

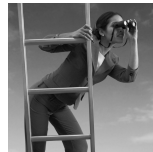
## Risk Management for Fast Changing-Projects

Jeff Oltmann  
jeff@spspro.com



### Topics

1. In risk management, opposites attract
  - Predictive planning
  - Flexible reaction
- Integrated risk management predicts the future
- Intrinsic risk management increases flexibility



## Stuff Happens

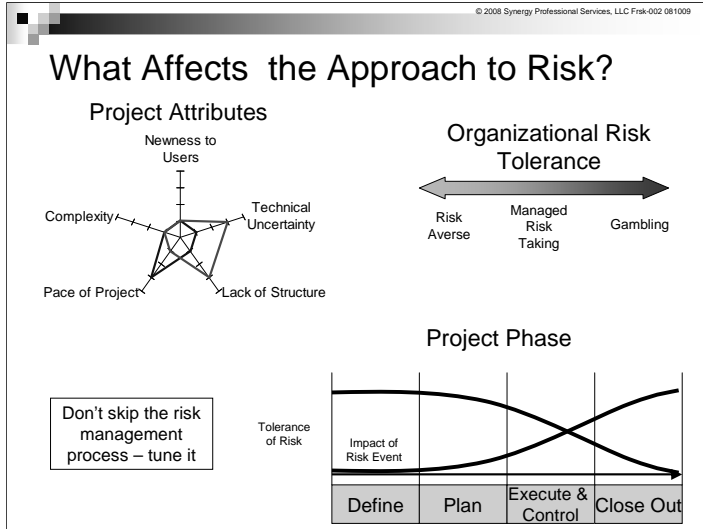
- Risk management is ...
  - Maximize good stuff and minimize bad stuff
  - Deliberate - not gambling
- Why bother?
  - "Even if something *can't* go wrong, it will"
  - Pro-active – increases flexibility and speed
  - Enables informed decision making on risk-taking
  - Reduces problems up to 90% (Mulcahy, 2002)



"All project management is risk management" – Eric Verzuh

Nearly everyone agrees that risk management is really important on projects, yet few companies actually do any kind of disciplined risk management. In fact, studies on project management maturity in high tech organizations show that risk management consistently ranks near the bottom of the 12 knowledge areas listed in the Project Management Body of Knowledge.

Yet a small investment in risk management techniques can pay off big time. According to Mulcahy, risk management can reduce later project problems by up to 90%.

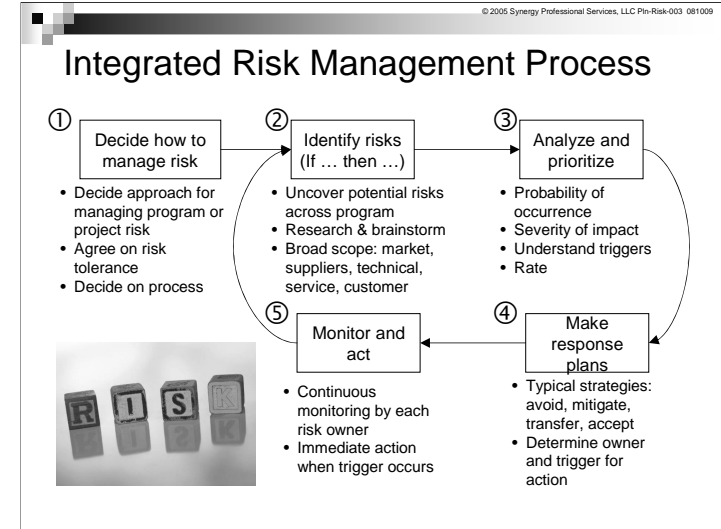


Risk management is crucial, but it should be tailored to the attributes of the project. For example, a one week project that is similar to previous projects may only need 15 minutes of risk management time. More would hurt rather than help.

On the other hand, Boeing's design of its next generation aircraft involves a team of thousands, plus hundreds of partner companies from all over the world. Much more sophisticated and expensive risk management approaches are required. Risk avoidance is mission-critical. I don't want a surprise in the aircraft's navigation system while I'm flying on the plane!

Understand the right times during a project to take risks. Early in the project, you have more runway to recover from problems, so you can be more risk tolerant. The potential rewards may be worth increased risk because the consequence is smaller. As you get into execution and closeout, the consequences of a surprise go up, so you must be less tolerant of taking risks.

Another tuning factor to consider is your organization's underlying tolerance for risk. For example, you will have difficulty using a risk management approach that takes aggressive risks within a historically risk averse culture. Similarly, "cowboy" organizations may find it difficult to be more analytical and disciplined about evaluating risks. What is your organization's tolerance for risk? Keep that in mind as you develop a risk management approach for your projects.



Integrated risk management deals with risk by implementing a framework that the project uses to predict possible risks and plan for them. The basic risk management process has five steps. There are versions with much more sophistication, but this set of steps underlies all of them.

Often steps 1 – 3 are done in a haphazard way, giving the project team the illusion that they've got risks under control. Or risks are carefully listed and prioritized, but then the list sits on someone's desk. Get value from your investment in steps 1 – 3 by doing the rest of the steps, too. Create response plans for top risks, assign owners, and frequently revisit your risk situation.

