10 Ways to Improve Project Estimates in Your Organization

A White Paper by Jerry Manas

Executive Summary:

Effective project estimation is vital for resource management, timely delivery, and overall business success. The following ten guidelines will help busy project leaders and organizations avoid common pitfalls, root out estimation errors, and achieve better results across their portfolios.

A resource forecast is only as good as the estimates it is based on. If the project effort is underestimated, the assigned resources will be overloaded. If it's overestimated, people will be sitting idle. This has a ripple effect on the organization's project portfolio.

Poor project estimates are a killer in many organizations, causing delays, scope creep, profit loss, resource under- and over-utilization, and even employee stress and apathy. The culprit is often the process, which can be improved with the right methods and tools.

Here are 10 ways to facilitate more accurate project estimates in your organization.

1. **Use a Multi-Phased Estimation Approach**

Rarely does an organization have all the information needed to provide an accurate estimate before a project begins. There are typically at least three phases during a project lifecycle when a project estimate is needed, leading to progressively more accurate estimates as you reach each stage:

Project Request: A rough order-of-magnitude estimate, given when a project is first requested. This is typically a top-down estimate based on expert opinion or comparison to other projects. Accuracy: According to the Project Management Institute's PMBOK® Guide, this can be -25 percent to +75 percent, though the variability can be greater in projects with high uncertainty.

Business Case or Phase Budget Approval: For preparation of a business case or budget approval of a project phase, organizations typically conduct a more intensive study. Sometimes, a separate conceptual design estimate is prepared as well. Accuracy: PMI standard ranges from -10 percent to +25 percent.

Baseline Approval: This Definitive/Baseline Estimate is a bottom-up estimate rolled up from the individual project task estimates, or in the absence of a detailed schedule, an accurate resource forecast. A snapshot is then taken of this baseline to use for ongoing comparison of actuals to tell whether the project is on budget. Accuracy: PMI Standard is -5 percent to +10 percent.

2. **Employ Predictive vs. Iterative Approaches Strategically**

Both predictive (e.g., Waterfall) and iterative (e.g., Agile) approaches to project management present unique opportunities and unique challenges for project estimators. In traditional, predictive projects, the scope and specifications are known (and definable) up front, but the cost and schedule to deliver it are estimated. With iterative approaches, the cost and schedule are fixed in a finite number of iterations leading up to a product release, but the features able to be delivered are estimated.

The key is to use the right tool for the right job, which can depend on the degree of customer engagement available (critical for iterative approaches) and the degree of exact specifications (necessary for predictive approaches). Also, up-front planning is important in both models. Requirements are essential and can be either functional (specific prioritized needs or features) or non-functional (referring to usability, maintainability, marketability, etc., which often lead to specific design elements). Doing all this work early on can allow for better estimates and avoid the dreaded scope creep later. After all, it's hard to estimate unless you know what you're up against to begin with.

3. **Prepare for Capital Planning Estimates**

Capital cost approvals are often needed toward the beginning of the project when little is known about the true costs and a detailed bottom-up estimate has not yet been conducted. Often, these Appropriation Requests (A.R.s) dictate a high level of accuracy (usually +/- 10 percent). Cover your bases when submitting A.R.s by demonstrating due diligence, offering rationale for the chosen solution, and outlining the risks and contingency plans.

As a last resort, in most cases a request for more funds can be submitted if capital funds are needed later that exceed the threshold of the approved A.R. This will be more readily accepted if the initial A.R. demonstrated adequate risk analysis.

4. **Adopt Proven Top-down and Bottom-up Estimation Methods**

Depending on the estimate phase, you can use a variety of top-down or bottom-up methods for effective estimates. Top-down methods are generally used for order-of-magnitude and budget-level estimates. A bottom-up estimate is comprised of either the individual project task estimates or project-level resource forecasts, and is used to create the baseline estimate. Many of the same estimation methods can be used for both top-down and bottom-up estimates. Examples, which can be done in combination or separately, range from analogous (comparing the project or task to a prior, similar project or task) to Subject Matter Expert (a SME assessment of what is needed) to parametric (using a calculated parameter such a $2 per line of code, x hours per program, etc.).

5. **Gather Contributor Estimates**

Contributor estimates are crucial to keeping your project schedule and resource forecast accurate. Encourage resources to provide on their timesheets the "current remaining estimate" of effort they're responsible for each week. Not only does this keep the project schedule accurate, but it also reflects the ongoing viewpoint of the people executing the tasks.

6. Proactively Address Resource Problems

It is vital to consider resource availability when estimating the duration of a task or project. For example, while the actual effort required may be 16 hours or 2 FTEs (Full Time Equivalents), if the resource is only available half time, it will take four days (.5 FTE per day). Bad estimates can result in cost and schedule overruns and throw entire portfolios into chaos. This is also why demand prioritization is so important, to

avoid resources getting constantly shifted in the first place. Many organizations think they have a resource management problem when in reality they have a demand prioritization problem. The truth is: demand and capacity are two sides of the same coin.

7. **Manage Risk**

Risk management is a vital part of project management that's often ignored. It's also an important part of addressing estimate problems proactively. There are a defined set of methods for addressing known risks, including:

- Mitigation: Reducing the probability and/or impact of the risk
- Avoidance: Changing plans to completely avoid the risk
- Transference: Transferring the risk to another party (e.g., insurance, fixed contracts, etc.)
- Passive acceptance: Taking a "wait and see" approach
- Active acceptance: Accepting the risk, but having a contingency plan such as a "plan B" and/or money set aside

Especially for large projects, consider having Management Reserve (a separate budget controlled by management, generally five to 10 percent of the project budget) for unknown risks. Also have a Contingency Reserve (controlled by the project manager) for addressing known risks. This amount should be part of the project budget and based on the expected cost impact of the likely risks.

