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PTO/SB/05 (08-00) (modified)

Approved for use through 9/30/2001, OMB 0651-0032

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

NEW UTILITY PATENT APPLICATION TRANSMITTAL <i>(only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket Number	22726-05935
	First Named Inventor	Timothy Tuttle et al.
	Title	ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK
	Express Mail Label No.	EL734639281US

APPLICATION ELEMENTS	ACCOMPANYING APPLICATION PARTS
1. ☒ Fee Transmittal Form (in duplicate)	7. ☐ Assignment Papers (cover sheet & document(s))
2. ☒ Applicant claims small entity status. See 37 CFR 1.27	8. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
3. ☒ Specification <i>Total Pages</i> 47 <i>(preferred arrangement set forth below)</i>	9. ☐ Power of Attorney or Authorization of Agent
☐ Descriptive Title of the Invention ☐ Cross Reference(s) to Related Case(s) ☐ Statement Regarding Fed sponsored R & D ☐ Background of the Invention ☐ Brief Summary of the Invention ☐ Brief Description of the Drawing(s) ☐ Detailed Description ☐ Claim or Claims ☐ Abstract of the Disclosure	10. ☐ 37 CFR 3.73(b) Statement
4. ☒ Drawing(s) (35 U.S.C. 113) <i>Total Sheets</i> 8	11. ☐ Preliminary Amendment
5. Oath or Declaration	12. ☐ Information Disclosure Statement & PTO-1449 ☐ Copies of IDS Citation(s)
a. ☐ New Declaration <i>Total Pages</i> ☐ Executed (original or copy)	13. ☒ Request and Certification under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent
b. ☐ Copy from a prior application (37 CFR 1.63(d)) <i>(for continuation/divisional with Box 18 completed)</i>	14. ☒ Return Postcard
i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	15. ☐
6. ☒ Application Data Sheet. See 37 CFR 1.76	16. ☐
	17. ☐
ADDRESS TO: Box Patent Application Commissioner for Patents Washington, DC 20231	

18. If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information below and in a preliminary amendment or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: ____/____

Prior application information: Examiner: _____ Group/Art Unit: _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuing or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

☒ Customer Number and Bar Code
Label



00758

Name (Print/Type)	Brian M. Hoffman	Registration No. (Attorney/Agent)	39,713
Signature		Date	December 14, 2001

0002/PTO(modified)
Rev. 10/2000U.S. Department of Commerce
Patent and Trademark Office

FEE TRANSMITTAL

TOTAL AMOUNT OF PAYMENT

Subtotal (1) + Subtotal (2) + Subtotal (3) = (\$) PLEASE DEFER

Complete if Known

Application Number	NEW
Filing Date	HEREWITH
First Named Inventor	Timothy Tuttle <i>et al.</i>
Group Art Unit	UNASSIGNED
Examiner Name	UNASSIGNED
Attorney Docket Number	22726-05935

METHOD OF PAYMENT

1. The Commissioner is hereby authorized to:

- ☐ Charge the indicated fees to the below mentioned deposit account.
- ☐ Charge any additional fee required under 37 CFR 1.16 - 1.21 or credit any over payments to the below mentioned deposit account.[†]
- ☒ Applicant claims small entity status
See 37 CFR 1.27

Deposit Account Number:

Deposit Account Name: FENWICK & WEST LLP

A Duplicate Copy of this authorization is attached

2. ☐ Payment Enclosed:☐ Check ☐ Credit Card ☐ Other

FEE CALCULATION (fees effective 10/01/2000)

1. FILING FEE

Large Entity Fee Code/Fee	Small Entity Fee Code/Fee	Fee Description	Fee Due
101/\$740	201/\$370	Utility Filing	370
106/\$330	206/\$165	Design Filing	
108/\$740	208/\$370	Reissue	
114/\$160	214/\$80	Provisional Filing	
SUBTOTAL (1)			(\$) 370

2. CLAIMS

Large Entity Fee Code/Fee	Small Entity Fee Code/Fee	Fee Description
103/\$18	203/\$9	Claims in excess of 20
102/\$84	202/\$42	Independent claims in excess of 3
104/\$280	204/\$140	Multiple dependent claim
109/\$84	209/\$42	Reissue independent claims over original patent
110/\$18	210/\$9	Reissue claims in excess of 20 and over original patent

3. ADDITIONAL FEES

Large Entity Fee Code/Fee	Small Entity Fee Code/Fee	Fee Description	Fee Due
105/\$130	205/\$65	Surcharge - late filing fee or oath	
127/\$50	227/\$25	Surcharge-late provisional filing fee or cover sheet	
147/\$2,520	147/\$2,520	For filing a request for reexamination	
115/\$110	215/\$55	Extension for response within first month [†]	
116/\$400	216/\$200	Extension for response within second month [†]	
117/\$920	217/\$460	Extension for response within third month [†]	
118/\$1,440	218/\$720	Extension for response within fourth month [†]	
128/\$1,960	228/\$980	Extension for response within fifth month [†]	
119/\$320	219/\$160	Notice of Appeal	
141/\$1,280	241/\$640	Petition to revive unintentionally abandoned application	
142/\$1,280	242/\$640	Utility Issue Fee (Or Reissue)	
143/\$460	243/\$230	Design Issue Fee	
122/\$130	122/\$130	Petitions to the Commissioner	
126/\$180	126/\$180	Submission of Information Disclosure Statement	
179/\$740	279/\$370	Request for Continued Examination (RCE)	
581/\$40	581/\$40	Recording each patent assignment per property (times number of properties)	
146/\$740	246/\$370	Filing a submission after final rejection (37 CFR 1.129(a))	
149/\$740	249/\$370	For each additional invention to be examined (37 CFR 1.129(b))	
Other fee (specify):			
Other fee (specify):			
SUBTOTAL (3)			(\$) 0

(Col. 1)		(Col. 2)		(Col. 3)		Fee	Fee Due
For	No. of Existing Claims	minus*	Highest No. Previously Paid For	=	Extra**	x	
TOTAL	49	minus*	20 or 0	=	29	x	9
INDEP	4	minus*	3 or 0	=	1	x	42
[] First presentation of multiple dependent claim							=

* Subtract the greater number of Col. 2

** If the difference between Col. 1 and Col. 2 is less than zero, then enter "0" in Col. 3

SUBTOTAL (2) (\$) 303

SUBMITTED BY

Typed or Printed Name: Brian M. Hoffman

Signature

Complete (if applicable)

Reg. Number: 39,713

Date

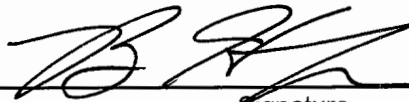
December 14, 2001

[†] Request for Extension of Time per 37 CFR 1.136 (a)(3) made hereby

REQUEST AND CERTIFICATION UNDER 35 U.S.C. 122(b)(2)(B)(i)	First Named Inventor		Timothy Tuttle <i>et al.</i>
	Title	ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK	
	Atty. Docket Number		22726-05935

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. I hereby request that the attached application not be published under 35 U.S.C. 122(b).

December 14, 2001
Date


Signature

Brian M. Hoffman, Reg. No. 39,713

Typed or printed name/Registration Number

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

Burden Hour Statement: This collection of information is required by 37 CFR 1.213(a). The information is used by the public to request that an application not be published under 35 U.S.C. 122(b) (and the PTO to process that request). Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 6 minutes to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

INVENTOR INFORMATION

Inventor One Given Name:: Timothy
Family Name:: Tuttle
Postal Address Line One:: 3449 22nd Street, Apt. 8
City:: San Francisco
State or Province:: California
Country:: United States
Postal or Zip Code:: 94110
City of Residence:: San Francisco
State or Province of Residence:: California
Country of Residence:: United States
Citizenship Country:: US
Inventor Two Given Name:: Robert S
Family Name:: Dreyer
Postal Address Line One:: 3918 23rd Street
City:: San Francisco
State or Province:: California
Country:: United States
Postal or Zip Code:: 94114
City of Residence:: San Francisco
State or Province of Residence:: California
Country of Residence:: United States
Citizenship Country:: US
Inventor Three Given Name:: Jeremy S
Family Name:: Lueck
Postal Address Line One:: 743 Clayton Street
City:: San Francisco
State or Province:: California
Country:: United States
Postal or Zip Code:: 94117
City of Residence:: San Francisco
State or Province of Residence:: California
Country of Residence:: United States
Citizenship Country:: US
Inventor Four Given Name:: Charles E
Family Name:: Cano
Postal Address Line One:: 743 Clayton Street
City:: San Francisco
State or Province:: California
Country:: United States
Postal or Zip Code:: 94117
City of Residence:: San Francisco
State or Province of Residence:: California
Country of Residence:: United States
Citizenship Country:: US
Inventor Five Given Name:: Paul A
Family Name:: Sorensen
Postal Address Line One:: 743 Clayton Street
City:: San Francisco

State or Province:: California
Country:: United States
Postal or Zip Code:: 94117
City of Residence:: San Francisco
State or Province of Residence:: California
Country of Residence:: United States
Citizenship Country:: US

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 00758
Fax One:: (650) 494-1417
Electronic Mail One:: bhoffman@fenwick.com
Fax Two:: (415) 281-1350

APPLICATION INFORMATION

Title Line One:: Asynchronous Messaging Using a Dynamic
Title Line Two:: Routing Network
Total Drawing Sheets:: 8
Formal Drawings?: No
Application Type:: Utility
Docket Number:: 22726-05935
Secrecy Order in Parent Appl.?: No

REPRESENTATIVE INFORMATION

Representative Customer Number:: 758
Registration Number One:: 42120
Registration Number Two:: 39713

CONTINUITY INFORMATION

This application is a:: NON PROV. OF PROVISIONAL
> Application One:: 60/256613
Filing Date:: 12-18-2000

This application is a:: NON PROV. OF PROVISIONAL
> Application Two:: 60/276847
Filing Date:: 03-16-2001

This application is a:: NON PROV. OF PROVISIONAL
> Application Three:: 60/278303
Filing Date:: 03-21-2001

This application is a:: NON PROV. OF PROVISIONAL
> Application Four:: 60/279608
Filing Date:: 03-28-2001

This application is a:: NON PROV. OF PROVISIONAL
> Application Five:: 60/280627
Filing Date:: 03-29-2001

Source:: PrintEFS Version 1.0.1

ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK

INVENTORS

TIMOTHY TUTTLE
ROBERT S. DREYER
JEREMY SCOTT LUECK
CHARLES EDWARD CANO
PAUL ANDREW SORENSEN

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 U.S.C. § 119(e) of U.S. Provisional Application No. 60/256,613, filed December 18, 2000, U.S. Provisional Application No. 60/276,847, filed March 16, 2001, U.S. Provisional Application No. 60/278,303, filed March 21, 2001, U.S. Provisional Application No. 60/279,608, filed March 28, 2001, and U.S. Provisional Application No. 60/280,627, filed March 29, 2001, all of which are hereby incorporated by reference herein.

BACKGROUND

FIELD OF THE INVENTION

[0002] This invention pertains in general to transferring information through digital networks and in particular to transferring information for remotely updating content at client devices through the digital networks.

BACKGROUND ART

[0003] The Internet is a digital network of computers. An individual computer on the Internet is typically identified by an internet protocol (IP) address. A computer on the

Internet sends a packet of information to another computer by routing the packet to a logical port at the destination computer's IP address. The destination computer interprets the packet according to one of several possible protocols determined by the port to which the packet was sent.

[0004] The World Wide Web (the "Web") is a collection of technology and content available on the Internet that allows the content to be routed from server computers to particular destination computers. The Web includes a large number of web pages residing on many different servers. Web pages contain one or more files, or references to one or more files, specifying instructions for presenting the web page and content, such as text, images, applets, video, and/or audio.

[0005] Web pages use a variety of definitional and programming languages to control how information is presented. The most fundamental of these is the Hypertext Markup Language (HTML). HTML uses a system of "tags" to specify how content should be displayed. Recent advances in HTML introduce "style sheets" which help separate content information from display information. HTML has also been modified and extended to provide new capabilities. For example, Extensible Markup Language (XML) adds semantic content to web pages. In addition, Dynamic HTML (DHTML) adds some dynamic content to web pages.

[0006] A web page may also include one or more programs for controlling how the web page is displayed. For example, JAVA[®] applets and JAVASCRIPT[®] scripts may be used to control the display of a web page. In addition, DHTML uses scripts to control the dynamic content. Thus, a web page designer can use applets and scripts to produce

animation effects or modify the display based on user interaction. For example, the designer can write a script that changes the color of a piece of text when a user clicks on a button.

[0007] Devices that display/execute web pages are often called “client devices” or simply “clients.” Client devices include personal computers, web-enabled set-top boxes and televisions, cellular telephones, personal digital assistants and other handheld devices, and special-purpose web-browsing appliances. Client devices typically employ a program called a “web browser” for interpreting the HTML or other display instructions in the web page and displaying the content accordingly. Most web browsers include special functionality, such as a Java Virtual Machine, for executing JAVA[®] applets and/or other applets or scripts embedded in the web pages.

[0008] A client device specifies a web page or other document on the web using a Uniform Resource Locator (URL). A URL has the form “service://server/path/file.” Here “service” refers to the protocol to be used, such as the file transfer protocol (FTP) or the hypertext transport protocol (HTTP). “Server” is the IP address of the server containing the page, and “path/file” specifies the particular web page on the server.

[0009] The Web suffers from a substantial limitation with respect to dynamically updating content in a web page at a client device. The Web’s only mode of operation is for a client device to first request a page from a server and then for the server to send the requested page to the client device. Once the server delivers the page to the client, it typically terminates its connection to the client, and does not retain any information about the client or the page that was sent. For this reason, servers are typically “stateless.” As a

result, client devices drive and control the flow of information around the Web. While client-side control is appropriate in some situations, it does not permit efficient updating of data at the client devices. For example, if a web page contains information that may change, such as the score of a baseball game or a stock quote, the server has no way to inform the client devices that are viewing the page of the change. Instead, the client devices must ask the server for the updated information. However, the client devices do not know when the information on the web page has changed, and thus do not know to ask for the update.

[0010] There are some simple web programming techniques that attempt to update content on client device-side web pages. One approach that web designers use is to rely on the client devices to periodically re-request web pages. This updating can be performed as the result of user action (such as pressing the “refresh” button) or can be automated to occur on a particular schedule (such as by using the HTML Meta Refresh tag to cause the client device to request the page every ‘X’ seconds). Although this technique provides client devices with more up-to-date information, it is very wasteful of resources. In particular, the web server must resend the page even if nothing has changed, and, even when something has changed, it must resend the entire web page rather than just the updated information, which may be only a very small part of the page. Further, attempting to reduce unnecessary requests by decreasing the request rate results in decreasing the currency of the data. This is an unalterable trade off in a client-driven approach.

[0011] The performance of automatic refreshing can be improved somewhat by putting information that may change in a separate frame from information that is less likely to change, and only refreshing the separate frame. A few web designers even write custom JAVA applets to limit refreshing to individual components on a page, such as the score of a soccer game. A willingness to go to such effort illustrates the serious drain of resources caused by frequent refreshing.

[0012] Nevertheless, even custom JAVA applets are not a meaningful attack on this problem. Custom applets require a large separate development effort for each item on each page that might need to be updated. More importantly, most custom applets still update content based upon client-driven requests, although it is possible to design an applet that accepts "pushed" messages. This solution is not scalable to provide updated information for large numbers of client devices and for large numbers of web pages.

[0013] Therefore, there is a need in the art for an efficient way to provide dynamic content to a web page at a client device.

DISCLOSURE OF THE INVENTION

[0014] The above need is met by a dynamic content routing network that routes messages containing data for updating properties of live objects to clients displaying web pages or other representations of data containing the live objects. The web server that initially provides the web pages to the clients does not need to track which clients are currently displaying the live objects. Instead, the information provider or a dynamic content provider (generically referred to as an "input source") that provided the live

object simply sends an update message to the routing network. The routing network maintains the mappings between the live objects and the clients that are currently displaying them. This routing utilizes bandwidth efficiently because the update messages are provided to the clients only when the live objects change.

[0015] In one embodiment, a web server associated with an input source provides web pages to clients. The web pages contain live objects identified by object IDs. An activation module at the client examines the web page and identifies the object IDs of the live objects on the web page. Then, the activation module establishes a connection with the routing network and registers for the object IDs. The routing network maintains a registry indicating which clients have registered for which live objects.

[0016] An input source provides update messages to the routing network. An update message preferably contains an object ID and data for updating a property of the identified live object. The routing network determines the clients that have registered for the identified object ID, and then routes the message to those clients. The activation modules at the clients receive the message and update the properties of the live object as specified by the data in the message.

[0017] The features and advantages described in this summary and the following detailed description are not all-inclusive, and particularly, many additional features and advantages will be apparent to one of ordinary skill in the art in view of the drawings, specification, and claims hereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. 1 is a high-level block diagram illustrating an environment containing a dynamic content routing network;

[0019] FIG. 2 is an interaction diagram illustrating interactions among a server, information provider, dynamic content provider, client, and routing network to update a property of a live object on a web page;

[0020] FIG. 3 is a high-level diagram graphically indicating the many-to-many mapping performed by the routing network;

[0021] FIG. 4 illustrates two different web pages containing sports scores;

[0022] FIG. 5 is a block diagram illustrating an input source and the tools available to it for generating the update messages;

[0023] FIG. 6 is a flow chart illustrating the steps performed by an embodiment of an activation module;

[0024] FIG. 7 is a block diagram illustrating a lower-level view of the routing network according to an embodiment of the present invention; and

[0025] FIG. 8 is a flow chart illustrating steps performed by a node in a cluster to perform object-based routing of a message received from an input source via the gateway.

[0026] The figures depict an embodiment of the present invention for purposes of illustration only. One skilled in the art will readily recognize from the following

description that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the invention described herein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] FIG. 1 is a high-level block diagram illustrating an environment 100 containing a dynamic content routing network 110 (hereafter referred to as the “routing network”). The environment 100 also contains a server 112 in communication with a client 114, an information provider 108, and a dynamic content provider 116. Although a typical environment 100 will have hundreds of servers 112 and information providers 108, thousands (or even millions) of clients 114, and multiple dynamic content providers 116, FIG. 1 illustrates only one of each of these entities in order to enhance the clarity of this description.

[0028] The server 112, client 114, information provider 108, dynamic content provider 116, and routing network 110 are preferably in communication via conventional communications links 117 such as those comprising the Internet. The communications links 117 include known wired communications media, such as dedicated or shared data, cable television or telephone lines, and/or known wireless communications media, such as communications over the cellular telephone network using protocols such as the global system for mobile communications (GSM), code division multiple access (CDMA), time division multiple access (TDMA), etc.

[0029] In one embodiment, the entities may each be in communication with one or more Internet Service Providers (ISPs) (not shown) that provide each entity with access to

other computers on the Internet. In addition, the server 112, client 114, information provider 108, dynamic content provider 116, and routing network 110 are preferably each identified by at least one Internet Protocol (IP) address such as "66.35.209.224." The IP address may also have one or more domain names associated with it, such as "bangnetworks.com." Alternative embodiments of the present invention may use alternative addressing schemes and/or naming conventions instead of, or in addition to, those described herein. For example, embodiments wherein one or more of the clients are cellular telephones or other portable devices may rely on different addressing schemes.

[0030] Preferably, the information provider 108 provides web pages or other representations of data to the server 112. The web pages contain one or more "live objects," which are designated to be real-time dynamically-updateable objects. Each live object is identified by an object identifier, or object ID. Preferably, the server 112 provides the web pages 118 to multiple clients 114. The clients 114 contact the routing network 110 and register for update messages for the object IDs on the web page. The routing network 110, in turn, preferably maintains a registry indicating which clients have registered for which object IDs.

[0031] The information provider 108 and/or dynamic content provider 116 send update messages to the routing network 110. These messages can be sent any time the information provider 108 or dynamic content provider 116 wants to update a property of a live object. Each update message preferably identifies a live object and contains data for updating a property of the identified live object. The routing network 110 accesses the registry and determines which clients have registered for the identified object. Then, the

routing network 110 routes the update message to the appropriate clients. Upon receipt of an update message, the clients 114 update the specified property of the live object.

[0032] The routing network 110 provides an efficient one-to-many mapping of objects to clients (and by inference of information, a many-to-many mapping of information providers 108/dynamic content providers 116 to clients) through object-based routing. Messages provided by the information provider 108 and/or dynamic content provider 116 to the routing network 110 are not routed to the clients 114 based entirely on a specified destination; more specifically, they are not routed based on the IP address of the client, as in conventional IP routing schemes. Instead, the messages are routed based on the live objects referenced by the message.

[0033] The mapping and object-based routing provided by the routing network 110 allow the information provider 108 and dynamic content provider 116 to update properties of live objects at a dynamically changing cross-section of clients in real-time, without requiring the information provider or dynamic content provider to track the clients or web pages being viewed by the clients. The clients 114, in turn, do not need to have any a priori knowledge of object IDs – they “discover” which IDs they should register when they receives the web pages 118 from the server 112.

[0034] Object-based routing also allows information providers 108 to dynamically update content on web pages without requiring the clients 114 to re-request the content, and without requiring the information providers 108 or servers 112 to maintain connections with the clients. In this manner, significantly more clients can receive updated content from a given information provider 108 than would be possible utilizing

conventional client-side request-driven transmission control protocol/Internet Protocol (TCP/IP) connections between the clients and the server 112.

[0035] Turning now to the individual entities illustrated in Fig. 1, the server 112 is preferably a conventional computer system configured to act as a web server and serves web pages 118 and other data representations to clients 114. The web pages 118 provided by the server 112 are associated with one or more information providers 108.

[0036] An information provider 108 is an entity providing one or more web pages 118, information contained in web pages, and/or other representations of data served by the server 112. The information provider 108 preferably has a conventional computer system coupled to the Internet. In one embodiment, the server 112 is directly controlled by the information provider 108 (e.g., the server is physically located at the information provider and/or is dedicated to serving only the information provider's web pages). In this embodiment, the server 112 and information provider 108 can be treated as the same entity. In an alternative embodiment, the server 112 serves web pages from multiple information providers.

[0037] As is known in the art, the web pages 118 and other content on the server 112 are specified by uniform resource locators (URLs) having the form "service://server/path/web page." Typically, web pages 118 are obtained via the hypertext transport protocol (HTTP) and thus an exemplary URL for retrieving the web page "b1.html" from the web server having the domain name "www.bangnetworks.com" is "http://www.bangnetworks.com/news/b1.html."

[0038] As used herein, a "web page" is a block of data available from the server 112. In the simplest case, a web page is a file written in the hypertext markup language (HTML). The web page may also contain or refer to one or more other blocks of data, such as other files, text, images, applets, video, and/or audio. In addition, the web page may contain instructions for presenting the web page and its content, such as HTML tags and style sheets. The instructions may also be in the Extensible Markup Language (XML), which is related to HTML and adds semantic content to web pages or the Dynamic HTML (DHTML), which adds some dynamic content to web pages. Additionally, the instructions may take the form of one or more programs such as JAVA[®] applets and JAVASCRIPT[®] and/or DHTML scripts.

[0039] As used herein, the phrase "web page" also refers to other representations of data served by the server 112 regardless of whether these data representations include characteristics of conventional web pages. These data representations include, for example, application programs and data intended for the web browser 120 or other application programs residing at the clients 114 or elsewhere, such as spreadsheet or textual (e.g., word processing) data, etc.

[0040] In a preferred embodiment, objects at the client, such as web pages and elements of web pages, can be designated as "live" by the information provider 108. Properties of a live object can be dynamically updated in real-time at the client 114 by the information provider 108 or another entity acting on behalf of the information provider. As used herein, an "object" is any datum or data at the client 114 that can be individually identified or accessed. Examples of objects include elements of web pages such as text

characters and strings, images, frames, tables, audio, video, applets, scripts, HTML, XML, and other code forming the web page, variables and other information used by applets, scripts and/or code, URLs embedded in the web page, etc. Application and operating system constructs are also objects. For example, cells of spreadsheets, text in word processor documents, and title bars and messages displayed by the operating system or applications are objects. Preferably, multiple objects can be grouped together into a single, logical object. Thus, an object can be defined at any desired or useful level of granularity.

[0041] Since content on a web page is conceptualized and organized by “object,” the present invention essentially abstracts web pages and web page content, and other modules and/or functionality at the client 114, away from the HTML code or other conventional representation. This abstraction allows the information provider 108 to update a property of an object without concern for the location, display format, or other specifics of how the data is being represented at the client 114.

[0042] Live objects have associated “properties” which include any modifiable data related to the object or referenced with respect to the object. The information provider 108 typically, but not necessarily, provides initial settings for the properties of live objects provided to the client 114. The properties may or may not affect the visual representation of the object in the web page or other data representation. A property may affect an internal aspect of the object and, thus, a change to the property may not have any direct effect on a web page containing the object. For example, the property may affect whether particular aspects of the object are modifiable, how the object responds to user

input or other stimuli, etc. Additionally, a property may also have a direct effect on how the object is displayed at the client 114. For example, the property may affect the content, color, typeface, size, formatting, or other attribute of text, images, or other data displayed by the object. Other properties may occupy parts of the spectrum between having no effect on the visible representation of the object and having a direct effect on the visible representation of the object. For example, a web page showing scores of football games may include a list of games and the current scores of the games as of the time the server 112 serves the web page. The list of games, subset of games to be displayed, and the scores of the games can be designated as live objects (or properties of a single live object) and updated as necessary or desired.

[0043] A property can also preferably include instantiating an instance of the object or invoking functionality of the object. For example, a property of a browser window object may include functionality for instantiating another browser window. This function can be invoked as a logical change to a property of the object. The second browser window can be referenced through the original browser window (i.e., object) or designated as a new live object.

[0044] An information provider 108 or other entity preferably updates a live object at a client 114 via an update message. In general, an update message identifies the live object and, if necessary, the property of the live object, and contains data for updating the property. In one embodiment, the data may be the actual value for the property or executable code for causing the object's property to be updated. For example, the data may be a simple numerical or textual value, e.g., "4," to which the property should be set,

and/or the data may be JAVASCRIPT[®] code or a call to a JAVASCRIPT[®] function at the client that effects the desired change to the property of the object.

[0045] The update message preferably implicitly or explicitly identifies a handler at the client 114 for use in updating the live object's property. In one embodiment, the client 114 utilizes a default handler when the message implicitly specifies the handler (e.g. when the message does not identify a specific handler). In one embodiment, if the update message specifies the actual value for the property, a default handler generates JAVASCRIPT[®] code for changing the property to the specified value. If the data in the update message are JAVASCRIPT[®] code, the default handler does not perform any processing of the code. In either case, the default handlers preferably use LiveConnect to execute the JAVASCRIPT[®] code in a Java Virtual Machine (JVM) 122 at the client 114 and thereby update the property of the live object.

[0046] For certain objects and/or data types, the default handlers are not appropriate. In these cases, the message preferably explicitly identifies a handler for performing the update. For example, the message may explicitly specify a function to call on the data or the message may explicitly identify the environment in which the data should be executed. For example, the data in the update message may include code for execution by a software "plug-in" such as MACROMEDIA FLASH[®] and the message may explicitly identify FLASH as the handler.

[0047] The information provider 108 preferably designates an object as "live" by including a unique identifier for the object, the object ID, in the web page or other data representation provided to the client 114. In one embodiment, the information provider

108 encodes the object ID in an object's corresponding HTML "ID" attribute using the following HTML expression:

ID = "elementIdentifier,"

where "elementIdentifier" is the object ID and is preferably a string. The string can encode any information desired by the information provider 108 or other entity establishing the object ID and in one embodiment is a simple textual and/or numeric identifier. In one embodiment, the information provider 108 begins the object ID with a predefined token, such as "Bang\$," in order to distinguish live objects from other objects that happen to have defined ID attributes. For example, an object can have the object ID "Bang\$elementIdentifier."

[0048] In the preferred embodiment, each information provider 108 optionally encodes a unique information provider ID in its object IDs in order to prevent naming collisions between the object IDs of different information providers. In one embodiment, the information provider ID is a textual and/or numeric identifier. The information provider 108 may specify the information provider ID and the object ID as part of a hierarchical namespace. For example, in one embodiment objects are named as follows: "\$namespace1\$[namespace2\$...\$namespaceN\$]objectId," where "\$namespace1" is the information provider ID and the "\$" operates as the name separator and defines additional optional levels of a namespace hierarchy. One embodiment of the system 100 supports typical directory services functionality. For example, two dollar sign characters appearing together, "\$\$", refers to the top level of the namespace hierarchy.

[0049] Thus, the object ID for a live object is preferably formed from a combination of the predefined token, the information provider ID namespace, and a value assigned by the information provider 108. For example, the object ID for a live object representing the real time price of a stock having the symbol "BANG" might be:

"Bang\$\$informationProviderID\$equities\$realtime\$bang." In this example, "Bang\$" is the predefined token that signifies a live object, "\$informationProviderID" is the ID identifying the information provider, "\$equities\$realtime\$" defines levels of a namespace hierarchy, and "bang" identifies the specific object.

