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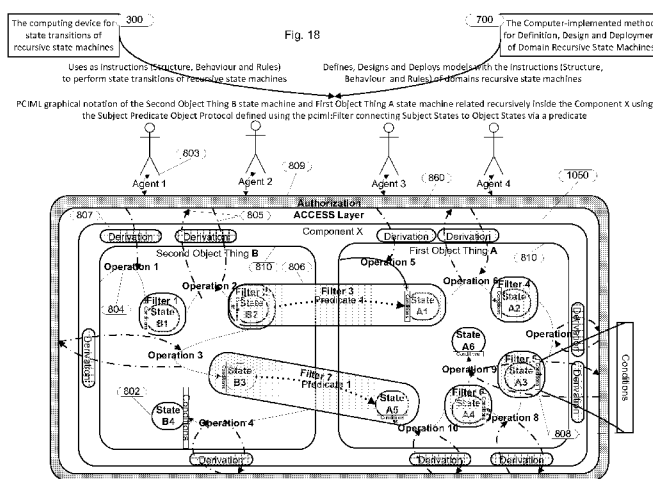
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Published:

- 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))

(88) Date of publication of the international search report:
22 May 2014

(54) Title: A COMPUTING DEVICE FOR STATE TRANSITIONS OF RECURSIVE STATE MACHINES AND A COMPUTER-IMPLEMENTED METHOD FOR THE DEFINITION, DESIGN AND DEPLOYMENT OF DOMAIN RECURSIVE STATE MACHINES FOR COMPUTING DEVICES OF THAT TYPE



(57) Abstract: A computing device for state transitions of recursive state machines and a computer-implemented method for the definition, design and deployment of domain recursive state machines for computing devices of that type; such devices are intended for the simulation of large systems involving human and automated components, particularly the type generally called "Enterprise Applications"; such devices are also applicable to a much wider range of fields, such as cognitive modelling or robotics. The commonality between the computing device and the computer-implemented method is the Subject Predicate Object Protocol (SPOP) which is used to capture instructions by the computer-implemented method for the definition, design and deployment of recursive state machines and also is the protocol used by the computing device for state transitions of recursive state machines to communicate inbound and outbound events based on the captured instructions.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2013/054591

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 7/76 (2013.01)

USPC - 707/999.1

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 7/76, 9/44, 15/16, 17/30 (2013.01)

USPC - 707/999.01, 707/999.1; 709/201; 719/316

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

CPC - G06F 7/76, 9/54, 17/30 (2013.01)

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

PatBase, Google Patents, ProQuest

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y -- A	US 7,415,483 B2 (KUNTZ-MAYR et al) 19 August 2008 (19.08.2008) entire document.	1-27,30,32-35,37-43 ---- 31, 36
Y -- A	US 5,765,207 A (CURRAN) 09 June 1998 (09.06.1998) entire document.	1-27,30,32-35,37-43 ---- 31, 36
Y -- A	US 2011/0295911 A1 (DEWOOLFSON) 01 December 2011 (01.12.2011) entire document.	2-27,30,32-35,37-43 ---- 31, 36
Y -- A	US 2008/0016020 A1 (ESTES) 17 January 2008 (17.01.2008) entire document.	9-27,30,32-35,37-43 ---- 31, 36
Y -- A	US 2010/0312829 A1 (O'CONNELL, JR.) 09 December 2010 (09.12.2010) entire document.	40
A	WO 01/38978 A1 (MILOUSHEV et al) 31 May 2001 (31.05.2001) entire document.	1-27, 30-43
A	US 2010/0114811 A1 (LAMBOV) 06 May 2010 (06.05.2010) entire document.	1-27, 30-43

☐ 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

"E" earlier application or patent but published on or after the international filing date

"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)

"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

28 February 2014

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2013/054591

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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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 Extra 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 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.:
1-27, 30-43

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.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/IB2013/054591

Continuation of Box NO. III:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-27, 30-43, drawn to a computing device for state transitions of recursive state machines.

Group II, claims 28-29, drawn to a library of business object models.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: a computing device for state transitions of recursive state machines to receive event data, receive first and second object data, receive relationship data between first and second objects, calculate first and second states of first and second objects, calculate valid state transition between the two objects as claimed therein is not present in the invention of Group II. The special technical feature of the Group II invention: a library of business object models comprising definitions as claimed therein is not present in the invention of Groups I.

Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature of ontology data, this technical feature is not a special technical feature as it does not make a contribution over the prior art.

Since none of the special technical features of the Group I or II inventions are found in more than one of the inventions, unity of invention is lacking.