Managing Complex Technical Projects

This program is in the Executive Certificate in Technology, Operations, and Value Chain Management track.

“Very inspirational. It provides advanced and useful project management techniques, which are useful in today’s global product development environment. Thank you!”

—Ullrich Flathmann, Director, Flawless Project Execution, Johnson & Johnson

Program Details

Managing complex technical projects is a massive integration effort at many levels. Product and production plans must be integrated into components, components into subsystems, subsystems into systems and systems into quality products.

Traditional project management does not provide the kind of detail required today to both accelerate product and service development and improve product and service quality in the 21st century. Managing Complex Technical Projects presents a revolutionary design structure matrix (DSM) that MIT researchers use to determine which tasks within each phase of a complex project should or should not be performed concurrently. The DSM method is already applied in a number of corporations.

MIT researchers developed the DSM modeling approach to learn how to solve problems facing large-scale projects. After field-testing DSM in dozens of organizations and industries around the world, they found that it successfully streamlined the development of a wide array of projects including:

• Complex automotive components systems and subsystems
• Aerospace configuration design
• Concept development and program roll-out
• Electronics and semi-conductor development
• Equipment and machine tool development
• Plant engineering
• Construction projects
• Complicated service development and delivery projects

Takeaways

Through lectures, exercises, interactive discussions, and teamwork, participants in the program learn how to use DSM to map complex and often highly-technical procedures into simple arrays. Most important, they learn how to solve five key problems that confound complex project management: iteration, overlapping tasks, architecture, decomposition and integration. In Managing Complex Technical Projects, participants learn to:

• Better document existing procedures
• Reduce complexity
• Share data with confidence
• Facilitate project flow
• Expose constraints and conflicts
• Design iteration strategically

“Refreshingly useable theory and practice delivered with approachable panache.”

—Gary S.
Past Participant
Read this review and others online.

“I applied the design structure matrix (DSM) to our value chain. When the matrix was completed, we evaluated the best way to use the information. We gained great insight from a usable methodology that I was able to apply immediately.”

—Ken K.
Past Participant
Read this review and others online.
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Sample Program Schedule
(subject to change)

Day 1
- 8:00 AM–9:00 AM: Registration and Continental Breakfast
- 9:00 AM–12:00 PM: Welcome and Introduction; Problems of Managing Complex Development Projects; Introduction to the Design Structure Matrix (DSM) Method; Using DSM for Project Planning
- 12:00 PM–1:00 PM: Luncheon
- 1:00 PM–5:00 PM: Using DSM for Project Planning
- 5:00 PM–6:00 PM: Reception

Day 2
- 8:15 AM–9:00 AM: Continental Breakfast
- 9:00 AM–12:00 PM: Project Control and Acceleration
- 12:00 PM–1:00 PM: Luncheon
- 1:00 PM–3:00 PM: Current Research Directions

Participants
Managing Complex Technical Projects is designed for senior managers involved in complex product development, highly interdependent system and service development and delivery, and project management as well as those responsible for speeding up the process of improving design procedures and designing and developing better products and services. The primary focus is on technical, engineering-driven products, services, and processes, although discussion around others is welcomed as applicable.

Participants include:

- Vice presidents of engineering, manufacturing, and technology
- Directors of project, program or service management
- Product, service and business development
- Engineering and R&D program managers
- Chief project engineers
- Product design and process development engineers
- Technology strategists
- Project leaders

Program Faculty
Steven D. Eppinger has created an interdisciplinary product development course at the MIT Sloan School of Management, in which graduate students from engineering, management, and industrial design programs collaborate to develop new products. He also teaches MIT Executive Education programs in the areas of product development and complex project management. From July 2004 through June 2009, he served as deputy dean of MIT Sloan, and was acting dean from July 2007 to October 2007. From 2001 to 2003, he served as faculty co-director of the Leaders for Manufacturing (LFM) and the System Design and Management (SDM) programs. He served as co-director of the Center for Innovation in Product Development from 1999 to 2001. Before joining the MIT faculty in 1988, he worked as a machinist, a manufacturing engineer, a product designer, and a consultant in both prototype and production operations.

“Excellent insight into the complex world of the product development process and its improvement.”
—Stephen Conlon
President
AccuVein, LLC
Read this review and others online.

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