14 Project Risk Management Tools That Help Manage Life Cycle Uncertainty
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Introduction: Risk Management and the Project Life Cycle

Project risk management is a hot topic these days. Indeed, according to the Project Management Institute (PMI; a world leader in research, education and professional development for project, program and portfolio management), risk management is a key factor in project success.

What’s more, PMI reports that high-performing organizations optimize risk management processes throughout a project’s life cycle.1

Industry-leading project management (PM) consulting firm PM Solutions seconds the call, stating that businesses must address and develop strategic processes for risk management to boost performance and develop their PM practices.2

Many experts agree that project risk management is the best strategic approach3 for handling unknowns. While the term “risk” may have a negative connotation, project risk management encompasses both the positive risks (opportunities) and negative risks (consequences) associated with a project. A disciplined project risk management approach allows organizations to learn as much from initially unrealized opportunities as from roadblocks to project success.

PMI’s Best Practices for Effective Risk Management

While risk management is often portrayed as one step within project planning, there are actually five key components of an effective risk management strategy, as defined by PMI:

1. **Plan**: Outline general risk management approach and execution strategies for both common and project-specific risks.

2. **Identify**: List risks, their characteristics and how they could impact overall project objectives. Assign risks to individual team members to further analyze and track.

3. **Analyze**: This includes both qualitative analysis—assessing risks based on probability of occurrence and potential impact—and quantitative analysis, or prioritizing risks based on their impact on overall project objectives.

4. **Respond**: Plan risk responses (e.g., contingency plans); take action to reduce possibility of occurrence and/or potential impact of identified risks.
5. **Monitor and control**: Track identified risks, execute risk-response plans when needed and evaluate and record effectiveness. Communicate progress and status reports to stakeholders and clients.

It is important to note that following these best practices is not a one-off sequence of events, but an ongoing exercise. High-performing organizations will perform this exercise at each step of the project life cycle (more on this in the next section).

According to a spokesperson for PMI:

> “It is imperative that risk management is addressed throughout the life of a project. As priorities are identified at the initiation of a project, they can change in probability of occurrence and impact to the success of the project. ... As the project evolves, additional risks can surface that were not evident at the beginning.”

**The Project Life Cycle**

Having **standardized, repeatable PM procedures** in place is critical for success—and is a hallmark of organizations with advanced project management abilities. This allows performance on each project to be accurately measured so that results can be optimized.

Here are the standard processes that should be followed at each stage in the life cycle of a typical project:

- **Stage One**
  - Define project scope & goals

- **Stage Two**
  - Detail the work breakdown

- **Stage Three**
  - Schedule resources & budget

- **Stage Four**
  - Execute on deliverables

- **Stage Five**
  - Report on deliverables

- **Stage Six**
  - Analyze progress

- **Stage Seven**
  - Project closeout
As with risk management best practices, each of these stages feeds into the next, and the results of one project affect the planning of future projects. And that’s where project management software comes in.

**With PM software, project information, documentation and communication is collected and stored in one, centralized hub—making it easy to access this data and apply that knowledge to future stages and projects.**

In the following sections, we’ll outline how team leaders and members can use PM software to structure and manage risk at each stage in the project life cycle.

### Stage One: Define Project Scope and Goals

**What happens at this stage:** At the start of any project, managers, team members and stakeholders should define the scope, goals and objectives associated with it. Failure to do so can result in “scope creep”—or when a project snowballs beyond initial expectations of cost, time and/or requirements. Scope creep is often the reason projects run over budget or past deadline.

According to Carl Pritchard, certified risk management professional and owner of Pritchard Management Associates, organizations should define project scope and objectives by looking to the future, asking: "What is the end result we want to achieve?" Then teams should work their way backwards, outlining potential obstacles to achieving that end goal.