© 2004 Synergy Professional Services, LLC Ch-CSF-003 1080128

## Search Far and Wide

② Identify

**Sources of Risk**

- Technical
- Business
  - Market, competition, customers, economy
- People
  - Skills, commitment, availability, politics, team dynamics
- Other teams, projects, and suppliers



It is easy to focus on technical risks. (By technical, I mean risks within our day-to-day domain expertise, whether that is engineering, healthcare, finance, or some other specialized area.) These risks are important, but often the bigger threats to a project come from sources outside our usual view, perhaps because we don't think about them as much.


During risk identification, look widely for risks from non-technical sources. One good way to start is to find out what hurt previous projects. Ask people who worked on those projects. There's a good chance that they will tell you about serious surprises that were because of business, people or skills issues.

© 2004 Synergy Professional Services, LLC Ch-CSF-004 081009

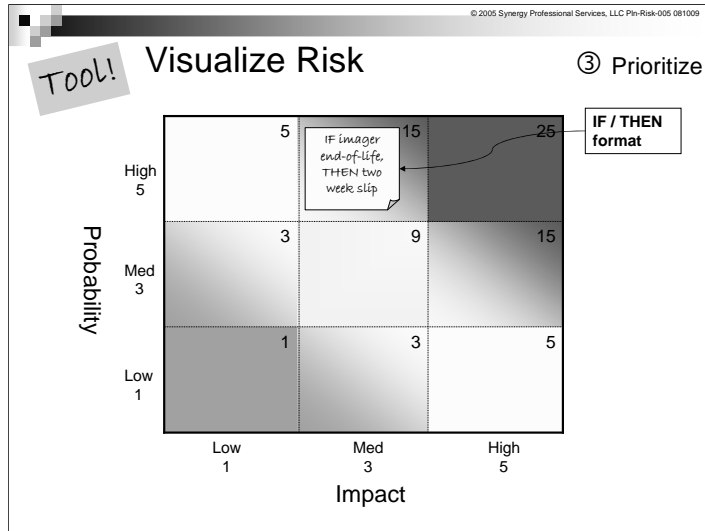
## How to Uncover Risks

② Identify

- Interview and brainstorm with experts
  - People who worked on similar projects
  - Technical experts
  - Business experts
  - People outside your area of expertise
  - The project team
- Consult historical information
  - Postmortems and debriefs
  - Books, articles, and case studies



Use the project's charter, WBS, and network diagram or Gantt to start the discussions on possible risks. And don't limit your questions to yourself or your project team. Also ask people who are not directly involved with the project, such as people outside your area of expertise. For example, if you're in engineering, talk to service, manufacturing, or marketing people. If you're the supervisor of a clinical unit, also talk to financial, IT, and other people you don't see daily.



Now that you have a list of potential risks, do something about them. Prioritize the list down to the top items that you and your team are going to focus on now. Prune the list to prevent it from becoming overwhelming. The tool on this slide (called a “PI Matrix”) will make prioritizing easier.

I recommend that you do this prioritization step with your team using stickies on a whiteboard or flipchart. It may seem hokey to play with a bunch of stickies, but I’ve found that this encourages lots of useful interaction and discussion. Many people are kinesthetic, and the action kicks their creative thinking into a higher gear.

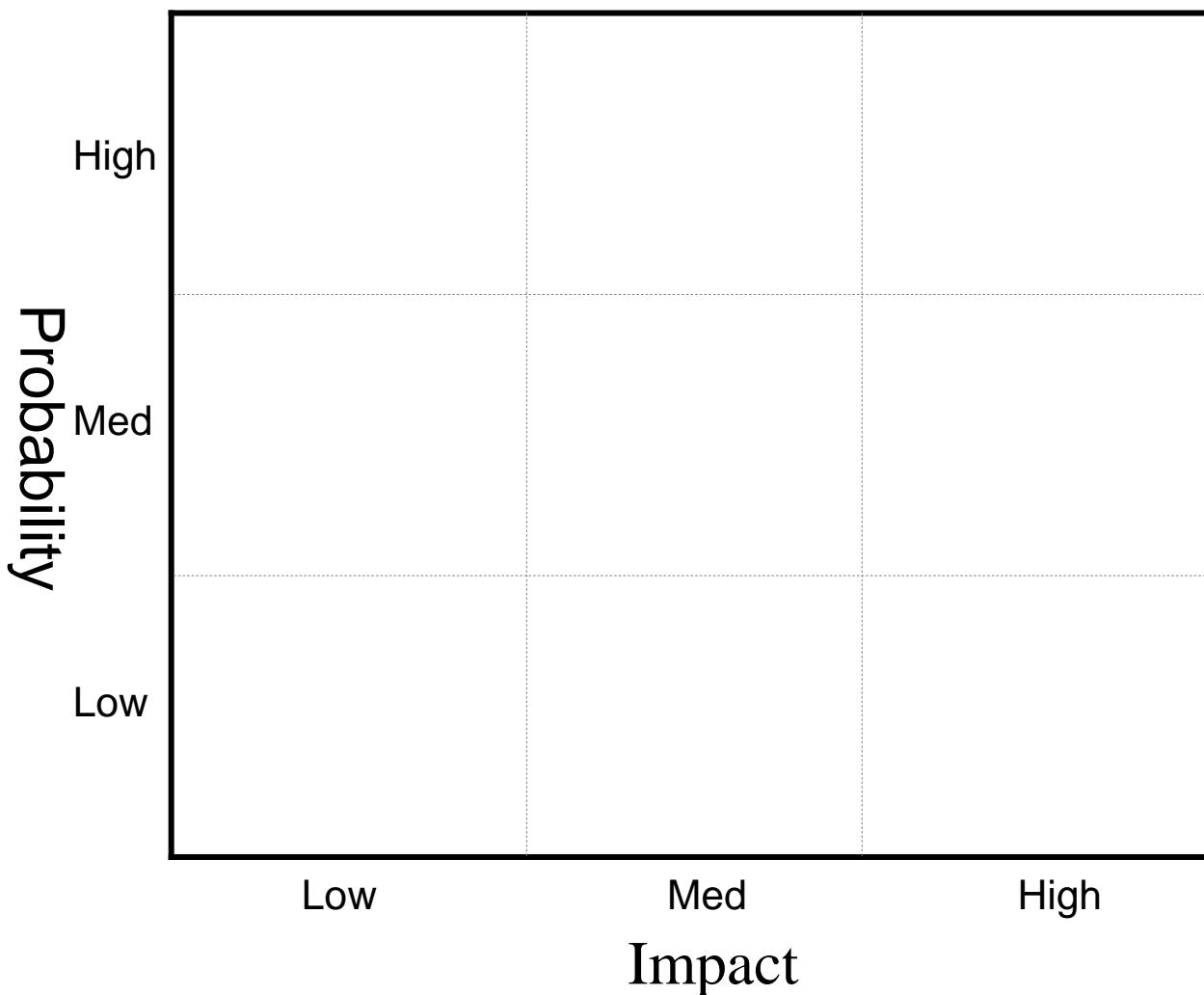
Write each risk on a sticky in the format “IF risk event, THEN consequence.” Then discuss where on the PI matrix each sticky should be placed. It is usually not necessary to be super-analytical about the probability and impact ratings – often high, medium, and low are sufficient.

