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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, BN, 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, QA, RO, RS, RU, RW, 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.

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[Continued on next page]

(54) **Title:** PROTECTING NETWORK ENTITY DATA WHILE PRESERVING NETWORK PROPERTIES

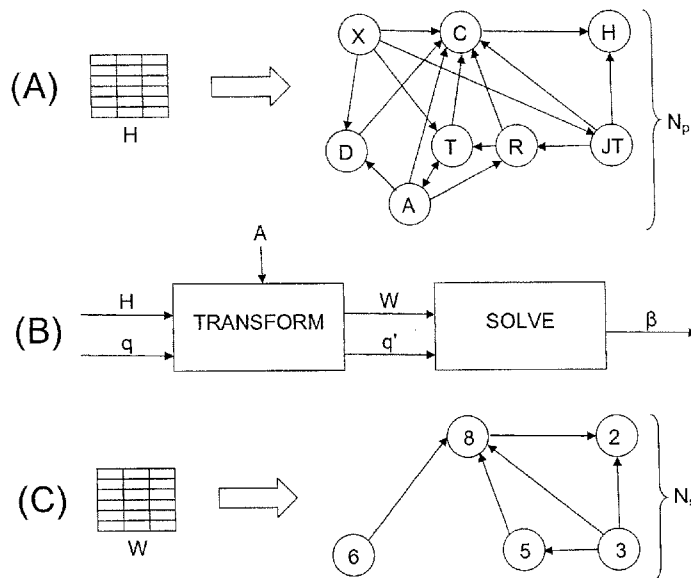


FIG. 3

(57) **Abstract:** In one exemplary embodiment, a storage medium embodying a program of instructions for performing operations includes: storing raw information for primary properties of primary nodes within a primary network; in response to receiving a query, transforming the raw information into transformed information using keys and based on the query, the query is in relation to a queried property, the transformed information is transformed data for the queried property, the transformed information represents a surrogate network having surrogate nodes corresponding to a portion of the primary nodes, the transformed information enables performance of operation without specific knowledge of and without revealing the entirety, the transformed information further enables one having the keys to relate an output of the operation to the raw information; and generating a solution that relates a transformed query to the transformed information, the transformed query is a transformed representation of the query obtained by using the keys.





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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/48771

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - G06F 7/00 (2012.01)
 USPC - 707/736
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC(8) - G06F 7/00 (2012.01)
 USPC - 707/736

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 IPC(8) - G06F 7/00 (2012.01) (keyword limited - see terms below)
 USPC - 700/1-3; 707/705, 736, 737, 757; 706/15, 42 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PatBase, Google Patents, Google Scholar; Search terms used: data information raw network node group query transform protect secure property attribute ownership subset marketing social medium processor sparse key access untrusted person organization company marketer demographer healthcare job career

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2010/0161600 A1 (Higgins et al.) 24 June 2010 (24.06.2010), entire document, especially Fig. 2, 9; Para [0003], [0021], [0026], [0034], [0037], [0054], [0068], [0108], [0111], [0143], [0154], [0156], [0158]	1, 3/1, 14, 16/14, 19, 21/19, 23, 25/23 ----- 2, 3/2, 15, 16/15, 20, 21/20, 24, 25/24
Y	US 2004/0267700 A1 (Dumais et al.) 30 December 2004 (30.12.2004), entire document, especially Fig. 1; Para [0025]	2, 3/2, 15, 16/15, 20, 21/20, 24, 25/24
A	US 6,839,680 B1 (Liu et al.) 04 January 2005 (04.01.2005), entire document	1-3, 14-16, 19-21, 23-25
A	US 2008/0208674 A1 (Hamilton et al.) 28 August 2008 (28.08.2008), entire document	1-3, 14-16, 19-21, 23-25

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	
“A” document defining the general state of the art which is not considered to be of particular relevance	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
“E” earlier application or patent but published on or after the international filing date	“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
“O” document referring to an oral disclosure, use, exhibition or other means	“&” document member of the same patent family
“P” document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 07 December 2012 (07.12.2012)	Date of mailing of the international search report 04 JAN 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/48771

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

- 2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

- 3. Claims Nos.: 4-13, 17-18 and 22
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- 1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
- 2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
- 3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
- 4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.