(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 August 2010 (12.08.2010)

PCT

(10) International Publication Number
WO 2010/091370 A2

(51) **International Patent Classification**:
G06F 9/44 (2006.01) *G06F 3/048* (2006.01)
G06F 15/00 (2006.01) *G06F 17/00* (2006.01)

(21) **International Application Number**:
PCT/US2010/023518

(22) **International Filing Date**:
8 February 2010 (08.02.2010)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
61/151,085 9 February 2009 (09.02.2009) US

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(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

[Continued on next page]

(54) **Title**: SYSTEMS AND METHODS TO CAPTURE DISPARATE INFORMATION

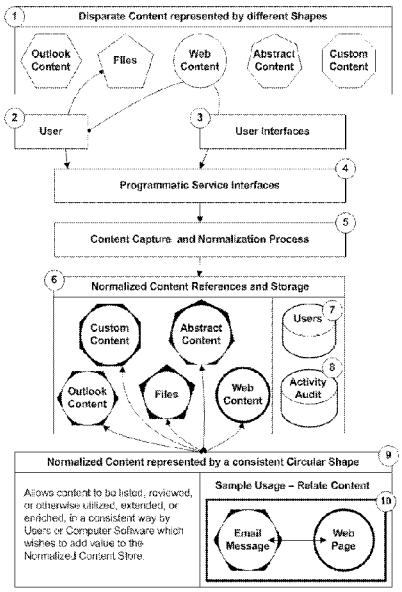

FIG. 14

(57) **Abstract**: Information capture systems and methods are disclosed for identifying and normalizing disparate information such as electronic content. Embodiments of the systems and methods provide a common format and a single location where the information can be referenced for the purpose of providing later access or restoring the prior context. Using unique content identifiers and universal resource identifiers to normalize information sets, embodiments include capturing, storing and accessing disparate information or content over data networks or on local processor based devices. Embodiments also include systems and methods to enrich and share the disparate information.

WO 2010/091370 A2

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

TITLE OF THE INVENTION:
SYSTEMS AND METHODS TO CAPTURE DISPARATE INFORMATION

CROSS-REFERENCE TO RELATED APPLICATIONS:

[0001] The present application claims the benefit of U.S. Provisional Application Ser. No. 61/151,085, filed Feb. 9, 2009, entitled "SYSTEMS AND METHODS OF OPTIMIZING THE FORMULATION, EVOLUTION, AND EXPLOITATION OF ELECTRONIC INFORMATION COMPOUNDS", the content of which is herein incorporated herein by reference in its entirety.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT:

[0002] Not Applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX

[0003] Not Applicable

BACKGROUND OF THE INVENTION:

[0004] Field of the Invention:

[0005] The present invention relates generally to improved systems and methods for storing and accessing information, in particular the invention relates to processor based systems and methods for storing and accessing information sets having different data formats.

[0006] Description of Related Art:

[0007] Currently, different types of electronic content are stored and managed in disparate data storage locations requiring the user to search and traverse multiple locations to locate information. For a computer user in an enterprise location, to do their work, they have to access several different systems to access information based on the format of the information and the interface for that system. For a personal computer user, they also have to access several different systems to access information important to them. For example, they open up one client

interface for accessing the Internet (e.g. Microsoft IE), they open up another client interface to access email (e.g. Microsoft Outlook) and other applications that may be specific to their work such as accounting programs, word processing programs. Even if some of these information sources can be access by one type of interface, such as a web browser, that type of interface still has different interfaces (i.e. different tabs in IE) to view that different content.

[0008] Because the information from these systems is disparate, and stored in different systems, users do not have an easy way to store or recreate the recreate the context in which the content may have previously been encountered. For example, the context of the information may include when this content was previously acted upon, who acted upon it, and why they may have acted upon it.

SUMMARY OF THE INVENTION:

[0009] The following summary is included only to introduce some concepts discussed in the Detailed Description below. This summary is not comprehensive and is not intended to delineate the scope of protectable subject matter.

[0010] According to one embodiment of the invention there is provided a method to normalize an information set, the method comprising the steps of receiving a first information set having at least one first information characteristic, receiving a second information set having at least one second information characteristic at least one of the first and second information characteristics corresponding to at least one normalizing characteristic and storing in a memory the first and second information characteristics to a set of normalized fields according to the normalizing characteristic to create a first and second normalized information set.

[0011] According to another embodiment of the invention, there is provided the method wherein the normalizing characteristic comprises a data format of the information set such as the a first information set comprising an http information set and the second information set comprising a local file information set. Embodiments may also include the method further comprising the step of mapping the information characteristics to the normalized fields according to the normalizing characteristics.

[0012] According to yet another embodiment of the invention, the method further comprises the step of automatically identifying the information characteristics corresponding to the normalizing characteristics.

[0013] According to still another embodiment of the invention, the method further comprises the step of generating a mark of the information set and the mark can be defined as an alias of a resource identifier of the at least one of the information set.

[0014] According to other embodiments of the invention, the methods further comprise the step of generating a mark of at least one of the information sets wherein the normalized information set comprises a uniform resource identifier from the at least one information characteristic.

[0015] According to one embodiment of the invention there is provided a method to reference an information set, the method comprising the steps of receiving a first information set having a set of first information characteristics receiving a second information set having a set of second information characteristics, at least one of the first information characteristics and at least one of the second information characteristics corresponding to at least one normalizing characteristic, storing in a memory at least one of the first information characteristics and at least one of the second information characteristics to a set of normalized fields according to the normalizing characteristic to create a first normalized information set and second normalized information set and communicating a first and second mark of the first and second normalized information set respectively to the memory whereby the first information set can be referenced according to the first mark and the second information set can be referenced according to the second mark.

[0016] According to another embodiment of the invention, there is provided the method wherein the information sets can be referenced through a single graphic user interface of a computing device.

[0017] According to one embodiment of the invention there is provided a capture system for normalizing an information set comprising a means to receive a first and second information set each having a set of information characteristics, at least one of the first information characteristics and one of the second information characteristics corresponding to at least one normalizing characteristic and a means to store in a memory at least one of each of first and second information characteristics to a normalized field according to the normalizing characteristic to create a first and second normalized information set.

[0018] According to another embodiment of the invention, there is provided the capture system wherein the means to receive a first and second information set comprises a

programmatic interface module of computer readable program code, the means to store the at least one of the first and second information characteristics to a normalized field comprises a normalizing module of computer readable program code capable of executing method steps to store the information characteristics in a reference table in the memory and the capture system further comprises an identification module of computer readable program code capable of executing method steps to automatically identify one of the first and second information characteristics that corresponds to the normalizing characteristic.

[0019] According to yet another embodiment of the invention, there is provided the capture system wherein the programmatic interface module is provided in a client subsystem; and the client subsystem comprises a capture interface of computer readable program code to communicate an information set having at least one information characteristic and the capture interface capable of communicating the information characteristic that corresponds to at least one normalizing characteristic.

[0020] According to one embodiment of the invention there is provided a computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for normalizing an information set, said method comprising providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module and a normalization module, receiving with the programmatic service interface module a first and second information set each having at least one information characteristic, recognizing with the normalization module the first and second information characteristic that corresponds to at least one normalizing characteristic and storing in a memory with the normalization module at least one of each of the first and second information characteristics to a normalized field according to the normalizing characteristic to create a first and second normalized information set each normalized according to the at least one normalizing characteristic.

[0021] According to yet another embodiment of the invention, the computer program product further comprises an identification software module capable of automatically recognizing the first and second information characteristic corresponding to the at least one normalizing characteristic and an activity audit software module capable of auditing the storing in the memory.

[0022] According to one embodiment of the invention there is provided a processor based method of enriching an information set, the methods comprising the sets of receiving a transaction to enrich a first information set stored in a memory with a second information set, the first information set having a unique content identifier, ensuring the second information set has a unique content identifier and relating the first unique content identifier with the second unique content identifier to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

[0023] According to another embodiment of the invention, there is provided an enrichment method wherein the first and second information set have a first and second data format respectively.

[0024] According to other embodiments of the invention, there is provided enrichment methods wherein at least one of the first and second information set is a comment, at least one of the first and second information set is a rating, the transaction to enrich comprises a command from a user interface presented by the system at a local computer desktop interface or the request to enrich comprises a drag and drop command from a web browser user interface.

[0025] According to yet another embodiment of the invention, there is provided an enrichment method wherein the unique content identifier is a field in a content reference table and the content reference table may comprise fields such as a unique content identifier and a uniform resource identifier.

[0026] According to still another embodiment of the invention, there is provided an enrichment method wherein the unique relationship identifier is a field in a content relationship table and the content relationship table may comprise fields such as a unique relationship identifier, a unique content identifier of the first information set and a unique content identifier of the second information set.

[0027] According to one embodiment of the invention there is provided a processor based method of accessing an enriched information set, the method comprising the steps of receiving inquiry transaction to access a first information set, the first information set having a first unique content identifier, accessing the first information set from a memory according to the first unique content identifier, relating the first unique content identifier with the second unique content identifier using a unique relationship identifier and enriching the first information set with the second information set.

[0028] According to another embodiment of the invention, there is provided methods to access enriched information wherein the first and second information sets have a first and second data format respectively, at least one of the first and second information set is a comment or a rating and the unique content identifier and unique relationship identifier is a field in a content reference table.

[0029] According to one embodiment of the invention there is provided a processor based system for of enriching an information set, the system comprising a means for receiving a transaction to enrich a first information set stored in a memory with a second information set, the first information set having a unique content identifier, a means for ensuring the second information set has a unique content identifier and a means for relating the first unique content identifier with the second unique content identifier to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

[0030] According to one embodiment of the system, the system is provided wherein the means to receive a first and second information set comprises a programmatic interface module of computer readable program code, the means for ensuing the second information set has a unique content identifier comprises a normalization module and the means for relating the first and second information set comprise a relationship module capable of creating and storing the relationship in a content relationship table in memory. In some embodiment, the system further comprises a normalization module of computer readable program code capable of automatically normalizing the second information set according to an information characteristic that corresponds to a normalizing characteristic.

[0031] According to one embodiment of the invention there is provided a computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for enriching an information set, said method comprising the steps of providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module, an enrich module, a normalization module and a database interface module, receiving a transaction to enrich a first information set stored in a memory with a second information set with the programmatic service interface module, the first information set having a unique content identifier, ensuring the second information set has a unique content identifier with a normalization module and relating the first

unique content identifier with the second unique content identifier with the enrich module to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

[0032] In another embodiment of the invention, there is provided the computer program product wherein the first information set has a first data format and the second information set has a second data format. In some embodiments, the program product further comprises a single graphical user interface module allowing selective transactions to enrich the first information set with at least one user.

[0033] According to one embodiment of the invention there is provided a processor based method for sharing normalized information, the methods comprising the steps of mapping from a memory a user identification field to a group identification field the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users, mapping the user identification field and the group identification field corresponding to a security identification field, the security identification field corresponding to a security community and mapping at least one normalized information set to the security identification field whereby the normalized information set can be shared with the at least one user according to the security community.

[0034] In another embodiment of the invention, there is provided the sharing method wherein the normalized information set includes a first information set having a first data format and a second information set having a second data format.

[0035] In yet another embodiment of the invention, there is provided the sharing method further comprising a single graphical user interface allowing selective sharing of the normalized information set with the at least one user. The single graphical user interface may further comprises a shared canvas having a publishable insight portion and a private insight portion, the publishable insight panel allowing the user to selectively share at least one information set with a data network and the private insight panel allowing selective sharing of at least one information set with the security community.

[0036] In other embodiments of the invention, the methods may further include the single graphical user interface comprising a web exploration inquiry model allowing a query of the shared normalized information set, the single graphical user interface allowing sharing of at least one information set with a data network, the shared canvas further comprising a user interface

allowing the creation of a relationship between the information sets, and the shared canvas further comprising an ordered list field allowing selective ordering of the relationships.

[0037] According to one embodiment of the invention there is provided a processor based system for sharing normalized information, the system comprising a means for mapping from a memory a user identification field to a group identification field, the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users, the user identification field and the group identification field corresponding to a security identification field, the security identification field corresponding to a security community and a means for mapping at least one normalized information set to the security identification field whereby the normalized information can be shared with the at least one user according to the security community.

[0038] According to another embodiment of the invention, there is provided the sharing system wherein the means for mapping from a memory comprises a sharing module of computer readable program code and the means for mapping at least one normalized information set to the security identification field comprises the sharing module.

[0039] According to yet another embodiment of the invention, there is provided the sharing system wherein the sharing module further comprises a single graphical user interface further having a shared canvas having a publishable insight portion and a private insight portion, the publishable insight panel allowing the user to selectively share at least one information set with a data network and the private insight panel allowing the user to selectively share at least one information set with the security community.

[0040] According to one embodiment of the invention there is provided a computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for sharing an information set, said method comprising the steps of providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module, a share module and a database interface module, retrieving from a database in a memory a user identification field and a group identification field with the database interface module, mapping the user identification field to a group identification field with the share module, the user identification field corresponding to at least one user and the group identification field corresponding to a

plurality of users, mapping the user identification field and the group identification field corresponding to a security identification field with the share module, the security identification field corresponding to a security community and mapping at least one normalized information set to the security identification field with the share module whereby the normalized information can be shared with the at least one user according to the security community.

[0041] According to another embodiment of the invention, there is provided a computer program product for sharing wherein the at least one normalized information set includes a first information set having a first data format and a second information set having a second data format. In embodiments, the computer program product further comprises a single graphical user interface module allowing selective sharing of the normalized information set with the at least one user. In some embodiments, the share module further comprises a single graphical user interface further comprising a shared canvas having a publishable insight portion and a private insight portion, the publishable insight panel allows selective sharing of at least one information set with a data network and the private insight panel allows selective sharing of at least one information set with the security community.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS:

[0042] In order that the manner in which the above-recited and other advantages and features of the invention are obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

[0043] FIG. 1 shows a high-level functional diagram illustrating the general methods of one embodiment of the invention;

[0044] FIG. 2 shows a high-level process diagram illustrating steps of one embodiment of the invention;

[0045] FIG. 3 shows a process diagram illustrating the process steps of one embodiment of the invention;

[0046] FIG. 4 shows a table depicting the database structure used to store references or marks to disparate captured and normalized information according to one embodiment of the invention;

[0047] FIG. 5 shows a high-level process diagram illustrating the flow of information according to one embodiment of the invention;

[0048] FIG. 6 shows a process diagram illustrating one embodiment of the processes used to identify and dispatch the various information types submitted to the information capture system;

[0049] FIG. 7 shows a process diagram illustrating one embodiment of the sub-processes used to normalize and capture local or network file information;

[0050] FIG. 8 shows a process diagram illustrating one embodiment of the sub-processes used to normalize and capture information whose source is the Microsoft Office Outlook communication and collaboration application program;

[0051] FIG. 9 shows a process diagram illustrating one embodiment of the sub-processes to normalize and capture information which is accessible through the HyperText Transfer Protocol (HTTP) from within public or private networks;

[0052] FIG. 10 shows a process diagram illustrating one embodiment of the sub-processes to normalize and capture isolated sets of keywords also known as Abstract Content;

[0053] FIG. 11 shows a functional diagram of one embodiment of an information capture system;

[0054] FIG. 12 shows a functional diagram of one embodiment of a server program product;

[0055] FIG. 13 shows a functional diagram of one embodiment of a client program product;

[0056] FIG. 14 shows a functional diagram of one example embodiment of systems and method to capture disparate information;

[0057] FIG. 15 shows a functional diagram of one example embodiment of a user interface capable of using drag and drop functionality to trigger execution of a variety of transactions on disparate content;

[0058] FIG. 16A shows a an alternative embodiment of a user interface which exposes contextual commands associated with representations of content from within a variety of content sources which can be used to trigger execution of a variety of transactions on disparate content;

[0059] FIG. 16B shows one embodiment of the program calls used with FIG. 16A. FIG. 17A shows one embodiment of a capture interface to select web content;

[0060] FIG. 17B shows one embodiment of the program calls used with FIG. 17A;

[0061] FIG. 18A shows one embodiment of a capture interface to select file content;

[0062] FIG. 18B shows one embodiment of the program calls used with FIG. 18A;

[0063] FIG. 19A shows one embodiment of a capture interface to select outlook content;

[0064] FIG. 19B shows one embodiment of the program calls used with FIG. 19A;

[0065] FIG. 20A shows one embodiment of a capture interface to select abstract content;

[0066] FIG. 20B shows one embodiment of the program calls use with FIG. 20A;

[0067] FIG. 21A shows one embodiment of a capture interface to select custom content;

[0068] FIG. 21B shows one embodiment of the program calls use with FIG. 21A;

[0069] FIG. 22 shows a functional diagram of one embodiment of relating content;

[0070] FIG. 23 shows a system overview of one embodiment of relating content to content or comments and the reporting of such activity;

[0071] FIG. 24 shows a system overview diagram summarizing one embodiment of the relationships between disparate content and the reporting which reflect these relationships ;

[0072] FIG. 25 shows an overview of one embodiment of system interfaces employed to enrich content;

[0073] FIG. 26 summarizes one embodiment of database structures used to relate disparate content;

[0074] FIG. 27 summarizes one embodiment of system logic process used to relate two nodes of disparate content;

[0075] FIG. 28 summarizes of one embodiment of database structures used to comment on disparate content;

[0076] FIG. 29 summarizes one embodiment of system logic process used to comment on a node of disparate content;

[0077] FIG. 30 shows a system overview diagram of one embodiment of rating content and the reporting of such rating activity;

[0078] FIG. 31 summarizes one embodiment of system logic process used to positively or negatively rate a node of disparate content;

[0079] FIG. 32 shows a system overview diagram of one embodiment of summarizing and reporting transactional activity performed on disparate content;

[0080] FIG. 33 illustrates a functional overview of one embodiment of how disparate content can be normalized and enriched through transactional activity and the reporting of such activity;

[0081] FIG. 34 summarizes the interdependence of the user interface, capture and normalization, and the enrichment processes used to relate disparate content in one embodiment of the invention;

[0082] FIG. 35A summarizes one embodiment of how a user interface activity results in a content relationship transaction within the system;

[0083] FIG. 35B shows one embodiment of a programmatic interface to create a content relationship within the system;

[0084] FIG. 36 summarizes the interdependence of the user interface, capture and normalization, and the enrichment processes used to comment on disparate content in one embodiment of the invention;

[0085] FIG. 37A summarizes one embodiment of how a user interface activity results in a content comment transaction within the system;

[0086] FIG. 37B shows one embodiment of a programmatic interface to create a comment relationship with content within the system;

[0087] FIG. 38 summarizes the interdependence of the user interface, capture and normalization, and the enrichment processes used to rate disparate content in one embodiment of the invention;

[0088] FIG. 39A summarizes one embodiment of how a user interface activity results in a content rating transaction within the system;

[0089] FIG. 39B shows one embodiment of a programmatic interface to rate content within the system;

[0090] FIG. 40 summarizes one embodiment of system process used to inquire about transactional activity performed on disparate content within the system;

[0091] FIG. 41 summarizes one embodiment of the system process used to inquire about transactional activity performed by specific users within the system;

[0092] FIG. 42 summarizes one embodiment of the system process used to inquire about transactional activity performed during a specific time period within the system;

[0093] FIG. 43 summarizes one embodiment of the effect of user activity to normalize and enrich content within the system and how the results of this activity can be shared in one embodiment of the invention;

[0094] FIG. 44 summarizes one embodiment of how content and enrichments performed on this content can be organized and shared in standard formats by collaborating users;

[0095] FIG. 45 shows one embodiment of how content and enrichments performed on this content can be selectively shared to broader groups of users;

[0096] FIG. 46 summarizes one embodiment of the process flow used to more broadly share content or enrichments resulting from transactions performed on this content;

[0097] FIG. 47 summarizes how inquiries and reporting on content can performed in multiple dimensions defined by the transactional activity performed on the content;

[0098] FIG. 48 shows a cycle of inquiry activity;

[0099] FIG. 49 shows how dynamic inquiries on content can be transformed into organized summaries of the content and the enrichments which surround the content in embodiments of the invention;

[00100] FIG. 50 summarizes one embodiment of the process flow used to create, comment on, and published organized;

[00101] FIG. 51 illustrates components of one embodiment of the canvas used to collaboratively compile and publish organized grouping of content;

[00102] FIG. 52 summarizes one embodiment of transformation from the collaborative content canvas to a standard web page rendering of organized content and distribution through common publishing outlets;

[00103] FIG. 53 summarizes one embodiment of how enrichments surrounding content can be exposed to the user from within the original source of the content ;

[00104] FIG. 54 shows a generalized model for triggering multidimensional inquiries on content originating at the original content source;

[00105] FIG. 55 summarizes the multidimensional content inquiry capabilities and how they are derived from the system database interrelationships for embodiments of the invention;

[00106] FIG. 56 summarizes how selected content can be organized to communicate specific insights about the content in embodiments of the invention;

[00107] FIG. 57 summarizes one embodiment of the database model and the conceptual models used to secure content or enrichments to this content at varying levels of user or group access;

[00108] FIG. 58 summarizes how highly secured content and enrichments can be shared more broadly and further enriched with collaborative transactional activity in embodiments of the invention; and

[00109] FIG. 59 summarizes how highly secured content and enrichments can be organized and shared more broadly and further enriched with collaborative transactional activity in embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION:

[00110] Systems and methods to capture, enrich, and share disparate information will now be described in detail with reference to the accompanying drawings. It will be appreciated that, while the following description focuses on systems and methods that capture disparate information on a data network, the systems and methods disclosed herein have wide applicability. For example, the methods and systems described herein may be readily employed for the capture and storing of disparate information locally as well as both in and to a communications network such as a network cloud. Additionally, components of these systems and methods allow disparate information to be enriched and shared with other systems and users. Notwithstanding the specific example embodiments set forth below, all such variations and modifications that would be envisioned by one of ordinary skill in the art are intended to fall within the scope of this disclosure.

[00111] As used throughout this description, the following terms are to be interpreted according to the following definitions:

[00112] Capture: any act of identifying, classifying and/or normalizing information, or any representation of information. Capture may also include recording information or a

representation of that information or representation of information in either a permanent or temporary form such as a computer memory.

[00113] Processor-based: any analog or digital processing system having data processing and memory capabilities such as but not limited to servers, phones, ipods, laptops, televisions or computers. This includes system having processing and memory capabilities that may reside in a single device or may reside in a combination of devices as may be found in, but not limited to a networked computing environment.

[00114] Context: additional information that can be gained directly or indirectly from other information or a combination of information.

[00115] Disparate: any type of difference or distinctiveness between multiple items such as but not limited to quality, character, format or type.

[00116] Enhancements: systems and methods that can be used on a stand-alone basis or can be used to supplement, in whole or in part, other systems and methods.

[00117] Enrich: to improve the quality, clarity or relevance of something, usually by adding or relating something else to it. For example and not for limitation, enrichments to information can be represented as forming relationships between two nodes of content, relating comments to a node of content or relating positive or negative ratings to a node of content.

[00118] Electronic Content: data, information, information sets or representations of data or information in a processor based system such as a computer or phone. Examples of electronic content is generally the substance (as written matter, illustrations, related meta-data, etc.) offered as documents, graphics or other records stored and accessible from personal computers, private networks, databases, custom application programs, or the World Wide Web.

[00119] Information: any type of data or representations of data, at any stage of processing (input, output, storage, transmission, etc.) in a processor based system, apparatus or method. An information set is one or more elements of information.

[00120] Network Cloud: any large communications network such as but not limited to wide area networks (WANs) such as the Internet, or private secured networks maintained by various organizations.

[00121] Normalize: to make conform to or reduce to a norm or standard or classify according to a norm or a standard. Normalize includes the conforming or classifying of information itself or representations of that information.

[00122] Relationship: an entity that joins two normalized nodes of content by creating a cross reference between them. When inquires which can inquire the set of relationships which include a targeted node of content, the cross reference to the second node of content included in any relationship which includes the targeted node of content can be revealed. The availability of the cross references formed by relationships enrich both nodes of content by adding additional context provided as result of explicit action by some user or implicit action by some other process.

[00123] Secure: any method of allowing selective access (including, by choice, universal access) to information or a resource or resources.

[00124] Security Community: a grouping of users or information that can be secured, separated or is otherwise accessed selectively from other groupings of users or information. A community includes a grouping of a single user or a single piece of information. A community may include groupings of information accessible by different users such as different projects that are being worked by different users.

[00125] Share: to have, use or make available to others, something in common with other users or to allow a user to use something, know or have part of something.

[00126] Transaction: an action, usually resulting in some persistent database records, which is performed relative to some content. The act of capturing and normalizing content is considered to be a transaction. The act of forming a relationship between two normalized nodes of content is considered a transaction which serves to enrich each node of content by persisting additional context within a database.

[00127] As personal computers, the internet, search technology, email and other collaboration systems, social networking, custom applications, databases, and other sources of information become more essential in the works of consumers and information workers, the management, storage, access, and correlation of this disparate information places a great burden on individuals and organizations.

[00128] As shown in FIG. 1, a capture system for capturing and normalizing disparate electronic content 1 in a secure network cloud can provide capture services 4 that define and create a common format and a single location 5 where the content can be referenced for the purpose of providing later access or restoring the prior context in which this content might have

been accessed or acted upon. It is understood that some of the functions of the systems and methods are described as being shared and/or communicated over a data network, but they can also be shared/communicated within a local system without having to use a data network. Embodiments of the systems and method may use a set of database tables (described below) to reference disparate content in a central, secured, network accessible location. Embodiments may employ user interface techniques 2 such as, but not limited to, drag and drop operations to allow the user to capture, classify and normalize disparate electronic content. Embodiments also provide programmatic interfaces 3 which can allow software within the system or software implemented in cooperating applications which access the system program interfaces (described below) to capture, classify and normalize disparate electronic content.

[00129] The data store which results from the identification and normalization of disparate electronic content can be used as a base to enrich, or attach additional information or context to the content referenced within the capture system. The data store can also be used to share content within different communities. These extensions represent separate and distinct systems which may be designed to leverage the benefits of the system being presented herein.

[00130] Embodiments of systems and methods to enrich content use additional database tables to allow relationships between disparate content to be created and reviewed from within a single, secured, network accessible location. The systems and methods employ user interface techniques such as, but not limited to, drag and drop operations to allow the user to create relationships between disparate electronic content. The enrichment enhancements also use a database table to allow comments about disparate content to be created and related to this disparate content and to also allow these comments to be treated as a new type of content which may have value in its own right. The enrichment enhancements also use a database table to allow disparate content to be rated positively or negatively by users. This adds a new dimension to the disparate content since it can now be reviewed in a way which reflects popular opinion about its relative value.

[00131] Once disparate content can be accessed in a normalized fashion, as facilitated by the described system and methods to capture disparate information, and once this content has been enriched via transactions executed from within the system and methods for enriching disparate information, it becomes more possible for users to electronically context the context which binds disparate content in the human mind. Examples of some of the capabilities provided

by embodiments of systems and methods to share content allow: the system provides easy access to all of the disparate content normalized and referenced within a centralized data store; the system can report, on demand, the relationships that have been made between normalized content thus revealing contextual groupings of content which have been previously defined by one or more users; the system can report, on demand, all of the transactional activity which has been performed on a particular node of normalized content; the system can report, on demand, which users have initiated transactional activity on a particular node of normalized content; the system can report, on demand, all of the descriptive comments which have been related to a particular node of normalized content; the system can report, on demand, all of the transactional activity which has been performed on any normalized content by a particular user; the system can report, on demand, all of the transactional activity which has been performed on any normalized content by a particular group of related users; the system can report, on demand, all of the transactional activity which has been performed during a specific period in time; the system can report, in any of the dimensions mentioned above, activity on normalized content in a way which segregates the activity into security contexts which are private to a single user, shared with a group of users, or available to all users; and the system allows ordered sets of content, the relationships to this content and additional commentary to be composed and extended by individual users or groups of users. These accumulations of content insight can be automatically transformed into network accessible documents, such as through an internet browser, for private or public distribution.

[00132] For ease of illustration purposes, the descriptions below highlight methods and systems to capture and normalize disparate information with enhancements that provide for enriching and sharing features. It is understood that portions or all of the capture systems and methods, as well as the enriching and sharing systems and methods can be selectively integrated to create enriching systems and methods, sharing systems and methods or any combined systems or methods.

One Embodiment of Methods to Capture Information of Disparate Types:

[00133] One embodiment of methods to capture disparate information generally comprises the steps of identifying the type of content present, storing that content or data, or a representation of that data or a mark to that data in a central database in manner whereby the

information can later be requested and accessed through the use of several user interface methods.

[00134] One embodiment of these methods is shown in FIG. 2 which summarizes the process illustrated in the high level diagram above in FIG. 1.

[00135] Referring to FIG. 2, with step 1, the capture system first identifies the type of content to be captured. The type of content to be captured and identified can be specified explicitly as a parameter within a programmatic interface pre-defined by the system. The type of content to be captured can be detected implicitly through various tests. This normally occurs during user interface submission to the system since the user has the ability to submit a wide variety of content with a common user interface technique such as drag and drop. This automatic content type detection process will be discussed in detail later in this document.

[00136] With step 2, this embodiment of the capture system ensures that the content will be available from within the secured network. For example, if the content has originated locally in memory on the user's personal computer or private network, the system uploads the content, a representation of the content or a mark to that content to a central memory in the secure system network so that it can be treated in an equivalent fashion (normalized) to other content which may already be accessible on the secure system network.

[00137] Once the content has been normalized, with step 3 the capture system creates a permanent reference or mark to the content within the system database. Details of the format of this reference, or mark, in this embodiment will be discussed later in this document.

[00138] All activity which creates or updates the system database can be audited with step 4. This auditing can include logging information such as the date and time when the activity was performed, what system user initiated the activity, and the nature of the activity.

[00139] FIG. 3 is another illustration of one embodiment of the methods of the present invention. Referring to FIG. 3, after the methods start at step 310, step 315 comprises receiving content or information from the capture system interfaces. This information is generally data communicated over a data bus or data network, even if the source and destination of the communicated data reside on the same processor based client or server device, using transmitters such as, but not limited to computers, phones, PDAs, sensors or any other device capable of communicating data. In this embodiment of the invention and in other possible embodiments, the location where the processing for a particular step in the process is performed is not limited.

That is, a particular step may be performed on the client device such as a personal computer or smart phone through a user interface if it is sufficiently powerful to successfully complete the step. In other embodiments where the client or remote device is not capable of performing the step, the raw data may be immediately transmitted to the system server through a programmatic interface which may perform the preliminary steps normally performed on a more capable system client device.

[00140] Step 320 comprises identifying the specific type of information that has been received based on the information characteristics received. One embodiment of the identification or recognition processes within this step is shown in FIG. 6 and discussed below. Generally, this step comprising identifying the information type based on identifying a normalizing characteristic such as, but not limited to known data formats and protocols, such as but not limited to Microsoft Outlook, HTML web content and other common data formats. The normalizing characteristic can come from any of the information characteristics. In one example embodiment, the identification is made using a web content navigation module within a client capture user interface that inspects data embedded in web pages defined within public or proprietary formats to identify the normalizing characteristic.

[00141] Step 325 comprises normalizing the information within the capture system. Generally, this step comprises using the data characteristics recognized in step 320 to pull or map content into a normalized format within the capture system. FIGS. 7-10 illustrate how information can be recognized and normalized for several data formats. FIG. 4 illustrates one embodiment of the database format that can be used to normalize the data received. FIGS. 4 and 7-10 are discussed in detail later in this description.

[00142] Step 330 comprises assigning a unique content identifier, or mark, and acknowledging or assigning a uniform resource identifier as a location reference for the normalized content being captured within the system. The mark allows the content, or a representation of the content, regardless of its original source, to be retrieved and reviewed, in a consistent fashion. It is understood that in some embodiments, the uniform resource identifier may not need to be assigned, but may be one of the information characteristics received with the information set.

[00143] Step 335 comprises allocating database resources to store the mark to the normalized content. In one embodiment, the normalized content can be stored within database

tables in system memory and can be later retrieved using the content type and a unique database identifier which differentiates that content from other content of the same type. The system allows the content to be externally referenced by submitting a mark. This step can also comprise storing the content in the database.

[00144] Step 340 comprises creating and storing a log, or permanent activity audit trail, of the activity that was performed to normalize and capture the content into the capture system. In one embodiment, the system logging facility has the flexibility to log follow-on activity related to the captured content thus providing a comprehensive audit beyond the scope of capture alone.

[00145] Step 345 comprises making the information and mark available for access by other components of the capture system, external systems or users. For example, this availability may include limiting access privileges to a certain class or community of users that are able to have access to content associated with that mark. This step may also include reporting the capture of the content and information about the mark to the public or a pre-defined set of users through tools internal to the system or potentially external tools such as Twitter, email, Facebook, or Myspace.

[00146] Step 350 comprises recognizing a request for information stored within the capture system. The request may be a specific inquiry to return previously captured content or the request may be a general request for other information, including audit information, which may be correlated to the captured content.

[00147] Step 355 comprises correlating the request to the marks and their associated captured content. Typically the system receives a uniform resource identifier as a request and then maps that identifier to marks which can be used to satisfy a request to return information about the content referenced by the mark in accordance with the nature of the request.

[00148] Step 360 comprises presenting the results correlated to the request to the requestor. This presentation may be made with any type of user interface such as but not including an audio transmitter, a visual display or a printer.

[00149] At step 365, the process is concluded.

[00150] In some cases as a part of the process steps of FIGS. 2 and 3, the information capture system captures and provides references to disparate content in a normalized form using a Content Reference Table structure within a database. FIG. 4 illustrates one embodiment of the field structure of the system content reference database for one embodiment of a content record,

or content node. Other content types, depending on the nature of the content and for other reasons such as performance optimization, may store data in other tables or table formats within the database. But the Content Reference Table case can be generalized to handle any type of content and thus suffices to describe the system's normalization process in one embodiment of the invention.

[00151] Referring to FIG. 4, the Field Numbers refer to the different database fields discussed below.

[00152] Field 1 comprises a unique content identifier or mark. The unique content identifier uniquely identifies the content record allowing the capture system to identify a content record for a variety of purposes such as auditing activity. In one embodiment of the present invention the unique content identifier is a unique integer numeric value assigned by a system service from a pool of potential integer values ranging from 0 to 2^{64} (a 64 bit integer value). In this embodiment, as the system is accessed by multiple users, when system activity requires the assignment of a unique content identifier, a central system service is invoked through a programmatic interface to assign the unique 64 bit integer value which will be used as the unique content identifier. In other embodiments, any method of generating, or capturing a unique alphanumeric variable with this system is contemplated, such as but not limited as using a Global Unique Identifier (GUID) to serve as the unique content identifier.

[00153] Field 2 comprises a uniform resource identifier. Once content has been captured and normalized, the content can be accessed (referenced) with a uniform resource identifier within the scope of the secure network configured by the capture system.

[00154] Field 3 comprises a content type identifier. The content type identifier is an indexed data item which uniquely identifies the type of content referenced within a specific data record. The system uses content type definitions to segment content into specific classes. Examples would be: web pages, spreadsheets, email messages, etc.

[00155] Field 4 comprises a content title. The content title is a field containing a meaningful title for the referenced content. Uniform resource identifier 2 is not always meaningful to users of the system. Content like web pages may have titles embedded within them and this system field is used to expose these titles. For example and not for limitation, the title may be a shortened version of the uniform resource identifier, the subject of an email

message, the file name of a document or a defined field within a custom data type supported by the system.

[00156] Field 5 comprises a content source path. The content source path is a field which is used to provide a trace back to the original source of content which was uploaded from a local or non public source location. If content originated from a local personal computer or network, this system field is used to provide a path to the original content prior to its upload to the secure system network. This field, in this embodiment, illustrates how content normalized and captured within the system can maintain a linkage back to its original source location. Other embodiments which support other types of disparate content may use similar implementations to maintain linkages to the original source of captured content.

[00157] Field 6 comprises a source location identifier. The source location identifier is a field which can define or refine the original source location of uploaded content. To refine the path in Field 5 above, this identifier can identify the personal computer or some other identifier which can more precisely define the original location of uploaded content. This field, in this embodiment, removes the ambiguity for the original source of content when content is captured from more than one client computer. As multiple computers may use similar file storage addresses, it is necessary to also identify the precise computer from which the content was captured and normalize. Other embodiments which support other types of disparate content may use similar implementations to similarly refine linkages to the original source of captured content.

[00158] Field 7 comprises optional description identifiers. The description identifiers, which could include illustrations, are detailed text or resource identifiers which allow the user to provide additional information or descriptions to the fields. The system provides capabilities for more fully describing content. In other embodiments of the invention, the description field may be stored in a separate table or location and linked back to the main content reference, but for purposes of this discussion and for clarity, this implementation fully describes the ability to more fully describe content.

[00159] Field 8 comprises content usage information. The content usage information can include information from a variety of accumulators which can log and store specific types of activity performed on the content record. The entire capture system described herein is used as a base for richer information system functionality and the capture system has been defined to

expose statistics which can support the implementation of this extended functionality. In other embodiments of the invention, such usage information may be stored in a separate table or tables and linked back to the main content reference, but for purposes of this discussion and for clarity, this implementation fully describes the ability to more fully log usage or other relevant activity adjunct to the content.

[00160] Field 9 comprises alias information. In some cases, more than one uniform resource identifier can represent the same content. For these cases, this embodiment of the invention maintains an alias table within its database which binds these equivalent content references. With the use of the alias table, alias information in Field 9 can provide an alternate way to access the content represented in Field 1. Field 9 essentially serves as a synonym uniform resource identifier for the uniform resource identifier specified in Field 2. In this embodiment, the alias functionality is implemented in a separate database table so that multiple aliases could potentially be correlated to a single node of normalized content.

[00161] As shown in FIG. 1, one object of the information capture system is to make different types of disparate content available in a consistent, normalized way. One embodiment allows the content to be made available in a secure network like an intranet of a company or on a public network such as the Internet. Once this content normalization has occurred, users and applications are able to leverage this referenced content and have a single consistent interface to build context about this content at the direction of the user.

[00162] In embodiments, disparate content from any supported information or data source can be presented to system applications which expose user interfaces to assimilate submitted content or to external applications which might exploit the system's programmatic interfaces which can submit content to the system capture services which are responsible for securing and referencing content in the system database and file store while keeping a comprehensive audit of all activity performed on submitted content. Once content has been normalized and referenced, application program can consume this content and build additional context around this content at the direction of the user or automatic program logic which might recognize and exploit patterns of content capture activity.

[00163] As shown in FIGS. 1 and 5, disparate content 1 can be communicated to or identified by the system through interfaces such as but not limited to the following types: "Drag and Drop" where a user presses a mouse button on the representation for some content then

moves the mouse pointer to some destination content or icon which represents an action to perform and, at that point, releases the mouse button which has been depressed; "Select and Click" where an application programs allow one or more items which may represent content to be highlighted in a selected state and then the user may click the mouse button on an icon which may represent some system action to perform on the selection; and any other programmatic interface such as but not limited to the following types, command line parameters to system application programs, documented service interfaces to the system, Component Object Model (COM) interfaces to the system, message queues or other inter-process communications methodologies.

[00164] Once content has been submitted or otherwise communicated through a system interface (2, 3), the system interface forwards the content to the system capture service 4 which normalizes and references the submitted content in the Content Reference Tables 5 in the system database. In some cases, in order to provide more universally access to content which has been submitted from a local source, the system may first upload the content to a Secure Network File Storage 5 before or after finalizing the normalized reference. The system capture service also creates and links detailed activity audit information 5 to reflect all actions performed on content within the system. Once content has been captured and normalized by the system, inquiry interfaces 6 (FIG. 1) can allow programs integral to the system, or externally written programs which may wish to access system content, to query the system for content or information about the activity surrounding that content.

[00165] The step of identifying the type of content being submitted to the system for capture, shown a 1 in FIG. 2, is detailed in FIG. 6. FIG. 6 assumes that an information set, such as but not limited to a data packet, from a user interface action, such as drag and drop, a mouse click or other identification method has been submitted or otherwise communicated to the information capture system. Data packets from operations like drag and drop can contain a wide variety of information characteristics such as, but not limited to, data formats, meta-information (including, e.g. HTTP headers or the uniform resource identifier of the document), document contents and tags, and information implied by other documents and data sources (e.g. features of related or linked documents). FIG. 6 outlines the logic employed by the information capture system to differentiate the supported data formats which will invoke specific capture and normalization logic as illustrated. Although this process is shown and discussed in a series of

numbered steps and specific types of data formats, it is understood that these processes can be performed in any order and can include any number, to include none, of the steps discussed and can be performed on a number of different types of other data formats including types which may be supported in other embodiments of the invention. In this figure, the encircled numbers represent the different steps of the process.

[00166] With step 1, the capture system tests whether the content is a file based on the information characteristics of the content or information. If any of the two conditions described are true, the system executes the process file content process discussed below: (a) the submitted data packet is in the "FileDrop" or an equivalent format (this format allows the data packet to access the local or network specifications for file content) or (b) the submitted data packet is in "Text" format and the submitted text is a valid local or network file specification ("file:///C:/folder/xyz.doc" , "C:\folder\xyz.doc", etc).

[00167] With step 2, the system tests whether the submitted content is in Microsoft Office Outlook format. If the submitted data packet is in the OutlookDataObject format, the system executes the process outlook content process discussed below.

[00168] With step 3, the system tests whether the submitted content is a network accessible uniform resource locator. If the submitted text content is in the format of a URI (Universal Resource Identifier which uses secure or unsecure Hypertext Transfer Protocol (http or https) providing unambiguous access to content on the internet or a secured private network, the system executes the process network content process.

[00169] With step 4, the system tests whether the submitted content is abstract. If submitted text does not follow any known content format, it can be considered as abstract content. Keywords such as "Project X" or "Patent Application" would be considered abstract content according to this test. The words "Patent Application" may be considered as meaningful in some way to the user. The system provides a process abstract content process to allow keywords such as described here to be referenced in the same way as other more formal content as described above is referenced by the system.

[00170] With step 5, the system tests whether the content follows the custom integration format for applications external to the system. Content which might be of value to the user may be locked inside the user interface of custom applications. The system provides specifications which allow custom applications to expose their data for referencing by the system through the

process custom content process. These specifications are considered trade secrets and will be disclosed to external developers upon agreement to keep such specifications confidential until such time that the specifications are released for public consumption.

[00171] If steps 1-5 do not recognize the content, the content is rejected. The system has been designed to support any type of content, but may not yet have implemented content normalization processes for some types of content. If the content type decision making process does not identify a known and supported content type, the system will notify the user that the content submitted to the system may not have been normalized and captured.

[00172] FIG. 7 shows an overview of one embodiment of the process file content process for data content such as computer files with the encircled numbers representing process steps. This process uses type information from the local system registry which is a repository managed by the operating system which allows applications to define content types. In this figure, the encircled numbers represent the different steps of the process.

[00173] With step 1, the type of file content can be ascertained by querying the system registry of the personal computer making the request to upload, normalize, and capture the content. Based on the file extension (the rightmost end portion of filename following a period or dot character), the registry might return "Microsoft Word Document" for a file named "C:\folder\xyz.doc".

[00174] The title of file content can be derived from the file's name within its folder or from a specific title the user may have entered using the operating system file metadata feature. With step 2 the system can provide a much more human readable name than the full filename might provide. For example "C:\folder\PatentApplication.doc" might have a simplified title of "PatentApplication".

[00175] The binary content of the file can be accessed using standard operating system functions. With step 3 the actual contents of a file or document can be accessed and encoded for uploading to the system network so that they can be made more widely accessible. Although it the system network is described as a secure system network, it is understood that embodiments do not require the network or storage services to be secure networks or storage.

[00176] With step 4, the formal request to normalize and capture the local or network file is packaged. Such a request will submit the binary file content data to the system along with the

content type, file name, system user identifier, the local source path of the file content, and the personal computer identifier from which the request is being made.

[00177] With step 5, the system saves the submitted binary content on a secure network file location and uses the submitted content type, file name, and system user identifier to generate a network path in the form of a uniform resource identifier for the saved content.

[00178] With steps 6 and 7, the system uniform resource identifier is derived and stored in the system reference database so that what was once local content can now be accessed with a uniform resource identifier addressable on the secure system network.

[00179] With steps 8, 9, 10 and11 the system fills in the appropriate fields in the system reference database from the submitted parameters and values generated by the capture process to include generating and assigning a unique content ID.

[00180] Although the process shown in FIG. 7 is described as if portions of the process are performed by one system, such as a client, and other parts of the process are performed by other systems, such as a remote server, it is understood that it is not important where the process steps are performed. For example, it is understood that the entire process could happen with a user having a simple interface to a remote server and it is also possible that the entire process could happen locally on a user's computer accessing files on that computer. The same range of embodiments are anticipated throughout this description and particularly in FIGS. 8-10.

[00181] FIG. 8 shows an overview of one embodiment of the process outlook content process related to an email/messaging context such as Microsoft Outlook.

[00182] Whether the Outlook content has been submitted directly or has been detected as part of a general user interface action, with step 1 the capture process will use the Microsoft Outlook object interface to gain access to the data representing the submitted item.

[00183] Some Outlook content types like email messages can be exported in HTML (Hypertext Markup Language) format. In one embodiment, HTML can be the format used to represent the content in its normalized form on the system secured network. With step 2 the Outlook content is saved in HTML format so that it may then be more widely viewed within the context of standard web browsers capable of displaying documents formatted using HTML.

[00184] If the Outlook item, such as an Outlook Contact item, does not support export to HTML, with step 3 the capture process manually extracts the content from the Outlook item and then transforms the data to HTML.

[00185] Every Outlook item has a unique "EntryID" from which it can be accessed using the Outlook object model. With step 4 a hyperlink referencing this "EntryID" is added to the HTML data which will be uploaded to the system secure network. This provides a link back to the original source of the content in native Outlook format.

[00186] Step 5 submits the binary HTML content data to the system along with the Outlook content type, item title, and the Outlook EntryID to the Outlook content capture process service method.

[00187] In step 6, the system saves the submitted binary content on a secure network file location and uses the submitted Outlook content type, item title, and system user identifier to generate a network path in the form of a uniform resource identifier for the saved content.

[00188] With steps 7 and 8, the system uniform resource identifier is derived and stored in the system reference database so that what was once local Outlook content can now be accessed with a uniform resource identifier on the secure system network.

[00189] With steps 9, 10, 11 and 12, the system fills in the appropriate fields in the system reference database from the submitted parameters and values resultant from the capture process to include generating and assigning a unique content ID.

[00190] FIG. 9 shows an overview of one embodiment of the process network content process related to network accessible content such as Internet browser content. Below is a discussion of how content which can be addressed and presented by a web browser application can be captured by the system.

[00191] With step 1, the content capture process attempts to navigate to the submitted URI. If this navigation is successful, the capture process tests to see whether the requested URI matches the URI that the content server returned in response to the navigation request. If the URIs do not match, the submitted URI is considered as an alias for the URI returned from the server.

[00192] After the test content navigation in 1 above, with step 2 the content capture process attempts to retrieve the title metadata from the response returned from the server.

[00193] If no title can be retrieved from the response returned from the server, a title is generated from the submitted URI with step 3. This title is intended to be more human readable that the submitted URI.

[00194] The content capture process maintains a list of common web content types which may be submitted to the system. With step 4, if the submitted URI matches one of these content types based on the configuration of the URI, the content type will not be set to the generic "web page" type which is used as the default.

[00195] The submitted URI, its alias if necessary, its title, and its content type is submitted to the content capture service for integration in the system content reference database with step 5.