[0050] In some embodiments and situations, the object ID utilizes relative names. For example, an information provider 108 referring to its own object IDs is implicitly in its own namespace. Accordingly, the information provider 108 does not need to include the information Provider ID in the object IDs it utilizes internally. In one embodiment, the information provider ID is not explicitly encoded into the object ID. Instead, the information provider ID is encoded elsewhere in the web page in order to provide scope to the page's object IDs.

[0051] In one embodiment, the object ID identifies a point (i.e., a node in a tree) in a Document Object Model (DOM) representation of a web page or other document at the client 114. The DOM is a platform- and language-neutral interface that represents a document as a hierarchy of objects. The DOM also provides an interface that allows programs and scripts to dynamically access and update properties of the objects. Object properties can be inherited by descendent objects.

[0052] In this embodiment, the client 114 preferably executes an update message in the context of the specified point in the DOM representation. The update may specify a change to a property of the object at the identified point. The update also may specify a change to a parent or descendent of the object at the identified point. In each case, the update is executed relative to the specified point in the DOM representation. In one embodiment, points in the DOM representation specify how to update properties of live objects located at those points. Thus, the same update may be interpreted differently depending upon the identified live object's location in the DOM representation.

[0053] For example, assume there is an object in the DOM representation identified as "window.document.frame[3].ObjectID." Also assume that the object has an "innerText" property located at "window.document.frame[3].ObjectID.innerText" that specifies the text displayed by the object. An update message can change the text displayed by the object by specifying "ObjectID" and the new value for the innerText property.

[0054] An advantage of utilizing object IDs to specify objects is that the information provider 108 or other entity providing the update message can access and change properties of objects without knowing the object's actual location in the DOM representation. Indeed, the object may be in different locations in different DOM representations and/or in multiple locations in the same DOM representation. In any of these cases, the update message will change the specified properties of all of the objects having the given object ID.

[0055] Depending upon the particular embodiment of the environment 100, the information provider 108 and/or the dynamic content provider 116 provides update messages to the routing network 110. The dynamic content provider 116 is preferably a conventional computer system operated by an entity that provides real-time information, such as stock prices and/or sports scores. In one embodiment, the information provider 108 receives updated properties for the live objects from the dynamic content provider 116 or another source (or generates the updated properties internally). Then, the information provider 108 sends an update message specifying the object ID and the change to the object property to the routing network 110. In this embodiment, the dynamic content provider 116 may be absent from the environment 100.

[0056] In another embodiment, the dynamic content provider 116 provides the object IDs for live objects to one or more information providers 108 and the information providers 108 distribute the live objects to the clients 114. Then, the dynamic content provider 116 sends messages specifying the changes to the properties of the live objects to the routing network 110. For example, the dynamic content provider 116 distributes an object ID associated with the score of a particular baseball game to the information providers 108. Then, the dynamic content provider 116 sends a message specifying the object ID and an update to a property of the object that controls the displayed score of the particular baseball game to the routing network 110. These two embodiments are not mutually exclusive and, therefore, some updates may be provided to the routing network 110 by the information provider 108 while others are provided by the dynamic content provider 116.

[0057] The client 114 is a device that retrieves web pages 118 and/or other information from the server 112. In one embodiment, the client 114 is a conventional personal computer used by a person to access information on the Internet. In alternative embodiments, the client 114 is a different consumer electronic device having Internet connectivity, such as an Internet-enabled television, a cellular telephone, a personal digital assistant (PDA), a web browsing appliance, etc. The client 114 preferably, but not necessarily, has an associated display device.

[0058] The client 114 preferably executes a web browser 120, such as MICROSOFT INTERNET EXPLORER[®], for retrieving web pages and displaying them on the display device. In embodiments where the client receives data representations from the server 112 other than conventional web pages, the web browser 120 does not necessarily share similarities with conventional web browsers. Preferably, the web browser 120 contains a JVM 122 for executing JAVA[®] applets and/or scripts. The web browser 120 also preferably contains Dynamic HTML capabilities, such as support for JAVASCRIPT[®] (or another scripting language, such as VBScript) and the Document Object Model (DOM), and enables communications between JAVA[®] and the scripting languages. In one embodiment, the web browser 120 supports the LiveConnect standard for enabling communication between JAVA[®] applets and scripts written in the supported scripting languages. The web browser 120 can also be extended through software plug-ins such as MACROMEDIA FLASH[®], REAL NETWORKS REALPLAYER[®], and/or APPLE QUICKTIME[®]. In alternative embodiments, the functionality of the JVM 122 and/or other aspects of the web browser 120 are provided by one or more other functional units

within the client 114. The term "module" is used herein to refer to software computer program code and/or any hardware or circuitry utilized to provide the functionality attributed to the module. The web browser 120 and JVM 122 are examples of modules in the client 114.

[0059] In some embodiments, the client 114 does not necessarily have a display device, web browser 120 and/or other components associated with a typical consumer device. The client 114, for example, may be a dedicated purpose device having certain aspects of web connectivity such as an embedded HTTP client in a web-enabled appliance or in a controller for an automobile, audio-visual equipment, or some other device.

[0060] A web page 118 provided from the server 112 to the client 114 preferably includes instructions for enabling the live objects on the web page. The instructions cause the client 114 to automatically and transparently (i.e., without user interaction) contact the routing network 110 and download an activation module 124 for activating the live objects. In one embodiment, the instructions comprise a URL specifying the location of the activation module 124 at the routing network 110. In an alternative embodiment, the client 114 obtains the activation module 124 from the server 112 or another source.

[0061] The activation module 124 preferably contains JAVA[®] instructions for execution by the JVM 122. However, alternative embodiments of the module 124 may encode the instructions in the web page 118 and/or the activation module 124 using different languages and/or techniques. For example, the instructions and/or activation

module 124 can be embedded in the web browser 120 or operating system, either as native code or as plug-ins. In these alternative embodiments, the web browser 120 does not have to download the activation module 124 from an external source.

[0062] The activation module 124 preferably registers object IDs from the web page 118 downloaded by the client 114 with the routing network 110 and updates the live objects in response to update messages received from the network. The routing network 110 records the registrations in the registry 125. The client's registrations preferably remain in effect as long as the client is displaying the associated web page 118, although other embodiments of the system 100 may use different criteria for determining when to terminate the client's registrations.

[0063] FIG. 2 is an interaction diagram illustrating interactions among the server 112, information provider 108/dynamic content provider 116 (generically referred to as an "input source 210"), client 114, and the routing network 110 to update a property of a live object. Initially, the client 114 sends 212 a web page request to the server 112. In response, the server 112 provides 214 to the client 114 the web page containing or otherwise identifying the one or more live objects. Instructions encoded in the web page preferably cause the client 114 to transparently request 216 the activation module 124 from the routing network 110. In response, the routing network 110 sends 218 the activation module 124. The client 114 executes 220 the activation module 124, which identifies the object IDs of the live objects at the client and registers 222 the object IDs with the routing network 110. The routing network 110 updates 223 its registry to identify the object IDs for which the client 114 has registered.

[0064] At some point, the input source 210 sends 224 an update message to the routing network 110 in order to change a property of a live object at the client 114. In one embodiment, the message from the input source 210 to the routing network 110 contains only a single object ID and an update to a property of the identified object. In another embodiment, the message contains multiple object IDs and the corresponding property updates. In this latter embodiment, the message may have an associated "Batch ID" that identifies the message as having multiple object IDs and updates. Preferably, the information provider 108 can include a batch ID in a web page 118 in the same manner as including an object ID. Likewise, the client 114 can preferably register for a batch ID with the routing network 110 in the same manner as an object ID. In fact, the batch ID can be the same as the object ID so that the client 114 registers for both batch and non-batch messages by registering one ID. Alternatively, separate procedures can be established for registering batch messages. The client 114 preferably processes the component messages of a batch as if each message were delivered separately.

[0065] The routing network 110, in turn, routes 226 the message to each client 114 that has registered for the specified object ID, preferably by utilizing standard Internet communications protocols, such as IP addresses, etc. The activation module 124 at the client 114 processes the message and updates 228 the property of the identified live object. If live objects having the same object ID appear in multiple locations at the client 114 (e.g., at multiple locations on a web page being displayed at the client), the activation module 124 preferably updates each of the live objects having the specified ID. As a result, the routing network 110 allows live objects at the client 114 to be dynamically

updated. Preferably, this routing and updating happens quickly enough to be considered “real-time” for the purposes of the input source 210.

[0066] This update process, indicated within the dashed box 230 in FIG. 2, can repeat an indefinite number of times and is fully asynchronous as to the information provider 210 and client 114. For example, the input source 210 may send regular update messages to the routing network 110 as the score of a sporting event changes or a stock price fluctuates, but may stop sending update messages once the sporting event ends or stock market closes. When the client 114 ends the display of a web page containing the live object, or otherwise no longer desires to receive update messages, the client preferably closes 232 the connection with the routing network 110. The routing network 110, in turn, updates 234 the registry 125 to remove the client’s object registrations. In another embodiment, the client 114 sends messages to the routing network 110 that selectively register and/or de-register the client from one or more objects yet leaves the connection open in order to receive update messages pertaining to other objects.

[0067] FIG. 3 is a high-level diagram graphically indicating the many-to-many mapping performed by the routing network 110. Multiple input sources (labeled 210A-C) send update messages to the routing network 110. Each update message preferably specifies at least one object ID and an update to a property of the identified object. The routing network 110, in turn, selectively routes the update messages to the clients 114 that have registered for the given object ID from the given input source 210. In FIG. 3, assume for example that clients 312A and 312B have registered for a given object ID while the other clients have not registered for the object ID. Accordingly, the routing

network 110 routes the update message to clients 312A and 312B, but does not route the message to clients 312C-312H.

[0068] FIG. 4 illustrates an example of the capabilities of the dynamic content routing network 110. FIG. 4 illustrates two different web pages 410, 412 containing sports scores. Although the web pages are formatted differently, each page contains the same scores for two professional football games and two professional baseball games. Web page 410 contains all four games under the heading "Local Sports Scores" while web page 412 contains the baseball games under the heading "Baseball Scores" and the football games under the heading "Football Scores."

[0069] There are various ways to internally represent the games and scores in the web pages using live objects. In one embodiment, a "game" object is defined having properties for the two teams involved in the game and the score associated with each team. The game object is placed at a selected position in the web page and the properties of the object cause the information about the game to be displayed on the page. In another embodiment, "team" and "score" objects are defined, with the team object having a property defining the name of a team and the score object having a property defining a score. In this second embodiment, the team and score objects are placed at selected locations on the page so that the proper teams and scores are aligned when the page is rendered. In yet another embodiment, an object is defined having properties for the name of one team and a score associated with that team. Then, pairs of the objects are placed in the page in the proper alignment to indicate the games and scores. In another embodiment, an object is defined having properties specifying names of two teams and a

separate object is defined having properties specifying two scores. In this last embodiment, the two objects are placed in the page so that the names of the teams align with the associated scores. Obviously, additional variations of these representations are possible.

[0070] Assume for the example of FIG. 4 that the names of teams in a game are specified by a "names" object having properties for the two team names and the scores in the game are specified by a "scores" object having properties for two scores. In web page 410, a names object 414 having properties set to identify the "SF 49ers" and the "STL Rams" is located directly under the "Local Sports Scores" heading. A scores object 416 having a property set to identify the score of the game as "42" to "7" is directly to the right of the names object 414. In web page 412, the properties of the second names object 418 identify the same game using slightly different terminology: "SF" and "STL." However, this names object 418 is aligned with the same scores object 416 as is utilized in web page 410.

[0071] Thus, the same scores object 416 is utilized in different positions in each web page 410, 412. In order to update the score of the San Francisco 49ers vs. St. Louis Rams football game on both web pages, the input source 210 simply sends an update message to the routing network 110 specifying the object ID for the scores object 416 and the update to the score property. The routing network 110 routes the update message to the appropriate clients 114, and the clients update the appropriate score regardless of the particular page layout.

[0072] The input source 210, i.e., the information provider 108 and/or dynamic content provider 116 can use a variety of tools to generate the update messages. FIG. 5 is a block diagram illustrating an input source 210 and the tools available to it for generating the update messages. Other tools can be utilized in addition to or instead of the ones described herein.

[0073] Preferably, the tools allow the input source 210 to access an application programming interface (API) provided by the routing network 110 for accepting messages. In one embodiment, the messages sent by the input source 210 are in the same format as utilized by the activation module 124 at the client 114. In an alternative embodiment, the messages provided to the routing network 110 are in a different format and the routing network translates the messages into the format utilized by the activation module 124.

[0074] In one embodiment, the input source 210 utilizes a data pump module 510 to access the API. The data pump module 510 reads an extensible markup language (XML) file containing one or more object IDs and the new values for the identified objects at regular intervals and automatically generates API calls that send messages representing changes to object properties to the routing network 110. In another embodiment, the data pump module 510 is event-driven and reads the XML file in response to a change in the file or some other occurrence.

[0075] In another embodiment, the input source 210 utilizes a director console module 512 to access the API. Preferably, the director console module 512 presents an administrator with a graphical interface displaying the contents of the web page 118. For

example, the administrator may use the director console 512 to edit textual data, images, and/or any objects or properties of objects on the web page. After editing, the administrator uses a "send update" button or similar technique to cause the director console module 512 to send messages for the changed objects and properties to the routing network 110 via the API.

[0076] In another embodiment, the information provider 108 and dynamic content provider 116 work together as the input source 210 by using a content management system module 514 to access the API. Preferably, the content management system module 514 resides at the information provider 108 and receives object property updates from the dynamic content provider 116. The content management system module 514 preferably updates the properties of the live objects in the web page 118 stored at the server 112 and also sends messages for the changed properties to the routing network 110. In this manner, the web page 118 at the server 112 and the web page displayed at the client 114 are updated almost simultaneously. In one embodiment, the dynamic content provider 116 sends the update messages to the routing network 110 instead of to the information provider 108. Embodiments of the system 100 can also utilize any combination of the content management techniques described herein.

[0077] For example, the tools described above can generate a message having the following code for updating the text displayed by a score object to "2":

```
LiveObject score = new LiveObject("Bang$homeScoreID");  
score.setProperty("innerText", "2").
```

This code sets the innerText property of the object having object ID

“Bang\$homeScoreID” to “2.” The tools use the API to pass this message to the routing network 110.

[0078] Turning now to the actions performed at the client 114, FIG. 6 is a flow chart illustrating the steps performed by an embodiment of the activation module 124. Those of skill in the art will recognize that different embodiments may perform the steps of FIG. 6 in different orders. The activation module 124 generally performs three functions: register object IDs with the routing network 110, handle messages received by the client 114 from the network in order to update the properties of live objects, and control communications between the client and the network.

[0079] In order to register object IDs, the activation module 124 preferably parses 610 the web page 118 received from the server 112 and identifies the object IDs of the live objects. In an alternative embodiment, the activation module 124 identifies only a subset of the object IDs, such as the IDs of only live objects that are currently being displayed by the web browser 120. Alternatively, a list of object IDs may be pre-encoded in the web page in addition to the objects themselves, thereby enabling easy identification by the activation module 124. In yet another embodiment, a user of the client 114 selects the object IDs to register.

[0080] The activation module 124 preferably opens 612 a connection between the client 114 and the routing network 110. The activation module 124 can open 612 this connection before or after the activation module receives and/or parses the web page 118. In some cases, the client 114 is located behind a firewall that puts a restriction on the

types of connection requests the client can make. A firewall might, for example, block all non-HTTP traffic. For this reason, the activation module 124 preferably wraps the connection request in an HTTP header in order to get the request to the routing network 110 through the firewall.

[0081] The activation module 124 uses the connection between the client 114 and routing network 110 to register 614 the object IDs by communicating to the routing network 116 a vector (e.g., a list or array) containing the identified object IDs. In order to accomplish this task through the firewall, the activation module 124 preferably puts the vector into a string, referred to as "object data," and then preferably creates an HTTP message to communicate the object data to the routing network 110. A schematic example is as follows:

```
POST / HTTP/1.1\r\n
Content-Length: <length of object data> \r\n
\r\n
<object data>
```

where <object data> is the object ID list. When the routing network 110 receives such an HTTP request, it extracts the object data and updates the registry 125 to indicate that the client 114 has registered for the identified objects.

[0082] If the web browser 120 loads 616 a new page, or otherwise terminates display of the objects on the initial page, the activation module 124 associated with the initial web page preferably terminates 618 the client's connection with the routing network 110. Those of skill in the art will recognize that this termination 618 can occur asynchronously with the other steps illustrated in FIG. 6. Thus, the location of steps 616 and 618

represents only one possible place in the sequence of steps where the termination may occur.

[0083] If the connection is not terminated, the activation module 124 preferably waits until it receives 618 a message from the routing network 110 specifying an object ID and an update to a property of the identified object. In one embodiment, this message is received as HTTP data. Upon receipt of the message, the activation module 124 preferably extracts 620 the object ID and update from the HTTP data. Then, the activation module 124 updates 622 the property of the identified object, or causes the object to be updated, as specified by the message.

[0084] The sequence of receiving messages 618, extracting data 620, and updating objects 622 is preferably repeated until a new page is loaded 616 or the connection with the routing network 110 is otherwise terminated. Although not shown in FIG. 6, in certain circumstances, such as when a user action with respect to the web page 118 activates a new live object, the activation module 124 may register new object IDs with the routing network 110 without first downloading and parsing a new page. In one embodiment, if the newly-loaded page contains live objects, then the process of downloading the activation module 124 and updating the objects as described by FIG. 6 is repeated. In an alternative embodiment, the activation module 124 remains active at the client 114 and, therefore, the client does not re-download the activation module from the routing network 110. Instead, the already-present activation module 124 performs the live-enabling process on the new page.

[0085] FIG. 7 is a block diagram illustrating a lower-level view of the routing network 110 according to an embodiment of the present invention. Those of skill in the art will recognize that there are many alternative ways to implement the functionality of the routing network 110. FIG. 7 illustrates multiple input sources (labeled 710A-D) representative of sources providing messages to the routing network 110, such as an information provider 710A and a dynamic content provider 710B. FIG. 7 also illustrates multiple clients (labeled 712A-F) representative of the many clients in communication with the routing network 110 at any given instant.

[0086] Internally, the routing network 110 is preferably divided into one or more clusters 714. In FIG. 7, the routing network 110 has three clusters 714A, 714B, 714C, although the number of clusters can vary depending upon the processing needs of the network. An input-side global load balancer 716 preferably routes messages from the input sources 710 to the clusters 714. Similarly, a client-side global load balancer 718 preferably routes connection requests from the clients 712 to the clusters 714. The load balancers 716, 718 are designed to ensure that load is distributed among the clusters 714 according to a predetermined heuristic. For example, the load may be distributed evenly among the clusters 714 or a more powerful cluster may be distributed a majority of the load. In one embodiment, one load balancer performs the functions of the input-side 716 and client-side 718 load balancers and utilizes conventional Domain Name System- (DNS-) based load balancing.

[0087] Each cluster 714, of which cluster 714A is representative, preferably contains an input-side cluster load balancer 720A and a client-side cluster load balancer 722A.

The cluster load balancers 720A, 722A function similarly to the corresponding global load balancers 716, 718 in that the input-side cluster load balancer 720A balances and routes incoming messages among one or more gateways 724A and the client-side cluster load balancer 722A balances and routes incoming connection requests among one or more nodes 726A and application servers 728A.

[0088] In one embodiment, the functionality of the two client-side cluster load balancers 720A, 722A is provided by one component. This single-component load balancer initially determines whether an incoming request is from an input source 710 seeking to send a message to a gateway 724A, a client 712 seeking a connection to a node 726A, or a client seeking a connection to an application server 728A. Then, the load balancer routes the messages/connection requests among the gateways 724A, nodes 726A, and application servers 728A within the cluster 714. In one embodiment, the single-component load balancer provides layer seven load balancing (i.e., load balancing at the application layer). Preferably, the load balancing for the nodes 726A and application servers 728A are performed by the same component since, for security reasons, most client web browsers only permit an application (e.g., the activation module 124) to transparently connect to the location from which the application was downloaded.

[0089] Alternative embodiments of the routing network 110 may combine the global 716, 718 and cluster 720A, 722A load balancers and/or incorporate the functionality of the load balancers into different components within or outside of the clusters 714. In addition, alternative embodiments may omit one or more of these load balancers. For

example, having different clusters 714 serve different customers might obviate the need for the global load balancers 716, 718.

[0090] The gateways 724A in the cluster 714 receive the messages from the input sources 710 and direct the messages to the appropriate node or nodes 726A. In one embodiment, each gateway 724A maintains a persistent TCP connection to every node 726 in every cluster 714 and directs every message to every node. Therefore, although a gateway 724A is located inside a cluster 714A and receives connections via the cluster's input-side load balancer 720A, the gateway's scope spans the entire routing network 110. This broad scope allows messages from any input source to reach any client 712.

[0091] In an alternative embodiment of the routing network 110, each gateway 724 maintains a persistent TCP connection to all nodes 426 in the same cluster 714 and at least one connection to at least one gateway in each of the other clusters. This embodiment reduces the number of simultaneous TCP connections maintained by each gateway 724. In another alternative embodiment, each cluster 714 also includes a gatekeeper (not shown in FIG. 7) that maintains connections with the gateways 724 of other clusters. A gateway 724 forwards messages to the gatekeeper, which then distributes the messages to the gateways of other clusters 714.

[0092] Since a gateway 724 does not control the rate at which it receives messages from input sources 710, it is possible for the gateway to receive messages faster than it can process them (i.e., send the messages to the nodes). Therefore, each gateway 724 preferably maintains a queue 730 of messages that have been received but not yet processed in order to avoid losing messages. In one embodiment, the gateway 724 drops

messages if the queue 730 becomes too long. In another embodiment, the gateway 724 utilizes priorities assigned to certain messages or input sources to determine which messages to drop.

[0093] The nodes 726 preferably transmit messages received from the gateways 724 to the clients 712 that have registered in the object IDs identified by the messages. If no clients 712 have registered the object ID specified by a message, the node preferably ignores the message. A node 726 preferably maintains an instance of the registry 125 as a hash table 732 containing the object IDs registered by clients 712 connected to the node. In one embodiment, the hash table 732 associates each object ID with a linked list containing one entry for each client 712 that has registered for that object ID. Each entry in the linked list preferably contains a pointer to a socket representing the connection to the corresponding client 712. As is known in the art, the pointer to the socket, typically called a "file descriptor," represents an address to which the node can write in order to send the message to the corresponding client. Preferably, the node 726 adds to the hash table 732 and/or linked list every time a client 712 registers an interest in an object and deletes the corresponding entry from the hash table and/or linked list when the client disconnects from the node or otherwise indicates that it is no longer interested in a particular object.

[0094] Alternative embodiments of the present invention utilize other data structures in addition to, or instead of, the hash table 732 and linked list, and/or may utilize different data within the data structures. For example, one embodiment of the routing network 110 has a hierarchy of nodes within each cluster 714. Different nodes in the hierarchy may

handle messages received from certain input sources 210, or process messages sent to different clients 712. In this embodiment, the linked lists may point to nodes lower in the hierarchy, instead of to sockets leading to the clients 712. Another embodiment lacks the node hierarchy, yet assigns certain nodes to certain input sources 210 or clients 712.

[0095] The application server 728 within each node 714 preferably serves the activation module 124 to the clients 712 in response to client requests. In addition, the application server 728 serves any other modules that may be required or desired to support the environment 100. In an alternative embodiment of the routing network, a single application server 728 fulfills all of the client requests. This application server 728 may be within a certain cluster 714 or independent of the clusters. However, this single-application-server embodiment is less desirable because it lacks redundancy.

[0096] Preferably, the routing network 110 utilizes conventional single-processor computer systems executing the Linux operating system (OS). Preferably, each component of the routing network 110 is implemented by a separate, dedicated computer system in order to enable the separate optimization of the components. The input/output (I/O) functionality of the OS is preferably enhanced through the use of a non-blocking OS package such as NBIO available from the University of California, Berkeley, California. Based on the assumption that connections with the nodes 728 are long-lived, the OS is preferably configured to not allocate resources toward monitoring idle connections. Instead, the well-known /dev/poll patch is preferably applied to the OS in order to provide advanced socket polling capabilities.

[0097] Moreover, the TCP/IP stack in the OS is preferably optimized in order to quickly output messages. In one embodiment, the retransmit timer in the stack is reduced from 200 ms to 50 ms. This timer determines how long the stack waits for an acknowledgement (ack) that a sent packet was received. Due to the way the Linux kernel implements the retransmit timer, the kernel will not send pending outbound packets (even if the ack has been received) until the initial retransmit timer has expired. Reducing the retransmit value minimizes the effect of this delay. If an ack is not received before the retransmit timer expires, an embodiment of the present invention increases the retransmit value for the affected TCP connection and the unacknowledged packet is retransmitted. In addition, the TCP/IP stack preferably utilizes Nagle's algorithm functionality to concatenate a number of small messages into a larger message, thereby reducing the number of packets sent by the routing network 110.

[0098] FIG. 8 is a flow chart illustrating steps performed by a node 726 in a cluster 714 to perform object-based routing of a message received from an input source via the gateway 724. Initially, the node 726 receives 810 the message from an input source 710. The node 726 extracts 812 the object ID from the message. In addition, the node 726 optionally transforms 814 the message to convert it from the format utilized by the input source 710 into the format utilized by the activation module 124 at the client 712. As described above, in one embodiment the message format utilized by the input source 710 is identical to the message format utilized by activation module 124. In this embodiment, therefore, the node 726 does not need to transform the message. In an alternative embodiment wherein the input source 710 and activation module 124 utilize different

message formats, the node 726 preferably transforms the message. The node 726 looks up 816 the hash table entry corresponding to the extracted object and information provider IDs to determine the linked list of clients 712 that have registered in the object referenced by the message. Finally, the node 726 transmits 818 the message to each of the registered clients 712. In an alternative embodiment, the node 726 optionally transforms the message after, as opposed to before, looking up the registered clients in the hash table. Transforming the message at this latter stage enables the node 726 to transform the message according to the specific requirements of the registered clients 712.

[0099] The above description is included to illustrate the operation of the preferred embodiments and is not meant to limit the scope of the invention. The scope of the invention is to be limited only by the following claims. From the above discussion, many variations will be apparent to one skilled in the relevant art that would yet be encompassed by the spirit and scope of the invention.

CLAIMS

1 1. A method for dynamically updating a property of a live object at remote
2 clients, comprising:
3 receiving a first message from a remote input source, the first message
4 identifying the live object and containing data for updating a property
5 of the live object;
6 identifying remote clients that have registered for updates to the live object,
7 wherein the remote clients are distributed on a network; and
8 routing a second message via the network to the registered clients, the second
9 message identifying the live object and containing the data for
10 updating the property of the live object;
11 wherein the registered clients are adapted to process the data to cause the
12 update to the property of the live object.

1 2. The method of claim 1, wherein the live object is identified by an object
2 ID.

1 3. The method of claim 2, wherein the object ID comprises a hierarchical
2 namespace.

1 4. The method of claim 1, wherein the live object is identified as a point in a
2 document object model.

1 5. The method of claim 1, wherein the data for updating the property of the
2 live object identify the property relative to a point in a document object model.

1 6. The method of claim 1, further comprising:
2 receiving a registration request from a client, the registration request
3 identifying the live object with an object ID.

- 1 7. The method of claim 1, further comprising:
2 receiving a request from a client for an activation module, the activation
3 module adapted to identify any live objects at the client; and
4 providing the activation module to the client.
- 1 8. The method of claim 1, wherein a client is adapted to generate a
2 registration request registering for updates to properties of live objects at the client.
- 1 9. The method of claim 1, wherein each registered client is adapted to
2 generate executable code responsive to the data in the second message and execute the
3 executable code to cause the update to the property of the live object.
- 1 10. The method of claim 1, wherein the data for updating a property of the live
2 object comprise an executable script and wherein each registered client is adapted to
3 execute the executable script.
- 1 11. The method of claim 1, wherein the second message identifies a handler
2 for updating the property of the live object responsive to the data in the second message.
- 1 12. The method of claim 11, wherein the second message implicitly identifies
2 the handler.
- 1 13. The method of claim 11, wherein the second message explicitly identifies
2 the handler.
- 1 14. The method of claim 1, wherein the change to the property of the
2 identified live object is associated with a visual representation of the object at a client.
- 1 15. The method of claim 1, wherein the change to the property of the
2 identified live object is not associated with a visual representation of the object at a client.

1 16. The method of claim 1, further comprising:

2 processing the first message from a first format to a second format to produce
3 the second message.

1 17. The method of claim 1, wherein the first message and the second message
2 are identical.

1 18. A dynamic content routing network for enabling updating a property of a
2 live object at a client coupled to the network, comprising:

3 a node for receiving a message from a remote input source, the message
4 identifying the live object and containing data for updating a property
5 of the live object, for maintaining a registry of remote clients coupled
6 to the network that have registered to receive updates to properties of
7 the live object, and for routing the message to the registered clients;
8 wherein each registered client is adapted to process the data to cause the
9 update to the property of the live object.