**How software helps:** Nanci Brown, PM professional and principal consultant for Bear Brown Consulting, says the best tools for defining a project’s scope are ones that outline the “critical path”: The tasks required to complete a project, the duration of those tasks and their interdependence. The critical path shows managers which tasks most impact the project as a whole, so they can plan to avoid or control those high-risk activities.

At this high-level stage of project and risk planning, visual software tools, such as Gantt charts, are especially useful. These show how different tasks relate, displaying their subphases and dependencies. This helps managers and project teams do two key things:

1. Outline potential risk areas
2. Begin discussion about contingency/mitigation strategies for managing any risks that actualize and become issues

Gantt charts allow managers to see when and where risks could occur: For example, if
Tasks B and C can only start once Task A is complete, then Task A’s deadline becomes a risk area. Managers can then ensure the team member responsible for completing Task A doesn’t have any other high-priority tasks assigned to them before that deadline is met (see screenshot below).

“The visual aspect is really important,” Brown says. “Having that [chart] that you can share with your team and the client so they can understand what and where the concerns are, that is really helpful.”

**Example tools:** While Brown likes the simplicity of Microsoft Project for visualizing the critical path, other products, such as Wrike or WorkZone, offer more sophisticated visualization and planning capabilities.

![Gantt chart showing the critical path in Wrike](image)

Wrike has fully integrated Gantt chart capabilities, enabling users to visualize project timelines and plans in real time. Additional visuals include burndown, baseline and performance charts.
WorkZone’s Gantt chart functionality allows users to view projects graphically across a timeline. Users can also link dependent tasks, using one task’s projected end date to calculate the following task’s start date.

<table>
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<tr>
<th>PROJECT / TASK</th>
<th>RESPONSIBLE</th>
<th>START</th>
<th>END</th>
</tr>
</thead>
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<tr>
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<td>Jul 22, 2015</td>
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<td>Final brochure back from printer</td>
<td>Gary Burkhart</td>
<td>Sep 23, 2015</td>
<td>Sep 29, 2015</td>
</tr>
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</table>

Stage Two: Detail the Work Breakdown

What happens at this stage: While defining the project scope and goals helps create a high-level overview, the work breakdown stage involves teams and stakeholders collaborating and outlining the project in detail. This includes planning the timeline, setting milestones and deadlines and discussing the expenses that will be incurred.

Additionally, during this stage, project teams may plan to break up major tasks into individual phases—for example, creating one of many visual design elements or building a specific software module. These smaller phases may be assigned to multiple workers, or even outsourced if a key resource (such as a designer or software developer) is unavailable within the timeline or budget.
**How software helps:** During the work breakdown stage, managers, team members and stakeholders can use PM software to:

- Assign tasks to workers
- Create project schedules
- Set milestones and deadlines
- Store discussions and related documentation about project risks all in one place
- Identify additional risks
- Assign identified risks to individuals for analysis and monitoring
- Contribute to the ongoing discussion surrounding risk responses

During this stage, Frank Nestore, PMP and director at Mathtech, Inc.⁸ (a strategy and consulting firm), uses Microsoft SharePoint to create a “risks register.”⁹ This is a document or table in which identified risks are listed and categorized based on their probability of occurring and their potential impact.

When using PM software to create a risks register, PMI suggests choosing one with alert functionality. This way, when someone is assigned a risk to evaluate, the assignee is alerted via email or in-app notifications.

**Example tools:** There are several PM tools with robust communications capabilities, such as Basecamp and Trello, that can help at the work-breakdown stage. These platforms are equipped with alerts and notification functionality.
Basecamp allows users to create lists and to assign tasks and risks to individuals. List items can be prioritized as needs change by using the click-and-drag feature to dictate the item’s list order. Users can also log and track status updates about these items through due-date settings and in-app and email alerts.
Trello is a more visual tool, often used by agile software development teams. It incorporates a virtual Kanban card wall, in which users drag and drop cards (representing to-dos) to different boards representing the status of tasks or risks (e.g., “in-progress” or “complete”). Users can add comments, labels and due dates to cards and loop in others through automatic alerts (in-app, email or even mobile push notifications).