# Risk Assessment

**Project name:**  
**Project manager:**  
**Date:**

## ***Identify and Prioritize Risks***

Identify risks to the successful completion of your project. Prioritize the risks by plotting each one on this Probability-Impact (PI) Matrix





## Risk Management Instructions

The risk management process has four basic steps.

1. Identify risks using "If / Then" format
2. Analyze and prioritize risks
3. Create and implement risk management plans
4. Monitor risks and act when necessary

### Step 1 - Identify

Identifying risks is a team activity. Use the charter to start the discussions on possible risks. Don't limit your questions to yourself or your project team. Ask people who are not directly involved with the project, such as people outside your area of expertise. For example, if you're in engineering, talk to service, manufacturing, or marketing people. You can also consult historical information such as postmortems and debriefs, as well as published information in books, articles, and case studies.

### Step 2 – Analyze and Prioritize

Now that you have a list of potential risks, prioritize it down to the top items that you and your team are going to focus on now. Use a Probability-Impact (PI) Matrix like the one on the first page of this form to drive the discussion.

A good way to use a PI matrix is for your team to write each risk on a sticky, and then place the stickies on a large copy of the matrix that you've drawn on flipchart paper. When you're done, transfer the results to the PI matrix on this form by typing the risks into the corresponding cells of the table. Remember to write each risk in this format: IF <something occurs>, THEN <impact>.

Put a high priority on managing the risks that end up in the red zone of the PI matrix. Green zone risks go on your watch list – don't spend a lot of energy planning for them, but check them periodically. For each yellow zone risk, make a case-by-case decision on how much energy you will spend managing it.

### Step 3 – Risk Management Plans

Use the *Risk Management Plans* worksheet on this form to create action plans for the high priority risks from the previous step. Each risk management plan has two parts, with an owner responsible for implementing each part.

- In the *proactive* section, you decide on preventative actions that you will take *now* to reduce the probability that the risk will occur or to reduce the impact if it does occur.
- In the *contingency* section, you decide how you will react if the risk event occurs in spite of your proactive actions. The *trigger* is the event that you will monitor to determine whether the proactive actions were good enough. If the trigger occurs, you will implement the contingency plan.

Some classic risk management strategies are:

- Avoid - Eliminate a specific threat, usually by eliminating the cause, before the project enters the execution phase.
- Mitigate - Reduce risk by taking proactive actions to lower the probability of a risk event's occurrence or to reduce its impact should it occur.
- Accept - Plan to accept the consequences of a risk (can be active or passive).
- Transfer – Move the burden of managing the risk to someone else who is better able to handle it (financially, expertise, or in other ways).
- Monitor – Defer action and monitor the risk.

### Step 4 – Monitor and Act

The owners of the proactive plans from the previous step should implement the preventative actions. This may require help and support from other people, including managers and sponsors. After all, great plans aren't any good if you don't execute them. Likewise, contingency owners should monitor their risks and initiate the contingency plans when triggers occur.

Finally, risk management is not a one-time event. Monitor and update your risk list and risk management plans regularly. Look for new risks and risks that have changed substantially. It is an excellent idea to devote a few minutes at every team meeting to a brief risk review.

## Risk Terms and Definitions

- **Risk Event** – A discrete occurrence that may affect the project for better or worse.
- **Trigger** - Item which will be used by the project team to recognize that a certain risk event has occurred, initiating the associated contingency plan.
- **Avoidance** - Plan to eliminate a specific threat, usually by eliminating the cause (before project execution).
- **Mitigation** - Plan to lessen risk by lowering the probability of a risk event's occurrence or reducing its effect should it occur (before project execution).
- **Acceptance** - Plan to accept the consequences of a risk (can be active or passive - before project execution).
- **Contingency** - Plan of alternate strategies to be used to ensure project success if a specified risk event occurs during project execution.

