

**INFORMATION TECHNOLOGY SYSTEMS FOR THE
NUCLEAR POWER INDUSTRY**

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Energy is a major issue in the 21st century. The nuclear power industry is expected to grow significantly in order to satisfy increasing demands for energy.

Advances in Information Technology have led to new architectures for large-scale information systems. In this work, the authors describe the latest advances in their model for an Integrated Information Plant (IIP), which could be used as a prototype information system for the nuclear power industry. They also describe a time-phased approach for building such an information system. The major goal of the Integrated Information Plant is to provide decision support for the Project Management through a project lifetime cycle. Therefore authors explore one specific IIP subsystems that is intended to accelerate construction and operational processes in tomorrow's energy market.

Simulation is used successfully in many areas of science and engineering to model processes that otherwise are too expensive or difficult to test or understand. Comparison of simulation results from different scenarios allows solutions to be optimized along technical, economic, and other dimensions. Modeling strategies also can be applied to the management of industrial projects. Project management simulation tools would allow modeling of different processes during construction and operational phases, which would lead to optimized processes in these phases. As an example, simulation tools could optimize construction activities by comparing different assembly alternatives, providing insight into their risks and benefits, and resolving potential problems in advance. Adding visualization features to simulation tools would enhance them significantly by providing an enhanced means of communication.