Kanban card wall in Trello

**Stage Three: Schedule Resources & Budget**

**What happens at this stage:** The next step in the project’s life cycle involves scheduling personnel resources and setting the project’s budget.

Team members are often involved in several projects at once, and their availability, bandwidth and skill sets affect decisions such as whether projects can and should be postponed, or if certain duties should be outsourced (as mentioned in the previous section). What’s more, the skill sets needed at different stages and the number of people on a team affect both timeline and budget.
**How software helps:** Managers can use the calendaring, resource management and time and expense functionality that comes with most PM solutions to:

- Access employee schedules and review their availability and bandwidth to take on additional projects;
- Make more informed decisions, based on the skill sets available in the resource pool (for example, if you’re implementing a Java solution, you can see when your Java developer will be available);
- Estimate time and labor costs—incurred from the skill level of various team members and the estimated time each will be spending on the project—in order to set an accurate budget;
- Identify and address the risks associated with personnel availability and bandwidth, their associated labor costs and the effects on the project’s budget;
- Assign these new risks to team members for additional analysis and monitoring; and,
- Plan appropriate risk responses and strategies.

**Example tools:** Products such as Replicon and TimeFox have extensive resource management functionality, which helps managers staff projects more appropriately, as well as budget and expense management capabilities, which help accurately predict and track project financials.
With Replicon, managers can use filters to assign personnel to projects based on skill set and schedule, and view a graphical calendar showing resource utilization. Additionally, they can assign “placeholder resources” to block out roles they know they’ll need when specific employee schedules are not yet available. Finally, project-costing functionality can be used to set budgets and timelines—and, once the project is underway, to track predicted versus actual expenditures.

Resources skill set filter in Replicon
Stage Four: Execute on Deliverables

What happens at this stage: The project scope and objectives have been set, the work has been broken down into sections with milestones and deadlines, the appropriate personnel have been assigned and the budget has been agreed upon between project teams and stakeholders. Now, the actual work can begin!

At this stage, managers are responsible for:

- Overseeing progress on deliverables, making sure the project is on track with projected timeline and budget; and,
- Monitoring the risks that have been identified and logged, taking steps to enact risk responses when necessary.

TimeFox’s resource forecasting capabilities can be used to compare estimated and actual hours logged on projects, and to track billable versus non-billable time. This allows managers to track the accuracy of scheduling and budget estimates.
How software helps: Managers can use PM software’s task-tracking functionality to make sure tasks and project phases are on track to meet deadlines. They can also keep an eye out for early risks by:

- Monitoring task and to-do comment threads;
- Tracking progress and performance on dashboards and calendars; and,
- Setting alerts on their dashboard or team calendars for upcoming and missed due dates and milestones.

Example tools: Products such as Asana and JIRA allow users to track workflows and progress on deliverables. They can also send automatic updates when tasks are completed or are behind schedule.

With Asana, managers can track team workflows using dashboards, from which they can drill down into individual calendars and project activities. Additionally, users can comment within tasks and attach files, keeping all communication about projects and risks in one, searchable hub.
JIRA—designed specifically for software development teams—is a task- and issue-tracking tool. Managers can use it to distribute work to developers, track progress on deliverables using Kanban boards and manage risk areas. JIRA is available as a stand-alone tool or as part of the larger Atlassian PM suite.

**Stage Five: Report on Deliverables**

**What happens at this stage:** Once the project is underway, it is the manager’s job to provide stakeholders and clients with status updates. Managers must also notify them of any risks that have escalated to become issues, which could compromise the project’s timeline or budget.