1 19. The routing network of claim 18, further comprising:

2 a gateway in communication with the node and the input source and adapted
3 to receive the message from the input source and deliver the message
4 to the node.

1 20. The routing network of claim 19, wherein there are a plurality of gateways,
2 further comprising:

3 a load balancer for balancing a load on the routing network by distributing
4 messages from the input source among the plurality of gateways.

1 21. The routing network of claim 18, wherein the node is further adapted to
2 receive registration request messages from the clients, the registration request messages
3 registering for updates to properties of the live object.

1 22. The routing network of claim 21, wherein there are a plurality of nodes,
2 further comprising:
3 a load balancer for balancing a load on the routing network by distributing the
4 registration request messages from the clients among the plurality of
5 nodes.

1 23. The routing network of claim 18, further comprising:
2 an application server for serving an activation module to the clients, the
3 activation module adapted to enable identification of live objects at the
4 clients.

1 24. The routing network of claim 23, wherein the activation module is further
2 adapted to generate a registration request from a client to the node for registering to
3 receive updates to properties of the live object.

1 25. The routing network of claim 23, wherein the activation module is further
2 adapted to receive the message routed to the registered clients and process the data to
3 cause the update to the property of the live object.

1 26. The routing network of claim 18, further comprising:
2 a queue module for holding messages from the input source that have been
3 received but not yet processed by the node.

1 27. The routing network of claim 18, wherein the registry maintained by the
2 node comprises:
3 a data structure identifying live objects for which clients have registered, and
4 an address of each registered client.

1 28. The routing network of claim 18, wherein there are a plurality of nodes
2 and wherein at least some of the nodes receive the message from the input source.

1 29. The routing network of claim 19, wherein there are a plurality of gateways
2 and a plurality of nodes in each of a plurality of clusters and wherein each gateway within
3 a cluster maintains a communications link with each node within the cluster and wherein
4 each gateway within a cluster maintains a communication link with at least one gateway
5 in each of the other clusters.

1 30. A computer program product comprising:
2 a computer-readable medium having computer program code embodied
3 therein for updating properties of live objects at a client, the computer
4 program code adapted to perform the steps of:
5 identifying the live objects at the client;
6 receiving via a network an update message identifying a live object at the
7 client and containing data for updating a property of the live object;
8 and
9 processing the data to cause the update to the property of the live object.

1 31. The computer program product of claim 30, wherein the step of
2 identifying the live objects at the client comprises the step of:
3 analyzing a web page displayed at the client to identify object IDs of live
4 objects on the web page.

1 32. The computer program product of claim 30, wherein the step of
2 identifying the live objects at the client comprises the step of:
3 receiving data responsive to a solicitation of input, the data identifying the live
4 objects at the client.

1 33. The computer program product of claim 30, wherein the program code is
2 further adapted to perform the step of:
3 sending via the network a registration message indicating the live objects
4 identified at the client to a remote routing network;
5 wherein the update message is received from the remote routing network.

1 34. The computer program product of claim 30, wherein the program code is
2 further adapted to perform the step of:
3 maintaining a connection with a remote routing network;
4 wherein the update message is received from the remote routing network.

1 35. The computer program product of claim 34, wherein the program code is
2 further adapted to perform the step of:
3 terminating the connection with the remote routing network responsive to an
4 action occurring at the client.

1 36. The computer program product of claim 30, wherein the live object is
2 identified as a point in a document object model.

1 37. The computer program product of claim 30, wherein the step of processing
2 the data to cause the update to the property of the live object comprises the step of:
3 changing a property of a point in a document object model.

1 38. The computer program product of claim 30, wherein the processing step
2 comprises the steps of:
3 generate executable code responsive to the data in the update message; and
4 executing the executable code to cause the update to the property of the live
5 object.

1 39. The computer program product of claim 30, wherein the data for updating
2 a property of the live object comprise an executable script and wherein the processing
3 step comprises the step of:
4 executing the executable script.

1 40. The computer program product of claim 30, wherein the update message
2 specifies a handler for changing the property of the live object responsive to the data in
3 the update message.

1 41. The computer program product of claim 40, wherein the update message
2 implicitly specifies the handler.

1 42. The computer program product of claim 40, wherein the update message
2 explicitly specifies the handler.

1 43. The computer program product of claim 30, wherein the step of processing
2 the data to cause the update to the property of the live object comprises the step of:
3 changing a property associated with a visual representation of the identified
4 live object.

1 44. The computer program product of claim 30, wherein the step of processing
2 the data to cause the update to the property of the live object comprises the step of:
3 changing a property not associated with a visual representation of the
4 identified live object.

1 45. A system for updating properties of live objects at a plurality of remote
2 clients, comprising:
3 a routing network in communication with the plurality of remote clients, the
4 routing network adapted to enable the plurality of clients to register to
5 receive updates to properties of live objects, to receive an update

6 message from a remote input source including data for updating a
7 property of an identified live object, and to route the update message to
8 the remote clients that have registered for the identified live object;
9 wherein each registered client is adapted to process the data to cause the
10 update to the property of the live object.

1 46. The system of claim 45, wherein each client executes an activation module
2 adapted to enable identification of live objects at the client and register for updates to
3 properties of the identified live objects with the routing network.

1 47. The system of claim 46, the routing network is further adapted to provide
2 the activation module to the clients.

1 48. The system of claim 45, wherein the remote input source is adapted to
2 utilize a director console module to provide the update message to the routing network.

1 49. The system of claim 45, wherein the input source is adapted to utilize a
2 content management system module to provide the update message to the routing
3 network.

ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK

ABSTRACT OF THE DISCLOSURE

[0100] A dynamic content routing network routes update messages containing updates to properties of live objects from input sources to clients having the objects. Certain objects served to clients by a server are indicated as "live." When the clients receive live objects, the clients identify the object IDs associated with the objects and register the object IDs with the routing network. The routing network maintains a registry of object IDs and clients. An input source provides an update message to the routing network containing the object ID and data specifying an update to a property of the object. The routing network routes the message to each client that has registered for the object ID contained in the message. Upon receipt of the message, a client updates the specified property of the live object.

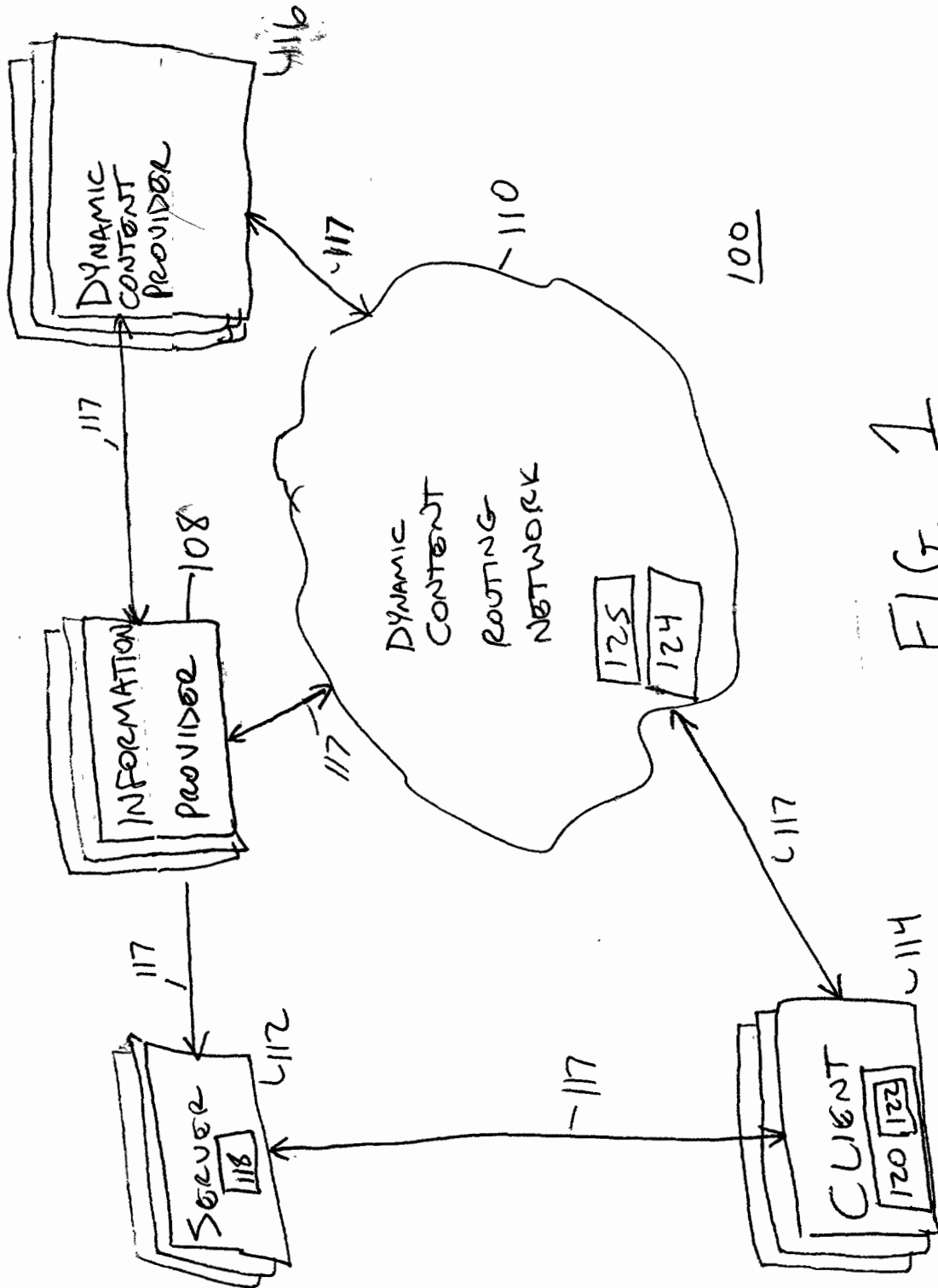


FIG. 1

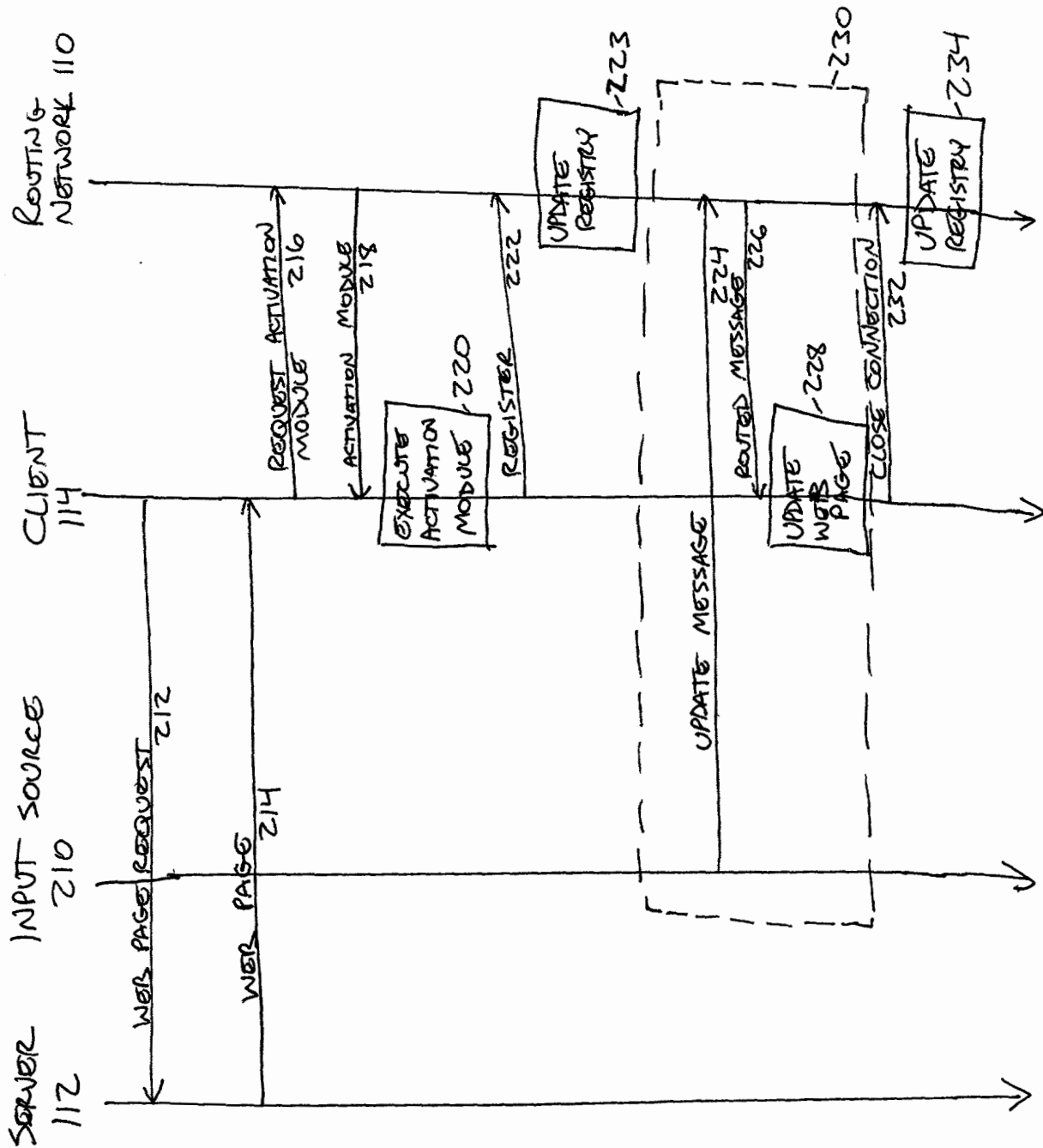


FIG. 2

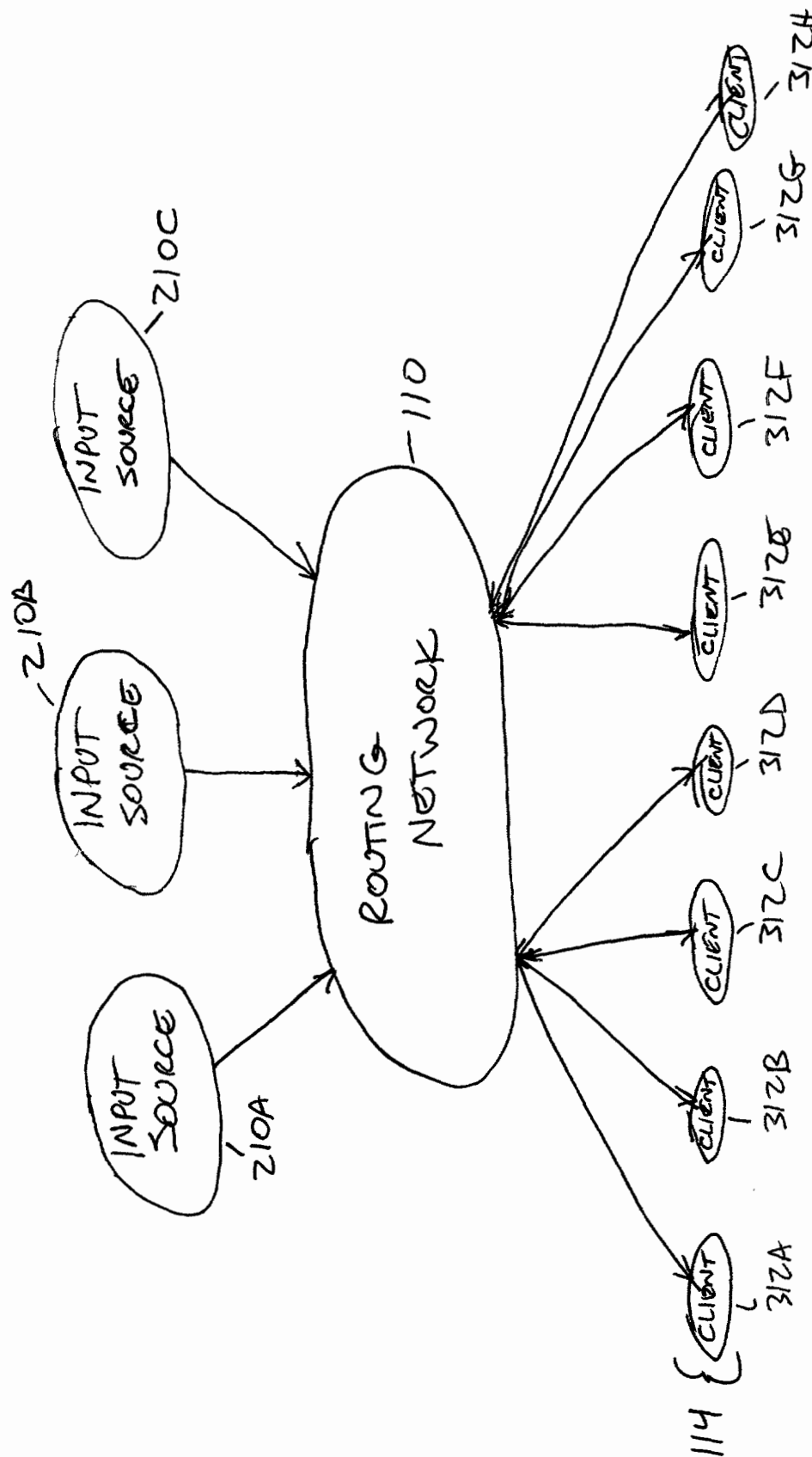
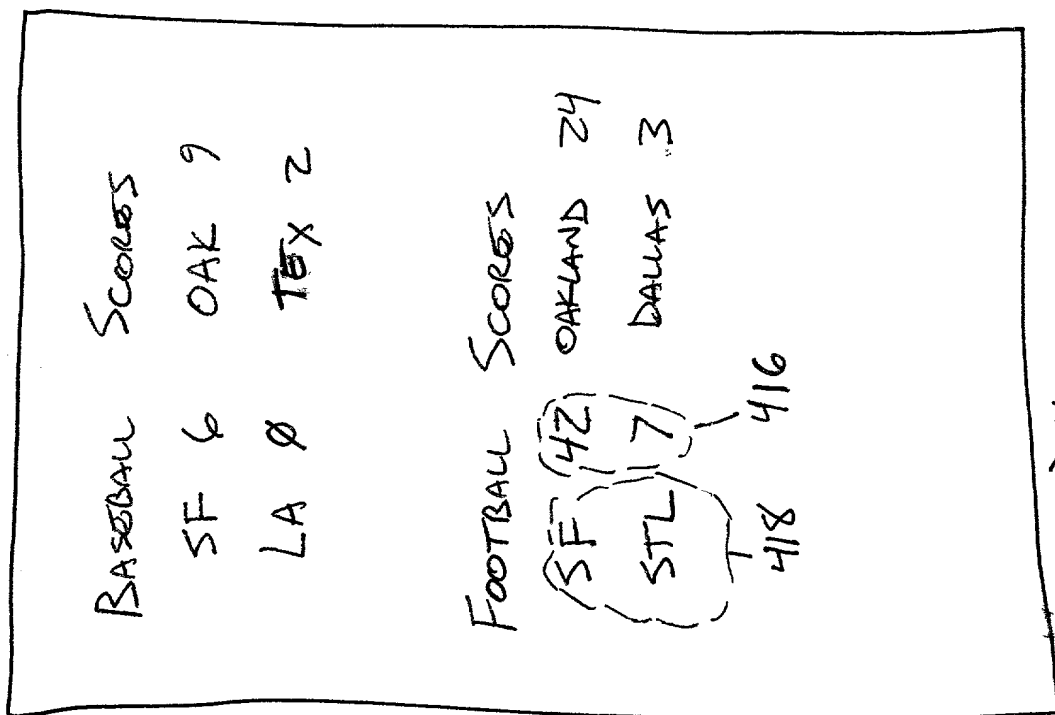
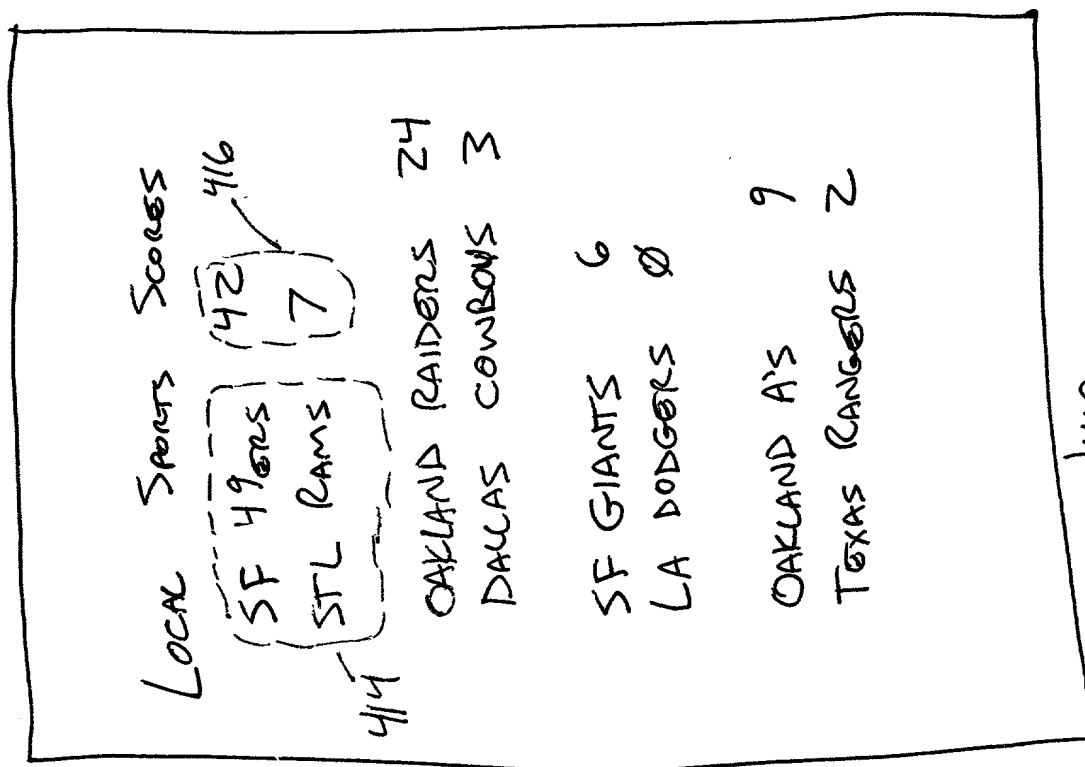


FIG. 3



412



410

FIG. 4

FIG.

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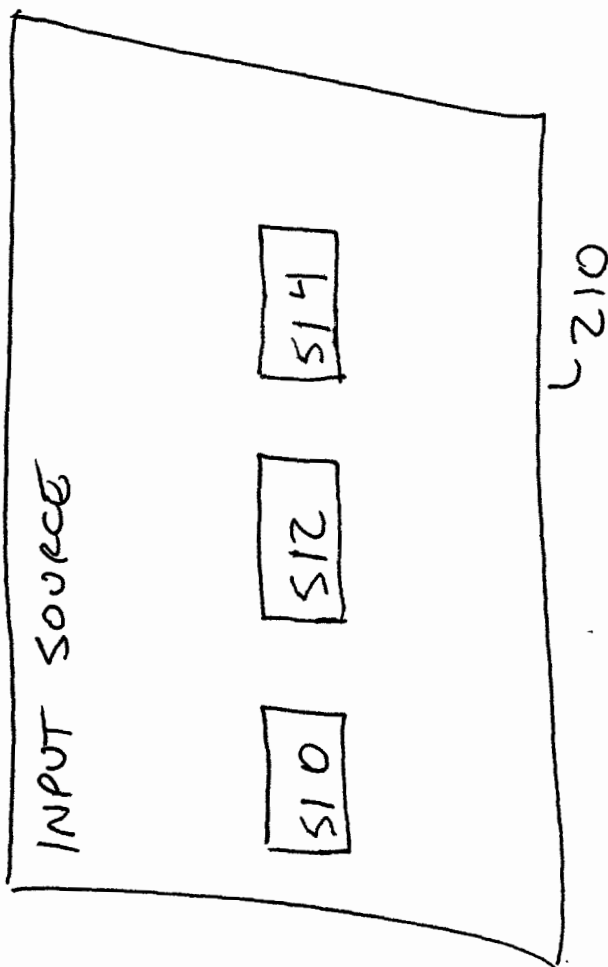
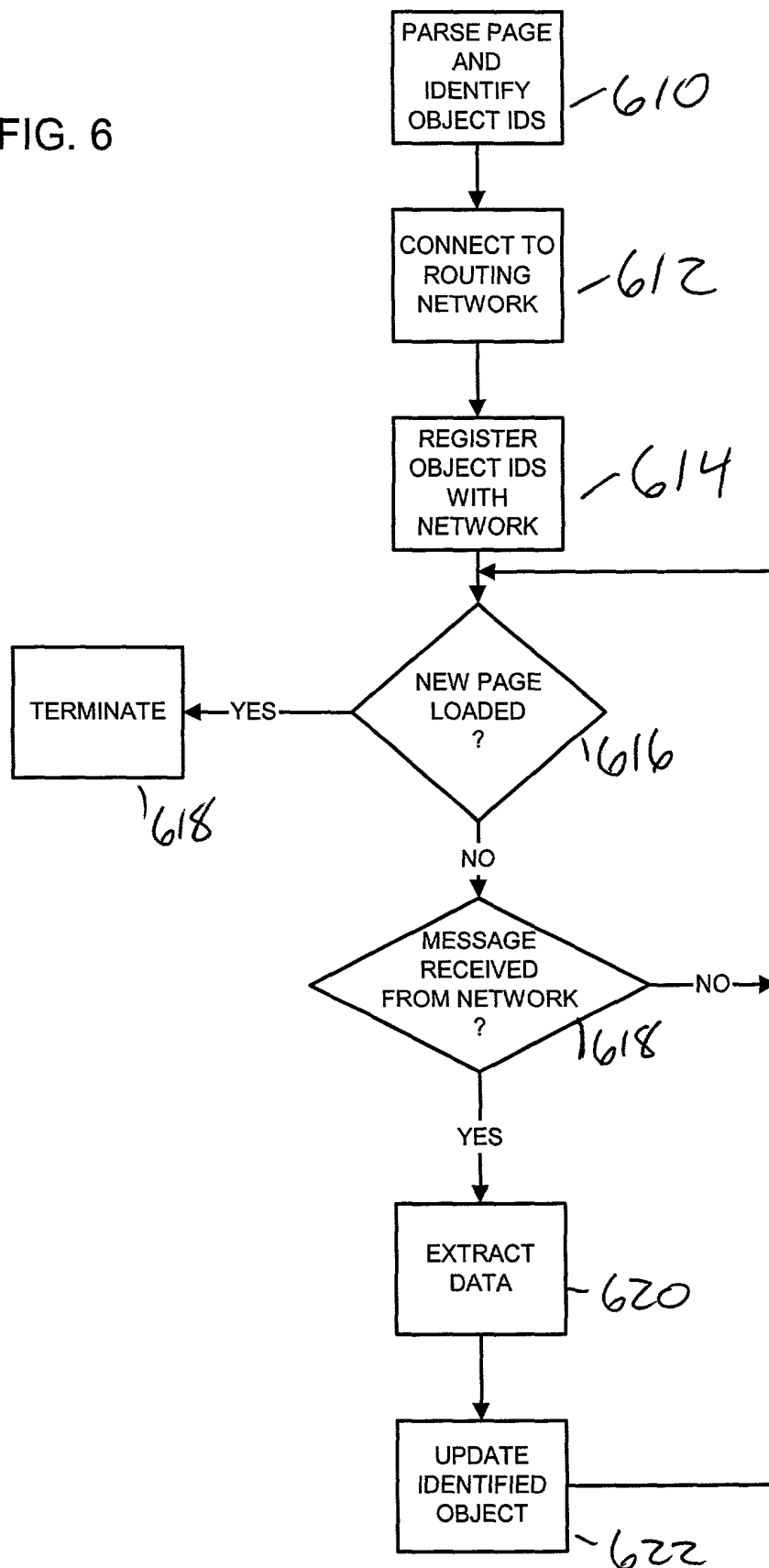


