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- (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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.

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- 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:**
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(54) **Title:** METHOD OF AND APPARATUS FOR DISPLAYING AN OUTPUT SURFACE AVOIDING THE USE OF A FRAMEBUFFER FOR FREQUENTLY CHANGING REGIONS

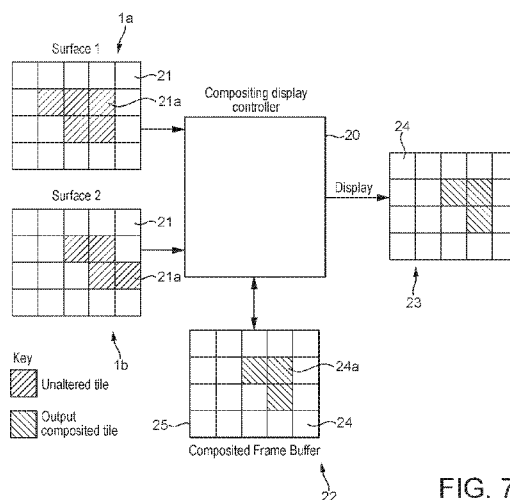


FIG. 7

(57) **Abstract:** A display controller provides an output frame to a display for display by sending respective output surface regions that together form the output frame, each respective region of the output surface being generated from a respective region or regions of one or more input surfaces, to the display. When a new version of an output surface region is generated, the display controller determines whether the output surface region has been unchanged for a period, and if it has, then stores the generated output surface region in a frame buffer. Then, for the subsequent frame, checks are performed to see if the output surface region could have changed. If there is no change the stored version of the output surface region is reused, but if there is a change in the output surface region, the output surface region is regenerated.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/053668

A. CLASSIFICATION OF SUBJECT MATTER

INV. G06T1/60 G09G5/393
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)
G06T

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	GB 2 474 114 A (ADVANCED RISC MACH LTD [GB]) 6 April 2011 (2011-04-06) abstract page 4, paragraph 3 - paragraph 5 -----	1-21, 31-51
X	US 2008/186319 A1 (BONER ALON [IL]) 7 August 2008 (2008-08-07) paragraph [0045] - paragraph [0047] -----	1-21, 31-51
X	US 6 359 625 B1 (PEREGO RICHARD E [US]) 19 March 2002 (2002-03-19) column 2 -----	1-21, 31-51

☐ 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 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

10 July 2015

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2014/053668

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.: 22-30, 52-67
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:

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

Continuation of Box II.2

Claims Nos.: 22-30, 52-67

The application falls short of the requirements of clarity and conciseness of Art. 6 PCT by presenting multiple independent method claims 1,22 and apparatus claims 31,52,61,62, The applicant not having selected the claims to be searched as indicated in the invitation to provide informal clarification, the search examiner has consider claims 1-21, and 31-51, i.e. the respectively first independent claim in each category in the dependent claims referring to it,

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2014/053668

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2474114	A	06-04-2011	CN 102033728 A	27-04-2011
			CN 102033809 A	27-04-2011
			GB 2474114 A	06-04-2011
			GB 2474115 A	06-04-2011
			JP 2011070671 A	07-04-2011
			JP 2011070672 A	07-04-2011

US 2008186319	A1	07-08-2008	NONE	

US 6359625	B1	19-03-2002	NONE	