Once the team has prioritized risks, assign owners (maybe you!) and tactics to the top ones. Classic tactics include:

- Resolve it now and get it off the list – e.g. engineering and marketing disagree on desired feature set. Thrash it out and reach a decision.
- Alter your plan to mitigate the risk – e.g., the sole source of a component may go out of business. Buy the supplier.
- Avoid it (change your plan to do something different) – e.g., the sole source may go out of business. Don't use the part.
- Acceptance – decide to take the risk.

Use a form like the worksheet on the previous page, and update it periodically – it is an excellent idea to review risks at every team meeting.

## Mastering Projects Series Stuff Happens: Dealing with Risks

### Visits from Murphy

Murphy gleefully surprises all projects, causing significant peril to schedules, budgets, and other business objectives. Disciplined risk management is crucial to preventing these perils, but few companies are capable of it. According to research by Kwok and Ibbes, most technology companies are less mature at risk management than at any other knowledge area listed in the Project Management Body of Knowledge (PMBOK).<sup>1</sup>

**Murphy's Law**  
If anything can go wrong, it will.

Despite this grim statistic, good risk management is not complicated. In this article, I will look at a tried and true risk management process, sharing tips from my clients and students. A future article will cover several advanced risk management techniques for today's turbulent project world.

### What is Risk Management?

My definition of risk management is simple. Risk management attempts to maximize the good stuff and minimize the bad stuff that may happen to your project. It is deliberate and proactive, not gambling. Figure 1 shows the traditional risk management process.

failure.<sup>2,3</sup> For example, a project to relocate ten cubicles requires a very different approach than a project to implement a new triage process at a busy hospital's trauma center. Tips for this step:

1. Risk tolerance varies by phase. The earlier stages of a project can often tolerate more risk.
2. Favor simplicity. A fancy, highly analytical risk methodology is worthless if its high overhead or complexity means that people don't understand it or use it consistently.
3. Get many perspectives. You'll get higher quality results and better buy-in if you involve the project team in all steps.
4. Include positive risks (we usually call them opportunities) as well as negative risks (threats).

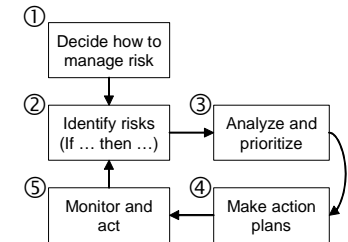


Figure 1: Traditional Risk Management Process

**Step 1: Decide how to manage risk.** The PMBOK calls this step "risk management planning." Agree on your risk tolerance, and then tailor your risk management approach to the type of project and the consequences of

**Step 2: Identify risks.** (PMBOK name: "risk identification") Uncover potential risks across the breadth of the project by researching and brainstorming. Cast a wide net. For example, look for risks related to technology, the business,

competitors, vendors, and customers.  
Tips:

1. Start identifying risks early, as soon as the project is a glimmer in the sponsor's eye. Use a checklist of risk sources to spur your thinking.
2. The objective of this step is to identify a wide range of risks. Don't get bogged down analyzing the risks or getting the wording perfect.
3. Interview "undercover experts." These are frontline people who may not be highly visible but who learned the hard way on similar projects.
4. Write risks in *if-then* format so that subsequent analysis and prioritization is easier.

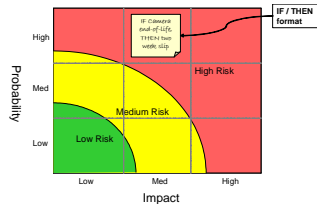
***If-Then Example***

**If** the pilot manufacturing run reveals a reliability flaw in the new product,  
**Then** first shipments and revenue will be delayed by 3 months.

**Step 3: Analyze and prioritize.** (PMBOK name: qualitative risk analysis and quantitative risk analysis) You must prioritize the risks identified in the previous step, because your project team doesn't have the time or money to respond comprehensively to all of them.

Tips:

1. Look at each risk's probability, impact, and timing attributes to help you decide where to focus.
2. Resist getting overly analytical. It's easy to lose momentum during this step, arguing too much about unimportant details such as whether the probability of a risk is 67% or 53%. Instead, use a simple visual tool such as a PI Matrix<sup>4,5</sup> (Figure 2) to encourage vigorous discussion.



**Figure 2: PI Matrix**

**Step 4: Make action plans.** (PMBOK: risk response planning) Decide how to handle the highest priority risks, including who will do what. Typical action strategies are avoidance, mitigation, transfer, acceptance, and monitoring (see sidebar). Effective action plans include the following components for each high priority risk:

1. Proactive (mitigation) plan: what are you going to do in advance to try to influence the risk event in your favor?
2. Reactive (contingency) plan: what are you going to do to ensure your project's success if your proactive plan turns out to be insufficient?
3. Owners: plans will fail unless there are clear owners who are responsible for implementing them.

**Step 5: Monitor and act.** (PMBOK: risk monitoring and control) Each risk owner implements his action plans, continuously monitors his risks, and immediately acts when a trigger occurs. Tips for this step are:

1. Fight for enough time and resources to implement the action plans immediately. Short-term project issues distract many teams and sponsors before they can implement their plans. They lose their best prevention opportunities.

2. As a project team, frequently review the landscape of risks and action plans to determine whether to make changes. Make it a brief agenda item at every team meeting.

**Classic Action Strategies**

**Avoid** the risk by changing your plan to eliminate the threat. For example, manufacturing of your new product will be shut down if the sole source supplier of a crucial component goes out of business. One way to avoid this risk is to eliminate its cause by redesigning the product to remove the component.

