
References

1. Adams, W. M., "Manufacturing Network Performance and Environmental Measurements", *Proceedings Enterprise Networking Event, ENE '88*, Baltimore, MD (June 1988).
2. Albus, J. S., Barbara, A. J., and Nagel, R. N., "Theory and Practice of Hierarchical Control," *Proceedings Twenty Third IEEE Computer Society International Conference*, pp 18-39 (September 1981).
3. Albus, J. S., McLean, C. R., Barbara, A. J., and Fitzgerald, M. L., "Hierarchical Control for Robots in an Automated Factory," *13th ISIR/Robots 7 Symposium*, Chicago, Illinois (April 1983).
4. Anonymous, *PROWAY*, International Electrotechnical Commission, (Continuing Publications), Geneva, Switzerland.
5. Anonymous, *Data Base Design - Steel Operations*, Applications Manual GE20-0479-0, International Business Machines, Inc., White Plains, New York (June 1975).
6. Anonymous, *CAMAC Instrumentation and Interface Standards*, IEEE Standards 583, 595, 596 and 683, The Institute of Electrical and Electronic Engineers, New York, (1976).
7. Anonymous, *IEEE Standard Digital Interface for Programmable Instrumentation*, IEEE Standard 488, The Institute of Electrical and Electronic Engineers, New York, (1978).
8. Anonymous, *Data Processing - Open Systems Interconnection-Basic Reference Model*, ISO DIS 7498, International Standards Organization, Geneva, Switzerland (December 3, 1980).
9. Anonymous, *Strategic Plan, Overall Computer Control*, Gary Works, U. S. Steel Corporation, Gary, Indiana (1980).
10. Anonymous, *IEEE Project 802, A Status Report - Local Network Standard Committee - Draft C*, Institute of Electrical and Electronic Engineers, New York, (May 17, 1982).
11. Anonymous, *Information Flow Model of Generic Production Facility*, The Foxboro Company, Foxboro, Massachusetts (1984).
12. Anonymous, *Local Area Networks, 802.3, Carrier Sense, Multiple Access With Collision Detection*, The Institute of Electrical and Electronic Engineers, Inc., New York, New York (October 1985).
13. Anonymous, *Local Area Networks, 802.4, Token-Passing Bus Access Method*, The Institute of Electrical and Electronic Engineers, Inc., New York, New York (October 1985).
14. Anonymous, *Local Area Networks, 802.5, Token Ring Access Method*, The Institute of Electrical and Electronic Engineers, Inc., New York, New York (October 1985).
15. Anonymous, *Information Flow Model of Generic Production Facility*, The Foxboro Company, Foxboro, Massachusetts (1986).

16. Anonymous, *Minutes, Reference Models Working Group One, ISO/TC184/SC5/WG1*, International Standards Organization, Geneva, Switzerland (1986).
17. Anonymous, *PROWAY LAN, ISA S 72.01*, Instrument Society of America, Research Triangle Park, North Carolina, Second Printing (1987).
18. Anonymous, *Manufacturing Message Specification*, (EIA Project 1393A Draft 6), ISO/DP 9506, Instrument Society of America, Research Triangle Park, North Carolina (May 1987).
19. Anonymous, "A Buyer's Guide to DBMS/Data Dictionaries," in *DataPro Reports on Software, Vol. 3, SW10-000AP-101*, Peck, J. Richard, Editor, DataPro Research Corporation, Delran, NJ 08075 (May 1987).
20. Anonymous, *Industrial Automation System Model*, Nagoya Works, Nippon Steel Corporation, Nagoya, Japan (June 11, 1987).
21. Anonymous, "Production Management System, Functional Structure," *Lecture Notes* presented at Purdue University, West Lafayette, Indiana, (June 20, 1987), Industrial Systems Division, Texas Instruments, Inc., Johnson City, TN.
22. Anonymous, *Manufacturing Automation Protocol, Version 3.0*, General Motors Corporation, Society of Manufacturing Engineers, Detroit, Michigan (September 1987).
23. Anonymous, *Process Communication Architecture - Working Group Draft E*, ISA ds 72.03, Instrument Society of America, Research Triangle Park, North Carolina.
24. Anonymous, *Process Messaging Service - Working Group Draft G*, ISA ds 72.02, Instrument Society of America, Research Triangle Park, North Carolina.
