

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
10 March 2005 (10.03.2005)

PCT

(10) International Publication Number  
WO 2005/022338 A3

- (51) International Patent Classification:  
G06F 17/50 (2006.01)
- (21) International Application Number:  
PCT/US2004/027887
- (22) International Filing Date: 27 August 2004 (27.08.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
10/651,560 29 August 2003 (29.08.2003) US
- (71) Applicant (for all designated States except US): ARC INTERNATIONAL [US/US]; 402 Amherst Street, Nashua, NH 03063 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HEWITT, Lee [GB/GB]; 158 Bois Moor Road, Chesham Buckinghamshire (GB). FARR, Mark [GB/GB]; 32 Loates Lane, Watford Hertfordshire (GB). DONG, Chao [CN/GB]; 56 Chandler Close, Bath BAI 4EG (GB). BRADLEY, Simon [GB/GB]; 14 Wheelrights, Weston Turville, Aylesbury, Buckinghamshire (GB).
- (74) Agent: GAZDZINSKI, Robert, F.; Gazdzinski & Associates, Suite 375, 11440 West Bernardo Court, San Diego, CA 92127 (US).

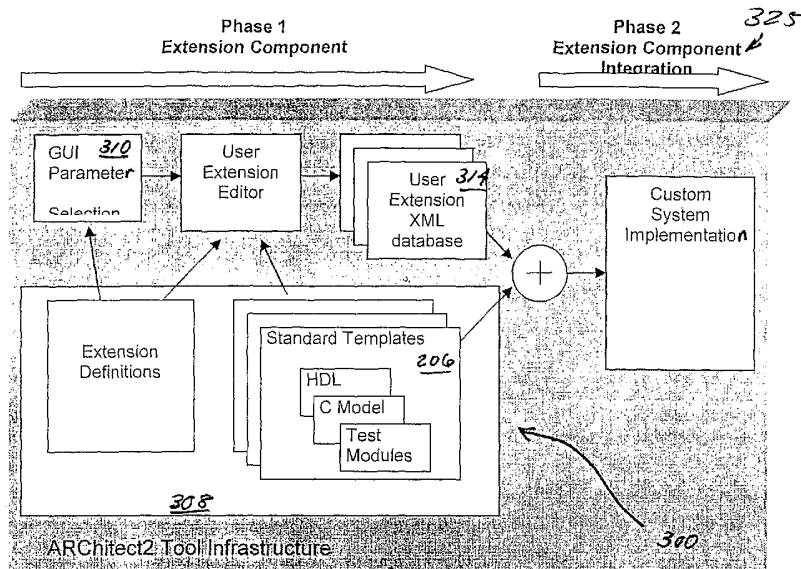
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, 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, IT, LU, 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).

Published:  
— with international search report

(88) Date of publication of the international search report:  
28 December 2006

[Continued on next page]

(54) Title: IMPROVED COMPUTERIZED EXTENSION APPARATUS AND METHODS



(57) Abstract: Apparatus and methods for integrated circuit (IC) design (fig 1-14), including the configuration and addition of extensions to the design (fig 1-14). In one exemplary embodiment, a computer program rendered in an object-oriented language implementing the aforementioned methods for automatically adding user-customized extensions to digital processors is disclosed (fig 1-14). The program comprises an extension tool which is adapted for varying levels of abstraction, and to significantly automate the creation and generation of various different extension types including for example ALUs, condition codes, and registers (fig 1-14). A markup language (e.g., XML) database of abstracted extension components is utilized to permit ready addition and modification of extensions, as well as applicability of the extensions across different target architectures (fig 1-14).

WO 2005/022338 A3



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US04/27887

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC: **G06F 17/50**( 2006.01)  
  
 USPC: 716/1,716/18  
 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)  
 U.S. : 716/1, 716/18

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)  
 EAST

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US PUB 2002/0156929 (HEKMATPOUR) 24 October 2002 (24.10.2002) fig 1-8	1-41
X	US PUB 2003/0009658 (CHEN et al) 09 January 2003 (09.01.2003) fig 1-20	1-41

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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
15 June 2006 (15.06.2006)

Date of mailing of the international search report  
**28 AUG 2006**

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 *Phonela for Bell*  
 Paul Dinh  
 Telephone No. (571) 272-1890