[00196] Step 6 logs the URI which addresses the content within the allocated data record in the system reference databases table so it can be later accessed.

[00197] With steps 7, 8, 9 and 10, the system fills in the appropriate fields in the system reference database from the submitted parameters and values resultant from the capture process to include generating and assigning a unique content ID.

[00198] FIG. 10 shows an overview of another embodiment of the process abstract content process as it may relate to abstract content such as keywords.

[00199] In some cases, a word or combination of words which the user identifies within a document or web page can themselves become useful content within the system.

[00200] If the submitted content does not represent a URI which references existing content and does not follow the format of a URI, the content is treated as abstract content or keywords which will be transformed into content by the content capture process.

[00201] With step 1, the title of the content will be equivalent to the keywords submitted to the content capture process.

[00202] In order to normalize the abstract content to make it equivalent to other content within the system, with step 2, one embodiment of the content capture process creates an HTML (Hypertext Markup Language) web page representation of the submitted keywords which define the abstract content. Other embodiments of the invention may represent abstract content using other types of content, such as dynamic web pages, rather than static HTML web pages as described here. This discussion illustrates that simple keywords can be transformed into addressable content which can be normalized and treated by the system as equivalent to any other type of content.

[00203] With step 3, the capture process then stores the HTML representation of the abstract content on the system file storage server. The system saves the HTML abstract content file on a secure network file location using the file name. The system user identifier is used in

this embodiment to designate the network path in the form of a uniform resource identifier for the saved content.

[00204] With steps 4 and 5, the system uniform resource identifier is derived and stored in the system reference database.

[00205] With steps 6, 7 and 8, the system fills in the appropriate fields in the system reference database from the submitted parameters and values resultant from the capture process to include generating and assigning a unique content ID.

[00206] In another embodiment of methods to capture disparate information, the methods may perform most of the steps on a local computing device. In this type of embodiment, the steps will capture and provide access to content residing locally on the computing device without having to share/communicate information with a remote computing device. This type of embodiment would provide normalization of content on a self contained system without any requirement to connect to a network to review the content. This might be useful in applications which require high levels of security.

One Embodiment of Methods to Enrich Information of Disparate Types:

[00207] Building on the capture methods and introducing methods for enriching disparate content, a usage scenario of explicitly creating a relationship between content such as an email message accessed through Microsoft Office Outlook with a web page accessed through a web browser can now accomplished without significant effort on the part of the user. Other scenarios of relating and otherwise enriching content in combination with other content of disparate types allows users to relate or bind content within the information providing a broader context in which the information was created or otherwise accessed without concern for the impedance imposed by incompatible content formatting and storage architectures. The methods for capturing and normalizing disparate content provide a single location from which users can review and further manipulate the disparate content which may be significant in their information workflow. The methods for enriching disparate content facilitates the execution of transactions against the normalized content by creating relationships to database entities which serve to augment or enhance the raw content captured within the system. Forming relationships between nodes of normalized content allows enriched content inquiries to reveal cross references which may reveal valuable rich context when users re-encounter this content after forming the

relationships. In scenarios where the system databases are shared among groups of collaborating users, additional insight can also be revealed by following the overall activity of users who may have shown interest in common content.

[00208] As these methods are shown in FIG. 23, once disparate content 1 has been normalized 2 and can be referenced from a central location 3, a User 4 working within a Security Community 5 can initiate Transactions 6 which serve to enrich the normalized content. Transactions to create relationships 7 between nodes of content and to log comments on content 8 can be initiated and audited 9 with attribution to the User, time-stamped, and with appropriated access security. Transactional activity on normalized content produces a framework for the system to return rich information based on inquiries 10 centered on both content 11 and users 12 who have acted upon the content.

[00209] FIG. 24 summarizes how the enrichment enhancements use the results of the capture methods and provides the ability to interrelate elements of this normalized content. By providing system users access to enriched views of this content which may make this content more useful towards the completion of the user's tasks, projects, or missions. FIG. 24 reflects utility of the relationship process as one of the tools used to enrich content. The relationship process comprises the process illustrated in FIG. 26, FIG. 34, FIG. 35A and the descriptions that accompany these illustrations.

[00210] As shown in FIG. 24, disparate content from any supported source 1 is normalized 1 by the capture systems and methods 2 into normalized content accessible from a common location or node 3, allowing a content relationship system to reflect the practical affinity of content with respect to the concepts reflected in this content 4 making it possible to leverage the insight defined by these relationships whenever individual nodes of content are encountered in the user's workflow 5 while auditing 6 all of the activity related to the content and allowing this activity to be reviewed in dimensions which include time, activity type, and the originating user.

[00211] As shown in FIG. 25, the enrichment enhancements facilitate user interfaces 2 within system applications 2 to integrate and enrich disparate content 1 using content enrichment services 4 provided by the system. A variety of content enrichment transactions (5, 6, 7) are provided by the system which record the effect of the transactions within a secured, network accessible database. A variety of database tables store and maintain the enriched context

surrounding content and the transactions performed on this content. Relationships 5, comments 6, and ratings 7 are examples of methods of enriching content. It is possible to extend the definition of enrichment by providing a framework to integrate custom transactions 8 which might define, build, and expose broader enriched context surrounding disparate content. The system exposed by these enhancements is also open for exploitation by external applications 3 written by third party developers who agree to the terms and conditions on the use of the programmatic interfaces 3 to the system content enrichment services 4.

[00212] Referring to FIG. 26 which shows an implementation of the relationship process, disparate content 1 has been previously, or will be dynamically, integrated into a normalized content data store 3 using the capture system and methods 2 described earlier. In this embodiment of the enrichment process 4 can now exploit and enrich the normalized content 3 by creating content relationships 5 which bind nodes of content as the direction of the user. Enriched content inquiries 6 may now present the user with insight in the form of cross references between disparate nodes of normalized content. These relationships help restore prior context whenever and wherever the user may re-encounter any node of content as illustrated in 6. As can be seen in normalized content references 3, each node of normalized content has a unique content identifier (ID) as well as a locator (a Uniform Resource Identifier or URI) and a title. The unique content identifier or ID is used as a linkage to all other tables which will be used to enrich the normalized content referenced by this ID. The content relationships are structured, in this embodiment, as distinct rows within a content relationship database table which refers to the unique identifiers of the 2 nodes of normalized content which should be related. Inquiries can then be structured in many different ways. For example, by presenting the locator for "Content A" as the subject of a relationship inquiry, the system would first locate the appropriate row within the normalized content references table 3, and then return all rows within the content relationships table 4 where the unique identifier of the desired content is present in either "Reference1" or "Reference2" in the relationships table 4. The results can then be displayed as illustrated in enriched content inquiries 6.

[00213] In order to make this embodiment of the invention practically useful, a user interface model is presented where simple actions such as dragging and dropping content such as a file onto a link to a web page within a web browser can be recognized as a transaction to trigger a process to form a relationship between the 2 nodes of content. One functional diagram

of a user interface model is shown in FIG. 27. In this embodiment, the target content destination for the drag and drop of a file 1, in this case the link to web page 2 is sensed by a browser extension 3 component provided in this embodiment which serves to trigger the process logic to create the content relationship 4. A browser extension is a type of computer software component which is able to sense web browser activity and events as it display content and can add functionality or add options to the user within the context of this content based on additional content or commands which the browser extension may present. The drag and drop transaction identifies the source content, in this case File A, and the destination content, in this case Web Page B. The process first ascertains if both the source and destination content nodes have been normalized (5 and 7) within the system. If the source content needs to be normalized, it will be done by first invoking the capture and normalization process in step 6. If the destination content needs to be normalized, it will be done similarly in step 8 of the process. Relating the source and destination content can now be done in step 9 and will result in the database activities described earlier.

[00214] Whenever a transaction is performed to enrich content, a transaction audit record 10 can be created which records the transaction type, the content affected, the user who initiated the transaction, and the date and time when the transaction was executed. This audit information allows many forms of inquiry to reveal the insight surrounding enriched content in all of the dimensions recorded in the audit records.

[00215] Similar to relating nodes of content, whenever a user perceives that content they encounter from any source is noteworthy, they can also compose and associate a comment which can then be related to the content of interest. A functional diagram of a method of enriching content with comments is shown in FIG 28. As shown, to take full advantage of the content relationship architecture in this embodiment of the invention, comments 1 are created by a user interface and presented to the capture system and methods 2 and are stored within as normalized content 3 in the same way that any content, including the noteworthy content which may be the subject of the content, is referenced by the system. As we can see in the illustration and in this embodiment, comments are stored within a comment data store 5 within the system database and are normalized as any other content 3. The system data tables which facilitate the enrichment process are native to the system process logic, but exposed as normalized content so that the system as a whole presents all types of content, including this new internal system content, in a

consistent fashion to the user. The various enrichment process figures and descriptions fully describe how this internal data is exposed. Once this normalization for both the comment and the noteworthy content which may be the subject of the comment has taken place, a content relationship 4 can be created to relate the comment to the content just as any content can be related to any other content as discussed previously. As with any other type of disparate content, enriched content inquiries 6 can be invoked to reveal the insight which may exist as a result of comment transactions.

[00216] One functional diagram of a user interface model to create comments for relating is shown in FIG. 29. In this model, actions such as revealing a context action menu relative to content such as link to a web page 1 within a web browser can trigger a process to create a comment a form a relationship between the comment and some noteworthy content. In this embodiment and this example, the noteworthy content which warrants some comment, in this case the link to web page B is sensed by a browser extension 2 component provided in this embodiment which serves to trigger the process logic 4 to create the comment 3 and, ultimately, relate 8 the comment to the noteworthy content. It should be noted that this system is capable of presenting contextual commands in relation to disparate content from the original source of this content using a variety of common user interface technique widely in practice. Presenting context menus presented within a web browser through the added function of a browser extension is one of these methods. In this example, when a context menu comment transaction is initiated, it first reveals a text and illustration entry interface 3 which defines the comment which the comment transaction process 4 will integrate and normalize into the system data store as previously discussed. The context menu also identifies the noteworthy content, in this case Web Page B. The comment transaction process then ascertains 6 whether the noteworthy content has been previously normalized within the system. If the noteworthy content needs to be normalized, it will be done in step 7 of the process. Relating the comment and noteworthy content can now be done in step 8 and will result in the database activities described earlier.

[00217] Whenever a transaction is performed to enrich content, a transaction audit record 9 can be created which records the transaction type, the content affected, the user who initiated the transaction, and the date and time when the transaction was executed. This audit information allow many forms of inquiry to reveal the insight surrounding enriched content in all of the dimensions recorded in the audit records.

[00218] Much like comment transactions discussed earlier, rating transactions, which can be triggered at the content source using methodologies like context menu commands, are a way to take special notice of disparate content which may be encountered. As rating transactions are illustrated in FIG. 30, if the user 4, who also defines an important part of the overall context for the transaction, decides that some content is worthy of positive or negative rating, the methods 2 will ensure that the content has been normalized within the system 3. For every enriched transaction including relationships, comments, and ratings, the system is also working within a specific security community 5 which also defines an important part of the context of the transaction. The security community 5 defines the visibility of enriched content to restricted sets of users. When a rating transaction 6 is executed by a user 4 within a security community 5 on any nodes of content within the normalized content data store 3, positive rating records 8 or negative rating records 7 will be created and/or incremented and directly associated with the noteworthy content which is the subject of the rating transaction 6. For any type of enriched transaction, including the rating transactions 6 being discussed here, transaction activity audit records 9 can be created to log the specific context and content which fully define the transaction. These audit records will also include the user, security context, and data and time at which the transaction was executed. Enriched inquiries 10 may reveal the cumulative rating information about any specific normalized content. In FIG. 30, the flow for Content A through the illustrated process reflects the rating transactions 6 and their specifics (7, 8) to provide a net rating score for the noteworthy content. Similarly the flow through the illustrated process for Content B reflects its net rating score. In both cases, the rating transaction activity can be reconciled with the respective net rating score.

[00219] One functional diagram of a user interface model to create ratings for content is shown in FIG. 31. In this embodiment, a user interface model is presented where simple actions such as revealing a context action menu relative to content such as link to a web page 1 within a web browser can trigger a process to log and/or increment a positive or negative rating related to the noteworthy content 1. As shown, the noteworthy content which warrants a rating, in this case the link to web page B is sensed by a browser extension 2 component provided in this embodiment which serves to trigger the process logic 4 to log and/or increment the rating and relates 8 the rating log record to the noteworthy content. The user interface, using a context menu or other common method such as dragging and dropping the content onto a rating icon

which the system might make available, identifies the noteworthy content, in this case web page B2. The rating transaction process 4 then ascertains 5 whether the noteworthy content has been previously normalized within the system. If the noteworthy content needs to be normalized, it will be done in step 6 of this process. Relating the rating and noteworthy content can now be done in step 7 and will result in the database activities described earlier. Whenever a transaction is performed to enrich content, a transaction audit record 8 can be created which records the transaction type, the content affected, the user who initiated the transaction, and the date and time when the transaction was executed. This audit information allow many forms of inquiry to reveal the insight surrounding enriched content in all of the dimensions recorded in the audit records. The majority of the discussion for this embodiment of methods to enrich information has focused on the initiation, processing, and the information storage used to persist the impact of enriched content transactions by storing relationships, comments and their content relationships, or ratings within system database tables. An additional benefit of the system accrues when the insight reflected by the enriched transactions are revealed in response to enriched content inquiries to the system as shown in FIG. 32, where a variety of content inquiry interfaces 2 are provided and allow prior insight related to disparate content 1 to be gleaned from the system content store 3. Full context surrounding the normalized content 4, the users 5 who have executed rating 6, comment 7, or relationship 8 transactions against this content can be inferred from the database. The transaction activity audit 9 records correlate the context which allows the enriched content inquiry display interfaces 10 to present content insight to users on demand. Inquiries can be centered on content 11, users 12, or time spans 13 within which transactional activity has transpired. The content inquiry user interface 2 and display 10 subsystems complement the enriched content data store 3.

One Embodiment of Methods to Share Information of Disparate Types:

[00220] Building on the capture methods and introducing methods for sharing disparate content, identifying security communities of different users of the system, and providing sharing interfaces, the sharing of disparate information can be accomplished.

[00221] As shown functionally in FIG. 43, once disparate content 1 has been normalized by the methods to capture disparate information 2 and can be referenced from a central location 6 and the methods to enrich disparate information 5 have directly 3 or implied a relationship 4 such

that the content is enriched and normalized 6, the newly enriched content is now ready for sharing such as through passive sharing 8 or active sharing 9. The methods to share disparate information 7 allow any and all prior experience with normalized content to be available whenever and wherever this content may be re-encountered. Passive sharing 8 allows the results of transactional activity on the normalized content to be retrieved on demand. Active sharing 9 allows ordered collections of content and comments to be compiled by collaborative groups of users who may then choose to publish their insights through this system on the World Wide Web. These published collections can then be referenced using other popular information portals such as but not limited to Facebook, Twitter, or any other information outlet 10 that allows users to access information to communities over a network.

[00222] FIG. 44 functionally summarizes one embodiment of methods 4 to share, in an organized and secure way, the products of the systems and methods to capture 2 and enrich 1 disparate information. The methods to share disparate information 4 facilitates the access and extraction of selected content and enrichments to this content from the secure, normalized data store 3. In one embodiment, a collaborative security community 5 is created and ensures that a defined list of collaborating users 7 will be able to access a shared insight canvas 6 where they may collectively accumulate a set of related content and commentary which may contribute to some personal or group objective.

[00223] At any point in time, one of the collaborating users 7 may decide to privately or publicly publish the collective insights by transforming 8 the canvas 6 into "Web Page" form for delivery using standard web browser technology. The composition of and the optional publication of a shared insight canvas is only one embodiment of the active sharing model.

[00224] One model of sharing can be done using a passive sharing model. The system may be used in a highly secure private security community 1 where all transaction or activity related to normalized content (3, 4) can be reviewed only by the user who submitted the content to the system and transacted on this content. FIG. 45 shows that, as a result of some transactional activity, comments and relationships have been made to some content (3, 4) and that of subset of these comments and relationships have been selected for sharing by the user. This subset of context surrounding content can be shared by selecting another security context 2 or by dragging information between these distinct security contexts. Subsequent activity or transactions can be performed on any of the content within the system (3, 4, 3s, 4s) and new

content (6, 7, 8, 9) can be integrated into the system in any security context the user might choose. In this embodiment, the passive sharing model defines the capability of the system to review any and all normalized content, or activity performed on that content, immediately after the activity has been performed. The system further allows this reporting to segment the activity within dimensions such as time or the users who performed the activity.

[00225] A process flow for the passive sharing model is shown in FIG. 46. As shown, when a user is reviewing normalized content from within a specific security community 1, they can enrich this content by performing transactional activity to relate the content to other content. The user can also choose to comment on the significance of this content 2. At some point the user may wish to more broadly share some of the insights revealed in the content relationships and comments. They can select which comments 2 and relationships 3 should be shared by selecting another shared security community 4. Alternatively, the user can explicitly drag content 5 from a view representing content within one security context to content within another view representing the desired shared security context.

[00226] This is called passive sharing model because no formal publication process must be performed in order to share the content or context surrounding the content. If another user has authorized access to a security community, they will be able to review and extend the content and context 6. Any authorized user can, at any point in time, review the content and context they have accumulated 7 or any additional content or context added by other authorized users 8. Subsets of the content and context maintained within discrete security contexts within the system can be freely exposed within other security contexts as authorized users deem appropriate 9. Over time iterating on the process 10 creates a rich web of content and context which expose the multidimensional insights of individuals or collaborating groups of users. This passive sharing model builds a natural social network of users who share an interest in specific content. This social network can be built, maintained, and accessed without the requirement to access a specific web site within a web browser to interact within the network. The system presents its interfaces in a variety of ways which include the desktop, add-ins or extensions to applications which expose disparate content, as well as integrated system applications. The effect is that the social network can be exposed, accessed, and extended as a natural extension to the user's typical information workflow rather than imposing the requirement to visit a specific web site within a Web Browser.

[00227] Embodiments of the passive sharing model provide many additional features. For example, when a user reviews content from within the system or, in some embodiments, reviews the information from its original source location such as a link within a browser, the system makes available accumulated context surrounding the content based on previously established relationships. As illustrated in FIG. 47, if content 1 is being reviewed, the user may be able to review relationships to other content, the list of users who have acted upon the content, the time periods when these transactions occurred. If a user 2 is being reviewed, all of the content acted upon by the user, the groups in which they publicly participate, and the time periods in which they have initiated activity on content can also be reviewed. If the transactional activity across a specific time period 3 is being reviewed, all of the content transacted on during that time period and the specific users who performed these transactions are also available for review.

[00228] FIG. 48 illustrates the cycle of multidimensional passive sharing, this cycle shows how encountering some content 1 may lead to some users 2 whose activity overlaps with a time period 3 which reveals other content 5 accessed by other users 5 who have transacted on content 5 which, in turn, may relate to our original interests 1.

[00229] The passive sharing model adds significant value to well established information models like the World Wide Web by exposing the extra dimensions of explicit information relationships, user activity, and transactional timelines in a manner which augments the traditional presentation of information.

[00230] In contrast with the passive sharing model which follows a more random, serendipitous exploration model, the active sharing model provides a methodology to allow ordered sets of content to be compiled and shared. As illustrated in FIG. 49, active sharing is centered on a collaborative security community which exposes a shared insight canvas 2 which is available for review and extension by an authorized group of users 6. The shared insight canvas essentially represents some central topic or idea which can serve as an anchor point for related and ordered content or comments. As with passive sharing, selected content (3, 4), relationships to this content and comments about the content can be integrated into the shared insight canvas (3s, 4s) within its implied collaborative security context. Once a canvas has been initialized, it can be extended with additional raw content 5 and this process can be iterated on by any users with access to the canvas 6.

[00231] One embodiment of the process flow for the active sharing model is shown in FIG. 50. Although there is no prerequisite that information from with the system be available before creating and populating a shared insight canvas, it is common that pre-existing enriched content (1, 2, 3) will serve as a basis for active sharing. Once a shared insight canvas has been created 4 and, optionally primed with pre-existing content (1, 2, 3), any user authorized to extend the canvas can integrate 5 or relate 6 content from any source. Freeform comments 7 can be interspersed wherever desired within the shared insight canvas to help express the purpose of the communication. As shared insight evolves, additional users 8 can be invited to contribute their insights to the topic at hand and about the content already integrated within the canvas. Reordering of comment or content segments is possible within the canvas to allow the topic or topics to be presented in the most efficient manner. At any point, any authorized collaborator can publish the canvas in browser compatible web page format for secured or public consumption.

[00232] Shown in FIG. 51, the shared insight canvas 1 has four main components. The main editable area of the canvas 2 contains an orderable set of comments and/or content segments. Content segments themselves contain comments and relationships to other content. If the shared insight canvas is ever transformed into published web page format, any content or comments included in the publishable shared insight section are transformed into the published work. The private, offline shared insight panel 3 allows collaborating users 4 to communicate background thoughts or insights which they feel should be withheld from the published work. This panel can also be used to temporarily stage content for review before moving it to the publishable 2 panel since content of comments can be freely moved between these panels. The user access panel 4 is used to authorize access to collaborating users at varying levels of access privilege. The publishing control 5 will be discussed in more detail in its own section.

[00233] For the embodiment shown in FIG. 52, the shared insight canvas allows an ordered set of content and / or comment segments to be compiled and composed by a collaborative team. In many cases, the canvas is an acceptable way to deliver the insight. In other cases however, an individual or collaborative team may wish to publish the insight compiled within a canvas more broadly in web page format 2 within a private network, or to the orld Wide Web. This embodiment transforms the ordered content from the publishable section of the canvas into hypertext markup language (HTML) so that the insights compiled within the

canvas can be explored using standard browser technology. In addition, the published web page can be automatically posted through popular networking portals like Facebook and Twitter.

[00234] Another embodiment of the shared canvas is shown in FIG. 53 that recognizes when web pages are viewed within a browser 5 they contain hyperlinks to other content 4. This embodiment integrates with information presentation applications like the browser by integrating a shared insight add-in 6. This add-in can query the system normalized and enriched content store (1, 2, 3) and return insight 7 previously shared passively or actively by system user. Rather than just being able to click through to the content represented by hyperlinks within the browser, system users can now expose multidimensional insight 7 on demand from any link. The previously described programmatic interfaces for capture and enriching information provide the necessary programmatic interfaces to allow the shared insight browser add-in 6 to expose the multidimensional insight 7.

[00235] As shown in FIG. 54, at a very high level and with architecture to support any type of content within that content's native viewer 1, this embodiment of a system for sharing disparate information can provide a specific system add-in 3 to expose multidimensional insight 4 for any type of content 2. The multidimensional insight 4 exposes who 5 has initiated transactional activity on the target content 2, when 6 this transactional activity took place, and, in some cases, what other content 7 may have been related to the target content 2. Once this multidimensional insight is exposed, the process can easily become recursive 8 as the user explores content exposed within the multidimensional insight viewer 4. This embodiment of a method for sharing disparate information integrates explicit and explicit prior experience with content into the mainstream information delivery systems used today. This embodiment effectively builds an ad-hoc social network centered on the content which naturally flows through the typical workflow of information consumers.

[00236] This is but one example embodiment of methods to share information and other embodiments might integrate similar technology within other information sources such and email client application or file explorer applications to allow for multidimensional insight to be exposed when other types of information are re-encountered after having been integrated into and enriched by the system.

One Embodiment of the Information Capture System:

[00237] The various method embodiments of the invention will be generally implemented by a processor based device, such as but not limited to a computer, or a network of client and server computers, executing a sequence of program instructions for carrying out the steps of the methods, assuming all required data for processing, communicating or receiving data is accessible to the computer, which sequence of program instructions may be embodied in a computer program product comprising media storing the program instructions.

[00238] For illustration purposes and not for limitation, one embodiment of a processor-based system by which the method of the present invention may be carried out is shown a system 1100 in FIG. 11. In this embodiment, the server subsystem 1120 includes a processing unit, which houses a processor 1122 or multiple processors, input/output elements 1124, memory 1126 and other systems components that implement a general or special purpose processing system or computer that may execute a computer program product 1128 comprising media, for example a compact storage medium such as a compact disc, which may be read by processing unit through disc drive or any means known to the skilled artisan for providing the computer program product to the general purpose processing system for execution thereby. The server program product 1148 may also be stored on hard disk drives within processing unit or may be located on a remote system such as a server, coupled to processing unit, via a network interface, such as an Ethernet or wireless interface. The server subsystem is also capable of communication and/or receiving information or data through and input/output elements comprising common data communications means such as but not limited to modems, transmitters, receivers, cell phones. Note that in some embodiments, no addition peripherals are required to perform program functions on server configurations defined for this embodiment of the present invention.

[00239] A functional block diagram of one embodiment of server program product is shown as 1200 in FIG. 12 and generally includes modules of program logic to implement the methods described in this description. One embodiment providing capture and normalization functions includes those elements aligning with callout A and generally comprises a programmatic service interface module, a normalization module and a system content inquiry module. The programmatic service interface receives information for capture and normalization. This module interfaces with other modules in the system which may appropriately process

content from a variety of information sources as described earlier. This module also interfaces with the capture and normalization module to submit the information for normalization. The capture and normalization module performs the capture and normalization functions described above. This module receives the information sets from the programmatic service interface module and maps selected characteristics of that information set to a set of normalized characteristics. This mapped information, or a mark of that information, is stored in memory in a Content Reference Table. In some embodiments, an identification module is provided that identifies the type of information received and uses this identity to select the mapping methods used by the normalization module. In most cases, the identification module will reside in the capture interface, but could also reside in the capture and normalization module. The system content inquiry module performs the function of retrieving content previously normalized and captured by the system. This module remotely interfaces with and responds to the client modules within system or custom applications which can then utilize the content references returned by the system in any number of ways.

[00240] Other modules may be added to perform functions specific to the application such as facilitate the integration of custom content or other extensions to the functionality described herein. It is understood that in some embodiments, the server program product may be working with "dumb" clients and therefore the server can also include modules that provide the user interface or capture interface functionality. In some of these embodiments, the user interface is a single graphic user interface that consolidates the user's access to the system features. These modules may interface with the any other module within the application including the programmatic service interface module, the normalization module or the system content inquiry modules described above.

[00241] For illustration purposes and not for limitation, one embodiment of the present invention also includes a client subsystem as shown as 1140 in FIG. 11. The client subsystem can include similar components as the above described server subsystem including but not limited to a processing unit, which houses a processor 1142, input/output elements 1144, memory 1146 and other systems components that implement a general or special purpose processing system or computer that may execute a computer program product 1148 comprising media, for example a compact storage medium such as a compact disc, which may be read by processing unit through disc drive or any means known to the skilled artisan for providing the

computer program product to the general purpose processing system for execution thereby. Similar peripherals, such as but not limited to a monitor, mouse, keyboard, scanner, printer and other peripherals can be coupled to the client subsystem in methods well known in the art.

[00242] The computer program product for the client subsystem, the client program product, can be implemented and stored using methods similar to those described for the server program product. In one embodiment, as shown in the functional block diagram in FIG. 13, the client program product 1300 generally includes a capture interface module, a programmatic service interface module, a capture and normalization module and a system content inquiry module. These elements are highlighted as those aligning with callout A in the figure. These modules typical communicate and coordinate their functions through services which engage server program modules to accomplish the desired capture or inquiry functions. Again, in some of these embodiments, the client user interface is a single graphic user interface that consolidates the user's access to the system modules and features. FIG. 13 also illustrates a possible embodiment which would define a system which does not store or reference content from a network. As mentioned previously, this type of embodiment could be used in highly secure environments or could facilitate a personal information manager which might manage only the information resident on the client device. The capture interface module provides the user interface to submit content to the capture system. The capture interface performs the function of submitting disparate content to the programmatic service interface for normalization and capture. This module interfaces with other modules in the system which may gather content from a variety of information sources. As shown, the capture interface may contain an identification module that identifies the content type being submitted for capture and normalization. This module may interface with a programmatic service interface module within the client subsystem or it may communicate with a programmatic service interface on a server subsystem. The programmatic service interface provides the interface between the capture interface and the capture and normalization module. This interface receives the information set and submits it to the capture and normalization module. The capture and normalization and system content inquiry modules in this client embodiment perform functions similar to the normalization module in the server program product described above. Other modules perform the functions specific to the application. These modules may interface with the any other module within the client

program product. Such modules can be used to extend the capability of the system to integrate custom content types or other functions such as automated submission of content for capture.

[00243] It is understood that embodiments of the capture system program product can be provided that have various, and sometimes all, of the server and client program product modules residing and working on either the client or the server. Therefore, it is contemplated that this system can be provided using only a central server program product as well as provided using a stand-alone processor based system or any mixture of the two types of systems.

[00244] In other embodiments of the information capture system, as shown in FIG. 11, the client subsystem 1140 can comprise processor based peripherals such as laptop computers 1140B, desktop computers 1140A and mobile phones 1140C. It is understood that any other type of peripheral capable of communicating information can also be used such as but not limited to Personal Data Assistant's like a Blackberry, Palm or iPod, Point of Sale devices or netbooks. Depending on the capability of the client side device, the division of labor between the client and server may shift to the server for less capable client devices and to the client for more capable client devices.

[00245] It is understood that although the above description illustrates one embodiment of a capture system, it is expected that some embodiments of the capture system will include pieces of functionality such as modules that provide enriching or sharing functions. For example, as shown in FIG. 12, a server program product may also include modules representing enriching features as highlighted by those elements corresponding to callout B. The enriching system would include the enriching interface that allows the system user to create enriching transactions. The enriching interface then communicates with the enrich module through the programmatic service interface as describe herein. The enrich module can include a relationship module and a comment module to execute the content enrichment commenting processes and content enrichment relationship process discussed below. The enriching interface, programmatic service interface and/or the enrich modules may then communicate with the database through the database interface. Similarly, as shown in the callout B components in FIG. 13, a client program product can provide the same type of enrich system components and functionality.

[00246] Furthermore, as shown in FIG 12, a server program product may also include modules representing sharing features as highlighted by those elements corresponding to callout C. The sharing system would include the sharing interface that allows the system user to create

sharing transactions. The sharing interface then communicated with the shared module through the programmatic service interface as described herein. The share module can include a passive sharing module and an active sharing module to execute the methods described for these features. The sharing interface, programmatic service interface and/or the share modules may then communicate with the database through the database interface.

[00247] It is understood that although the systems are described independently, components of one system can be used interchangeably with components of other systems can can be combined into an integrated capture, enrich and sharing system.

Example Embodiment of Information Capture System and Methods:

[00248] The following description of an example embodiment is meant to serve as an illustration only of one embodiment of systems and methods to capture disparate content or information. This illustration is not intended to limit the scope of the inventions disclosed.

[00249] An overall functional diagram of this example embodiment is shown in FIG. 14. Consistent with the discussion above, this example embodiment allows users 2 to access disparate content 1 in such a way as to eliminate the fundamental formatting and storage differences between the disparate content 1 as symbolized by the varying shapes in the illustration.

[00250] Common among current information usage scenarios, such as attempting to explicitly create a relationship between an email message accessed through Microsoft Office Outlook with a web page accessed through a web browser cannot be easily accomplished without significant effort on the part of the user. In this scenario, the email message content is stored and controlled by a dedicated computer application program which manages its own proprietary data storage model for email messages. The web browser dynamically presents links to web pages as they are viewed by the user with no automatic or reliable persistent storage of the content. The scenario is exacerbated when the User accesses content from a wide variety of disparate sources whose content management and storage methodologies may be incompatible.

[00251] The information capture systems embodiment shown in FIG. 14 is intended to provide simple and pervasive user interfaces 3 and programmatic interfaces 4 to a content capture and normalization process 5 which presents normalized content or information in a normalized content reference database and data store 6 which provides a single location from

which the user 2 can review all of the disparate content which may be significant in their information workflow. The system maintains a list of authorized users 7 who can submit content to the system. The system also maintains a comprehensive activity audit 8 to ensure that content introduced and manipulated within the system can be attributed to a specific authorized user 7 at a specific point in time.

[00252] Symbolically, the system smoothes the sharp edges 9 which may create friction between nodes of content allowing them to be used more interchangeably within a variety of contexts. Much as in the mechanical world, certain fasteners such as nut and bolts are built to certain specifications for certain applications and matched sets must be used to accomplish a give task. Similarly, disparate content which can be presented in a consistent, normalized way will provide more flexible raw material for systems which may want to add value to this content.

[00253] As described above, this capture and normalization system takes content or information with various information characteristics and normalizes the information into a set of normalized characteristics according to normalized fields. By normalizing the information in this embodiment, including assigning a uniform resource identifier or mark to the information, other features are also possible such as relating one normalized content set to another. For example, in the "Relate Content" 10 shown, the email message and web page, despite their different data formats, can now be cross referenced without regard to their disparate origins and data formats. It should be noted that all of the database designs discussed below may be optimized to use additional tables or table fields to represent certain data types, so these should not be considered to be the only database designs capable of being used with embodiments of this invention.

[00254] Referring again to FIG. 14, a Content Reference Table represents the normalized fields for normalized information within memory or node 6. In this embodiment, the system normalizes content through the use of a relationship database to store references to the disparate content captured and normalized by the system. As an example, the field structure of the content reference data table would follow the form shown in the Content Reference Table below.

Content Reference Table

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1, 2, 1343433434343434, …
Content URI	Uniform Resource Identifier	http://www.somesite.com/abc.html, https://ournetwork/securedocuments/xyz.doc
Content Type	String	Web Page, Microsoft Word Document, …
Content Title	String	The ABCs on this site, Our contract with xyz corporation
Content Source Path	File Path	file:///c:/MyDocument/def.txt, d:\contracts\xyz.doc \\NetworkFiles\securedocument\personnel.xls

[00255] In embodiments consistent with the examples described, the unique number data type can be described as follows. In some embodiments, the unique number is an integer numeric value assigned by a system service from a pool of potential integer values ranging from 0 to 264 (a 64 bit integer value). In these embodiments, as the system is accessed by multiple users, when system activity requires the assignment of a unique content identifier, a central system service is invoked through a programmatic interface to assign the unique 64 bit integer value which will be used as the unique content identifier. In other embodiments, a Global Unique Identifier (GUID) or any other unique alphanumeric variable could be used equivalently to serve as the unique content identifier. Other methods of generating a unique number or alphanumeric variable can also be used and are contemplated.

[00256] Ensuing steps in this example embodiment will refer to and show examples of the Content Reference Table being populated as the capture and normalization processes for specific types of content are described.

[00257] Although the sign-on and authentication process is not detailed in the scope of this description, in this embodiment only users who could be authenticated against the system

User Table will be able to submit content to the system for capture and normalization. For completeness, and to allow for the later discussion of system activity audit functionality, we include an example minimal structure for the User Table here. The User Table below represents data within node 7 in FIG. 14.

User Table

Field Name	Data Type	Sample Field Value
User ID	Unique Number	1, 2, 177743343434, …
User Identifier	Email Address	joe@somedomain.com, userxyz@hotmail.com
First Name	String	Joe, Sally
Last Name	String	Doe, Peters

[00258] The capture and normalization process for any disparate content submitted to the system will create a time stamped activity audit record which will be attributed to the user who initiated the activity. This activity audit capability provides a time ordered list of content that individual users have accessed within or submitted to the system. The Activity Audit Table below represents data within node 8 in FIG. 14.

Activity Audit Table

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	1, 2, 156445474343434, …
User ID	Unique Number	References valid Users within the User Table
Content ID	Unique Number	Referenced the Content which was the subject of this Activity
Transaction Activity Type	String	Content Submitted, Content Inquiry,
Time Stamp	Date Time Value	2010-01-19 15:13.32

[00259] Referring to FIG. 14, user interfaces 3 (also referred to as capture interfaces) can be implemented in several different models. Content may be submitted to or acted upon by the system in many ways by the user as facilitated by system software integrated within the user's desktop. We will describe two of the distinct user interface models used in this embodiment which could be used to submit content form capture and normalization by the system. These and other potential user interface models ultimately interface to the system through its programmatic interfaces. Other user interface models, including voice recognition or probes implanted within the user's brain could be used to accomplish the same function as the methods described below. The point of emphasis in this discussion is to define user interfaces which can accomplish the following tasks. First, identify content from disparate sources in a way where and address can be used to later access this content. Second, perform a well defined transaction on the content once it has been identified. A transaction can be defined as "an action that adds, removes, or changes data in a database or other computer program".

[00260] One user interface model comprises a drag and drop model. As illustrated in FIG. 15, the system may make available, on the desktop and / or within system application programs, specific "User Interface" icons or other visual elements which indicate a location, where if content is dropped, the system will initiate a well defined transaction process on that content. The drop event logic behind the capture interface element is: (1) be able to uniquely identify

dropped content from among the content types supported by the system (the content identification methodologies are outlined in more detail in the specific discussion of the content specific capture processes); (2) ensure that the dropped content has been captured and normalized by the system as this is a prerequisite for any enriched transaction processing; and (3) if the transactional command implied by the target of the drag and drop operation goes beyond simple capture and normalization, the command will initiate, through the system programmatic interface, the specific system transaction process responsible for enriching the submitted content.

[00261] The system may provide integration add-ins or extensions into a wide variety of content management programs and implement widely known methods for providing context sensitive actions to be performed based on menu items exposed when the user performs an action such as right clicking the mouse over some content exposed by the application. The application programming interfaces to web browsers, email client applications such as Microsoft Office Outlook, Microsoft Windows Explorer, the Microsoft Windows Desktop, and other applications programs are well documented and widely accessible through most programming languages. When a context menu handler is implemented within an application program which supports context sensitive actions to be performed on the content the application exposes, the content type is generally implied or supplied by the application itself. That is, implementing an "Accelerator" within the Microsoft Internet Explorer Browser to expose a "Capture and Normalize" contextual action would automatically know whether the content acted upon was a web content or Abstract Content from "Selected Keywords" and would be able to identify the appropriate capture and normalization process to be initiated through the system programmatic interface because of specific code path that was being executed. Other commands which may serve to further enrich the content would have access, as needed, to the capture and normalization process as well as the specific content enrichment processes through the system programmatic interfaces.

[00262] Referring to FIG. 14, the user interfaces 3 discussed above, ultimately submit capture and normalization requests to the system through the programmatic service interfaces 4. Because of this, the system can theoretically be accessed by any program written in any language which supports standard web service calling methods. It is also understood that the systems and methods disclosed could be augmented by programs written by other parties that interface with the programmatic service interfaces.

[00263] Referring to FIG. 16A, at a generic level, and compatible with the data models expressed earlier in this document, the program call to submit content to the system for capture and normalization would have the signature shown in FIG. 16B (more parameters may be present for certain content types). In each process for the capture and normalization of a specific content type, the parameters which will be passed to the "SubmitContent" method will be enumerated and the method of their derivation will also be described. The illustrations describe embodiments with steps of the capture and normalization process being performed by specific system elements, but it is understood that other configurations of process performed by different system elements can be used to perform the same system functions, such as but not limited to a server implementation that provides all system functions except for a user interface.

[00264] Referring to FIG. 17A, web Content 1 can be dragged and dropped by the user onto any system capture interface 2 exposed on the desktop or within any system enabled application. Web content can also be directly submitted to the programmatic interface 3 by any system application or other application with proper authentication.

[00265] Of all content types supported in this embodiment, web content could be considered to be the base content type. In its native form being displayed or referenced within a web browser application, web content is represented by a URI (Universal Resource Identifier) which may be a URL (Universal Resource Locator). Within this system, web content will also be referenced with a URI. Symbolically, because there is no real change in the state of the web content, it is seen to "keep its shape" as illustrated in FIG. 17A.

[00266] The impact is that there is now a reference or data container for the web content in the system which can simply log that the user thought that the content was noteworthy enough to treat differently than other content they have encountered. Thus, this content will, at a minimum, appear in an audit trail of the user and system activity.

[00267] The concept of a reference or container around the content is more significant however as, in its standard, normalized form, it can now be acted upon in a variety of ways such as relating it to other normalized content which may have been integrated from other disparate sources. These applications will be discussed briefly later in this document and in more detail in as part of other inventions which may build upon this invention.

[00268] Regarding a drag and drop capture interface 2, if the capture interface recognizes that the dropped text or link content is in the format of a URI (Universal Resource Identifier)

which uses secure or unsecure Hypertext Transfer Protocol (http or https) providing unambiguous access to content on the internet or a secured private network, the URI will be forwarded as web content to the programmatic interface 3.

[00269] The programmatic interface 3, or service method signature to submit web content 1 to the capture and normalization services 4 is as shown in FIG. 17B.

Example of One Embodiment of a Web Content Capture and Normalization Process

User ID	An authenticated user will be responsible for the initiation of a transaction within the system.
Content and Resource Identifier	This parameter will contain a valid Uniform Resource Identifier (URI) which is suitable for display within a standard Web Browser Application. A caller of the programmatic interface simply passes in the URI of the content they wish to capture and normalize. The system, as a result of this process will generate a Unique Content Identifier which will map this content to other tables within the system.
Content Type	The content capture process maintains a list of common web content types which may be submitted to the system. If the submitted URI matches one of these content types based on the configuration of the URI, the content type will not be set to the generic "Web Page" type which is used as the default. For example a URI in this form: http://www.facebook.com/profile.php?id=00090084 Would be interpreted as a "Facebook Profile Page" based on the "www.facebook.com" domain and the "profile.php" web page navigation. Many other predictable "Web Content Types" can be recognized and added to the process lookup logic.
Content Title	The content capture process attempts to navigate to the submitted URI. If this navigation is successful, the content capture process attempts to retrieve the title metadata from the response returned from the server. If the navigation is not successful, or if no title can be retrieved from the response returned from the server, a title is generated from the submitted URI. This title is intended to be more human readable that the submitted URI. For example the URI: http://www.microsoft.com/en/us/default.aspx has a Title Metadata value of "Microsoft Corporation" but, if the Title Metadata was not, for whatever reason, available for this page, the process would generate the title "microsoft.com / default.aspx" eliminating much of the extraneous address conventions. If the Title is not suitable for the user they can change the title of content they

	have submitted.
Source Path	Since the submitted content already exists on an accessible public or private network, a Local Source Path is meaningless in this use case.
Source Identifier	Since the submitted content already exists on an accessible public or private network, a Local Source Identifier is meaningless in this use case.

[00270] If the URI http://www.microsoft.com/en/us/default.aspx was submitted for capture and normalization, the resultant database row of the Content Reference Table might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Content URI	Uniform Resource Identifier	http://www.microsoft.com/en/us/default.aspx
Content Type	String	Web Page
Content Title	String	Microsoft Corporation

[00271] If, for example, the URI http://www.microsoft.com/en/us/default.aspx was submitted by the user with ID:1234 for capture and normalization the resultant row of the Activity Audit Table might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	66454
User ID	Unique Number	1234
Content ID	Unique Number	3233 Note that this ID matches the ID from the Content Reference Table for this transaction reflected above
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-19 15:13.32

[00272] File content capture and normalization process is shown in FIG. 18A and 18B. File content 1 can be dragged and dropped by the user onto any system capture interface 2 exposed on the desktop or within any system enabled application. File content can also be directly submitted to the programmatic interface 3 by any system application or other application with proper authentication. Once received by the programmatic interface 3, File content is normalized by the capture and normalization services 4. File content originated from local or network file storage locations is uploaded to a system file storage location so that the content can then be referenced in the same way that web content can be accessed with a URI referencing this uploaded file location. Within this system, file content can now be referenced with this URI and, symbolically, the file content it is seen to "change its shape" to become more compatible with web content as illustrated above. This shape change is conceptual indications that normalization has taken place for the content, the act of making it react, in many ways, similarly to web content which is the base content type within the system.

[00273] Importantly, during the normalization process, a linkage back to the original file content source location is maintained to allow the original user who submits the file content to the system to later correlate this source location to the newly assigned network location.

[00274] For a drag and drop content interface, if the capture interface 2 recognizes that the dropped data packet meets either of the following conditions, the packet will be forwarded as file content to the programmatic interface 3: (a) the submitted data packet is in the "FileDrop" or an

equivalent format which allows the data packet to access the local or network specifications for file content or (b) the submitted data packet is in "Text" format and the submitted text is a valid local or network file specification ("file:///C:/folder/xyz.doc", "C:\folder\xyz.doc", etc).

[00275] The programmatic interface 3, or the service method signature to submit file content 1 to the capture and normalization services 4 is shown in FIG. 18B.

Example of One Embodiment of a File Content Capture and Normalization Process 4

User ID	An authenticated user will always be responsible for the initiation of a transaction within the system.
Content and Resource Identifier	This parameter is generated by the capture and normalization process and will be a URI for the secure network address for the submitted file once it has been uploaded to the system file store. The URI may be composed in several ways depending on the specific embodiment and what follows is one possible URI format. http://capturesystem.filestore.com/UserID/Documents/xyz.doc This example uses a system file store domain and qualifies the file location with the UserID who has made the capture request and an assigned documents folder for that user. The filename is extracted from the Source Path and used as the file name within the URI. Name and directory conflicts are handled using qualified file and folder names as required. The system, as a result of this process will generate a Unique Content Identifier which will map this content to other tables within the system.
Content Type	When the file content is submitted from the client system, the system registry can be queried with the file extension of the submitted file. Standard system functions allow these inquiries and if the file "C:\folder\xyz.doc", and thus the ".doc" file extension was submitted to the registry, the Content Type would be returned as "Microsoft Word Document". If no value is found in the registry for the submitted file, the generic "xxx Document" will be used where "xxx" is the file extension of the submitted file.
Content Title	The title of file content can be derived from the file's name within its folder or, if available, from a specific title the user may have entered using the operating system file metadata feature which is accessible through standard operation system interfaces. If the Title is not suitable for the user they can change the title of content they have submitted.
Binary File Data	In order to provide normalized access to the file from the system network, the file must be uploaded to the system file store. The capture and normalization process uses standard system binary file data access and encoding functions to read and prepare the Binary File Data for upload as part of the submission.

Source Path	The local or network Source Path is forwarded with the submission so that users can later inquire from the local system or network passing in the original Source Path to map this Path to the Content Identifier URI for the uploaded, normalized version of the file.
Source Identifier	If the file submitted is resident on a local system storage device, the Unique Computer ID is submitted so that conflicts with similar paths from other computers can be arbitrated on later inquiries. An inquiry to the system for a file which was uploaded from a local Source Path will only match if the inquiry is made from the same computer from which it was submitted. Other users on other computers may access the normalized file by its Content Identifier URI, but will not be able to match it to a source document on their computer.

