One more time: Preventing project failures [1]

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The larger and more complex a project is, the more susceptible it is to cost overruns, schedule delays, and technical difficulties that lead to project failures. Project failures can result in production underperformance, financial losses, regulatory penalties, and reputational damage. In severe cases, failures jeopardize the careers of associated leaders and corporate viability.

As with other categories of work, the list of reasons that can lead to project disappointment or failure is longer than the list of best practices that lead to success. Preventing project failure requires disciplined attention to the interconnected management, engineering, operational, and organizational topics listed below, which are required for successful completion.

Sufficient front-end planning

One of the leading causes of project failure is inadequate front-end planning (FEP). A frequent reason for rushed or incomplete planning is pressure from management to get on with it.

Poorly defined project objectives, unclear technical requirements, and insufficient economic analysis create instability, including nasty surprises about scope, cost, and schedule, throughout the project lifecycle.

FEP improves project outcomes by ensuring:

- Project scope is clearly defined.
- Project assumptions are extensively documented and validated.
- The tangible cost-benefit amounts are realistic.
- Stakeholder expectations are analyzed.
- Regulator concerns are anticipated.
- Technical and business environment risks are considered.

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Well-executed FEP reduces late-stage engineering changes and vendor underperformance, two of the largest drivers of cost escalation in large projects.

In-depth scope defence

Scope creep frequently occurs when team members or stakeholders introduce additional features, appealing technologies, or new operational requirements after execution begins. While often well-intentioned, these additions frequently lead to schedule and cost overruns.

In-depth scope defence is achieved by:

- Stating the elements of project scope as precisely as possible.
- Documenting all proposals for scope additions.
- Deferring approval of scope additions to follow-on projects except in the most urgent circumstances.
- Using accumulated scope proposals to define follow-on projects.

Strong governance processes help ensure that scope additions are rarely approved.

Ongoing risk management

Many projects operate in a highly uncertain business environment. Sales forecasts fluctuate, supply chains become constrained, and geopolitical risks emerge. These risks can differ from initial forecasts and assumptions. Too often, projects conduct a single risk assessment, never update it, and forget to implement mitigations.

Effective risk management requires:

- A comprehensive risk register.
- Quantitative risk analysis.
- Risk mitigation planning and execution.
- Repeated risk reassessments.

Projects that fail often underestimate low-probability but high-impact events. Scenario planning helps project teams anticipate multiple future conditions, including construction disruptions, regulatory changes, and team underperformance.

Determined leadership and governance

Weak governance structures frequently contribute to major project problems. Leadership instability or unclear accountability can delay critical decisions and create confusion about project direction. Projects require rapid decision-making combined with strong accountability mechanisms to stay on track.

Effective governance includes these elements:

- Executive project sponsorship.
- A steering committee.
- Experienced project management.
- Clear reporting structures.
- Transparent issue escalation processes.

Effective project leadership balances technical, financial, environmental, and stakeholder priorities that are often contradictory.

For more information about project leadership and governance, please see our recent book, A Project Sponsor's Warp-Speed Guide: Improving Project Performance.

Significant digital transformation and data integration

Complex projects are expected to manage or deliver systems that generate enormous volumes of engineering, operational, partner, and supply chain data. Project failures often occur when information remains fragmented across disconnected systems.

Digital approaches improve project outcomes through:

- Integrated project management platforms.
- Real-time execution monitoring.
- Predictive analytics.
- AI-assisted forecasting.
- Automated reporting systems.

Digital twins, for example, allow projects to simulate proposed designs and operational conditions before commissioning facilities or building software. Predictive analytics can identify project bottlenecks before failures occur. Integrated data environments improve collaboration between the project team, contractors, and suppliers. Better visibility into information reduces rework, scheduling conflicts, and procurement delays.

Digital transformation has become a failure prevention mechanism rather than simply an efficiency initiative.