25. Anonymous, "Data Management Software Summary," in *DataPro Reports on Microcomputers, Vol. 2, CM45-000-501*, Peck J. Richard, Editor, DataPro Research Corporation, Delran, NJ 08075 (January 1988).
26. Anonymous, "Vendor Directory: There Must Be 50 Ways to DBMS," *Digital News* (April 18, 1988).
27. Anonymous, *Map in the Process Industries*, White Paper Developed by the Process Industries Focus Group of the MAP/TOP Users Group, Draft 4.0 (April 21, 1988).
28. Anonymous, *The Integrated Data Base Management Program (IDBM)*, CIM Branch, Air Force Materials Laboratory, Wright-Patterson Air Force Base, Ohio (September 1985).
29. Anonymous, *Integrated Information Support System (IISS) Enhancements*, Boeing Military Airplane Company, Wichita, Kansas (September 1987).
30. Ash, R. H. "Manufacturing Systems Integrated by Information and Control," *Control Engineering, Vol. 33, No. 5*, pp 67-69 (May 1986).
31. Beck, C. L., *Modelling and Simulation of Flexible Control Structures for Automated Manufacturing Systems*, Technical Report, Robotics Institute, Carnegie-Mellon University (1985).
32. Boehm, B. W., "Software Engineering - As It Is," CH 1479-5/79/0000, *IEEE*, pp 11-21 (1979).
33. Boehm, B. W. and Standish, T. A., "Software Technology in the 1990's: Using An Evolutionary Paradigm," *Computer, Vol. 16, No. 11* (November 1983).
34. Brewster, D. B., "Paper-Mill-Wide System Design From the User's Viewpoint," *Proceedings TAPPI 1984 Engineering Conference*, pp 473-480, Boston, Massachusetts (September 1984).
35. Brewster, D. B., Uronen, Paavo, and Williams, T. J., *Hierarchical Computer Control in the Paper Industry, Report Number 111*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (March 1985).

36. Brooks, F. P., Jr., *The Mythical Man-Month*, Addison-Wesley (1975).
37. Charnes, A., and Cooper, W. W., *Management Models and Industrial Applications of Linear Programming*, John Wiley and Sons, Inc., New York, NY (1961).
38. CIM Reference Model Working Group, ISO/TC184/SC5/WG1, *Technical Report on CIM Reference Model* (July 1987).
39. Committee on the Effective Implementation of Advanced Manufacturing Technology, Manufacturing Studies Board, Commission on Engineering and Technical Systems, *Human Resources Practices for Implementing Advanced Manufacturing Technology*, National Academy Press, Washington, D.C. (1986).
40. Conaway, Jack, "What's in a Name: Plain Talk About CIM," *Computers in Mechanical Engineering*, Vol. 4, No. 3, pp 23-31 (November 1985).
41. Dallimonti, Renzo, "The Horizon Plant," *Control Engineering*, Vol. 33, No. 5, pp 72-76 (May 1986).
42. Date, C. J., *A Guide to DB2*, Addison-Wesley Publishing Company, Menlo park, CA (1985).
43. DeMarco, Tom, *Structured Analysis and System Specification*, Prentice-Hall, Englewood Cliffs, NJ (1979).
44. Denzler, D. R., Moodie, C. L., and Williams, T. J., "Some Industrial Administration Factors in the Computer Control of Chemical Plants," *Proceedings CHEMECA-70- Conference*, Melbourne, Australia, pp 7, 1-21 (August 1979).
45. Digital Equipment Corporation and Nederlandse Phillips Bedrijven B V, *Reference Model of Production Systems, Version 1.0*, Digital Equipment Corporation Internal Working Paper, Maynard, Massachusetts (1986).
46. Eckard, Mark, "Tackling the Interconnect Dilemma," *Instruments and Control Systems*, Vol. 55, No. 5, May 1982, pp. 36-43.
47. Elbling, Philip, Private Communication, IBM Corporation (April 24, 1987).
48. Elzer, P. F., "Software Project Management," in *Proceedings of the IFAC Conference on Software for Computer Control*, Graz, Austria, Pergamon Press, London, pp 1-12 (1986).
49. Eriksson, Lennart and Edlund, S. G., Editors, *Proceedings EUCEPA Symposium*, Stockholm, Sweden (May 1982); also 1986 Symposium (May 1986).
50. Fadum, Ole-Kristian, "A Structured Approach to Mill Wide Automation," *Proceedings, TAPPI 1984 Engineering Conference*, pp 467-471, Boston, Massachusetts (September 1984).