**Mitigate** the risk before it happens by lowering the probability of its occurrence or reducing its impact should it occur. For example, instead of removing the sole sourced component from the design, buy the supplier to improve its business stability. This reduces the probability that supplies of the critical component will be interrupted.

**Transfer** the risk by moving the burden of it to someone else who is better able to handle it (financially, expertise, or in other ways).

**Accept** the risk by planning to accept the consequences if it does occur. This may be an appropriate tactic when the costs of managing the risk outweigh its impacts or probability.

**Monitor** the risk, deferring a decision on how to handle it. This is a holding action and is different than accepting the risk.

**Conclusion**

There are many sophisticated variations on this basic process, but using even simple risk management techniques will

reduce the havoc that Murphy can wreak on your next project.

Today's turbulent project environments have led to new thinking about risk management. The next article in this series looks at advanced methods of managing risk, including flexible project methodologies and the influence of change on risk.

For free templates that support this risk management process, get the *Project Development Workbook* from the Resources area of [www.spspro.com](http://www.spspro.com).

**About the Author**

Jeff Oltmann is principal consultant at Synergy Professional Services, LLC in Portland, Oregon ([www.spspro.com](http://www.spspro.com)). He is also on the faculty of the department of Science and Technology at the OGI School of Oregon Health and Science University. Jeff welcomes your questions and ideas. You can contact him at [jeff@spspro.com](mailto:jeff@spspro.com).

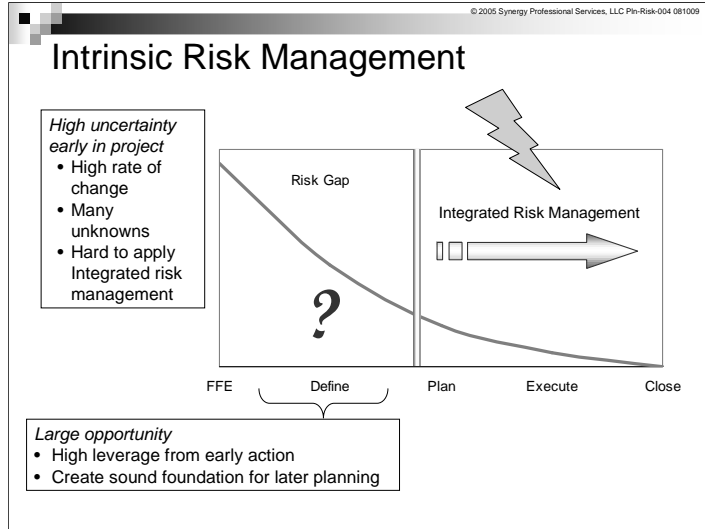
<sup>1</sup> Ibbs, C. William & Kwok, Young Hoon (March 2000): *Assessing Project Management Maturity*, Project Management Journal, pp 32-43.

<sup>2</sup> See "How Projects Differ", Shenhar, A. J. and D. Dvir, in *The Wiley Guide to Managing Projects*, John Wiley & Sons, 2004

<sup>3</sup> See framework for evaluating IT projects in McFarlan, F. Warren. "Providian Trust: Tradition and Technology (B) TN." Harvard Business School Teaching Note 399-089.

<sup>4</sup> Verzuh, Eric (2005): *Fast Forward MBA in Project Management, 2<sup>nd</sup> edition*, ch. 5, ISBN 978-0471692843

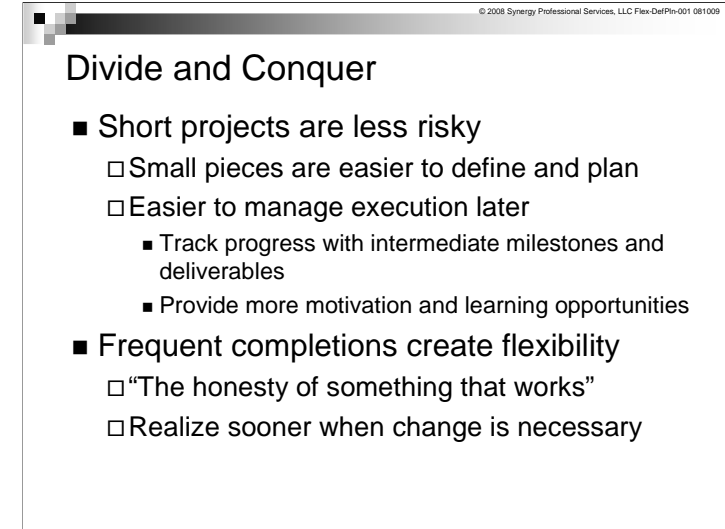
<sup>5</sup> Milosevic, Dragan (2003): *Project Management Toolbox*, ISBN 0-471-20822-1



Integrated risk management is powerful, especially in the later phases of a project, but it is not sufficient for fast-changing projects. It is very plan-driven, and is dependant on correctly forecasting the most important risks well in advance. Thus, it is susceptible to disruption from the lightning bolts that we didn't foresee.

Especially in the early stages of a fast-changing project, we need risk management methods that give the project flexibility and the agility to react quickly to unforeseen discoveries. Thus, we must supplement integrated risk management with something else – intrinsic risk management.