FIG. 6



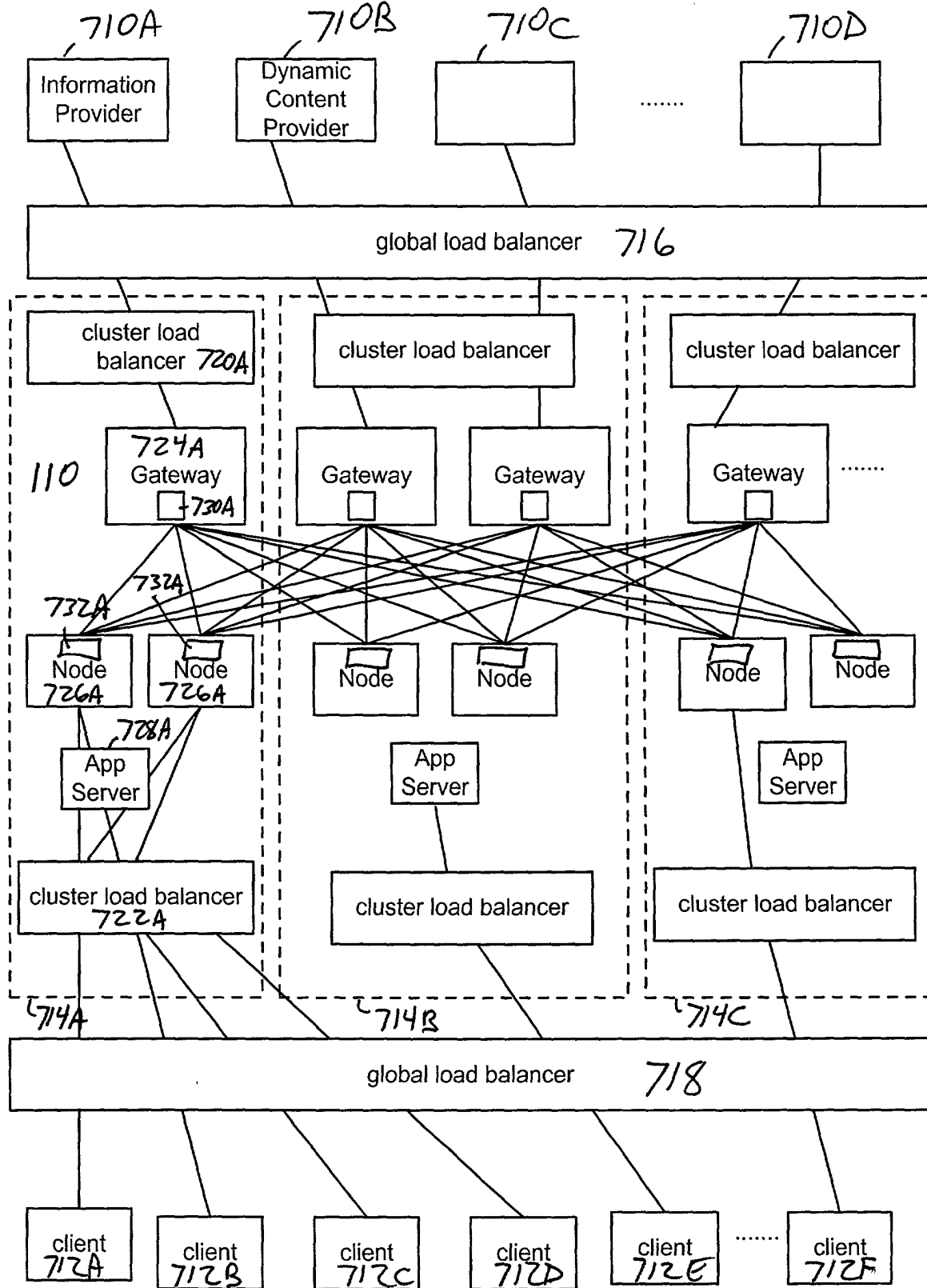
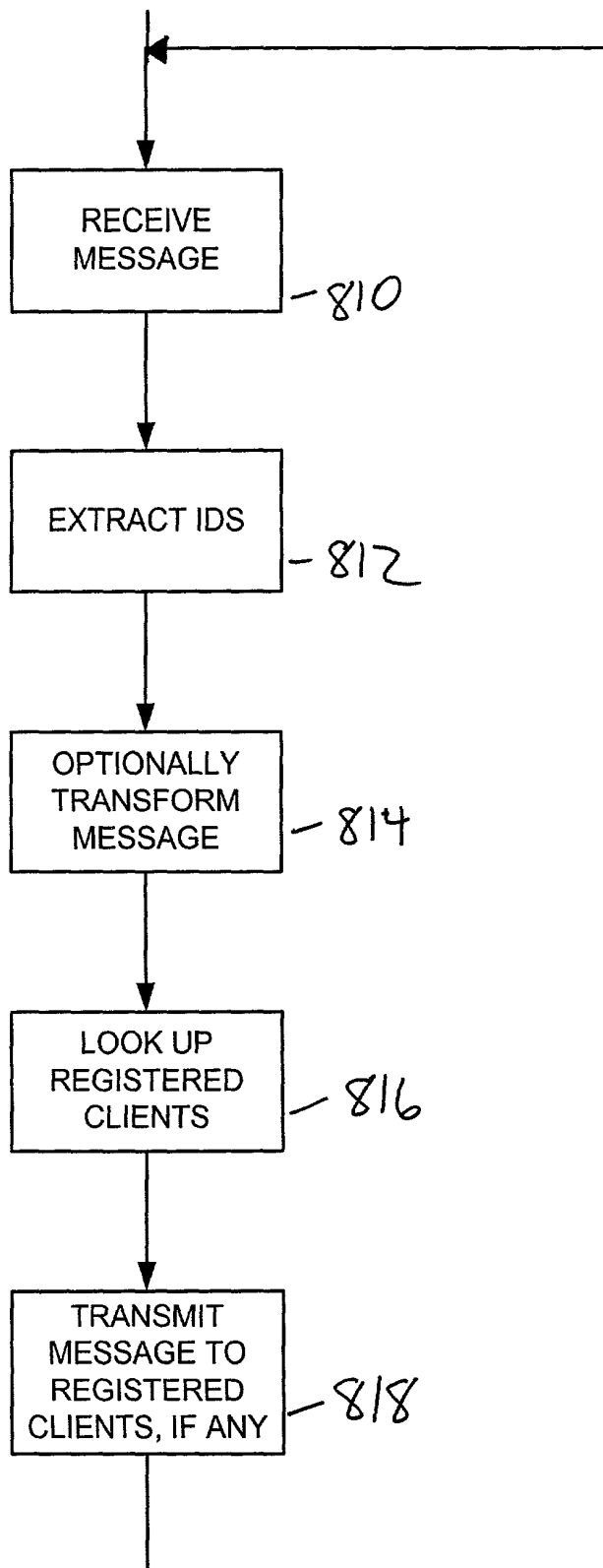


FIG. 7

FIG.
8



PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2001

Application or Docket Number

10017182

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	49	0
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	49 minus 20=	*
INDEPENDENT CLAIMS	4 minus 3=	*
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY
TYPE ☐

OR OTHER THAN
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RATE	FEE
BASIC FEE	370.00
X\$ 9=	
X42=	
+140=	
TOTAL	

RATE	FEE
BASIC FEE	740.00
X\$18=	
X84=	
+280=	
TOTAL	

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

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RATE	ADDITIONAL FEE
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+140=	
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RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

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X42=	
+140=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

CLAIMS ONLY							SERIAL NO.	FILING DATE
							APPLICANT(S)	
CLAIMS								
	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			
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TOTAL IND.	4							
TOTAL DEP.	45							
TOTAL CLAIMS	49							

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

FORM PTO-2022 (1-98)

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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

CONFIRMATION NO. 5890

00758
FENWICK & WEST LLP
TWO PALO ALTO SQUARE
PALO ALTO, CA 94306

FORMALITIES LETTER



OC000000007569054

Date Mailed: 03/04/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 370 to complete the basic filing fee for a small entity.
- Total additional claim fee(s) for this application is \$303.
 - \$261 for 29 total claims over 20.
 - \$42 for 1 independent claims over 3 .
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of \$65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 738.

*A copy of this notice **MUST** be returned with the reply.*

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PART 3 - OFFICE COPY



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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

00758
FENWICK & WEST LLP
TWO PALO ALTO SQUARE
PALO ALTO, CA 94306



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CONFIRMATION NO. 5890

FORMALITIES LETTER



OC000000007569054

Date Mailed: 03/04/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

06/18/2002 BABRAHA1 00000091 10017182

FILED UNDER 37 CFR 1.53(b)

01 FC:201	370.00 OP
02 FC:205	55.00 OP
03 FC:203	261.00 OP
04 FC:202	42.00 OP

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

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- The balance due by applicant is \$ 738.

*A copy of this notice **MUST** be returned with the reply.*

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Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE



IN THE UNITED STATES

PATENT AND TRADEMARK OFFICE

APPLICANTS: Timothy Tuttle *et al.*
APPLICATION NO.: 10/017,182
FILING DATE: December 14, 2001
TITLE: ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK
EXAMINER: UNASSIGNED
GROUP ART UNIT: 2151
ATTY. DKT. NO.: 22726-05935

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Missing Parts, Commissioner For Patents, Washington, DC 20231, on the date shown below:

Dated: June 4, 2002

By:

Brian M. Hoffman, Reg. No. 39,713

BOX MISSING PARTS
COMMISSIONER FOR PATENTS
WASHINGTON, DC 20231

RESPONSE TO NOTICE TO FILE MISSING
PARTS OF APPLICATION

SIR:

Responsive to the Notice to File Missing Parts dated March 4, 2002 received in the above-identified patent application,

☒ Enclosed are:

- ☒ a copy of the Notice to File Missing Parts;
- ☒ an original, signed Declaration;
- ☒ an original, signed Power of Attorney or Authorization of Agent;
- ☐ an Application Data Sheet;

PATENT

- ☒ payment in the amount of \$793.00 for the
- ☒ application filing fee;
 - ☒ fee for additional claims;
 - ☒ missing parts surcharge; and
 - ☒ fee for one month extension of time.

☐ Other

☒ Applicant claims small entity status under 37 C.F.R. § 1.27.

Respectfully submitted,
TIMOTHY TUTTLE *et al.*

Dated: June 4, 2002

By: 

Brian M. Hoffman, Reg. No. 39,713
Attorney for Applicants
Fenwick & West LLP
Two Palo Alto Square
Palo Alto, CA 94306
Tel.: (415) 875-2484
Fax: (415) 281-1350

M-P#3
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PTO/SB/21 (modified)

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0001/PTO Rev. 10/95		U.S. Department of Commerce Patent and Trademark Office	
TRANSMITTAL FORM To be used for all correspondence during pendency of filed application)		Application Number	10/017,182
		Filing Date	December 14, 2001
		First Named Inventor	Timothy Tuttle et al.
		Group Art Unit Number	2151
		Examiner Name	UNASSIGNED
Total Number of Pages in This Submission	12	Attorney Docket Number	22726-05935

ENCLOSURES (check all that apply)

☒ Fee Transmittal Form (in duplicate) ☒ Check Enclosed ☒ Return Receipt Postcard ☒ Response to Notice to File Missing Parts ☒ Copy of Notice to File Missing Parts ☒ Declaration ☒ Power of Attorney ☐ Application Data Sheet ☐ Information Disclosure Statement & PTO-1449 ☐ Copies of IDS Cited References ☐ Request for Corrected Filing Receipt ☐ Request for Correction of Recorded Assignment ☐ Amendment/Response: [] Page(s) ☐ After Final ☐ Status Request ☐ Revocation and Substitute Power of Attorney	☐ Issue Fee Transmittal ☐ Letter to Chief Draftsperson ☐ Formal Drawing(s) [] Sheet(s) of Figure(s) [] ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) ☐ Certified Copy of Priority Document(s) ☐ After Allowance Communication to Group ☒ One Month Extension of Time ☐ ☐ ☐ ☐ ☐
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REMARKS:

SIGNATURE OF ATTORNEY OR AGENT

Signature:			
Attorney/Reg. No.:	Brian M. Hoffman, Reg. No. 39,713	Dated:	June 4, 2002

CERTIFICATE OF MAILING

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Signature:			
Typed or Printed Name:	Brian M. Hoffman	Dated:	June 4, 2002
Express Mail Mailing Number (optional):			

PTO/SB/17 (10-01)(modified)
Approved for use through 09/29/01, OMB 0851-0032
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

0002/PTO(modified) Rev. 10/2000	U.S. Department of Commerce Patent and Trademark Office	Complete if Known	
FEE TRANSMITTAL TOTAL AMOUNT OF PAYMENT Subtotal (1) + Subtotal (2) + Subtotal (3) = (\$ 793.00)		Application Number	10/017,182
		Filing Date	December 14, 2001
		First Named Inventor	Timothy Tuttle et al.
		Group Art Unit	2151
		Examiner Name	UNASSIGNED
		Attorney Docket Number	22726-05935

METHOD OF PAYMENT		FEE CALCULATION (continued)																																																																																									
1. The Commissioner is hereby authorized to: ☐ Charge the indicated fees to the below mentioned deposit account. ☒ Charge any additional fee required under 37 CFR 1.16 - 1.21 or credit any over payments to the below mentioned deposit account. ☒ Applicant claims small entity status See 37 CFR 1.27 Deposit Account Number: 19-2555 Deposit Account Name: FENWICK & WEST LLP A Duplicate Copy of this authorization is attached 2. ☒ Payment Enclosed: ☒ Check ☐ Credit Card ☐ Other		3. ADDITIONAL FEES <table border="1"> <thead> <tr> <th>Large Entity Fee Code/Fee</th> <th>Small Entity Fee Code/Fee</th> <th>Fee Description</th> <th>Fee Due</th> </tr> </thead> <tbody> <tr> <td>105/\$130</td> <td>205/\$65</td> <td>Surcharge - late filing fee or oath</td> <td>65</td> </tr> <tr> <td>127/\$50</td> <td>227/\$25</td> <td>Surcharge-late provisional filing fee or cover sheet</td> <td></td> </tr> <tr> <td>147/\$2,520</td> <td>147/\$2,520</td> <td>For filing a request for reexamination</td> <td></td> </tr> <tr> <td>115/\$110</td> <td>215/\$55</td> <td>Extension for response within first month¹</td> <td>55</td> </tr> <tr> <td>116/\$400</td> <td>216/\$200</td> <td>Extension for response within second month¹</td> <td></td> </tr> <tr> <td>117/\$920</td> <td>217/\$460</td> <td>Extension for response within third month¹</td> <td></td> </tr> <tr> <td>118/\$1,440</td> <td>218/\$720</td> <td>Extension for response within fourth month¹</td> <td></td> </tr> <tr> <td>128/\$1,960</td> <td>228/\$980</td> <td>Extension for response within fifth month¹</td> <td></td> </tr> <tr> <td>119/\$320</td> <td>219/\$160</td> <td>Notice of Appeal</td> <td></td> </tr> <tr> <td>141/\$1,280</td> <td>241/\$640</td> <td>Petition to revive unintentionally abandoned application</td> <td>1280</td> </tr> <tr> <td>142/\$1,280</td> <td>242/\$640</td> <td>Utility Issue Fee (Or Reissue)</td> <td>55</td> </tr> <tr> <td>143/\$460</td> <td>243/\$230</td> <td>Design Issue Fee</td> <td></td> </tr> <tr> <td>122/\$130</td> <td>122/\$130</td> <td>Petitions to the Commissioner</td> <td></td> </tr> <tr> <td>126/\$180</td> <td>126/\$180</td> <td>Submission of Information Disclosure Statement</td> <td></td> </tr> <tr> <td>179/\$740</td> <td>279/\$370</td> <td>Request for Continued Examination (RCE)</td> <td></td> </tr> <tr> <td>581/\$40</td> <td>581/\$40</td> <td>Recording each patent assignment per property (times number of properties)</td> <td></td> </tr> <tr> <td>148/\$740</td> <td>248/\$370</td> <td>Filing a submission after final rejection (37 CFR 1.129(a))</td> <td></td> </tr> <tr> <td>149/\$740</td> <td>249/\$370</td> <td>For each additional invention to be examined (37 CFR 1.129(b))</td> <td></td> </tr> <tr> <td colspan="2">Other fee (specify):</td> <td></td> <td></td> </tr> <tr> <td colspan="2">Other fee (specify):</td> <td></td> <td></td> </tr> <tr> <td colspan="2">SUBTOTAL (3)</td> <td>(\$ 120)</td> <td></td> </tr> </tbody> </table>		Large Entity Fee Code/Fee	Small Entity Fee Code/Fee	Fee Description	Fee Due	105/\$130	205/\$65	Surcharge - late filing fee or oath	65	127/\$50	227/\$25	Surcharge-late provisional filing fee or cover sheet		147/\$2,520	147/\$2,520	For filing a request for reexamination		115/\$110	215/\$55	Extension for response within first month ¹	55	116/\$400	216/\$200	Extension for response within second month ¹		117/\$920	217/\$460	Extension for response within third month ¹		118/\$1,440	218/\$720	Extension for response within fourth month ¹		128/\$1,960	228/\$980	Extension for response within fifth month ¹		119/\$320	219/\$160	Notice of Appeal		141/\$1,280	241/\$640	Petition to revive unintentionally abandoned application	1280	142/\$1,280	242/\$640	Utility Issue Fee (Or Reissue)	55	143/\$460	243/\$230	Design Issue Fee		122/\$130	122/\$130	Petitions to the Commissioner		126/\$180	126/\$180	Submission of Information Disclosure Statement		179/\$740	279/\$370	Request for Continued Examination (RCE)		581/\$40	581/\$40	Recording each patent assignment per property (times number of properties)		148/\$740	248/\$370	Filing a submission after final rejection (37 CFR 1.129(a))		149/\$740	249/\$370	For each additional invention to be examined (37 CFR 1.129(b))		Other fee (specify):				Other fee (specify):				SUBTOTAL (3)		(\$ 120)	
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* Subtract the greater number of Col. 2 ** If the difference between Col. 1 and Col. 2 is less than zero, then enter "0" in Col. 3		SUBTOTAL (2) (\$ 303)																																																																																									

SUBMITTED BY		Complete (if applicable)	
Typed or Printed Name	Brian M. Hoffman	Reg. Number	39,713
Signature		Date	June 4, 2002



2151

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PTO/SB/21 (modified)
Approved for use through xx/xx/xx, OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM <i>(to be used for all correspondence during pendency of filed application)</i>	0001/PTO Rev. 10/95	U.S. Department of Commerce Patent and Trademark Office	Application Number	10/017,182
			Filing Date	December 14, 2001
			First Named Inventor	Timothy Tuttle <i>et al.</i>
			Group Art Unit Number	2151
			Examiner Name	UNASSIGNED
Total Number of Pages in This Submission		7*	Attorney Docket Number	22726-05935

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ENCLOSURES (check all that apply)

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☐ Appeal Communication to Group
(Appeal Notice, Brief, Reply Brief)
☐ Certified Copy of Priority Document(s)
☐ After Allowance Communication to Group
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REMARKS: * references not included in page count

SIGNATURE OF ATTORNEY OR AGENT

Signature:			
Attorney/Reg. No.:	Brian M. Hoffman, Reg. No. 38,713	Dated:	November 19, 2002

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Signature:			
Typed or Printed Name:	Brian M. Hoffman	Dated:	November 19, 2002
Express Mail Mailing Number (optional):			



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Timothy Tuttle *et al.*
APPLICATION NO.: 10/017,182
FILING DATE: December 14, 2001
TITLE: ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK
EXAMINER: UNASSIGNED
GROUP ART UNIT: 2151
ATTY. DKT. NO.: 22726-05935

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Dated: November 19, 2002

By:

Brian M. Hoffman, Reg. No. 39,713

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COMMISSIONER FOR PATENTS
WASHINGTON, DC 20231

INFORMATION DISCLOSURE STATEMENT

Under 37 CFR §§ 1.56 and 1.97-98

SIR:

Pursuant to the provisions of 37 CFR §§ 1.56 and 1.97-98, enclosed herewith is modified form PTO/SB/08A listing references for consideration by the Examiner. Enclosed is a copy of each listed reference that may be material to the examination of this application, and for which there may be a duty to disclose.

The filing of this Information Disclosure Statement shall not be construed as a representation regarding the completeness of the list of references, or that inclusion of a reference in this list is an admission that it is prior art or is pertinent to this application, or that a search has been made, or as an admission that the information listed is, or may be considered to be, material to patentability, or that no other material information exists, and shall not be construed as an admission against interest in any manner.

This Information Disclosure Statement is being filed:

- ☒ within three months of the filing date of the application, or date of entry into the national stage of an international application, or before the mailing date of a first office action on the merits, whichever event last occurred;

- ☐ before the mailing of a first official action after the filing of a request for continued examination (RCE) under 37 CFR § 1.114;
- ☐ after three months of the filing date of this national application or the date of entry of the national stage in an international application, or after the mailing date of the first official action on the merits, whichever event last occurred, but before the mailing date of the first to occur of either: (1) a final action under 37 CFR § 1.113; or (2) an action that otherwise closes prosecution in the application, and:
 - ☐ attached hereto is the fee set forth under 37 CFR § 1.17(p) for submission of this Information Disclosure Statement under 37 CFR § 1.97(c); OR
 - ☐ Applicant certifies pursuant to 37 CFR § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement; OR
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing this certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement;
- ☐ before the payment of the issue fee but after the mailing date of the first to occur of either: (1) a final action under 37 CFR § 1.113; or (2) an action that otherwise closes prosecution in the application, and:
 - ☐ Applicant certifies pursuant to 37 CFR § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement; or
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing this

certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement; AND

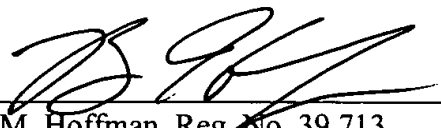
- ☐ attached hereto is the fee set forth under 37 CFR §1.17(p) for submission of this Information Disclosure Statement under 37 CFR. § 1.97(c); OR
- ☐ after the payment of the issue fee. Applicant request that the information contained in this Information Disclosure Statement be placed in the file according to 37 CFR § 1.97(i), although the information may not be considered by the USPTO.
- ☐ This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application No. [APPLICATION NUMBER], filed on [FILING DATE], and the references cited therein are hereby referenced, but are not required to be provided in this application under 37 CFR § 1.98(d).
- ☐ Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not received by any individual designated in 37 CFR § 1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement. 37 CFR § 1.704(d).
- ☒ Applicant submits that no fee is required for the consideration of this Information Disclosure Statement.

Consideration of the listed references and favorable action are solicited.

Respectfully submitted,

TIMOTHY TUTTLE *et al.*

Dated: November 19, 2002

By: 
Brian M. Hoffman, Reg. No. 39,713
Attorney for Applicants
Fenwick & West LLP
Two Palo Alto Square
Palo Alto, CA 94306
Tel.: (415) 875-2484
Fax: (415) 281-1350



PTO/SB/08A (10-01)

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Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/017,182
				Filing Date	December 14, 2001
				First Named Inventor	Timothy Tuttle <i>et al.</i>
				Art Unit	2151
				Examiner Name	UNASSIGNED
Sheet	1	of	2	Attorney Docket Number	22726-05935

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U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No. ¹	Document No. Number - Kind Code ² (if known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	A1	US-6029175	02-22-2000	Chow <i>et al.</i>

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OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS			
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	C1	Franklin <i>et al.</i> , "Dissemination-Based Information Systems," IEEE Data Engineering Bulletin, Vol. 19, No. 3, September 1996, 9 pages.	
	C2	Nagami <i>et al.</i> , "Toshiba's Flow Attribute Notification Protocol (FANP) Specification," April 1997, RFC 2129, Internet RFC/STD/FYI/BCP Archives [online], [retrieved on 2002-05-16]. Retrieved from the Internet: <URL: http://www.landfield.com/rfcs/rfc2129.html >, 16 pages.	
	C3	Strom <i>et al.</i> , "Gryphon: An Information Flow Based Approach to Message Brokering," International Symposium on Software Reliability Engineering '98, 1998, 2 pages.	
	C4	Sturman <i>et al.</i> , "Reflection in the Gryphon Message Brokering System," Reflection Workshop of the 13 th ACM Conference on Object Oriented Program Systems, Languages and Applications (OOPSLA '98), 1998, 5 pages.	
	C5	International DOI Foundation, "Introduction to the Digital Object Identifier," [online]. April 1998 [retrieved on 2002-05-16]. Retrieved from the Internet: <URL: http://www.doi.org/introduction.html >, 4 pages.	
	C6	Aksoy <i>et al.</i> , "Research in Data Broadcast and Dissemination", Proc. 1st Int'l Conf. on Advanced Multimedia Content Processing, Osaka University, Osaka, Japan, November, 1998.	
	C7	Banavar <i>et al.</i> , "An Efficient Multicast Protocol for Content-Based Publish-Subscribe Systems," Proc. of the 19th International Conference on Distributed Computing Systems, 1999, 9 pages.	
	C8	Banavar <i>et al.</i> , "Information Flow Based Event Distribution Middleware," Proceedings of the 1999 ICDCS Workshop on Electronic Commerce and Web-Based Applications, 1999, 8 pages.	

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

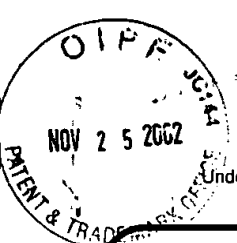
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

22726/05935/SF/5087946.1

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

Page 74 of 185



Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Complete if Known	
				Application No.	10/017,182
				Filing Date	December 14, 2001
				First Named Inventor	Timothy Tuttle et al.
				Art Unit	2151
				Examiner Name	UNASSIGNED
Sheet	2	of	2	Attorney Docket Number	22726-05935

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
	C9	Aguilera <i>et al.</i> , "Matching Events in a Content-based Subscription System," Eighteenth ACM Symposium on Principles of Distributed Computing (PODC '99), Atlanta, GA, May 4-6, 1999, 9 pages.	
	C10	Banavar <i>et al.</i> , "A Case for Message Oriented Middleware," Distributed Computing, 13 th International Symposium, Bratislava, Slovak Republic, September 27-29, 1999, 18 pages.	
	C11	Aguilera <i>et al.</i> , "Efficient Atomic Broadcast Using Deterministic Merge," Symposium on Principles of Distributed Computing, 2000, 10 pages.	
	C12	Opyrchal <i>et al.</i> , "Exploiting IP Multicast in Content-Based Publish-Subscribe Systems," Proceedings of the IFIP/ACM International Conference on Distributed Systems Platforms (Middleware 2000), April 2000, 23 pages.	
	C13	Caplin Systems Ltd., White Paper "Real Time Text Protocol (RTTP)," Version 1.1, September 2000, 11 pages.	
	C14	Reuters, "Reuters Market Data Systems and the Trading Solutions Architecture," Version 1.0, January 12, 2001, 51 pages.	
	C15	Ramamrithan <i>et al.</i> , "Dissemination of Dynamic Data on the Internet," [online]. Powerpoint Presentation, Spring 2001, [retrieved on 2002-02-06], 5 pages. Retrieved from the Internet <URL: http://www.cs.umbc.edu/courses/graduate/CMSC691T/spring 2001/rlist/amit.ppt >.	
	C16	ComputerLetter, Vol. 17, No. 23, July 16, 2001, pp. 1-8.	
	C17	ComputerLetter, Vol. 17, No. 31, September 24, 2001, pp. 1-6.	
	C18	ComputerLetter, Vol. 17, No. 35, November 5, 2001, pp. 1-6.	

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Technology Center 2100

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.



2126
IFW
+

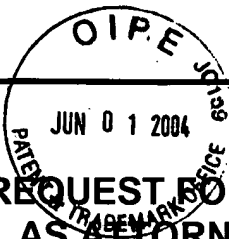
TRANSMITTAL FORM <i>(to be used for all correspondence during pendency of filed application)</i>	0001/PTO Rev. 10/95	U.S. Department of Commerce Patent and Trademark Office	Application Number	10/017,182
			Filing Date	December 14, 2001
			First Named Inventor	Timothy Tuttle
			Group Art Unit Number	2126
			Examiner Name	Meng Ai T An
Total Number of Pages in This Submission		2	Attorney Docket Number	22726-05935

ENCLOSURES (check all that apply)	
☐ Fee Transmittal Form (in duplicate) ☐ Check Enclosed ☒ Return Receipt Postcard ☐ Response to Notice to File Missing Parts ☐ Assignment & Recordation Cover Sheet ☐ Declaration ☐ Power of Attorney ☐ Application Data Sheet ☐ Information Disclosure Statement & PTO/SB/08A ☐ Copies of IDS Cited References ☐ Request for Corrected Filing Receipt ☐ Request for Correction of Recorded Assignment ☐ Amendment/Response: [] Page(s) ☐ After Final ☐ Status Request ☐ Revocation and Substitute Power of Attorney	☐ Issue Fee Transmittal ☐ Letter to Chief Draftsperson ☐ Formal Drawing(s): [] Sheet(s) of Figure(s) [] ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) ☐ Certified Copy of Priority Document(s) ☐ After Allowance Communication to Group ☒ Request for Withdrawal as Attorney or Agent ☐ ☐ ☐ ☐ ☐ ☐
REMARKS:	

SIGNATURE OF ATTORNEY OR AGENT			
Signature:			
Attorney/Reg. No.:	Brian M. Hoffman, Reg. No. 39,713	Dated:	May 28, 2004

CERTIFICATE OF MAILING			
I hereby certify that this correspondence, including the enclosures identified above, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. If the Express Mail Mailing Number is filled in below, then this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service pursuant to 37 CFR 1.10.			
Signature:			
Typed or Printed Name:	Brian M. Hoffman	Dated:	May 28, 2004
Express Mail Mailing Number (optional):			

22726/05935/SF/5121910.1



**REQUEST FOR WITHDRAWAL
AS ATTORNEY OR AGENT**

Application Number	10/017,182
Issue Date	December 14, 2001
First Named Inventor	Timothy Tuttle
Group Art Unit	2126
Examiner Name	Meng Ai T An
Attorney Docket Number	22726-05935

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

I hereby apply to withdraw as attorney or agent for the above identified patent. The client has been duly notified of this request for withdrawal and provided with all papers and property to which the client is entitled.