8. **Develop an Estimation Project for Your Mega-Project**

For mega-projects, it is a best practice to have a separate project for the estimate itself. The estimating and discovery process itself can take weeks, consuming valuable resources. If this so-called preparatory work isn't planned and estimated, it tends to be "off the radar" and can impact an entire project portfolio by using up valuable resources. Taking the time to do an estimation project up front will make it more likely that the resulting business case and estimate for the ensuing mega-project will be fairly accurate.

9. **Create Multi-Point Estimates**

Consider creating more than one estimate. For example, the construction industry provides three estimates (high, medium, low) as a standard practice, and that's in an industry with relatively high degrees of up-front accuracy. This is similar to offering a range, but it draws attention away from a single number. After all, executives often remember the single estimate amount and ignore the plus/minus variability range given in the three phases of estimates. Consider providing an optimistic, pessimistic, and most likely estimate, and base them on the assessed likelihood of identified risks happening, not just on a hunch.

The PERT technique, originally established for the Polaris Missile Program, uses a weighted average toward the "most likely," using a calculation of O+P+4(ML) / 6 (where O is the Optimistic estimate, P is the Pessimistic, and ML is the Most Likely). Again, this should be based on a risk assessment, where Optimistic means most of the risks won't come to pass, Pessimistic means most WILL come to pass, and Most Likely is based on the risks' probability and impact.

10. **Determine the Root Causes of Project Delays**

Poor project estimates are not the only cause of project delays. Causes range from unrealistic deadlines to customer unavailability to unpredictable events. Draft a plan to address the root causes of project delays. Using the tips in this article and having a solid demand prioritization and governance process will help.

Summary:

Tip	Description
Use Multi-Phased Approach	Refine estimates as a project progresses, starting broad and getting more precise.
Predictive vs. Iterative Models	Choose the method (Waterfall or Agile) that best fits your project's uncertainties and customer needs.
Prepare for Capital Planning	Base early funding approvals on due diligence, clear risk analysis, and planned contingencies.
Top-down & Bottom-up Methods	Apply appropriate estimation techniques at each stage, combining past data with granular analysis.
Contributor Estimates	Require participants to update remaining effort weekly, keeping estimates responsive and accurate.
Address Resource Problems	Factor in true resource availability and prioritize demand to prevent overload or underuse.
Manage Risk	Proactively allocate management and contingency reserves for both expected and unknown risks.
Estimation Project for Megaprojects	Treat the estimation process as its own project for complex, large-scale efforts.
Multi-Point Estimates	Use optimistic, pessimistic, and likely values informed by risk, not just single-point guesses.
Root Cause Analysis	Investigate and address causes of delays beyond estimation, such as unrealistic timelines, market factors, or resource shortages.

Improve the Process with Education and PPM Tools

Many of these methods and skills can be learned. Changing a flawed process that is entrenched in an organization's DNA is more challenging. Project Portfolio Management (PPM) and Resource Management solutions are used by many to improve the process and facilitate more accurate project estimates.

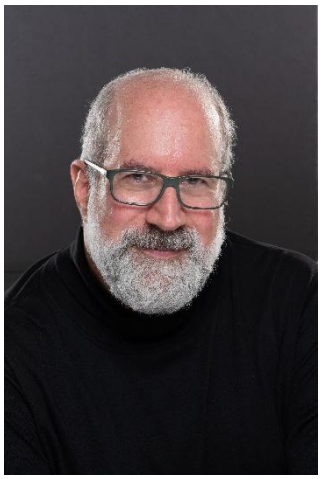
A good PPM or Resource Management application can go far to help you solve some of your problems, but should never be thought of as a replacement for the expertise and opinions of subject matter experts and engaged project and resource managers. If your company already has a software solution in place, you're ahead of the game but it is still worthwhile to take an objective look at how the solution is being used and how it can be extended across the organization.

Next Steps

Ready to improve your project outcomes? Start with a simple estimation audit: Review the last five projects using this checklist and identify gaps where a new approach would have made a measurable difference. Schedule a team session or training to boost awareness and adoption of these practices.

If you are interested in a custom estimation process assessment or workshop, or to schedule a free consultation, contact us for a one-on-one discussion tailored to your challenges. Additional learning and implementation resources are available for those seeking to go deeper.

About the Author



Jerry Manas is an internationally bestselling author, speaker, and consultant specializing in workforce planning and resource management. He helps organizations maximize the potential of their people to achieve breakthrough results. His books include *The Resource Management and Capacity Planning Handbook* (McGraw-Hill), which Judith E. Glaser, noted author of *Conversational Intelligence*, touted as "the first book dedicated to what is essentially the drivetrain of organizations—the effective use of its people toward its most important activities."

Jerry is frequently cited by leading voices in the world of business, including Tom Peters (*In Search of Excellence*), who often references Jerry's bestselling work, *Napoleon on Project Management*, for its insights on simplicity and character, and Pat Williams, Senior VP of the Orlando Magic, who called Jerry's book, *Managing the Gray Areas*, "a new path for leaders."

Jerry played a pivotal role on the leadership team for the first editions of the Project Management Institute's international standards for portfolio and program management. He later served as a U.S. Registered Expert with ANSI/ISO, representing the United States in the creation of global standards for Workforce Allocation, Employee Engagement, and Knowledge Management, and as a voting member of the ISO Global Standards ANSI Technical Advisory Committee on HR Management (TC 260).

Jerry's work has been highlighted in a variety of publications, including the *Houston Chronicle*, *Chicago Sun Times*, *National Post*, *Globe and Mail*, *Huffington Post*, and others. He has appeared on TV and radio internationally, including a notable appearance on Icelandic National TV, where he applied lessons from his books to the country's economic recovery.

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