51. Farowich, S. A., "Communicating in the Technical Office," *IEEE Spectrum*, Vol. 23, No. 4, pp 63-67 (April 1986).
52. Finkelstein, Richard, "Lingua Franca for Databases," *PC Tech Journal*, Vol. 5, No. 12 (December 1987).
53. Flatau, Ulrich, *Digital's CIM Architecture, Revision 1.1*, Digital Equipment Corporation, Marlboro, Massachusetts (March 1986).
54. Fox, M. S., Allen, B. P., Smith, S. F., and Strohm, G. A., *ISIS: A Constraint-Directed Reasoning Approach to Job Shop Scheduling*, Technical Report CMU-RI-TR-83-8, Intelligent Systems Lab., The Robotics Institute, Carnegie-Mellon University (1983).
55. Fujishima, Chico, Straus, R. W., et al., *Detailed Description, Nippon Steel Company, Hierarchical Integrated On-Line Computerized Control System*, Galaxy, Inc., Washington, D. C., p 119 (July 1979).
56. Gershwin, S. B., Hildebrant, R. R., Suri, Rajan, and Mitter, S. K., "A Control Perspective on Recent Trends in Manufacturing Systems," *IEEE Control Systems Magazine*, Vol. 6, No. 2, pp 3-14 (April 1986).
57. Gochi, Eiji, et al., "Special Issue on the Computer System," *The Sumitomo Search*, No. 24, Sumitomo Metal Industries, Ltd., Osaka, Japan (November 1980).

58. Grierson, D. K., "The Automated Factory - An Engineering Challenge," *Instruments and Control Systems*, Vol. 55, No. 3, pp 36-41 (March 1982).
59. Halstead, M. H., *Elements of Software Science*, Elsevier, North Holland (1977).
60. Hatvany, Jozsef, "Dreams, Nightmares and Reality," in *Computer Applications in Production and Engineering*, E. A. Warman, Editor, North-Holland Publishing Company, Amsterdam, pp 3-10 (1983).
61. Hiatt, W. H. and Petersen, D.C., *Reliability Analysis of the Proposed Hierarchical Computer Control System for Large Steel Manufacturing Complexes, Report Number 93*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (September 1977).
62. Hindin, H. J. and Manuel, T., "Local Networks Will Multiply Opportunities in the 1980's," *Electronics*, Vol. 55, No. 2, pp 88-89 (January 27, 1982).
63. Ignizio, J. P., *Goal Programming and Extensions*, D. C. Heath and Company, Lexington, KY (1976).
64. Inoue, Y., et al., "Case Study 5, Practical Management and Control in the Steel Industry," *Proceedings, IFAC Congress, Kyoto, Japan*, pp CS-106 to CS-117 (August 1981).
65. Jurgen, R. K., Issue Editor, *Data-Driven Automation, IEEE Spectrum*, Vol. 20, No. 5, pp 34-96 (May 1983).
66. Kaminski, M. A., "Protocols for Communicating in the Factory," *IEEE Spectrum*, Vol. 23, No. 4, pp 56-62 (April 1986).
67. Key, M., "The Reasons Why Software Has a Bad Name," *Proceedings of the First IFAC Workshop on Experience With the Management of Software Projects*, Heidelberg, May 1986, Pergamon Press, to be published.
68. Kompass, E. J., Editor, *Interfacing Plant Controls and Management's Computers, Special Issue, Control Engineering*, Vol. 32, No. 6 (June 1985).
69. Koppel, L. B., "Plantwide Control: Planning for Organized Information Technology," Paper 86-2690, Instrument Society of America, International Conference and Exhibit, Houston, Texas (October 13-16, 1986).
70. Kramer, S., *Automation of Information Systems*, Estel Hoogovens BV, IJmuiden, The Netherlands (July 1981).
71. Kunes, W. R., "Human Resource Implications of CIM," *Proceedings, CIM Management Forum*, Digital Equipment Corporation, Orlando, Florida (January 25-27, 1988).
72. Lee, S. M., *Goal Programming for Decision Analysis*, Auerbach Publishing Company, Philadelphia, PA (1972).
73. Loundes, J. C., et al., "Aerospace Factory of the Future," *Aviation Week and Space Technology*, Vol. 117, No. 5, pp 40-101 (August 2, 1982).