[00276] Given the process steps outlined above, if, for example, the file "C:\folder\xyz.doc" was submitted for capture and normalization by a user with the identifier "JoeD" from a computer with the ID "3434314abfe334c3443ddcf333d", the resultant Content Reference Table database row might look like that shown below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3563
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/Documents/xyz.doc
Content Type	String	Microsoft Word Document
Content Title	String	xyz.doc
Content Source Path	File Path	C:\folder\xyz.doc
Refined Source Identifier	String	3434314abfe334c3443ddcf333d

[00277] If, for example, the file "C:\folder\xyz.doc" was submitted by the user "JoeD" with ID:1234 for capture and normalization the resultant Audit Table database audit row might look like this below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	26454
User ID	Unique Number	1234
Content ID	Unique Number	3563 Note that this ID matches the ID from the Content Reference Table for this transaction reflected above
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-21 11:10.12

[00278] One embodiment of the process for Outlook content capture and normalization process is highlighted in FIG. 19A and 19B. Microsoft Office Outlook is a widely used email messaging and productivity software application which presents large volumes of content to a large number of users within the context of their information workflow. This embodiment of the invention supports Outlook content as first class content which can be captured and normalized. Referring to FIG. 19A, Outlook content 1 can be dragged and dropped by the user onto any system capture interface 2 exposed on the desktop or within any system enabled application. Outlook content can also be directly submitted to the programmatic interface 3 by any system application or other application with proper authentication. Once received by the programmatic interface 3, Outlook content is normalized by the capture and normalization services 4. Much like file content, Outlook content is copied, transformed, and the resulting data is uploaded to a system file storage location so that the content can then be referenced in the same way that web content can be accessed with a URI referencing this uploaded file location. Within this system, Outlook content can now be referenced with this URI and, symbolically, the Outlook content it is seen to "change its shape" to become more compatible with web content as illustrated above. This shape change is conceptual indications that "Normalization" has taken place for the content, the act of making it react, in many ways, similarly to web content which is the base content type within the system.

[00279] Importantly, the system network accessible rendering of the Outlook content also, in all cases, contains a reference key back to the original Outlook source content.

[00280] In this embodiment, the capture interface comprising a drag and drop case 2, if the capture interface recognizes that the dropped data packet is in the "OutlookDataObject" format, the packet will be forwarded as Outlook content to the programmatic interface 3. Microsoft Office Outlook exposes an open programmatic object model which allows external application programs to read and write messages within Outlook. This embodiment of the invention uses this public interfaces to extend and add value to the information provided by communication products such as Outlook.

[00281] The programmatic interface 3, or the service method signature to submit Outlook content 1 to the capture and normalization services 4 is as shown in FIG. 19B.

Example of One Embodiment of Outlook Content Capture and Normalization Process 4

User ID	An authenticated user will always be responsible for the initiation of a transaction within the system.
Content and Resource Identifier	The Outlook Object Model allows its content to be transformed and saved in a variety of formats including Hypertext Markup Language (HTML) the language of the World Wide Web. This embodiment of the application uses the Outlook Object Model to replicate the native Outlook content into HTML format in preparation for the normalization process. This parameter is generated by the capture and normalization process and will be a URI for the secure network address for the submitted Outlook content once its transformed rendering has been uploaded to the system file store. The URI may be composed in several ways depending on the specific embodiment and what follows is one possible URI format for an Outlook Email Message submitted to the system. http://capturesystem.filestore.com/UserID/Email/EmailMessageSubject.html This example uses a system file store domain and qualifies the file location with the UserID who has made the capture request and an assigned Email (as appropriate to the specific Outlook Content Type) folder for that user. The filename is extracted from the specific message data in, in the case of an Email message, the filename will be derived from the Subject of the Email Message. Name and directory conflicts are handled using qualified file and folder names as required. The system, as a result of this process will generate a Unique Content Identifier which will map this content to other tables within the system.
Content Type	The Content Type that is submitted for capture and normalization is strictly defined within the Outlook Object Model used for the process and it will be extracted and will be one of the following content types in this embodiment. Outlook Email Message Outlook Appointment Outlook Contact Outlook Task
Content Title	The various Outlook content types have a variety of field with define the messages or content. This embodiment accesses these fields using the Outlook Object Model

	for the following content types. Outlook Email Message Subject Field Outlook Appointment Subject Field Outlook Contact Full Name Field Outlook Task Subject Field If the Title is not suitable for the user they can change the title of content they have submitted.
Source Identifier	The Outlook Object Model exposes an EntryID field which uniquely identifies content items within its proprietary data store. The capture and normalization process stores this EntryID in this Source Identifier field to allow users to correlate, at any time, the original Outlook Content to captured and normalized system reference to that content.

[00282] If, for example, the Outlook email message with the subject "The Agenda for our meeting" was submitted for capture and normalization the resultant database row of the Content Reference Table might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1267
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/Email/TheAgendafor ourmeeting.html
Content Type	String	Outlook Email Message
Content Title	String	The Agenda for our meeting

[00283] If, for example, the URI Outlook email message with the subject "The Agenda for our meeting" was submitted by the user with ID:1234 for capture and normalization the resultant database audit row of the Activity Audit Table might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	78454
User ID	Unique Number	1234
Content ID	Unique Number	1267 Note that this ID matches the ID from the Content Reference Table for this transaction reflected above
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-09 11:33.42

[00284] It is understood that although examples for Outlook are described above, similar methods and systems could be implemented for other communications applications such as but not limited to Firebird, Eudora and similar messaging platforms.

[00285] The example embodiment is also able to capture and normalize abstract content. Abstract content is a term used to convey the concept of transforming a keyword like "Economics" into first class content which can be used as an organizing entity along with content of other types. If we could treat keywords the same way we treat web pages or a document, we could use ideas centered on keywords we might find within this other content as the focal point for threads of research we might want to pursue.

[00286] Referring to FIG. 20A and 20B, abstract content 1, in the form of keywords, can be dragged and dropped by the user onto any system capture Interface 2 exposed on the desktop or within any system enabled application. Abstract content can also be directly submitted to the programmatic interface 3 by any system application or other application with proper authentication. When abstract content as keywords are submitted to the capture and normalization process 4, they are transformed, in this embodiment, to a real node of web content whose contents consist solely of the keywords submitted. Within this system, the web page representation of the keywords can now be referenced with a URI and, symbolically, the abstract content it is seen to "change its shape" to become more compatible with web content as illustrated above. This shape change is conceptual indications that normalization has taken

place for the content, the act of making it react, in many ways, similarly to web content which is the base content type within the system.

[00287] For this drag and drop implementation of an interface for abstract content, the capture interface 2 recognizes that the dropped data in text format does not follow any known content format, it can be considered as abstract content. For example and not limitation, keywords such as "Project X" or "Patent Application" would be considered abstract content according to this test. Once the dropped data is recognized as abstract content it is submitted to the programmatic interface 3.

[00288] The programmatic interface 3, or the service method signature to submit abstract content 1 to the capture and normalization services 4 is as shown in FIG. 20B.

Example of One Embodiment of Abstract Content Capture and Normalization Process 4

User ID	An authenticated user will always be responsible for the initiation of a transaction within the system.
Content and Resouce Identifier	This parameter is generated by the capture and normalization process and will be a URI for the secure network address of the HTML file representation for the submitted keywords once it has been created and secured to the system file store. The URI may be composed in several ways depending on the specific embodiment and what follows is one possible URI format. http://capturesystem.filestore.com/UserID/Keywords/Economics.html or http://capturesystem.filestore.com/UserID/Keywords/PatentApplication.html or http://capturesystem.filestore.com/UserID/Keywords/ProjectX.html This example uses a system file store domain and qualifies the file location with the UserID who has made the capture request and an assigned keywords folder for that user. The filename is a variation of the keywords which represent the Abstract Content. Name and directory conflicts are handled using qualified file and folder names as required. The system, as a result of this process will generate a Unique Content Identifier which will map this content to other tables within the system.
Content Type	Abstract Content is a technical term for the content type and the actual content type specification in this embodiment will more likely be “Tag”, “Keyword” or “Folder” which more closely correlate to some close approximations of the utility of Abstract Content within existing information management paradigms.
Content Title	The Title for Abstract Content will also be the keywords submitted to the system which spawned the creation of the content.

[00289] If, for example, the keywords “Patent Application” were submitted for capture and normalization, the resultant database row for the Content Reference Table might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3869
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/Keywords/Patent Application.html
Content Type	String	Tag
Content Title	String	Patent Application

[00290] If, for example, the file "C:\folder\xyz.doc" was submitted by the user "JoeD" with ID:1234 for capture and normalization the resultant database audit row of the Activity Audit Table might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	8451
User ID	Unique Number	1234
Content ID	Unique Number	3869 Note that this ID matches the ID from the Content Reference Table for this transaction reflected above
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-11 11:19.52

[00291] Web content, files, Outlook content, and abstract content keywords provided a fairly broad range of content which users encounter in their information workflow. But custom applications and the custom data context they deliver still capture a significant share of attention from users every day. This embodiment of the present invention allows a wide range of additional custom content to be captured and normalized.

[00292] Custom content can be defined as any display of content by an application program from a data source than it controls that has some defined context. If this context which defines the content display is saved and presented back to the application program if would be able to restore its content display to the identical state. For example, as outlined in FIG. 21A and 21B, a real estate listing application 2 might be displaying properties from a data source 1 below $300,000 located within the 32339 Zip Code. The application might have an icon or other user interface element which when dragged would create an application context packet 3 which is formatted within the definition of the capture and normalization system's custom content methods 4. Once the system (5, 6, 7) have normalized the custom content context packet 8, if the user wishes to restore the saved application context 9, the system, when requested to open the context packet 8 will submit the context packet to through a custom application 2 interface which can, in turn call that application's open interfaces to restore the saved context. In the example used above the context packet may include the parameters: Price: < 300,000; and Location Code: 32339. In summary this embodiment of the present invention defines some simple conventions for custom interfaces to be built to allow existing applications to fully participate in sharing their information context within an information ecosystem which also normalizes access to most other common content types.

[00293] The application context packets described above, once submitted to the system, are packaged as file content with a specific content type of custom application context. Once this packaging as file content has taken place, the remainder of the processing for custom content is identical to that done for file content. In this embodiment, the custom application context document type is registered with the operating system and, when opening of the document is requested, the system application program associated with the custom application context document type executes, parses the context and instructs restores the application context using the application interfaces and context parameters specified in the document.

[00294] In this embodiment, the system recognizes the custom application context through the drag and drop format, creates a temporary custom application context document file in computer memory, and submits this binary file data to the programmatic interface 6.

[00295] The programmatic interface 3, or the service method signature to submit custom content 4 to the capture and normalization services 6 is as shown in 21B.

Example for One Embodiment of a Custom Content Capture and Normalization Process 7

User ID	An authenticated user will always be responsible for the initiation of a transaction within the system.
Content and Resource Identifier	This parameter is generated by the capture and normalization process and will be a URI for the secure network address of the system file representation for Application Context. The URI may be composed in several ways depending on the specific embodiment and what follows is one possible URI format. http://capturesystem.filestore.com/UserID/AppContext/ REListing123.appcontext This example uses a system file store domain and qualifies the file location with the UserID who has made the capture request and an assigned Application Context folder for that user. The filename is a variation of the Content Title which represent the Custom Content. Name and directory conflicts are handled using qualified file and folder names as required. The system, as a result of this process will generate a Unique Content Identifier which will map this content to other tables within the system.
Content Type	Custom Application Context
Content Title	The Title for Custom Content is one of the parameters defined in the Custom Application Context data specification and is extracted from the document and placed into this field during the capture and normalization process.

[00296] If, for example, the custom content implying the context entitled "Less than $300,000 within 32339" were submitted for capture and normalization, the resultant database row of the Content Reference Table might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	7864
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/AppContext/Lessthan300000within32339.appcontext
Content Type	String	Custom Application Context
Content Title	String	Less than $300,000 within 32339
Refined Source Identifier	String	Outlook Entry ID: 322366711989455476672230898723

[00297] If, for example the custom content implying the context entitled "Less than $300,000 within 32339 was submitted by the user ID:1234 for capture and normalization the resultant database audit row of the Activity Audit Table might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	448451
User ID	Unique Number	1234
Content ID	Unique Number	7864 Note that this ID matches the ID from the Content Reference Table for this transaction reflected above
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-11 11:19.52

[00298] Having normalized the information sets, it now becomes possible to form relationships between nodes of normalized content. A step by step discussion of one of the benefits of embodiments like the example described above is illustrated by FIG. 22. If a user drags and drops content of one type, in this case an Outlook email message 1, onto a second disparate type of content, in this case web page 2, the drag and drop operation will be detected by the system user interface 3. The system will initiate transactional activity to capture and normalize the email content 5 if it has not previously been referenced within the system. The system will then initiate transactional activity to capture and normalize the web page content 6 if it has not previously been referenced within the system. Once both nodes of content have been normalized and referenced, another process, in this case the content enrichment process 7 might be able to make use of the normalized content references. In this example, a relationship 8 is created between the two nodes of content.

[00299] If, for example, the Outlook email message with the subject "The Agenda for our meeting" was the subject of the drag and drop operation described above, the resultant database row of the Content Reference Table for the email message might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1267
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/Email/TheAgendafor ourmeeting.html
Content Type	String	Outlook Email Message
Content Title	String	The Agenda for our meeting
Refined Source Identifier	String	Outlook Entry ID: 322366711989455476672230898723

[00300] Content Reference Table Impact for the web page: If, for example, the URI http://www.microsoft.com/en/us/default.aspx for the web page which was the destination for the drag and drop operation described above, the resultant database row of the Content Reference Table for the web page might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Content URI	Uniform Resource Identifier	http://www.microsoft.com/en/us/default.aspx
Content Type	String	Web Page
Content Title	String	Microsoft Corporation

[00301] In one possible embodiment of an invention which could utilize the products of the present invention, content might be enriched by being able to create relationships between nodes of disparate content using a data structure, such as a Relationship Table shown below.

Field Name	Data Type	Sample Field Value
Relationship ID	Unique Number	123434
Content ID #1	Unique Number	1267
Content ID #2	Unique Number	3233

[00302] In the information relationship scenario described above, a user who, at any time, re-encounters either the email message or the web page which were subject of the content relationship, they would be able to review cross-references between these two disparate nodes of content. Prior art does not provide a systemic mechanism such as illustrated here which would allow such rich cross-referencing of disparate content.

Example Embodiment of Information Enrichment System and Methods:

[00303] As shown functionally in FIG. 33 in one embodiment of enrichment systems to enhance a capture system, an enrichment system 4 facilitates the execution of transactions to create relationships, comments, ratings, as well as support for any other type of custom enrichment transaction and the data which might support it, against the normalized content 3 secured by the capture system 2 creating relationships to the database entities which represent the normalized content 9 which serve to augment or enhance the raw content captured within the system. Forming relationships 5 between nodes of normalized content allows enriched content

inquiries 10 to reveal cross references 11 which may reveal valuable rich context when users re-encounter this content after forming the relationships. In scenarios where the system databases are shared among groups of collaborating users, additional insight can be revealed by following the overall activity of users 12 who may have shown interest in common content. Users can explicitly enrich content by creating spontaneous content such as comments 6 which can be contextually related to one or more nodes of normalized content 3. Comments can be treated much like any other content once they are created and can be cross-referenced with enriched content inquiries as previously discussed. Additional insight can be gathered by following the overall activity of users 12 who may have contributed commentary. Rating 7 content positively or negatively is a shorthand notation for making a comment about some normalized content 3 and is one more way provided by the system to enrich disparate content. This embodiment of the system has been defined with well defined programmatic interfaces which allow its database to be logically joined with other custom content or custom transactional activity 8 which might define further content enrichment. The embodiment shown uses a relationship database to store references to the disparate content captured and normalized by the system. The field structure of the Content Reference Table could follow the form shown below. It should be noted that the database design may be optimized to use additional tables to represent certain data types, so this should not be considered to be the only database design contemplated.

Content Reference Table

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1343433434343434
Content URI	Uniform Resource Identifier	http://www.somesite.com/abc.html, https://ournetwork/securedocuments/xyz.doc http://systemDataStore/Comments.aspx?ID=13433
Content Type	String	Web Page, Microsoft Word Document, Comment, …
Content Title	String	The ABCs on this site, Our contract with xyz corporation
Content Source Path	File Path	file:///c:/MyDocument/def.txt, d:\contracts\xyz.doc \\NetworkFiles\securedocument\personnel.xls, NOT REQUIRED FOR ALL CONTENT TYPES
Refined Source Identifier	String	Unique Computer ID, Email Message ID, NOT REQUIRED FOR ALL CONTENT TYPES

[00304] Once disparate content has been captured and normalized within the Content Reference Table, relationships between referenced nodes of this content can be reflected in a Content Relationship Table. As can be seen below, the structure of this relationship table creates a cross reference between two nodes of content. A node of content can be represented within many rows within this table and a full list of cross reference relationships to any specific node of normalized content would query the database table for its Content ID, as stored in the Content Reference Table, from within either relationship field position.

Content Relationship Table

Field Name	Data Type	Sample Field Value
Relationship ID	Unique Number	16843434
Content ID #1	Unique Number	3434
Content ID #2	Unique Number	23

[00305] In this embodiment, comments can be considered as a type of content which is maintained internally within the system database in a Comment Table. Comments are treated in the same way as any other type of content since each comment, in this embodiment, will also be referenced with a row within the Content Reference Table. The system provides normalized access to the content of the comment with a standard uniform resource identifier (URI) implementation which allows the comment to be displayed like other web content within a web browser.

Comment Table

Field Name	Data Type	Sample Field Value
Comment ID	Unique Number	13433
Comment Body	Rich Text String	Comments can contain some simple formatting such as bolded text and can also contain Hyperlinks to other content. Comments can also contain multiple paragraphs as seen here and even bullet lists: • Text Formatting • Hyperlinks • Multiple Paragraphs
Illustration	Uniform Resource Identifier	http://www.somesite.com/somepicture.jpg

[00306] Content ratings as a lightweight way for users to express their approval or disapproval or suitability or unsuitability in relationship to any normalized content. In this embodiment, users are only permitted to rate a node of content only one time. This restriction is enforceable since all transactional activity is recorded in the Activity Audit Table and attributed to specific users acting on specific nodes of content. Once content is rated by one user, ratings by other users on the same content will accumulate within the same Rating Table record assigned to that content. In embodiments, net and percentage rating metrics can also be calculated and stored.

Content Rating Table

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1343433434343434 (identifies the content being rated in this rating record)
Cumulative Positive Rating	Number	432
Cumulative Negative Rating	Number	302
Net Rating	Number	+132
Percentage Rating	Number	+58.8%

[00307] Referring to FIG. 34, if a user drags and drops content of one type, in this case an Outlook email message 1, onto a second disparate type of content, in this case web page 2, the drag and drop operation will be detected by the system user interface 3. The system will initiate transactional activity to capture and normalize (using the capture systems described earlier) 4 the email content 5 if it has not previously been referenced within the system. The system will then initiate transactional activity to capture and normalize the web page content 6 if it has not previously been referenced within the system. Once both nodes of content have been normalized and referenced, this embodiment of the content enrichment process will be able to make use of the normalized content references as content enrichment processes 7 are executed. In this example, a relationship 8 is created between the two nodes of content.

[00308] Referring to FIG. 35A, if, for example, an Outlook email message with the subject "The Agenda for our meeting" 1 was dragged and dropped onto a web page link 3 to "Microsoft Corporation" within a web browser application 2 configured with a browser extension, which is a manifestation of the broader term "Add-In" which is described as a software component which adds function to some other content source using well specified and supported software development conventions provided by the provider of the content source program, 4 provided by the embodiment of the present invention, specific system process logic would be triggered to create a relationship between the email message and the web page. Note that this drag and drop scenario and the content types illustrated are one embodiment of how a relationship can be made between two nodes of content. The programmatic interfaces provide

generalized methods for any type of user interface or program agent to accomplish the same task. In this example and in this embodiment, the logic executed by the system user interface 4 would first ensure that the both nodes of content implied by the drag and drop operation were captured and normalized by the system. The browser add-in 5 would invoke methods 5 of the capture and normalization processes 7 through the appropriate system programmatic service interfaces 6 ensuring that both content references are reflected in the Content References 8 database table as illustrated below. All appropriate capture and normalization transactional activity would be reflected in the Activity Audit 9 database tables. For example, if the Outlook email message with the subject "The Agenda for our meeting" was the subject of the drag and drop operation described above, the resultant database row might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1267
Content URI	Uniform Resource Identifier	http://capturesystem.filestore.com/UserID/Email/TheAgendafor ourmeeting.html
Content Type	String	Outlook Email Message
Content Title	String	The Agenda for our meeting
Refined Source Identifier	String	Outlook Entry ID: 322366711989455476672230898723

[00309] And for example, if the URL http://www.microsoft.com/en/us/default.aspx for the web page which was the destination for the drag and drop operation described above, the resultant database row might look like the table below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Content URI	Uniform Resource Identifier	http://www.microsoft.com/en/us/default.aspx
Content Type	String	Web Page
Content Title	String	Microsoft Corporation

[00310] The process logic of the user interface would then invoke a create relationship method 10 within the content enrichment relationship process 11 which would result in the creation of a row within the content relationship 12 database table as illustrated below. In addition, the content enrichment relationship process 11 logic would ensure that the relationship transactional activity would be reflected in the Activity Audit 9 database tables.

[00311] The method signature, in this embodiment follows the form shown in FIG. 35B.

[00312] The resulting Relationship Table may look like the table below.

Field Name	Data Type	Sample Field Value
Relationship ID	Unique Number	123434
Content ID #1	Unique Number	1267
Content ID #2	Unique Number	3233

[00313] If, for example, the relationship transaction was initiated by the user "JoeD" with ID:1234 database audit table row might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	5444
User ID	Unique Number	1234
Content ID	Unique Number	3233
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-19 15:13.32
Transaction Activity ID	Unique Number	5445
User ID	Unique Number	1234
Content ID	Unique Number	1267
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-19 15:13.34
Transaction Activity ID	Unique Number	5446
User ID	Unique Number	1234
Content ID #1	Unique Number	1267
Content ID #2	Unique Number	3233
Transaction Activity Type	String	Content Related
Time Stamp	Date Time Value	2010-01-19 15:13.36

[00314] Referring to FIG. 36, in this embodiment, the content enrichment commenting process 7 is an extension of the content enrichment relationship process discussed previously. The major difference is that one of the nodes of content which forms the relationship, the Comment 3, is original content created by the user. The system user interfaces provide icons, menu choices, and other cues that the user can comment on any of the disparate content they

might encounter. In this example, dragging and dropping a Web Page 1 link from its source to a Comment 2 icon within the system user interface would trigger the process. As with the relationship process discussed previously, the system will initiate the transactional activity necessary to capture and normalize (using the prerequisite invention) the source content 1 as well as the original user comment 3 if they have not previously been referenced within the system. Once both nodes of content have been normalized and referenced, this embodiment of the content enrichment process will be able to make use of the normalized content references. In this example, a relationship 8 is created between the source content 1 and the newly entered comment 3.

[00315] Referring to FIG. 37A, if, for example, a web browser application 1 exposed a web page link 2 and a system supplied user interface, in one embodiment implemented as a browser add-in 4, exposed a context menu which allowed a comment 3 to be entered relative to the exposed content link 2, the following processes would be triggered. The logic executed by the system user interface 4 would first ensure that the target node of content 2 implied by the commenting operation was captured and normalized by the system. The process logic would invoke methods 5 of the capture and normalization process 7 through the appropriate system programmatic service interfaces 6 ensuring that the content reference is reflected in the Content References 8 database table as illustrated below. Appropriate capture and normalization transactional activity would be reflected in the Activity Audit 9 database tables. Once the target content 2 reference has been normalized 8, the user interface logic 4 submits the user comment 3 by calling methods 10 within the content enrichment commenting process 11 through the system programmatic interface 6. This method will have the effect of creating a comment within the system Comment Database Table 12 while also normalizing the comment within the Content Reference Database Table 8 so that a relationship between the comment 3 and the target content 2 reflected in the system Content Relationships Database Table 13. All appropriate comment storage, normalization, and relationship transactional activity would also be reflected in the Activity Audit 9 database tables.

[00316] As an example of the Comment Table impact, a user might enter a comment, as reflected below, within the context of the target content described above.

Field Name	Data Type	Sample Field Value
Comment ID	Unique Number	1378
Comment Body	Rich Text String	The company was founded in 1975, to develop and sell BASIC interpreters for the Altair 8800. Microsoft rose to dominate the home computer operating system market with MS-DOS in the mid-1980s, followed by the Windows line of operating systems.
Illustration	Uniform Resource Identifier	http://www.somesite.com/MicrosoftLogo.jpg

[00317] The system programmatic service interface, or method signature for created a comment about some normalized content, in this embodiment, follows the form shown in FIG. 37B.

[00318] If, for example, the URL http://www.microsoft.com/en/us/default.aspx for the web page which was the target for the commenting operation described above, the resultant database row might look like this.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Content URI	Uniform Resource Identifier	http://www.microsoft.com/en/us/default.aspx
Content Type	String	Web Page
Content Title	String	Microsoft Corporation

[00319] The normalized comment might look like this below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	1378
Content URI	Uniform Resource Identifier	http://systemDataStore/Comments.aspx?ID=1378
Content Type	String	Comment
Content Title	String	The company was founded in 1975, to develop…
Refined Source Identifier	String	Comment ID: 1378

[00320] In this example, the resulting Relationship Table may look like the table below.

Field Name	Data Type	Sample Field Value
Relationship ID	Unique Number	783434
Content ID #1	Unique Number	3233
Content ID #2	Unique Number	1378

[00321] For example, if the commenting transaction was initiated by the user "JoeD" with ID:1234 database audit table rows might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	15444
User ID	Unique Number	1234
Content ID	Unique Number	3233
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-20 15:13.32
Transaction Activity ID	Unique Number	15445
User ID	Unique Number	1234
Content ID	Unique Number	1378
Transaction Activity Type	String	Comment Created
Time Stamp	Date Time Value	2010-01-20 15:13.34
Transaction Activity ID	Unique Number	15447
User ID	Unique Number	1234
Content ID #1	Unique Number	1378
Content ID #2	Unique Number	3233
Transaction Activity Type	String	Content Related
Time Stamp	Date Time Value	2010-01-20 15:13.36

[00322] Referring to FIG. 38, one embodiment of the enrichment systems includes a content enrichment rating process 5 utilizing content rating storage 6 elements to bind positive or negative user impressions about normalized content 4. The system user interfaces provide icons, menu choices, and other cues that the user can positively or negatively rate 2 any of the disparate content they might encounter. In this example, dragging and dropping a web page 1 link from its

source to a rating 2 icon within the system user interface would trigger the process. As with the relationship and commenting processes discussed previously, the system will initiate the transactional activity necessary to capture and normalize (using the prerequisite invention) the source content 1 so that the process can associate and reflect the ratings impressions 6 of various users.

[00323] Referring to FIG. 39A, if, for example, a web browser application 1 exposed a web page link 2 and a system supplied user interface, in one embodiment implemented as a browser add-in 4, exposed a context menu which allowed a rating 3 to be expressed relative to the exposed content link 2, the following processes would be triggered. The logic executed by the system user interface 4 would first ensure that the target node of content 2 implied by the commenting operation was captured and normalized by the system. The process logic would invoke methods 5 of the content capture and normalization process 7 through the appropriate system programmatic service interfaces 6 ensuring that the content reference is reflected in the Content References 8 database table as illustrated below. All appropriate capture and normalization transactional activity would be reflected in the Activity Audit 9 database tables. Once the target content 2 reference has been normalized 8, the user interface logic 4 submits the user rating 3 by calling methods 10 within the content enrichment rating process 11 through the system programmatic interface 6. This method will have the effect of creating a rating record, if it does not already exist, within the system Rating Database Table 12. Depending on the user's impression, for example positive or negative, the appropriate fields within will be incremented. This rating record 12, when it is initially created, will be directly associated with the target content 2 reflected in the system Content References Database Table 8. All appropriate rating transactional activity would also be reflected in the Activity Audit 9 database tables. An example of the programmatic service interface 6 is the method signature for rating some normalized content, in this embodiment, follows the form in FIG. 39B.

[00324] As an example, if the URL http://www.microsoft.com/en/us/default.aspx for the web page which was the target for the rating operation described above, the resultant database row might look like this.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Content URI	Uniform Resource Identifier	http://www.microsoft.com/en/us/default.aspx
Content Type	String	Web Page
Content Title	String	Microsoft Corporation

[00325] The resulting Rating Table may look like the table below. Note that the Content ID for the Content Reference above matches the Content ID within the Rating Record below.

Field Name	Data Type	Sample Field Value
Content ID	Unique Number	3233
Cumulative Positive Rating	Number	7
Cumulative Negative Rating	Number	3
Net Rating	Number	+4
Percentage Rating	Number	+63.6%

[00326] As an example, if the rating transaction was initiated by the user "JoeD" with ID:1234 database audit table rows might look like the table below.

Field Name	Data Type	Sample Field Value
Transaction Activity ID	Unique Number	5444
User ID	Unique Number	1234
Content ID	Unique Number	3233
Transaction Activity Type	String	Content Submitted
Time Stamp	Date Time Value	2010-01-20 15:13.32
Transaction Activity ID	Unique Number	15445
User ID	Unique Number	1234
Content ID	Unique Number	3233
Transaction Activity Type	String	Positive Rating
Time Stamp	Date Time Value	2010-01-20 15:13.34

[00327] Referring to FIG. 40, as users enrich content 1 using this embodiment of the present invention, their activity is reflected in multidimensional interrelationships within the various database tables 3 maintained by the system. To fully exploit the system, inquiry user interfaces 2 are provided and, when the user submits content to these inquiry interfaces, the enriched context created by user transactional activity can be extracted in a variety of reports 10. For content centric inquiries, the inquiry interface 2 will first map the request of disparate raw content 1 to the captured and normalized content stored within the system content reference database table 4. Relationships 5 which include the submitted normalized content will be gathered and a subset of these relationships 5 might be in the form of comments 6 which are also normalized within the system. If the submitted content has been rated by one or more users, its associated rating values 7 will also be gathered. Finally, it is also possible to identify all of the users who have acted upon the submitted content by querying the activity audit 8 which relates a comprehensive list of these users 9 as well as the time periods when transactional activity has

taken place. The database tables and relationships exploited, in this embodiment, to produce these reports have been fully described earlier in this document.

[00328] Referring to FIG. 41, in this embodiment, the system inquiry interfaces may, with permission, expose the users who have performed transactional activity on normalized content within the system. The system also provides inquiry interfaces which can expose additional context and insight by allowing inquiries to center on the activity of a specific user. For user centric inquiries, the inquiry interface 2 will first map the requested user to an authenticated user within the user table 4 within the system database. Once the user has been identified, the activity audit 5 will reflect transactional activity initiated by that user which, in turn can be mapped to normalized content references 6 and any relationships 7, comments 8, or rating information 9 which might be associated with the content transacted by the user. One all of the user centric information is correlated and extracted from the database, a variety of enriched user inquiry reports 10 can be reviewed on demand. The database tables and relationships exploited, in this embodiment, to produce these reports have been fully described earlier in this document.

[00329] Referring to FIG. 42, given the database design in this embodiment, another dimension which can be exploited is the ability to gather additional insight by reporting transactional activity which may have occurred during defined time periods exclusive of what normalized content was affected or what users may have initiated the transactional activity.

Example Embodiment of Information Sharing System and Methods:

[00330] As described earlier, the systems for capturing and normalizing disparate electronic information allows users to access disparate content in such a way as to eliminate the fundamental formatting and storage differences between the disparate content. The described systems for enriching disparate electronic content allows users to bind this disparate content within the broader context in which has been created or otherwise accessed without concern for the impedance imposed by incompatible content formatting and storage architectures. The described systems for sharing disparate information exploits the data model created by and enhanced by the other systems to allow prior experience, and the broader context it represents, to be flexibly reviewed by the contributors who originally gathered and organized the information, freely reviewed by other authorized users or groups of users, and to group, organized, and

annotate sets of related information into more formal published works which can be distributed and used as the basis for new works through popular existing networks.

[00331] The sharing system embodiment described builds on, and uses components described earlier and shown in FIG. 11. Many of the enhanced features of the sharing system are provided by computer program products as described below.

[00332] A functional overview of one embodiment of a sharing system is shown in FIG. 55. In this diagram, a generalized inquiry module 8 exploits the intricate database relationships maintained within the system database 1 by the capture, normalization and enrichment systems. All transactional activity is audited 2 and is performed on normalized content references 3 by authorized users 4. This multidimensional audit (2, 3, 4) lays the foundation for a rich web style exploration model which can further link to related content 5, comments 6 about this content and other peripheral metadata such as ratings 7. In a web exploration inquiry model, a web exploration inquiry module 8 can present multiple starting points for database exploration including exploring individual transactions which might allow branch explorations into transactions of the same type, transactions centered on the same content, transactions performed by the same user, or transactions performed during a specific period of time. The web exploration inquiry model, in one embodiment, can be exposed by presenting a web page within a web browser or other application interface which exposes the target transaction, user, content, or time period as hyperlinks which enable exploration in the alternative dimensions of transaction type, content, content type, or time as illustrated in FIG. 55. Starting, for example, with a user would allow any of these explorations to commence. What content has the user transacted? When did they perform transactions? The relational database design in this embodiment allow inquiries to be started within the dimensions of content, transaction type, user, or time period and followed through with total flexibility in any of the other dimensions as illustrated above.

[00333] The web exploration inquiry model provides the ultimate flexibility to instantaneously follow any link or dimension may seem appropriate, but, some communications problems need a more structured approach to sharing information. For this reason, this embodiment also provides the structured, collaborative publishing model, as a complement to the web exploration inquiry model.

[00334] FIG. 56 illustrates one embodiment of a structured, collaborative publishing model. The same system database 1 can be exploited by a set of collaborating users (2, 7) who can use a flexible content layout canvas 6 to weave together existing database content 3, relationships to this content 4 and existing and original comments 4 into a collaborative discussion. When the collaborative team, or any authorized member of the team, wishes to more widely publish 8 this ordered content aggregation 6, it can be transformed into a web standard content and distributed 9 directly to the web or through any number of popular publication outlets such as Facebook and Twitter.

[00335] Up until this point in the discussion of the systems to capture and normalize, enrich and share disparate information, the focus has been on unified access to disparate content and the enrichments thereof. If the combined systems were to be used by a single user, and system database resources were allocated exclusively to that user, the overall system would function as a "personal information management" system. That is, only the user, who introduced and normalized the disparate content and enrichments thereof, would be able to review the context of these data assets. As shown in FIG. S57, these systems can also support a variety of security communities 4 by partitioning system database 1 assets into two major categories: content assets and security assets. Content assets 2 consist of the captured and normalized content references, relationships created between node of this content, and comments or other enrichments which may also be related to this content. Security assets 3 consist of database resources which enumerate and manage authenticated systems users (e.g. users tables) as well as groups of users (e.g. group membership tables) who may wish to share content and the enrichments which may surround this content. As shown in FIG. 57, the private security community 5 describes those content assets assigned to an individual system user who may later decide to more broadly reveal the context and insights which they have gathered. Limited security community 6 addresses the concept of a "Group" to create and maintain a security context where a trusting, collaborative collection of users defined within a group membership database table all have access to shared content assets and the context surrounding these assets. Group members can also decide to more broadly reveal the context and insight they have gathered. The public security community 7 describes those content assets and the context which surrounds them are not assigned to any specific user or group of users but are freely accessible to all system users.

[00336] To illustrate one embodiment of database design which could support the security communities we will map some sample data according to a number of tables below. These tables, when used, are maintained in the systems memory as a database.

Users Table

User ID	Identifier	Name	Type
1234	joed@xyz.com	User A	Individual
3436	pete@abc.com	User B	Individual
2346	jane@def.com	User C	Individual
6789		Management Team	Group
3412		Publishing Team	Group

[00337] As can be seen above, in the Users table each user ID is a unique ID mapped to a user or a group of users. In the Group Membership Table below, each Group ID is mapped to individual User IDs.

Group Membership Table

Group ID	User ID	Access
6789	1234	Administrative
6789	3436	Contributor
3412	1234	Administrative
3412	3436	Contributor
3412	2346	Reviewer

[00338] The Content References Table, Content Relationship Table and Comments Table embodiments are provided by the systems and methods for capturing and enriching information described herein.

Content References Table

Content ID	URI	Title	Security ID
1	http://www.microsoft.com	Microsoft Corporation	1234
2	http://www.google.com	Google	1234
3	http://www.yahoo.com	Yahoo	1234
4	http://www.microsoft.com	Microsoft Corporation	6789
5	http://www.google.com	Google	6789
6	http://www.yahoo.com	Yahoo	
7	http://www.microsoft.com	Microsoft Corporation	
8	http://www.google.com	Google	
9	http://www.google.com	Google	3436
10	http://www.yahoo.com	Yahoo	2346
11	http://systemDataStore/Comments.aspx?ID=11	Google is my favorite…	3436
12	http://systemDataStore/Comments.aspx?ID=12	Bing is my favorite…	1234
13	http://systemDataStore/Comments.aspx?ID=13	Yahoo is my favorite…	2346
14	http://systemDataStore/Comments.aspx?ID=14	We should look into the competition…	6789
15	http://systemDataStore/Comments.aspx?ID=15	Google seems to be having an…	

Content Relationships Table

Relationship ID	Content ID #1	Content ID #2
1	1	2
2	3	2
3	4	5
4	7	8
5	7	6
6	6	8
7	11	9
8	12	1
9	13	10
10	14	4
11	14	5

Comments Table

Comment ID	Rich Text
11	Google is my favorite search engine
12	Bing is my favorite search engine
13	Yahoo is my favorite search engine
14	We should look into the competition brewing between Microsoft and Google
15	Google seems to be having an interesting time in China

[00339] Below is an illustration of the security community for User A (ID 1234) mapping content and enriched content from the example tables above.

Via Content Reference Table: Security ID 1234 in community with Content ID 1 "Microsoft Corporation"

Via Content Relationship Table, Relationship ID 1, Content ID 1 related to Content ID 12 (Comment ID 12) "Bing is my favorite search engine …"

Via Content Relationship Table, Relationship ID 8: Content ID 1 related to Content ID 2, "Google"

[00340] Below is an illustration of the security community for User B (ID 3436) mapping content and enriched content from the example tables above.

Via Content Reference Table: Security ID 3426 in community with Content ID 9 "Google"

Via Content Relationship Table, Relationship ID 7: Content ID 9 related to Content ID 11 (Comment ID 11) "Google is my favorite search engine"

[00341] Below is an Illustration of the security community for User C (ID 2346) mapping content and enriched content from the example tables above.

Via Content Reference Table: Security ID 2346 in community with Content ID 10 "Yahoo"

Via Content Relationship Table, Relationship ID 9: Content ID 10 related to Content ID 13 (Comment ID: 13) "Yahoo is my favorite search engine"

[00342] Below is an illustration of the security community for the Group "Management Team" (ID 6789) mapping content and enriched content from the example tables above.

Via Group Membership Table, Group 6789: User ID 1234 and User 3436 members

Via Content Reference Table: Security ID 6789 in community with Content ID 4 "Microsoft Corporation"

Via Content Relationship Table, Relationship ID 3: Content ID 4 related to Content ID 5 "Google"

Via Content Relationship Table, Relationship ID 11: Content ID 5 related to Content ID 14 (Comment ID 14) "We should look into the competition brewing between Microsoft …"

[00343] Below is an illustration of the security community for the Public Group (ID None) mapping content and enriched content from the example tables above.

Via Content Reference Table: No User ID in community with Content ID 8 "Google"

Via Content Relationship Table, Relationship ID 4: Content ID 8 related to Content ID 7 "Microsoft Corporation"

Via Content Relationship Table, Relationship ID 6: Content ID 8 related to Content ID 6 "Yahoo"

[00344] It should be noted that normalized content references are replicated within the database for each security context in which the content is secured. When inquiries are processed within a restricted security community only content which has been secured to the individual or group user who owns the content will be displayed. All other enrichments, such as relationships between content nodes will, because of the database relationship design, only be reflected for content secured within that community. The examples above are a very narrow but complete an illustration of how content can be secured by the system with proper user authentication.

[00345] Given the concept of security community has been introduced, the actual user interface mechanisms employed to share content and the context surrounding that content in this embodiment can be discussed.

[00346] One embodiment of a user interface for passive sharing is shown in FIG. 58. In this embodiment, if user A has captured and normalized content within a private security context 1 and further enriched nodes of this content (3, 4) with comments and / or relationship to other content, user A may wish to share some subset of their insight with other. If shared security community 2 is defined, other users will have access to content within the public or limited confines of that security community. Note that within the illustrated view of content within the private security community 1, a subset of relationships and comments can be selected or displayed as denoted by state of the checkboxes or the visibility of comments. If user A were to, through some other explicit user interface action such as drag and drop, transmit content (3, 4) to a shared security community 2, the subset of selected content and context would be replicated within the shared security community (3s, 4s) according the database relationship and security conventions described in the security community discussion above. In addition, raw content from disparate sources 5 can be freely used to further enrich content and the overall context of either the private or shared security community by any authenticated and security authorized user. In the illustration, user A has related a web page 6 to content C 4 within the private security community 1. In addition, user A has further enriched the shared security community by relating page A 7 and a document 8 to content C (4s) this time within the shared security community 2. Keep in mind that the system will now maintain multiple content references for

any content which appears in both security contexts as illustrated here. Lastly, user B further enriches the shared security community 2 by relating an email message 9 to the reference to content C (4s) originally replicated into the shared security community by user A.

[00347] For further illustration the Content Reference and Relationships Tables for this passive sharing example are summarized below. The shared security community would be considered to be "Public" according to the data represented below. Note also that the comments are also referenced as content by the system for consistency in forming relationships.

Content Reference Table

Content ID	URI	Title	Security ID
1	http://somesite.com/ContentA.html	Content A	1234
2	http://somesite.com/ContentB.html	Content B	1234
3	http://somesite.com/ContentC.html	Content C	1234
4	http://somesite.com/ContentD.html	Content D	1234
5	http://somesite.com/ContentE.html	Content E	1234
6	http://somesite.com/ContentA.html	Content A	
7	http://somesite.com/ContentB.html	Content B	
8	http://somesite.com/ContentC.html	Content C	
9	http://somesite.com/ContentD.html	Content D	
10	http://somesite.com/WebPage.html	Web Page	1234
11	http://somesite.com/PageA.html	Web Page	
12	http://systemDataStore/Document/Document.doc	Document	
13	http://systemDataStore/Outlook/EmailMessage.msg	Email Message	
14	http://systemDataStore/Comments.aspx?ID=14	This content is very important…	1234
15	http://systemDataStore/Comments.aspx?ID=15	This content is very important…	

Content Relationships Table

Relationship ID	Content ID #1	Content ID #2
1	1	2
2	1	3
3	1	4
4	1	5
5	6	7
6	6	8
7	8	9
8	8	7
9	3	10
10	8	11
11	8	12
12	8	13
13	1	14
14	6	15

[00348] Building upon the security community and passive sharing models discussed above, the system can also include a more structured collaborative sharing model which allows for more ordered presentation of related content. As previously discussed, web exploration inquiry models can allow users to branch and explore content and context in multiple dimensions. As shown in FIG. 59, the more structured collaborative sharing model provides a dedicated collaborative security context and shared insight canvas 2 where authors can guarantee that important content relationships and commentary will be exposed in a single, organized location. In a way which parallels the prior discussion centered on passive sharing using the web style inquiry model, users replicate private content (3, 4), content shared within other shared security contexts, or raw content from disparate sources 5 into the shared insight canvas which is wrapped within its own shared security context. The collaborative group of users who have access to the security context and its embedded shared insight canvas can be managed directly from the "Access" control list near the bottom of the canvas or user interface in this embodiment. The comments and content segments visible within the canvas can be edited and reordered as

needed to best convey the contextual message desired by the collaborative team, or in some cases, an individual working alone within the security community.

[00349] For illustrative purposes, we display the database tables necessary to reflect the collaborative security context and, as you can see, they are similar to those from the prior discussion except that a group user is defined as well as the individual membership within this group. Please note that the group ID is used to secure content included in the collaborative security community.

[00350] Also note that the "Shared Insight Canvas" is referenced as content within the system and that its constituent comments and content segments are reflected as relationships within the domain of the collaborative security community.

Users Table

User ID	Identifier	Name	Type
1234	joed@xyz.com	User A	Individual
3436	pete@abc.com	User B	Individual
2346	jane@def.com	User C	Individual
3412		Publishing Team	Group

Group Membership Table

Group ID	User ID	Access
3412	1234	Administrative
3412	3436	Contributor
3412	2346	Reviewer

Content References Table

Content ID	URI	Title	Security ID
1	http://somesite.com/ContentA.html	Content A	1234
2	http://somesite.com/ContentB.html	Content B	1234
3	http://somesite.com/ContentC.html	Content C	1234
4	http://somesite.com/ContentD.html	Content D	1234
5	http://somesite.com/ContentE.html	Content E	1234
6	http://somesite.com/ContentA.html	Content A	3412
7	http://somesite.com/ContentB.html	Content B	3412
8	http://somesite.com/ContentC.html	Content C	3412
9	http://somesite.com/ContentD.html	Content D	3412
10	http://somesite.com/WebPage.html	Web Page	1234
11	http://somesite.com/PageA.html	Web Page	3412
12	http://systemDataStore/Document/Document.doc	Document	3412
13	http://systemDataStore/Outlook/EmailMessage.msg	Email Message	3412
14	http://systemDataStore/Comments.aspx?ID=14	This content is very important…	1234
15	http://systemDataStore/Comments.aspx?ID=15	This content is very important…	3412
16	http://systemDataStore/Canvas.aspx?ID=16	Shared Insight Canvas	3412
17	http://systemDataStore/Comments.aspx?ID=17	This Canvas is used the share…	3412
18	http://systemDataStore/Comments.aspx?ID=18	In this Canvas, a combination…	3412

Content Relationships Table

Relationship ID	Content ID #1	Content ID #2
1	1	2

2	1	3
3	1	4
4	1	5
5	6	7
6	6	8
7	8	9
8	8	7
9	3	10
10	8	11
11	8	12
12	8	13
13	1	14
14	6	15
15	16	17
16	16	18
17	16	6
18	16	8

Shared Insight Canvas Table

Canvas ID	Canvas Contents Ordered List	Title
16	<Canvas> <Comment id="17"/> <Content id="6"/> <Comment id="18"/> <Content id="8"/> </Canvas>	Shared Insight Canvas Note that this title is only a sample matching the general illustration and will typically have meaning for actual collaborative works.

[00351] The addition of the shared insight canvas table as an element of content, Content ID 16, reinforces the ability of the system to integrate and normalize any type of content even if that content is represented as data from within the system database domain. Secondly, the canvas contents ordered list field defined above is one embodiment which illustrates how content

relationships, which are not typically presented with a predictable ordering, could be ordered according to user preference by placing the content ordering metadata within the canvas data object itself.

[00352] Cross referencing the illustrations, the content and content relationship table with the canvas contents ordered list will confirm the system operation in this embodiment.

[00353] Shown in FIG. 51, the shared insight canvas 1 facilitates the capture, organization, and communicating of related content and commentary. The content gathered and organized within the canvas is suitable for both formal and informal communication of related topics. The formal canvas can be divided into two panels. The publishable shared insight panel 2 contains and organizes content which will be transformed into web page format if the collaborative team decides to formally publish their insights. The private, offline shared insight panel 3 provides a space for the collaborative team to log private or informal commentary or supporting content which may not be suitable for ultimate publication. This private insights panel 3 can also be utilized as a staging area for proposed content or commentary which can then be reviewed and promoted to the publishable panel 2 with user interface operations such as drag and drop. The user access panel 4 is used to manage the dynamic addition, removal, and collaboration privilege settings for the dedicated collaborative security community associated with the shared insight canvas 1. Publishing control will be discussed in greater detail in an ensuing section.

[00354] For completeness, the table below indicated how the shared insight canvas differentiates content and commentary which can be published from that which should be kept offline and secure to the collaborative team. For brevity, we have left the Content Reference and Relationship Tables out as they would closely parallel the shared insight canvas example previously illustrated.

