

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 September 2001 (20.09.2001)

PCT

(10) International Publication Number
WO 01/69330 A3

(51) International Patent Classification⁷: **G05B 19/042**

(21) International Application Number: PCT/US01/07587

(22) International Filing Date: 9 March 2001 (09.03.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/188,561 10 March 2000 (10.03.2000) US

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

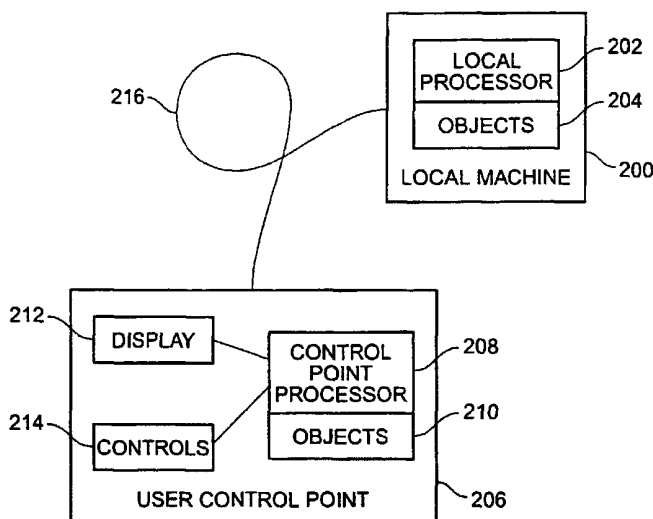
(84) Designated States (*regional*): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— with international search report

(88) Date of publication of the international search report:
28 March 2002

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.

(54) Title: DISTRIBUTED MACHINE CONTROL SOFTWARE ARCHITECTURE



(57) **Abstract:** Distributed machine control software architecture permits modular development of complex machine control systems and allows functional subsystems comprised of object modules to be distributed and remotely controlled and monitored. Software applications are broken into logical subsystems with standardized data and transaction interfaces that act as servers and clients. This permits flexible reconfiguration of machine functions for a variety of applications and promotes system security and reliability by isolating modifications to functional subsystems. In addition, functional modules of the same application do not need to reside in the same host, but can be remotely located over local intranet or via public Internet. In machine control applications this permits real-time and time critical process sequence objects to be resident in the local machine controller while the user interface, database and command generator are at any remote network location, including any Internet addressed location. Control can be quickly and temporarily reconfigured to allow a remote operator or specialist to study, monitor, or modify a machine control process.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/07587

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G05B19/042

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)

IPC 7 G05B

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 30964 A (STANFORD RES INST INT) 16 November 1995 (1995-11-16) the whole document ---	1,2
X	DE 196 49 082 C (FRAUNHOFER GES FORSCHUNG) 8 January 1998 (1998-01-08) the whole document ---	1,2
X	SMITH C S ET AL: "CYBER CUT: A WORLD WIDE WEB BASED DESIGN-TO-FABRICATION TOOL" JOURNAL OF MANUFACTURING SYSTEMS, SOCIETY OF MANUFACTURING ENGINEERS, DEARBORN, MI, US, vol. 15, no. 6, 1996, pages 432-442, XP000636197 ISSN: 0278-6125 page 432 -page 442 --- -/--	1,2



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Patent family members are listed in annex.

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Date of the actual completion of the international search

12 November 2001

Date of mailing of the international search report

21/11/2001

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/07587

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 483 440 A (AONO TOSHIHIRO ET AL) 9 January 1996 (1996-01-09) the whole document ---	1,2
A	EP 0 825 506 A (FOXBORO CORP) 25 February 1998 (1998-02-25) the whole document ---	1,2
A	US 5 805 442 A (GOLDMAN CRAIG E ET AL) 8 September 1998 (1998-09-08) the whole document ---	1,2
A	US 5 588 109 A (EICHBERGER HORST ET AL) 24 December 1996 (1996-12-24) the whole document -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/07587

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9530964	A	16-11-1995	US 5631973 A	20-05-1997
			CA 2189775 A1	16-11-1995
			EP 0758469 A1	19-02-1997
			JP 10504763 T	12-05-1998
			WO 9530964 A1	16-11-1995
			US 6259806 B1	10-07-2001
			US 5696837 A	09-12-1997
			US 5859934 A	12-01-1999
DE 19649082	C	08-01-1998	DE 19649082 C1	08-01-1998
			AU 5484498 A	22-06-1998
			WO 9823216 A1	04-06-1998
US 5483440	A	09-01-1996	JP 6344279 A	20-12-1994
EP 0825506	A	25-02-1998	EP 0825506 A2	25-02-1998
US 5805442	A	08-09-1998	US 5975737 A	02-11-1999
			US 5982362 A	09-11-1999
US 5588109	A	24-12-1996	NONE	