In his new book Flexible Product Development, Preston Smith says, “For a fast-changing project, risk management must move beyond simply being integrated to being intrinsic, In intrinsic risk management, running the project and managing its risk are identical.” [Smith, p.192]



Preston Smith has this cautionary tale about change and flexibility in his new book Flexible Product Development. [Smith, p.31 – 32]

“The changes developers encounter during development frequently can be traced to the customer. Customers change their minds; they do not know what they want until they see it; they do not use the product as they are supposed to (that is, the way developers assume they will); they do not read the instruction manual; they abuse the product; they undervalue the product’s marvelous features while complaining about minor problems; and they return it for warranty service when it is working perfectly.”

Smith quotes the results of thirteen years of data collection by Donald Reinertsen at Cal Tech, and continues:

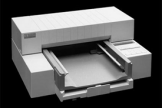
“Phased development systems generally require a requirements document as a deliverable at the end of an early phase ... Does this fit with reality, or is a frozen specification simply fiction? ... [Reinertsen found that] it is not that specifications seldom remain constant during development; it is that they never do. The concept of frozen requirements is a complete fiction in the real world.”

One way to deal with constant change is to divide and conquer. Divide large projects into a series of smaller, shorter projects. A series of shorter projects is less risky because short projects are easier to understand and things are less likely to change during the project. A series of short projects also forces the project team to frequently deliver working, valuable results rather than letting the project stay in the conceptual stage too long.



© 2008 Synergy Professional Services, LLC APM-Scope-005 081009

## Reduce Definition Risk

1. Specify at a higher level, especially early in the project
2. Specify the desired result, not the method of achieving it
3. Anticipate customer needs with early on-going investment

Increase dot resolution  Laser-quality print

Original 1988 HP DeskJet

Jeepney image from www.jalopnik.com


Scope changes are going to happen. You might as well run a project that handles them well, and even takes advantage of them. Here are some tips that will help keep a project flexible, and therefore better able to respond to unforeseen events.


- Specify the desired result at a higher level, rather than specifying lots of details or a method to achieve the result. For example, the three requirements for the original HP DeskJet printer in 1988 were simply “Laser quality print on plain paper for under \$1000,” which allowed a breakthrough shift from dot-matrix to ink jet technology. A “how-to” spec would have resulted in a mundane product using the same tired old technology.
- Anticipate customer needs so you know what they really need even before they do. Smith says, “Seek to anticipate change in the customer environment by finding ways to stay close to your customers and thus appreciate their trends in using your products.” [Smith, p. 55]

© 2008 Synergy Professional Services, LLC Flex-DefPin-002 081009

## Modular Architecture Reduces Risk

Which would you prefer when winter comes early?

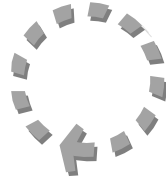
 ← Partly completed mansion

Small simple house designed for later additions → 

Another way to increase flexibility in a design project is to use a modular product architecture, so you can respond to changes during design rapidly and at low cost, isolating the effects of the changes to one or two modules.

## Successive Refinement of Scope

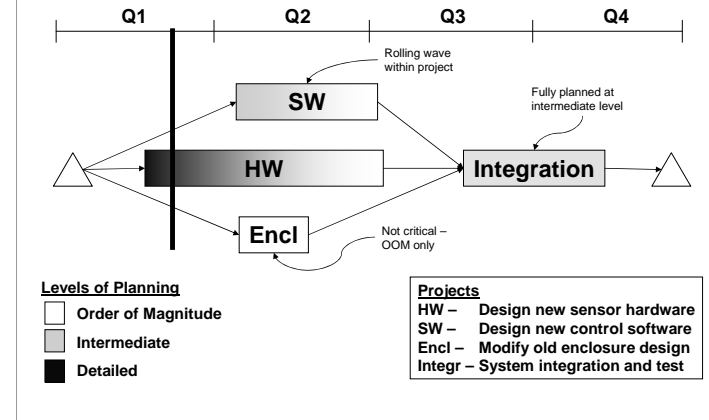
- Start at a high level
- Progressively iterate as more becomes known
  - Project learns more
  - Business changes
  - Resources change
- Expect change requests
  - Scope statement is basis for negotiation
  - Use change control process and communication



You usually can't know everything about your product's and project's scopes at the definition stage. Markets and technologies change. Your team and the customer learn more as they get further into the project. So scope is usually successively refined in an iterative way during the early phases of a project. This helps the project stay flexible and reduces the impacts of late changes.

Sometimes I see teams who want to define or plan the entire project in excruciating detail before moving forward. Just as often, I see teams who want to skip the hard definition work and jump right into execution. A project manager has to lead his team to balance between the two extremes, and successive refinement is a good tool for doing that.

## Flexibility: Rolling Wave Planning

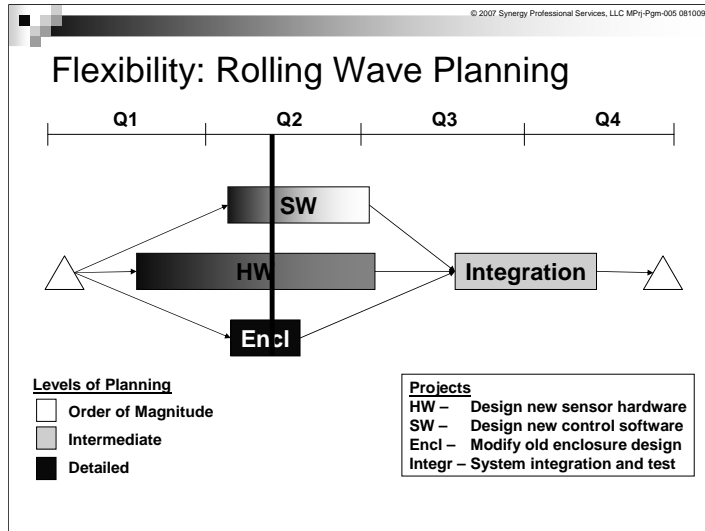


Projects that rate high on Shenhar's technical novelty scale benefit from flexible planning techniques, such as rolling wave planning. In turbulent environments, the future beyond a short horizon is just too fuzzy to plan with great accuracy. The rolling wave approach recognizes that giving up planning entirely would lead to disaster, but the level of planning detail should correspond to the amount of certainty about each phase of the project.

