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(54) Title: BIDIRECTIONAL NETWORKED REAL-TIME DATA EXCHANGE USING A SPREADSHEET APPLICATION

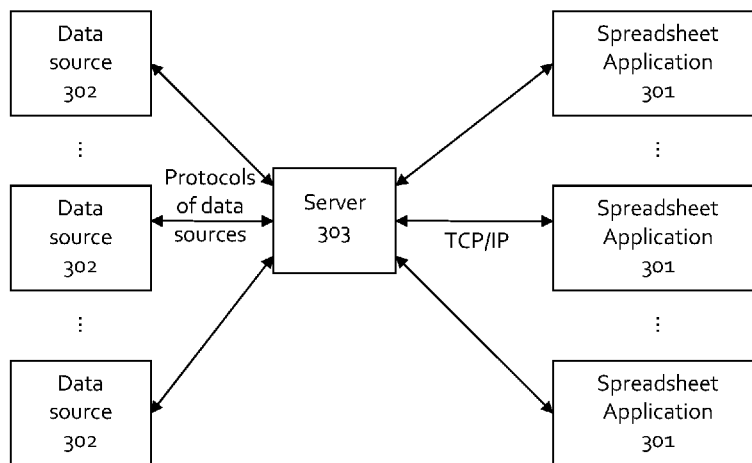


FIG. 3

(57) Abstract: Systems and methods and methods for providing real-time data to a spreadsheet applications (SSAPPs) are disclosed. In an example, a spreadsheet application (SSAPP) obtains subscribed data from a server through the persistent connection between the SSAPP and the server via a TCP socket. The subscribed data can be propagated to the server from a data source. The SSAPP can perform an action on the subscribed data, such as presenting a representation based on the subscribed data to a user. When the data source propagates updated data to the server, the server can send the updates to the SSAPP in real time over the TCP socket. The SSAPP can also send data do the server over the TCP socked by, for example, extracting contents from a set of cells, processing the contents to produce a result, and transmitting the result to the server via the persistent connection.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
 IPC: **H04L 29/06** (2006.01), **G06F 17/00** (2006.01), **H04L 12/12** (2006.01)

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L 29/06 (2006.01), **G06F 17/00** (2006.01), **H04L 12/12** (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Questel Orbit, Canadian Patent Database, Google Patents and keywords: real-time data, real-time data server, real-time server, persistent connection, Websockets, real-time communication, spreadsheet, excel, google sheets, open office calc, web application.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CA2991685(THOMAS) 14 January 2016(14.01.2016) *paragraphs 0031, 0051, 0073-0076, 0122-0124, 0172-0178, 0184; Figs. 1-4*	1 - 2, 5 - 9, 11 - 13, 15, 17 - 19
Y	US20050251527(PHILLIPS et al.) 10 November 2005(10.11.2005) *paragraphs 0035, 0036, 0084-0089, 0092; Figs. 13A, 13B*	1, 6, 9, 11, 12, 15, 17
A	US20130058262(PARREIRA) 7 March 2013(07-03-2013) *abstract, paragraphs 0011-0013, 0038-0042; Figs. 3, 4*	1, 11, 15
A	US20130318144(ITAMI) 28 November 2013(28-11-2013) *abstract, paragraphs 0008-0009, 0018-0020; Figs. 1, 2A-2C*	1, 11, 15

Further documents are listed in the continuation of Box C.

See patent family annex.

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“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“&” document member of the same patent family
“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	

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Information on patent family members

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