74. Loundes, J. C., et al., "Technical Survey: Factory of the Future," *Aviation Week and Space Technology*, pp 50-71 (December 22, 1986).
75. Ludzinsky, A. J., "As Serial Communications Buses Proliferate, Will Standards Develop," *Control Engineering*, Vol. 32, No. 10, pp 51-52 (October 1985).
76. Mackulak, G. T., and Moodie, C. L., *A Production Control Strategy for Hierarchical Multi-Objective Scheduling with Specific Application to Steel Manufacture*, Report Number 112, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, IN (May 1979).
77. Mackulak, G. T., Todd, D. A., and Moodie, C. L., *A Computer Simulation of Steel Production Used as a Tool to Investigate Hierarchical Production Control*, Report Number 70, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (August 1975).
78. Martin, D., "Practical Improvements in the Management of Real-Time Software Projects," *Proceedings of First IFAC Workshop on Experience With the Management of SW-*

- Projects*, Heidelberg, May 1986, Pergamon Press, to be published.
79. McCarthy, J. J., "MAP and the Integration of Plant Data Bases," in *Standards in Information Technology and Industrial Control*, N. E. Malagardis and T. J. Williams, Editors, North Holland Publishing Company, Amsterdam, The Netherlands, 1988.
 80. McCarthy, J. J. and Mikkilineni, Krishna, "Considerations for Distributed Data Bases in the Computer Integrated Business," Paper Presented at the 43rd Annual Conference and Exhibition, Instrument Society of America, Houston, TX (October 16-21, 1988).
 81. McCarthy, J. J., and Ruckman, R. P., "The Application of the CIM Reference Model to a Continuous Process Plant," *Advanced Control in Computer Integrated Manufacturing*, Morris, H. M., Kompass, E. J. and Williams, T. J., Editors, Purdue University, West Lafayette, Indiana (September 28-30, 1987), pp 87-96.
 82. Metzger, D.P., and McCarthy, J. J., "The Challenge of Integrating Hierarchical Control Across Distributed Processors on a Plant-Wide Network," in *Advanced Control Techniques Move From Theory to Practice, Some Techniques That Have Made It*, Morris, H. M., Kompass, E. J. and Williams, T. J., Editors, Purdue University, West Lafayette, IN (September 1986).
 83. Miyake, Jukio, et al., "Ohgishima Special Issue," *Nippon Kokan Technical Report, No. 28*, Nippon Kokan K. K., Tokyo, Japan (June 1980).
 84. Mori, K., "Distributed Control System in Japanese Steel Industry," *Proceedings, International Seminar on Distributed Control*, Delhi, India (September 10-12, 1986).
 85. Parunak, H. V., and White, J. F., Private Communications to CIM Reference Model Committee, (March 2-3, 1987).
 86. Parunak, H. V., and White, J. F., "A Framework for Comparing Factory Reference Models," 1987 IEEE Workshop on Languages for Automation, Vienna, Austria, (August 24-27, 1987).
 87. Parunak, H.V., White, J. F., Judd, Robert, Irish, B. W., and Kendrick, James, *An Architecture for Heuristic Factory Control*, Industrial Technology Institute, Ann Arbor, Michigan (March 26, 1986).
 88. Phister, M., Jr., *Data Processing, Technology and Economics*, Digital Press (1979).
 89. Prage, J. H., Personal Communication to the CIM Reference Model Committee, International Purdue Workshop on Industrial Computer Systems, Inland Steel Company, E Chicago, Indiana (March 8, 1988).
 90. Project Staff, *Tasks and Functional Specifications of the Steel Plant Hierarchy Control System, Report Number 98*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (September 1977; Revised June 1984).
 91. Putnam, L. H., "A General Empirical Solution to the Macro Software Sizing and Estimating Problem," *IEEE Trans. on SW-Engr.*, Vol. SE-4, No. 4 (July 1978).
 92. Reinhardt, Andrew, "Small Systems for Distributed Process Control," *Measurements and Control*, pp 162-166 (April 1986).
 93. Roethlisberger, F. J., and Dickson, W. J., *Management and the Worker*, Harvard University Press, Cambridge, Massachusetts (1947).
 94. Rogers, D. G., and Moodie, C. L., *User's Guide to the Steel Plant Simulation Model*, Report Number 85, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (August 1976).
 95. Saridis, G. N., "Toward the Realization of Intelligent Controls," *Proceedings of the IEEE*, Vol. 67, No. 8, p 1115 (August 1979).