Look-ahead supply chain and procurement management

Global supply chains are highly vulnerable to disruption. Delayed equipment deliveries, material shortages, contractor failures, and logistics bottlenecks can significantly impact project execution. Many project failures result in part from overly optimistic procurement assumptions.

Strong procurement management for projects includes:

- Early supplier engagement.
- Vendor qualification processes.
- Inventory visibility.
- Logistics planning.
- Contract performance monitoring.

Long-lead equipment, such as compressors, turbines, subassemblies, and computing environments, requires particularly careful management.

Projects that build flexibility into supply chains and maintain alternative sourcing strategies are generally more resilient.

Adequate workforce capability and organizational culture

Most projects depend heavily on specialized expertise from multiple disciplines. A shortage of experienced engineers, project managers, team leads, or business analysts can significantly increase execution risk. A culture that suppresses bad news can allow manageable issues to evolve into major project failures.

Organizations reduce workforce-related failure risks through:

- Workforce planning.
- Skills development.
- Knowledge transfer.
- Succession planning.
- Cross-functional collaboration.

High-performing project organizations encourage:

- Early issue reporting.
- Technical transparency.

- Lessons-learned sharing.
- Continuous improvement.
- Safety accountability.

Ongoing attention to safety and process integrity

Major industrial incidents can permanently damage projects and companies. Safety failures often stem from weak operational discipline, inadequate hazard analysis, or insufficient process safety management.

Failure prevention on projects requires rigorous attention to:

- Hazard and operability studies (HAZOP).
- Process safety management.
- Mechanical integrity programs.
- Emergency response planning.
- Safety leadership.

Businesses have repeatedly learned that cost-reduction efforts too often compromise safety systems or maintenance integrity.

Regular stakeholder and regulatory management

Some projects operate within increasingly complex environmental and social governance expectations. Delays frequently occur due to inadequate stakeholder engagement or inadequate regulatory planning.

Successful projects proactively address:

- Environmental compliance.
- Community relations.
- Land access.
- Emissions management.
- Water use concerns.

Projects that integrate regulatory and stakeholder considerations early in planning generally experience fewer delays and legal challenges.

Continuing capital discipline

Sales forecast volatility creates constant financial pressure in many industries. Projects that rely on optimistic net benefits forecasts are vulnerable to budget reductions during economic downturns.

Continuing capital discipline includes:

- Conservative economic modelling.
- Phased investment strategies.
- Strong cost controls.
- Regular reporting of costs, forecasts and variances.

Organizations increasingly favour shorter-cycle, modular, and lower-cost projects that can adapt to changing market conditions.

Projects designed with operational flexibility are better positioned to survive downturns without being cancelled.

Conclusion

Project failures rarely result from a single issue. Most failures emerge from the interaction of technical uncertainty, weak governance, poor communication, inadequate planning, and insufficient risk management.

Organizations that consistently deliver successful projects typically emphasize front-end planning, integrated governance, digital transformation, workforce capability, supply chain resilience, and process safety. They also maintain capital discipline while adapting to evolving regulatory and stakeholder expectations.

The ability to execute reliable, resilient projects will remain a major competitive differentiator for companies across industries.

About the Author

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Yogi Schulz has over 40 years of experience in Information Technology across various industries. Yogi works extensively in the petroleum industry, selecting and implementing financial, production revenue accounting, land & contracts, and geotechnical systems. He manages projects arising from changes in business requirements, leveraging technology opportunities, and mergers and acquisitions. His specialties include IT strategy, web strategy, and systems project management.

Mr. Schulz regularly speaks to industry groups and writes a regular column for Engineering.com and for TechNewsDay.com. He has written for Microsoft.com and the Calgary Herald. His writing focuses on project management and IT developments of interest to management. Mr. Schulz served on the Board of Directors of the PPDM Association for 20 years, until 2015. He can be contacted at yogischulz@corvelle.com

His new book, co-authored by Jocelyn Schulz Lapointe, is "A Project Sponsor's Warp-Speed Guide: Improving Project Performance."