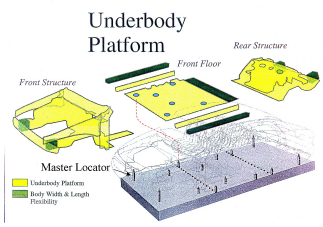
Flexible Automation

Organizers & Chairs: Peter Luh, Dan Whitney

Research Issues in Manufacturing Flexibility - An Invited Review Paper for ICRA 2000 Symposium on Flexibility

D. E. Whitney
Massachusetts Institute of Technology

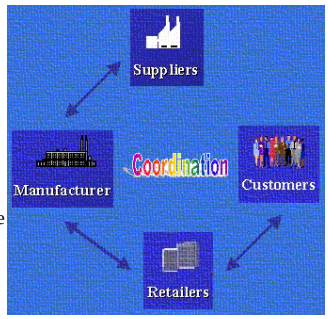
- This paper reviews flexibility issues in manufacturing
- Flexibility occurs in design, manufacturing, distribution, and general business practices
- Typical approaches include CAD/CAE, platform product design, and delayed committment
- Flexibility is not always good, and business-technical trades must be considered.



Scheduling and Coordination in Manufacturing Enterprise Automation

H. Chen and P. B. Luh
University of Connecticut

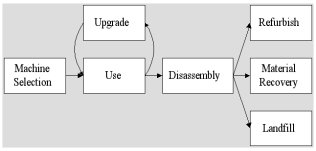
- The Importance of Coordination for Manufacturing Enterprises
- Overview of Existing Approaches
- Challenging Issues
- Price-Based Coordination Architecture and Methodology



A Life Cycle Engineering Approach to FMS Development

P. Yan, M. Zhou and R. Caudill
New Jersey Institute of Technology

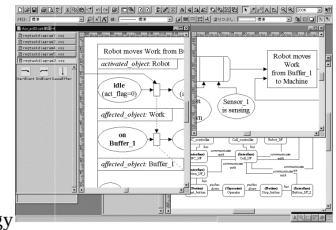
- Provide a life cycle engineering approach to FMS development;
- A timed IPPD methodology;
- A case study considering FMS machine selection and decisions along its life;
- A new way to develop cost-effective, high-quality and environmentally conscious FMS.



Object-Oriented Graphical Specification and Seamless Design Procedure for Manufacturing Cell Control Software Development

Satoshi Kanai[1], Takeshi Kishinami[1] and Toyoaki Tomura[2]
[1]Hokkaido University and [2]Asahikawa National College of Technology

- Rapid prototyping methodology of cell control software
- Diagram based programming and clear design method: refinement, translation and transformation
- Computer-aided prototyping and code-generating tool
- Validation of proposed methodology through co-simulation



Supply Chain Engineering and Automation

N. Viswanadham
The National University of Singapore

- A theme paper that describes the architecture of an Integrated supply Chain Network (ISN) using collaborative and communication technologies
- The central problem in ISNs is: When, Where, What product and How much to manufacture and store and for whom.
- We identify the decision and performance modelling problems in ISNs
- We Identify possible future research issues in Supply Chain Engineering