 96. Schaffer, E. J., and Williams, T. J., An Analysis of Fault Detection, Correction and Prevention in Industrial Computer Systems, *Report Number 106*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (October 1977).

58. Grierson, D. K., "The Automated Factory - An Engineering Challenge," *Instruments and Control Systems*, Vol. 55, No. 3, pp 36-41 (March 1982).
59. Halstead, M. H., *Elements of Software Science*, Elsevier, North Holland (1977).
60. Hatvany, Jozsef, "Dreams, Nightmares and Reality," in *Computer Applications in Production and Engineering*, E. A. Warman, Editor, North-Holland Publishing Company, Amsterdam, pp 3-10 (1983).
61. Hiatt, W. H. and Petersen, D.C., *Reliability Analysis of the Proposed Hierarchical Computer Control System for Large Steel Manufacturing Complexes, Report Number 93*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (September 1977).
62. Hindin, H. J. and Manuel, T., "Local Networks Will Multiply Opportunities in the 1980's," *Electronics*, Vol. 55, No. 2, pp 88-89 (January 27, 1982).
63. Ignizio, J. P., *Goal Programming and Extensions*, D. C. Heath and Company, Lexington, KY (1976).
64. Inoue, Y., et al., "Case Study 5, Practical Management and Control in the Steel Industry," *Proceedings, IFAC Congress*, Kyoto, Japan, pp CS-106 to CS-117 (August 1981).
65. Jurgen, R. K., Issue Editor, *Data-Driven Automation, IEEE Spectrum*, Vol. 20, No. 5, pp 34-96 (May 1983).
66. Kaminski, M. A., "Protocols for Communicating in the Factory," *IEEE Spectrum*, Vol. 23, No. 4, pp 56-62 (April 1986).
67. Key, M., "The Reasons Why Software Has a Bad Name," *Proceedings of the First IFAC Workshop on Experience With the Management of Software Projects*, Heidelberg, May 1986, Pergamon Press, to be published.
68. Kompass, E. J., Editor, *Interfacing Plant Controls and Management's Computers, Special Issue, Control Engineering*, Vol. 32, No. 6 (June 1985).
69. Koppel, L. B., "Plantwide Control: Planning for Organized Information Technology," Paper 86-2690, Instrument Society of America, International Conference and Exhibit, Houston, Texas (October 13-16, 1986).
70. Kramer, S., *Automation of Information Systems*, Estel Hoogovens BV, Ijmuiden, The Netherlands (July 1981).
71. Kunes, W. R., "Human Resource Implications of CIM," *Proceedings, CIM Management Forum*, Digital Equipment Corporation, Orlando, Florida (January 25-27, 1988).
72. Lee, S. M., *Goal Programming for Decision Analysis*, Auerbach Publishing Company, Philadelphia, PA (1972).
73. Loundes, J. C., et al., "Aerospace Factory of the Future," *Aviation Week and Space Technology*, Vol. 117, No. 5, pp 40-101 (August 2, 1982).
74. Loundes, J. C., et al., "Technical Survey: Factory of the Future," *Aviation Week and Space Technology*, pp 50-71 (December 22, 1986).
75. Ludzinsky, A. J., "As Serial Communications Buses Proliferate, Will Standards Develop," *Control Engineering*, Vol. 32, No. 10, pp 51-52 (October 1985).
76. Mackulak, G. T., and Moodie, C. L., *A Production Control Strategy for Hierarchical Multi-Objective Scheduling with Specific Application to Steel Manufacture*, Report Number 112, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, IN (May 1979).
77. Mackulak, G. T., Todd, D. A., and Moodie, C. L., *A Computer Simulation of Steel Production Used as a Tool to Investigate Hierarchical Production Control*, Report Number 70, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (August 1975).
78. Martin, D., "Practical Improvements in the Management of Real-Time Software Projects," *Proceedings of First IFAC Workshop on Experience With the Management of SW-*

- Projects*, Heidelberg, May 1986, Pergamon Press, to be published.
79. McCarthy, J. J., "MAP and the Integration of Plant Data Bases," in *Standards in Information Technology and Industrial Control*, N. E. Malagardis and T. J. Williams, Editors, North Holland Publishing Company, Amsterdam, The Netherlands, 1988.
