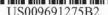
EXHIBIT F



(12) United States Patent

Dannat et al.

US 9,691,275 B2 (10) Patent No.:

Jun. 27, 2017 (45) Date of Patent:

(54) ADJUSTING VEHICLE TIMING IN A TRANSPORTATION NETWORK

(71) Applicant: INTERNATIONAL BUSINESS MACHINES CORPORATION,

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Subject to any disclaimer, the term of this (*) Notice:

patent is extended or adjusted under 35

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B60K 35/00 (2006.01)(52) U.S. Cl.

CPC G08G 1/00 (2013.01); B60K 35/00

(58) Field of Classification Search

CPC G08G 1/00; G08G 9/00; G08G 1/0962; G08G 1/0116; G08G 1/096716; G08G 1/04; B61L 27/0016; G06Q 10/06311; G06F 9/5011

See application file for complete search history.

(56)References Cited

U.S. PATENT DOCUMENTS

8,315,802	B2	11/2012	Brown
8,825,350	B1*	9/2014	Robinson G08G 1/0116
			340/909
2008/0094250	A1*	4/2008	Myr G08G 1/04
			340/909
2009/0077099	A1*	3/2009	Haustein G06F 9/5011
2009/0174573	Al*	7/2009	Smith G08G 1/0962
			340/905
2010/0280748	A1	11/2010	Mundinger et al.
2012/0221230	A1*	8/2012	Reilhac G08G 1/096716
			701/117
2013/0116916	A1*	5/2013	Kickbusch B61L 27/0016
			701/118
2013/0158846	A1	6/2013	Zhang
2014/0025294	A1	1/2014	Boss et al.
(Continued)			

FOREIGN PATENT DOCUMENTS

WO WO2007067841 A2 6/2007 WO WO2014026956 A1 2/2014

OTHER PUBLICATIONS

Partha Chakroborty; Optimal Routing and Scheduling in Transportation: Using Genetic Algorithm to Solve Difficult Optimization Problems; 2004.

(Continued)

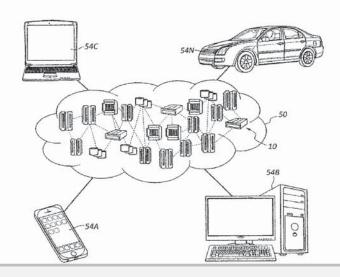
Primary Examiner — Yuri Kan

(74) Attornev, Agent, or Firm - Daniel R. Simek; George S. Blasiak; Heslin, Rothenberg, Farley & Mesiti, PC

(57)ABSTRACT

Methods, computer program products, and systems are presented. The methods include, for instance: obtaining passenger information of one or more passenger traveling within a transportation network; and providing one or more output based on a processing of the passenger information.

18 Claims, 22 Drawing Sheets



(2013.01)



US 9,691,275 B2

Page 2

(56) References Cited

U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

Gunjal Sunil N., Joshi Ajinkya V., Gosavi Swapnil C., Kshirsagar Vyanktesh B.; Dynamic Bus Timetable Using GPS; International Journal of Advanced Research in Computer Engineering & Technology (IJARCET); vol. 3 Issue 3, Mar. 2014.

S.R. Subramanya; Adaptive Bus Routing Heuristics for Improving Vehicle Utilization and Reducing Commuter Waiting Times; International Journal of Innovative Research in Computer and Communication Engineering; vol. 2, Issue 5, May 2014.

Mel, Peter; Grance, Timothy; The NIST Definition of Cloud Computing; NIST Special Publication 800-145; Sep. 2011.

T.E. Dannat, et al. "List of IBM Patents and/or Patent Applications Treated as Related," U.S. Appl. No. 15/582,909, filed May 1, 2017, Dated: May 1, 2017.

T.E. Dannat, et al. "Adjusting Vehicle Timing in a Transportation Network," U.S. Appl. No. 15/582,909, filed May 1, 2017.



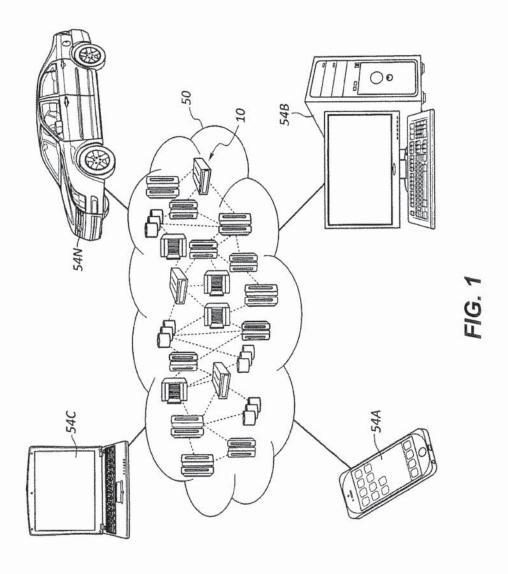
^{*} cited by examiner

U.S. Patent

Jun. 27, 2017

Sheet 1 of 22

US 9,691,275 B2

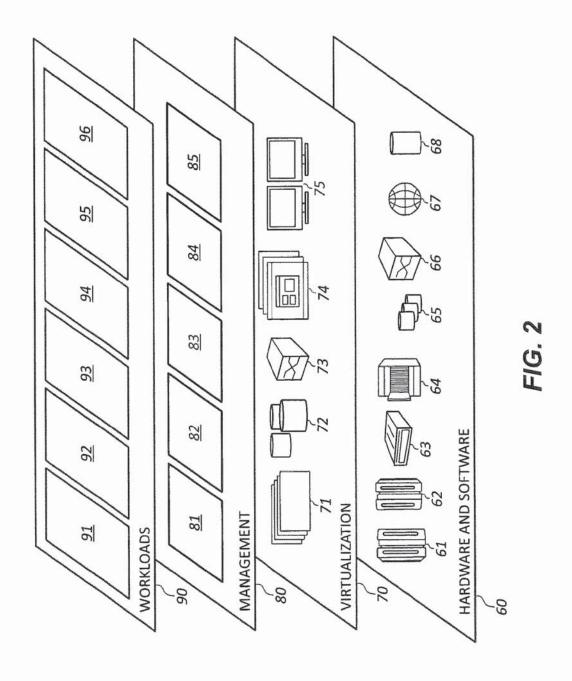


U.S. Patent

Jun. 27, 2017

Sheet 2 of 22

US 9,691,275 B2



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