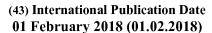
## (19) World Intellectual Property Organization

International Bureau





English



(10) International Publication Number WO 2018/022165 A3

- (51) International Patent Classification: *G06Q 30/00* (2012.01)
- (21) International Application Number:

PCT/US2017/030906

(22) International Filing Date:

03 May 2017 (03.05.2017)

(25) Filing Language:

(26) Publication Language: English

(30) Priority Data:

62/331,052	03 May 2016 (03.05.2016)	US
62/337,164	16 May 2016 (16.05.2016)	US
62/345,551	03 June 2016 (03.06.2016)	US

(71) Applicant: UNIVERSITY OF MARYLAND, COL-LEGE PARK OFFICE OF TECHNOLOGY COM-MERCIALIZATION [US/US]; 2130 Mitchell Bldg., 7999 Regents Drive, College Park, MD 20742 (US).

- (72) Inventors: BARAS, John S.; 10912 Burbank Drive, Potomac, MD 20854 (US). WENG, Xiangnan; 7852 Emilys Way, Greenbelt, MD 20770 (US).
- (74) Agent: FLANAGAN, Peter et al.; Squire Patton Boggs (US) LLP, 8000 Towers Crescent Dr., 14th Floor, Vienna, VA 22182-6212 (US).
- (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, DJ, 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, KH, KN, KP, KR, KW, 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.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(54) Title: JOINT OPTIMIZATION FOR SOCIAL CONTENT DELIVERY OR DISSEMINATION

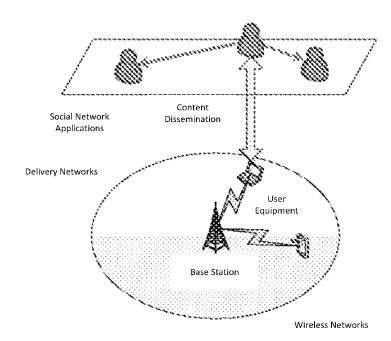


Figure 1

(57) Abstract: Various communication systems may benefit from optimized delivery or dissemination of information. For example, various wireless networks including heterogeneous wireless may benefit from joint optimization for social content delivery or dissemination over such networks. A method can include selecting content to deliver according to user reward values given wireless capacity constraints. The method can also include delivering the content to a plurality of users via a wireless network comprising different transmission modes.

# 

UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

#### **Published:**

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

## $\textbf{(88)} \ \ \textbf{Date of publication of the international search report:}$

01 March 2018 (01.03.2018)

### INTERNATIONAL SEARCH REPORT

International application No. PCT/US 17/30906

A. CLASSIFICATION OF SUBJECT MATTER  IPC(8) - G06Q 30/00 (2017.01)  CPC - G06Q 30/0207, G06Q 30/02, G06Q 30/0601, G06Q 30/0241, G06Q 30/0239, G06Q 30/0226, G06Q 30/0236, G06Q 30/0227, G06Q 50/01, G06Q 10/10, G06Q 99/00, H04L 29/06027, H04L 29/06462, H04L 29/06, H04L 29/06523, H04L 29/08072				
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)				
See Search History Document				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched See Search History Document				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) See Search History Document				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category* Citation of document, with indication, where a	ppropriate, of the relevant passages	Relevant to claim No.		
X US 2015/0230184 A1 (HEADWATER PARTNERS I LI document, especially Fig. 24, 27; para [0034], [0088],	LC) 13 August 2015 (13.08.2015), entire [0098], [0168], [0191], [0287], [0308]	1-22		
A US 2011/0164527 A1 (MISHRA et al.) 07 July 2011 (0	07.07.2011), entire document	1-22		
A US 2013/0253934 A1 (JELLI, INC.) 26 September 20	ļ	1-22		
Further documents are listed in the continuation of Box C. See patent family annex.				
<ul> <li>Special categories of cited documents:</li> <li>"A" document defining the general state of the art which is not considered to be of particular relevance</li> </ul>	"T" later document published after the intern date and not in conflict with the applica the principle or theory underlying the ir	ttion but cited to understand		
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the considered novel or cannot be conside			
"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)	step when the document is taken alone "Y" document of particular relevance; the c	claimed invention cannot be		
"O" document referring to an oral disclosure, use, exhibition or other means	considered to involve an inventive st combined with one or more other such d being obvious to a person skilled in the	ocuments, such combination		
"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	Date of mailing of the international search report			
16 December 2017 (16.12.2017)	1 1 JAN 2018			
Name and mailing address of the ISA/US	Authorized officer:			
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450	Lee W. Young			
Facsimile No. 571-273-8300	PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774			

Form PCT/ISA/210 (second sheet) (January 2015)