Manage Risk with Schedule Risk Analysis

Schedule risk analysis (SRA) is a well-defined, objective method to identify risks to a project, quantify their impacts, and prioritize mitigation actions to increase the likelihood that a project is completed on schedule and on budget.

DEFINING RISK

In SRA, risks occur in the context of a project, a finite endeavor that involves a set of coordinated and inter-related activities to achieve a specific goal or objective. Risks are uncertain events that may adversely impact the duration or cost of the project's tasks. Risks may arise from a variety of sources, including project management, resource availability, technical difficulties, procurements, permitting, or natural disasters.

VALUABLE INSIGHT, OBJECTIVE ANSWERS

SRA provides project managers with valuable insights and objective answers to important questions throughout the lifecycle of a project:

- What is the likelihood of completing the project on time and on budget?
- What is the range of costs and finish dates given the project's exposure to risks?
- Which risks are most responsible for driving schedule delays and cost overruns?
- How should the project prioritize mitigation actions to reduce risks?
- How much contingency should the project retain to pay for remaining risks?
- How should project managers draw down contingency as the project nears completion?

HOW SRA WORKS

SRA is an analysis technique used in project management to quantify the impacts of risks and uncertainties associated with the execution of a project.

It uses a project's existing schedule and resources to propagate the impacts of risks in a Monte Carlo simulation, a computational method used to model complex systems with unknown parameters.

In the Monte Carlo simulation, the likelihood and impacts of risks are sampled from elicited input distributions to generate possible outcomes that represent realizations of the risk-impacted project.

This data is analyzed to quantify the impact of risks to a project's schedule and budget, rank the biggest risks, and assess contingency requirements.

UNPARALLELED SUPPORT

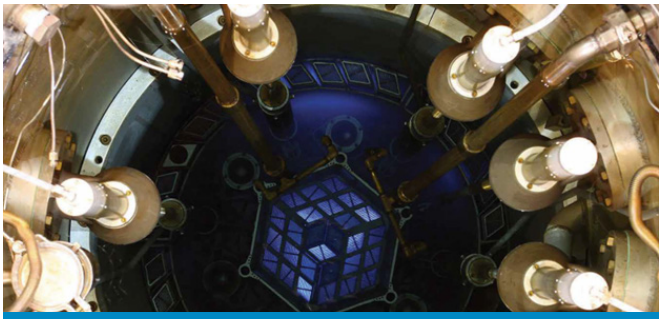
Pacific Northwest National Laboratory (PNNL) has a dedicated team of technical staff members, including data scientists and engineers, with decades of experience managing risks across a broad range of complex projects, including environmental remediation, laboratory construction, development of scientific instruments, and execution of experiments, among others.

PNNL's risk management team has particularly deep experience managing risks for nuclear projects, including defense waste disposition, reactor and fuel design, nuclear material production, and commercial spent nuclear fuel disposition.

PNNL researchers have capabilities across the full spectrum of project risk management tasks, including establishing risk management programs, fostering dialog between project stakeholders, eliciting risks, performing qualitative and quantitative analyses, and communicating actionable results to project managers.

The risk team can apply an appropriately scaled approach that is compliant with domain best practices and DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

SRA enabled the successful delivery of the Energy Sciences Center, a 140,000 square foot high-performance sustainable building project at PNNL. *(Photo by Andrea Starr | Pacific Northwest National Laboratory)*



SRA is informing optimal strategies for mitigating the risks of developing new low-enriched uranium fuel for research reactors, including the reactor at the Massachusetts Institute of Technology. *(Photo Courtesy of Nuclear Science User Facilities)*
SOURCE: **https://nsuf.inl.gov/Home/FacilityLayer/668**

SRA identified and prioritized risks for the Hanford Site cleanup, a multi-decade environmental remediation project. *(Photo Courtesy of Department of Energy)*
SOURCE: **https://www.energy.gov/em/articles/crews-making-progress-hanfords-former-plutonium-processing-facility**

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