Shared Insight Canvas Table

Canvas ID	Canvas Contents Ordered List	Title
3434	<Canvas> <Comment id="1" private="false"/> <Content id="1" private="false"/> <Comment id="2" private="false"/> <Comment id="3" private="true"/> <Content id="8" private="true"/> <Comment id="4" private="true"/> </Canvas>	Shared Insight Canvas Note that this title is only a sample matching the general illustration and will typically have meaning for actual collaborative works.

[00355] Note that private, offline content and commentary is stored as content within the system database, but if excluded from publishing and placed in the offline panel depending on the "private" attribute within the canvas metadata as illustrated.

[00356] The shared insight canvas 1 itself is suitable for the sharing of organized content and commentary within the controlled authenticated and authorized environment facilitated by this embodiment of the present invention. However, the system can serve as an easy to use publishing tool which can produce standard, browser compatible, web page 2 renderings of the content and commentary accumulated and organized within the shared insight canvas.

[00357] One embodiment of transforming shared insight into published web content is shown in FIG. 52. The embodiment shown can use various standard techniques to transform the system database representation of the contents of the shared insight canvas 1. One possible technique is to extract the data from the canvas 1 in industry standard XML (eXtensible Markup Language) format and generate the web page 2 using an XSLT (eXtensible Stylesheet Language Transformation) process. Alternatively common server based dynamic web page generation processes such as ASP (active server pages) or substitutes or variations thereof could use the system inquiry services to gather the information from the canvas and programmatically transform the data into web page form using the inherent efficiencies and flexibility of environments such as ASP. Once the shared insight canvas 1 has been transformed into web page form, references to the web page, and thus the organized content and commentary within,

can be widely distributed through popular social networking and information distribution portals such as Facebook or Twitter. This embodiment uses the public programmatic interfaces to both Facebook and Twitter to provide such references to the content generated within the system.

[00358] Another feature of the sharing system is its ability to both capture and normalize content from disparate sources and to expose the enriched context gathered by the system from within those same disparate content sources. One embodiment of the systems passive sharing abilities is shown in FIG. 53. As shown, if a web page is being viewed within a web browser application 5 it might expose content links 4 which may have been previously captured, normalized, and enriched within the system. This embodiment implements "add-in" components 6 which integrate into common content sources such as web browsers 5. As discussed previously in the systems which capture and enrich disparate content, these "add-in" components 6 can expose user interface functionality such as context menus which can allow users to perform actions such as rating the content 4 which they might encounter. These system "add-in" components 6 can also expose inquiry commands in the context of content 4 embedded within the information source, in this case a web browser 5. When invoking such an inquiry command within the context of content 4 which has been normalized and enriched within the system as illustrated with the relationships 4 to the content in relation to other content (2, 3) or even web pages 1 published from a shared insight canvas as discussed previously.

[00359] The end result is that a user browsing content within an application like a web browser 5 can now have access to additional context 7 surrounding this content that may have been previously accumulated by that user, their collaborative team, or the public at large.

[00360] The database tables below summarize how the system database model provides consistent access to content and the context which surrounds it.

Content Reference Table

Content ID	URI	Title	Security ID
101	http://systemDataStore/Canvas.aspx?ID=14	Shared Insight Canvas Title	
102	http://somesite.com/ContentB.html	Content B	
103	http://somesite.com/ContentC.html	Content C	
104	http://somesite.com/SomeContent.html	Some Content	
105	http://somesite.com/Hyperlinks.html	Hyperlinks	
106	http://somesite.com/ProjectX.html	Project X	
107	http://somesite.com/WebPage.html	Web Page	
108	http://somesite.com/ContentD.html	Content D	
109	http://systemDataStore/Document/DocumentA.doc	Document A	
110	http://systemDataStore/Outlook/EmailMessage.msg	Email Message	
111	http://systemDataStore/Keywords/GoodIdea.html	Good Idea	

Content Relationships Table

Relationship ID	Content ID #1	Content ID #2
1	101	102
2	101	103
3	101	104
4	101	105
5	106	102
6	106	103
7	106	107
8	106	110
9	109	108
10	109	111
11	109	106
12	102	109

[00361] As shown above, the dynamic inquiry mechanism 6, in the context of "Content B" 4 displayed within the web browser 5 would match the URL for "Content B" to the row with the Content ID: 102 within the Content References table. Then the inquiry process would search for all occurrences of Content ID: 102 within either position #1 or #2 within the Content Relationships Table and would find the three highlighted rows. It should be mentioned that once the enriched context 7 is revealed, the user has the option to additionally explore further explore the context within the dimensions of related content, the users who transacted on the content, or the time period when the transactions were executed as discussed previously in the web exploration inquiry model section.

[00362] Given the system description above, one embodiment of the server program product to execute steps of the methods to share disparate information is shown in FIG. 12 where the components aligning with element C represent the sharing enhancements. As described above, the sharing interface allows the system to receive transactions from users or other system components, and through the programmatic service interfaces, the program product performs the steps of sharing. The program components can both add information into the system memory as well as access information through the database interface. As described above, the software

modules and interfaces are also able to communicate with each to provide system features. Similarly, a functional diagram of an embodiment of a client program product is shown in FIG. 13 where the sharing components are generally aligned with callout C.

[00363] As will be readily apparent to those skilled in the art, the present invention can be realized in hardware, software, or a combination of hardware and software. Any kind of computer/server system(s), or other apparatus adapted for carrying out the methods described herein, is suited. A typical combination of hardware and software could be a general-purpose computer system with a computer program that, when loaded and executed, carries out the respective methods described herein. Alternatively, a specific use computer, containing specialized hardware and/or software for carrying out one or more of the functional tasks of the invention, could be utilized.

[00364] The present invention, or aspects of the invention, can also be embodied in a computer program product, which comprises all the respective features enabling the implementation of the methods described herein, and which--when loaded in a computer system--is able to carry out these methods. Computer program, software program, program, or software, in the present context mean any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of: (a) conversion to another language, code or notation and (b) reproduction in a different material form.

[00365] Although this invention has been described in the above forms with a certain degree of particularity, it is understood that the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMS:

We claim:

1. A method to normalize an information set, the method comprising the steps of:

receiving a first information set having at least one first information characteristic;

receiving a second information set having at least one second information characteristic;

at least one of the first and second information characteristics corresponding to at least one normalizing characteristic; and

storing in a memory the first and second information characteristics to a set of normalized fields according to the normalizing characteristic to create a first and second normalized information set.

2. The method of claim 1 wherein the normalizing characteristic comprises a data format of the first and second information set.

3. The method of claim 1 wherein the first information set comprises an http information set and the second information set comprises a local file information set.

4. The method of claim 1 further comprising the step of mapping the first and second information characteristics to the normalized fields according to the normalizing characteristics.

5. The method of claim 1 further comprising the step of automatically identifying the first and second information characteristics corresponding to the normalizing characteristics.

6. The method of claim 1 further comprising the step of generating a mark of the information set.

7. The method of claim 1 further comprising the step of generating a mark of at least one of the information sets wherein the mark is defined as an alias of a resource identifier of the at least one of the information sets.

8. The method of claim 1 further comprising the step of generating a mark of at least one of the information sets wherein the normalized information set comprises a uniform resource identifier from the at least one information characteristic.

9. The method of claim 1 wherein the first and second information set can be referenced through a single graphic user interface of a computing device.

10. A method to reference an information set, the method comprising the steps of:

receiving a first information set having a set of first information characteristics;

receiving a second information set having a set of second information characteristics;

at least one of the first information characteristics and at least one of the second information characteristics corresponding to at least one normalizing characteristic;

storing in a memory at least one of the first information characteristics and at least one of the second information characteristics to a set of normalized fields according to the normalizing characteristic to create a first normalized information set and second normalized information set; and

communicating a first and second mark of the first and second normalized information set respectively to the memory whereby the first information set can be referenced according to the first mark and the second information set can be referenced according to the second mark.

11. The method of claim 10 wherein the normalizing characteristic comprises a data format of the information sets.

12. The method of claim 10 wherein the first information set comprises an http information set and the second information set comprise a local file information set.

13. The method of claim 10 further comprising the step of automatically identifying the first and second information characteristics that corresponds to the normalizing characteristics.

14. The method of claim 10 wherein the mark is a unique content identifier.

15. The method of claim 10 wherein the first and second information set can be referenced through a single graphic user interface of a computing device.

16. A capture system for normalizing an information set comprising:

a means to receive a first and second information set each having a set of information characteristics;

at least one of the first information characteristics and one of the second information characteristics corresponding to at least one normalizing characteristic; and

a means to store in a memory at least one of each of first and second information characteristics to a normalized field according to the normalizing characteristic to create a first and second normalized information set.

17. The capture system of claim 16 wherein:

the means to receive a first and second information set comprises a programmatic interface module of computer readable program code; and

the means to store the at least one of the first and second information characteristics to a normalized field comprises a normalizing module of computer readable program code capable of executing method steps to store the information characteristics in a reference table in the memory.

18. The capture system of claim 17 further comprising an identification module of computer readable program code capable of executing method steps to automatically identify one of the first and second information characteristics that corresponds to the normalizing characteristic.

19. The capture system of claim 18 wherein:

the programmatic interface module is provided in a client subsystem; and

the client subsystem comprising a capture interface of computer readable program code to communicate an information set having at least one information characteristic and the capture interface capable of communicating the information characteristic that corresponds to at least one normalizing characteristic.

20. A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for normalizing an information set, said method comprising:

providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module and a normalization module;

receiving with the programmatic service interface module a first and second information set each having at least one information characteristic;

recognizing with the normalization module the first and second information characteristic that corresponds to at least one normalizing characteristic; and

storing in a memory with the normalization module at least one of each of the first and second information characteristics to a normalized field according to the normalizing characteristic to create a first and second normalized information set each normalized according to the at least one normalizing characteristic.

21. The computer program product of claim 20 further comprising:

an identification software module capable of automatically recognizing the first and second information characteristic corresponding to the at least one normalizing characteristic; and

an activity audit software module capable of auditing the storing in the memory.

22. A processor based method of enriching an information set, the methods comprising the sets of:

receiving a transaction to enrich a first information set stored in a memory with a second information set;

the first information set having a unique content identifier;

ensuring the second information set has a unique content identifier; and

relating the first unique content identifier with the second unique content identifier to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

23. The processor based method of claim 22 wherein the first and second information set have a first and second data format respectively.

24. The processor based method of claim 22 wherein at least one of the first and second information set is a comment.

25. The processor based method of claim 22 wherein at least one of the first and second information set is a rating.

26. The processor based method of claim 22 wherein the transaction to enrich comprises a command from a user interface presented by the system at a local computer desktop interface.

27. The processor based method of claim 22 wherein the request to enrich comprises a drag and drop command from a web browser user interface.

28. The processor based method of claim 22 wherein the unique content identifier is a field in a content reference table.

29. The processor based method of claim 28 wherein the content reference table comprises a plurality of fields including:

a unique content identifier; and

a uniform resource identifier.

30. The processor based method of claim 23 wherein the unique relationship identifier is a field in a content relationship table.

31. The processor based method of claim 30 wherein the content relationship table comprises a plurality of fields including:

a unique relationship identifier;

a unique content identifier of the first information set; and

a unique content identifier of the second information set.

32. A processor based method of accessing an enriched information set, the method comprising the steps of:

receiving inquiry transaction to access a first information set;

the first information set having at least one first information characteristic including a first unique content identifier;

accessing the at least one first information characteristic from a memory according to the first unique content identifier;

indentifying a relationship including the first unique content identifier and a second unique content identifier;

the second unique content identifier corresponding to a second information set having at least one second information characteristic; and

accessing the at least one second information characteristic from the memory whereby the first information characteristic is enriched with the second information characteristic.

33. The processor based method of claim 32 wherein the first and second information sets have a first and second data format respectively.

34. The processor based method of claim 32 wherein at least one of the first and second information set is a comment.

35. The processor based method of claim 32 wherein at least one of the first and second information set is a rating.

36. The processor based method of claim 33 wherein the first and second unique content identifiers are fields in a first and second content reference table.

37. The processor based method of claim 33 wherein the relationship is defined by a content relationship table having the first and second unique content identifier and a unique relationship identifier.

38. A processor based system for of enriching an information set, the system comprising:
a means for receiving a transaction to enrich a first information set stored in a memory with a second information set;
the first information set having a unique content identifier;
a means for ensuring the second information set has a unique content identifier; and
a means for relating the first unique content identifier with the second unique content identifier to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

39. The processor based system of claim 38 wherein:
the means to receive a first and second information set comprises a programmatic interface module of computer readable program code;
the means for ensuing the second information set has a unique content identifier comprises a normalization module; and
the means for relating the first and second information set comprise a relationship module capable of creating and storing the relationship in a content relationship table in memory.

40. The processor based system of claim 39 further comprising a normalization module of computer readable program code capable of automatically normalizing the second information set according to an information characteristic that corresponds to a normalizing characteristic.

41. A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for enriching an information set, said method comprising:
providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module, an enrich module, a normalization module and a database interface module;
receiving a transaction to enrich a first information set stored in a memory with a second information set with the programmatic service interface module;
the first information set having a unique content identifier;

ensuring the second information set has a unique content identifier with a normalization module; and

relating the first unique content identifier with the second unique content identifier with the enrich module to create a unique relationship identifier whereby the first information set is enriched with a relationship to the second information set.

42. The computer program product of claim 41 wherein the first information set has a first data format and the second information set has a second data format.

43. The computer program product of claim 41 further comprising a single graphical user interface module allowing selective transactions to enrich the first information set with at least one user.

44. A processor based method for sharing normalized information, the methods comprising the steps of:

mapping from a memory a user identification field to a group identification field;

the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users;

mapping the user identification field and the group identification field corresponding to a security identification field;

the security identification field corresponding to a security community; and

mapping at least one normalized information set to the security identification field whereby the normalized information set can be shared with the at least one user according to the security community.

45. The processor based method of claim 44 wherein the normalized information set includes a first information set having a first data format and a second information set having a second data format.

46. The processor based method of claim 44 further comprising a single graphical user interface allowing selective sharing of the normalized information set with the at least one user.

47. The processor based method of claim 46 wherein the single graphical user interface further comprises a web exploration inquiry model allowing a query of the shared normalized information set.

48. The processor based method of claim 46 wherein the single graphical user interface allows sharing of at least one information set with a data network.

49. The processor based method of claim 46 wherein:

the single graphical user interface further comprises a shared canvas having a publishable insight portion and a private insight portion;

the publishable insight panel allowing the user to selectively share at least one information set with a data network; and

the private insight panel allowing selective sharing of at least one information set with the security community.

50. The processor based method of claim 46 wherein the shared canvas further comprises a user interface allowing the creation of a relationship between the information sets.

51. The processor based method of claim 50 wherein the shared canvas further comprises an ordered list field allowing selective ordering of the relationships.

52. A processor based system for sharing normalized information, the system comprising:

a means for mapping from a memory a user identification field to a group identification field;

the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users;

the user identification field and the group identification field corresponding to a security identification field;

the security identification field corresponding to a security community; and

a means for mapping at least one normalized information set to the security identification field whereby the normalized information can be shared with the at least one user according to the security community.

53. The processor based system of claim 52 wherein:

the means for mapping from a memory comprises a sharing module of computer readable program code; and

the means for mapping at least one normalized information set to the security identification field comprises the sharing module.

54. The processor based system of claim 53 wherein:

the sharing module further comprises a single graphical user interface further comprises a shared canvas having a publishable insight portion and a private insight portion;

the publishable insight panel allowing the user to selectively share at least one information set with a data network; and

the private insight panel allowing the user to selectively share at least one information set with the security community.

55. A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for sharing an information set, said method comprising:

providing a system, wherein the system comprises distinct software modules, and wherein the distinct software modules comprise a programmatic service interface module, a share module and a database interface module;

retrieving from a database in a memory a user identification field and a group identification field with the database interface module;

mapping the user identification field to a group identification field with the share module; the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users;

mapping the user identification field and the group identification field corresponding to a security identification field with the share module;

the security identification field corresponding to a security community; and

mapping at least one normalized information set to the security identification field with the share module whereby the normalized information can be shared with the at least one user according to the security community.

56. The computer program product of claim 55 wherein the at least one normalized information set includes a first information set having a first data format and a second information set having a second data format.

57. The computer program product of claim 55 further comprising a single graphical user interface module allowing selective sharing of the normalized information set with the at least one user.

58. The computer program product of claim 55 wherein:

the share module further comprises a single graphical user interface further comprising a shared canvas having a publishable insight portion and a private insight portion;

the publishable insight panel allowing selective sharing of at least one information set with a data network; and

the private insight panel allowing selective sharing of at least one information set with the security community.

59. A method to capture an information set, the method comprising the steps of:

receiving a first information set having at least one first information characteristic;

at least one of the first information characteristics corresponding to at least one normalizing characteristic;

storing in a memory the first information characteristics to a set of normalized fields according to the normalizing characteristic to create a first normalized information set;

receiving a transaction to enrich the first normalized information set with a second information set;

the first normalized information set having a unique content identifier;

ensuring the second information set has a unique content identifier; and

relating the first unique content identifier with the second unique content identifier to create a unique relationship identifier whereby the first normalized information set is enriched with a relationship to the second information set.

60. The method of claim 59, further comprising the steps of:

mapping from the memory a user identification field to a group identification field;

the user identification field corresponding to at least one user and the group identification field corresponding to a plurality of users;

mapping the user identification field and the group identification field corresponding to a security identification field;

the security identification field corresponding to a security community; and

mapping the first normalized information set to the security identification field whereby the enriched first normalized information set can be shared with the at least one user according to the security community.

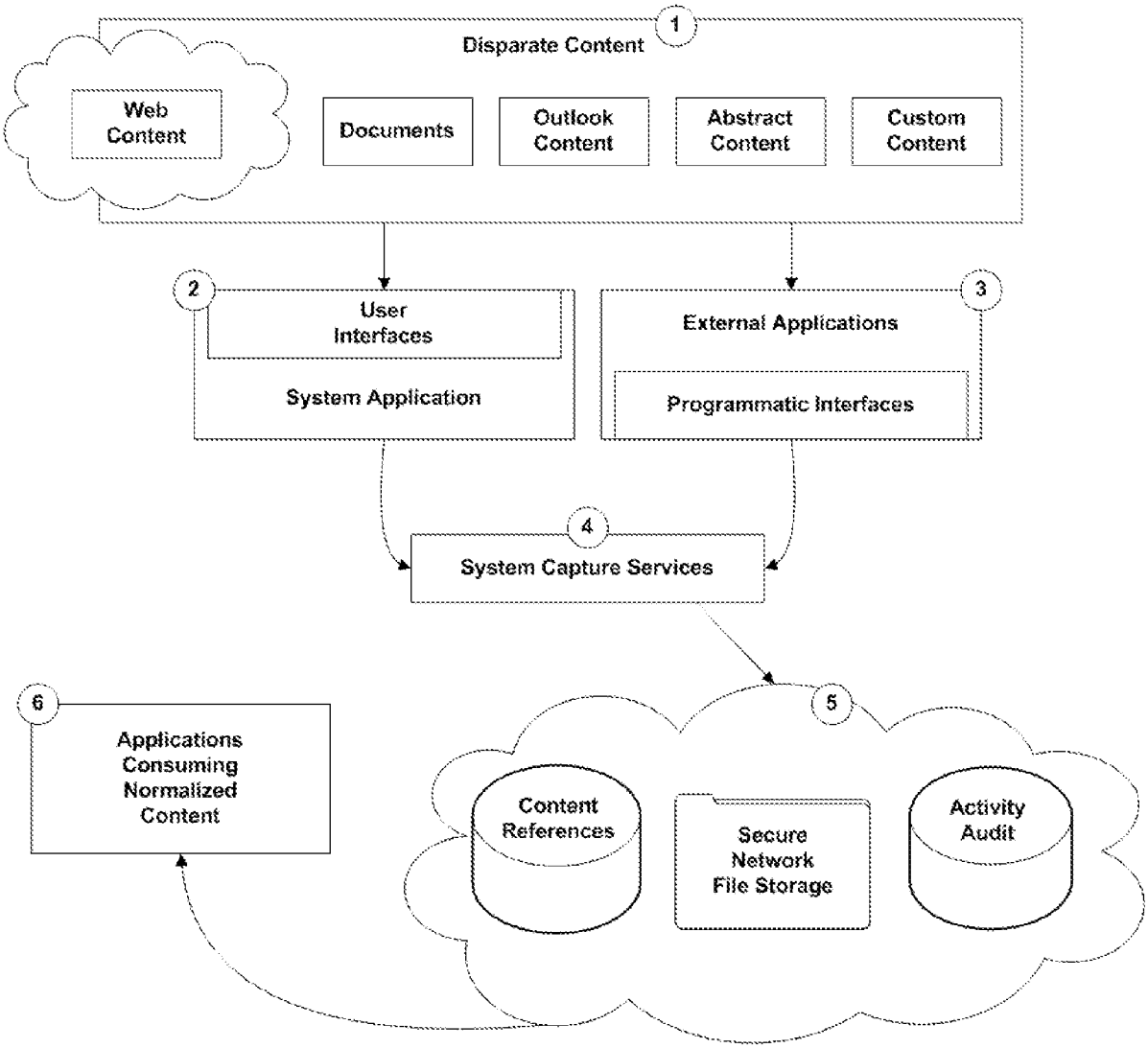
1
Disparate Content
Web Content
Documents
Outlook Content
Abstract Content
Custom Content
2
User Interfaces
System Application
3
External Applications
Programmatic Interfaces
4
System Capture Services
5
Content References
Secure Network File Storage
Activity Audit
6
Applications Consuming Normalized Content

FIG. 1

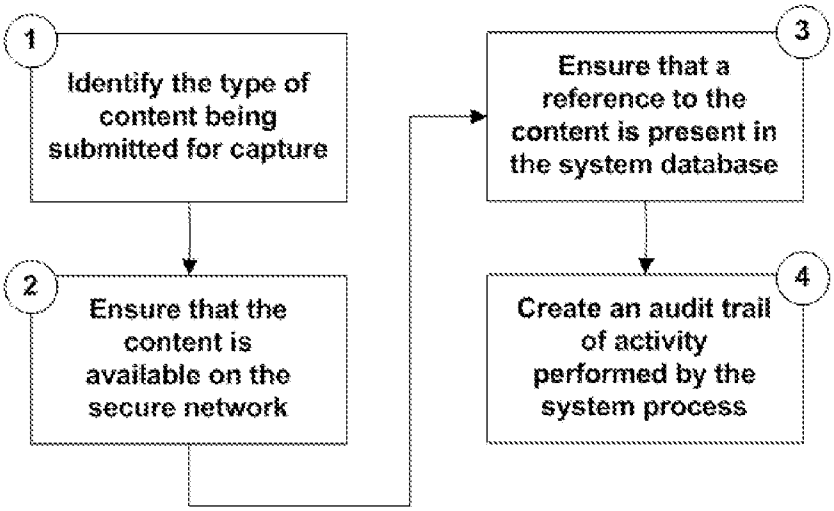
1
Identify the type of content being submitted for capture
2
Ensure that the content is available on the secure network
3
Ensure that a reference to the content is present in the system database
4
Create an audit trail of activity performed by the system process

FIG. 2

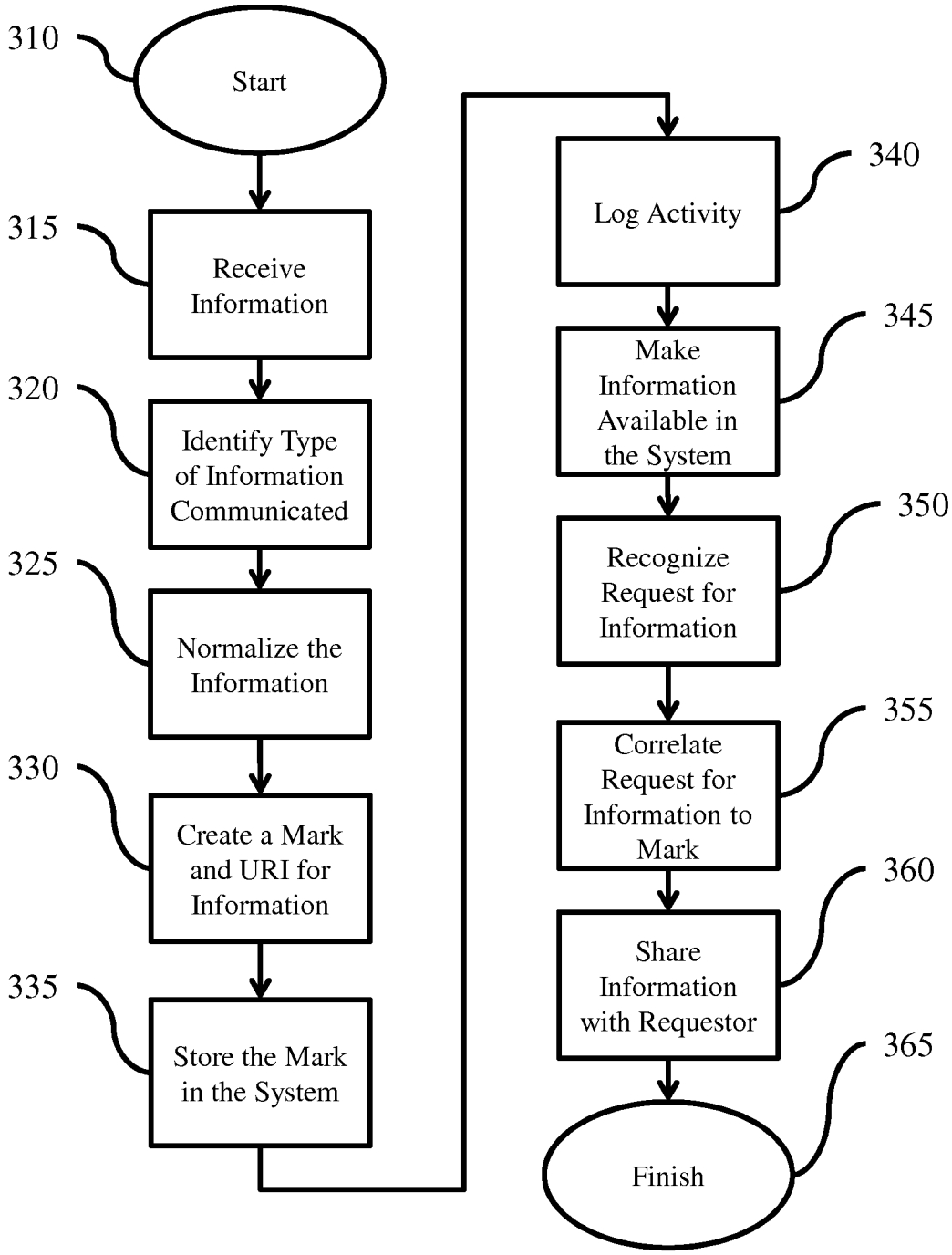
310
Start
315
Receive Information
320
Identify Type of Information Communicated
325
Normalize the Information
330
Create a Mark and URI for Information
335
Store the Mark in the System
340
Log Activity
345
Make Information Available in the System
350
Recognize Request for Information
355
Correlate Request for Information to Mark
360
Share Information with Requestor
365
Finish

FIG. 3

Field No.	Title	Description
1	Content ID	A globally unique identifier for the content assigned by the system
2	Content URI	The location of the content within the systems
3	Content Type	The type of content represented by this entry in the system database
4	Content Title	A title, usually human readable, assigned to the content
5	Content Source Path	The path within a location if this content has be uploaded
6	Source Location Identifier	An identifier of the location from which the content was uploaded
7	Optional Description Identifier	Optional descriptive fields (description, illustration)
8	Content Usage Information	Content usage statistics beyond the scope of capture, such as but not limited to Transactions, Ratings, Comments or Relationships
9	Alias Information	Alias location of the content on the system network representing a globally unique identifier for the content assigned by the system

FIG. 4

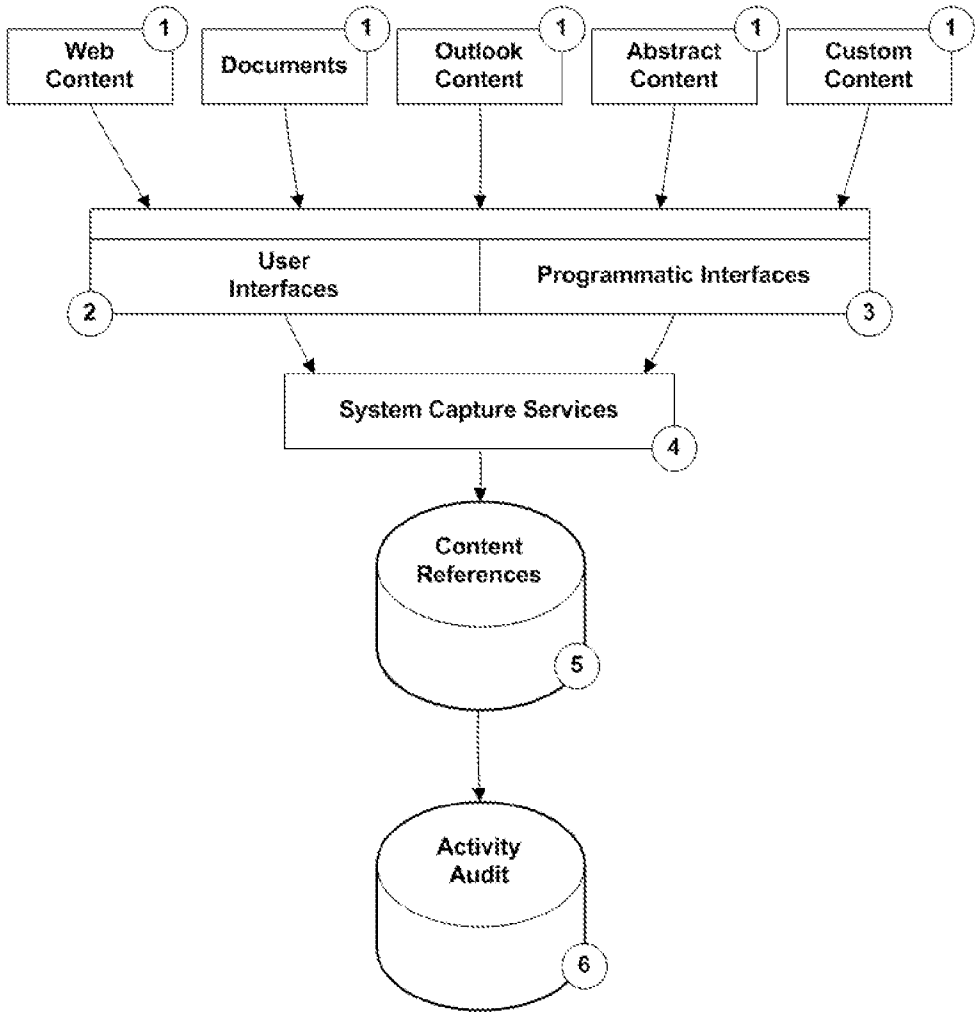
Web Content
1
Documents
1
Outlook Content
1
Abstract Content
1
Custom Content
1
User Interfaces
Programmatic Interfaces
2
3
System Capture Services
4
Content References
5
Activity Audit
6

FIG. 5

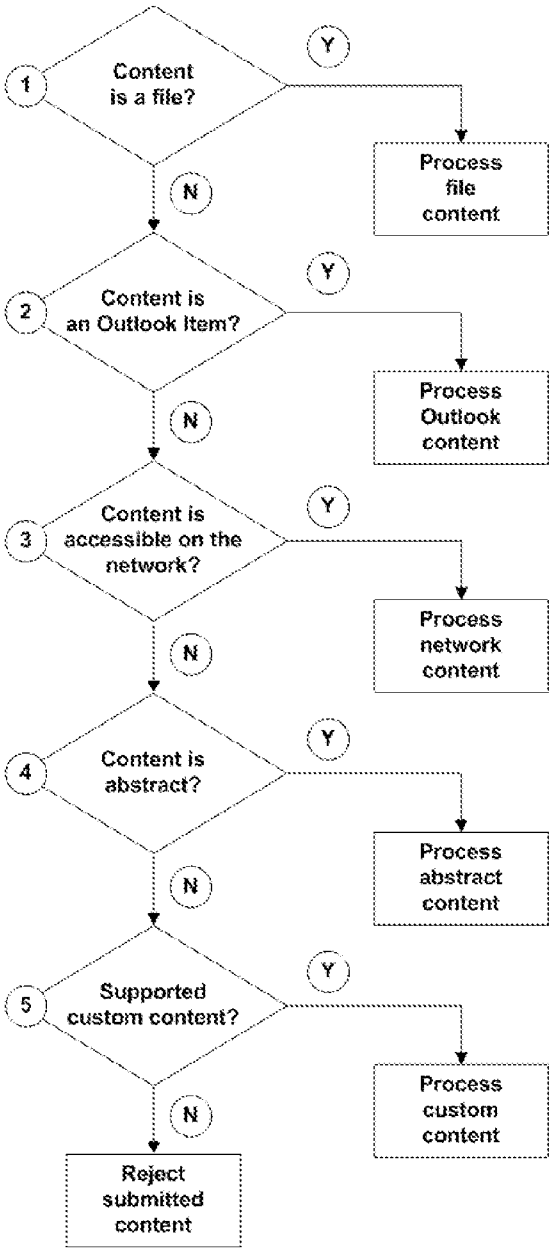
1
Content is a file?
Y
Process file content
N
2
Content is an Outlook Item?
Y
Process Outlook content
N
3
Content is accessible on the network?
Y
Process network content
N
4
Content is abstract?
Y
Process abstract content
N
5
Supported custom content?
Y
Process custom content
N
Reject submitted content

FIG. 6

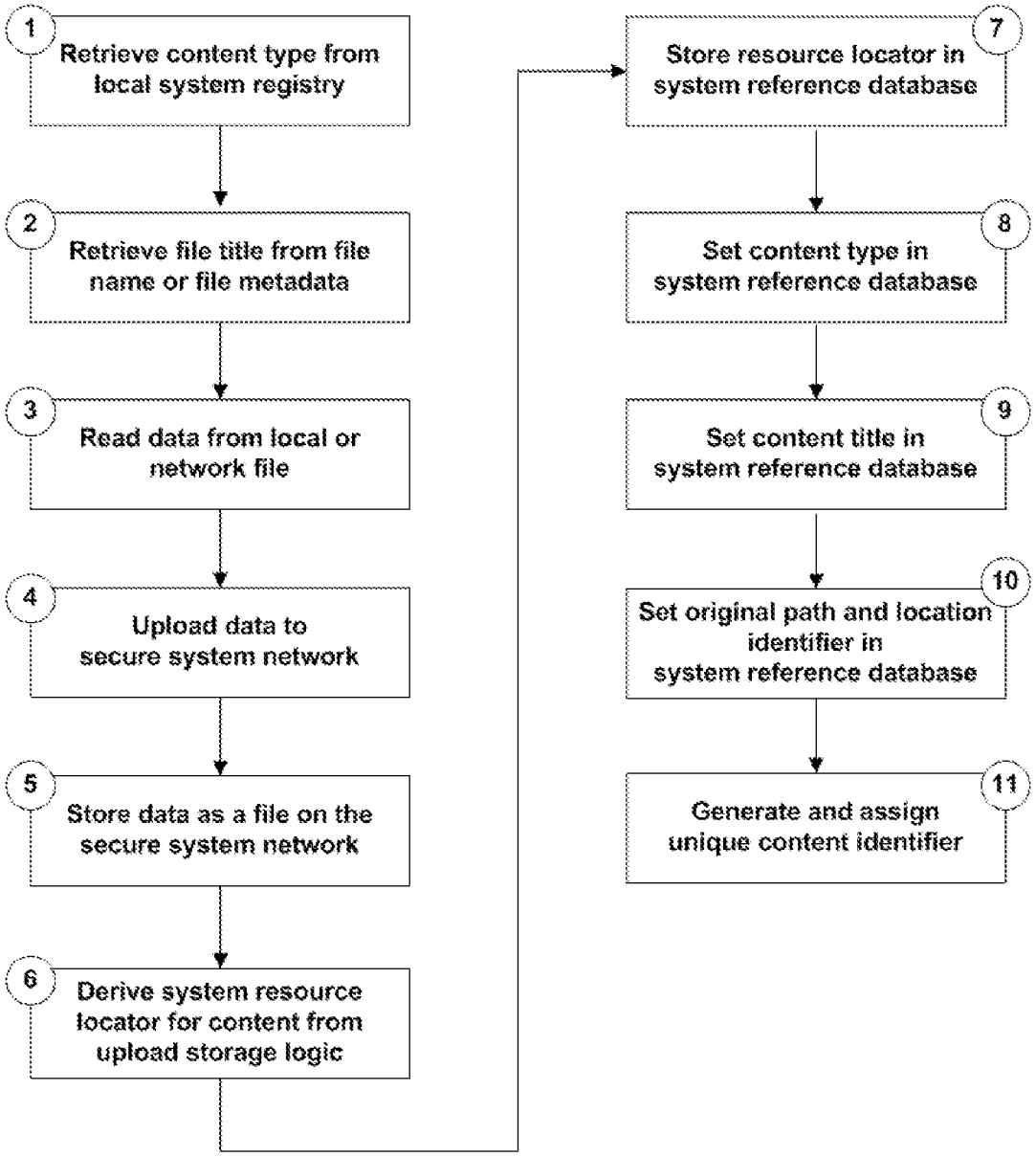
1
Retrieve content type from local system registry
2
Retrieve file title from file name or file metadata
3
Read data from local or network file
4
Upload data to secure system network
5
Store data as a file on the secure system network
6
Derive system resource locator for content from upload storage logic
7
Store resource locator in system reference database
8
Set content type in system reference database
9
Set content title in system reference database
10
Set original path and location identifier in system reference database
11
Generate and assign unique content identifier

FIG. 7

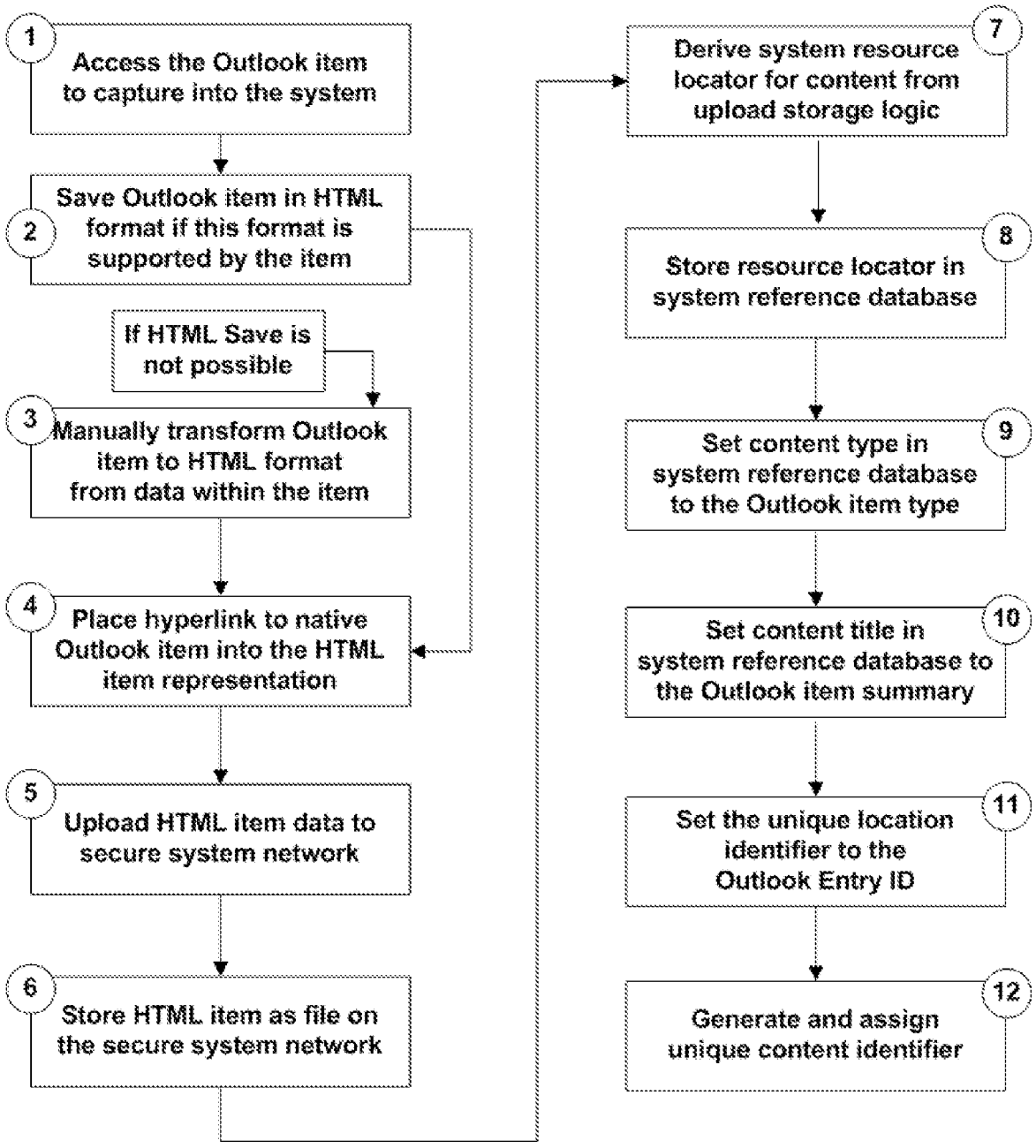
1
Access the Outlook item to capture into the system
2
Save Outlook item in HTML format if this format is supported by the item
If HTML Save is not possible
3
Manually transform Outlook item to HTML format from data within the item
4
Place hyperlink to native Outlook item into the HTML item representation
5
Upload HTML item data to secure system network
6
Store HTML item as file on the secure system network
7
Derive system resource locator for content from upload storage logic
8
Store resource locator in system reference database
9
Set content type in system reference database to the Outlook item type
10
Set content title in system reference database to the Outlook item summary
11
Set the unique location identifier to the Outlook Entry ID
12
Generate and assign unique content identifier

FIG. 8

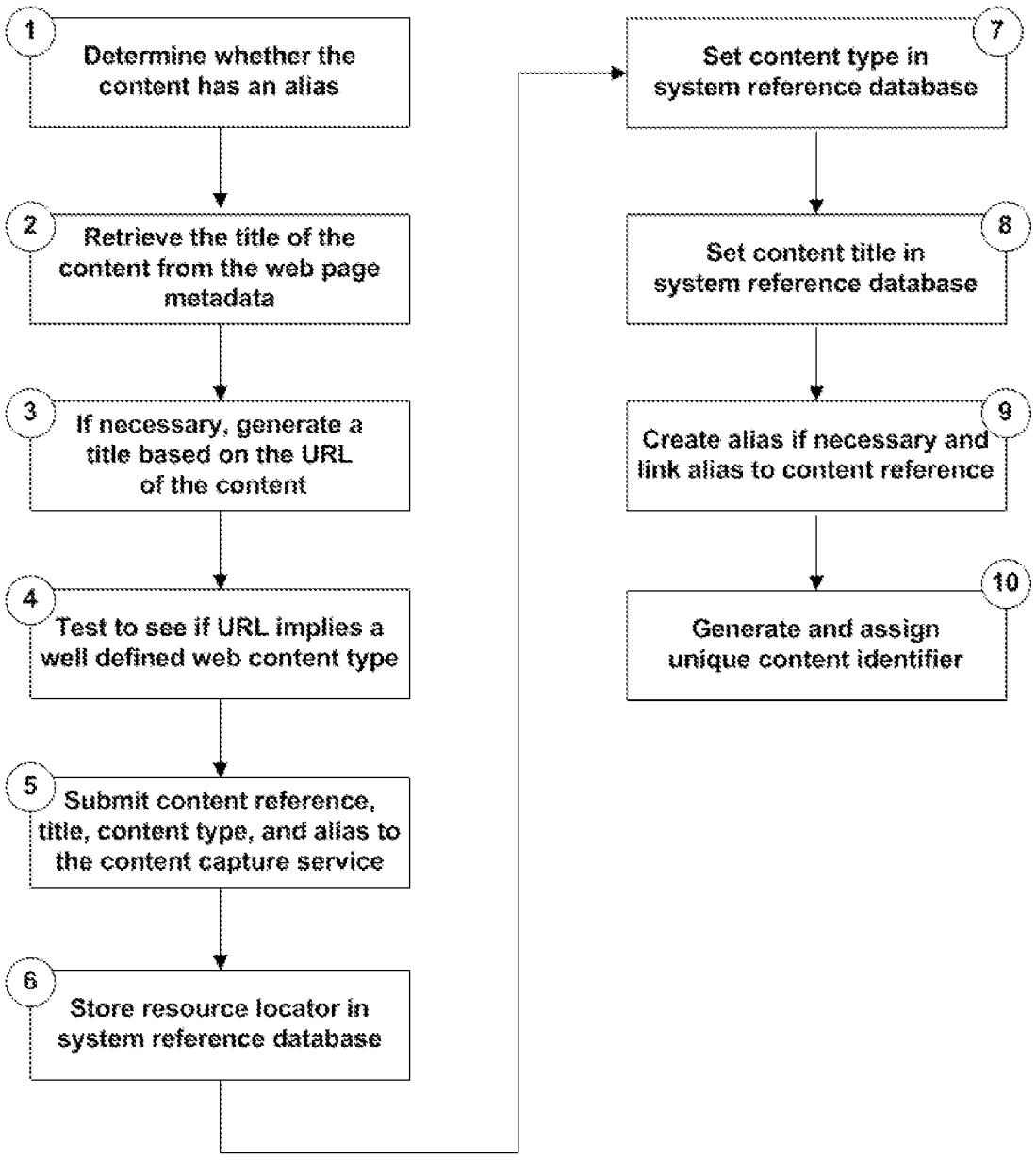
1
Determine whether the content has an alias
2
Retrieve the title of the content from the web page metadata
3
If necessary, generate a title based on the URL of the content
4
Test to see if URL implies a well defined web content type
5
Submit content reference, title, content type, and alias to the content capture service
6
Store resource locator in system reference database
7
Set content type in system reference database
8
Set content title in system reference database
9
Create alias if necessary and link alias to content reference
10
Generate and assign unique content identifier

