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20120 (US). **JONES, Mark** [US/US]; 15342 Oakmere  
Place, Centreville, VA 20120 (US). **CHERASARO, Troy**  
[US/US]; 1524 Kestral Court, Culpeper, VA 22701 (US).

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(74) Agents: **SANTARELLI, Bryan, A.** et al.; Graybeal Jack-  
son Haley LLP, 155-108th Avenue NE, Suite 350, Bellevue,  
WA 98004 (US).

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(71) Applicant (*for all designated States except US*): **LOCK-  
HEED MARTIN CORPORATION** [US/US]; Building  
400, Mail Drop 043, 9500 Godwin Drive, Manassas, VA  
20110 (US).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **SCHULZ, Kenneth,  
R.** [US/US]; 10506 Golden Autumn Court, Manassas,  
VA 20112 (US). **RAPP, John, W.** [US/US]; 9350 River  
Crest Road, Manassas, VA 20110 (US). **JACKSON,  
Larry** [US/US]; 13093 Crestbrook Drive, Manassas, VA

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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: PIPELINE ACCELERATOR HAVING MULTIPLE PIPELINE UNITS AND RELATED COMPUTING MACHINE  
AND METHOD

(57) Abstract: A pipeline accelerator includes a bus and a plurality of pipeline units, each unit coupled to the bus and including at least one respective hardwired-pipeline circuit. By including a plurality of pipeline units in the pipeline accelerator, one can increase the accelerator's data-processing performance as compared to a single-pipeline-unit accelerator. Furthermore, by designing the pipeline units so that they communicate via a common bus, one can alter the number of pipeline units, and thus alter the configuration and functionality of the accelerator, by merely coupling or uncoupling pipeline units to or from the bus. This eliminates the need to design or redesign the pipeline-unit interfaces each time one alters one of the pipeline units or alters the number of pipeline units within the accelerator.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 03/34555

|  |   |   |   |   |
|--|---|---|---|---|
| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>G06F15/80      G06F15/78      G06F13/38  |   |   |   |   |
| According to International Patent Classification (IPC) or to both national classification and IPC  |   |   |   |   |
| <b>B. FIELDS SEARCHED</b>  |   |   |   |   |
| Minimum documentation searched (classification system followed by classification symbols)<br>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 practical, search terms used)<br>EPO-Internal   |   |   |   |   |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>  |   |   |   |   |
| Category °   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.   |   |   |
| X  | US 5 892 962 A (CLOUTIER ET AL)<br>6 April 1999 (1999-04-06)<br>figures 1,2<br>column 2, line 56 - column 3, line 14<br>-----   | 1-4,15,<br>20,21  |   |   |
| <input type="checkbox"/> Further documents are listed in the continuation of box C.  |   |   |   |   |
| <input checked="" type="checkbox"/> Patent family members are listed in annex.   |   |   |   |   |
| ° Special categories of cited documents :  |   |   |   |   |
| <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                     "A" document defining the general state of the art which is not considered to be of particular relevance<br/>                     "E" earlier document but published on or after the international filing date<br/>                     "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)<br/>                     "O" document referring to an oral disclosure, use, exhibition or other means<br/>                     "P" document published prior to the international filing date but later than the priority date claimed                 </td> <td style="width: 50%; border: none; vertical-align: top;">                     "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<br/>                     "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<br/>                     "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.<br/>                     "&amp;" document member of the same patent family                 </td> </tr> </table> |   |   | "A" document defining the general state of the art which is not considered to be of particular relevance<br>"E" earlier document but published on or after the international filing date<br>"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)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"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<br>"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<br>"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.<br>"&" document member of the same patent family |
| "A" document defining the general state of the art which is not considered to be of particular relevance<br>"E" earlier document but published on or after the international filing date<br>"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)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"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<br>"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<br>"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.<br>"&" document member of the same patent family |   |   |   |
| Date of the actual completion of the international search<br><br><div style="text-align: center; font-size: 1.2em;">25 February 2005</div>   |   | Date of mailing of the international search report<br><br><div style="text-align: center; font-size: 1.2em;">23. 12. 2005</div> |   |   |
| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016   |   | Authorized officer<br><br><div style="text-align: center; font-size: 1.2em;">Bosch Vivancos, P</div>                            |   |   |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/34555

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
  
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.:

1-4,15,20,21

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- 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: 1-4,15,20,21

1.1. claims: 1-3,15,20,21

Memory system for a processor array and method of use.

1.2. claim: 4

A reconfigurable processor array  
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2. claims: 5-14,16-19,22

Apparatus and method for routing data in a processor array.  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/34555

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |            |
|--|------------------|-------------------------|------------------|------------|
| US 5892962                             | A                | 06-04-1999 CA           | 2215598 A1       | 12-05-1998 |

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