2.2 *Mirror Worlds*

Several of the researchers from Yale, including Gelernter, have founded a small commercial start-up firm in addition to the work that they continue to perform at the University. The goal of this company, called Mirror Worlds Technologies, is to turn the Lifestream interface into commercially viable products.

Their premier product is called Lifestream Office, which is a browser-based document management system. The characteristic that distinguishes this product from more traditional types of software is that its documents are indexed, searched and retrieved based on their attributes and contents, and not by a filename and location in a hierarchical directory tree.

Many of the workgroup features of this product can also be applied to the DISCIPLÉ project to aid in the rapid dissemination not only of pieces of data themselves, but also the contextual information which makes that data useful. These features include:

- Filtering large amounts of data to present only details relating to the task at hand