PM software’s reporting functionality pulls much of this information from the task, time and expense tracking tools discussed in the previous section, allowing managers to take a snapshot of:

- Progress on deliverables
- Predicted versus actual expenditures
- Personnel performance
How software helps: Managers can use reporting capabilities to provide risk management updates to stakeholders. These updates should include:

- Identified risks that have been escalated to issues, as a result of becoming more likely or more impactful (for example, if a developer quits in the midst of developing a software module);
- Risks initially considered “low impact” that end up greatly affecting deadlines and/or budget (for example, if while testing a program, a major bug is discovered); and,
- The success or failure of risk responses.

According to our spokesperson for PMI, using reporting data to effectively monitor and report on a team’s project risk management efforts can not only win stakeholder buy-in for future projects, but can help standardize risk management protocols across the organization.

Example tools: There are several PM tools with strong reporting capabilities, ranging from simple data capture to comprehensive analytics, such as ProWorkflow and SmartSheet.

ProWorkflow boasts a dashboard home page, giving managers a high-level overview of active projects, tasks, staff and time logged. From here, managers can run reports to provide a detailed look at team workloads and performance as well as project financials.
Smartsheet is a PM tool that also offers a spreadsheet display. Managers can run reports and view a high-level summary of work status, team performance or impending milestones and deadlines. Additionally, you can schedule reports to run on a recurring basis, share reports with teams and stakeholders or export the data to Excel.

Weekly status report in Smartsheet

Stage Six: Analyze progress

What happens at this stage: Of course, simply running reports isn’t enough: Managers and stakeholders must understand all that information and put it to work when planning future projects. Essentially, reports act as a “snapshot,” or a static picture, of each stage of the project’s life cycle.

Key variables from these reports to analyze include (but are not limited to):

- Time and expenses incurred, versus. the original budget;
- Which tasks and phases took additional time to complete than was previously allotted; and,
- Accuracy in meeting milestones and deadlines, as determined by the critical path set forth in the initial Gantt chart (see chapter one).

Analyzing the data gleaned from reports means that managers are looking at “how” and “why” there was an overrun, rather than simply making note that one occurred. Analyzing
reports in this way can help businesses avoid making the same mistakes, while perfecting upon past wins.

**How software helps:** With reports, managers have at their disposal a contextual project history. They can then use this information when creating and presenting a summary document to clients and stakeholders during the project closeout phase (more on this in the next section).

Additionally, it’s important that managers analyze reports for project risk management, to ensure that:

- Team members who have been assigned risks to analyze have completed their assessment, documented the probability of occurrence and potential impact, notified the team of any changes and escalated any issues to upper management
- The success and/or failure of risk responses is properly documented (which will factor into the project closeout stage, discussed next)

**Example tools:** There are several comprehensive PM reporting and analytics tools, such as Mavenlink and Clarizen, that managers can use for more effective project risk management.

Mavenlink’s reporting and analytics functionality helps managers gain insight into project financials, such as expenses, revenue and profit margins. Status reports also allow managers to monitor work in progress: For example, the time and expense accrued on a project, what can be invoiced and the estimated time and compensation required to complete a project.

![Mavenlink Insights screen](image)
The reporting and analytics tools offered by Clarizen allow users to run reports on nearly every task and activity, from timesheets to discussion threads. Users can highlight key business metrics and share real-time data with internal and external stakeholders via a live link.

Stage Seven: Project closeout

What happens at this stage: While it is sometimes overlooked, this stage is as integral to effective project risk management as any other. In fact, according to PMI, formalizing this stage is a “best practice” for high-performing organizations.

PMI advises managers to compile an official closeout document, which can be presented to stakeholders and clients during a final meeting. This process should serve to summarize project performance and business outcomes, and to release team members for assignments to other work.
The closeout document should formally detail the successes and failures at each stage of the project life cycle, including:

- Whether the project remained within scope and met the agreed-upon objectives
- A comparison of performance against the agreed-upon schedule
- The impact on resources
- Risks that surfaced and were mitigated
- Project financials
- Lessons learned and what can be applied to the next project
- Stakeholder final approval to officially close the project

According to Mathtech’s Nestore, a big part of project closeout is knowing the right medium in which to share the information. Whether you choose a report document, an emailed SlideShare or a physical presentation, the important thing is that all invested parties can communicate about and learn from the experience.