FIG. 9

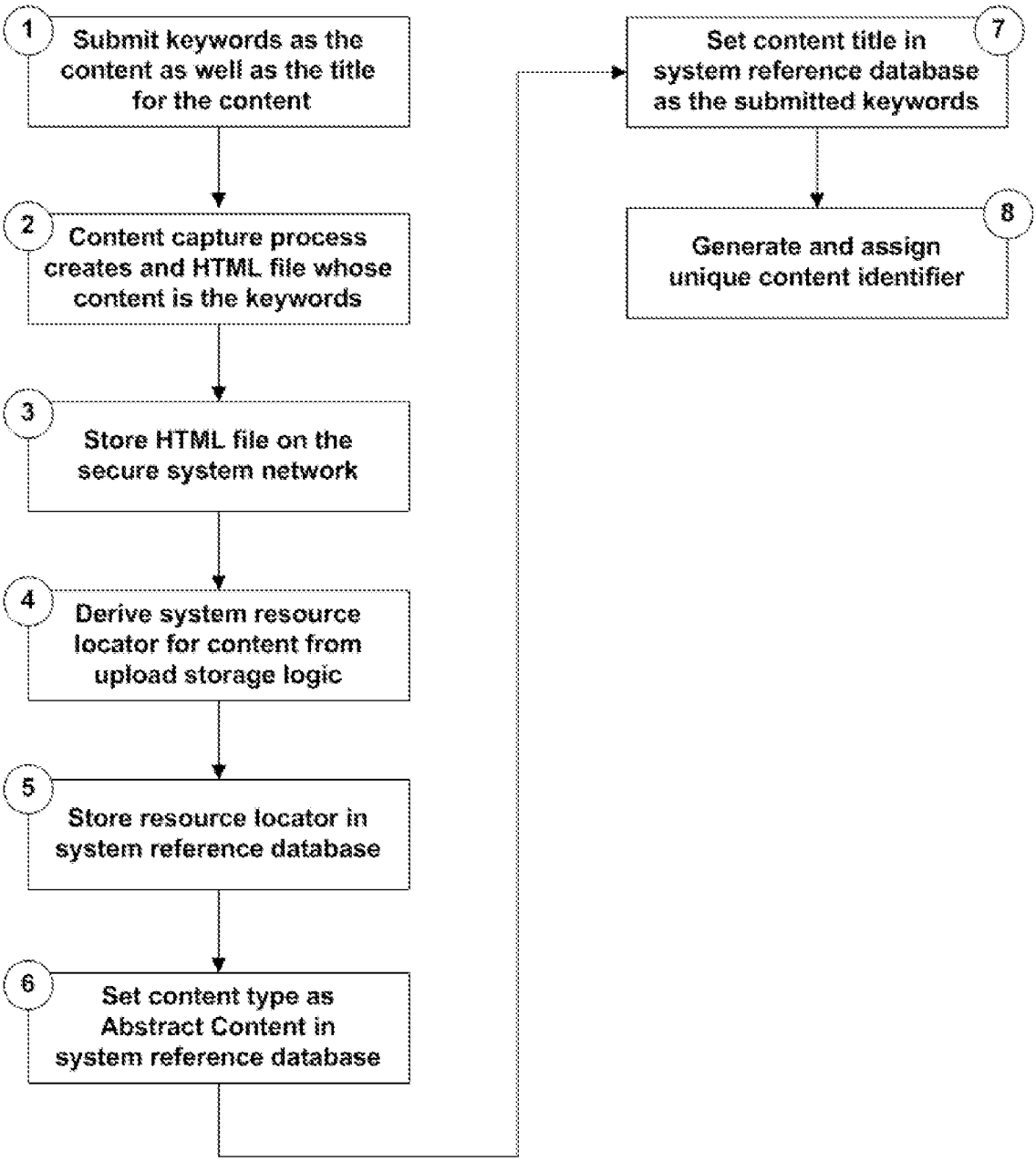
1
Submit keywords as the content as well as the title for the content
2
Content capture process creates and HTML file whose content is the keywords
3
Store HTML file on the secure system network
4
Derive system resource locator for content from upload storage logic
5
Store resource locator in system reference database
6
Set content type as Abstract Content in system reference database
7
Set content title in system reference database as the submitted keywords
8
Generate and assign unique content identifier

FIG. 10

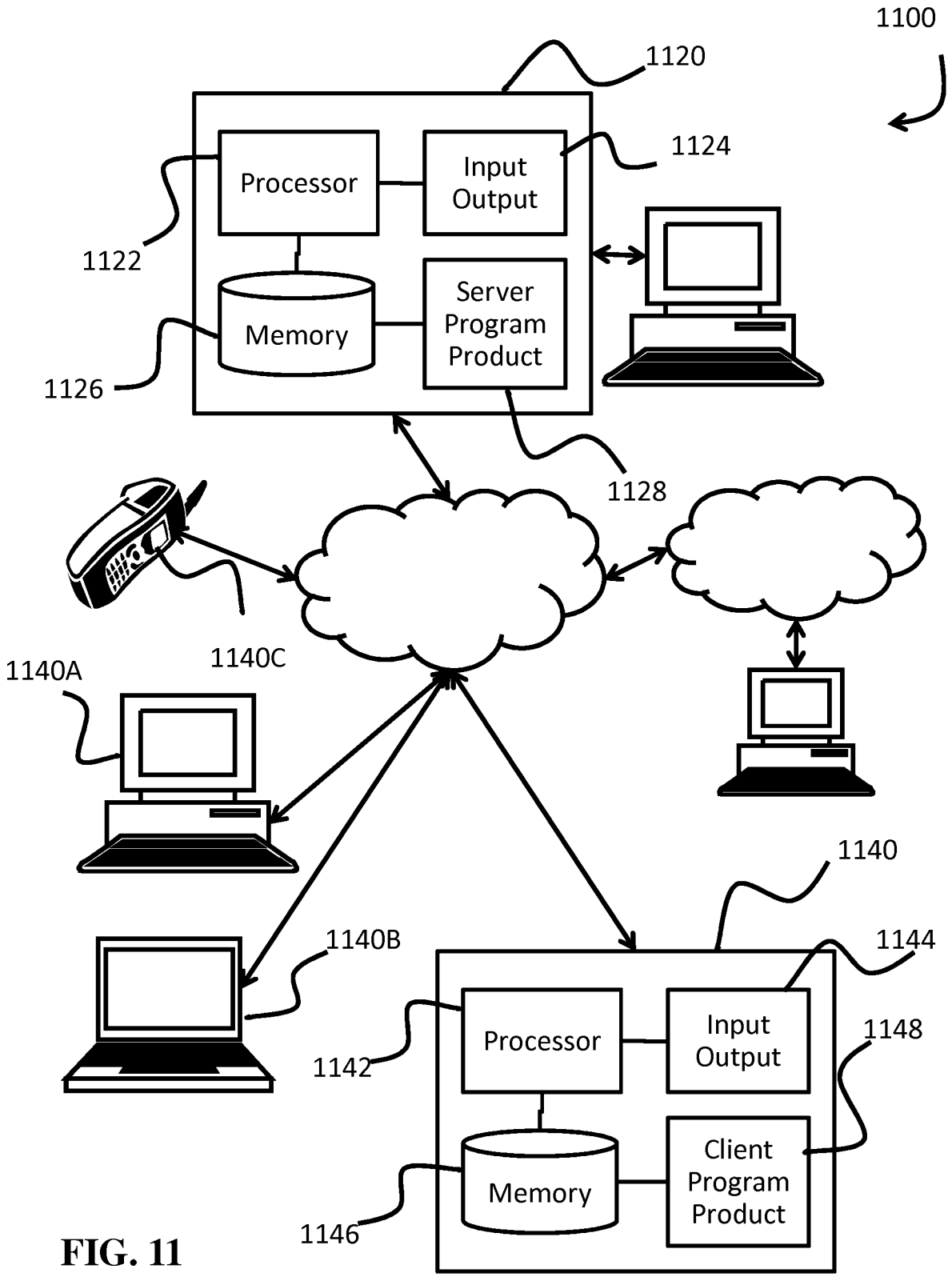
1100
1120
Processor
Input Output
1124
1122
Memory
Server Program Product
1126
1128
1140A
1140C
1140
1140B
1144
Processor
Input Output
1148
1142
Memory
Client Program Product
1146

FIG. 11

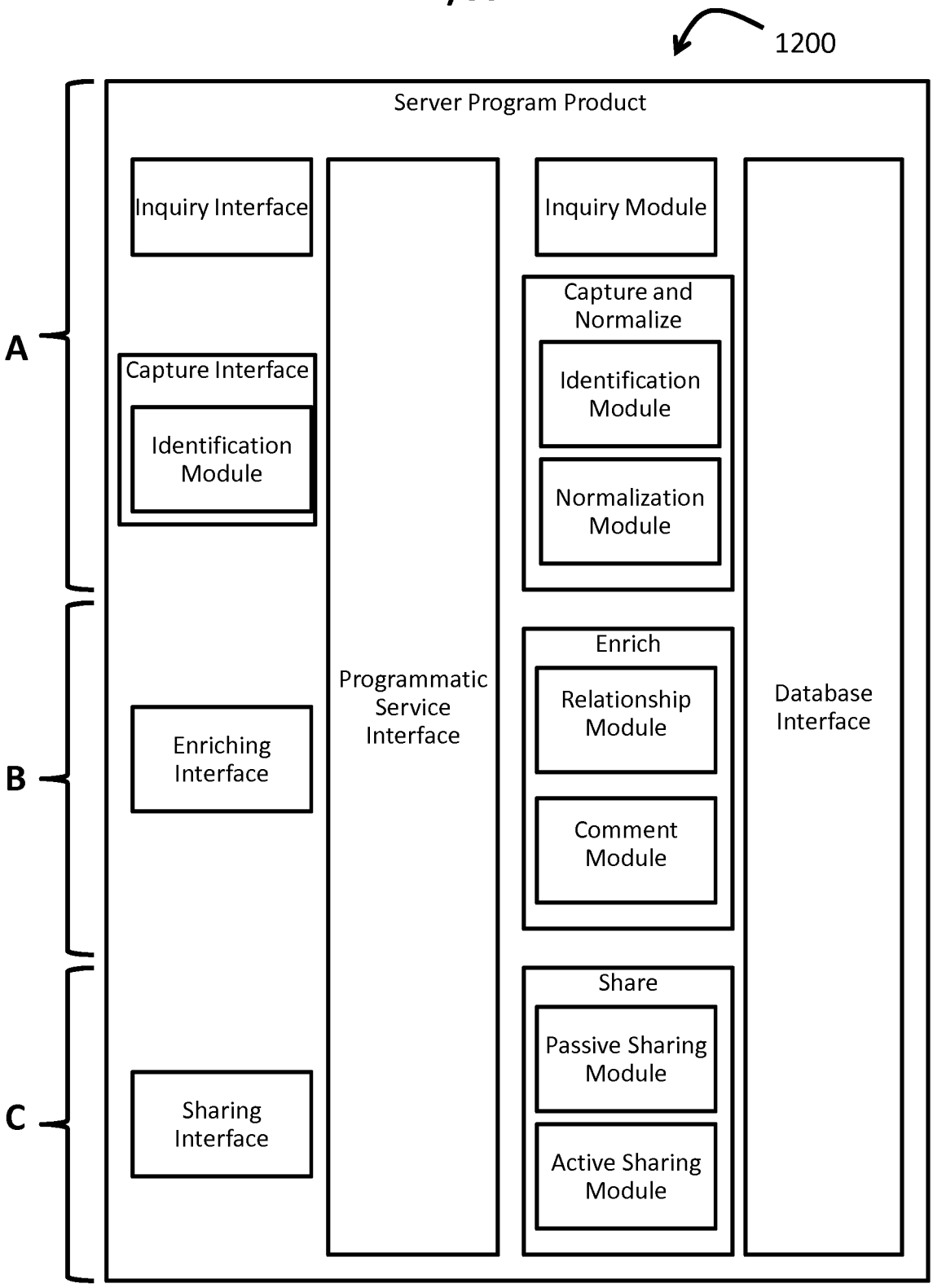
1200
Server Program Product
Inquiry Interface
Capture Interface
Identification Module
Enriching Interface
Sharing Interface
Programmatic Service Interface
Inquiry Module
Capture and Normalize
Identification Module
Normalization Module
Enrich
Relationship Module
Comment Module
Share
Passive Sharing Module
Active Sharing Module
Database Interface
A
B
C

FIG. 12

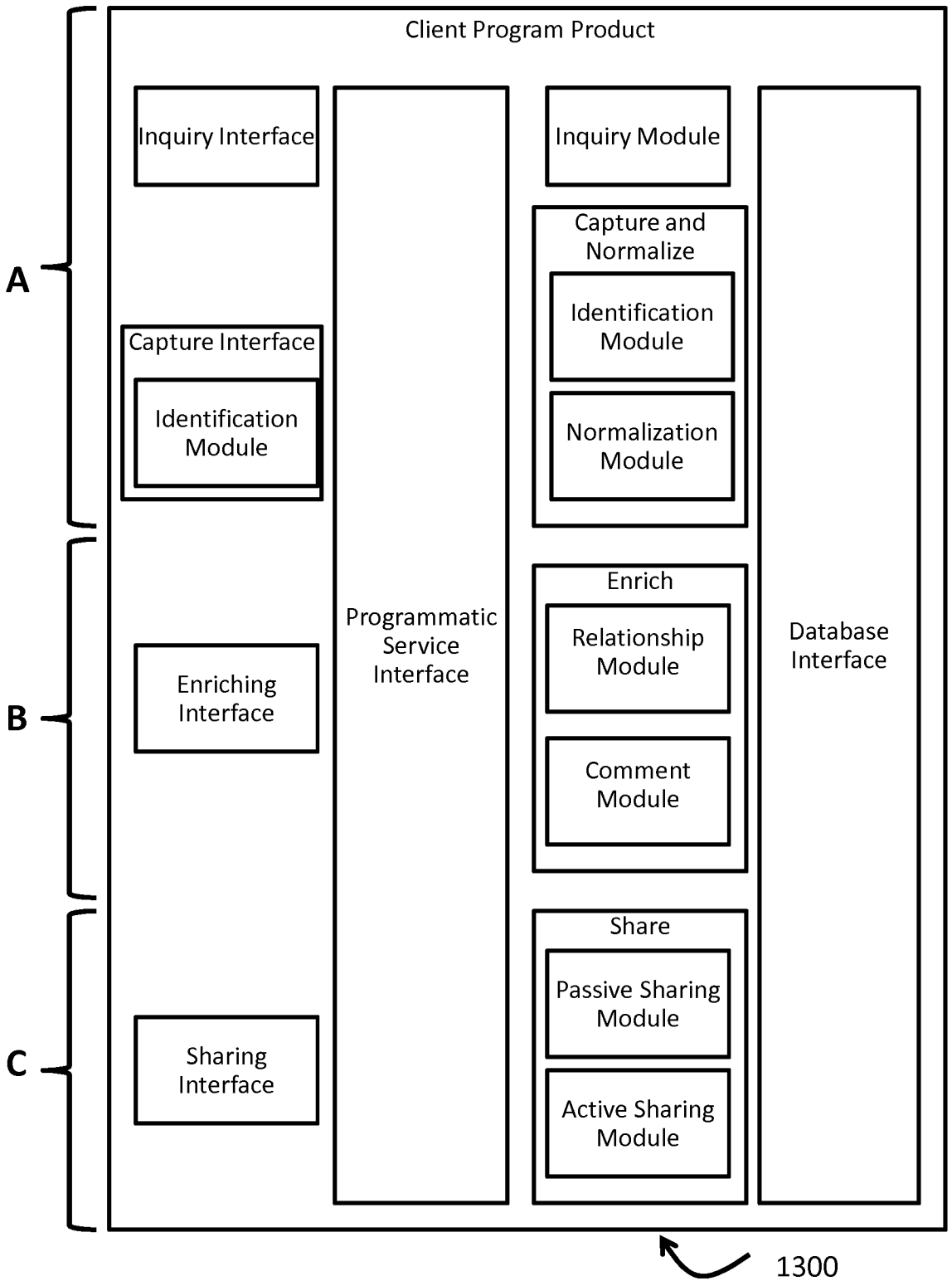
Client Program Product
Inquiry Interface
Inquiry Module
Capture and Normalize
Identification Module
Normalization Module
Capture Interface
Identification Module
A
Enrich
Relationship Module
Comment Module
Enriching Interface
Programmatic Service Interface
Database Interface
B
Share
Passive Sharing Module
Active Sharing Module
Sharing Interface
C
1300

FIG. 13

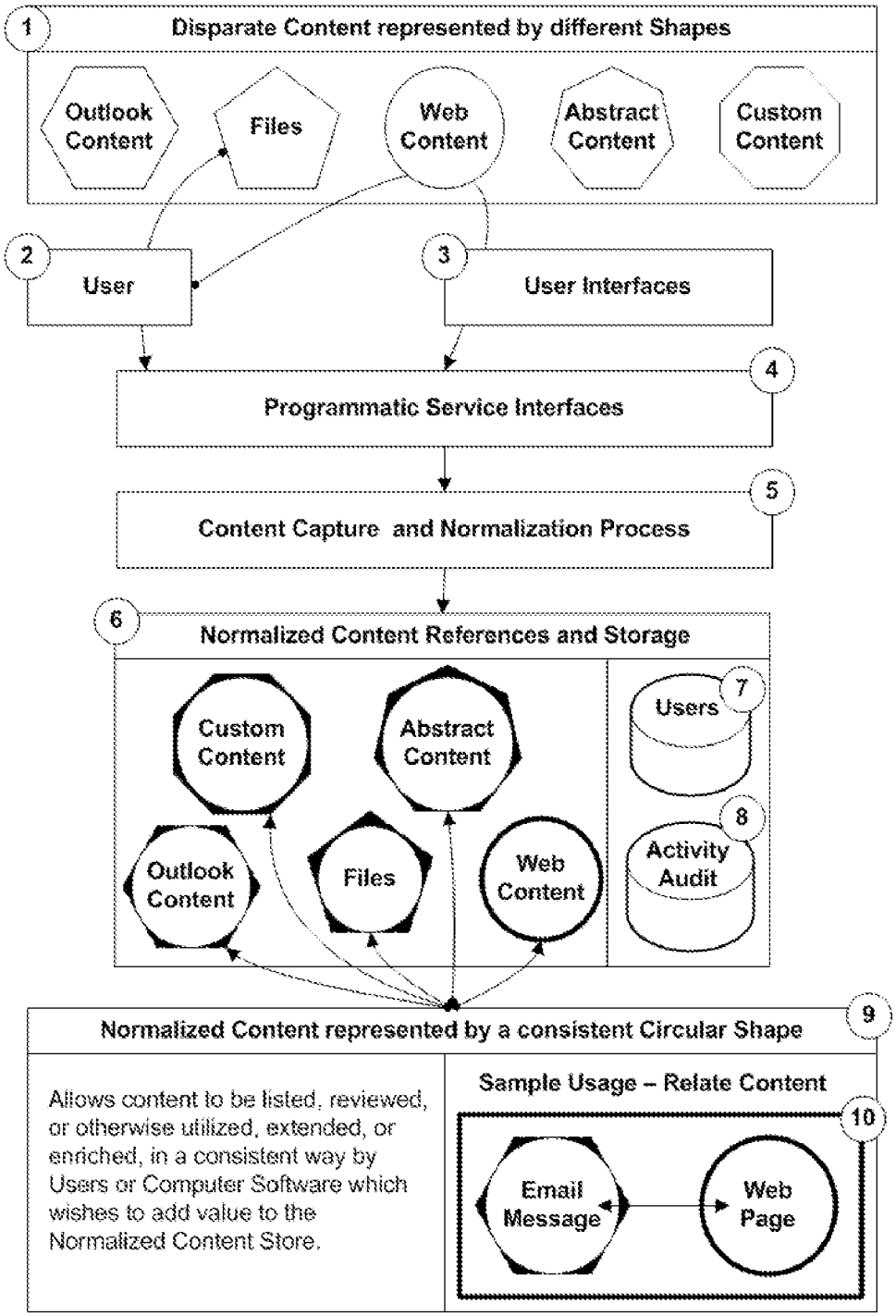
1
Disparate Content represented by different Shapes
Outlook Content
Files
Web Content
Abstract Content
Custom Content
2
User
3
User Interfaces
4
Programmatic Service Interfaces
5
Content Capture and Normalization Process
6
Normalized Content References and Storage
Custom Content
Abstract Content
Outlook Content
Files
Web Content
7
Users
8
Activity Audit
9
Normalized Content represented by a consistent Circular Shape
Allows content to be listed, reviewed, or otherwise utilized, extended, or enriched, in a consistent way by Users or Computer Software which wishes to add value to the Normalized Content Store.
Sample Usage – Relate Content
10
Email Message
Web Page

FIG. 14

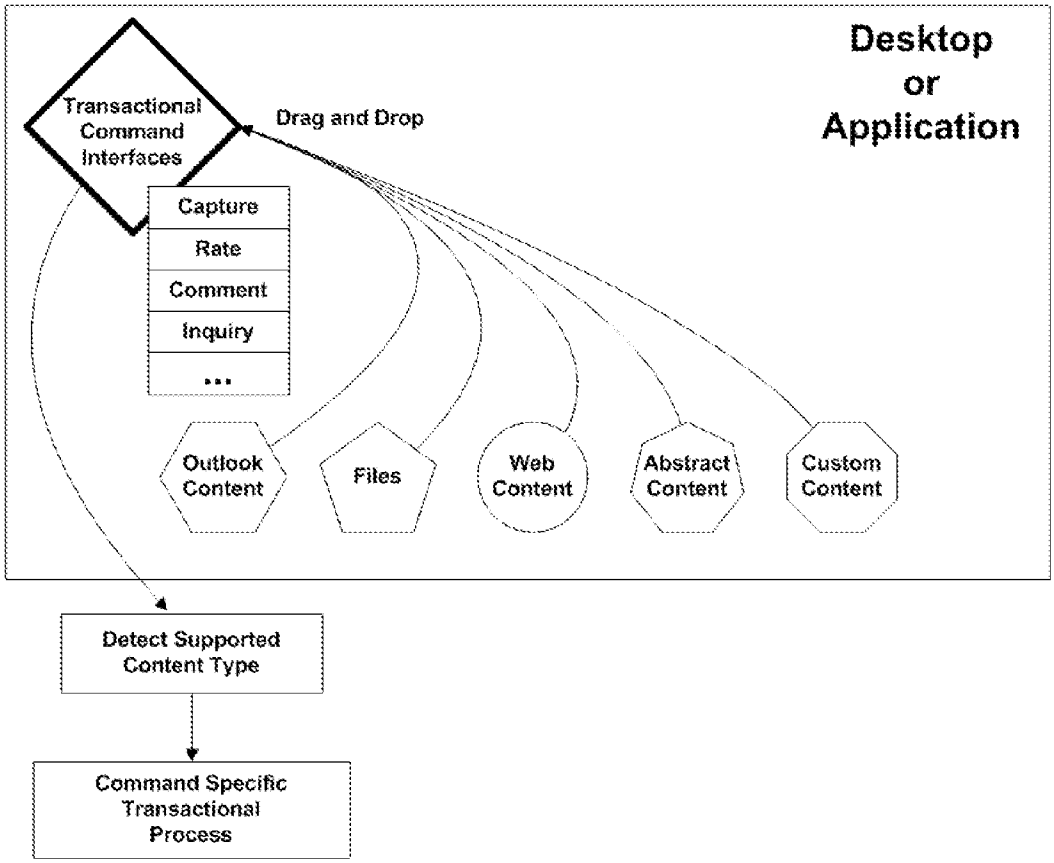
Desktop
or
Application
Transactional
Command
Interfaces
Drag and Drop
Capture
Rate
Comment
Inquiry
...
Outlook
Content
Files
Web
Content
Abstract
Content
Custom
Content
Detect Supported
Content Type
Command Specific
Transactional
Process

FIG. 15

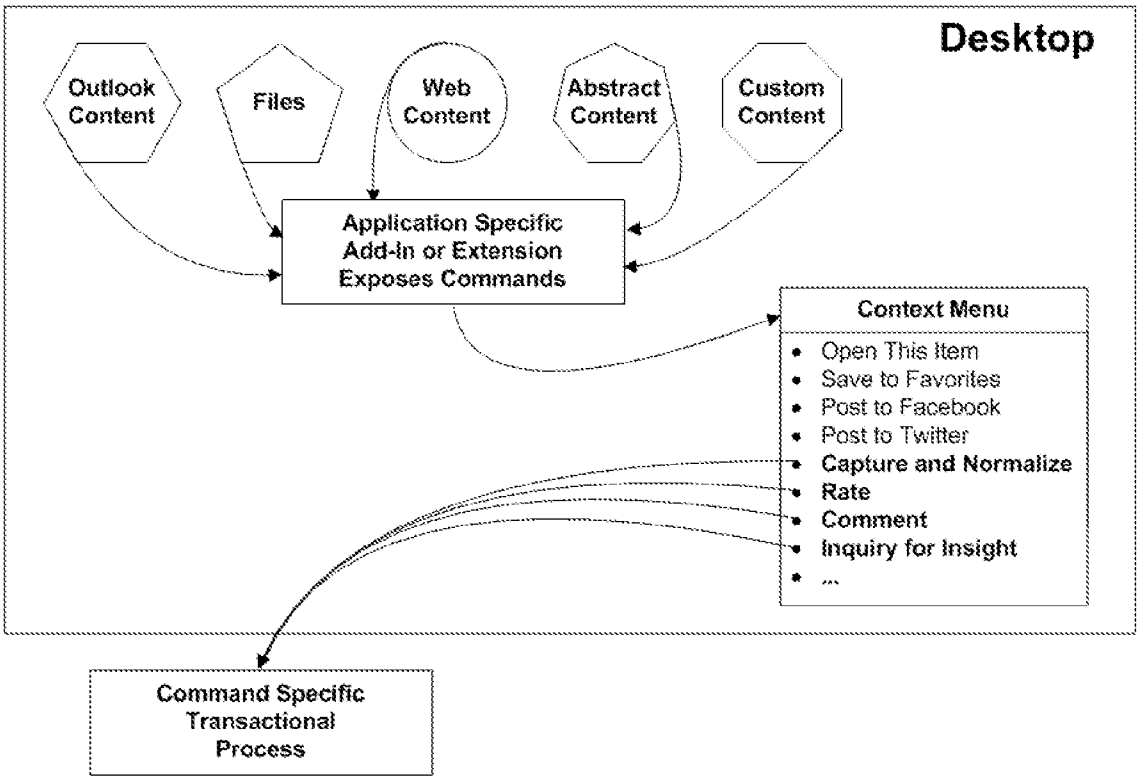

FIG. 16A

```
SubmitContent(  User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // interpreted differently for various content types
                Content Type,         // the content type being submitted for capture
                Content Title         // derived from the Content Identifier or from other metadata

                )                     // Method Signature is complete
```

FIG. 16B

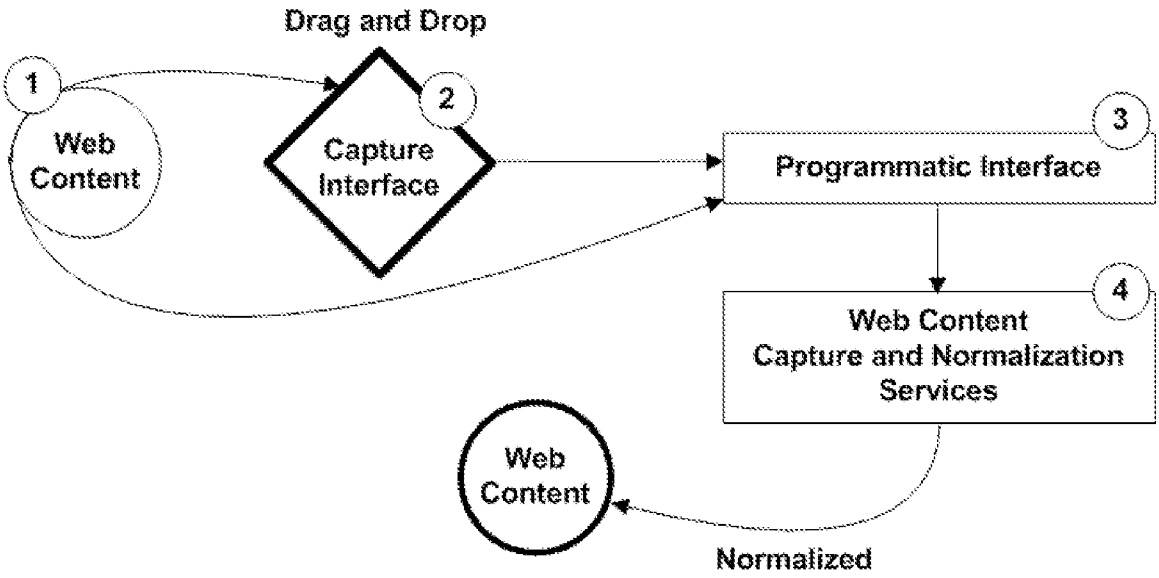

FIG. 17A

```
SubmitContent ( User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // The URI of the Web Content
                Content Type,         // "Web Page" or (see notes)
                Content Title         // derived from the Web Page Title Metadata (see notes)

                )                     // Method Signature is complete
```

FIG. 17B

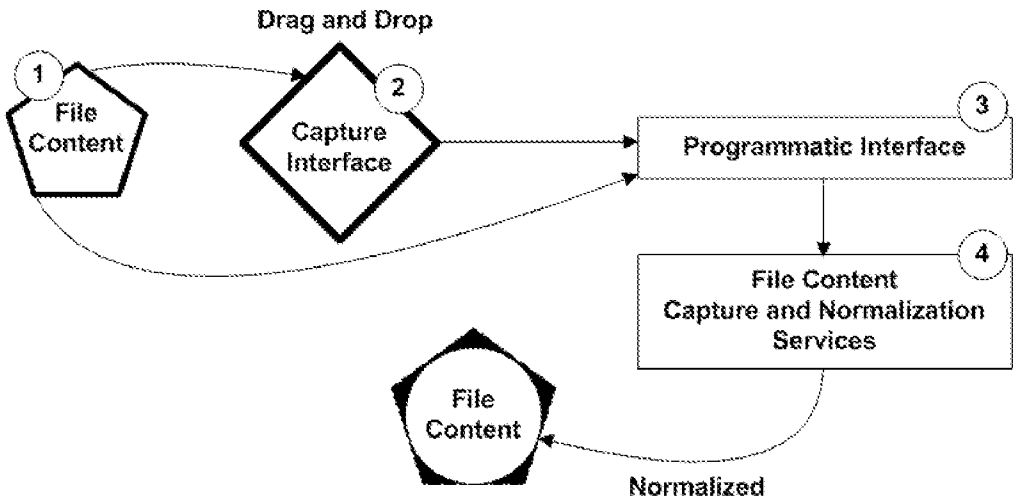

FIG. 18A

```
SubmitContent ( User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // The URI of the File Content after it is uploaded
                Content Type,         // Derived from the System Registry as described below
                Content Title,        // derived from the File Name or File Metadata if available
                Binary File Data,     // The contents of the file for upload to the system file store
                Source Path,          // The Local or Network Path from where the File originated
                Source Identifier,    // The Computer ID from where this request is being posted

                )                     // Method Signature is complete
```

FIG. 18B

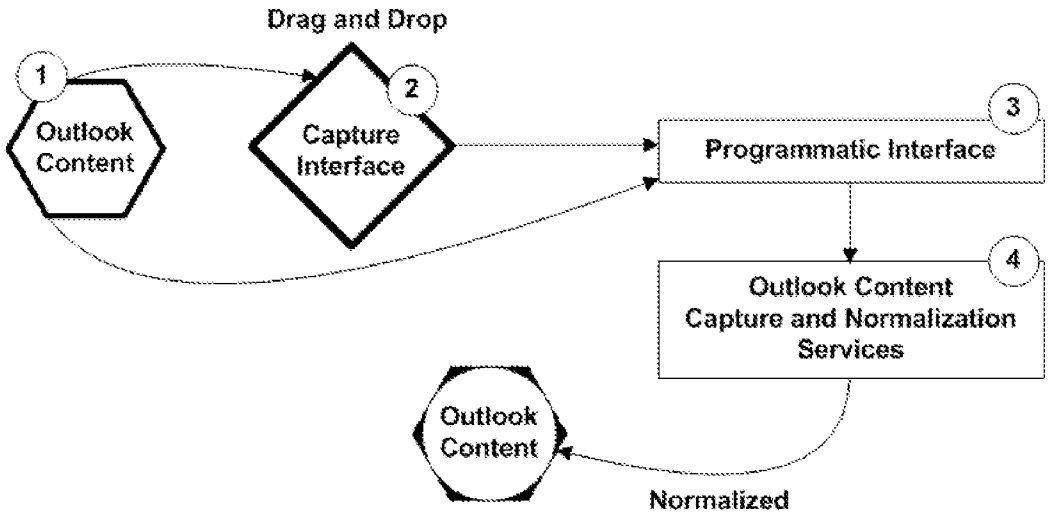

FIG. 19A

```
SubmitContent ( User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // The URI of the Outlook Content after it is transformed
                Content Type,         // The specific type of Outlook content for this message
                Content Title,        // derived from the specific Message (Subject of an email, etc.)
                Binary File Data,     // The transformed data for upload to the system file store
                Source Identifier,    // The unique Outlook Entry ID for the Outlook Content

                )                     // Method Signature is complete
```

FIG. 19B

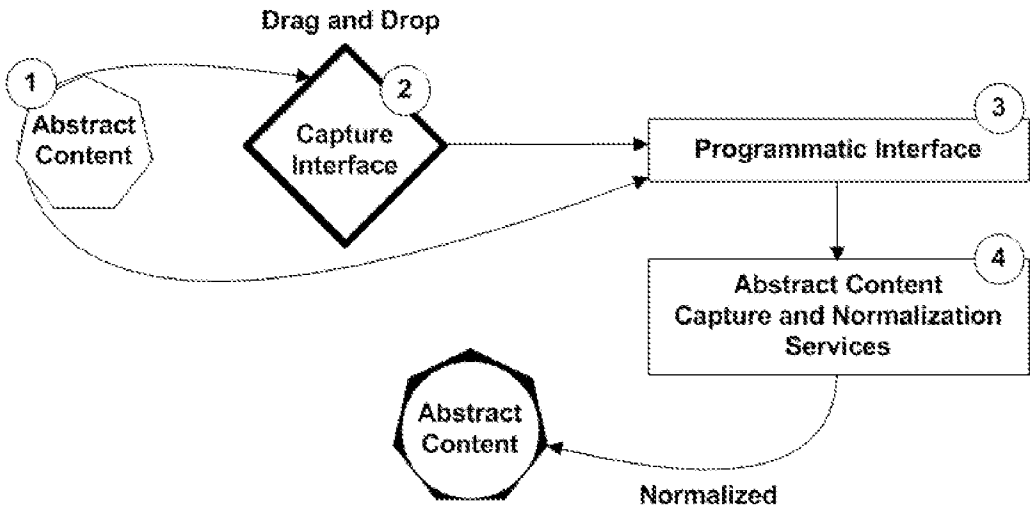

FIG. 20A

```
SubmitContent ( User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // The URI of the Abstract Content after it is uploaded
                Content Type,         // will be "Abstract Content", "Tag", or "Keyword"
                Content Title,        // the keywords submitted serve as the title of the content

                )                     // Method Signature is complete
```

FIG. 20B

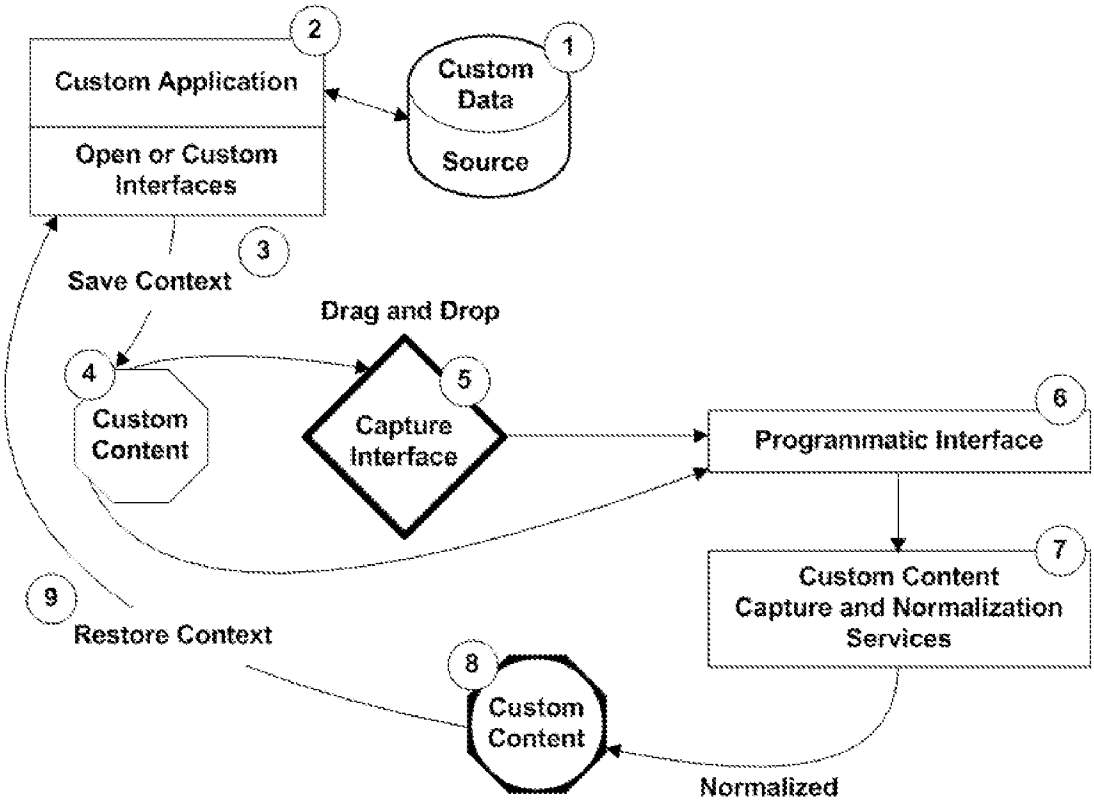

FIG. 21A

```
SubmitContent ( User ID,              // will attribute the activity to the specified authenticated user
                Content Identifier,   // the URI of the Custom Content file after it is uploaded
                Content Type,         // will be "Custom Application Context"
                Content Title,        // provided within the context packet
                Binary File Data,     // the data containing the Custom Application Context

                )                     // Method Signature is complete
```

FIG. 21B

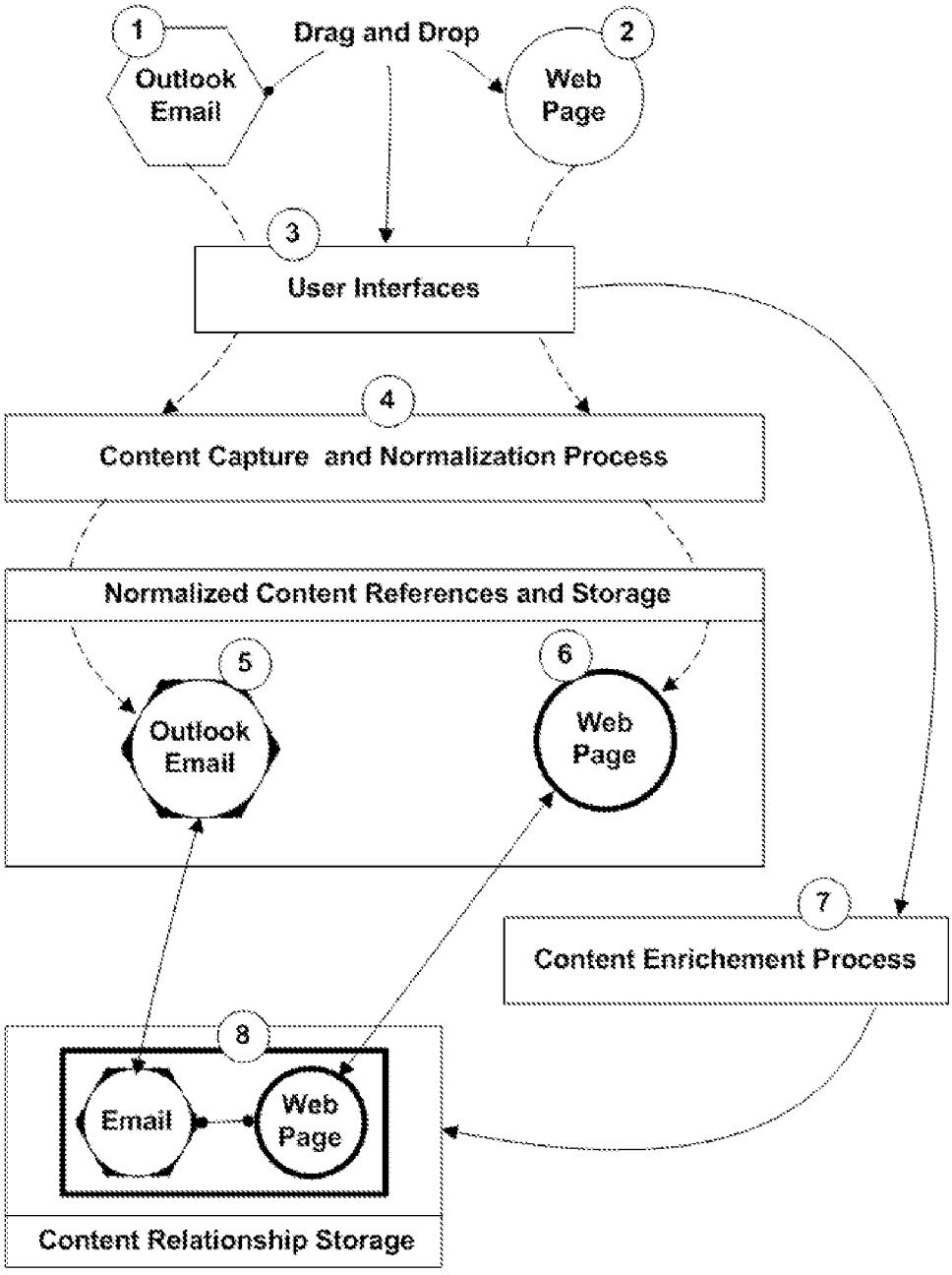
1
Outlook Email
Drag and Drop
2
Web Page
3
User Interfaces
4
Content Capture and Normalization Process
Normalized Content References and Storage
5
Outlook Email
6
Web Page
7
Content Enrichement Process
8
Email
Web Page
Content Relationship Storage

FIG. 22

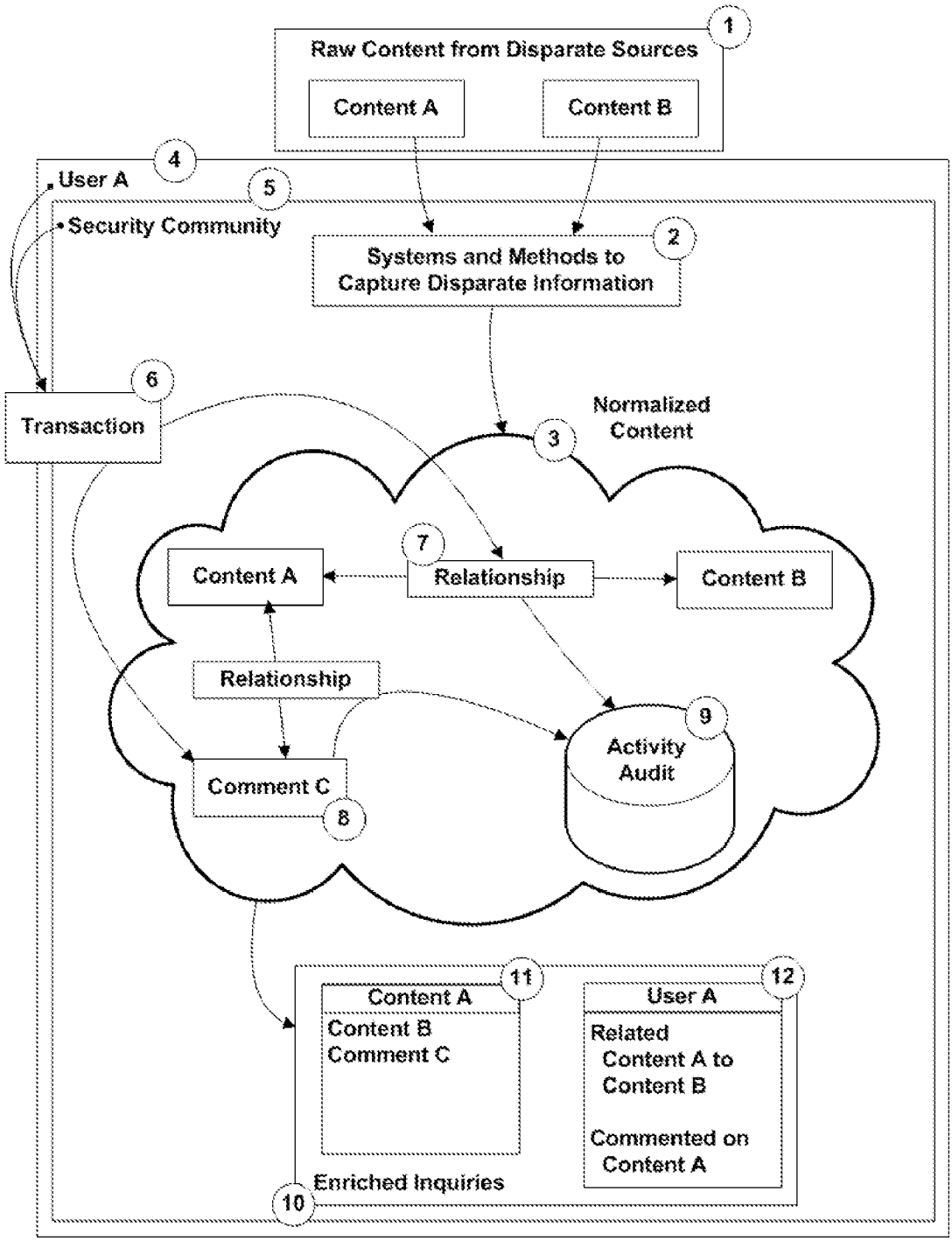
1
Raw Content from Disparate Sources
Content A
Content B
4
User A
5
Security Community
2
Systems and Methods to Capture Disparate Information
6
Transaction
Normalized Content
3
7
Content A
Relationship
Content B
Relationship
9
Activity Audit
Comment C
8
11
Content A
Content B
Comment C
12
User A
Related Content A to Content B
Commented on Content A
Enriched Inquiries
10

