

Integrated Concurrent Engineering

Week 6 Outline

Required Reading:

McManus, H. L., SSPARC Book Material for Lecture 6.

Neff, J. and Presley, S. P., "Implementing a Collaborative Conceptual Design System: The Human Element is the Most Powerful Part of the System," 2000 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2000, Vol. 1, pp. 341-353.

Aguilar, J. A., and Dawdy, A., "Scope vs. Detail: The Teams of the Concept Design Center," 2000 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2000, Vol. 1, pp. 465-482.

Parkin, K., Sercel, J., Liu, M., and Thunnissen, D., "ICEMaker: An Excel-Based Environment for Collaborative Design," 2003 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2003.

Supplimental Reading:

Tools and models:

"XTOS: 16.89 Final Design Report", MIT Aeronautics and Astronautics, May 2002, extract covering ICE models.

Larson, W. J., and Wertz, J. R., *Space Mission Analysis and Design*, 3rd ed., Microcosm Press, El Segundo, CA., 1999, in particular chapters 10 and 11.

Ardalan, S. M., "DrawCraft: A Spacecraft Design Tool for Integrated Concurrent Engineering," 2000 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2000, Vol. 1, pp. 501-510.

Benjamin, J. L., and Paté-Cornell, M. E., "A Risk Chair for Concurrent Design Engineering: a Satellite Swarm Illustration," *Journal of Spacecraft and Rockets*, Vol. 41, No. 1., Jan.-Feb. 2004, pp. 51-59.

SpaceTug example:

Galabonva, K., Bounova, G., de Weck, O. and Hastings, D., "Architecting a Family of Space Tugs Based on Orbital transfer Mission Scenarios," AIAA paper 2003-6368, Sept. 2003.

Design Rooms:

Nolet, S., "Development of a Design Environment for Integrated Concurrent Engineering in Academia," Master of Science Thesis in Aeronautics and Astronautics, Massachusetts Institute of Technology, June 2001.

Reynerson, C. M., "Developing an Efficient Space System Rapid Design Center," 2001 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2001, Vol. 7. pp. 3517-3522.

Mapar, J., Brown, K., Medina, J., Laskey K., and Conaty, C., "NASA Goddard Space Flight Center Virtual System Design Environment," 2001 IEEE Aerospace Conference Proceedings, Big Sky, Montana, March 2001, Vol. 7. pp. 3567-3580.

Related Efforts:

Websites <http://NewDesignParadigms.jpl.nasa.gov/> and <http://nsd2001.jpl.nasa.gov/>