

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 November 2006 (16.11.2006)

PCT

(10) International Publication Number
WO 2006/122286 A3

- (51) International Patent Classification:
G06F 15/167 (2006.01)
- (21) International Application Number:
PCT/US2006/018345
- (22) International Filing Date: 11 May 2006 (11.05.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
11/128,568 13 May 2005 (13.05.2005) US
- (71) Applicant (for all designated States except US): TEXAS INSTRUMENTS INCORPORATED [US/US]; P.O.Box 655474, Mail Station 3999, Dallas, TX 75265-5474 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): JAGATHESAN, Shoban, Srikrishna [IN/US]; 411 Walnut Dr., Murphy, TX 75094 (US). AGARWALA, Sanjiva [US/US]; 2608 Foxcreek Dr., Fichardson, TX 75082 (US). CASTILLE, Kyle [US/US]; 1614 Westhurst Lane, Houston, TX 77077 (US). AN, Quang-Dieu [US/US]; 3108 Santana Lane, Plano, TX 75023 (US).
- (74) Agents: FRANZ, Warren, L. et al.; TEXAS INSTRUMENTS INCORPORATED, DEPUTY GENERAL PATENT COUNSEL, P.O.Box 655474, M/S 3999, Dallas, TX 75265-5474 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

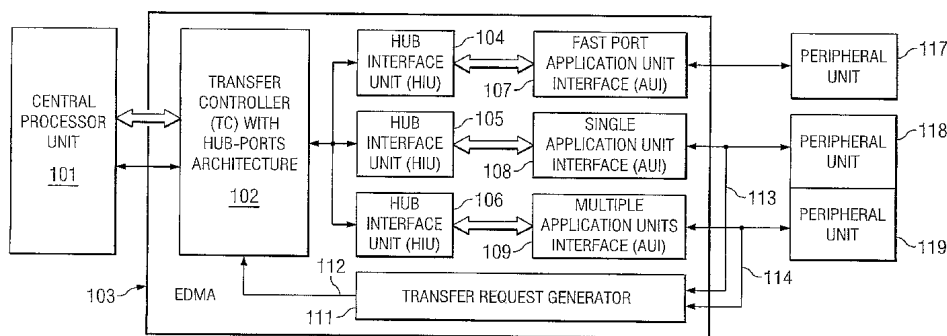
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report

(88) Date of publication of the international search report:
23 April 2009

(54) Title: COMMAND-RE-ORDERING IN HUB INTERFACE UNIT BASED ON PRIORITY



(57) Abstract: Command reordering in the hub interface unit (HIU) (104) of Enhanced Direct Memory Access (EDMA) (103) functions is described. Without command reordering in the EDMA, commands are issued by the HIU to the peripheral in order of issue. If the higher priority transfers are issued later by the EDMA, the previously issued lower priority transfers would block the higher priority transfers. Command reordering in the HIU causes transfers to be reordered and issued to the peripheral based on their priority. Reordering allows the EDMA and HIU is to give due service to high priority transfer requests with decreased weight placed on the order in which the requests were issued.

WO 2006/122286 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/18345

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - G06F 15/167 (2007.01)
 USPC - 709/213
 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)
 USPC - 709/213

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 USPC: 345/520, 543; 710/100; 711/173; 712/29

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PubWEST(PGPB,USPT,EPAB,JPAB) - terms: direct memory access, apparatus, hub unit, data transfer, interface unit, plural port, port, write command, write data, read command, read data, queue, priority

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2002/0013821 A1 (KASPER et al.) 31 January 2002 (31.01.2002), abstract and para [0051], [0053]-[0056], [0059]-[0060], [0063]-[0065], [0068], [0071]-[0074].	1 ----- 2-7
Y	US 2005/0078694 A1 (ONER et al.) 14 April 2005 (14.04.2005), abstract and para [0023]-[0027], [0043]-[0044], [0075], [0077], [0079]-[0087], [0092]-[0094], [0096].	2-7
A	US 6,141,692 A (LOEWENSTEIN et al.) 31 October 2000 (31.10.2000) entire document, especially abstract and para [0009]-[0012], [0019], [0024], [0030], [0033], [0035].	1-7

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 23 July 2007 (23.07.2007)	Date of mailing of the international search report 19 DEC 2007
--	--

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
---	--