FIG. 23

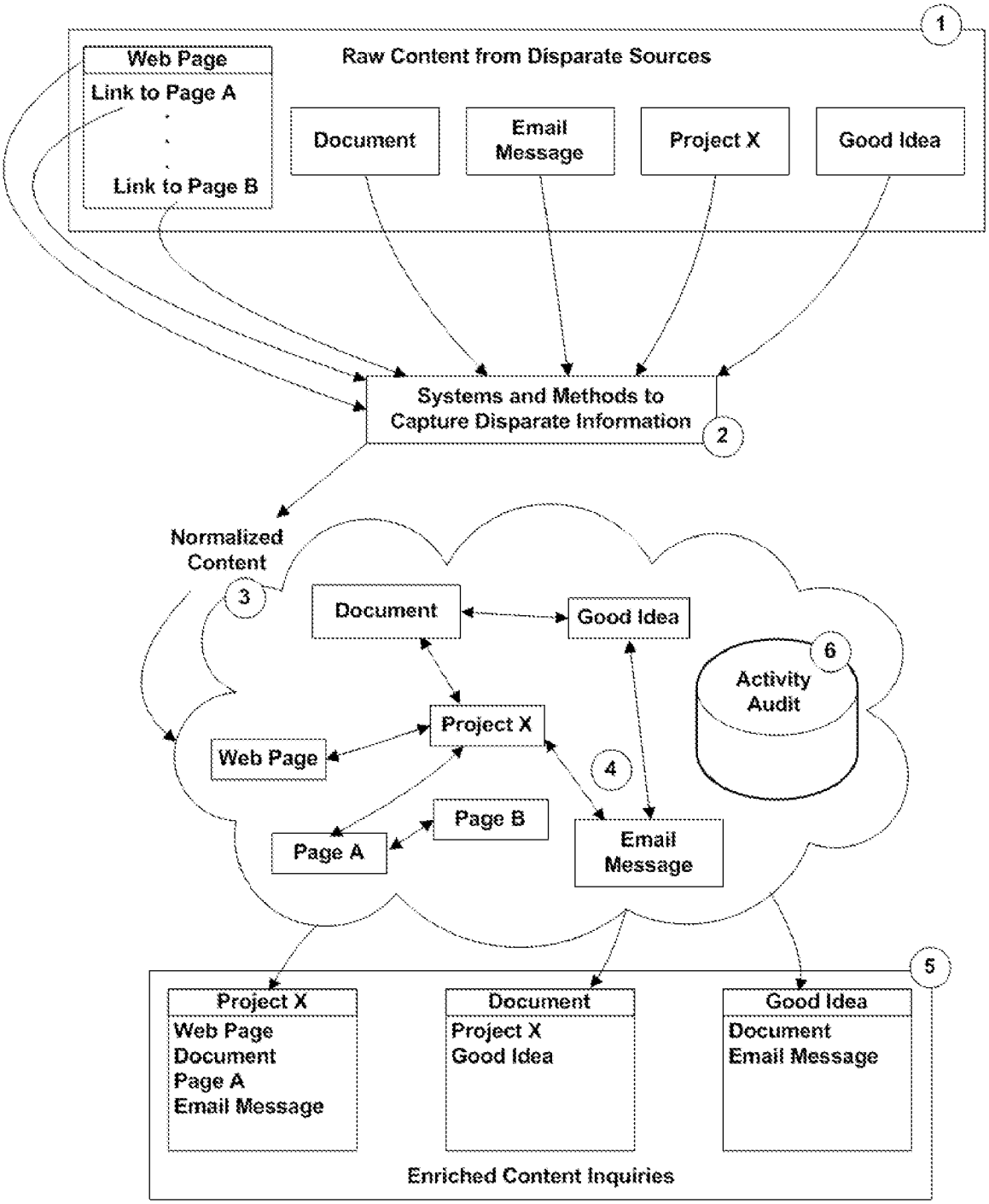
1
Web Page
Link to Page A
Link to Page B
Raw Content from Disparate Sources
Document
Email Message
Project X
Good Idea
Systems and Methods to Capture Disparate Information
2
Normalized Content
3
Document
Good Idea
Project X
Web Page
Page A
Page B
4
Email Message
6
Activity Audit
5
Project X
Web Page
Document
Page A
Email Message
Document
Project X
Good Idea
Good Idea
Document
Email Message
Enriched Content Inquiries

FIG. 24

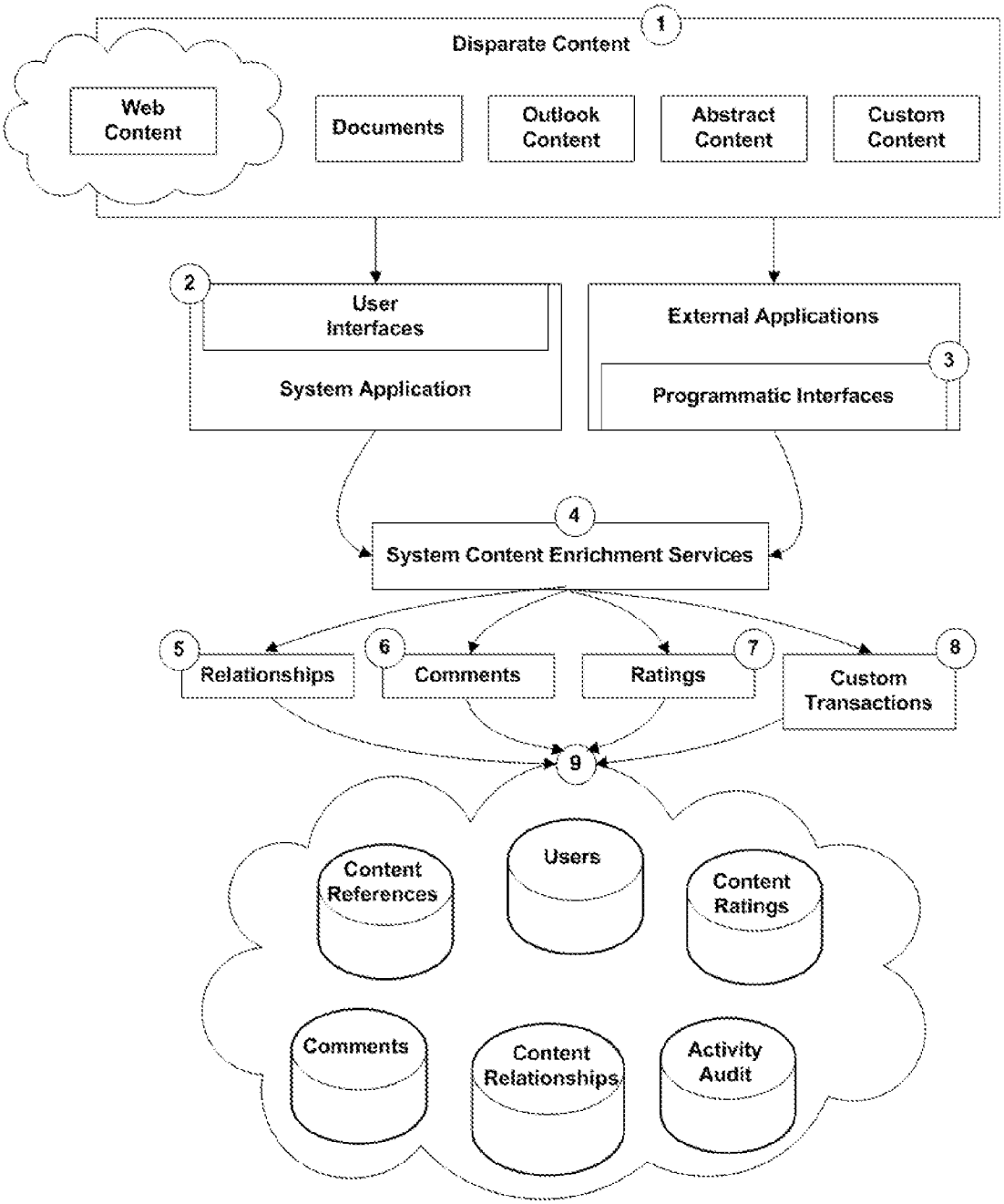
1
Disparate Content
Web Content
Documents
Outlook Content
Abstract Content
Custom Content
2
User Interfaces
System Application
External Applications
3
Programmatic Interfaces
4
System Content Enrichment Services
5
Relationships
6
Comments
7
Ratings
8
Custom Transactions
9
Content References
Users
Content Ratings
Comments
Content Relationships
Activity Audit

FIG. 25

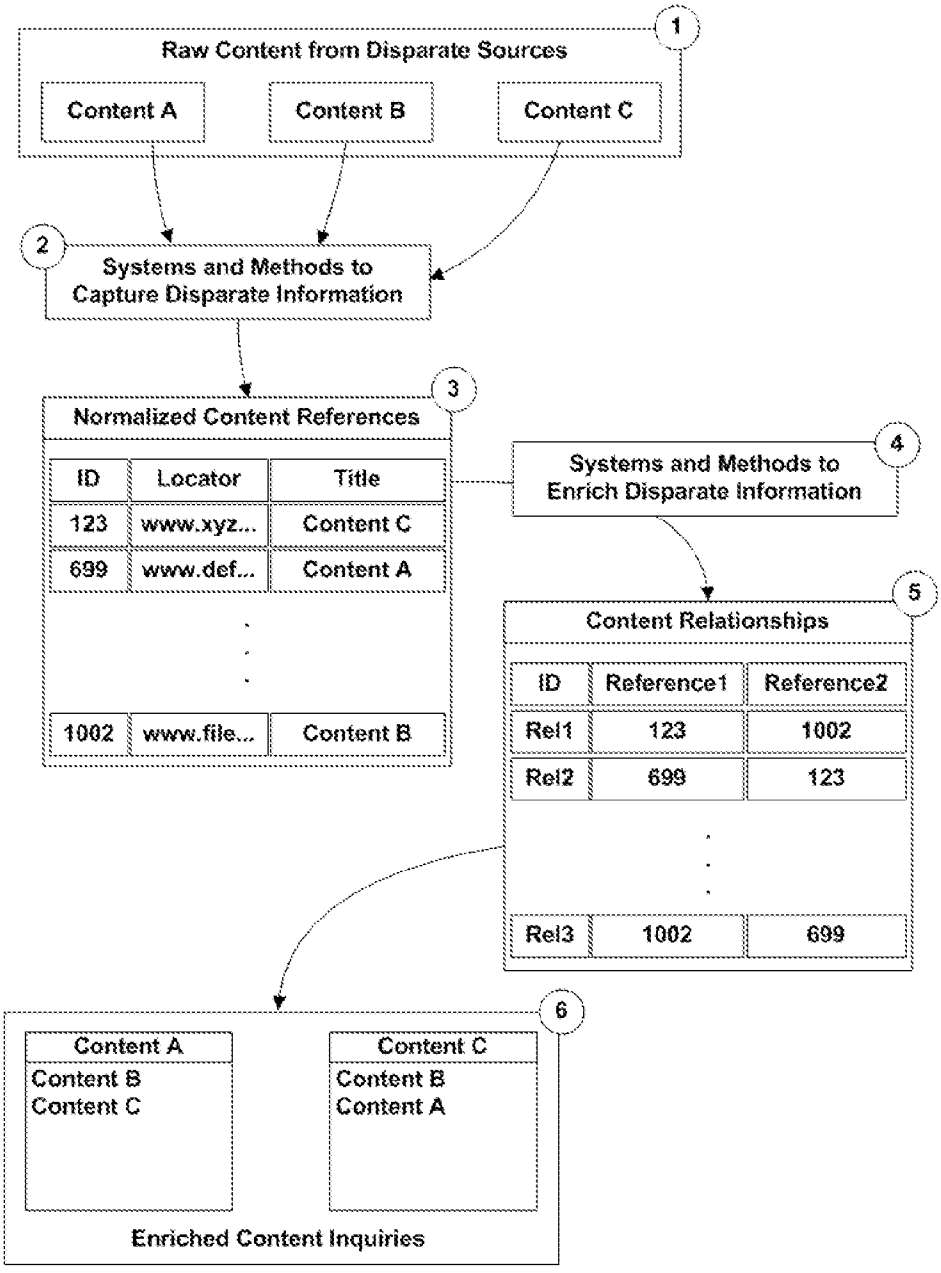
1
Raw Content from Disparate Sources
Content A
Content B
Content C
2
Systems and Methods to Capture Disparate Information
3
Normalized Content References
ID
Locator
Title
123
www.xyz...
Content C
699
www.def...
Content A
1002
www.file...
Content B
4
Systems and Methods to Enrich Disparate Information
5
Content Relationships
ID
Reference1
Reference2
Rel1
123
1002
Rel2
699
123
Rel3
1002
699
6
Content A
Content B
Content C
Content C
Content B
Content A
Enriched Content Inquiries

FIG. 26

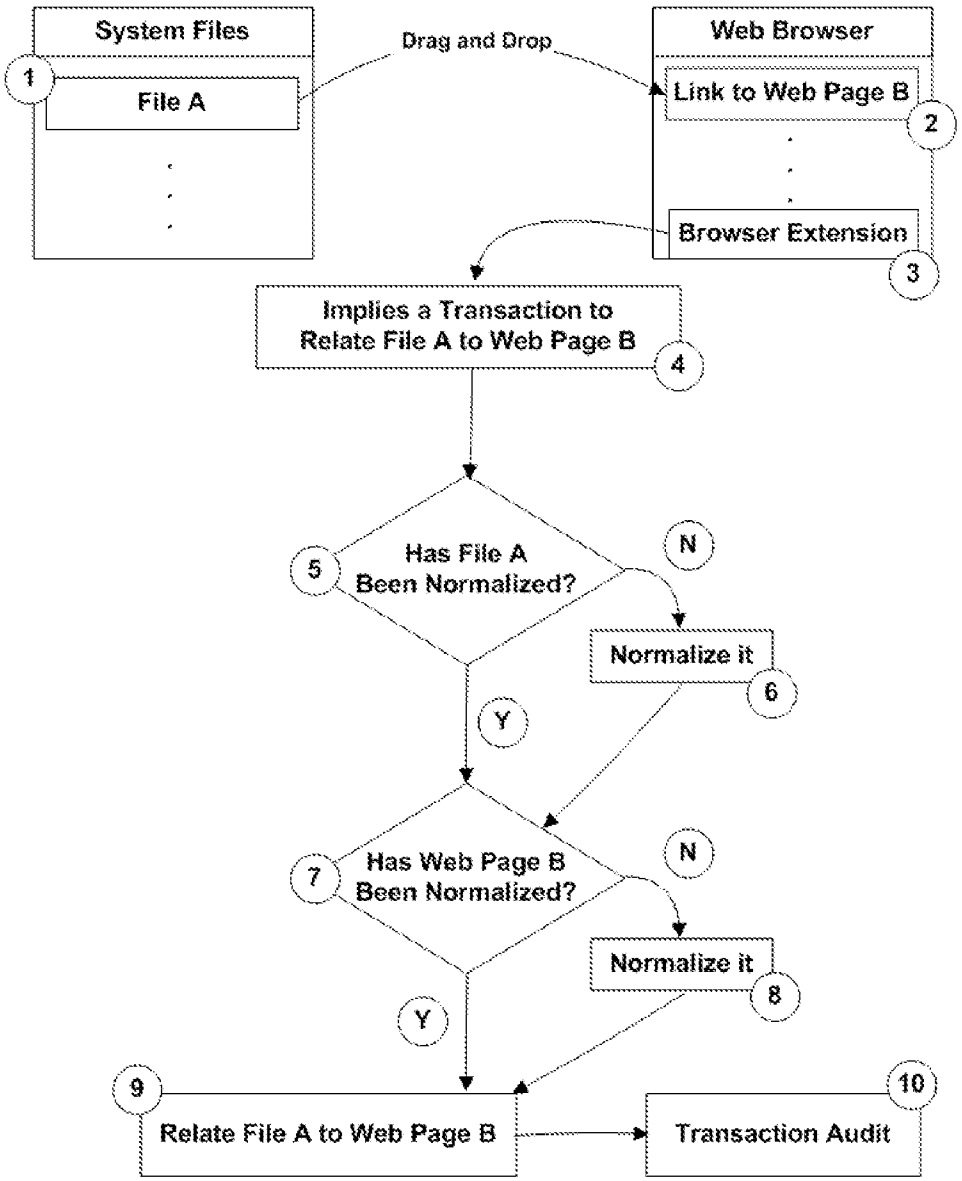
System Files
1
File A
Drag and Drop
Web Browser
Link to Web Page B
2
Browser Extension
3
Implies a Transaction to Relate File A to Web Page B
4
5
Has File A Been Normalized?
N
Normalize it
6
Y
7
Has Web Page B Been Normalized?
N
Normalize it
8
Y
9
Relate File A to Web Page B
10
Transaction Audit

FIG. 27

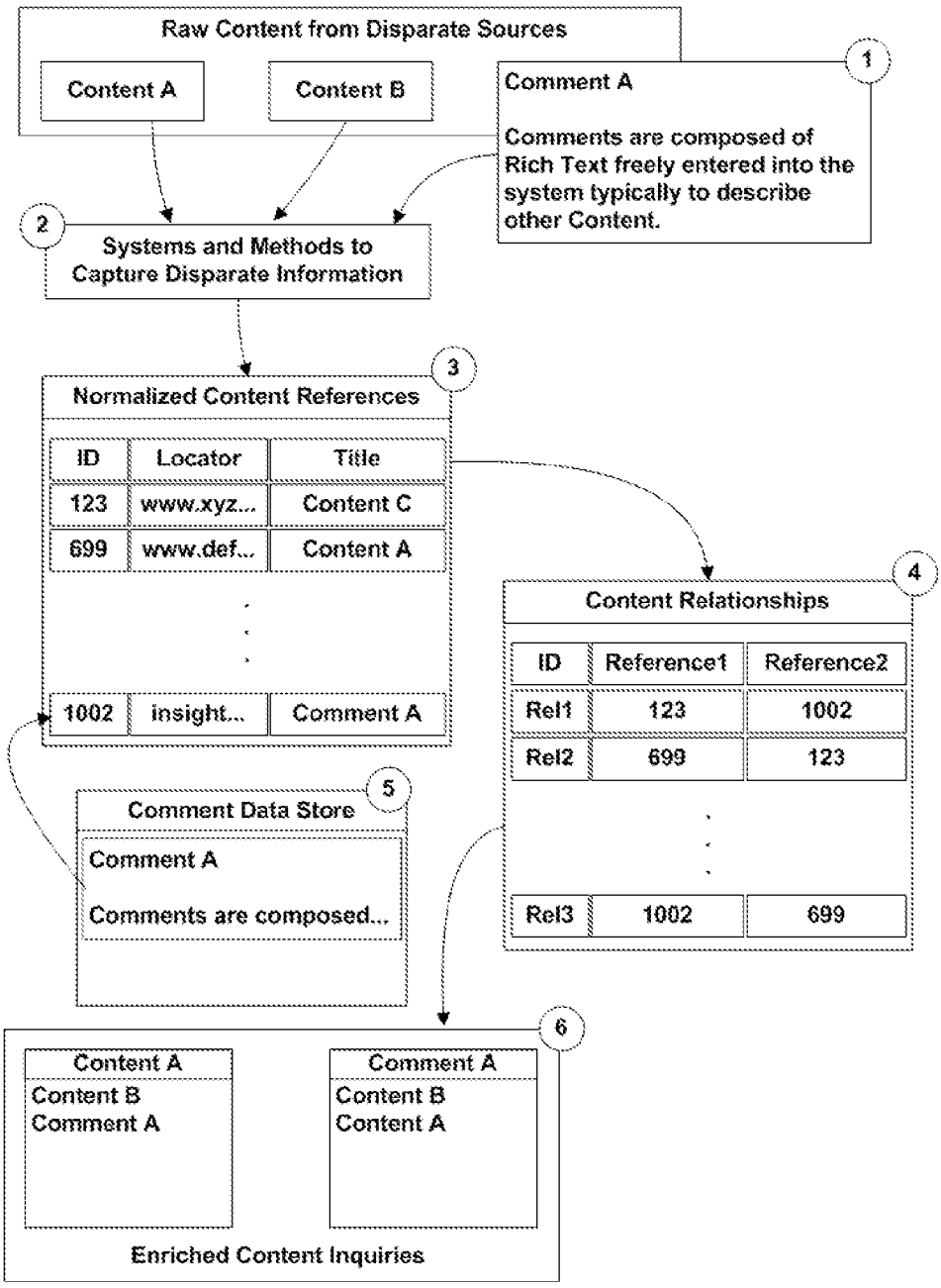
Raw Content from Disparate Sources
Content A
Content B
1
Comment A
Comments are composed of Rich Text freely entered into the system typically to describe other Content.
2
Systems and Methods to Capture Disparate Information
3
Normalized Content References
ID
Locator
Title
123
www.xyz...
Content C
699
www.def...
Content A
1002
insight...
Comment A
4
Content Relationships
ID
Reference1
Reference2
Rel1
123
1002
Rel2
699
123
Rel3
1002
699
5
Comment Data Store
Comment A
Comments are composed...
6
Content A
Content B
Comment A
Comment A
Content B
Content A
Enriched Content Inquiries

FIG. 28

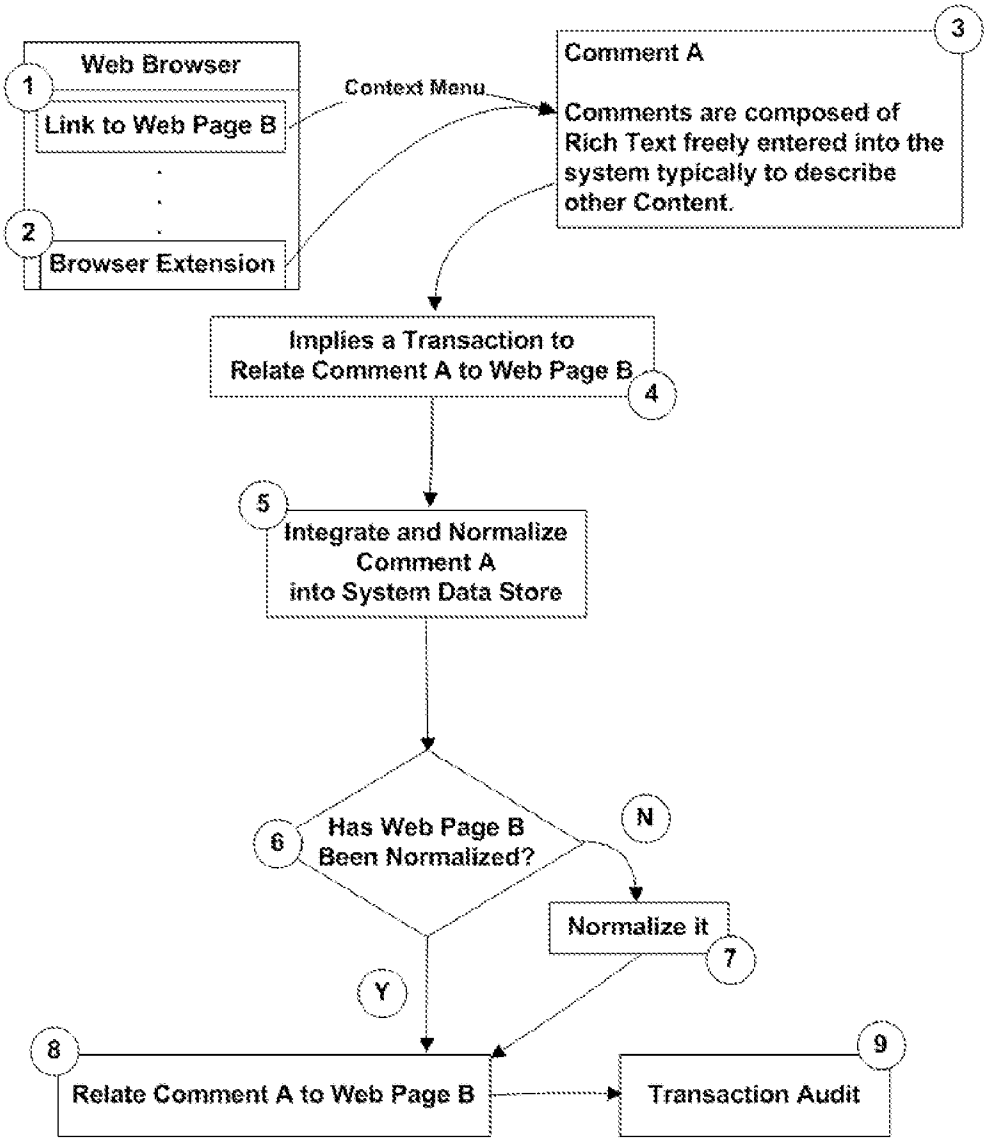
Web Browser
1
Link to Web Page B
2
Browser Extension
Context Menu
Comment A
3
Comments are composed of Rich Text freely entered into the system typically to describe other Content.
Implies a Transaction to Relate Comment A to Web Page B
4
5
Integrate and Normalize Comment A into System Data Store
6
Has Web Page B Been Normalized?
N
Normalize it
7
Y
8
Relate Comment A to Web Page B
9
Transaction Audit

FIG. 29

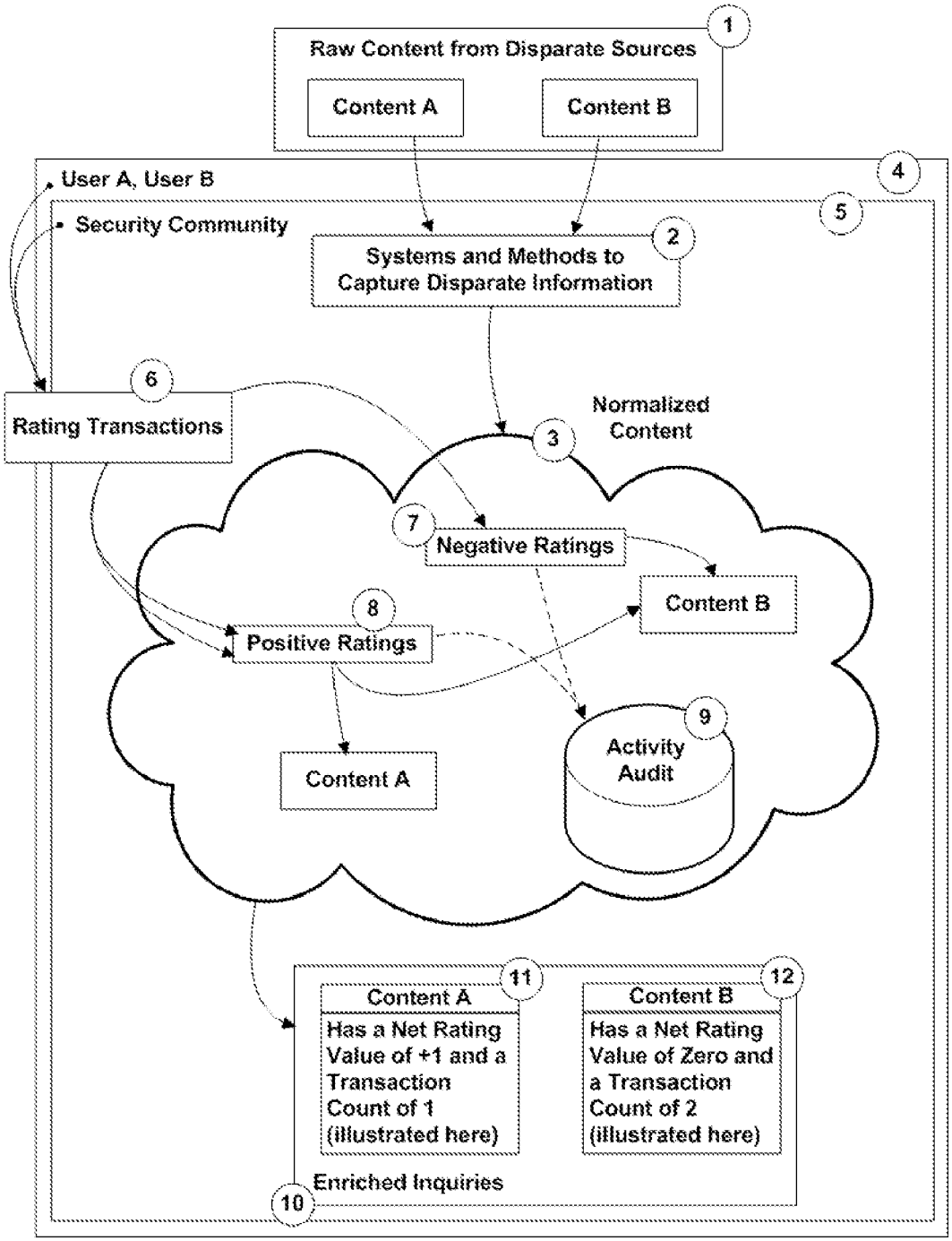
1
Raw Content from Disparate Sources
Content A
Content B
4
User A, User B
5
Security Community
2
Systems and Methods to Capture Disparate Information
6
Rating Transactions
Normalized Content
3
7
Negative Ratings
Content B
8
Positive Ratings
9
Activity Audit
Content A
11
Content A
Has a Net Rating Value of +1 and a Transaction Count of 1 (illustrated here)
12
Content B
Has a Net Rating Value of Zero and a Transaction Count of 2 (illustrated here)
Enriched Inquiries
10

FIG. 30

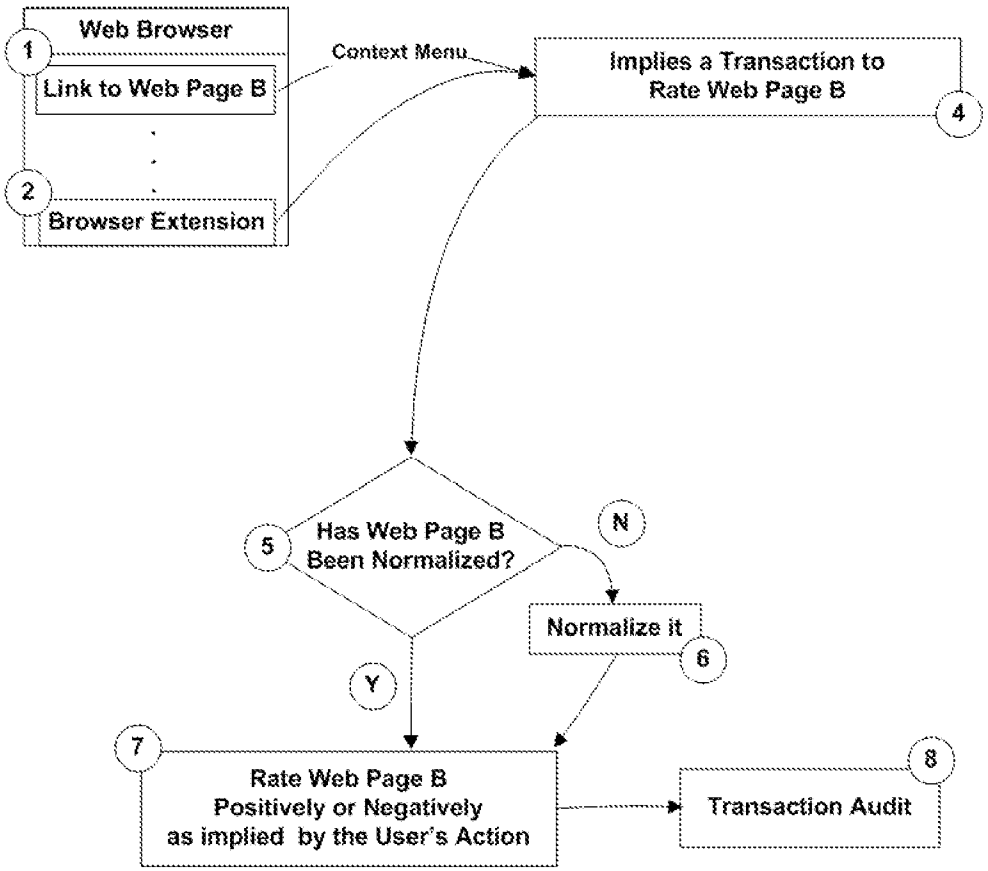
Web Browser
1
Link to Web Page B
2
Browser Extension
Context Menu
Implies a Transaction to Rate Web Page B
4
5
Has Web Page B Been Normalized?
N
Normalize it
6
Y
7
Rate Web Page B Positively or Negatively as implied by the User's Action
8
Transaction Audit

FIG. 31

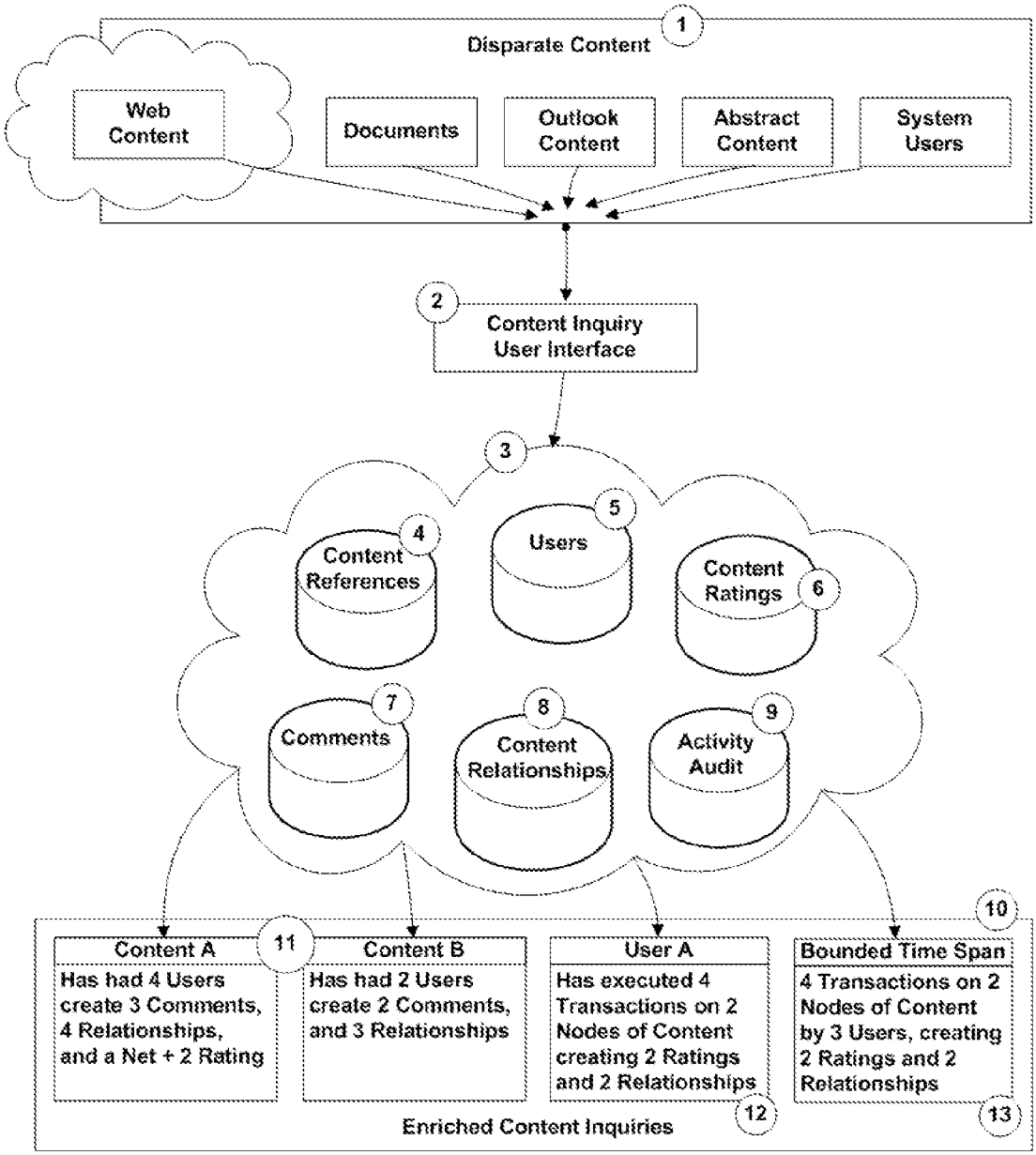
1
Disparate Content
Web Content
Documents
Outlook Content
Abstract Content
System Users
2
Content Inquiry User Interface
3
4
Content References
5
Users
6
Content Ratings
7
Comments
8
Content Relationships
9
Activity Audit
10
11
Content A
Has had 4 Users create 3 Comments, 4 Relationships, and a Net + 2 Rating
Content B
Has had 2 Users create 2 Comments, and 3 Relationships
User A
Has executed 4 Transactions on 2 Nodes of Content creating 2 Ratings and 2 Relationships
Bounded Time Span
4 Transactions on 2 Nodes of Content by 3 Users, creating 2 Ratings and 2 Relationships
12
13
Enriched Content Inquiries

FIG. 32

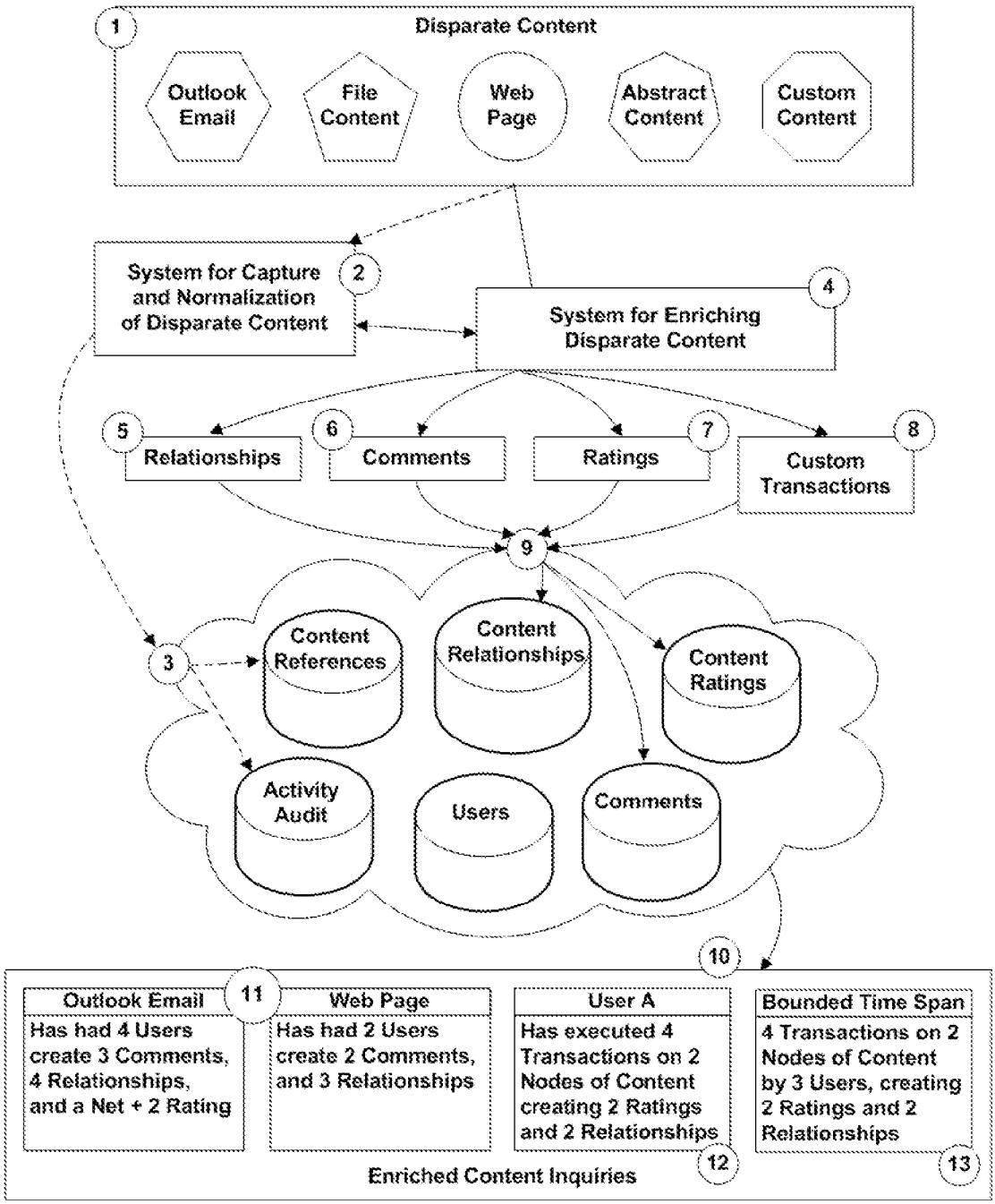
1
Disparate Content
Outlook Email
File Content
Web Page
Abstract Content
Custom Content
System for Capture and Normalization of Disparate Content
2
System for Enriching Disparate Content
4
5
Relationships
6
Comments
7
Ratings
8
Custom Transactions
9
3
Content References
Content Relationships
Content Ratings
Activity Audit
Users
Comments
10
11
Outlook Email
Has had 4 Users create 3 Comments, 4 Relationships, and a Net + 2 Rating
Web Page
Has had 2 Users create 2 Comments, and 3 Relationships
User A
Has executed 4 Transactions on 2 Nodes of Content creating 2 Ratings and 2 Relationships
12
Bounded Time Span
4 Transactions on 2 Nodes of Content by 3 Users, creating 2 Ratings and 2 Relationships
13
Enriched Content Inquiries

FIG. 33

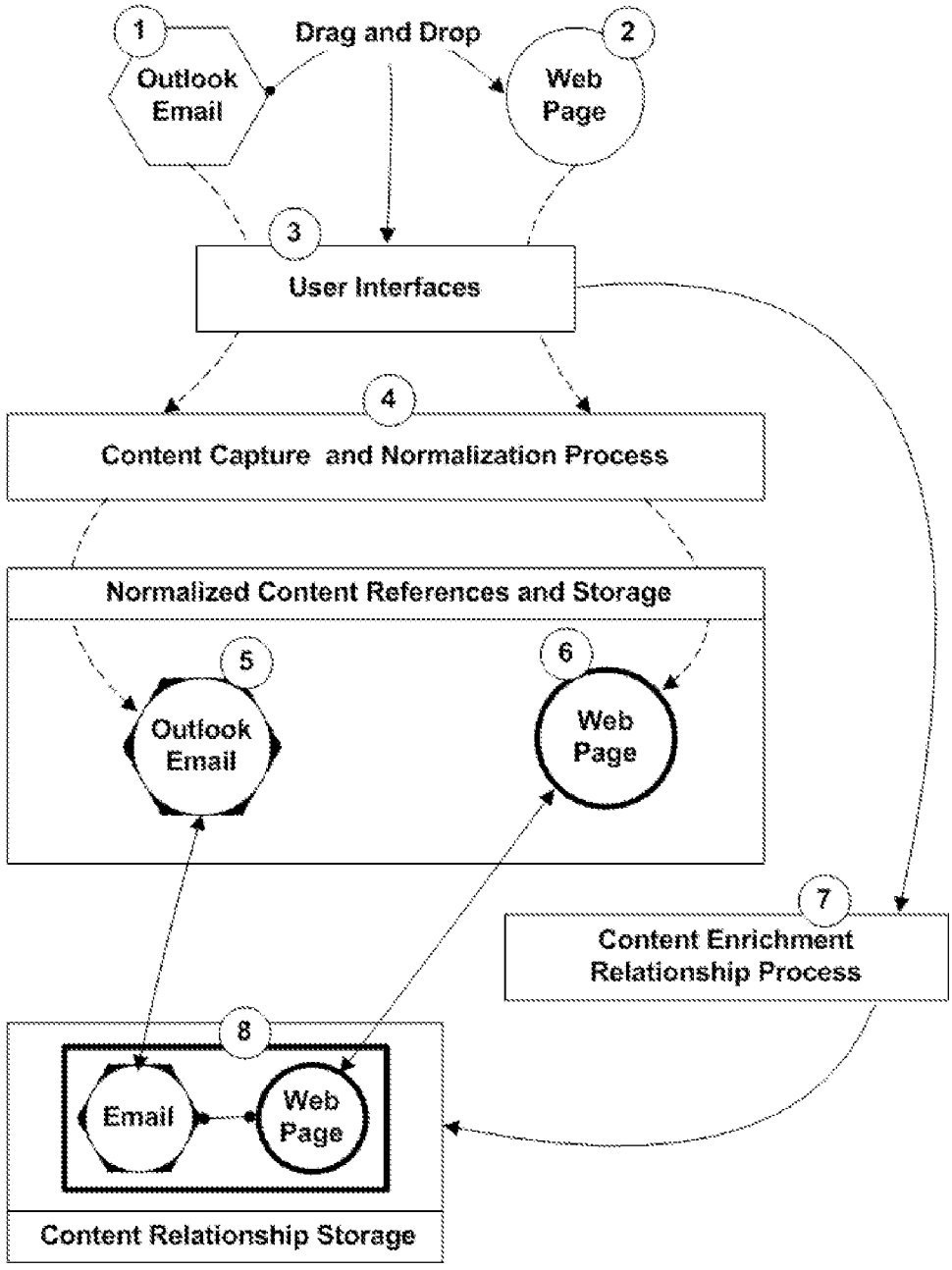
1
Outlook Email
Drag and Drop
2
Web Page
3
User Interfaces
4
Content Capture and Normalization Process
Normalized Content References and Storage
5
Outlook Email
6
Web Page
7
Content Enrichment Relationship Process
8
Email
Web Page
Content Relationship Storage

FIG. 34

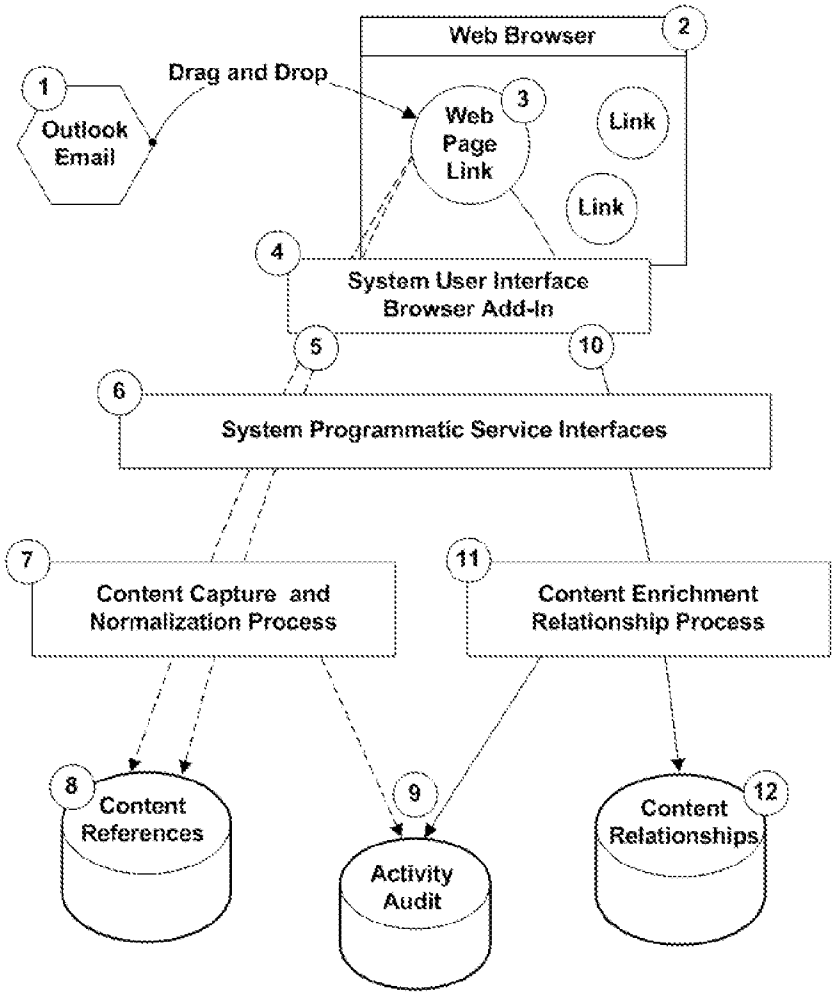

FIG. 35A

```
CreateRelationship (  User ID,          // will attribute the activity to the specified authenticated user
                      Content ID #1,  // The system Content ID of the Normalized Email Message
                      Content ID #2,  // The system Content ID of the Normalized Web Page

                      )                 // Method Signature is complete
```

