

**PROJECT MANAGEMENT IN LARGE COLLABORATIONS:
LESSONS LEARNED FOR ITER**

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Within the past decade, collaborations of research institutions and industry have been increasingly employed to accomplish the design, procurement, fabrication, assembly, installation, testing and commissioning of complex science facilities to support enhanced research capabilities in many areas. The large cost and significant breadth of technical knowledge, skills and abilities needed to bring into successful operation such complex facilities makes it likely that collaborations among national institutions and nations will become the norm for future facilities projects of this nature. The Spallation Neutron Source (SNS), a \$1.4 billion (US) accelerator-based facility for neutron science nearing completion at Oak Ridge National Laboratory (ORNL) in Tennessee, is a major collaboration among six US national laboratories and a major industrial partner whose objective has been to design, construct and operate the world's most powerful neutron source to sustain world-class materials research. The lessons learned in planning, executing and managing this successful, multi-party collaborative project have significance for the International Thermonuclear Experimental Reactor (ITER) project, a planned partnership among six nations (China, the European Union, Japan, the Russian Federation, South Korea and the United States) that is coming together to design, construct and operate a full-scale technology demonstration facility for producing power from fusion energy. While the US and other countries have been engaged in fusion research and development for many years on smaller projects, the successful completion of ITER will require transition to project management methods on a scale never before experienced. Basic elements supporting successful project management in any endeavor include: (1) clear definition of project scope and deliverables; (2) development of realistic schedule, budget and technical performance baselines; (3) effective configuration management and baseline change control; and (4) and meaningful project performance reporting, progress assessment, and implementation of corrective actions when needed to solve problems. Key success factors within the SNS project collaboration have included: (1) establishment of a framework to organize and manage effectively across institutional boundaries; (2) a focus by the central project management team on requirements definition, interface control and integration; (3) a less-centralized management approach to hardware procurements with industry; and (4) centralized risk management, including appropriate performance incentives and project-level control of reserve (contingency) funds. Instituting successful project management within the international ITER collaboration will require aligning the project management philosophies, accounting for cultural influences, understanding the participants' political environments, selecting and implementing useful management systems, and successfully incorporating the project management strengths and experience of the ITER partners.