

## Three Success Factors for Schedule Risk Analysis

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For most projects, it is important to finish on schedule. For example, it might be necessary to supply gas on a certain date that drives gas exploration and production, processing or pipeline projects. Or there may be liquidated damages for late completion. The economic viability of a project may be determined by the finish date of a project, combined with the capital expenditure (CAPEX). For these and other reasons a schedule risk analysis is often conducted on larger projects.

A quantitative schedule risk analysis starts with either the main project schedule or a simplified “analysis schedule”. Analysis uses Monte Carlo simulation that requires specialized software, and answers questions that static critical path scheduling cannot address, including: (1) How likely are we to finish on time? (2) How much schedule contingency do we need to be sufficiently confident of success? (3) Which risks contribute to the problems in meeting schedule, and which need effective risk mitigation?

Three key factors determine the success of schedule risk analysis:

1. **Use project scheduling best practices.** The schedule is a dynamic model of the project. Changes of the activity durations influence the schedule by logical relationships and might affect the final delivery date. A best-practice schedule is essential because Monte Carlo simulation changes activity durations probabilistically many times during the simulation, and we need to be confident that the underlying schedule structure and logic are correct, leading to a realistic finish date.
2. **Ensure good-quality schedule uncertainty and risk data.** These represent the risks that drive the project. One useful method of gathering risk data is conduct confidential interviews with subject matter experts individually or in small groups, encouraging them to be honest about which risks are important and how big they might be. During the process of collecting quantitative risk data it is important to consider risks that may not be in the Risk Register but may turn out to be important.
3. **Encourage a risk-friendly organizational culture.** Often such a culture is not present. Sometimes management does not really want to know about the possible finish date and the CAPEX value, since those specific numbers may reduce organizational support for the project. Others in management may have not used risk analysis in the past and are not convinced that it adds anything useful. In some cases, if they have not budgeted or scheduled for the risk analysis, the cost and time taken by the risk analysis process seems to be daunting, even though millions of dollars may be at risk. Usually the organization's top management wants to know realistically which risks are

important and their impact on the project, but the project sponsors and project managers want to protect their projects and downplay the significance of risk to the schedule.

Each of these factors is essential if schedule risk analysis is to succeed and provide benefits for the project. Project teams can tackle the first two factors, producing high quality schedules and collecting valid risk data. But only senior managers in the organization can develop and promote a risk-friendly risk culture. Addressing these three factors will ensure that schedule risk analysis contributes to the success of your projects.

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*To provide feedback on this Briefing Note, or for more details on how to develop effective risk management, [contact the Risk Doctor](mailto:info@risk-doctor.com) ([info@risk-doctor.com](mailto:info@risk-doctor.com)), or [visit the Risk Doctor website](http://www.risk-doctor.com) ([www.risk-doctor.com](http://www.risk-doctor.com)).*

## About the Author



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David Hulett is recognized as a leader in quantitative project cost and schedule risk analysis and project scheduling. He is the founder and CEO of Hulett and Associates LLC (H&A), a California-based program and project risk advisory firm. Dr. Hulett has focused for the last 25 years on quantitative schedule risk analysis, integrated cost-schedule risk analysis and project scheduling best practices. Clients of H&A represent many industries, including: aerospace and defense, oil and gas, construction, pharmaceutical development and plant construction, transportation, communications, IT, and large science.

Dr. Hulett is well-known as a leader in the Project Management Institute (PMI) for project risk and scheduling standards, including leading the risk management chapter in the Guide to the Project Management Body of Knowledge (PMBOK® Guide) and the Practice Standard for Project Risk Management and participating on the Core Committee for the Practice Standard for Project Scheduling. He has authored the Recommended Practice 57R-09 for the Association for the Advancement of Cost Engineering International (2011, AACEI) on integrated cost and schedule risk analysis and is developing another recommended practice for decision tree analysis. Dr. Hulett headed a group of scheduling experts from various professional associations, sponsored by the PMI College of Scheduling, to assist the US Government Accountability Office (GAO) with revising its scheduling best practices used to review government programs.

Dr. Hulett authored Practical Schedule Risk Analysis (Gower, 2009) for which he was recognized by the PMI College of Scheduling for “contributions to the scheduling profession” in 2010, and Integrated Cost- Schedule Risk Analysis (Gower, 2011). He is also the author (with Michael Nosbisch) of Integrated Cost-Schedule Risk Analysis which appeared in Cost Engineering November/December 2012 and Use Decision Trees to Make Important Project Decisions, Cost Engineering June/July 2014. He has presented papers on quantitative risk analysis topics at conferences such as NASAs PM Challenge, PMI’s congresses, ICEAA and AACE annual conferences, user groups for Primavera, C/S Solutions, Palisade and Crystal Ball, as well as at the PMI Risk Management SIG conferences and at MarcusEvans conferences in various Asian countries.

Some projects that H&A have worked on include the Capitol Visitor Center in Washington DC for the USGAO, a gas processing plant in Canada for Encana, offshore gas platforms and a gas pipeline for the Petronas Carigali unit (Malaysia),

the YANBU Export Refinery Project in Saudi Arabia and several refinery projects for ConocoPhillips, offshore platforms and FPSOs for Petrobras in Brazil, gas pipelines for Kinder Morgan (El Paso), a VA hospital construction project in Las Vegas for the USGAO, the SOFIA project for NASA, Chemical Demilitarization project for the USDOD and the San Francisco-Oakland Bay Bridge project for Caltrans. He has conducted many schedule assessments against Scheduling Best Practices for the USGAO.

Dr. Hulett has held strategic planning positions at TOSCO, an oil company, and at TRW in aerospace and defense. In the Federal government, Dr. Hulett managed offices in the Federal Energy Agency (FEA), the Department of Energy (DOE) and the Office of Management and Budget (OMB). He was also an economist with the Federal Reserve Board of Governors. Dr. Hulett was an Instructor in the Economics Department at Harvard University. His Ph.D. in Economics is from Stanford University and his B.A. is from the Special Program for Public and International Affairs (Woodrow Wilson School) at Princeton University.

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