FIG. 35B

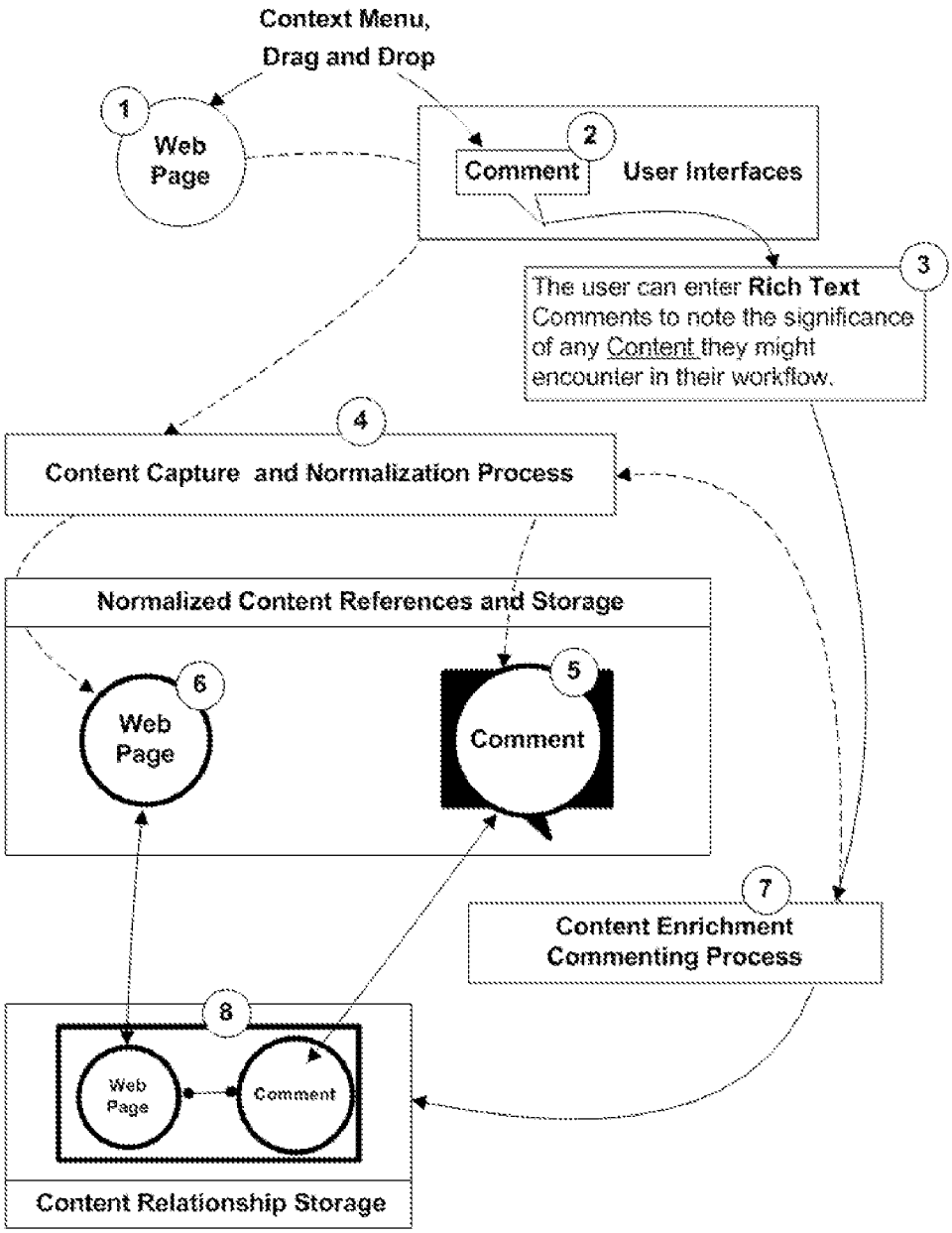
Context Menu,
Drag and Drop
1
Web Page
2
Comment
User Interfaces
3
The user can enter Rich Text Comments to note the significance of any Content they might encounter in their workflow.
4
Content Capture and Normalization Process
Normalized Content References and Storage
6
Web Page
5
Comment
7
Content Enrichment Commenting Process
8
Web Page
Comment
Content Relationship Storage

FIG. 36

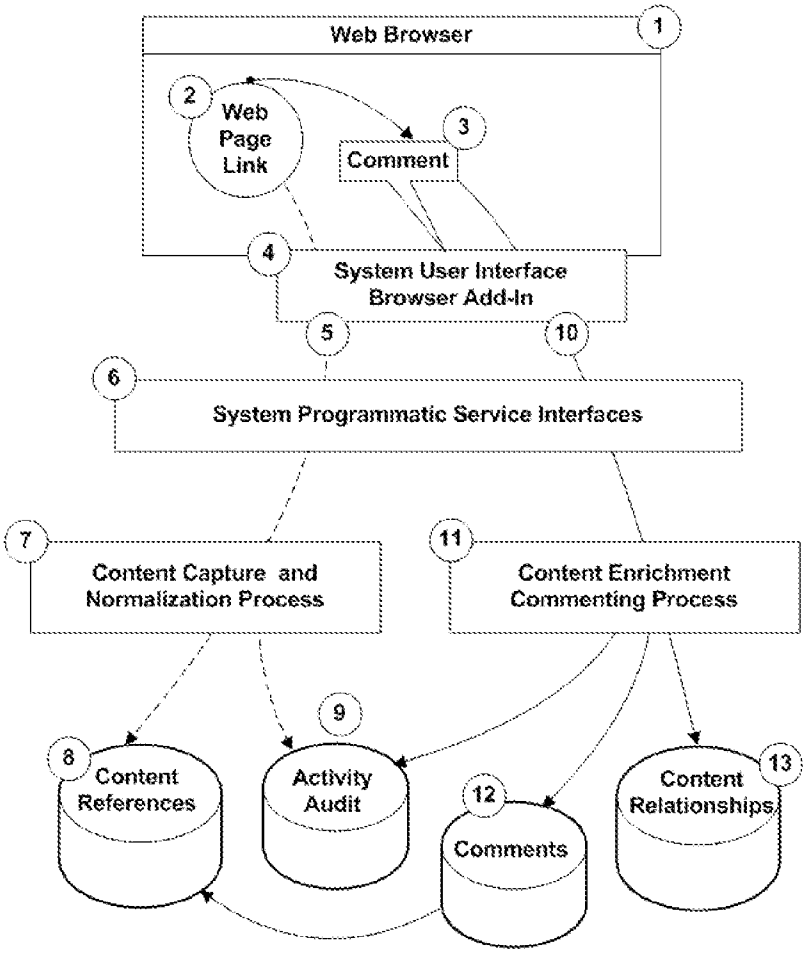

FIG. 37A

CreateComment (User ID, // will attribute the activity to the specified authenticated user
Content ID , // The system Content ID of the Normalized Target Content
Comment, // Rich Text reflecting the user insight
[Illustration], // An optional illustration can be included within the interface

) // Method Signature is complete

FIG. 37B

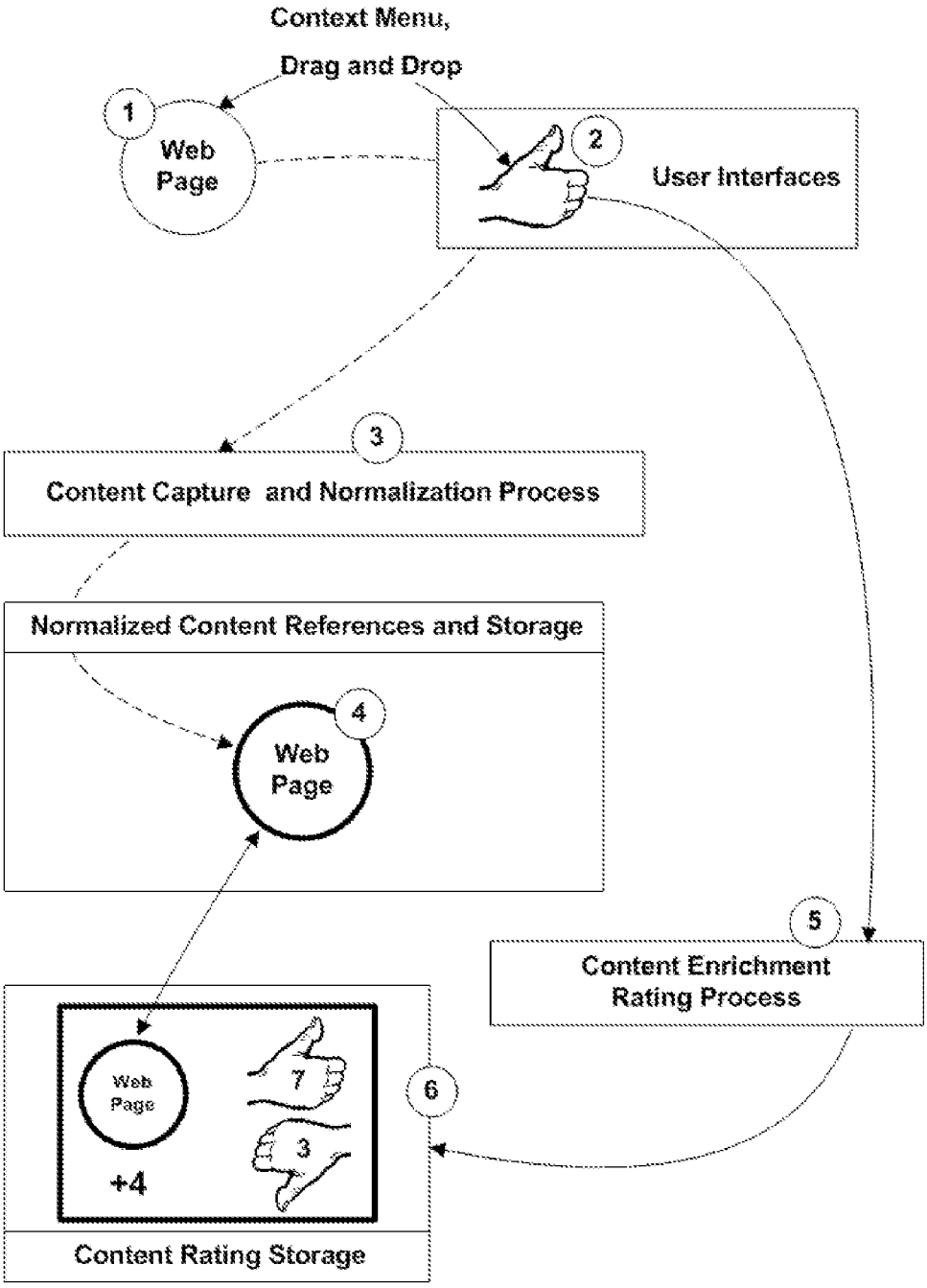
Context Menu,
Drag and Drop
1
Web Page
2
User Interfaces
3
Content Capture and Normalization Process
Normalized Content References and Storage
4
Web Page
5
Content Enrichment Rating Process
Web Page
+4
7
3
6
Content Rating Storage

FIG. 38

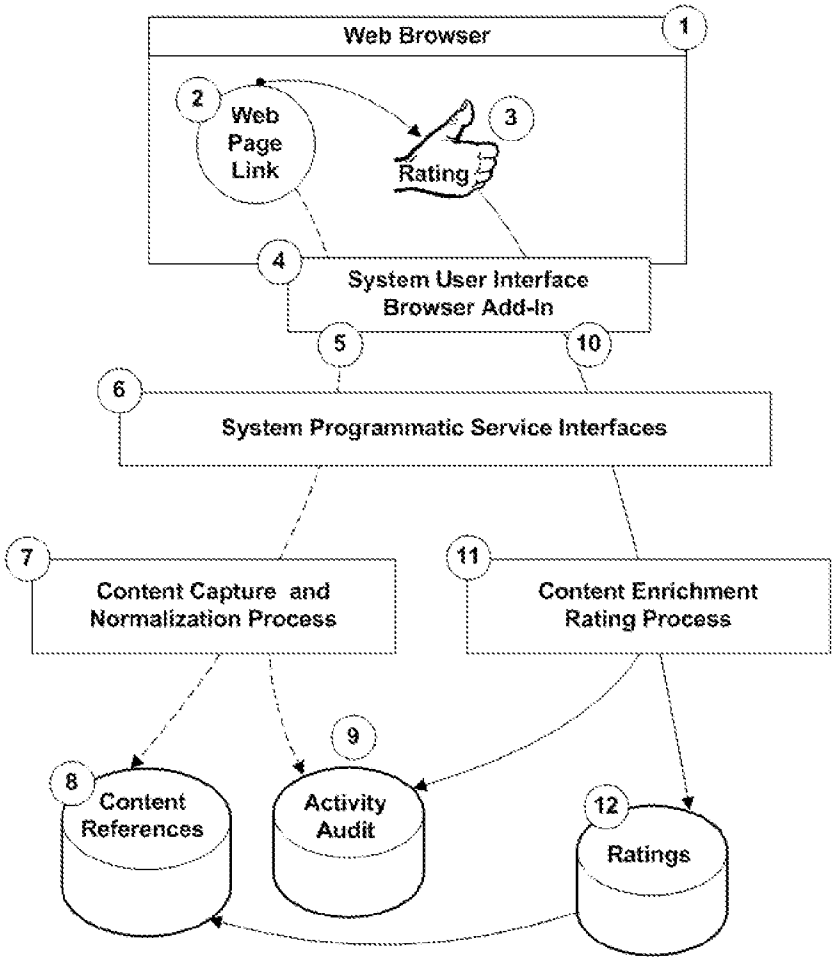

FIG. 39A

```
RateContent (   User ID,                    // will attribute the activity to the specified
authenticated user
Content ID ,                // The system Content ID of the Normalized Target Content
Rating,                     // The Value +1 for Positive Ratings, -1 for Negative
Ratings
[Illustration],             // An optional illustration can be included within the interface

)                           // Method Signature is complete
```

FIG. 39B

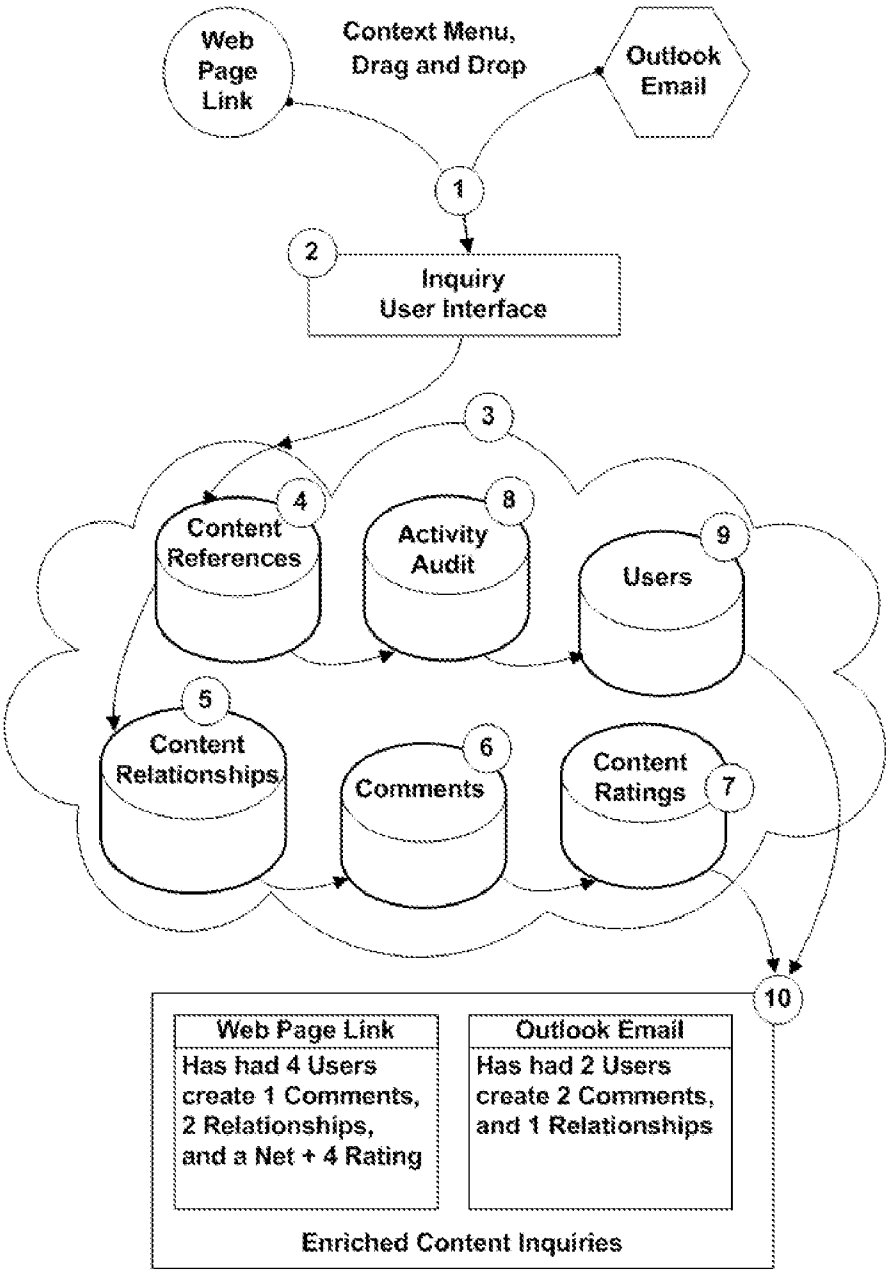
Web Page Link
Context Menu, Drag and Drop
Outlook Email
1
2
Inquiry User Interface
3
4
Content References
8
Activity Audit
9
Users
5
Content Relationships
6
Comments
Content Ratings
7
10
Web Page Link
Has had 4 Users create 1 Comments, 2 Relationships, and a Net + 4 Rating
Outlook Email
Has had 2 Users create 2 Comments, and 1 Relationships
Enriched Content Inquiries

FIG. 40

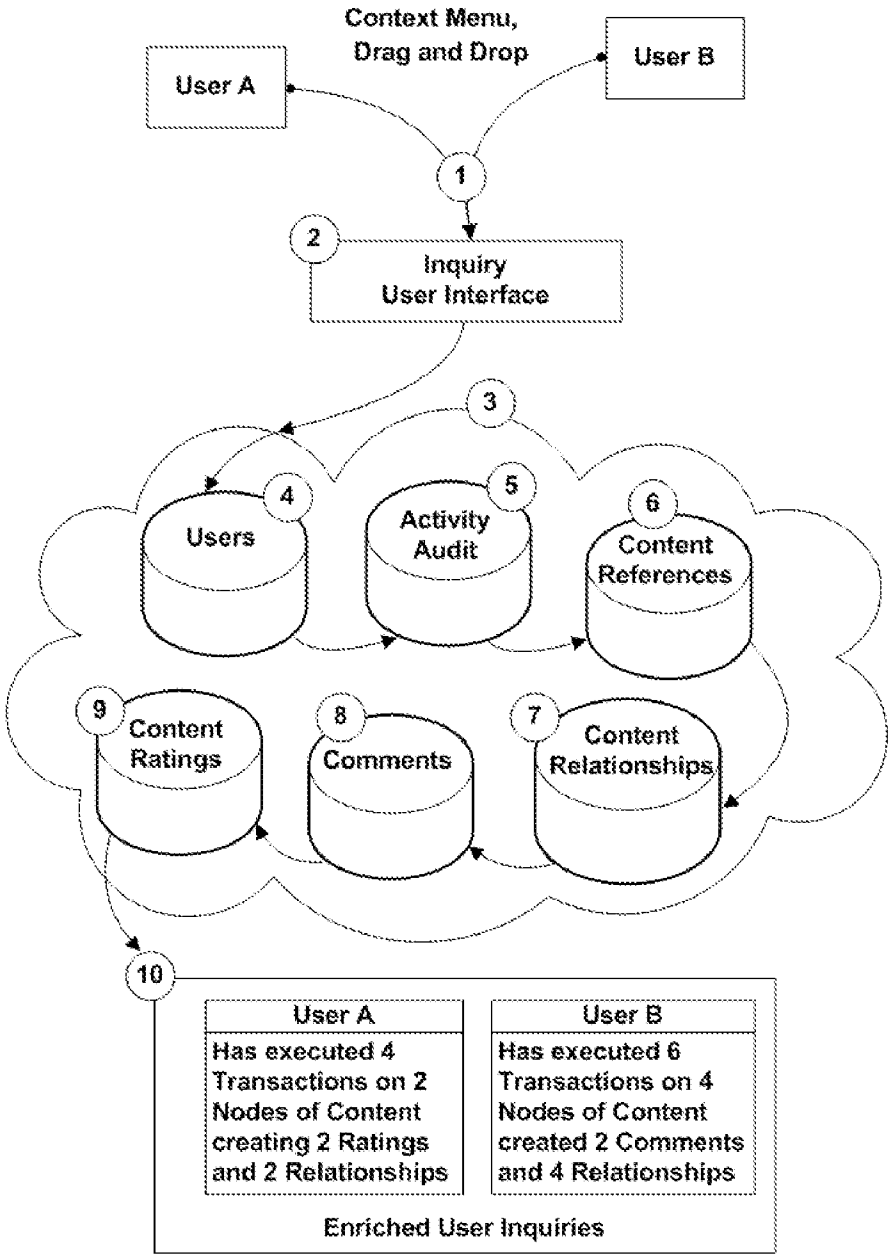
Context Menu,
Drag and Drop
User A
User B
1
2
Inquiry
User Interface
3
4
Users
5
Activity
Audit
6
Content
References
9
Content
Ratings
8
Comments
7
Content
Relationships
10
User A
Has executed 4
Transactions on 2
Nodes of Content
creating 2 Ratings
and 2 Relationships
User B
Has executed 6
Transactions on 4
Nodes of Content
created 2 Comments
and 4 Relationships
Enriched User Inquiries

FIG. 41

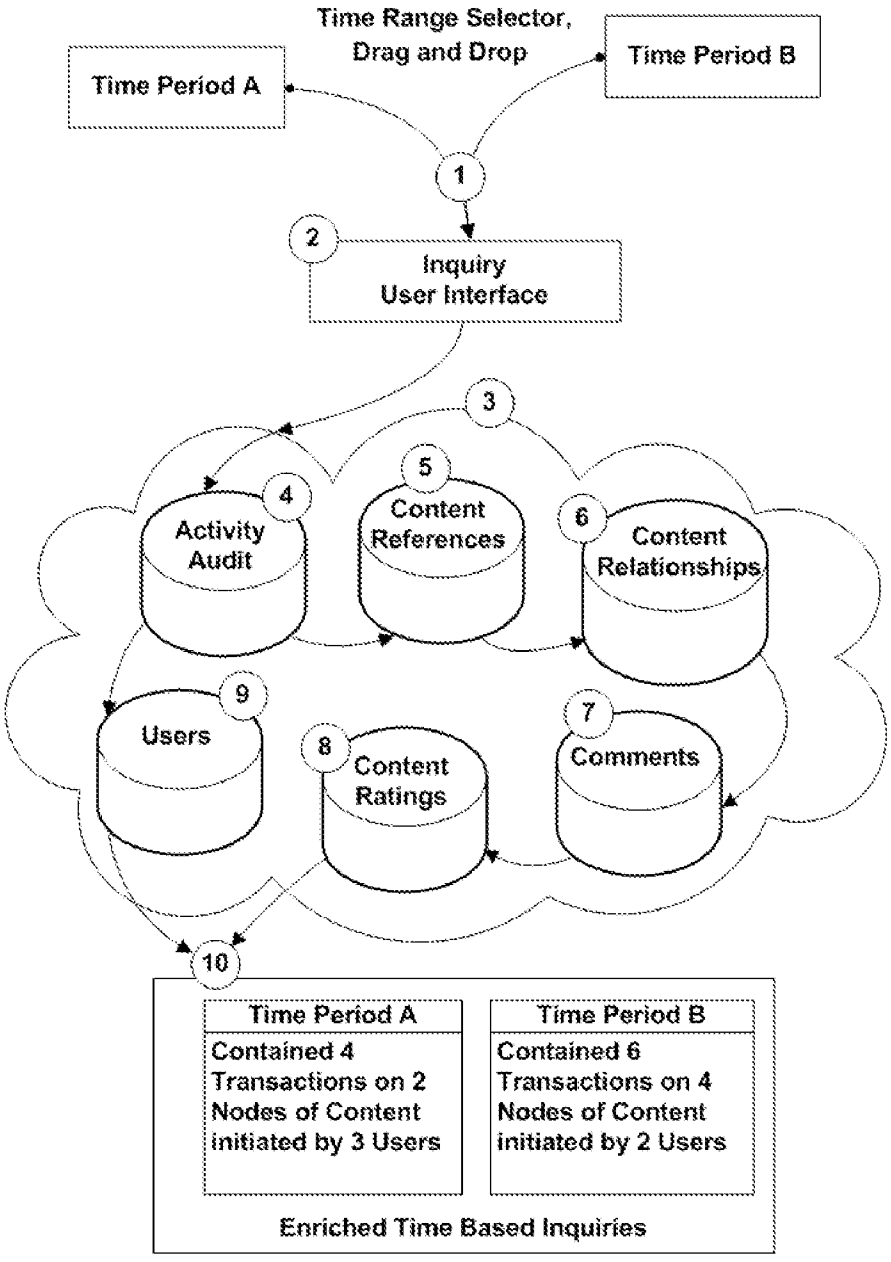
Time Range Selector,
Drag and Drop
Time Period A
Time Period B
1
2
Inquiry
User Interface
3
4
Activity
Audit
5
Content
References
6
Content
Relationships
9
Users
8
Content
Ratings
7
Comments
10
Time Period A
Contained 4
Transactions on 2
Nodes of Content
initiated by 3 Users
Time Period B
Contained 6
Transactions on 4
Nodes of Content
initiated by 2 Users
Enriched Time Based Inquiries

FIG. 42

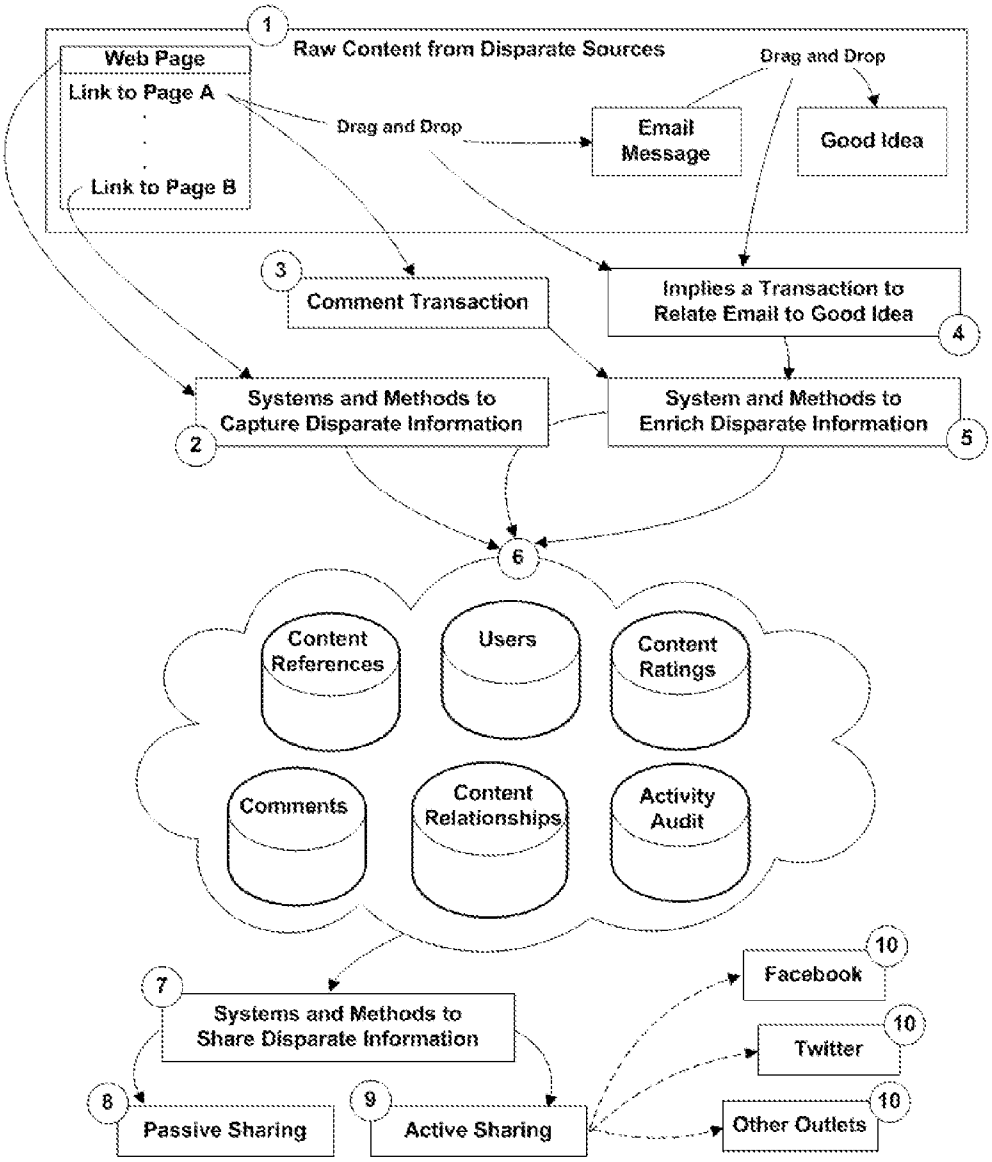
1
Raw Content from Disparate Sources
Web Page
Link to Page A
Link to Page B
Drag and Drop
Drag and Drop
Email Message
Good Idea
3
Comment Transaction
Implies a Transaction to Relate Email to Good Idea
4
Systems and Methods to Capture Disparate Information
2
System and Methods to Enrich Disparate Information
5
6
Content References
Users
Content Ratings
Comments
Content Relationships
Activity Audit
7
Systems and Methods to Share Disparate Information
8
Passive Sharing
9
Active Sharing
10
Facebook
10
Twitter
10
Other Outlets

FIG. 43

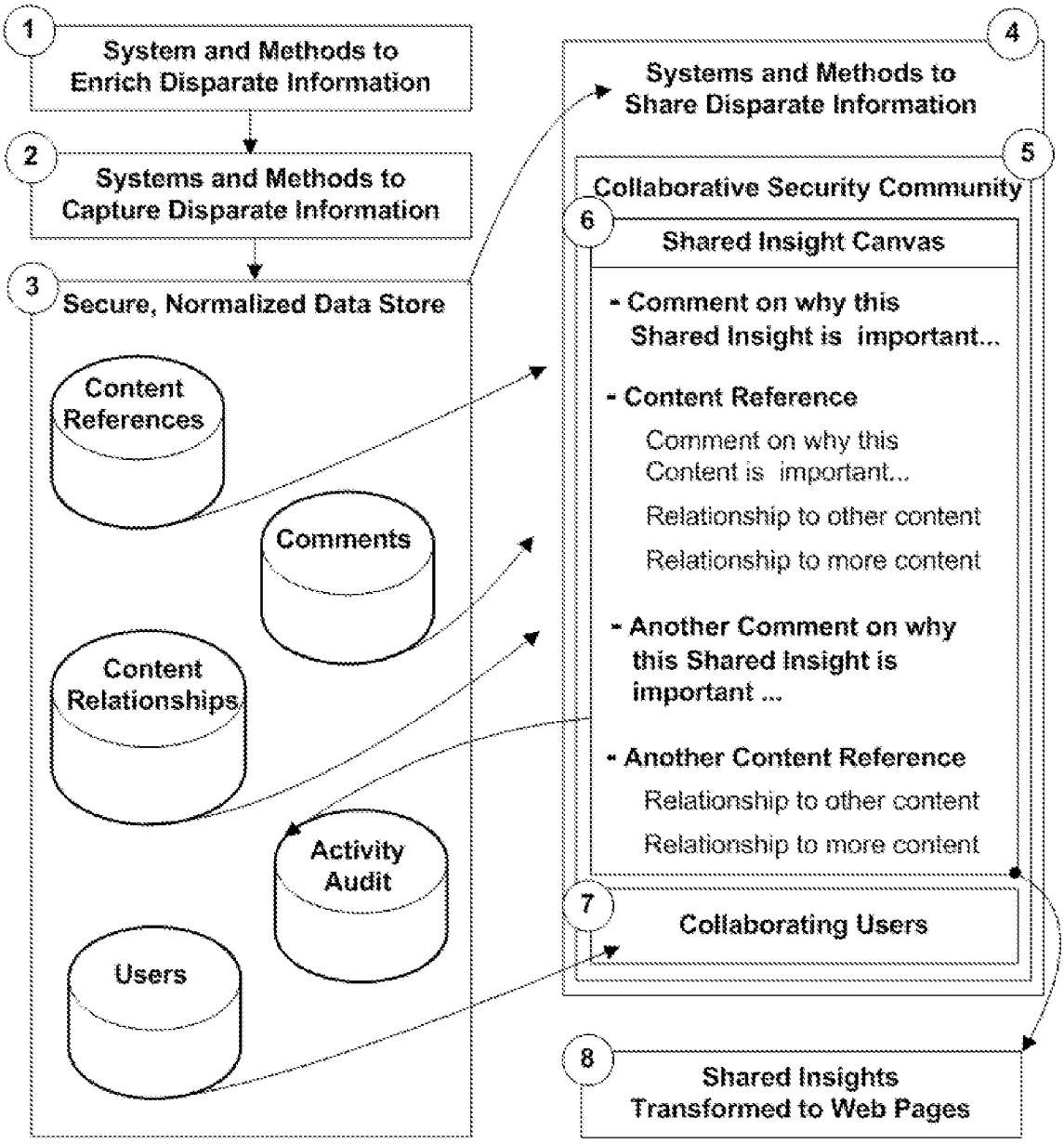
1
System and Methods to Enrich Disparate Information
2
Systems and Methods to Capture Disparate Information
3
Secure, Normalized Data Store
Content References
Comments
Content Relationships
Activity Audit
Users
4
Systems and Methods to Share Disparate Information
5
Collaborative Security Community
6
Shared Insight Canvas
- Comment on why this Shared Insight is important...
- Content Reference
Comment on why this Content is important...
Relationship to other content
Relationship to more content
- Another Comment on why this Shared Insight is important ...
- Another Content Reference
Relationship to other content
Relationship to more content
7
Collaborating Users
8
Shared Insights Transformed to Web Pages

FIG. 44

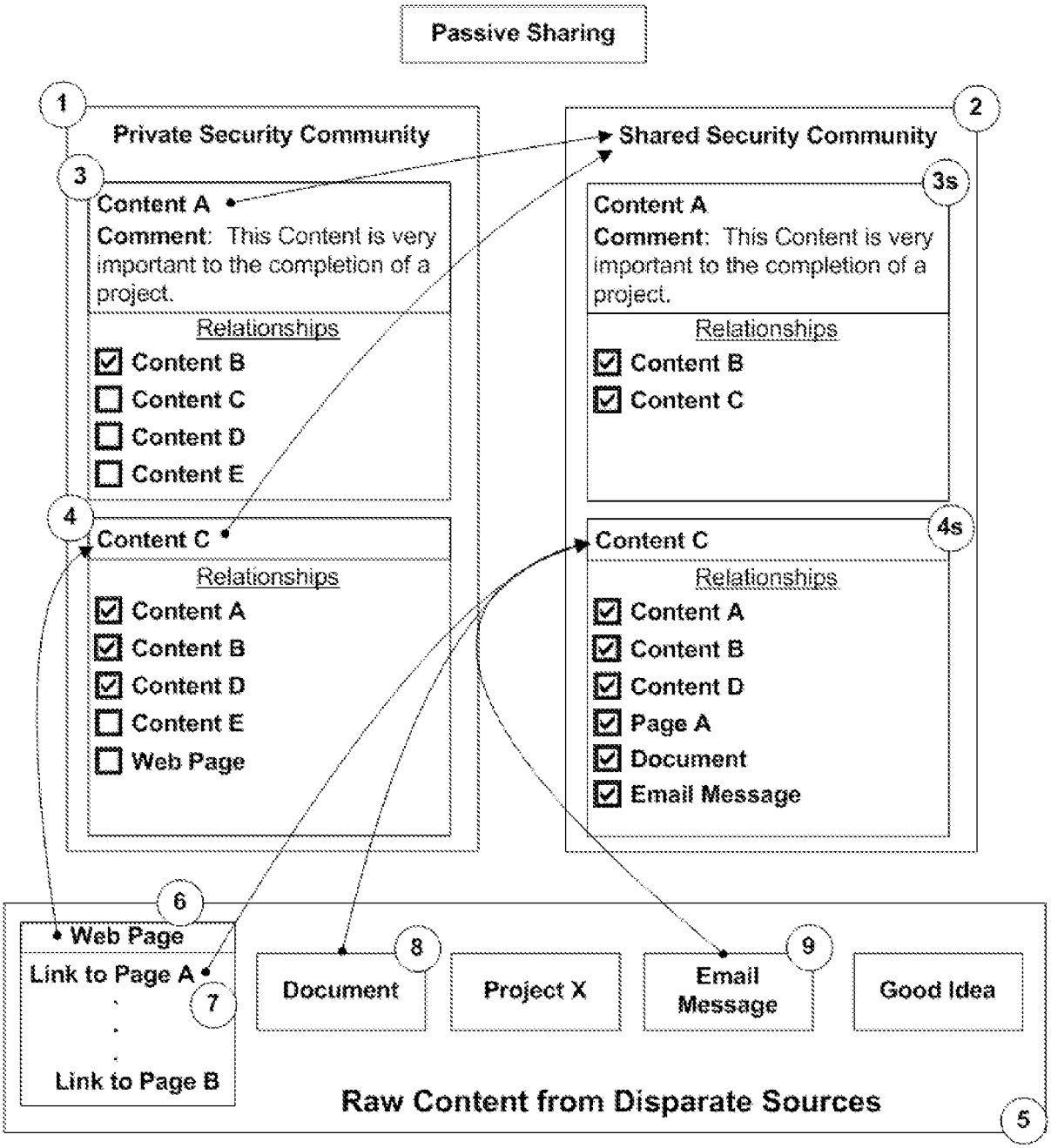
Passive Sharing
1
Private Security Community
3
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
Content D
Content E
4
Content C
Relationships
Content A
Content B
Content D
Content E
Web Page
2
Shared Security Community
3s
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
4s
Content C
Relationships
Content A
Content B
Content D
Page A
Document
Email Message
6
Web Page
Link to Page A
7
Link to Page B
8
Document
Project X
9
Email Message
Good Idea
Raw Content from Disparate Sources
5

FIG. 45

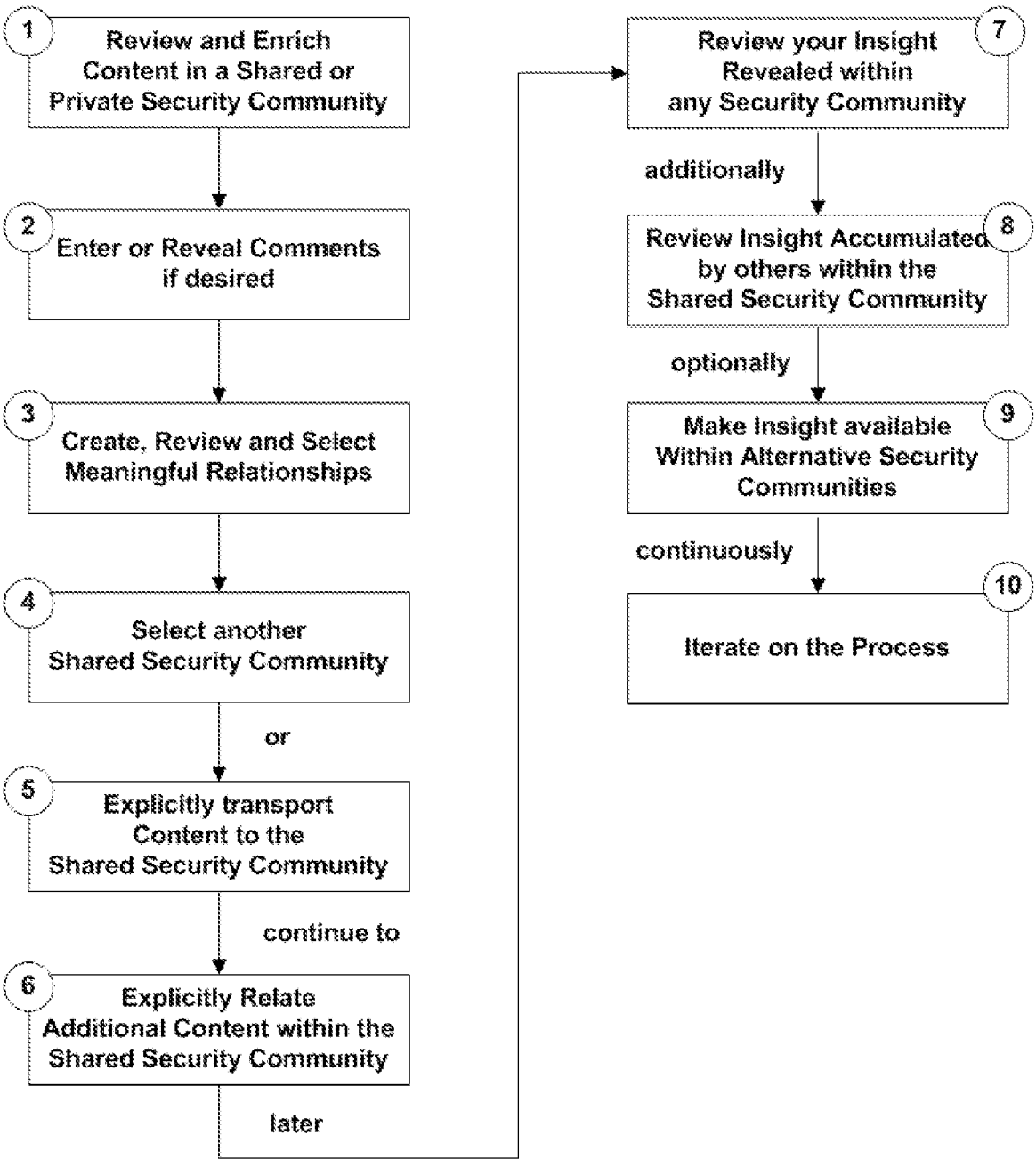
1
Review and Enrich Content in a Shared or Private Security Community
2
Enter or Reveal Comments if desired
3
Create, Review and Select Meaningful Relationships
4
Select another Shared Security Community
or
5
Explicitly transport Content to the Shared Security Community
continue to
6
Explicitly Relate Additional Content within the Shared Security Community
later
7
Review your Insight Revealed within any Security Community
additionally
8
Review Insight Accumulated by others within the Shared Security Community
optionally
9
Make Insight available Within Alternative Security Communities
continuously
10
Iterate on the Process

FIG. 46

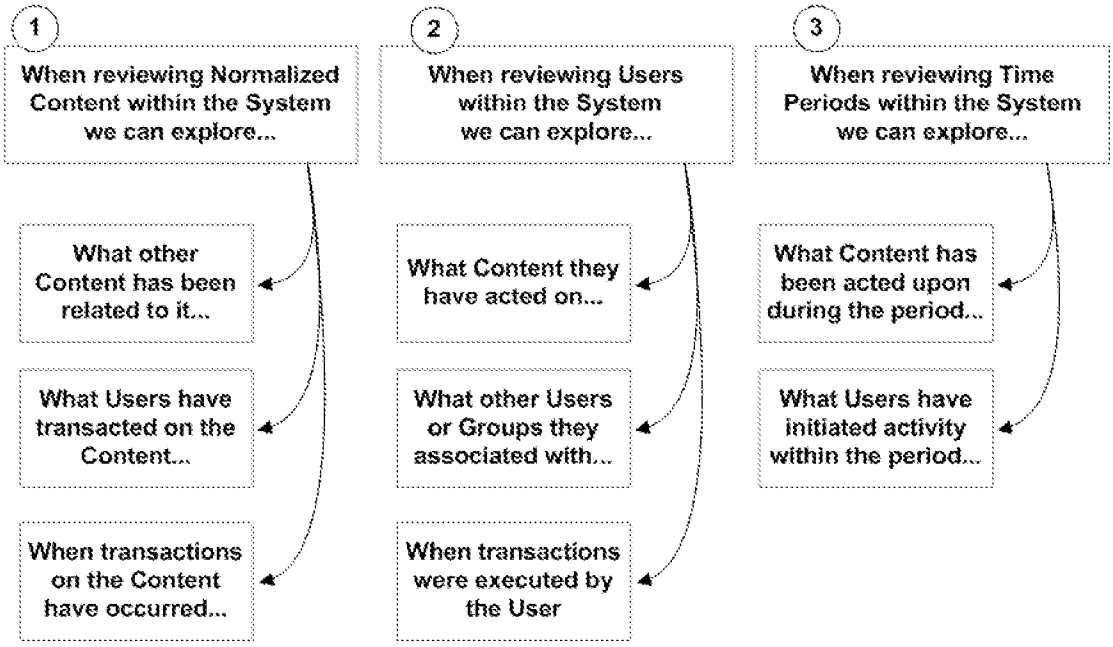
1
When reviewing Normalized Content within the System we can explore...
What other Content has been related to it...
What Users have transacted on the Content...
When transactions on the Content have occurred...
2
When reviewing Users within the System we can explore...
What Content they have acted on...
What other Users or Groups they associated with...
When transactions were executed by the User
3
When reviewing Time Periods within the System we can explore...
What Content has been acted upon during the period...
What Users have initiated activity within the period...

FIG. 47

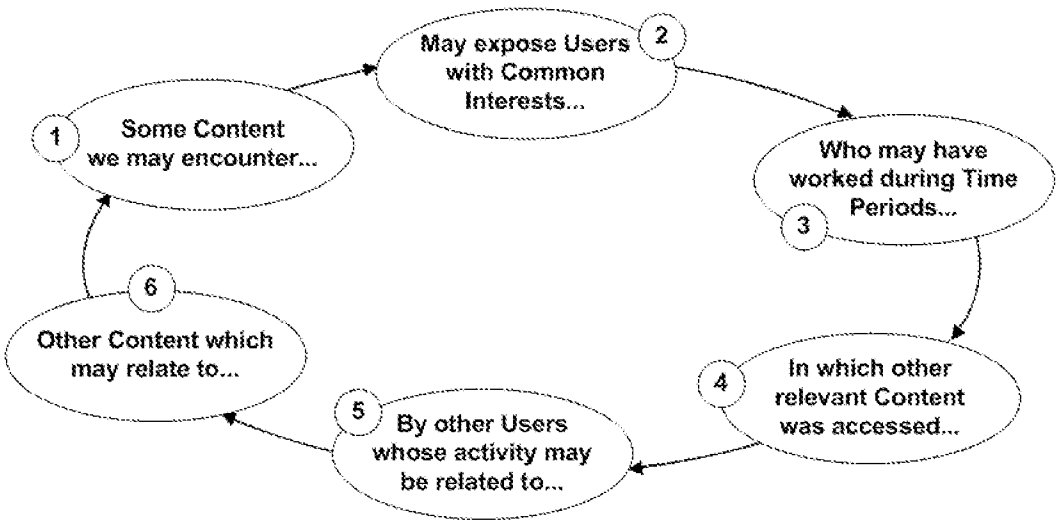
1
Some Content we may encounter...
2
May expose Users with Common Interests...
3
Who may have worked during Time Periods...
4
In which other relevant Content was accessed...
5
By other Users whose activity may be related to...
6
Other Content which may relate to...