To use rolling waves, start by creating a plan that covers the entire project, but add a crucial twist: make near term plans very detailed, but plan for the later portions of the project at a higher level. As the project moves forward, move the detailed planning window forward, too. Rolling wave is one of the earliest agile planning approaches, described by F.L. Harrison in 1981.

The diagram above shows a twelve month program composed of four shorter component projects. The diagram is a snapshot in time – the bold red line near the left side shows today's date. The program is about 20% into its schedule. Some of the component projects are using rolling wave planning. For example, the HW (hardware) project has detailed plans for the first third of the project, intermediate detail plans for the middle third, and order of magnitude plans for the last third, as shown by the changing shading in the Gantt bar.

In addition, the entire program is using rolling wave planning. Each aspect of the program is planned in a level of detail that corresponds to the degree of certainty about it, with near term activities generally having more detailed plans.

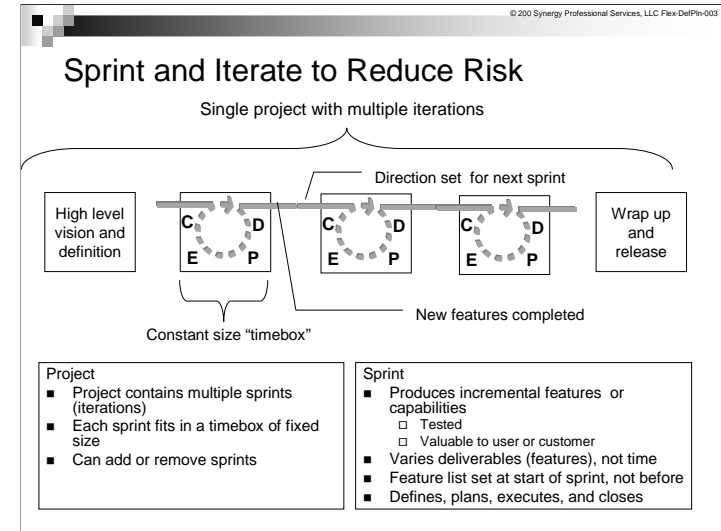


In the snapshot above, about two months of time have passed. Note that the detailed planning window has moved forward, too. Much more of the program and its projects is now planned in detail, but there are still some future areas of high uncertainty that are planned only at intermediate or order of magnitude levels of detail.

Rolling wave planning will be uncomfortable for some people on your team, because it relinquishes the feeling of control and predictability that come from detailed plans for the entire project. However, this feeling is an illusion in the turbulent environments that are most appropriate for rolling wave planning. Rolling wave planning explicitly acknowledges the lack of control.

Two caveats about rolling wave planning:

- It is not applicable for every type of program or project. Use Shenhar's classifications to help you decide when it is appropriate.
- Rolling wave is not an excuse to avoid or skimp on planning. It is a method for deciding *when* to make detailed plans, not *whether* to make detailed plans.



## Traditional Risk Management Is Not Enough

Project managers have honed risk management techniques for decades. These tried and true approaches save many projects from disaster, but are increasingly challenged by the turbulence and rapid rate of change surrounding modern projects. In a previous article, I described tips for applying the five steps of traditional risk management (figure 1). In this article, I look at eight advanced risk management approaches that you can use in these

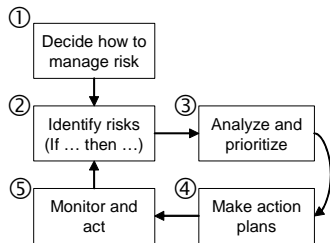


Figure 1: Traditional Risk Management Process challenging new environments.

## Advanced Risk Management Techniques for Your Toolbox

**1 Change your mindset.** For turbulent projects, risk management is job #1, not just one more project management process among many. Continuous risk management is the philosophy that drives everything else. Preston Smith

calls this “intrinsic risk management” – the project team weaves it into everything they do. Here’s an example of this philosophy: the first item on the agenda of every project team meeting is a review of risks. In traditional risk management, the project team does risk identification and action planning once in the planning phase, perhaps with several updates after that. With intrinsic risk management, they look at risks every day! Using a risk list becomes as ingrained as writing a personal daily to-do list.

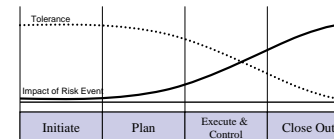
All project management is risk management.  
*Eric Verzuh*

**2 Make projects short.** Research shows clearly that long projects have a disproportionately high failure rate. To reduce risk, break big projects into smaller, shorter projects. This may seem obvious, but it is extremely effective at reducing risk. One CIO I know refuses to approve any project that is forecast to take longer than 3 months. Longer projects must be broken into a series of smaller projects, each standing alone and delivering real value to the customer.