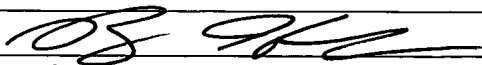
The reasons for this request are:

Pursuant to 37 CFR §§1.36 and 10.40, the practitioner's client knowingly and freely assents to, and has requested, termination of the employment.

1. ☐ The correspondence address is NOT affected by this withdrawal.
2. ☒ Change the correspondence address and direct all future correspondence to:

Firm or Individual Name	Townsend Townsend & Crew				
Address	Two Embarcadero Center				
Address	8 th Floor				
City	San Francisco	State	CA	Zip	94111-3834
Country	United States				
Telephone	415-576-0200	Fax	415-576-0300		

- ☒ This request is made on behalf of myself and
- ☒ all the attorneys/agents of record,
 - ☐ the attorneys/agents (with registration numbers) listed on the attached paper(s), or
 - ☒ the attorneys/agents associated with Customer Number 00758
- on whose behalf I have signed this request and on whose behalf I am authorized to sign. The request is enclosed in triplicate (including any attachments).

Name	Brian M. Hoffman
Signature	
Date	May 28, 2004

NOTE: Withdrawal is effective when approved rather than when received.
Unless there are at least 30 days between approval of withdrawal and the expiration date of a time period for response or possible extension period, the request to withdraw is normally disapproved.

22726/05935/SF/5121899.1

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003/004

PTO/SB/82 (09-03)

**REVOCATION OF POWER OF
ATTORNEY WITH
NEW POWER OF ATTORNEY
AND
CHANGE OF CORRESPONDENCE ADDRESS**

Application Number	10/017,182
Filing Date	December 14, 2001
First Named Inventor	Tuttle, Timothy
Art Unit	2151
Examiner Name	Unassigned
Attorney Docket Number	022193-090610US

I hereby revoke all previous powers of attorney given in the above-identified application:

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint the practitioners associated with the Customer Number:

20350

☒ Please change the correspondence address for the above-identified application to:

☒ The address associated with Customer Number: 20350

OR

☐ Firm or
Individual Name

Address

Address

City

State

ZIP

Country

Telephone

Fax

I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

SIGNATURE of Applicant or Assignee of Record

Name Julia Ceffalo

Signature

Date

Telephone

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ *Total of _____ forms are submitted.

60260329 v1

Best Available Copy

PTO/SB/06 (08-03)

Attorney Docket No. 022193-090610US

STATEMENT UNDER 37 CFR 3.73(b)Applicant/Patent Owner: Timothy Tuttle et al.Application No./Patent No.: 10/017,182Filed/Issue Date: December 14, 2001Entitled: ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORKShaw Parsing LLC a Delaware corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest.
The extent (by, percentage) of its ownership interest is ____ %

In the patent application/patent identified above by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: Timothy Tuttle et al. To: Bang Networks, Inc.
The document was recorded in the United States Patent and Trademark Office at Reel 012982, Frame 0112, or for which a copy thereof is attached.

2. From: Bang Networks, Inc. To: Shaw Parsing LLC
The document was recorded in the United States Patent and Trademark Office at Reel 014790, Frame 0220, or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

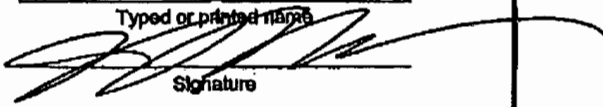
☐ Copies of assignments or other documents in the chain of title are attached.

(NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.8)

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

14 JULY 2004
Date

Telephone number

Julia Ceffalo
Typed or printed name

Signature

Authorized Person

Title

60260385 v1

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PTO/SB/21 (04-04)

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>		Application Number	10/017,182
		Filing Date	December 14, 2001
		First Named Inventor	Tuttle, Timothy
		Art Unit	2151
		Examiner Name	Unassigned
Total Number of Pages in This Submission	3	Attorney Docket Number	022193-090610US

ENCLOSURES (Check all that apply)		
☐ Fee Transmittal Form ☐ Fee Attached ☐ Amendment/Reply ☐ After Final ☐ Affidavits/declaration(s) ☐ Extension of Time Request ☐ Express Abandonment Request ☐ Information Disclosure Statement ☐ Certified Copy of Priority Document(s) ☐ Response to Missing Parts/Incomplete Application ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53	☒ Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address ☒ Statement Under 37 CFR 3.73(b) ☐ Petition ☐ Petition to Convert to a Provisional Application ☐ Power of Attorney, Revocation Change of Correspondence Address ☐ Terminal Disclaimer ☐ Request for Refund ☐ CD, Number of CD(s) _____	☐ After Allowance Communication to Technology Center (TC) ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) ☐ Proprietary Information ☐ Status Letter ☒ Other Enclosure(s) (please identify below): Facsimile Cover Sheet
Remarks		The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Townsend and Townsend and Crew LLP Patrick R. Jewik
Signature	
Date	July 15, 2004

CERTIFICATE OF FACSIMILE TRANSMISSION			
I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office, Fax No. (703) 872-9306 on July 15, 2004.			
Typed or printed name	Michael Nowak		
Signature		Date	July 15, 2004

60261990 v1

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Atty Docket No. 022193-090610US

PTO FAX NO.: (703) 872-9306

ATTENTION: Examiner Unassigned
TELEPHONE NO.: (703) 308-1202

Group Art Unit 2151

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FOR THE ATTENTION OF THE O.I.P.E.
CERTIFICATION OF FACSIMILE TRANSMISSION

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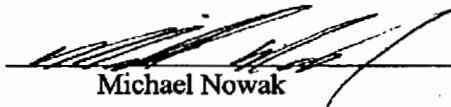
I hereby certify that the following documents in re Application of Timothy Tuttle et al., Application No. 10/017,182, filed December 14, 2001 for ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK are being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Document(s) Attached

1. Transmittal Form
2. Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address
3. Statement Under 37 CFR 3.73(b)

Number of pages being transmitted, including this page: 4

Dated: July 15, 2004


Michael Nowak

**PLEASE CONFIRM RECEIPT OF THIS PAPER BY
RETURN FACSIMILE AT (415) 576-0300**

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, CA 94111-3834
Telephone: 415-576-0200
Fax: 415-576-0300

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 www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

00758
 FENWICK & WEST LLP
 SILICON VALLEY CENTER
 801 CALIFORNIA STREET
 MOUNTAIN VIEW, CA 94041

CONFIRMATION NO. 5890

OC000000013628990

OC000000013628990

Date Mailed: 08/24/2004

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/15/2004.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

JESSICA T GAYNOR
 2100 (571) 272-3582

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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

20350
 TOWNSEND AND TOWNSEND AND CREW, LLP
 TWO EMBARCADERO CENTER
 EIGHTH FLOOR
 SAN FRANCISCO, CA 94111-3834

CONFIRMATION NO. 5890

OC000000013629029

OC000000013629029

Date Mailed: 08/24/2004

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/15/2004.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

JESSICA T GAYNOR
 2100 (571) 272-3582

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2151
8/4

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 On October 3, 2004

PATENT
Attorney Docket No.: 022193-090610US

TOWNSEND and TOWNSEND and CREW LLP

By: Katherine Farkas

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

TUTTLE, Timothy et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: Asynchronous Messaging Using a Dynamic Routing Network

Examiner: Unassigned

Art Unit: 2151

STATUS REQUEST

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

Sir:

To date, Applicants have not received an Office Action on the merits.
Please advise us on the status of this application.

Respectfully submitted,

Patrick R. Jewik
Reg No. 40,456

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300

60323767 v1

Search History

DATE: Friday, April 29, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

Hit Count Set Name

result set

DB=USPT; PLUR=YES; OP=ADJ

<u>L13</u>	live object same client same network	2	<u>L13</u>
<u>L12</u>	live object same client same network same rout\$	0	<u>L12</u>
~~<u>L11</u>~~	~~live object same client same network~~	~~0~~	~~<u>L11</u>~~
~~<u>L10</u>~~	~~live object same client same network same rout\$~~	~~0~~	~~<u>L10</u>~~
<u>L9</u>	L8 not l5	1	<u>L9</u>
<u>L8</u>	updat\$ same client same live object	8	<u>L8</u>
<u>L7</u>	updat\$ same property same live object	1	<u>L7</u>
<u>L6</u>	L1 not l5	20	<u>L6</u>
<u>L5</u>	L1 same client	7	<u>L5</u>
<u>L4</u>	L1 same client same network	1	<u>L4</u>
<u>L3</u>	L1 same propert\$	0	<u>L3</u>
<u>L2</u>	L1 with propert\$	0	<u>L2</u>
<u>L1</u>	updat\$ with live object	27	<u>L1</u>

END OF SEARCH HISTORY



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935	5890

20350 7590 05/03/2005

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

BAROT, BHARAT

ART UNIT PAPER NUMBER

2155

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,182

Applicant(s)

TUTTLE ET AL.

Examiner

Bharat N. Barot

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/25/2002</u> . | 6) ☐ Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-49 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

Evidence that claims 1, 18, 30, and 45 fail to correspond in scope with that which applicant(s) regard as the invention can be found in the preamble such that a method, system, and program product for updating a property of live object at remote clients.

Other dependent claims, which are not specifically cited above are also rejected because of the deficiencies of their respective parent claims.

5. Claims 1-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 18, 30, and 45, they contain the phrase " updating a property of live object at remote clients" renders the claims indefinite because it is unclear about a property of live application object, live web object, live hardware/software object, or live user profile object.

Other dependent claims, which are not specifically cited above are also rejected because of the deficiencies of their respective parent claims.

NON-STATUTORY DOUBLE PATENTING

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application, See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

ANTICIPATION REJECTION

7. Claims 1-2, 4-5, 7-10, 12 and 14 of copending Application No. 10/105,018 contain every element of claims 1-2, 6-7, 16-19, 21, 23-29, and 45-47 of the instant application and as such anticipate claims 1-2, 6-7, 16-19, 21, 23-29, and 45-47 of the instant application. This is a provisional double patenting rejection because the conflicting claims have not in fact been patented.

8. "A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

9. The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

The claimed invention in the instant application (claims 1-2, 6-7, and 16-17) is same as the claimed invention in the copending application (claims 1-2, 4-5, and 7-8 of copending Application No. 10/105,018). No new invention or new improvement is being claimed in the instant application (claims 1-17).

The claimed invention in the instant application (claims 18-19, 21, and 23-29) is same as the claimed invention in the copending application (claims 4-5, 9-10, 12, and 14 of copending Application No. 10/105,018) by rearranging the limitations. No new invention or new improvement is being claimed in the instant application (claims 18-28).

The claimed invention in the instant application (claims 45-47) is same as the claimed invention in the copending application (claims 4-5, 9-10, and 14 of copending Application No. 10/105,018) by rearranging the limitations. No new invention or new improvement is being claimed in the instant application (claims 45-49).

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claim 30 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 30 recite a program code adapted to perform some steps. A program not claimed as embodied in computer readable media and execute in a computer or by a computer are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer (See MPEP section 2106, Seventh Edition, Revision No. 1 dated February 2000, at page 2100-10 and 2100-1 1).

Claim Objections

12. Other dependent claims (3-5, 8-15, 20, 22, 31-44, and 48-49), which are not specifically cited above in the double patenting rejections and 35 U.S.C. 101 rejections, are objected rejected because of the deficiencies of their respective parent claims.

Allowable Subject Matter

13. Claims 4-5 and 31-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Additional References

14. The examiner as of general interest cites the following references.
- a. Kumbalimutt et al, U.S. Patent No. 6,871,346.
 - b. Alexander, III et al, U. S. patent No. 6,658,652.
 - c. Matsuda et al, U.S. Patent No. 6,577,328.
 - d. Matsuda et al, U.S. Patent No. 6,253,167.

Contact Information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bharat Barot whose telephone number is (571) 272-3979. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

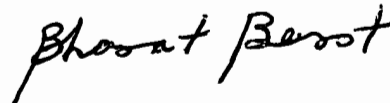
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam, Hosain, can be reached at (571) 272-3978.

Any inquiry of general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-3900.

Patent Examiner Bharat Barot

Art Unit 2155

April 29, 2005



**BHARAT BAROT
PRIMARY EXAMINER**



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PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0851-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Substitute for form 1449A/PTO			
		Complete If Known			
		Application No.	10/017,182		
		Filing Date	December 14, 2001		
		First Named Inventor	Timothy Tuttle <i>et al.</i>		
		Art Unit	2151-2155		
Examiner Name	UNASSIGNED BAROT				
Sheet	1	of	2	Attorney Docket Number	22726-05935

RECEIVED

U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No. ¹	Document No. Number - Kind Code ² (if known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
BB	A1	US-6029175	02-22-2000	Chow <i>et al.</i>

OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ³
BB	C1	Franklin <i>et al.</i> , "Dissemination-Based Information Systems," IEEE Data Engineering Bulletin, Vol. 19, No. 3, September 1996, 9 pages.	
BB	C2	Nagami <i>et al.</i> , "Toshiba's Flow Attribute Notification Protocol (FANP) Specification," April 1997, RFC 2129, Internet RFC/STD/FYI/BCP Archives [online], [retrieved on 2002-05-16]. Retrieved from the Internet: <URL: http://www.landfield.com/rfcs/rfc2129.html >, 16 pages.	
BB	C3	Strom <i>et al.</i> , "Gryphon: An Information Flow Based Approach to Message Brokering," International Symposium on Software Reliability Engineering '98, 1998, 2 pages.	
BB	C4	Sturman <i>et al.</i> , "Reflection in the Gryphon Message Brokering System," Reflection Workshop of the 13 th ACM Conference on Object Oriented Program Systems, Languages and Applications (OOPSLA '98), 1998, 5 pages.	
BB	C5	International DOI Foundation, "Introduction to the Digital Object Identifier," [online]. April 1998 [retrieved on 2002-05-16]. Retrieved from the Internet: <URL: http://www.doi.org/introduction.html >, 4 pages.	
BB	C6	Aksoy <i>et al.</i> , "Research in Data Broadcast and Dissemination", Proc. 1st Int'l Conf. on Advanced Multimedia Content Processing, Osaka University, Osaka, Japan, November, 1998.	
BB	C7	Banavar <i>et al.</i> , "An Efficient Multicast Protocol for Content-Based Publish-Subscribe Systems," Proc. of the 19th International Conference on Distributed Computing Systems, 1999, 9 pages.	
BB	C8	Banavar <i>et al.</i> , "Information Flow Based Event Distribution Middleware," Proceedings of the 1999 ICDCS Workshop on Electronic Commerce and Web-Based Applications, 1999, 8 pages.	

Examiner Signature	Bhazat Bazar	Date Considered	04/29/2005
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

22726/05935/SF/5087946.1



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Substitute for form 1449A/PTO				Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/017,182
				Filing Date	December 14, 2001
				First Named Inventor	Timothy Tuttle et al.
				Art Unit	2151-2135
				Examiner Name	UNASSIGNED BAROT
Sheet	2	of	2	Attorney Docket Number	22726-05935

OTHER REFERENCES - NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
BB	C9	Aguilera et al., "Matching Events in a Content-based Subscription System," Eighteenth ACM Symposium on Principles of Distributed Computing (PODC '99), Atlanta, GA, May 4-6, 1999, 9 pages.	
BB	C10	Banavar et al., "A Case for Message Oriented Middleware," Distributed Computing, 13 th International Symposium, Bratislava, Slovak Republic, September 27-29, 1999, 18 pages.	
BB	C11	Aguilera et al., "Efficient Atomic Broadcast Using Deterministic Merge," Symposium on Principles of Distributed Computing, 2000, 10 pages.	
BB	C12	Opyrchal et al., "Exploiting IP Multicast in Content-Based Publish-Subscribe Systems," Proceedings of the IFIP/ACM International Conference on Distributed Systems Platforms (Middleware 2000), April 2000, 23 pages.	
BB	C13	Caplin Systems Ltd., White Paper "Real Time Text Protocol (RTTP)," Version 1.1, September 2000, 11 pages.	
BB	C14	Reuters, "Reuters Market Data Systems and the Trading Solutions Architecture," Version 1.0, January 12, 2001, 51 pages.	
BB	C15	Ramamrithan et al., "Dissemination of Dynamic Data on the Internet," [online]. Powerpoint Presentation, Spring 2001, [retrieved on 2002-02-06], 5 pages. Retrieved from the Internet <URL: http://www.cs.umbc.edu/courses/graduate/CMSC691T/spring_2001/rlist/amit.ppt >.	
BB	C16	ComputerLetter, Vol. 17, No. 23, July 16, 2001, pp. 1-8.	
BB	C17	ComputerLetter, Vol. 17, No. 31, September 24, 2001, pp. 1-6.	
BB	C18	ComputerLetter, Vol. 17, No. 35, November 5, 2001, pp. 1-6.	

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Technology Center 2100

Examiner Signature	Bhushat Barot	Date Considered	04/29/2005
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809.
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¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

22726/05935/SF/5087946.1

Notice of References Cited	Application/Control No. 10/017,182	Applicant(s)/Patent Under Reexamination TUTTLE ET AL.	
	Examiner Bharat N. Barot	Art Unit 2155	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,871,346 B1	03-2005	Kumbalimutt et al.	718/104
	B	US-6,577,328 B2	06-2003	Matsuda et al.	709/205
	C	US-6,658,652 B1	12-2003	Alexander et al.	717/128
	D	US-6,253,167 B1	06-2001	Matsuda et al.	709/203
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
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	K	US-			
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application/Control No.

10/017,182

Examiner

Bharat N. Barot

Applicant(s)/Patent under Reexamination

TUTTLE ET AL.

Art Unit

2155

✓	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
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A	Appeal
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Claim		Date			
Final	Original	4/29/05			
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CONFIRMATION NO. 5890

SERIAL NUMBER 10/017,182	FILING DATE 12/14/2001 RULE	CLASS 709	GROUP ART UNIT 2155	ATTORNEY DOCKET NO. 22726-05935
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APPLICANTS

Timothy Tuttle, San Francisco, CA;

Robert S. Dreyer, San Francisco, CA;

Jeremy S. Lueck, San Francisco, CA; Charles E. Cano, San Francisco, CA;

Paul A. Sorensen, San Francisco, CA;

** CONTINUING DATA *****

Yes 133

This appln claims benefit of 60/256,613 12/18/2000

and claims benefit of 60/276,847 03/16/2001

and claims benefit of 60/278,303 03/21/2001

and claims benefit of 60/279,608 03/28/2001

and claims benefit of 60/280,627 03/29/2001

** FOREIGN APPLICATIONS *****

No 133

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

** SMALL ENTITY **

** 01/11/2002

Foreign Priority claimed ☐ yes ☒ no	STATE OR	SHEETS	TOTAL	INDEPENDENT
35 USC 119 (a-d) conditions met ☐ yes ☒ no ☐ Met after Allowance	COUNTRY	DRAWING	CLAIMS	CLAIMS
Verified and Acknowledged <u>Bhusant Bhatt</u> Examiner's Signature Initials	CA	8	49	4

ADDRESS

20350

TOWNSEND AND TOWNSEND AND CREW, LLP

TWO EMBARCADERO CENTER

EIGHTH FLOOR

SAN FRANCISCO , CA

94111-3834

TITLE

Asynchronous messaging using a dynamic routing network

FILING FEE

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No. _____ for following:

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

☐ All Fees
☐ 1.16 Fees (Filing)
☐ 1.17 Fees (Processing Ext. of time)
☐ 1.18 Fees (Issue)
☐ Other

Search Notes

Application/Control No.

10/017,182

Examiner

Bharat N. Barot

Applicant(s)/Patent under
Reexamination

TUTTLE ET AL.

Art Unit

2155

SEARCHED

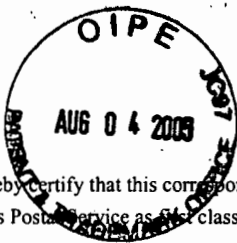
Class	Subclass	Date	Examiner
709	203-205 217-218 227-228 246	4/19/2005	BB
718	104-105		
719	315, 318		
719	328-332		

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
WEST Search	4/29/2005	BB
Consult SPE	4/29/2005	BB



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PATENT
Attorney Docket No.: 022193-090610US
Client Ref. No.: US 10/017182

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

On Aug. 1, 2005

TOWNSEND and TOWNSEND and CREW LLP

By: [Signature]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Timothy TUTTLE et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: Techniques for Updating Live
Objects at Clients using a Dynamic
Routing Network (as amended)

Customer No.: 20350

Confirmation No. 5890

Examiner: Bharot Barot

Technology Center/Art Unit: 2155

AMENDMENT

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

Sir:

In response to the Office Action mailed 05/03/05, please enter the following amendments and remarks:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 14 of this paper.

08/05/2005 HMARZI1 00000032 201430 10017182

01 FC:1201 400.00 DA
02 FC:1202 800.00 DA

Appl. No. 10/017,182
Amdt. dated August 1, 2005
Reply to Office Action of 05/03/05

PATENT

Amendments to the Specification:

Please replace the title with the following title:

"Techniques for Updating Live Objects at Clients using a Dynamic Routing Network".



Appl. No. 10/017,182

Amdt. dated August 1, 2005

Reply to Office Action of 05/03/05

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (currently amended) A method for dynamically updating a property
2 | of a live object at one or more remote clients coupled to a network, comprising:
3 receiving a first message from a remote input source, the first
4 message identifying the live object and containing data for updating a property of the
5 live object;
6 | identifying a remote clients client in the one or more clients that have
7 has registered for updates to the live object, wherein the remote clients client is are
8 distributed oncoupled to a the network; and
9 | routing a second message via the network to the registered clientlients,
10 the second message identifying the live object and containing the data for updating
11 the property of the live object;
12 | wherein the registered client is configured clients are adapted to
13 process the data to cause the update to the property of the live object,
14 wherein the live object is included in a data representation at the
15 | client.

1 2. (presently presented) The method of claim 1, wherein the live object
2 is identified by an object ID.

1 3. (presently presented) The method of claim 2, wherein the object ID
2 comprises a hierarchical namespace.

1 4. (presently presented) The method of claim 1, wherein the live object is
2 identified as a point in a document object model.

1 5. (presently presented) The method of claim 1, wherein the data for
2 updating the property of the live object identify the property relative to a point in a
3 document object model.

1 6. (currently amended) The method of claim 1, further comprising:
2 receiving a registration request from a ~~a~~the client, the registration
3 request identifying the live object with an object ID.

1 7. (currently amended) The method of claim 1, further comprising:
2 receiving a request from a ~~a~~the client for an activation module, the
3 activation module adapted to identify any live objects at the client; and providing the
4 activation module to the client.

1 8. (currently amended) The method of claim 1, wherein a ~~a~~the client
2 is ~~adapted~~configured to generate a registration request registering for updates to
3 properties of live objects at the client.

1 9. (currently amended) The method of claim 1, wherein ~~each~~the
2 registered client is ~~adapted~~configured to generate executable code responsive to the
3 data in the second message and execute the executable code to cause the update to
4 the property of the live object.

1 10. (currently amended) The method of claim 1, wherein the data for
2 updating a property of the live object comprise an executable script and wherein ~~each~~
3 the registered client is ~~adapted~~configured to execute the executable script.

1 11. (presently presented) The method of claim 1, wherein the second
2 message identifies a handler for updating the property of the live object responsive to
3 the data in the second message.

1 12. (presently presented) The method of claim 11, wherein the second
2 message implicitly identifies the handler.

1 13. (canceled) The method of claim 11, wherein the second message
2 explicitly identifies the handler.

1 14. (currently amended) The method of claim 1, wherein the change to
2 the property of the identified live object is associated with a visual representation of
3 the object at a the client.

1 15. (currently amended) The method of claim 1, wherein the change to
2 the property of the identified live object is not associated with a visual representation
3 of the object at a the client.

1 16. (presently presented) The method of claim 1, further comprising:
2 processing the first message from a first format to a second format to
3 produce the second message.

1 17. (presently presented) The method of claim 1, wherein the first message
2 and the second message are identical.

1 18. (currently amended) A dynamic content routing network for enabling
2 updating a property of a live object at a client coupled to the network, comprising:
3 a node ~~for configured to receive~~ receiving a message from a remote
4 input source, the message identifying the live object and containing data for updating a
5 property of the live object, configured to determine ~~for maintaining a registry of the~~
6 ~~remote clients~~ client coupled to the network, the client having ~~that have~~ registered to
7 receive updates to properties of the live object, and ~~for routing~~ configured to route the
8 message to the registered client ~~clients~~;

9 wherein ~~each the~~ registered client is ~~adapted~~ configured to process the
10 data to cause the update to the property of the live object, wherein the live object is
11 included in a data representation at the registered client.

1 19. (presently presented) The routing network of claim 18, further comprising:
2 a gateway in communication with the node and the input source and
3 adapted to receive the message from the input source and deliver the message to the
4 node.

1 20. (presently presented) The routing network of claim 19, wherein there are
2 a plurality of gateways, further comprising:
3 a load balancer for balancing a load on the routing network by
4 distributing messages from the input source among the plurality of gateways.

1 21. (currently amended) The routing network of claim 18, wherein the node
2 is further adapted to receive registration request messages from the ~~clients~~ client, the
3 registration request messages registering for updates to properties of the live object.

1 22. (currently amended) The routing network of claim 21, wherein there are a
2 plurality of nodes, further comprising:
3 a load balancer for balancing a load on the routing network by
4 distributing the registration request messages from the ~~clients~~ client and one or more
5 additional clients among the plurality of nodes.

1 23. (currently amended) The routing network of claim 18, further
2 comprising:
3 an application server for serving an activation module to the
4 ~~clients~~ client, the activation module adapted to enable identification of the live objects
5 object at the client.

1 24. (currently amended) The routing network of claim 23, wherein the

2 | activation module is further adapted to generate a registration request from a the client to
3 | the node for registering to receive updates to properties of the live object.

1 | 25. (currently amended) The routing network of claim 23, wherein the
2 | activation module is further adapted to receive the message routed to the registered
3 | ~~clients~~client and process the data to cause the update to the property of the live object.

1 | 26. (presently presented) The routing network of claim 18, further
2 | comprising:
3 | a queue module for holding messages from the input source that have
4 | been received but not yet processed by the node.

1 | 27. (currently amended) The routing network of claim 18, ~~wherein the~~ further
2 | comprising a registry maintained by the node, wherein the registry comprises:
3 | a data structure identifying live objects for which ~~clients~~ the client
4 | has~~have~~ registered, and an address of each ~~the~~ registered client.

1 | 28. (presently presented) The routing network of claim 18, wherein there are
2 | a plurality of nodes and wherein at least some of the nodes receive the message from the
3 | input source.

1 | 29. (presently presented) The routing network of claim 19, wherein there are
2 | a plurality of gateways and a plurality of nodes in each of a plurality of clusters and
3 | wherein each gateway within a cluster maintains a communications link with each node
4 | within the cluster and wherein each gateway within a cluster maintains a
5 | communication link with at least one gateway in each of the other clusters.

1 | 30. (currently amended) ~~A computer program product comprising: a~~ A
2 | computer-readable medium having computer program code embodied therein for
3 | updating a ~~properties~~ property of a live objects ~~object~~ at a client coupled to the network,
4 | the computer program code adapted ~~configured~~ to cause a computing device to perform

5 the steps of:

6 identifying the live ~~objects~~object at the client;
7 receiving via ~~a the~~ network an update message identifying ~~a the~~ live
8 object at the client and containing data for updating ~~a the~~ property of the live object;
9 and

10 processing the data to cause the update to the property of the live
11 object, wherein the live object is included in a data representation at the client.

1 31. (currently amended) The computer ~~program product~~readable medium of
2 claim 30, wherein the step of identifying the live ~~objects~~object at the client comprises
3 the step of:

4 analyzing a web page displayed at the client to identify object IDs of
5 live objects on the web page.

1 32. (currently amended) The computer readable medium ~~program product~~ of
2 claim 30, wherein the step of identifying the live ~~objects~~object at the client comprises
3 the step of:

4 receiving data responsive to a solicitation of input, the data identifying
5 the live ~~objects~~object at the client.

1 33. (currently amended) The computer readable medium ~~program product~~ of
2 claim 30, wherein the program code is further ~~adapted~~configured to cause the
3 computing device to perform the step of:

4 sending via the network a registration message indicating the live
5 objects identified at the client to a remote routing network;

6 wherein the update message is received from the remote routing
7 network.

