Some important articles about enterprise integration

T.J. Williams

The first ten models or architectures (the labels are synonymous in this context) are grouped in approximately their order of importance as judged by this author. The remainder are listed simply in alphabetical order.

The AMRF model of the U. S. National Institute of Standards and Technology (NIST) (formerly National Bureau of Standards (NBS) is listed first because it was the first model published as a CIM architecture and has been widely accepted.

CIMOSA is listed second because of its major political importance due to its backing by the European Communities and their push for its acceptance as a standard. The ISO TC184/SC5/WG1 group has the mandate from the International Standards Organization to recommend standards in this area and – as of 1992-93 – has its own model to promote in competition with CIMOSA. GRAI-GIM is listed next in its order in the evaluation by the Task Force for this report.

The Purdue University model is the oldest of the reference models but was labelled as Hierarchical Control or Millwide Control during the 1970s and was only recently identified with the title Computer Integrated Manufacturing. This has been due to its process industry application context.

The Case–Western Reserve model is the oldest of all but was confined mainly to its use as a demonstration vehicle for advanced control theory topics. The Computer Integrated Manufacturing International (CAM-I) Model was a precursor to the ISO offering. The Nippon Steel model was the first major attempt to incorporate enterprise requirements in such a model. The Society of Manufacturing Engineers and IBM have similar models to each other.

The book by Thacker ([1], Part II of Section 5.9), published by the Society of Manufacturing Engineers, presents a very interesting and descriptive model of CIM from the viewpoint of the CEO of a company interested in the technology. It also presents a quite thorough discussion (description only)

of the 'life-cycle' process of CIM system development. However it goes into none of the detail and technology involved in the three references architectures evaluated in this report. It therefore was not included among them, although it is an excellent semitechnical reference to supplement any of them.

5.1 NIST

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- [3] ESPRIT Consortium AMICE, Open System Architecture, CIMOSA, AD 1.0, Architecture Description, ESPRIT Consortium AMICE, Brussels, Belgium (1991).
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- [3] CIM Reference Model Working Group, ISO/TC184/SC5/WG1, Technical Report on CIM Reference Model (July 1987).
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3. SEMATECH CIM Architecture
4. DARPA Initiative Into Concurrent Engineering (DICE) being developed by W Va, CMU and RPI Universities
5. The RPI CIM Model (Rensselaer Polytechnic Institute)
6. Advanced Cost Management System (DOD)
7. Microelectronics Manufacturing Science and Technology (MMST) DOD
8. CFI (DOD) (CAD Framework Initiative)
9. Lehigh University, AMEF, Agile Manufacturing Enterprise Forum. (No Specific Reference Available).

The above list developed by:
Enterprise Integration Framework Project,
Federal Systems Division,
IBM Corporation, Oswego, NY 13827, USA

5.21 SOME ADDITIONAL MODELS RECOMMENDED FOR STUDY BY THE ISO WORKING GROUP, ISO/TC-184/SC5/WG1

1. Additional Models Recommended for Study by ISO/TC-184/SC5/WG1
2. EISWG (MCC) (Enterprise Integration Suppliers Working Group)
3. EIP (Enterprise Integration Program)
4. NCMS/CIO (National Center for Manufacturing Studies) (DFI)
5. CASEE (Hewlett–Packard)
6. OMG (Object Management Group)
7. C4 (GM)
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