

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 October 2011 (27.10.2011)

(10) International Publication Number
WO 2011/132002 A3

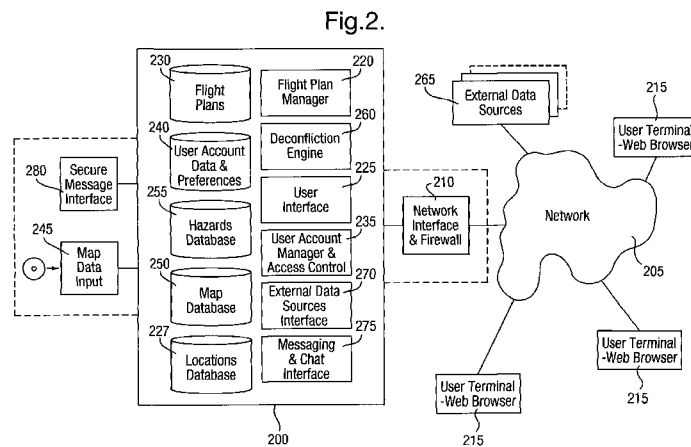
- (51) **International Patent Classification:**
G08G 5/00 (2006.01) *G01C 23/00* (2006.01)
- (21) **International Application Number:**
PCT/GB2011/050822
- (22) **International Filing Date:**
26 April 2011 (26.04.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
10275046.0 22 April 2010 (22.04.2010) EP
1006677.7 22 April 2010 (22.04.2010) GB
- (71) **Applicant (for all designated States except US):** BAE SYSTEMS PLC [GB/GB]; 6 Carlton Gardens, London SW1Y 5AD (GB).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** PENDRY, Steven [GB/GB]; Bae Systems PLC, Alvington, Yeovil Somerset BA22 8UZ (GB). HOOD, Timothy [GB/GB]; Bae Systems PLC, Alvington, Yeovil Somerset BA22 8UZ (GB).
- (74) **Agent:** BAE SYSTEMS PLC, GROUP IP DEPT; PO Box 87, Farnborough Aerospace Centre, Farnborough Hampshire GU14 6YU (GB).
- (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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, 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))
- (88) **Date of publication of the international search report:**
15 December 2011

(54) Title: FLIGHT PLANNING METHODS AND SYSTEMS



(57) **Abstract:** An electronic flight planning system is provided, arranged to implement a preferred method for identifying conflicts between flight plans for aircraft. In the preferred method, the system receives, as data input from one or more users, a plurality of flight plans each defining a flight by an aircraft; the system determines, for each aircraft and its respective received flight plan, a three-dimensional region of potential conflict, representative both of the uncertainty in the position of the aircraft and of a region of air exclusion appropriate for the aircraft or for the respective received flight plan; and the system determines, on the basis of the determined regions of potential conflict, whether one of the received flight plans is in conflict with any of the other received flight plans.

WO 2011/132002 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/050822

A. CLASSIFICATION OF SUBJECT MATTER
INV. G08G5/00 G01C23/00
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)
G08G G01C

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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/102505 A2 (VILLIERS JACQUES [FR]) 25 November 2004 (2004-11-25) page 13, line 17 - page 17, line 3 -----	1,2, 6-12,15, 16
Y	US 2009/125221 A1 (ESTKOWSKI REGINA I [US] ET AL) 14 May 2009 (2009-05-14) paragraphs [0024] - [0028], [0 31] - [0034], [0 42] - [0046]; figures 1, 3, 4 -----	1,2, 6-12,15, 16
X	US 6 577 947 B1 (KRONFELD KEVIN M [US] ET AL) 10 June 2003 (2003-06-10)	1-6,8, 12,15-17
Y	column 3, line 1 - line 45; figures 1, 2, 7- 9, 11A column 9, line 66 - column 11, line 37 column 15, line 36 - column 17, line 45 column 19, line 50 - column 22, line 44 ----- -/--	11

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

"E" earlier document 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 14 July 2011	Date of mailing of the international search report 19/10/2011
---	--

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 Pariset, Nadia
--	--

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2011/050822

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.: 18, 19
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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.:
1-12(completely); 15-17(partially)

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

International application No
PCT/GB2011/050822

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/259234 A1 (FLYNN LORRAINE [US] ET AL) 16 November 2006 (2006-11-16)	11
A	paragraphs [0012], [0 43]; figure 1 -----	1,15-17
A	FR 2 923 008 A1 (THALES SA [FR]) 1 May 2009 (2009-05-01) the whole document -----	1-12,15, 16
A	WO 2005/079179 A1 (BOEING CO [US]) 1 September 2005 (2005-09-01) the whole document -----	1-12,15, 16
A	FR 2 894 056 A1 (THALES SA [FR]) 1 June 2007 (2007-06-01) the whole document -----	1-12,15, 16
A	FR 2 905 505 A1 (THALES SA [FR]) 7 March 2008 (2008-03-07) the whole document -----	1-12,15, 16
A	WO 2007/072015 A2 (NATS EN ROUTE PLC [GB]; JANES BRIAN [GB]) 28 June 2007 (2007-06-28) the whole document -----	1-12,15, 16
A	US 2010/049380 A1 (HIALE-GUILHAMOU MATHIEU [FR] ET AL) 25 February 2010 (2010-02-25) sentence 69, paragraph 64; figures 1,3 -----	1-12,15, 16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/GB2011/050822

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004102505	A2	25-11-2004	EP 1644906 A2 12-04-2006 FR 2854978 A1 19-11-2004 US 2007032940 A1 08-02-2007
US 2009125221	A1	14-05-2009	AU 2008348157 A1 23-07-2009 WO 2009091434 A1 23-07-2009
US 6577947	B1	10-06-2003	NONE
US 2006259234	A1	16-11-2006	NONE
FR 2923008	A1	01-05-2009	US 2009109065 A1 30-04-2009
WO 2005079179	A1	01-09-2005	NONE
FR 2894056	A1	01-06-2007	EP 1960984 A1 27-08-2008 WO 2007060167 A1 31-05-2007 US 2009319101 A1 24-12-2009
FR 2905505	A1	07-03-2008	US 2008065312 A1 13-03-2008
WO 2007072015	A2	28-06-2007	AT 515013 T 15-07-2011 EP 1969576 A2 17-09-2008 EP 2372672 A2 05-10-2011 GB 2433796 A 04-07-2007 US 2009005960 A1 01-01-2009
US 2010049380	A1	25-02-2010	FR 2935181 A1 26-02-2010

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-12(completely); 15-17(partially)

Method and apparatus for determining in an electronic flight plan processing system the existence of conflict between flight plans

2. claims: 13, 14(completely); 15-17(partially)

Method and apparatus for accessing in an electronic flight plan processing system stored flight plans in accordance with inspection criteria.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 18, 19

The application does not meet the requirements of Article 6 PCT, because claims 18, 19 are not clear. The claims, which do not define any technical feature rather merely refer to the drawings, cover such an extremely large number of possible methods and apparatus that a meaningful search is not possible.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2) declaration be overcome.