1 34. (currently amended) The computer readable medium ~~program product~~ of
2 claim 30, wherein the program code is further configured to cause the computing device

3 | adapted to perform the step of:

4 | maintaining a connection with a remote routing network;
5 | wherein the update message is received from the remote routing
6 | network.

1 | 35. (currently amended) The computer readable medium ~~program product~~ of
2 | claim 34, wherein the program code is further configured to cause the computing device
3 | ~~adapted to perform the step of.~~

4 | terminating the connection with the remote routing network
5 | responsive to an action occurring at the client.

1 | 36. (presently presented) The computer readable medium ~~program product~~ of
2 | claim 30, wherein the live object is identified as a point in a document object model.

1 | 37. (presently presented) The computer readable medium ~~program product~~ of
2 | claim 30, wherein the step of processing the data to cause the update to the property of
3 | the live object comprises the step of:

4 | changing a property of a point in a document object model.

1 | 38. (currently amended) The computer readable medium ~~program product~~ of
2 | claim 30, wherein the processing step comprises the steps of:

3 | ~~generate~~ generating executable code responsive to the data in the
4 | update message; and

5 | executing the executable code to cause the update to the property of the
6 | live object.

1 | 39. (presently presented) The computer readable medium ~~program product~~ of
2 | claim 30, wherein the data for updating a property of the live object comprise an
3 | executable script and wherein the processing step comprises the step of:

4 | executing the executable script.

1 40.

(presently presented) The computer readable medium ~~program-product~~
2 of claim 30, wherein the update message specifies a handler for changing the property of
3 the live object responsive to the data in the update message.

1 41.

(presently presented) The computer readable medium ~~program-product~~
2 of claim 40, wherein the update message implicitly specifies the handler.

1 42.

(presently presented) The readable medium ~~computer program-product~~
2 of claim 40, wherein the update message explicitly specifies the handler.

1 43.

(presently presented) The readable medium ~~computer program-product~~ of
2 claim 30, wherein the step of processing the data to cause the update to the property of
3 the live object comprises the step of:
4 changing a property associated with a visual representation of the
5 identified live object.

1 44.

(presently presented) The computer readable medium ~~program-product~~ of
2 claim 30, wherein the step of processing the data to cause the update to the property of
3 the live object comprises the step of:
4 changing a property not associated with a visual representation of the
5 identified live object.

1 45.

(currently amended) A system for updating properties of live objects at a
2 plurality of ~~remote clients~~ coupled to a routing network, comprising:
3 ~~a~~the routing network in communication with the plurality of ~~remote~~
4 clients, the routing network ~~adapted~~configured to enable the plurality of clients to
5 register to receive updates to properties of live objects, to receive an update message
6 from a remote input source including data for updating a property of an identified
7 live object, and to route the update message to ~~the a remote clients-client in the~~
8 plurality of clients that ~~have~~has registered for the identified live object;

9 wherein ~~each~~ the registered client is ~~adapted~~ configured to process the
10 data to cause the update to the property of the live object, wherein the live object is
11 included in a data representation at the client.

1 46. (currently amended) The system of claim 45, wherein ~~each~~ each of the
2 plurality of clients ~~is configured to execute~~ executes an activation module adapted
3 to enable identification of live objects at ~~the~~ each client and register for updates to
4 properties of the identified live objects with the routing network.

1 47. (currently amended) The system of claim 46, the routing network is
2 further adapted to provide the activation module to each of the clients.

1 48. (currently amended) The system of claim 45, wherein the remote input
2 source is adapted to utilize a director console module to provide the update message to the
3 routing network.;

1 49. (presently presented) The system of claim 45, wherein the input source is
2 adapted to utilize a content management system module to provide the update message
3 to the routing network.

1 50. (new) A device for dynamically updating a property of a live object
2 at one or more clients coupled to a network, comprising:
3 logic configured to receive a first message from an input source, the
4 first message identifying the live object and containing data for updating a property of
5 the live object;
6 logic configured to identify a client in the one or more clients that has
7 registered for updates to the live object, wherein the client is coupled to the network;
8 and
9 logic configured to route a second message via the network to the
10 registered client, the second message identifying the live object and containing the
11 data for updating the property of the live object;

12 wherein the registered client is configured to process the data to
13 cause the update to the property of the live object,
14 wherein the live object is included in a data representation at the
15 client.

1 51. (new) The device of claim 50, wherein the live object is identified by an
2 object ID.

1 52. (new) The device of claim 51, wherein the object ID comprises a
2 hierarchical namespace.

1 53. (new) The device of claim 50, wherein the live object is identified as a
2 point in a document object model.

1 54. (new) The device of claim 50, wherein the data for updating the property of
2 the live object identify the property relative to a point in a document object model.

1 55. (new) The method of claim 50, wherein the data for updating a property
2 of the live object comprise an executable script and wherein the client is configured to execute
3 the executable script.

1 56. (new) The device of claim 50, wherein the change to the property of the
2 identified live object is associated with a visual representation of the object at the client.

1 57. (new) The device of claim 50, wherein the change to the property of the
2 identified live object is not associated with a visual representation of the object at the client.

1 58. (new) The device of claim 50, further comprising:
2 logic configured to process the first message from a first format to a
3 second format to produce the second message.

1 59. (new) The device of claim 50, wherein the first message and the second
2 message are identical.

1 60. (new) The device of claim 50, wherein the data representation comprises
2 a web page or an application program.

1 61. (new) A method for dynamically updating a property of a live object at
2 clients coupled to a network, comprising:

3 receiving a first message from an input source, the first message
4 identifying the live object and containing data for updating a property of the live
5 object;

6 identifying a plurality of clients that have registered for updates to the
7 live object, wherein the plurality of clients are distributed on the network; and

8 routing a second message via the network to the registered plurality of
9 clients, the second message identifying the live object and containing the data for
10 updating the property of the live object;

11 wherein the registered plurality of clients are configured to process
12 the data to cause the update to the property of the live object,

13 wherein the live object is included in a data representation at each
14 of the plurality of registered clients.

1 62. (new) The method of claim 1, wherein the data representation comprises a
2 web page or an application program.

1 63. (new) The routing network of claim 18, wherein the data representation
2 comprises a web page or an application program.

1 64. (new) The computer readable medium of claim 30, wherein the data
2 representation comprises a web page or an application program.

1 65. (new) The system of claim 45, wherein the data representation comprises
2 a web page or an application program.

REMARKS/ARGUMENTS

Upon entry of this amendment, which amends claims 1, 6-10, 14-15, 18, 21-25, 27, 30-48, and adds new claims 50-65, claims 1-65 will be pending. In the office action, the title of the invention was deemed not descriptive; claims 1-49 were rejected under 35 U.S.C. §112, second paragraph, as failing to set forth the subject which Applicants regard as their invention; claims 1-49 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention; claims 1-2, 6-7, 16-19, 21, 23-29, and 45-47 were rejected as being rejected under judicially created double patenting by claims 1-2, 4-5, 7-10, 12, and 14 of copending Application No. 10/105,018; claim 30 is rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter; and claims 4-5 and 31-32 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicants respectfully request reconsideration of the claims in view of the amendments above and remarks below.

Allowable Subject Matter

Applicants thank the Examiner for the indication of allowable subject matter.

Examiner Interview

Applicants thank the Examiner for the courtesy of the Interview conducted on July 26, 2005. During the Interview, the rejections and claims were discussed.

Title

Applicants have changed the title to "Techniques for Updating Live Objects at Clients using a Dynamic Routing Network".

Section 112 Rejections

Claims 1-49 were rejected under 35 U.S.C. §112, second paragraph, as failing to set forth the subject which Applicants regard as their invention. Specifically, the preamble in claims 1, 18, 30, and 45 fail to correspond in scope with that which Applicants regards as the invention. As discussed during the Interview, Applicants have amended the preamble of claim 1 to read " A method for dynamically updating a property of a live object at a client coupled to a network". Claims 18, 30, and 45 have been amended similarly. Applicants submit that claims 1, 18, 30, and 45 now fully comply with the requirements of Section 112 and request withdrawal of the rejection of claims 1-49.

Claims 1-49 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the rejection stated that in claims 1, 18, 30, and 45, the phrase "updating a property of a live object at clients" renders the claims indefinite. As discussed during the Interview, Applicants have amended the claim 1 to read "wherein the live object is included in a data representation at the client". Claims 18, 30, and 45 have been amended similarly. Applicants submit that claims 1, 18, 30, and 45 now fully comply with the requirements of Section 112 and request withdrawal of the rejection of claims 1-49.

Double Patenting

Claims 1-2, 6-7, 16-19, 21, 23-29, and 45-47 were rejected as being rejected under judicially created double patenting by claims 1-2, 4-5, 7-10, 12, and 14 of copending Application No. 10/105,018. In response, Applicants have submitted a terminal disclaimer. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-2, 6-7, 16-19, 21, 23-29, and 45-47.

Section 101 Rejections

Claim 30 was rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Specifically, the rejection stated "[a] program not claimed as embodied in a computer readable media and

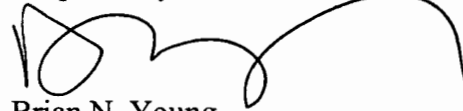
execute[d] in a computer or by a computer are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer." In response, claim 30 is amended to have a preamble of "A computer-readable medium having computer program code embodied therein for updating properties of a live object at a client, the computer program code configured to cause a computing device to perform the steps of:". Applicants respectfully request withdrawal of the rejection.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

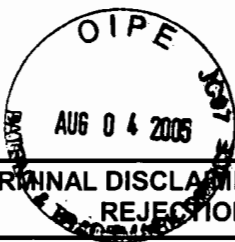
If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



Brian N. Young
Reg. No. 48,602

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 415-576-0200
Fax: 415-576-0300
Attachments
BNY:dk
60504262 v1

**TERMINAL DISCLAIMER TO OBIATE A PROVISIONAL DOUBLE PATENTING
REJECTION OVER A PENDING SECOND APPLICATION**Docket Number (Optional)
022193-090610US

In re Application of: Timothy TUTTLE, et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: TECHNIQUES USING UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC
ROUTING NETWORK (as amended)

The owner*, Bang Networks, Inc., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number 10/105,018, filed on March 21, 2002, as such term is defined in 35 U.S.C. 154 and 173, and as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that: any such patent: granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

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.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 48,602

Signature

8/1/05

Date

Brian N. Young

Typed or printed name

415-576-0200

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included.

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*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

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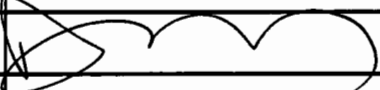
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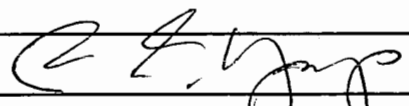
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21558

TRANSMITTAL FORM (to be used for all correspondence after initial filing) Total Number of Pages in This Submission: 21-	Application Number	10/017,182
	Filing Date	December 14, 2001
	First Named Inventor	Tuttle, Timothy
	Art Unit	2155
	Examiner Name	Barot, Bharat
	Attorney Docket Number	022193-090610US

ENCLOSURES (Check all that apply)		
☒ Fee Transmittal Form ☐ Fee Attached ☒ Amendment/Reply ☐ After Final ☐ Affidavits/declaration(s) ☐ Extension of Time Request ☐ Express Abandonment Request ☐ Information Disclosure Statement ☐ Certified Copy of Priority Document(s) ☐ Reply to Missing Parts/ Incomplete Application ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53	☐ Drawing(s) ☐ Licensing-related Papers ☐ Petition ☐ Petition to Convert to a Provisional Application ☐ Power of Attorney, Revocation ☐ Change of Correspondence Address ☒ Terminal Disclaimer ☐ Request for Refund ☐ CD, Number of CD(s) _____ ☐ Landscape Table on CD	☐ After Allowance Communication to TC ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) ☐ Proprietary Information ☐ Status Letter ☒ Other Enclosure(s) (please identify below): Return Postcard
Remarks: The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Townsend and Townsend and Crew LLP		
Signature			
Printed name	Brian N. Young		
Date	8/1/05	Reg. No.	48,602

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Signature			
Typed or printed name	ROSARIO G. TSIP	Date	8/1/05

AUG 04 2003

AUG 04 2003

PTO/SB/17 (12-04)

Effective on 12/09/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 1330

Complete if Known

Application Number	10/017,182
Filing Date	December 14, 2001
First Named Inventor	Tuttle, Timothy
Examiner Name	Barot, Bharat
Art Unit	2155
Attorney Docket No.	022193-090610US

METHOD OF PAYMENT (check all that apply)
☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 20-1430 Deposit Account Name: Townsend and Townsend and Crew LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

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FEE CALCULATION
1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Small Entity		SEARCH FEES Small Entity		EXAMINATION FEES Small Entity		Fees Paid (\$)
	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Small Entity	
	Fee (\$)	Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
65	-20 or HP = 16	x \$50	= \$800			

HP = highest number of total claims paid for, if greater than 20

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
6	-3 or HP = 2	x \$200	= \$400

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	/ 50 = _____	(round up to a whole number) x _____	= _____	

4. OTHER FEE(S)

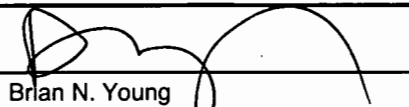
Non-English Specification, \$130 fee (no small entity discount)

Other: Submission of Terminal Disclaimer

Fees Paid (\$)

130

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 48,602	Telephone 415-576-0200
Name (Print/Type)	Brian N. Young	B/1/05	Date

60551423 v1

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2001

Application or Docket Number

100A182

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	49	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	49 minus 20 =	*
INDEPENDENT CLAIMS	4 minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	8-4-05	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*	65	Minus ** 49 = 16
Independent	*	6	Minus *** 4 = 2
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*		Minus ** =
Independent	*		Minus *** =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*		Minus ** =
Independent	*		Minus *** =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

RATE	FEE
BASIC FEE	370.00
X\$ 9=	
X42=	
+140=	
TOTAL	

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	740.00
X\$18=	
X84=	
+280=	
TOTAL	

SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	50
X84=	800
+280=	300
TOTAL ADDIT. FEE	400

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

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Application Number 	Application/Control No. 10/017,182	Applicant(s)/Patent under Reexamination TUTTLE ET AL.	
Document Code - DISQ		Internal Document – DO NOT MAIL	

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 08/04/2005	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
Y. vines

U.S. Patent and Trademark Office

AUG 19 2005

Atty Docket No. 022193-090610US

PTO FAX NO.: 1-571-273-8300

ATTENTION: Examiner Bharat BAROT

Group Art Unit 2155

OFFICIAL COMMUNICATION
FOR THE PERSONAL ATTENTION OF
EXAMINER Bharat BAROT

CERTIFICATION OF FACSIMILE TRANSMISSION

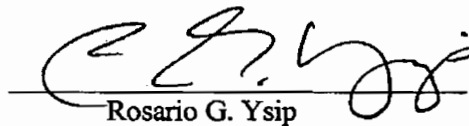
I hereby certify that the following document in re Application of Timothy TUTTLE et al., Application No. 10/017,182, filed December 14, 2001 for TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK (AS AMENDED) is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Documents Attached

1. Recission of Previous Nonpublication Request, 1 page.

Number of pages being transmitted, including this page: -2-

Dated: August 19, 2005


Rosario G. Ysip

**PLEASE CONFIRM RECEIPT OF THIS PAPER BY
RETURN FACSIMILE AT (415) 576-0300**

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, CA 94111-3834
Telephone: 415-576-0200
Fax: 415-576-0300
0407

60567463 v1

AUG 19 2005

PTO/SB/36 (07-05)

**RESCISSON OF PREVIOUS NONPUBLICATION
REQUEST**

(35 U.S.C. 122(b)(2)(B)(ii))

AND, IF APPLICABLE,

NOTICE OF FOREIGN FILING

(35 U.S.C. 122(b)(2)(B)(iii))

Send completed form to:
Mail Stop PG Pub
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX: (571) 273-8300

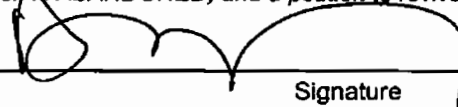
Application Number	10/017,182
Filing Date	12/14/2001
First Named Inventor	Timothy TUTTLE
Title	TECHNIQUES USING UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK (as Amended)
Atty Docket Number	022193-090610US
Art Unit	2155
Examiner	Bharat Barot

A request that the above-identified application not be published under 35 U.S.C. 122(b) (nonpublication request) was included with the above-identified application on filing pursuant to 35 U.S.C. 122(b)(2)(B)(i).

I hereby **rescind** the previous nonpublication request.

If a notice of foreign or international filing is or will be required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c), I hereby provide such notice. This notice is being provided no later than forty-five (45) days after the date of such foreign or international filing.

If a notice of subsequent foreign or international filing required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c) was not filed within forty-five (45) days after the date of filing of the foreign or international application, the application is ABANDONED, and a petition to revive under 37 CFR 1.137(b) is required. See 37 CFR 1.137(f).



Signature

Date August 19, 2005

Brian N. Young
Typed or printed name

48,602
Registration Number, if applicable

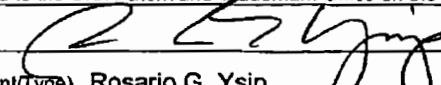
415-576-0200
Telephone Number

This request must be signed in compliance with 37 CFR 1.33(b).

If information or assistance is needed in completing this form, please contact the Pre-Grant Publication Division at (703) 605-4283 or by e-mail at PGPub@USPTO.gov.

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop PG Pub, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature 

Name (Print/Type) Rosario G. Ysip

Date 8/19/05

60567385 v1



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

CONFIRMATION NO. 5890

20350

TOWNSEND AND TOWNSEND AND CREW, LLP
 TWO EMBARCADERO CENTER
 EIGHTH FLOOR
 SAN FRANCISCO, CA 94111-3834

Date Mailed: 08/25/2005

Communication Regarding Rescission Of Nonpublication Request and/or Notice of Foreign Filing

Applicant's rescission of the previously-filed nonpublication request and/or notice of foreign filing is acknowledged. The paper has been reflected in the Patent and Trademark Office's (USPTO's) computer records so that the earliest possible projected publication date can be assigned.

The projected publication date is 12/01/2005.

If applicant rescinded the nonpublication request before or on the date of "foreign filing,"¹ then no notice of foreign filing is required.

If applicant foreign filed the application after filing the above application and before filing the rescission, and the rescission did not also include a notice of foreign filing, then a notice of foreign filing (not merely a rescission) is required to be filed within 45 days of the date of foreign filing. See 35 U.S.C. § 122(b)(2)(B)(iii), and Clarification of the United States Patent and Trademark Office's Interpretation of the Provisions of 35 U.S.C. § 122(b)(2)(B)(ii)-(iv), 1272 Off. Gaz. Pat. Office 22 (July 1, 2003).

If a notice of foreign filing is required and is not filed within 45 days of the date of foreign filing, then the application becomes abandoned pursuant to 35 U.S.C. § 122(b)(2)(B)(iii). In this situation, applicant should either file a petition to revive or notify the Office that the application is abandoned. See 37 CFR 1.137(f). Any such petition to revive will be forwarded to the Office of Petitions for a decision. Note that the filing of the petition will not operate to stay any period of reply that may be running against the application.

Questions regarding petitions to revive should be directed to the Office of Petitions at (571) 272-3282. Questions regarding publications of patent applications should be directed to the patent application publication hotline at (703) 605-4283 or by e-mail pgpub@uspto.gov.

¹ Note, for purpose of this notice, that "foreign filing" means "filing an application directed to the same invention in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing".

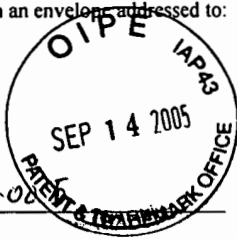
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:

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

On August 30, 2005

TOWNSEND and TOWNSEND and CREW LLP

By: Mark T. Davis
Mark T. Davis



PATENT
Attorney Docket No.: 022193-090610US
Client Reference No.: US 10/017182

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Timothy TUTTLE et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: TECHNIQUES FOR UPDATING
LIVE OBJECTS AT CLIENTS USING A
DYNAMIC ROUTING NETWORK (AS
AMENDED)

Examiner: Barot, Bharat

Art Unit: 2155

SUPPLEMENTAL INFORMATION
DISCLOSURE STATEMENT UNDER 37
CFR §1.97 and §1.98

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

Sir:

The references cited on attached form PTO/SB/08A are being called to the attention of the Examiner. Copies of the references [in compliance with the requirements of 1287 OG 163] are not enclosed. It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

09/15/2005 SDENBOB1 00000024 201430 10017182

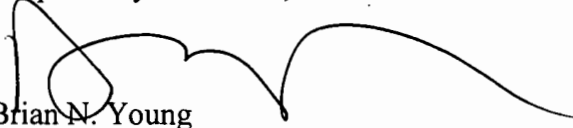
01 FC:1806 180.00 DA

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

This IDS is being filed before the mailing date of the final Office Action or Notice of Allowance.

Please charge the IDS fee of \$180 to Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,



Brian N. Young
Reg. No. 48,602

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 415-576-0200
Fax: 415-576-0300
BNY:mtd

60574675 v1

Substitute for form 1449A&B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet

1

of

1

Complete if Known

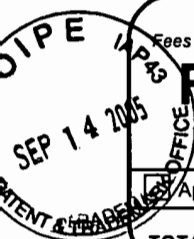
Application Number	10/017,182
Filing Date	December 14, 2001
First Named Inventor	Tuttle, Timothy
Art Unit	2155
Examiner Name	Barot, Bharat
Attorney Docket Number	022193-090610US

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)			
	AA	US-5,706,516	01-1998	Chang et al.	
	AB	US 6,233,600 B1	05-2001	Salas et al.	
	AC	US-6,324,587	11-2001	Trenbeath et al.	
	AD	US 6,363,421 B2	03-2002	Barker et al.	
	AE	US 6,418,448 B1	07-2002	Sarkar	
	AF	US 6,446,257 B1	09-2002	Pradhan et al.	
	AG	US-6,609,138	08-2003	Merriam	
	AH	US-6,836,86 B2	12-2004	Tuerke et al.	
	AI	US 10/105,018		Tuttle et al.	
	AJ	US 10/213,269		Cano et al.	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.



\$ 2155.00

Effective on 12/08/2004.

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2005

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 180)

Complete if Known

Application Number	10/017,182
Filing Date	December 14, 2001
First Named Inventor	Tuttle, Timothy
Examiner Name	Barot, Bharat
Art Unit	2155
Attorney Docket No.	022193-090610US

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____
☒ Deposit Account Deposit Account Number: 20-1430 Deposit Account Name: Townsend and Townsend and Crew LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee
☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Small Entity		Small Entity		Small Entity		
	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Small Entity	
	Fee (\$)	Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims Extra Claims Fee (\$) Fee Paid (\$) Multiple Dependent Claims
 -20 or HP = _____ x _____ = _____ Fee (\$) Fee Paid (\$)

HP = highest number of total claims paid for, if greater than 20

Indep. Claims Extra Claims Fee (\$) Fee Paid (\$)
 -3 or HP = _____ x _____ = _____

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets Extra Sheets Number of each additional 50 or fraction thereof Fee (\$) Fee Paid (\$)
 - 100 = _____ / 50 = _____ (round up to a whole number) x _____ = _____

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: Submission of Information Disclosure Stmt

Fees Paid (\$)

180

SUBMITTED BY

Signature	Registration No. (Attorney/Agent) 48,602	Telephone 415-576-0200
Name (Print/Type) Brian N. Young		Date August (30), 2005

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

5

Application Number

10/017,182

Filing Date

December 14, 2001

First Named Inventor

Tuttle, Timothy

Art Unit

2155

Examiner Name

Barot, Bharat

Attorney Docket Number

022193-090610US

ENCLOSURES (Check all that apply)

- | | | |
|--|--|--|
| ☒ Fee Transmittal Form
☐ Fee Attached
☐ Amendment/Reply
☐ After Final
☐ Affidavits/declaration(s)
☐ Extension of Time Request
☐ Express Abandonment Request
☒ Information Disclosure Statement

☐ Certified Copy of Priority Document(s)
☐ Reply to Missing Parts/ Incomplete Application
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53 | ☐ Drawing(s)
☐ Licensing-related Papers
☐ Petition
☐ Petition to Convert to a Provisional Application
☐ Power of Attorney, Revocation
☐ Change of Correspondence Address
☐ Terminal Disclaimer
☐ Request for Refund
☐ CD, Number of CD(s) _____
☐ Landscape Table on CD | ☐ After Allowance Communication to TC
☐ Appeal Communication to Board of Appeals and Interferences
☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☐ Proprietary Information
☐ Status Letter
☒ Other Enclosure(s) (please identify below):
Return Postcard |
|--|--|--|

Remarks

The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name

Townsend and Townsend and Crew LLP

Signature



Printed name

Brian N. Young

Date

August (30), 2005

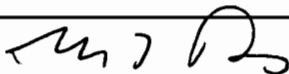
Reg. No.

48,602

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature



Typed or printed name

Mark T. Davis

Date

August (30), 2005



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

20350 7590 11/10/2005
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

BAROT, BHARAT

ART UNIT PAPER NUMBER

2155

DATE MAILED: 11/10/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935	5890

TITLE OF INVENTION: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$700	\$300	\$1000	02/10/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

20350 7590 11/10/2005
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

Certificate of Mailing or Transmission
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935	5890

TITLE OF INVENTION: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$700	\$300	\$1000	02/10/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
BAROT, BHARAT	2155	709-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935	5890
20350	7590	11/10/2005		

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER	
BAROT, BHARAT	

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 11/10/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 759 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 759 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

10/017,182

Applicant(s)

TUTTLE ET AL.

Examiner

Bharat N. Barot

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 08/04/2005.
2. ☒ The allowed claim(s) is/are 1-65.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☒ to Paper No./Mail Date 05/03/2005.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 09/14/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Bharat Barot
BHARAT BAROT
PRIMARY EXAMINER

(571) 272-3979

Reasons For Allowance

1. The following is an Examiner's Statement of Reasons for Allowance:

Claims 1-65 are allowable over the prior art of record.

The examiner has found that the prior art of record does not teach or suggest or render obvious a method and a system for dynamically updating a property of a live object at remote client. The major difference in the independent claims not found in the prior art of record that a node/network device for receiving a message from a remote input source, the message identifying the live object and containing data for updating the property of the live object at remote clients that have registered for updates to the live object; and router/network device for routing a update message to the registered clients, wherein the update message contains same information as previous message and the live object is included in a data representation at the client at set forth in the specification and recited in the independent claims 1, 18, 30, 45, 50, and 61.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bharat Barot** whose Telephone Number is **(571) 272-3979**. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM. Most facsimile-transmitted patent application related correspondence is required to be sent to the Central FAX Number **(571) 273-8300**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Saleh Najjar**, can be reached at **(571) 272-4006**.

Patent Examiner Bharat Barot

Art Unit 2155

October 07, 2005

Bharat Barot
BHARAT BAROT
PRIMARY EXAMINER

O I P E I A P A S
SEP 14 2005
PATENT OFFICE

Substitute for form 1449A&B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 1		Complete if Known	
		Application Number	10/017,182
		Filing Date	December 14, 2001
		First Named Inventor	Tuttle, Timothy
		Art Unit	2155
		Examiner Name	Barot, Bharat
		Attorney Docket Number	022193-090610US

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)			
<i>BB</i>	AA	US-5,708,516	01-1998	Chang et al.	
<i>BB</i>	AB	US 6,233,600 B1	05-2001	Salas et al.	
<i>BB</i>	AC	US-6,324,587	11-2001	Trenbeath et al.	
<i>BB</i>	AD	US 6,363,421 B2	03-2002	Barker et al.	
<i>BB</i>	AE	US 6,418,448 B1	07-2002	Sarkar	
<i>BB</i>	AF	US 6,446,257 B1	09-2002	Pradhan et al.	
<i>BB</i>	AG	US-6,609,138	08-2003	Merriam	
<i>BB</i>	AH	US-6,836,88 B2	12-2004	Tuerke et al.	
<i>BB</i>	AI	US 10/105,018		Tuttle et al.	
<i>BB</i>	AJ	US 10/213,269		Cano et al.	

