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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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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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Declarations under Rule 4.17:

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

[Continued on next page]

(54) **Title:** DETERMINING STRENGTH OF ASSOCIATION BETWEEN USER CONTACTS

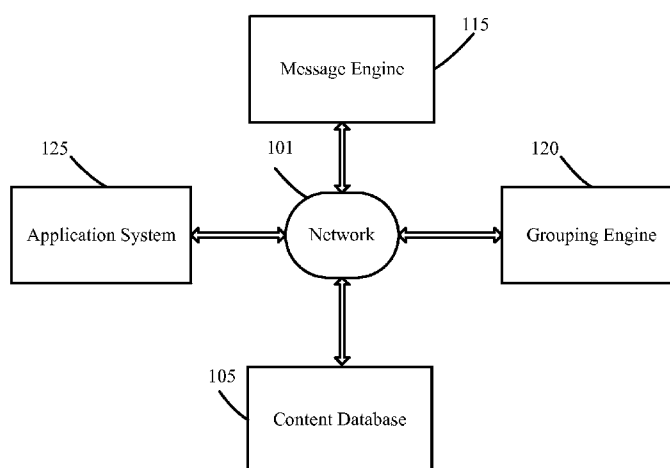


FIG. 1

(57) **Abstract:** Methods and apparatus related to identifying one or more messages sent by a user, identifying two or more contacts that are associated with one or more of the messages, determining a strength of relationship score between identified contacts, and utilizing the strength of relationship scores to provide additional information related to the contacts. A strength of relationship score between a contact and one or more other contacts may be determined based on one or more properties of one or more of the messages. In some implementations, contacts groups may be determined based on the strength of relationship scores. In some implementations, contacts groups may be utilized to disambiguate references to contacts in messages. In some implementations, contacts group may be utilized to provide suggestions to the user of additional contacts of a contacts group that includes the indicated recipient contact of a message.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 15/16 (2015.01)

CPC - G06Q 10/107

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 15/16 (2015.01); CPC: G06Q 10/107

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 709/203, 709/206
IPC(8): G06F 15/16 (2015.01); CPC: G06Q10/107, H04L12/585, H04L12/58, H04L12/581, H04L12/5855

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, ProQuest Dialog, Google Web, Google Patents (Search terms: strength, strong, closeness, score, measure, relationship, count, number, often, occurrence, contact, address, email, message, SMS, relating, related, autosuggest, autocomplete, automated suggestion, term, keyword, etc.)

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 2009/0271370 A1 (Jagadish et al.) 29 October 2009 (29.10.2009), para. [0019]-[0022], [0035], [0037], [0040], [0052], [0055]-[0056], [0062]-[0064], [0066], [0072], [0074], [0076], [0080]-[0083], [0085]-[0086], and [0099]-[0100], and Figs. 2 and 4, and claim 4.	1-5, 7, 9, 12-20, 22-23 ----- 6, 8, 10-11, 21
Y	US 2007/0083552 A1 (Allen et al.) 12 April 2007 (12.04.2007), para. [0034], [0107]-[0108], [0156], and [0244].	6, 8, 10-11, 21
A	US 2012/0124059 A1 (Pratt et al.) 17 May 2012 (17.05.2012) (entire document).	1-23

☐ 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

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

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