FIG. 48

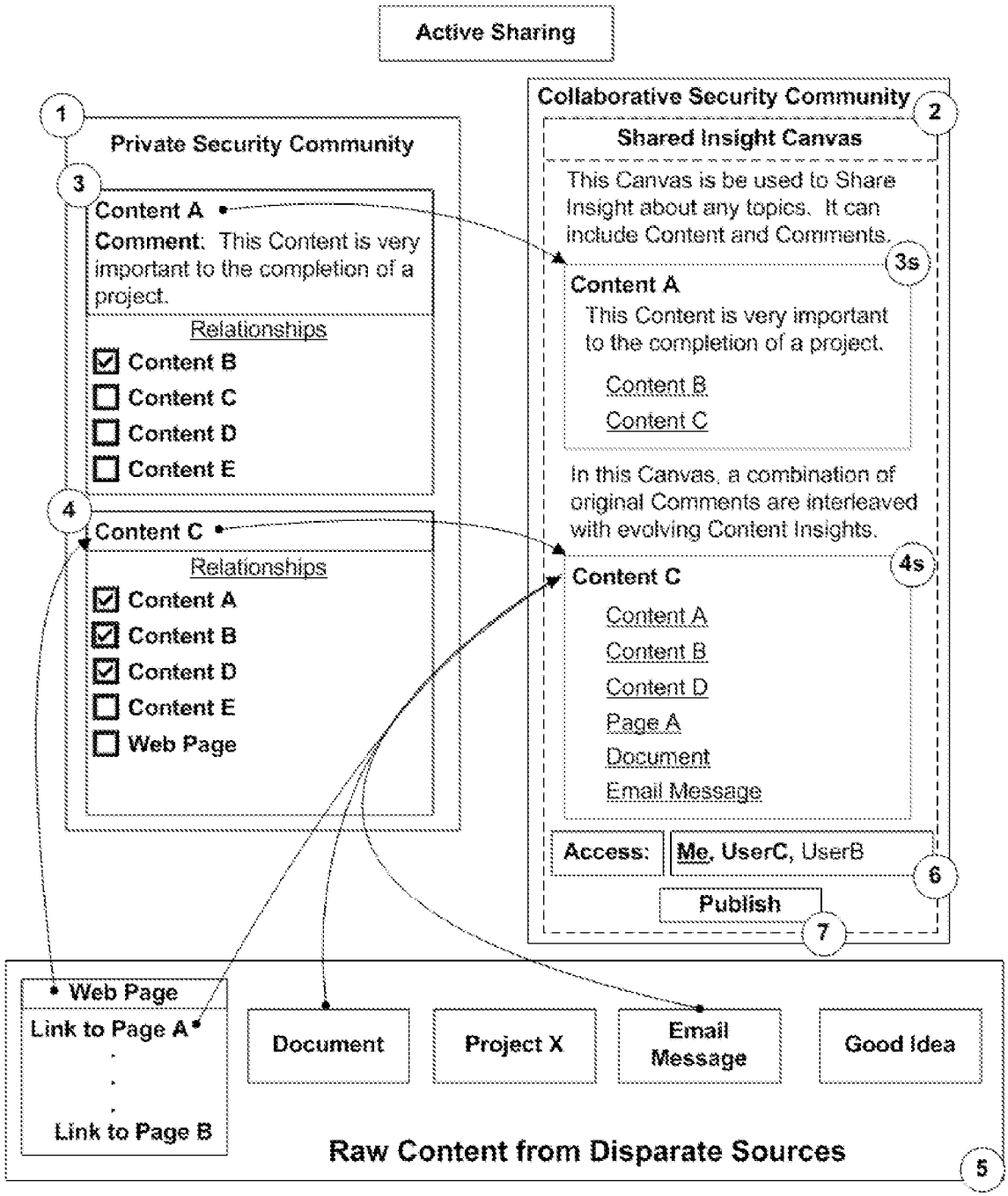
Active Sharing
1
Private Security Community
3
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
Content D
Content E
4
Content C
Relationships
Content A
Content B
Content D
Content E
Web Page
Collaborative Security Community
2
Shared Insight Canvas
This Canvas is be used to Share Insight about any topics. It can include Content and Comments.
3s
Content A
This Content is very important to the completion of a project.
Content B
Content C
In this Canvas, a combination of original Comments are interleaved with evolving Content Insights.
4s
Content C
Content A
Content B
Content D
Page A
Document
Email Message
Access:
Me, UserC, UserB
6
Publish
7
Web Page
Link to Page A
Link to Page B
Document
Project X
Email Message
Good Idea
Raw Content from Disparate Sources
5

FIG. 49

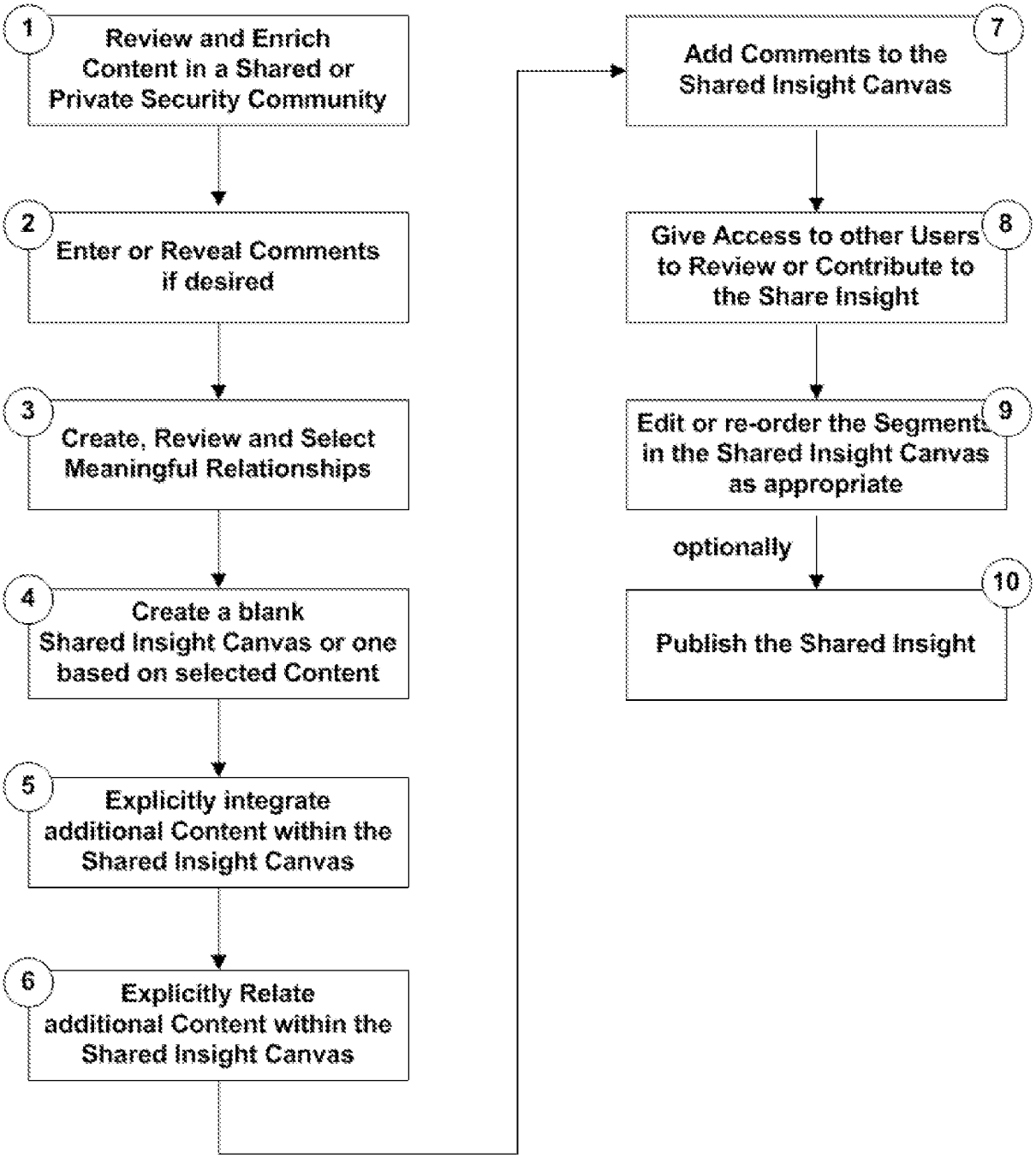
1
Review and Enrich Content in a Shared or Private Security Community
2
Enter or Reveal Comments if desired
3
Create, Review and Select Meaningful Relationships
4
Create a blank Shared Insight Canvas or one based on selected Content
5
Explicitly integrate additional Content within the Shared Insight Canvas
6
Explicitly Relate additional Content within the Shared Insight Canvas
7
Add Comments to the Shared Insight Canvas
8
Give Access to other Users to Review or Contribute to the Share Insight
9
Edit or re-order the Segments in the Shared Insight Canvas as appropriate
optionally
10
Publish the Shared Insight

FIG. 50

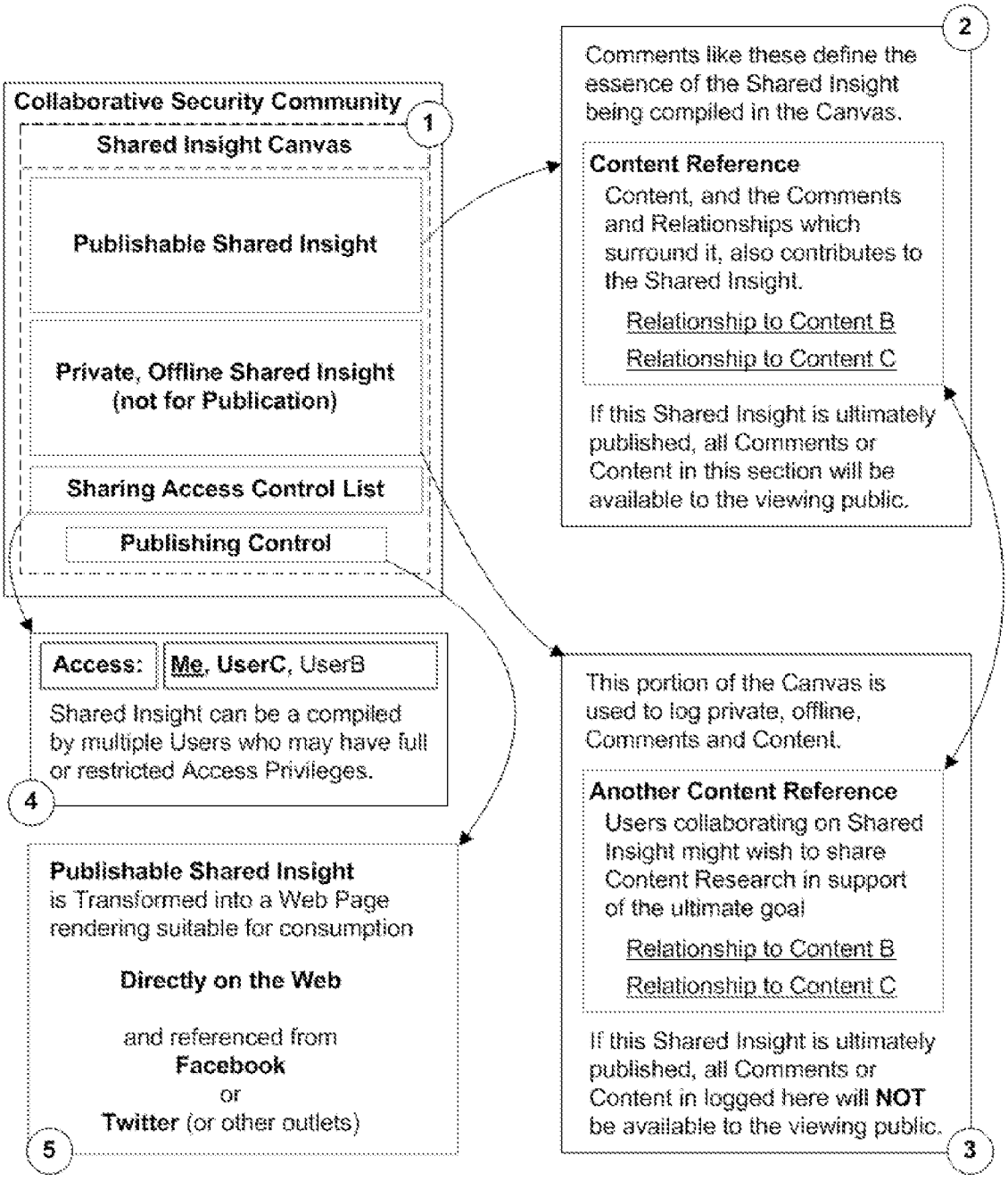
Collaborative Security Community
1
Shared Insight Canvas
Publishable Shared Insight
Private, Offline Shared Insight (not for Publication)
Sharing Access Control List
Publishing Control
2
Comments like these define the essence of the Shared Insight being compiled in the Canvas.
Content Reference
Content, and the Comments and Relationships which surround it, also contributes to the Shared Insight.
Relationship to Content B
Relationship to Content C
If this Shared Insight is ultimately published, all Comments or Content in this section will be available to the viewing public.
Access: Me, UserC, UserB
Shared Insight can be a compiled by multiple Users who may have full or restricted Access Privileges.
4
This portion of the Canvas is used to log private, offline, Comments and Content.
Another Content Reference
Users collaborating on Shared Insight might wish to share Content Research in support of the ultimate goal
Relationship to Content B
Relationship to Content C
If this Shared Insight is ultimately published, all Comments or Content in logged here will NOT be available to the viewing public.
3
Publishable Shared Insight
is Transformed into a Web Page rendering suitable for consumption
Directly on the Web
and referenced from
Facebook
or
Twitter (or other outlets)
5

FIG. 51

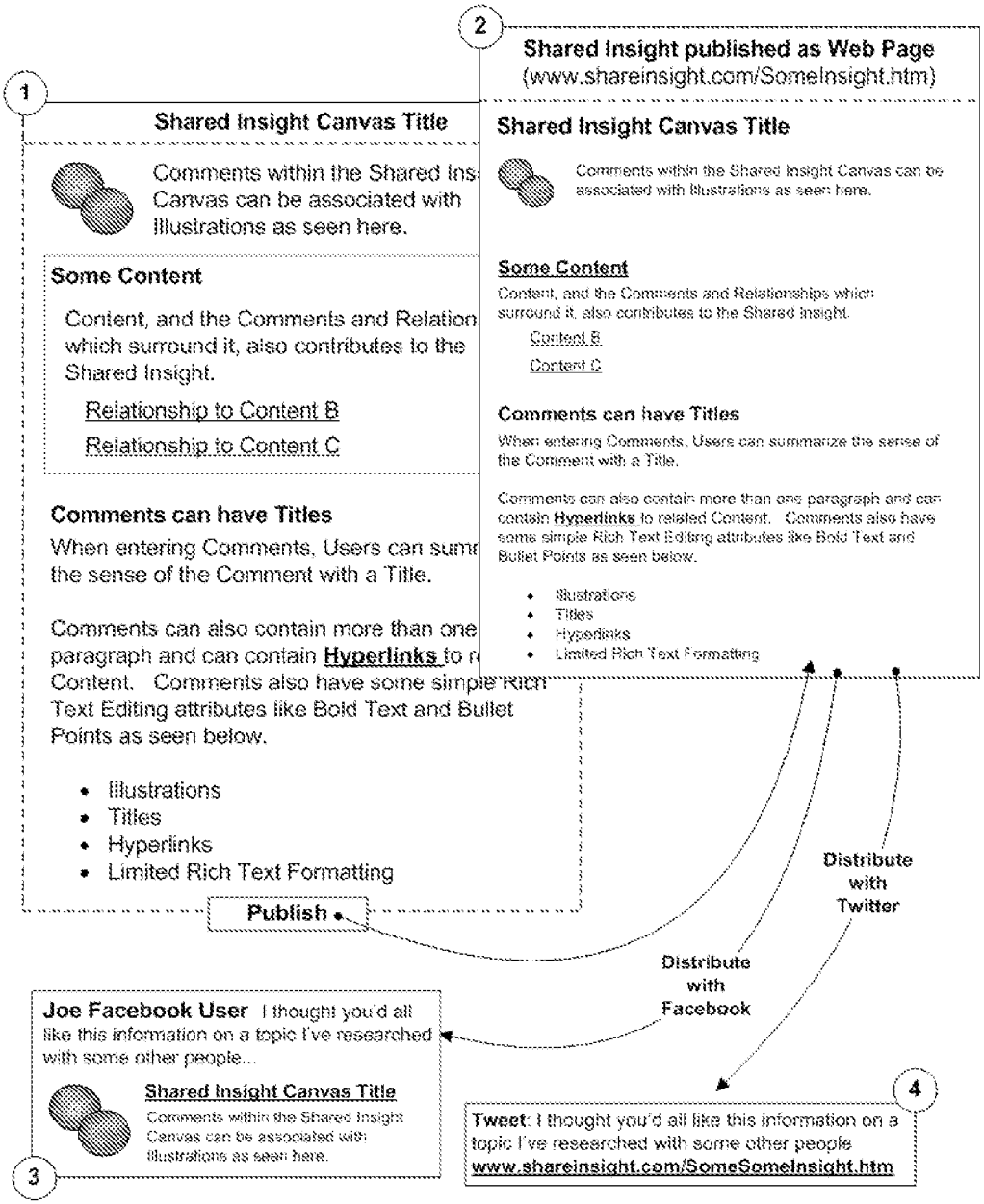
1
Shared Insight Canvas Title
Comments within the Shared Ins
Canvas can be associated with
illustrations as seen here.
Some Content
Content, and the Comments and Relation
which surround it, also contributes to the
Shared Insight.
Relationship to Content B
Relationship to Content C
Comments can have Titles
When entering Comments, Users can sum
the sense of the Comment with a Title.
Comments can also contain more than one
paragraph and can contain Hyperlinks to r
Content. Comments also have some simple Rich
Text Editing attributes like Bold Text and Bullet
Points as seen below.
Illustrations
Titles
Hyperlinks
Limited Rich Text Formatting
Publish
2
Shared Insight published as Web Page
(www.shareinsight.com/SomeInsight.htm)
Shared Insight Canvas Title
Comments within the Shared Insight Canvas can be associated with illustrations as seen here.
Some Content
Content, and the Comments and Relationships which surround it, also contributes to the Shared Insight.
Content B
Content C
Comments can have Titles
When entering Comments, Users can summarize the sense of the Comment with a Title.
Comments can also contain more than one paragraph and can contain Hyperlinks to related Content. Comments also have some simple Rich Text Editing attributes like Bold Text and Bullet Points as seen below.
Illustrations
Titles
Hyperlinks
Limited Rich Text Formatting
Distribute with Twitter
Distribute with Facebook
Joe Facebook User I thought you'd all like this information on a topic I've researched with some other people...
Shared Insight Canvas Title
Comments within the Shared Insight Canvas can be associated with illustrations as seen here.
3
Tweet: I thought you'd all like this information on a topic I've researched with some other people www.shareinsight.com/SomeSomeInsight.htm
4

FIG. 52

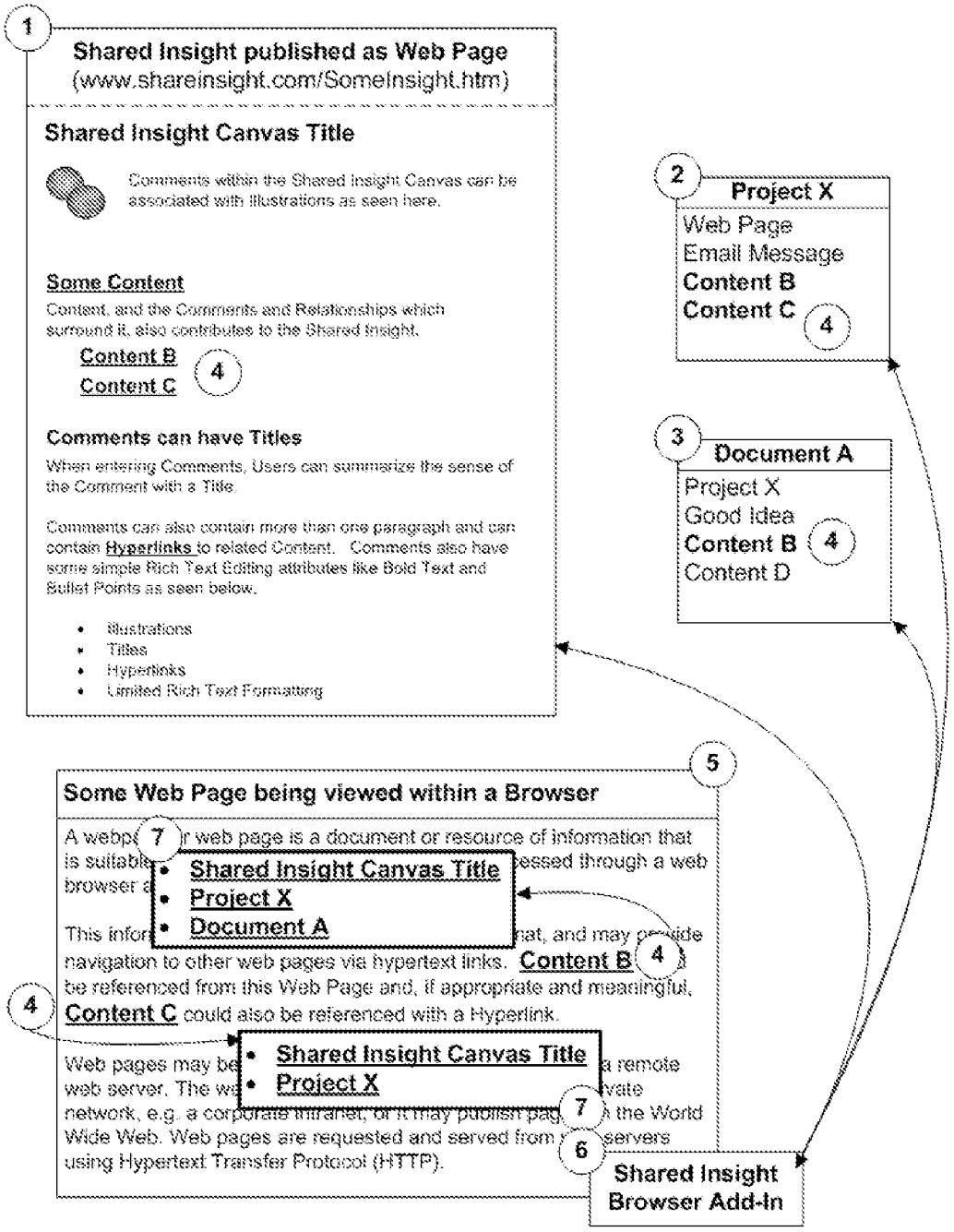
1
Shared Insight published as Web Page
(www.shareinsight.com/SomeInsight.htm)
Shared Insight Canvas Title
Comments within the Shared Insight Canvas can be associated with illustrations as seen here.
Some Content
Content, and the Comments and Relationships which surround it, also contributes to the Shared Insight.
Content B
Content C
4
Comments can have Titles
When entering Comments, Users can summarize the sense of the Comment with a Title.
Comments can also contain more than one paragraph and can contain Hyperlinks to related Content. Comments also have some simple Rich Text Editing attributes like Bold Text and Bullet Points as seen below.
Illustrations
Titles
Hyperlinks
Limited Rich Text Formatting
2
Project X
Web Page
Email Message
Content B
Content C
4
3
Document A
Project X
Good Idea
Content B
4
Content D
5
Some Web Page being viewed within a Browser
7
Shared Insight Canvas Title
Project X
Document A
navigation to other web pages via hypertext links. Content B
4
be referenced from this Web Page and, if appropriate and meaningful,
4
Content C could also be referenced with a Hyperlink.
Shared Insight Canvas Title
Project X
7
Wide Web. Web pages are requested and served from
using Hypertext Transfer Protocol (HTTP).
6
Shared Insight
Browser Add-In

FIG. 53

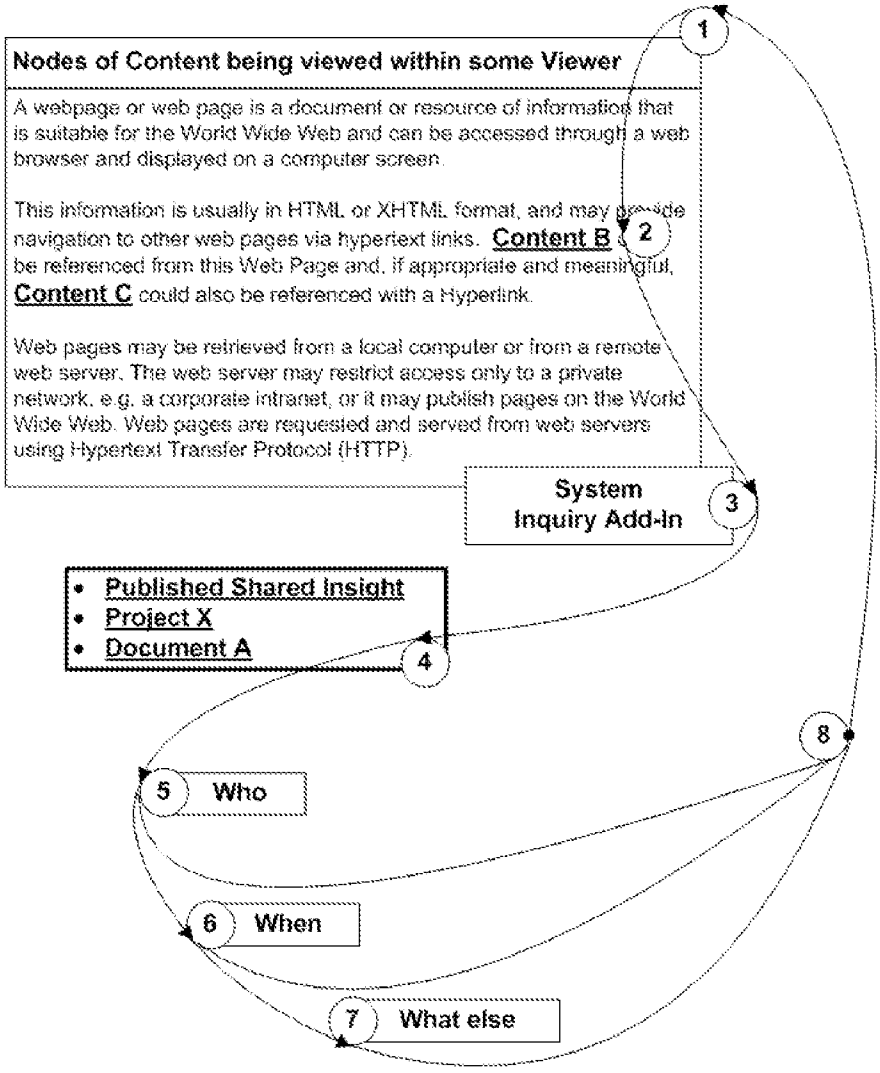
Nodes of Content being viewed within some Viewer
A webpage or web page is a document or resource of information that is suitable for the World Wide Web and can be accessed through a web browser and displayed on a computer screen.
This information is usually in HTML or XHTML format, and may provide navigation to other web pages via hypertext links. Content B could be referenced from this Web Page and, if appropriate and meaningful, Content C could also be referenced with a Hyperlink.
Web pages may be retrieved from a local computer or from a remote web server. The web server may restrict access only to a private network, e.g. a corporate intranet, or it may publish pages on the World Wide Web. Web pages are requested and served from web servers using Hypertext Transfer Protocol (HTTP).
1
2
System Inquiry Add-In
3
Published Shared Insight
Project X
Document A
4
5 Who
6 When
7 What else
8

FIG. 54

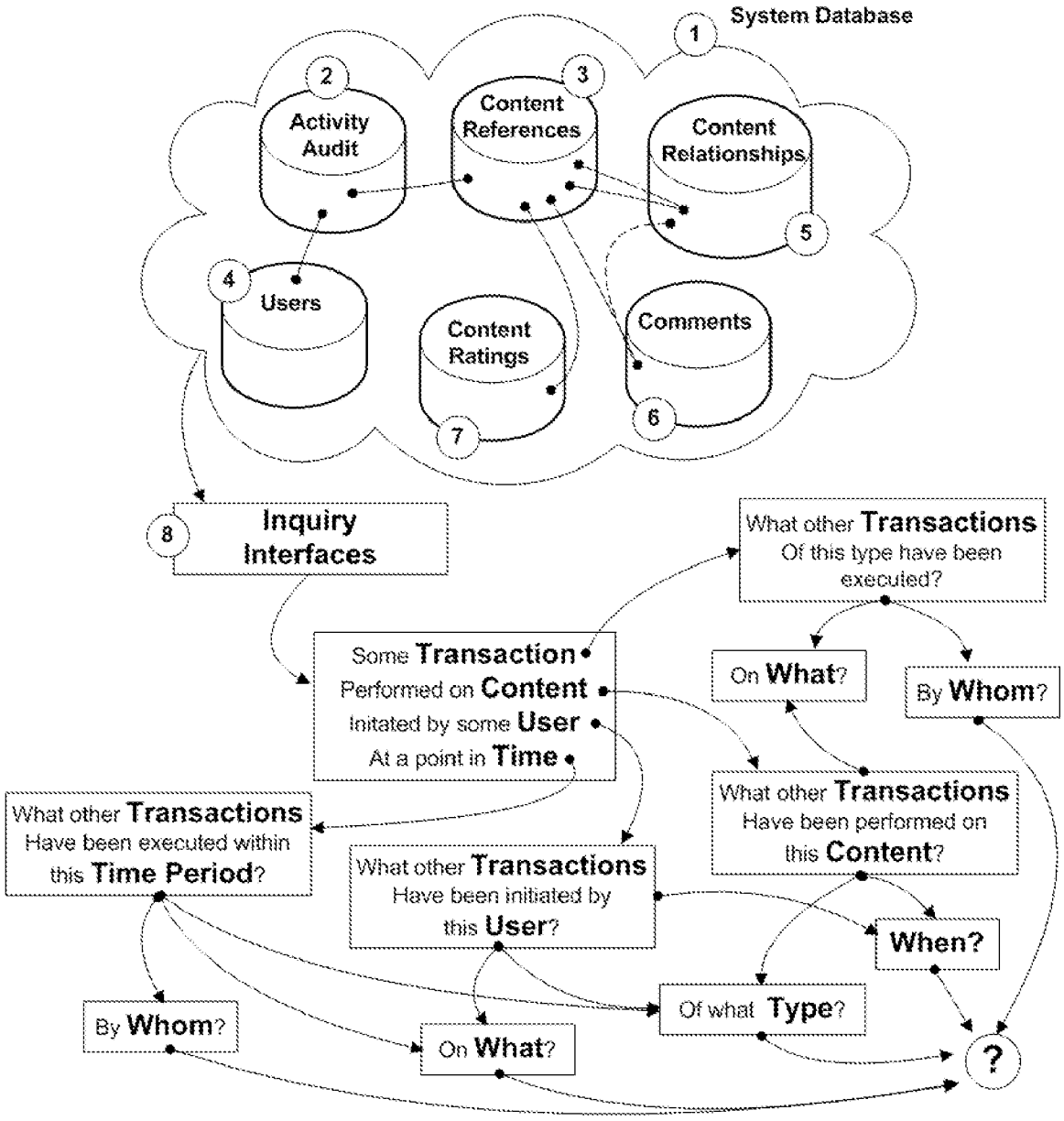
System Database
1
2
Activity Audit
3
Content References
Content Relationships
5
4
Users
Content Ratings
Comments
6
7
8
Inquiry Interfaces
What other Transactions Of this type have been executed?
Some Transaction Performed on Content Initated by some User At a point in Time
On What?
By Whom?
What other Transactions Have been executed within this Time Period?
What other Transactions Have been performed on this Content?
What other Transactions Have been initiated by this User?
When?
Of what Type?
By Whom?
On What?
?

FIG. 55

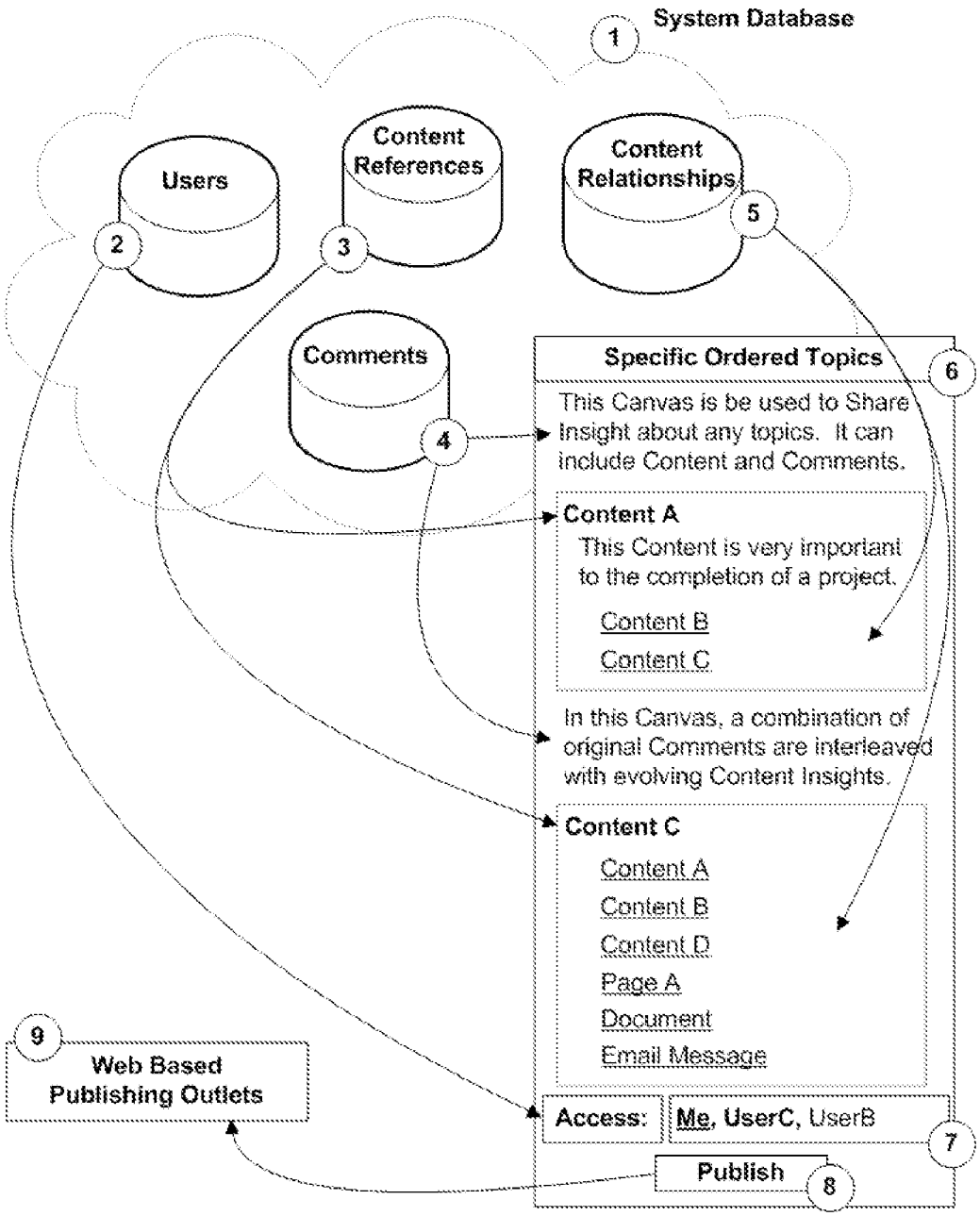
System Database
1
Users
2
Content References
3
Content Relationships
5
Comments
4
Specific Ordered Topics
6
This Canvas is be used to Share Insight about any topics. It can include Content and Comments.
Content A
This Content is very important to the completion of a project.
Content B
Content C
In this Canvas, a combination of original Comments are interleaved with evolving Content Insights.
Content C
Content A
Content B
Content D
Page A
Document
Email Message
9
Web Based Publishing Outlets
Access:
Me, UserC, UserB
7
Publish
8

FIG. 56

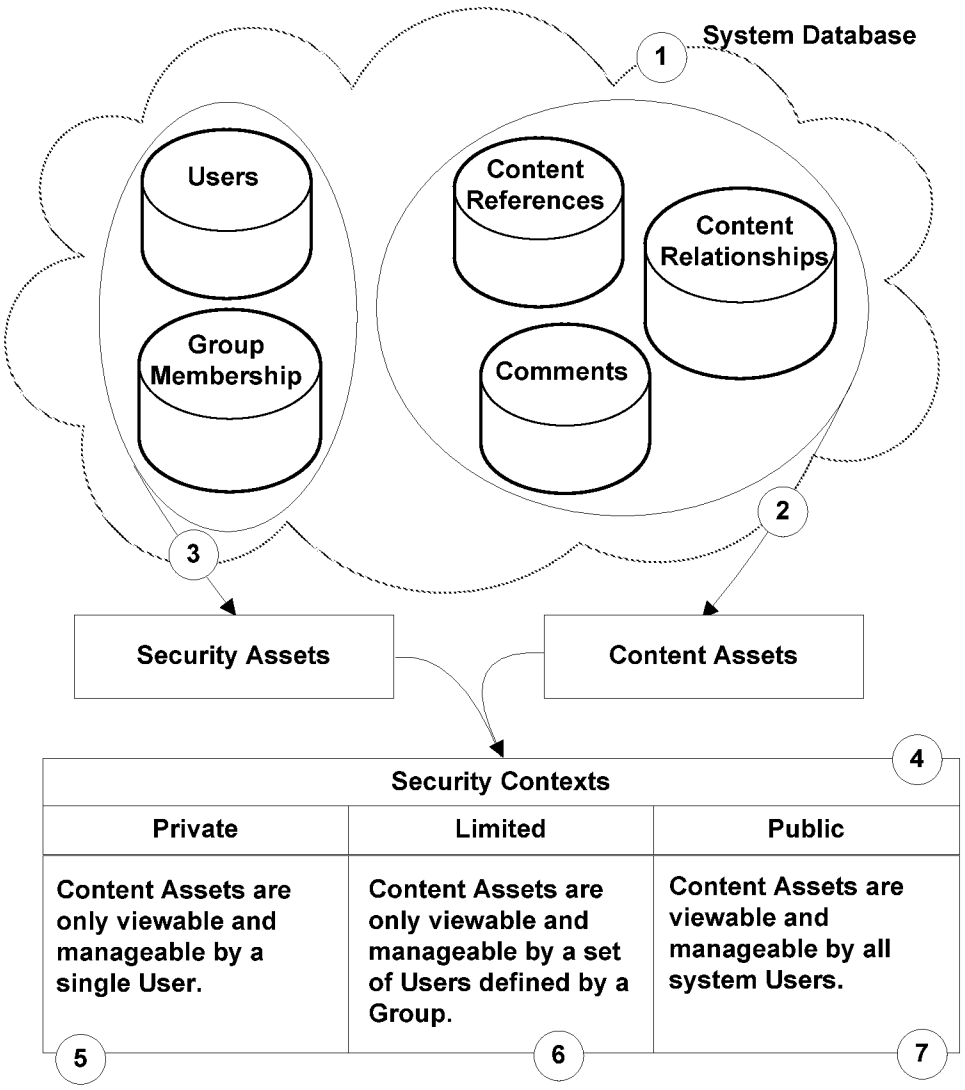
System Database
1
Users
Group Membership
Content References
Content Relationships
Comments
2
3
Security Assets
Content Assets
4
Security Contexts
Private
Limited
Public
Content Assets are only viewable and manageable by a single User.
Content Assets are only viewable and manageable by a set of Users defined by a Group.
Content Assets are viewable and manageable by all system Users.
5
6
7

FIG. 57

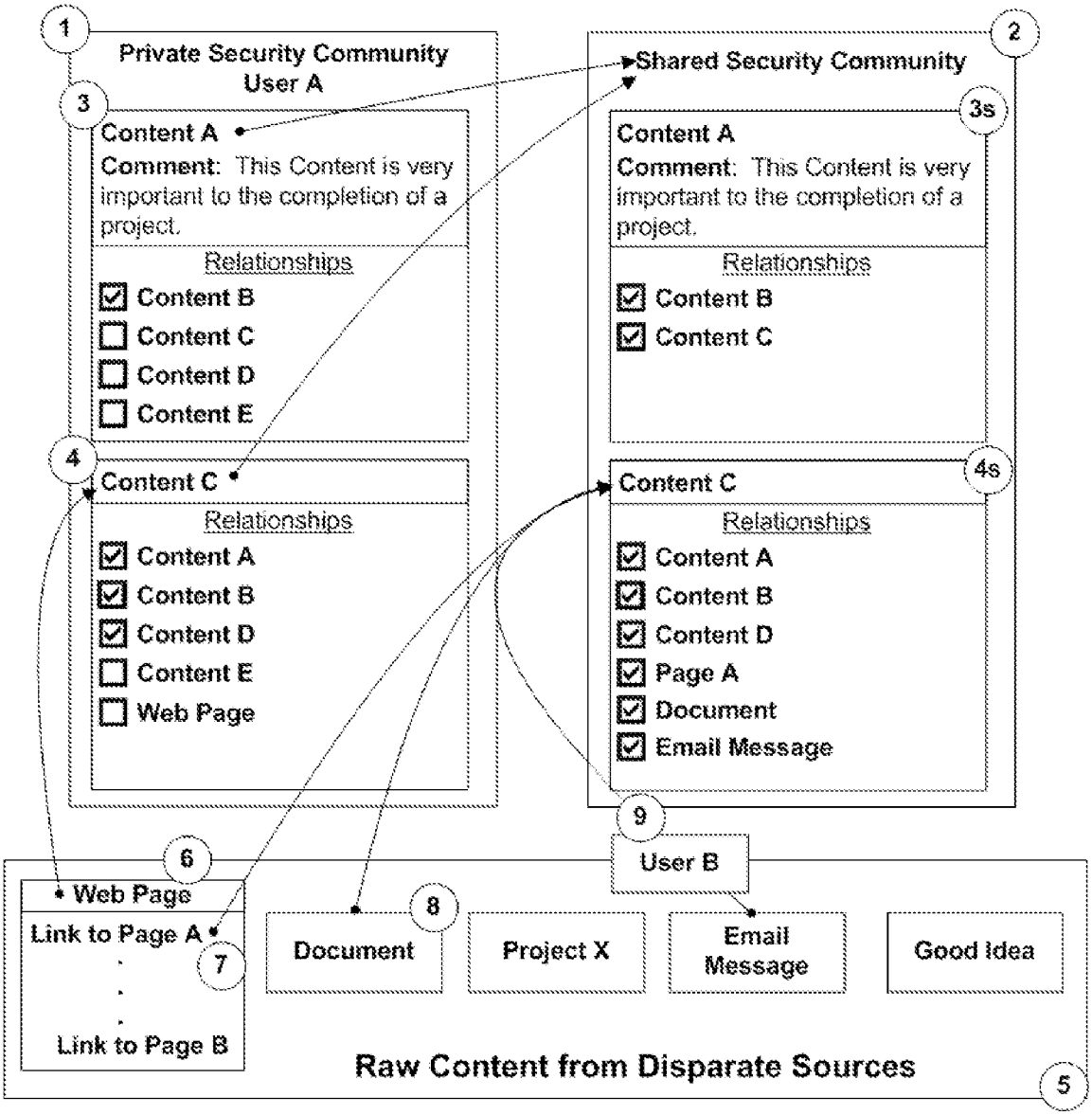
1
Private Security Community
User A
3
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
Content D
Content E
4
Content C
Relationships
Content A
Content B
Content D
Content E
Web Page
2
Shared Security Community
3s
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
4s
Content C
Relationships
Content A
Content B
Content D
Page A
Document
Email Message
9
User B
6
Web Page
Link to Page A
Link to Page B
7
8
Document
Project X
Email Message
Good Idea
Raw Content from Disparate Sources
5

FIG. 58

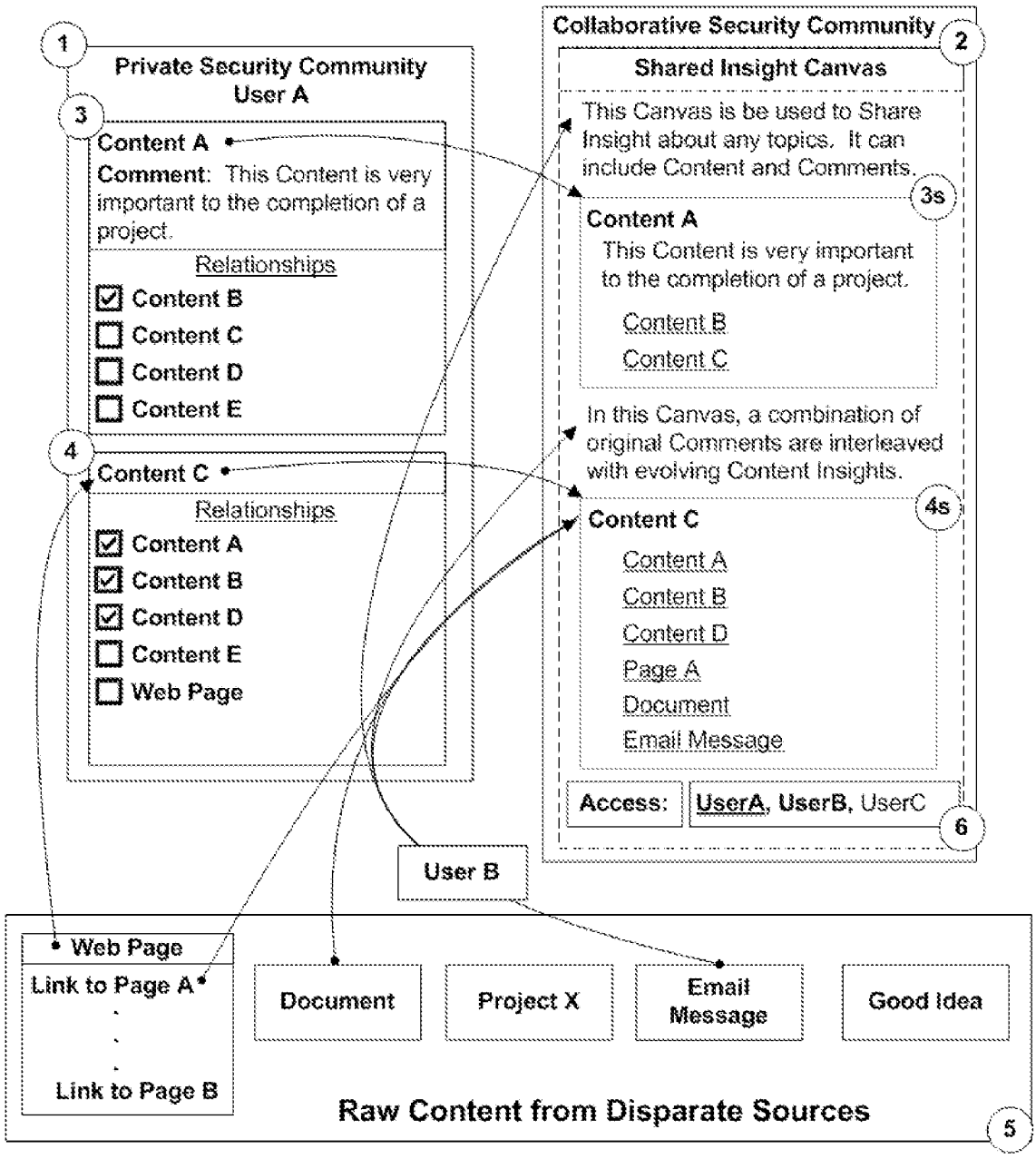
1
Private Security Community
User A
3
Content A
Comment: This Content is very important to the completion of a project.
Relationships
Content B
Content C
Content D
Content E
4
Content C
Relationships
Content A
Content B
Content D
Content E
Web Page
Collaborative Security Community
2
Shared Insight Canvas
This Canvas is be used to Share Insight about any topics. It can include Content and Comments.
3s
Content A
This Content is very important to the completion of a project.
Content B
Content C
In this Canvas, a combination of original Comments are interleaved with evolving Content Insights.
4s
Content C
Content A
Content B
Content D
Page A
Document
Email Message
Access:
UserA, UserB, UserC
6
User B
Web Page
Link to Page A
Link to Page B
Document
Project X
Email Message
Good Idea
Raw Content from Disparate Sources
5

FIG. 59