 80. McCarthy, J. J. and Mikkilineni, Krishna, "Considerations for Distributed Data Bases in the Computer Integrated Business," Paper Presented at the 43rd Annual Conference and Exhibition, Instrument Society of America, Houston, TX (October 16-21, 1988).
 81. McCarthy, J. J., and Ruckman, R. P., "The Application of the CIM Reference Model to a Continuous Process Plant," *Advanced Control in Computer Integrated Manufacturing*, Morris, H. M., Kompass, E. J. and Williams, T. J., Editors, Purdue University, West Lafayette, Indiana (September 28-30, 1987), pp 87-96.
 82. Metzger, D.P., and McCarthy, J. J., "The Challenge of Integrating Hierarchical Control Across Distributed Processors on a Plant-Wide Network," in *Advanced Control Techniques Move From Theory to Practice, Some Techniques That Have Made It*, Morris, H. M., Kompass, E. J. and Williams, T. J., Editors, Purdue University, West Lafayette, IN (September 1986).
 83. Miyake, Jukio, et al., "Ohgishima Special Issue," *Nippon Kokan Technical Report, No. 28*, Nippon Kokan K. K., Tokyo, Japan (June 1980).
 84. Mori, K., "Distributed Control System in Japanese Steel Industry," *Proceedings, International Seminar on Distributed Control*, Delhi, India (September 10-12, 1986).
 85. Parunak, H. V., and White, J. F., Private Communications to CIM Reference Model Committee, (March 2-3, 1987).
 86. Parunak, H. V., and White, J. F., "A Framework for Comparing Factory Reference Models," 1987 IEEE Workshop on Languages for Automation, Vienna, Austria, (August 24-27, 1987).
 87. Parunak, H.V., White, J. F., Judd, Robert, Irish, B. W., and Kendrick, James, *An Architecture for Heuristic Factory Control*, Industrial Technology Institute, Ann Arbor, Michigan (March 26, 1986).
 88. Phister, M., Jr., *Data Processing, Technology and Economics*, Digital Press (1979).
 89. Prage, J. H., Personal Communication to the CIM Reference Model Committee, International Purdue Workshop on Industrial Computer Systems, Inland Steel Company, E. Chicago, Indiana (March 8, 1988).
 90. Project Staff, *Tasks and Functional Specifications of the Steel Plant Hierarchy Control System, Report Number 98*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (September 1977; Revised June 1984).
 91. Putnam, L. H., "A General Empirical Solution to the Macro Software Sizing and Estimating Problem," *IEEE Trans. on SW-Engr.*, Vol. SE-4, No. 4 (July 1978).
 92. Reinhardt, Andrew, "Small Systems for Distributed Process Control," *Measurements and Control*, pp 162-166 (April 1986).
 93. Roethlisberger, F. J., and Dickson, W. J., *Management and the Worker*, Harvard University Press, Cambridge, Massachusetts (1947).
 94. Rogers, D. G., and Moodie, C. L., *User's Guide to the Steel Plant Simulation Model*, Report Number 85, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (August 1976).
 95. Saridis, G. N., "Toward the Realization of Intelligent Controls," *Proceedings of the IEEE*, Vol. 67, No. 8, p 1115 (August 1979).
 96. Schaffer, E. J., and Williams, T. J., An Analysis of Fault Detection, Correction and Prevention in Industrial Computer Systems, *Report Number 106*, Purdue Laboratory for Applied Industrial Control, Purdue University, West Lafayette, Indiana (October 1977).

97. Seymour, Jim, "Relational Databases: Taking the Middleground," *PC Magazine*, Vol. 7, No. 8 (April 26, 1988).
98. Seymour, Jim, "Programmable Databases: dBase and Its Challengers," *PC Magazine*, Vol. 7, No. 9 (May 17, 1988)
99. Shah, M. J., and Brecher, V. H., "Distributed Computer Control in Manufacturing," *Computers in Mechanical Engineering*, Vol. 4, No. 3, pp 50-56 (November 1985).
100. Shunk, Dan, Sullivan, Bill, and Cahill, Jerry, "Making the Most of IDEF Modeling - The Triple Diagonal Approach," *CIM Review*, Vol. 3, No. 1, pp 12-17 (Fall 1986).
101. Simpson, J. A., Hocken, R. J., and Albus, J. S., "The Automated Manufacturing Research Facility of the National Bureau of Standards," *Journal of Manufacturing Systems*, Vol. 1, No. 1, pp 17-32 (1982).