Examiner Signature	<i>Bharat Barot</i>	Date Considered	<i>10/07/2005</i>
--------------------	---------------------	-----------------	-------------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Application Number 	Application/Control No. 10/017,182	Applicant(s)/Patent under Reexamination TUTTLE ET AL.	
Document Code - DISQ		Internal Document – DO NOT MAIL	

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 08/04/2005	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
Y. vines

U.S. Patent and Trademark Office

Issue Classification 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	10/017,182		TUTTLE ET AL.	
	Examiner		Art Unit	
	Bharat N. Barot		2155	

ISSUE CLASSIFICATION										
ORIGINAL					CROSS REFERENCE(S)					
CLASS		SUBCLASS			CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
709		203			709	205	228	238		
INTERNATIONAL CLASSIFICATION					718	105				
G	0	6	F	15/16	707	10				
				/						
				/						
				/						
				/						

(Assistant Examiner) (Date)		<i>Bharat Barot.</i> BHARAT BAROT PRIMARY EXAMINER (Primary Examiner)	Total Claims Allowed: 65	
<i>Laurina Johnson</i> 11-9-05 (Legal Instruments Examiner) (Date)			O.G. Print Claim(s) 1	O.G. Print Fig. 7

☐ Claims renumbered in the same order as presented by applicant										☐ CPA		☒ T.D.		☐ R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	33	31	65	61		91		121		151		181		
2	2	34	32	18	62		92		122		152		182		
3	3	35	33	31	63		93		123		153		183		
4	4	36	34	47	64		94		124		154		184		
5	5	37	35	53	65		95		125		155		185		
6	6	38	36		66		96		126		156		186		
7	7	39	37		67		97		127		157		187		
8	8	40	38		68		98		128		158		188		
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10	10	42	40		70		100		130		160		190		
11	11	43	41		71		101		131		161		191		
12	12	44	42		72		102		132		162		192		
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22	29	63	59		89		119		149		179		209		
32	30	64	60		90		120		150		180		210		

Search Notes

Application/Control No.

10/017,182

Examiner

Bharat N. Barot

Applicant(s)/Patent under
Reexamination

TUTTLE ET AL.

Art Unit

2155

SEARCHED

Class	Subclass	Date	Examiner
709	203-205 217-218 227-228 246	4/19/2005	BB
718	104-105		
719	315, 318		
719	328-332		
Update	Search	10/7/2005	BB
709	238, 242		
717	153-154		
707	10, 100		

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner
709	203, 205	10/7/2005	BB
709	228, 238		
718	105		
707	10		

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
WEST Search	4/29/2005	BB
Consult SPE	4/29/2005	BB
WEST Search	10/7/2005	BB

Index of Claims



Application/Control No.

10/017,182

Examiner

Bharat N. Barot

Applicant(s)/Patent under Reexamination

TUTTLE ET AL.

Art Unit

2155

✓	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date			
Final	Original	4/29/05	10/7/05		
1	(1)	✓			
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52	49	✓			
54	(50)				

Claim		Date			
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UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

BIBDATASHEET

Bib Data Sheet

CONFIRMATION NO. 5890

SERIAL NUMBER 10/017,182	FILING DATE 12/14/2001 RULE	CLASS 709	GROUP ART UNIT 2155	ATTORNEY DOCKET NO. 22726-05935
-----------------------------	---------------------------------------	--------------	------------------------	---------------------------------------

APPLICANTS

Timothy Tuttle, San Francisco, CA;

Robert S. Dreyer, San Francisco, CA;

Jeremy S. Lueck, San Francisco, CA; Charles E. Cano, San Francisco, CA;

Paul A. Sorensen, San Francisco, CA;

** CONTINUING DATA *****

Yes 133

This appln claims benefit of 60/256,613 12/18/2000
and claims benefit of 60/276,847 03/16/2001
and claims benefit of 60/278,303 03/21/2001
and claims benefit of 60/279,608 03/28/2001
and claims benefit of 60/280,627 03/29/2001

** FOREIGN APPLICATIONS *****

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

** SMALL ENTITY **

** 01/11/2002

Foreign Priority claimed ☐ yes ☒ no	STATE OR COUNTRY CA	SHEETS DRAWING 8	TOTAL CLAIMS 48 65	INDEPENDENT CLAIMS 6
35 USC 119 (a-d) conditions met ☐ yes ☒ no ☐ Met after Allowance				
Verified and Acknowledged <i>Bhusht Bhusht</i> Examiner's Signature Initials				

ADDRESS

20350
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA
94111-3834

TITLE *"Techniques For Updating Live Objects at Clients Using a Dynamic
Asynchronous messaging using a dynamic routing network - Routing Network"*

FILING FEE

RECEIVED
738

FEES: Authority has been given in Paper
No. _____ to charge/credit DEPOSIT ACCOUNT
No. _____ for following:

- ☐ All Fees
- ☐ 1.16 Fees (Filing)
- ☐ 1.17 Fees (Processing Ext. of time)
- ☐ 1.18 Fees (Issue)
- ☐ Other

PETITIONERS - AMERICAN SOUTHWEST, Exhibit 10.5

● PRINTER RUSH ●

(PTO ASSISTANCE)

Application : <u>10/017,182</u>	Examiner : <u>B. BAROT</u>	GAU : <u>2155</u>
From: <u>R. MITCHELL</u>	Location: <u>IDC</u> FMF FDC	Date: <u>1/3/06</u>

Tracking #: EPM 10/017,182 Week Date: 1/14/05

DOC CODE	DOC DATE	MISCELLANEOUS
☐ 1449	_____	☐ Continuing Data
☐ IDS	_____	☐ Foreign Priority
☐ CLM	_____	☐ Document Legibility
☐ IIFW	_____	☐ Fees
☐ SRFW	_____	☐ Other
☒ OATH	<u>MISSING</u>	
☐ 312	_____	
☐ SPEC	_____	

[RUSH] MESSAGE: OATH / DECLARATION IS MISSING.

THANK YOU
REM

[XRUSH] RESPONSE: _____

See MISC comm

INITIALS: RF

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.
REV 10/04



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuttle	22726-05935	5890
20350	7590	01/24/2006		
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			EXAMINER BAROT, BHARAT	
			ART UNIT	PAPER NUMBER
			2155	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Serial Number
10017182

Date Mailed
1/24/06

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given 30 days from the mail date of this Notice within which to correct the informalities indicated below. A failure to reply will result in the application being ABANDONED. This period for reply is NOT extendable under 37 CFR 1.136 (a) or (b).

- ♦ The oath/declaration is missing from the application. Fax missing information to number below or e-mail.
- o For status updates visit <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR System, contact the Electronic Business Center (EBC) toll free at 866-217-9197.

APPLICANT MUST SUPPLY MISSING INFORMATION WITHIN 30 DAYS OF THE MAIL DATE OF THIS NOTICE.

A copy of this notice MUST be returned with the reply. Please address response to Commissioner for Patents P.O. Box 1450
Alexandria, VA 22313-1450

Rori Burch
USPTO
Publishing Division
Rori.burch@uspto.gov
Fax (571) 273-9009
Fax (703) 308-6642
703-305-0333 ext.135 (V)

PRINTER RUSH

(PTO ASSISTANCE)

Application : 10/07, 182 Examiner : B. BAROT GAU : 2155

From : R. Mitchell Location : IDC FMF FDC Date : 1/3/06

Tracking # : EPM 10/017, 182 Week Date : 1/14/05

DOC CODE	DOC DATE	MISCELLANEOUS
☐ 1449		☐ Continuing Data
☐ IDS		☐ Foreign Priority
☐ CLM		☐ Document Legibility
☐ IIFW		☐ Fees
☐ SRFW		☐ Other
☒ OATH	<u>MISSING</u>	
☐ 312		
☐ SPEC		

[RUSH] MESSAGE: OATH / DECLARATION IS MISSING.

THANK YOU
REM

[XRUSH] RESPONSE: _____

See misc comm

INITIALS: REM

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.

REV 10/04

Atty Docket No. 022193-090610US
(formerly 22726-05935)

PTO FAX NO.: 1-571-273-9009

ATTENTION: Examiner Barot, Bharat

Group Art Unit 2155

OFFICIAL COMMUNICATION
FOR THE PERSONAL ATTENTION OF
EXAMINER Barot, Bharat

CERTIFICATION OF FACSIMILE TRANSMISSION

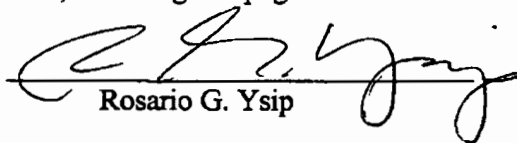
I hereby certify that the following documents in re Application of Timothy TUTTLE et al., Application No. 10/017,182, filed December 14, 2001 for TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK (AS AMENDED) are being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Documents Attached

1. Response to Notice to File Corrected Application Papers (Notice of Allowance Mailed) (2 pages);
2. Copy of Declaration filed June 4, 2002 (2 pages);
3. Copy of Transmittal Form filed June 4, 2002 (1 page);
4. Copy of Responsse to Notice to File Missing Parts of Application (2 pages);
5. Copy of Return Postcard (1 page); and
6. Copy of PTO's Notice to File Corrected Application Papers (1 page).

Number of pages being transmitted, including this page: - 10 -

Dated: February 1, 2006


Rosario G. Ysip

**PLEASE CONFIRM RECEIPT OF THIS PAPER BY
RETURN FACSIMILE AT (415) 576-0300**

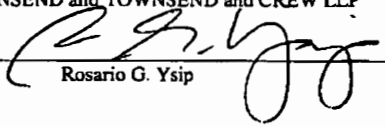
TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, CA 94111-3834
Telephone: 415-576-0200
Fax: 415-576-0300
3891

60693347 v1

I hereby certify that this correspondence is being facsimile transmitted to the Commissioner for Patents, United States Patent and Trademark Office, Fax No. 571-273-9009 on February 1, 2006

PATENT
Docket No.: 022193-090610
(formerly 22726-05935)

TOWNSEND and TOWNSEND and CREW LLP

By: 

Rosario G. Ysip

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Timothy TUTTLE, et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: TECHNIQUES FOR UPDATING
LIVE OBJECTS AT CLIENTS USING A
DYNAMIC ROUTING NETWORK (AS
AMENDED)

Examiner: BAROT, Bharat

Art Unit: 2155

RESPONSE TO NOTICE TO FILE
CORRECTED APPLICATION PAPERS
(Notice of Allowance Mailed)

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

Sir:

In response to the Notice to File Corrected Application Papers after a Notice of Allowance date mailed January 24, 2006, attached are the following:

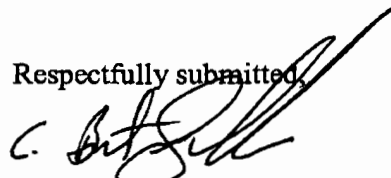
1. Copy of the Declaration submitted in the PTO in Response to Notice to File Missing Parts dated June 4, 2002;
 2. Copy of the Transmittal Form;
 3. Copy of Response to Notice to File Missing Parts of Application;
 4. Copy of postcard indicating that the Declaration was received in the PTO;
- and
5. Copy of PTO's Notice to File Corrected Application Papers.

Timothy TUTTLE, et al.
Application No.: 10/017,182
Page 2

PATENT

In view of the foregoing, Applicants believe the application is now complete and will await PTO's approval to proceed with the Issue Fee. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200.

Respectfully submitted,



C. Bart Sullivan
Reg. No. 41,516

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
CBS:rgy

60692779 v1

COPY

ATTORNEY DOCKET NO. 22726-05935

PTO/SB/01A (10-00)

Approved for use through 10/31/2002. OMB 0851-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- ☐ The attached application or
- ☒ Application No. 10/017,182, filed on December 14, 2001,
- ☐ as amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including material information which became available between the filing date of the prior application and the National or PCT International filing date of the continuation-in-part application, if applicable; and

All statements made herein of my/our knowledge are true, all statements made herein 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 are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF INVENTOR(S)Inventor one: Timothy Tuttle Citizen of: United StatesSignature: [Signature] Date: 5/30/02Inventor two: Robert S. Dreyer Citizen of: United StatesSignature: [Signature] Date: 5/30/02Inventor three: Jeremy S. Lueck Citizen of: United StatesSignature: [Signature] Date: 5/30/02Inventor four: Charles E. Cano Citizen of: United StatesSignature: [Signature] Date: 5-16-02☒ Additional inventors are being named on one additional form attached hereto.

Burden Hour Statement: This collection of information is required by 35 U.S.C. and 37 CFR 1.63. The information is used by the public to file (and the PTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 1 minute to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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ATTORNEY DOCKET NO. 22726-05935

PTO/SB/01A (10-00)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- ☐ The attached application or
- ☒ Application No. 10/017,182, filed on December 14, 2001,
- ☐ as amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including material information which became available between the filing date of the prior application and the National or PCT International filing date of the continuation-in-part application, if applicable; and

All statements made herein of my/our knowledge are true, all statements made herein 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 are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF INVENTOR(S)Inventor one: Paul A. Sorensen Citizen of: United StatesSignature: Paul Sorensen Date: 5/16/02

Inventor two: _____ Citizen of: _____

Signature: _____ Date: _____

Inventor three: _____ Citizen of: _____

Signature: _____ Date: _____

Inventor four: _____ Citizen of: _____

Signature: _____ Date: _____

☐ Additional inventors are being named on _____ additional form attached hereto.

Burden Hour Statement: This collection of information is required by 35 U.S.C. and 37 CFR 1.63. The information is used by the public to file (and the PTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 1 minute to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

0001/PTO Rev. 10/95 TRANSMITTAL FORM <i>(to be used for all correspondence during pendency of filed application)</i>	U.S. Department of Commerce Patent and Trademark Office	Application Number Filing Date First Named Inventor Group Art Unit Number Examiner Name	10/017,182 December 14, 2001 Timothy Tuttle et al. 2151 UNASSIGNED
Total Number of Pages in This Submission	12	Attorney Docket Number	22726-05935

ENCLOSURES (check all that apply)	
☒ Fee Transmittal Form (in duplicate) ☒ Check Enclosed ☒ Return Receipt Postcard ☒ Response to Notice to File Missing Parts ☒ Copy of Notice to File Missing Parts ☒ Declaration ☒ Power of Attorney ☐ Application Data Sheet ☐ Information Disclosure Statement & PTO-1449 ☐ Copies of IDS Cited References ☐ Request for Corrected Filing Receipt ☐ Request for Correction of Recorded Assignment ☐ Amendment/Response: [] Page(s) ☐ After Final ☐ Status Request ☐ Revocation and Substitute Power of Attorney	☐ Issue Fee Transmittal ☐ Letter to Chief Draftsperson ☐ Formal Drawing(s): [] Sheet(s) of Figure(s) [] ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to Group <i>(Appeal Notice, Brief, Reply Brief)</i> ☐ Certified Copy of Priority Document(s) ☐ After Allowance Communication to Group ☒ One Month Extension of Time ☐ ☐ ☐ ☐ ☐ ☐
REMARKS:	

SIGNATURE OF ATTORNEY OR AGENT			
Signature:			
Attorney/Reg. No.:	Brian M. Hoffman, Reg. No. 39,713	Dated:	June 4, 2002

CERTIFICATE OF MAILING			
I hereby certify that this correspondence, including the enclosures identified above, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Missing Parts, Commissioner for Patents, Washington, DC 20231 on the date shown below. If the Express Mail Mailing Number is filled in below, then this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service pursuant to 37 CFR 1.10.			
Signature:			
Typed or Printed Name:	Brian M. Hoffman	Dated:	June 4, 2002
Express Mail Mailing Number (optional):			

22726/05935/SF/5076839.1

COPY**PATENT****IN THE UNITED STATES****PATENT AND TRADEMARK OFFICE**

APPLICANTS: Timothy Tuttle *et al.*
APPLICATION NO.: 10/017,182
FILING DATE: December 14, 2001
TITLE: ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK
EXAMINER: UNASSIGNED
GROUP ART UNIT: 2151
ATTY. DKT. NO.: 22726-05935

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Dated: June 4, 2002

By:

Brian M. Hoffman, Reg. No. 39,713

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WASHINGTON, DC 20231

**RESPONSE TO NOTICE TO FILE MISSING
PARTS OF APPLICATION**

SIR:

Responsive to the Notice to File Missing Parts dated March 4, 2002 received in the above-identified patent application,

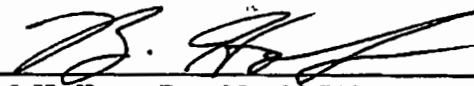
☒ Enclosed are:

- ☒ a copy of the Notice to File Missing Parts;
- ☒ an original, signed Declaration;
- ☒ an original, signed Power of Attorney or Authorization of Agent;
- ☐ an Application Data Sheet;

PATENT

COPY☒ payment in the amount of \$793.00 for the☒ application filing fee;☒ fee for additional claims;☒ missing parts surcharge; and☒ fee for one month extension of time.☐ Other☒ Applicant claims small entity status under 37 C.F.R. § 1.27.

Respectfully submitted,

TIMOTHY TUTTLE *et al.*Dated: June 4, 2002By: 

Brian M. Hoffman, Reg. No. 39,713

Attorney for Applicants

Fenwick & West LLP

Two Palo Alto Square

Palo Alto, CA 94306

Tel.: (415) 875-2484

Fax: (415) 281-1350

COPY

Date Mailed: June 4, 2002	Atty/Sec: BMH:paf	Filing Date: December 14, 2001
Application No.: 10/017,182	Docket No.: 22726-05935	
Applicants: Timothy Tuttle <i>et al.</i>		
Title: ASYNCHRONOUS MESSAGING USING A DYNAMIC ROUTING NETWORK		

Please Imprint Patent Office "date stamp" hereon to indicate receipt and then return card to addressee

☐ ___ pages of Specification, Claims & Abstract	☐ Request and Certification under 35 U.S.C. 122(b)(2)(B)(i)
☐ ___ sheets of informal drawings	☐ Amendment/Response
☐ Provisional Application Cover Sheet	☒ Response to Notice to File Missing Parts
☐ New Utility Application Transmittal	☒ Copy of Notice to File Missing Parts
☒ Transmittal	☒ One Month Extension of Time
☒ Fee Transmittal (in duplicate)	☐ Issue Fee Transmittal
☒ Declaration	☐ Letter to Chief Draftsperson
☒ Power of Attorney or Authorization of Agent	☐ Request for Certificate of Correction
☐ Assignment & Recordation Cover Sheet	☒ Small Entity Assertion Under 37 CFR 1.27
☐ CPA Request Transmittal	☒ First Class Certificate of Mailing
☐ Application Data Sheet	☒ Box Missing Parts
☒ Check No. 2138 for \$793.00	☐ Express Mail No.

Other: _____

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JUN 12 2002
PATENT & TRADEMARK OFFICE

22726-05935

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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

Serial Number
10017182

Date Mailed
1/24/06

NOTICE TO FILE CORRECTED APPLICATION PAPERS***Notice of Allowance Mailed***

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given 30 days from the mail date of this Notice within which to correct the informalities indicated below. A failure to reply will result in the application being ABANDONED. This period for reply is NOT extendable under 37 CFR 1.136 (a) or (b).

- ♦ The oath/declaration is missing from the application. Fax missing information to number below or e-mail.
- o For status updates visit <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR System, contact the Electronic Business Center (EBC) toll free at 866-217-9197.

APPLICANT MUST SUPPLY MISSING INFORMATION WITHIN 30 DAYS OF THE MAIL DATE OF THIS NOTICE.

A copy of this notice **MUST** be returned with the reply. Please address response to Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

A handwritten signature in black ink, appearing to read "Rori Burch", written over a horizontal line.

Rori Burch
USPTO
Publishing Division
Rori.burch@uspto.gov
Fax (571) 273-9009
Fax (703) 308-6642
703-305-0333 ext.135 (V)



02-06-06

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail****Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax** (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the **ISSUE FEE** and **PUBLICATION FEE** (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Please use Block 1 for any change of address)

20350 7590 11/10/2005

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Rosario G. Ysip	(Depositor's name)
<i>[Signature]</i>	(Signature)
February 3, 2006	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,182	12/14/2001	Timothy Tuzilo	22726-05935	5890

TITLE OF INVENTION: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$1400 ~~\$700~~	\$300	\$1700 ~~\$1000~~	02/10/2006
EXAMINER	ART UNIT	CLASS-SUBCLASS			
BAROT, BHARAT	2155	709-203000			

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list: **TOWNSEND AND TOWNSEND**

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

AND CREW, LLP

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

BANG NETWORKS, INC.

(B) RESIDENCE (CITY AND STATE OR COUNTRY)

San Francisco, CAPlease check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number **20-1430** (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims **SMALL ENTITY** status. See 37 CFR 1.27. ☒ b. Applicant is no longer claiming **SMALL ENTITY** status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

*[Signature]*Date **February 3, 2006**Typed or printed name **C. Bart Sullivan**Registration No. **41,516**

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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PTOL-85 (Rev. 07/05) Approved for use through 04/30/2007.

OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

02/07/2006 MBIZUNE2 00000070 201430 10017182

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02 FC:1504 300.00 DA**BEST AVAILABLE COPY**

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

Page 155 of 185



PTO/SB/21 (09-04)

TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/017,182	
	Filing Date	December 14, 2001	
	First Named Inventor	Tuttle, Timothy	
	Art Unit	2155	
	Examiner Name	Barot, Bharat	
Total Number of Pages in This Submission	- 11 -	Attorney Docket Number	022193-090610US

ENCLOSURES (Check all that apply)		
☐ Fee Transmittal Form	☒ Drawing(s) - Replacement sheets (7) of Figs. 1 - 8.	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☐ Amendment/Reply	☐ Petition	☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☒ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	Letter to Official Draftsperson (1 page)
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	Return Postcard
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)	Remarks	The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.
☐ Reply to Missing Parts/ Incomplete Application		
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Townsend and Townsend and Crew LLP		
Signature			
Printed name	C. Bart Sullivan		
Date	February 3, 2006	Reg. No.	41,516

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Signature			
Typed or printed name	Rosario G. Yslip	Date	February 3, 2006

60694977 v1

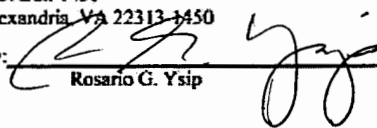


"Express Mail" Label No. EV 566970225 US
Date of Deposit February 3, 2006

PATENT
Attorney Docket No.: 022193-090610US

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Alexandria, VA 22313-1450

By: 

Rosario G. Ysip

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Timothy Tuttle, et al.

Application No.: 10/017,182

Filed: December 14, 2001

For: TECHNIQUES FOR UPDATING
LIVE OBJECTS AT CLIENTS USING A
DYNAMIC ROUTING NETWORK

Customer No.: 20350

Examiner: Barot, Bharat

Art Unit: 2155

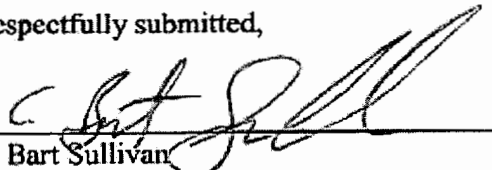
LETTER TO OFFICIAL DRAFTSPERSON

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

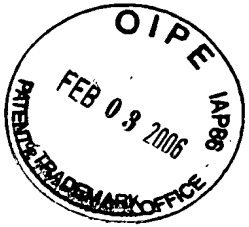
Sir:

Applicant submits seven (7) sheets of formal drawings to be made of record in the above-identified case.

Respectfully submitted,


C. Bart Sullivan
Reg. No. 41,516

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
(415) 576-0200
Fax (415) 576-0300
CBS/rgy
60694970 v1