**How software helps:** PM software acts as a centralized database housing all project-related information—notes, schedules, correspondence, risks registers and so on. Document management functionality simplifies and streamlines the process of reviewing the data required to create the project closeout document.

Using this functionality, managers can:

- Search within and review the entire project history
- Run any necessary final reports
- Create the closeout document from previous status reports and other data stored in the PM software database

If managers have been diligent about enforcing PM software use among team members, they will have access to all project communication and collaboration, through conversation threads and comments, about the evolution of tasks and risks. Summaries of the information gleaned from this correspondence can also be included in the closeout document.

**Example tools:** There are several PM platforms with document management and collaboration capabilities, including LiquidPlanner and Redbooth.
With LiquidPlanner, users can view comment streams about specific projects or tasks on their home screen, then follow those that are most important to them. Managers can also review comments in tasks or projects at closeout to understand the context around decisions.

Finally, users can share and store documents and photos attached to specific tasks from third-party services such as Dropbox.
Redbooth lets users create project-specific team workspaces. This provides one central location where all related documents and discussions about tasks and risks for a given project are stored. Managers can then use the platform’s search feature when reviewing project history and creating the closeout document.
Survey: How Project and Team Leaders Approach Risk Management

In order to gauge how teams are currently practicing project risk management, Software Advice conducted an online survey of project managers, engineers and team leads from industries with reportedly high PM engagement (see Methodology section for details).

These results are not intended to be representative of these industries’ approach to risk management. Rather, they serve as a marker of the average project manager’s struggles and triumphs within this aspect of PM.

We asked respondents about several aspects of project risk management, from common tools and practices to how successful they have been in executing on and meeting project objectives. Based on the results, it’s clear many of those in our sample have room to improve.

The majority say they have formal risk management protocols in place. However, most also seem to place a diminishing importance on risk management best practices as projects near completion.

This is a likely reason why, for the majority of respondents, up to 10 percent of projects fail to meet goals, objectives and/or deadlines—with 11 to 20 percent of projects running over budget.

“Failure isn’t a result of technology—it’s the people element, the communication,” says Nestore.

The following charts represent our key findings:
Project Risk Management Among Managers, Engineers and Team Leads

29% of respondents believe that reporting on deliverables is integral to project success, while 28 percent believe this stage in the project life cycle has the least impact on project success.

78% of respondents follow these procedures, while 22% do not.
Conclusions: Best Practices for Project Risk Management

By using PM software to engage project teams and stakeholders and facilitate dialogue about potential risks, project managers can increase the chances of success. Schedules, budgets, milestones and expenses can all be tracked and reported on using these platforms.

Finally, using the structure and repeatable framework provided by PM software, managers can encourage transparency and consistency in project risk management across the organization.

As outlined throughout this e-book, there are many PM tools managers can use to manage risks throughout the project life cycle. If your organization is interested in increasing the number of successful projects and maturing in its PM abilities, we encourage you to:

- Call or chat with a Software Advice project management expert to pinpoint solutions tailored to your business
- Demo PM products prior to purchase, ensuring they contain the necessary functionality to effectively manage risk throughout the project life cycle

Survey Methodology

To collect the data in the research used for chapter eight, we conducted a seven-day online survey of 18 questions, and gathered 114 responses from current project managers, engineers and team leads within the United States. We screened our sample to only include respondents within the business services (information technology), construction/engineering and manufacturing industries (those that most frequently use PM software based on Software Advice’s previous BuyerView data). Software Advice performed and funded this research independently.
References

Eileen O’Loughlin

Eileen O’Loughlin is a Market Research Associate at Software Advice. She joined the team in 2015 and covers the accounting, project management and legal management markets.

Software Advice profile
eileen@softwareadvice.com
(512) 375-4071

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