102. Space Station Advanced Technology Advisory Committee, *Advancing Automation and Robotics Technology for The Space Station and for the U. S. Economy*, NASA Technical Memorandum 87566, Vols. I and II, National Aeronautics and Space Administration, Washington, D.C. (March 1985).
103. Stern, D. E., Jr., "Tying Islands of Automation Into CIM Systems," *DEC Professional*, Vol. 6, No. 11, pp 44-52, (November 1987).
- ✓ 104. Sweeton, D.C., and Crowder, R. S., "MAP and MMS Serving the Needs of the Process Industries," in *Standards in Information Technology and Industrial Control*, N. M. Malagardis and T. J. Williams, Editors, North Holland Publishing Company, Amsterdam, The Netherlands (1988).
105. Systems Engineering Group, INCOS Project, *Tasks and Functional Specifications of the Bhilai Steel Plant Integrated Control System (INCOS)*, Steel Authority of India, Ltd., Delhi, India (April 1986).
106. Temple, Barker and Sloan, Inc., "Customer Perspectives on CIM," *Proceedings, CIM Management Forum*, Digital Equipment Corporation, Orlando, Florida (January 25-27, 1988).
107. Throop, J. W., and Read, R. R., *A Discrete Parts Manufacturing Model*, Report Number R-83-SC-01, Computer Aided Manufacturing - International, Inc., Arlington, Texas (August 1983).
108. Volz, R. A. and Mudge, T. N., "Robots are (Nothing More Than) Abstract Data Types," in *Proceedings SME Conference on Robotics Research* (August 1984).
109. Volz, R. A. and Naylor, A. W., *Final Report of the NSF Workshop on Manufacturing Systems Integration*, Technical Report, held November 1985 in St. Clair, Michigan and Organized by the Robotic Systems Division, Center for Research on Integrated Manufacturing, College of Engineering, The University of Michigan, Ann Arbor, Michigan 48109 (1985).
110. Wachter, W. J., "System Malfunction Detection and Correction," *Digest of the 1975 International Symposium on Fault-Tolerance Computing*, Paris, France (June 1975), IEEE Computer Society, New York, New York, pp 196-201.
111. Walston, C. E., and Felix, C. P., "A Method of Programming Measurement and Estimation," *IBM System Journal*, No. 1, pp 54-73 (1977).
112. Wensley, J. H., Levitt, K. N. and Neumann, P. G., "A Comparative Study of Architectures for Fault-Tolerance," *Digest of the 1975 International Symposium on Fault-Tolerant Computing*, Urbana, Illinois, IEEE Computer Society, New York, New York, pp 4-16 to 4-21 (June 1974).
113. Whitney, C., "Control Problems in Flexible Manufacturing," *Proceedings 1984 Conference Dec. and Control*, San Diego, California (1984).
- ✓ 114. Williams, D. L., and McHugh, Anne, "TDC-2000 - An Overview," *Minutes, Eighth Annual Meeting*, International Purdue Workshop on Industrial Computer Systems, Purdue University, West Lafayette, Indiana, pp 579-610 (September 22-25, 1980).

-
115. Williams, D. P., et al., "The Context of Mill Wide Control," *Proceedings TAPPI 1983 Annual Meeting*, pp 101-113, Atlanta, Georgia (March 1983).
 116. Williams, T. J., *Computer Control and Its Affect on Industrial Productivity*, A. I. Johnson Memorial Lecture, National Research Council of Canada, Montreal, Canada (May 24, 1981).
 117. Williams, T. J., "The New Process Control Hardware and Its Effect on Industrial Control of the Future," *Proceedings PROMECON I*, Institute of Measurement and Control, London, England, pp 173-186 (June 16-18, 1981).
 118. Williams, T. J., "Computer Control in the Steel Industry," *Computers in Mechanical Engineering*, Vol. 2, No. 4, pp 14-26 (January 1984).
 119. Williams, T. J., Editor, *Analysis and Design of Hierarchical Control Systems*, Elsevier Science Publishers, Amsterdam, The Netherlands (1985).
 120. Yeomans, R. W., Choudry, A., and ten Hagen, P. J. W., *Design Rules for a CIM System*, North Holland Publishing Company, Amsterdam (1985).
 121. Yoshitani, Yutaka, "The Background and Present Status of Computer Usage in the Japanese Iron and Steel Industry," *Computers in Industry*, Vol. 1, pp 263-275 (1980).