1/7

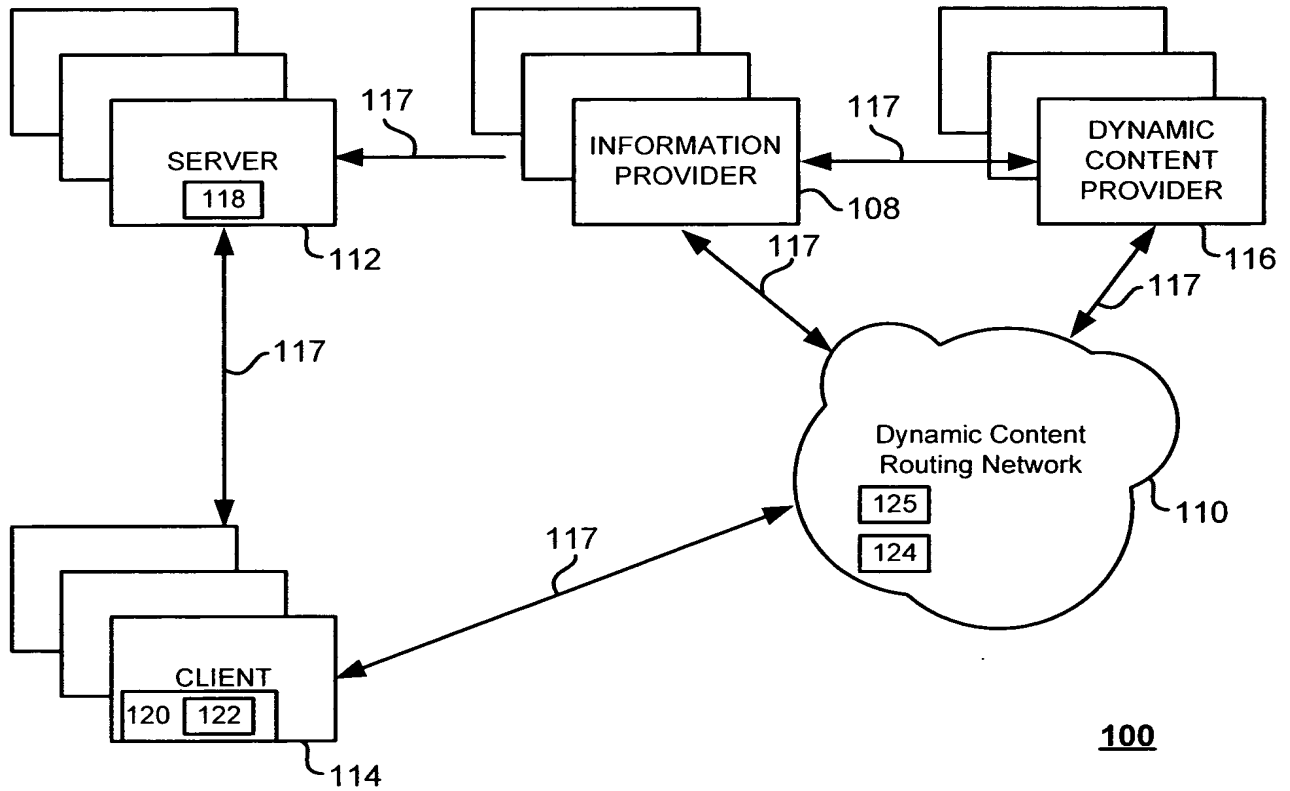


Fig. 1

2/7

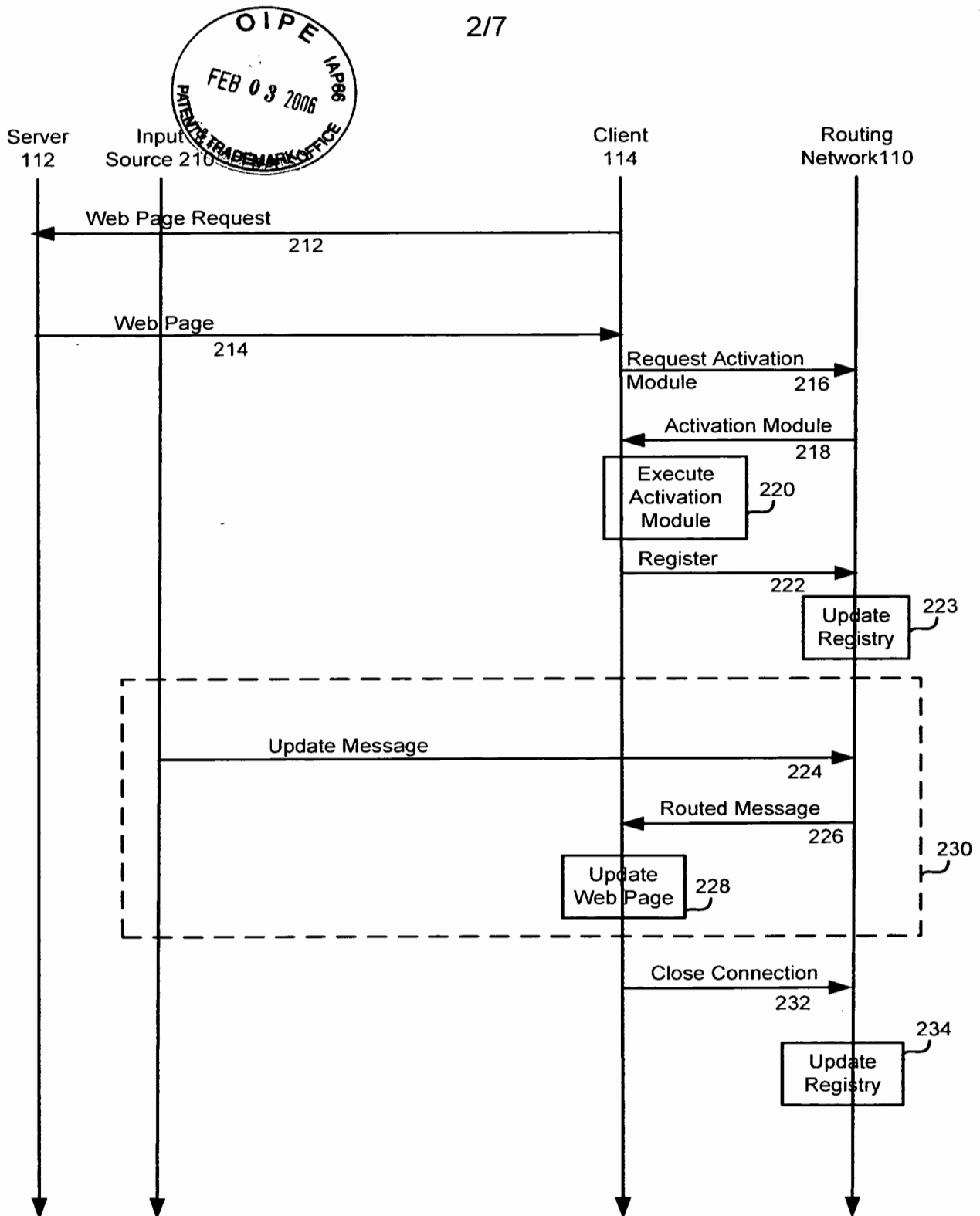


Fig. 2



3/7

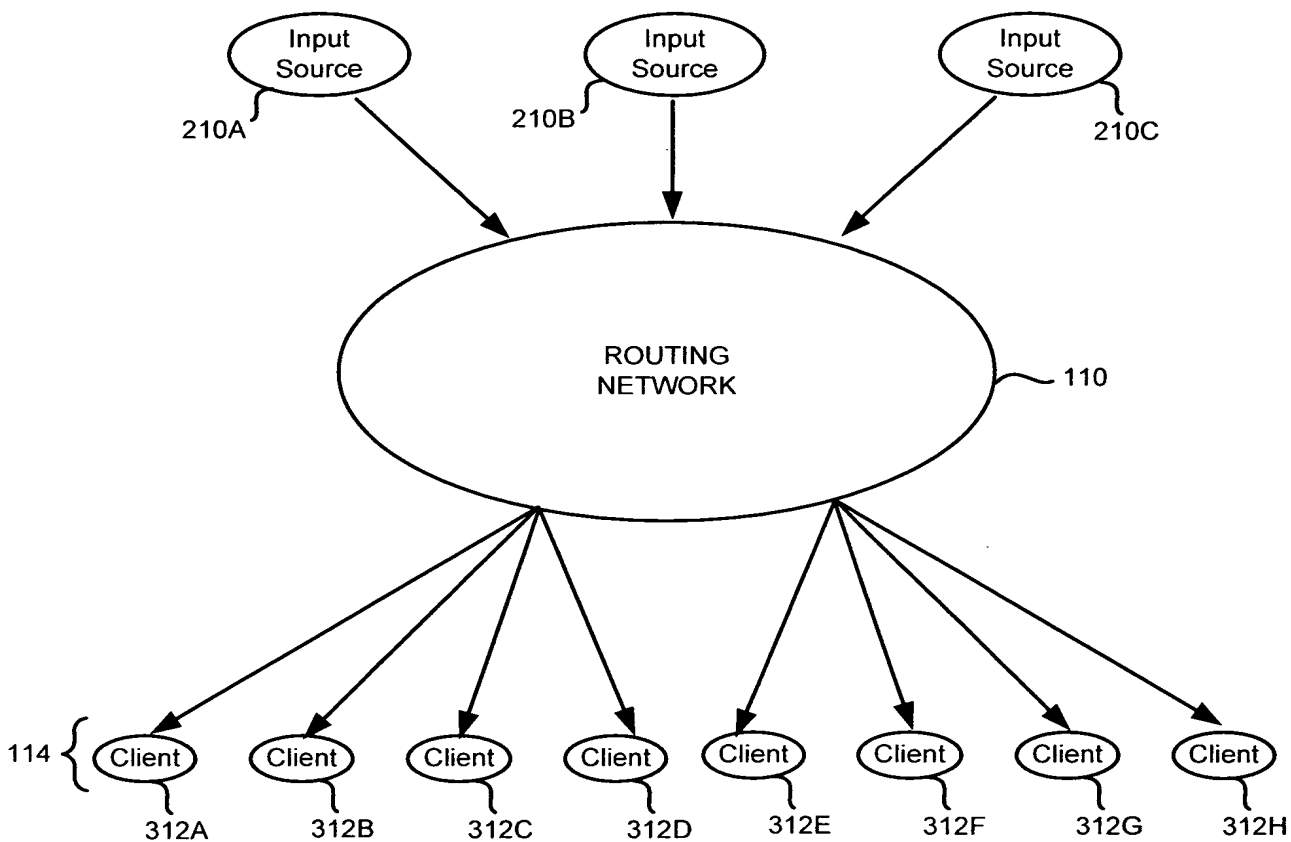


Fig. 3

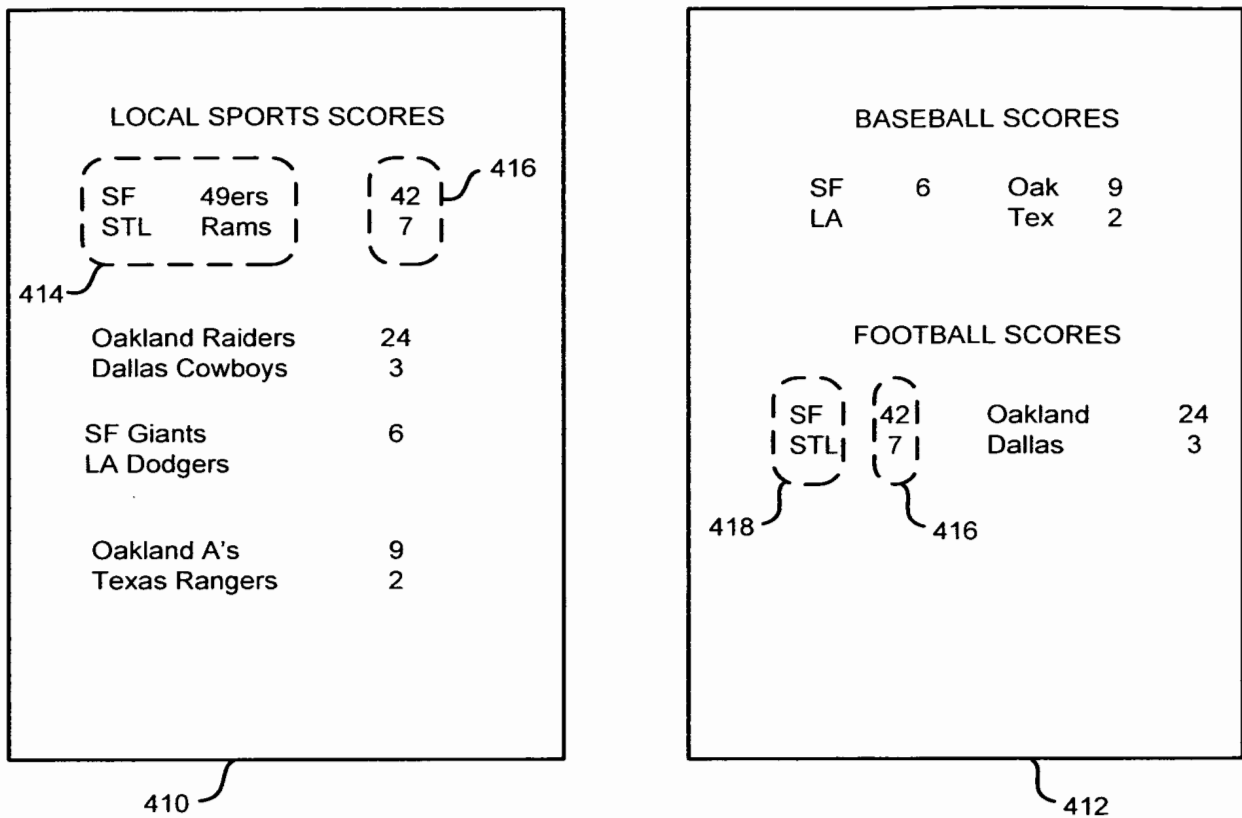


Fig. 4

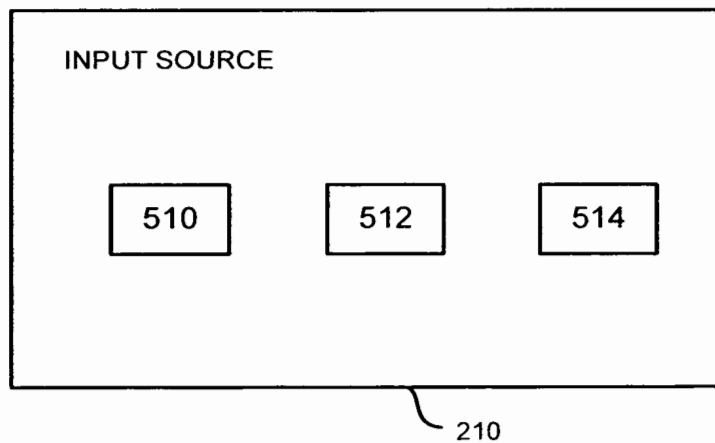


Fig. 5



5/7

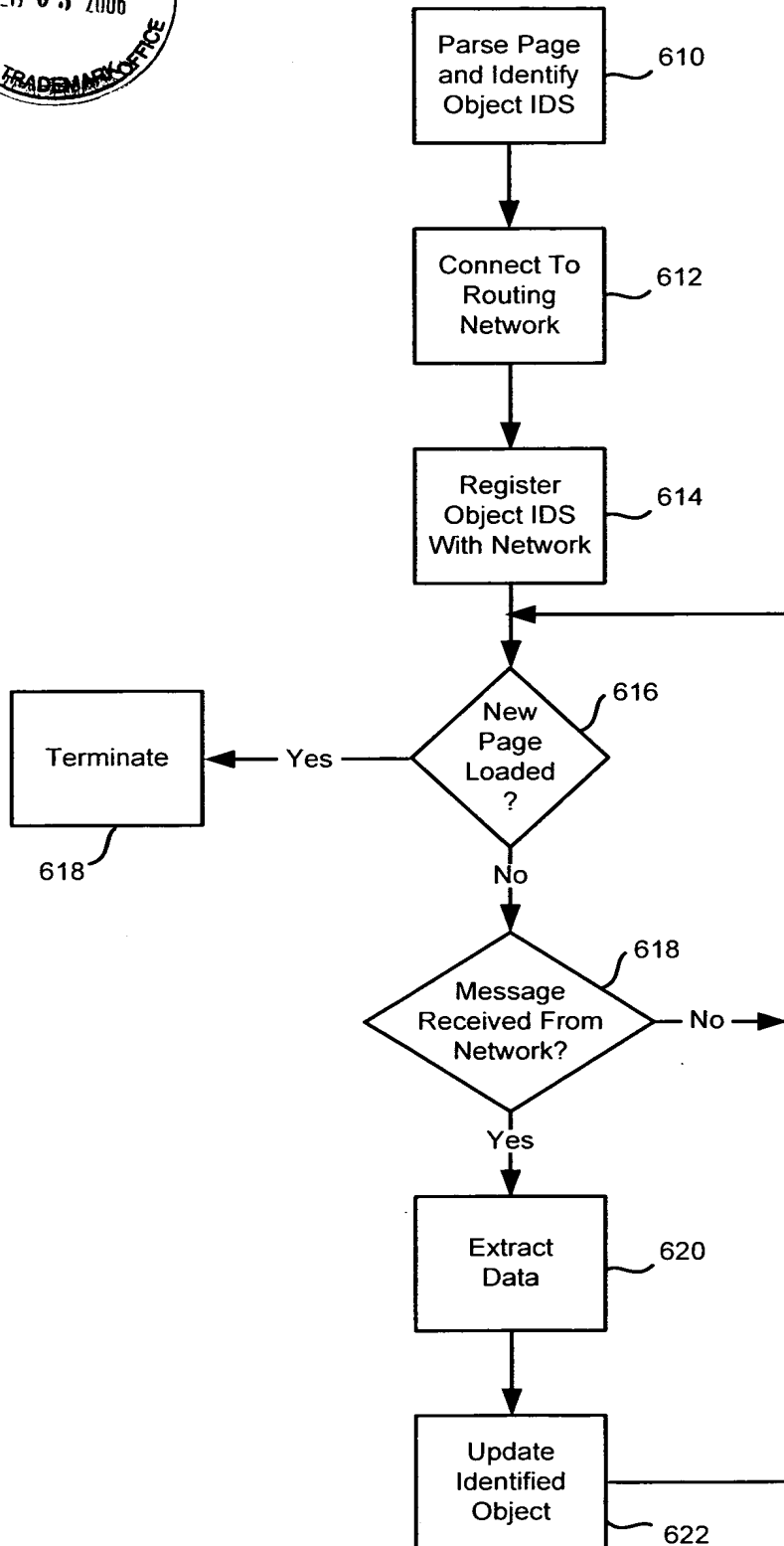


Fig. 6



6/7

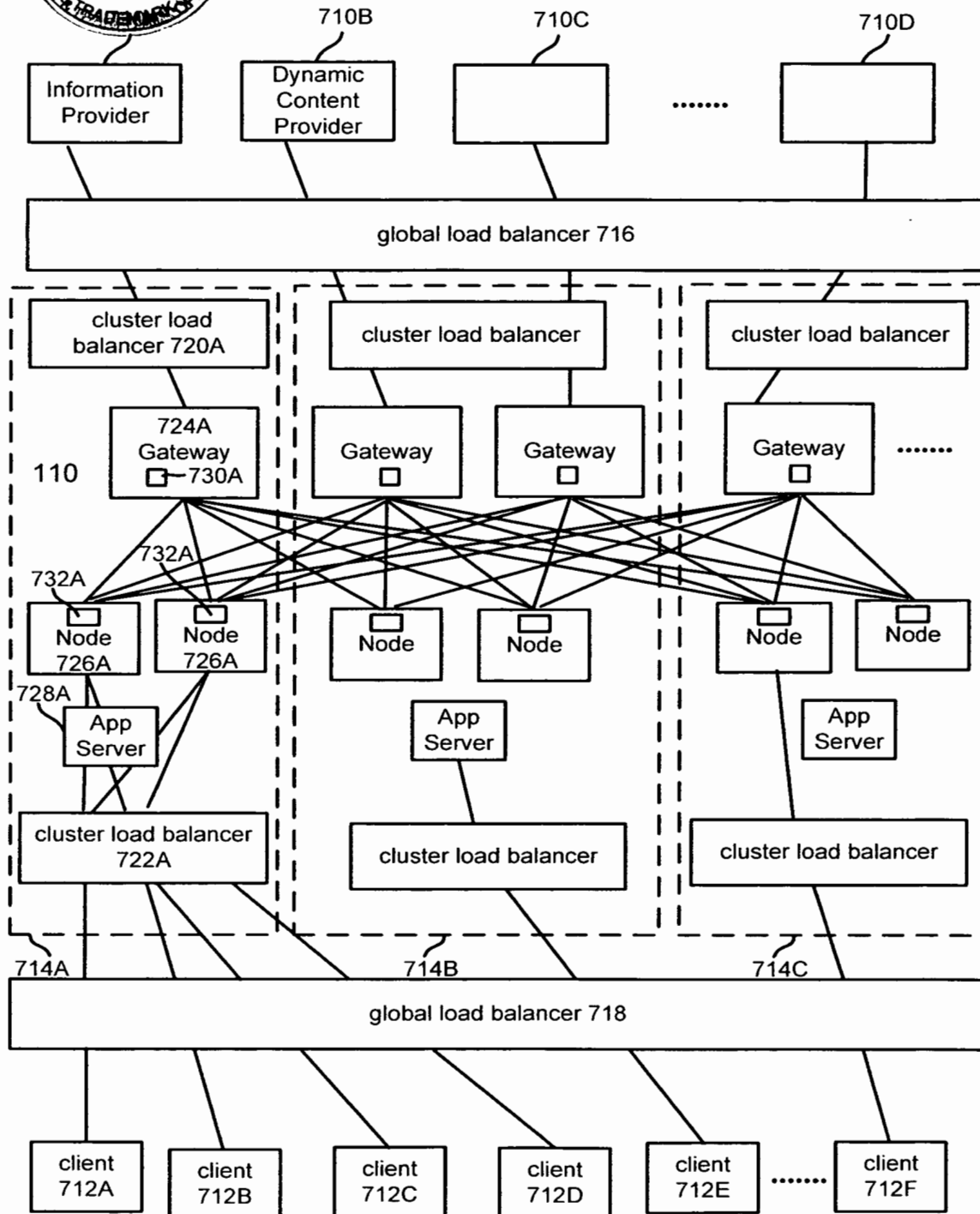


Fig. 7

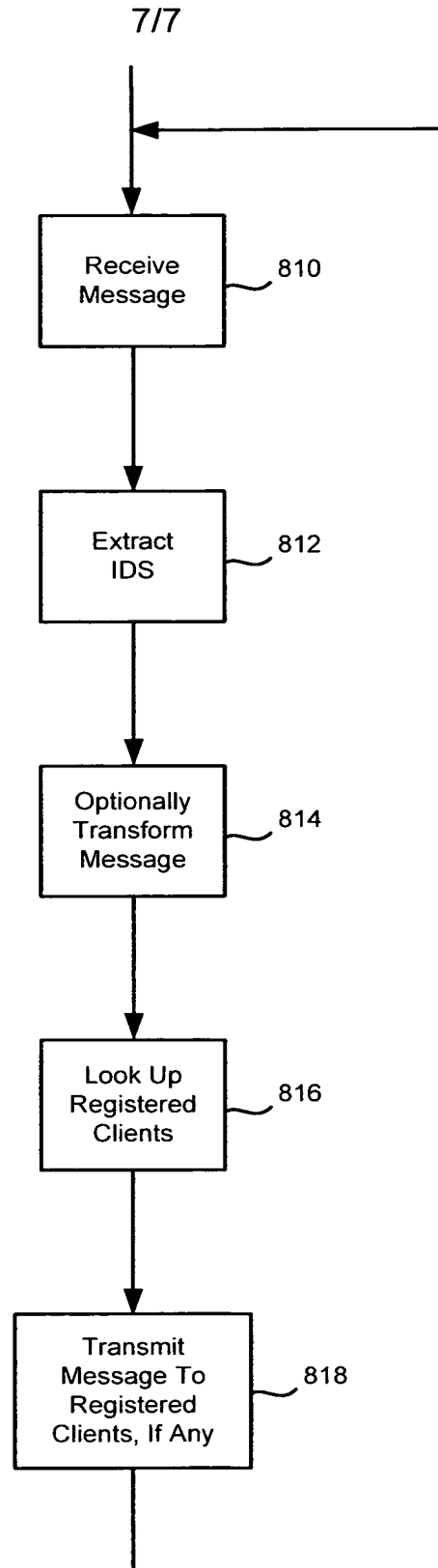


Fig. 8



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

BIBDATASHEET

CONFIRMATION NO. 5890

Bib Data Sheet

SERIAL NUMBER 10/017,182	FILING DATE 12/14/2001 RULE	CLASS 709	GROUP ART UNIT 2155	ATTORNEY DOCKET NO. 22726-05935
APPLICANTS Timothy Tuttle, San Francisco, CA; Robert S. Dreyer, San Francisco, CA; Jeremy S. Lueck, San Francisco, CA; Charles E. Cano, San Francisco, CA; Paul A. Sorensen, San Francisco, CA;				
** CONTINUING DATA ***** This appln claims benefit of 60/256,613 12/18/2000 and claims benefit of 60/276,847 03/16/2001 and claims benefit of 60/278,303 03/21/2001 and claims benefit of 60/279,608 03/28/2001 and claims benefit of 60/280,627 03/29/2001				
** FOREIGN APPLICATIONS *****				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 01/11/2002				
Foreign Priority claimed ☐ yes ☐ no 35 USC 119 (a-d) conditions ☐ yes ☐ no ☐ Met after met Allowance Verified and Acknowledged		STATE OR COUNTRY CA	SHEETS DRAWING 8	TOTAL CLAIMS 49 INDEPENDENT CLAIMS 4
ADDRESS 20350 TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO , CA 94111-3834				
TITLE TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK				

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		☐ 1.17 Fees (Processing Ext. of time)
		☐ 1.18 Fees (Issue)
		☐ Other _____
		☐ Credit

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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒

Practitioners associated with the Customer Number:

26111

OR

☐

Practitioner(s) named below (If more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

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☒

The address associated with Customer Number:

26111

OR

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City

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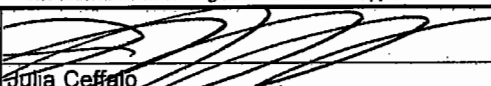
Assignee Name and Address:

Shaw Parsing LLC
2215-B Renaissance Drive, Suite 5
Las Vegas, NV 89119

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	24 MAY 2007
Name	Julia Cefalo	Telephone	
Title	Authorized Person for Shaw Parsing LLC		

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

2222.7750005

Applicant/Patent Owner: Timothy Tuttle et al.Application No./Patent No.: 7,043,525 Filed/Issue Date: May 9, 2006Entitled: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORKShaw Parsing LLC, a Limited Liability Company
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is _____ %)

in the patent application/patent identified above by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

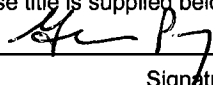
1. From: Timothy Tuttle et al. To: Bang Networks, Inc.
The document was recorded in the United States Patent and Trademark Office at
Reel 012982, Frame 0112, or for which a copy thereof is attached.
2. From: Bang Networks, Inc. To: Shaw Parsing LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 014790, Frame 0220, or for which a copy thereof is attached.
3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.


Signature

Glenn J. Perry, Registration No. 28,458

Printed or Typed Name

Authorized Person

Title

6-7-2007
Date

202.371.2600

Telephone Number

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	1852672
Application Number:	10017182
International Application Number:	
Confirmation Number:	5890
Title of Invention:	TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK
First Named Inventor/Applicant Name:	Timothy Tuttle
Customer Number:	20350
Filer:	Glenn J. Perry/Nihad Heto
Filer Authorized By:	Glenn J. Perry
Attorney Docket Number:	22726-05935
Receipt Date:	08-JUN-2007
Filing Date:	14-DEC-2001
Time Stamp:	11:26:30
Application Type:	Utility

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1		22227750005poaandstatem entunder373b.pdf	101008	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Power of Attorney	1	1
	Assignee showing of ownership per 37 CFR 3.73(b).	2	2
Warnings:			
Information:			
Total Files Size (in bytes):		101008	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

26111
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

CONFIRMATION NO. 5890



Date Mailed: 06/19/2007

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/08/2007.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
OFFICE COPY



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	22726-05935

20350
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

CONFIRMATION NO. 5890



OC000000024423408

Date Mailed: 06/19/2007

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/08/2007.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
OFFICE COPY

Bang
IP Group 0046

TO PROSECUTE APPLICATIONS BEFORE THE USPTO

of attorney given in the application identified in the attached statement under

I hereby appoint:

☒ Practitioners associated with the Customer Number:

86636

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☒ The address associated with Customer Number:

86636

OR

☐ Firm or Individual Name

Address

City

State

Zip

Country

Telephone

Email

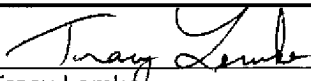
Assignee Name and Address:

Zarbana Digital Fund LLC
2711 CENTERVILLE ROAD
SUITE 400
WILMINGTON, DELAWARE, 19808

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

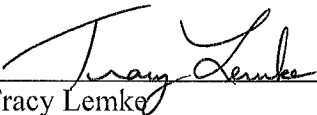
Signature		Date	3/30/17
Name	Tracy Lemke	Telephone	
Title	Authorized Person for Zarbana Digital Fund LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DECLARATION REGARDING AUTHORITY TO SIGN
ON BEHALF OF A LEGAL ENTITY
37 C.F.R. 3.73(b)(2)(i)

I, Tracy Lemke (whose title is supplied below), hereby declare that I am authorized to sign documents on behalf of Zarbaña Digital Fund LLC



Tracy Lemke

Authorized Person for Zarbaña Digital Fund LLC

3/30/16

Date

Electronic Acknowledgement Receipt

EFS ID:	29138456
Application Number:	10017182
International Application Number:	
Confirmation Number:	5890
Title of Invention:	TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK
First Named Inventor/Applicant Name:	Timothy Tuttle
Customer Number:	26111
Filer:	Carl Irwin Brundidge/Nora Colston
Filer Authorized By:	Carl Irwin Brundidge
Attorney Docket Number:	2222.7750005
Receipt Date:	08-MAY-2017
Filing Date:	14-DEC-2001
Time Stamp:	11:42:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	3976_373.pdf	430019	no	2
			eed113c7dfd81679f320c887cd367d2b3684abe		

Warnings:

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

Information:					
2	Power of Attorney	Bang_PoA.pdf	57066	no	2
			8031626eed6d146f8b48bc6af921caaca9aa eab0		
Warnings:					
Information:					
			Total Files Size (in bytes):		
			487085		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: ZARBAÑA DIGITAL FUND LLC

Application No./Patent No.: 7043525 Filed/Issue Date: 05/09/2006

Titled: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK

ZARBAÑA DIGITAL FUND LLC, a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: TUTTLE, TIMOTHY, et al To: BANG NETWORKS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 01298, Frame 0112, or for which a copy thereof is attached.

2. From: BANG NETWORKS, INC. To: SHAW PARSING LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 014790, Frame 0220, or for which a copy thereof is attached.

3. From: SHAW PARSING LLC To: ZARBAÑA DIGITAL FUND LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 037219, Frame 0324, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/David S. Lee/

Signature

May 8, 2017

Date

David S. Lee

Printed or Typed Name

Patent Attorney for Applicant

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

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Page 177 of 185

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	

86636
BRUNDIDGE & STANGER, P.C.
2318 MILL ROAD, SUITE 1020
ALEXANDRIA, VA 22314

CONFIRMATION NO. 5890
POA ACCEPTANCE LETTER



Date Mailed: 05/12/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/08/2017.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/jtfitzhugh sr/



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/017,182	12/14/2001	Timothy Tuttle	2222.7750005

26111
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

CONFIRMATION NO. 5890
POWER OF ATTORNEY NOTICE



Date Mailed: 05/12/2017

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/08/2017.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/jtfitzhugh sr/

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)First Named Inventor/Patent Owner: INTELLECTUAL VENTURES I LLCApplication No./Patent No.: 7,043,525 Filed/Issue Date: May 9, 2006Titled: TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORKINTELLECTUAL VENTURES I LLC, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached*.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Timothy Tuttle, Robert S. Dreyer, Jeremy S. Lueck, Charles E. Cano and Paul A. Sorensen To: Bang Networks, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 012982, Frame 0112, or for which a copy thereof is attached*.

2. From: Bang Networks, Inc. To: Shaw Parsing LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 014790, Frame 0220, or for which a copy thereof is attached*.

[Page 1 of 2]

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0031. Public burden for this form is estimated to average 12 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PETITIONERS - AMERICAN/SOUTHWEST, Exhibit 1015

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Page 181 of 185

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)3. From: Shaw Parsing LLC To: Zarbana Digital Fund LLCThe document was recorded in the United States Patent and Trademark Office at
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[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Brandon R. Theiss

Signature

/Brandon R. Theiss/

Printed or Typed Name

October 4, 2024

Date

70,507

Title or Registration Number

[Page 2 of 2]



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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
10/017,182	10/04/2024 04:33:11 PM Z ET	-

Title of Invention

TECHNIQUES FOR UPDATING LIVE OBJECTS AT CLIENTS USING A DYNAMIC ROUTING NETWORK

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	7043525
CONFIRMATION #	5890	FILED BY	Margaret Ferello
PATENT CENTER #	67436081	FILING DATE	12/14/2001
CUSTOMER #	86636	FIRST NAMED INVENTOR	Timothy Tuttle
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Brandon Theiss

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IVIPR-RE90019662_Power_to_Prosecute_pc.pdf	1	Power of Attorney	536 KB
Warning: The PDF file has been signed with a digital signature and the legal effect of the document will be based on the contents of the file not the digital signature.			
7043525_Statement_3_73c_pc.pdf	2	Assignee showing of ownership per 37 CFR 3.73	412 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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IVIPR- RE90019662_Power_to_Prose cute_pc.pdf	8723B76C96B3D70A6D7D1E2568404DB76BD4E9AB3284779E9 C21BB4931C1FA888F2865DB1F1935D8B0D3230809DBC30A2F A56E3E83FF37A0F2AFEAO0C91ED7286
7043525_Statement_3_73c_pc. pdf	25E2A56FE6B27B6C9D75DA7CF134C02040D34C3F399C911F E260D48A994A96CC211BF204E23262B9023AB9806D85060538 8DC8AECE97AD2B3998B288D124330C

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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I hereby appoint:

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Practitioners associated with Customer Number:

03624

OR

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Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

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03624

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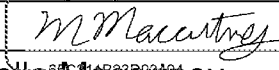
Email

Assignee name and address: INTELLECTUAL VENTURES I LLC
251 Little Falls Drive
Wilmington, DE 19808

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature		Date	10/1/2024 9:10 PM EDT
Name	Michelle Macartney	Telephone	
Title Assistant Company Secretary			

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