(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 March 2005 (17.03.2005)

PCT

(10) International Publication Number
WO 2005/024666 A2

(51) International Patent Classification[7]: G06F 17/30

(21) International Application Number:
PCT/US2004/024569

(22) International Filing Date: 29 July 2004 (29.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

10/646,580	21 August 2003 (21.08.2003)	US
PCT/US03/26144	21 August 2003 (21.08.2003)	US
10/693,574	24 October 2003 (24.10.2003)	US

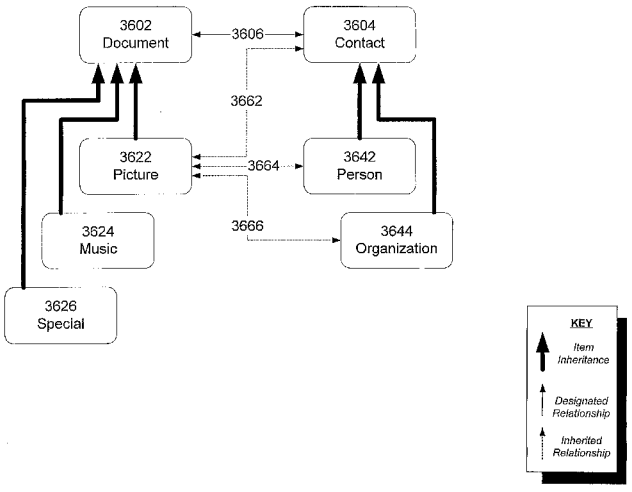
(71) Applicant *(for all designated States except US)*: **MICROSOFT CORPORATION** [US/US]; One Microsoft Way, Redmond, WA 98052 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **DEMIROSKI, Bekim** [MK/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **WHITNEY, Robert, T.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **THOMPSON, Patrick, J.** [GB/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **NORI, Anil, K.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **AGARWAL, Sameet** [IN/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **CELIS, Pedro** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98053 (US). **CAMPBELL, David, G.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **TEREK, F. Soner.** [TR/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **CAMERON, Kim** [CA/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **SMITH, Walter, R.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **SHAKIB, Darren, A.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **BALLOU, Nathaniel, H.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **ACHARYA, Srinivasmurthy, P.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **RAMAN, Balan, Sethu** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US). **SPIRO, Peter, M.** [US/US]; Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 (US).

[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR EXTENSIONS AND INHERITANCE FOR UNITS OF INFORMATION MANAGEABLE BY A HARDWARE/SOFTWARE INTERFACE SYSTEM



(57) Abstract: By modeling real-world application objects with complex structures, behaviors, and operations described by a schema which is enforced by the hardware/software interface system, various embodiments of the present invention provide rich sub-typing functionality (3602, 3604, 3606, 6322, 3624, 3626, 3642, 3644) by extending Items using extensions which provide additional data structure to already existing items type structures. Extensions are strongly typed instances that cannot exist independently and must be attached to an item or a Nested element. Extensions are also intended to address multi-typing issues by enabling the overlap of type instances.

WO 2005/024666 A2

(74) **Agents: ROCCI, Steven, J.** et al.; Woodcock Washburn LLP, One Liberty Place, 46th Floor, Philadelphia, PA 19103 (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*

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.