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- (71) **Applicant:** BAE SYSTEMS PLC [GB/GB]; 6 Carlton Gardens, London SW1Y 5AD (GB).
- (72) **Inventors:** REID, Iain Norman Nicol; BAE Systems, Applied Intelligence, Surrey Research Park, Guildford Surrey GU2 7YP (GB). JARVIS, Richard Thomas; BAE Systems, Applied Intelligence, Surrey Research Park, Guildford Surrey GU2 7YP (GB). NICHOLSON, David; BAE

Systems, Applied Intelligence, Gloucester Business Park, Gloucester GL3 4AB (GB).

(74) **Agent:** BAE SYSTEMS PLC; Group IP Dept, PO Box 87, Farnborough Aerospace Centre, Farnborough, Hampshire, GU14 6YU (GB).

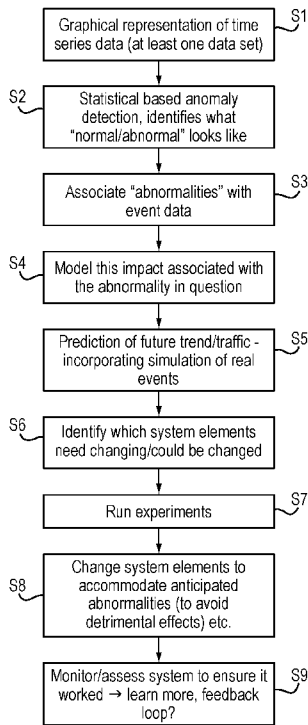
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[Continued on next page]

(54) **Title:** PROVISION, CONFIGURATION, AND USE OF A TELECOMMUNICATIONS NETWORK

Fig. 2



(57) **Abstract:** A method of configuring a telecommunications network comprising the steps of: providing a first set of time dependent network data, a network related parameter varying with time; identifying abnormalities embedded within said first set of data; providing a first set of external event data; associating respective abnormalities with corresponding event data; generating a model to represent an impact of the, or each, class of event, represented by the event data; using the, or each, model in combination with extrapolated data to predict future variation in the network related parameter; repeating this simulation for alternative input conditions; selecting a solution from the output of one the simulations; and implementing a modification to the network corresponding to the/or each respective input condition.

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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).

- *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))*
- *with information concerning request for restoration of the right of priority in respect of one or more priority claims (Rules 26bis.3 and 48.2(b)(vii))*

**Published:**

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**INTERNATIONAL SEARCH REPORT**

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. H04L12/26 H04L12/24 H04L29/06  
ADD.  
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)  
H04L G06F  
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2010/027432 A1 (GOPALAN PREM K [US] ET AL) 4 February 2010 (2010-02-04) abstract; figure 4 paragraph [0069] - paragraph [0073] paragraph [0089] - paragraph [0109] paragraph [0118] - paragraph [0132] -----	1,2 4-6,14
X A	US 2013/238534 A1 (NAGARAJ SHIRISH [US] ET AL) 12 September 2013 (2013-09-12) abstract; figure 2 paragraph [0032] - paragraph [0034] ----- -/--	1,2 4-6,14

Further documents are listed in the continuation of Box C.  See patent family annex.

\* 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 <b>9 September 2016</b>	Date of mailing of the international search report <b>16/09/2016</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer <b>Hanigk, Sebastian</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2016/000034

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>Pekka Kumpulainen: "Anomaly Detection for Communication Network Monitoring Applications",</p> <p>19 March 2014 (2014-03-19), XP055280836, Tampere  ISBN: 978-952-1532-66-5  Retrieved from the Internet:  URL: <a href="http://dspace.cc.tut.fi/dpub/bitstream/handle/123456789/22104/kumpulainen.pdf?sequence=3&amp;isAllowed=y">http://dspace.cc.tut.fi/dpub/bitstream/handle/123456789/22104/kumpulainen.pdf?sequence=3&amp;isAllowed=y</a>  [retrieved on 2016-06-15]</p>	4-6,14
A	<p>Chapters 3, 4  Chapter 7</p>	1,2
X	<p>-----</p> <p>UNKNOWN ET AL: "Traffic classification using clustering algorithms",  PROCEEDINGS OF THE 2006 SIGCOMM WORKSHOP ON MINING NETWORK DATA , MINENET '06,  1 January 2006 (2006-01-01), pages 281-286, XP055301257,  New York, New York, USA  DOI: 10.1145/1162678.1162679  ISBN: 978-1-59593-569-4  the whole document</p> <p>-----</p>	4-6,14

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2016/000034

## 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.: 3, 7-13(completely); 4-6, 14(partially)  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
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.:  
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:

see additional sheet

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 an 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.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2

Method for configuring a telecommunications network, comprising abnormality detection, model generation, parameter prediction, and modification of network management parameters.

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2. claims: 3-14

Mathematical method for clustering entities, comprising entity-attribute mapping, weighting factors for correlation measurements, and clustering based on said correlation results.

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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.1

Claims Nos.: 3, 7-13(completely); 4-6, 14(partially)

Claim 3 specifies a mathematical method within the meaning of Rule 39.1(i) PCT for clustering of entities. Since claim 3 as well as dependent claims 7-13 furthermore do not specify any feature that is technical or has technical character, the subject-matter of claims 3 and 7-13 is purely a mathematical method within the meaning of Rule 39.1(i) PCT, and therefore according to Article 17(2)(a)(i) PCT, the International Search Authority considers that it is not required to carry out a search over the subject-matter of claims 3 and 7-13.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2016/000034

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010027432 A1	04-02-2010	US 2010027432 A1	04-02-2010
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		KR 20140145151 A	22-12-2014
		US 2013238534 A1	12-09-2013
		WO 2013135734 A1	19-09-2013
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