**3 Use rolling wave planning to stay agile.** Some projects can’t be broken into smaller, independent projects. However, making upfront detailed plans that cover the entire project may be inefficient and give a false sense of security. In turbulent environments, the future beyond a short horizon is just too fuzzy to plan with

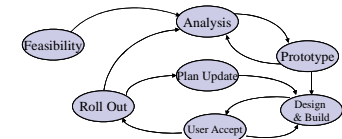
great accuracy. The rolling wave approach recognizes that giving up planning entirely would lead to disaster, but the level of planning detail should correspond to the amount of certainty about each phase of the project. To use rolling waves, start by creating a plan that covers the entire project, but add a crucial twist: make near term plans very detailed, but plan for the later portions of the project at a higher level. As the project moves forward, move the detailed planning window forward, too. Rolling wave is one of the earliest agile planning approaches, described by F.L. Harrison in 1981.

**4 Front load risk.** The cost of risk varies throughout the project. Usually risk tolerance is highest early in the project because you have less invested and more “runway” to make corrections. Take advantage of this by doing the riskiest, most investigational tasks early in the project.



**5 Go in circles with iterative project management.** Change is inevitable, and can even be a competitive advantage for those organizations that react quickly to it. Iterative frameworks keep projects flexible by breaking them into many loops of short planning and execution iterations. Unlike waterfall lifecycles, projects that use an iterative approach can change direction quickly. They also get the added advantage of frequent customer feedback on whether the

project’s direction is correct. Many software development teams use iterative frameworks such as RUP, Scrum, XP, and Evo with great results.



**6 Get honest with prototyping.** Paper designs that haven’t yet been “reduced to practice” harbor many nasty surprises. Reduce this risk by turning paper designs into real prototypes as quickly as possible. Software developers call this “the honesty of working software.” Prototyping is most obvious for projects that are creating a physical deliverable, such as a new machine, but you don’t get off the hook if you’re creating something non-physical. Use tools such as simulations or user interface mockups. Almost anything can be prototyped physically or virtually – get creative!

Prototyping reduces risk in two ways.

1. Prototypes give customers something to “touch and see” early in the project. Customers often don’t really know what they want until they see something. Prototypes elicit their real requirements early, reducing late changes to requirements.
2. Prototypes force project teams to grapple early with the bothersome realities of actually making ideas work. This is always harder than it seems, so prototyping front-loads a major source of risk.

**7 Defer decisions.** At first, this seems to run counter to front-loading risks. Indeed, waiting too long to make important decisions can stall projects and throw them into confusion. However, making decisions too early in a rapidly changing environment has an insidious consequence. You may paint yourself unnecessarily into a corner when things change. Paradoxically, you must make some decisions as early as possible to give the project stable anchor points, but defer others until the last possible moment to retain maximum flexibility in changing conditions. This can be difficult for technical professionals and project managers, who are usually trained to converge on solutions by methodically and rapidly eliminating options.

**8 Change the architecture.** The previous seven tips focused on the project management process itself. However, risks may lurk in the very design of what the project is creating. For example, the design you select for your IT applications may make future changes very difficult and costly. Your architecture is *inflexible*. An inflexible architecture in a rapidly changing world means that you will incur dangerous delays and costs whenever requirements, needs, or technologies inevitably change. Therefore, reduce project risk by creating an architecture that has built in flexibility. These design approaches are known as modular or platform design techniques. They concentrate on modularity,

interchangeability, and robust interfaces. They are powerful ways to reduce risk and can also improve inventory management, reduce product costs, and increase maintainability.

### Conclusion

The traditional risk management process in figure 1 is still a valuable tool. Supplement it by adding these eight advanced techniques to your toolbox so you will be prepared when turbulence and change overwhelm the traditional risk management process.

### References and Reading

- <sup>1</sup> Frame, J. Davidson (2002): *The New Project Management 2<sup>nd</sup> ed*
- <sup>2</sup> Harrison, F.L. (1985): *Advanced Project Management 2<sup>nd</sup> ed*
- <sup>3</sup> Highsmith, Jim (2004): *Agile Project Management*
- <sup>4</sup> Smith, Preston (2007): *Flexible Product Development*
- <sup>5</sup> Verzuh, Eric (2005): *The Fast Forward MBA in Project Management*
- <sup>6</sup> Wheelwright, Steven and Kim Clark (1992): *Revolutionizing Product Development*

### About the Author

Jeff Oltmann is principal consultant at Synergy Professional Services, LLC in Portland, Oregon ([www.spspro.com](http://www.spspro.com)). He is also on the faculty of the department of Management of Science and Technology at the OGI School of Oregon Health and Science University. Jeff welcomes your questions and ideas. You can contact him at [jeff@spspro.com](mailto:jeff@spspro.com)

© 2007 Synergy Professional Services, LLC  
version 071022L

### For Further Information

1. *The Standard for Program Management*, Project Management Institute, 2006
2. *The Project Management Body of Knowledge*, "Communications Management" chapter, Project Management Institute
3. *Mastering Virtual Teams, 2nd ed*, "Starting a Virtual Team" chapter, Deborah Duarte and Nancy Snyder
4. *Emotional Intelligence for Project Managers*, Anthony Mersino, AMACOM, 2007
5. *Fast Forward MBA in Project Management*, "Communication" chapter, Eric Verzuh, Wiley, 2005
6. Schmaltz is quoted in *Dealing with the "Fuzzy Front End"*, Loren Gary, HBSP Article Reprint No. U0306C
7. *The New Project Management, 2<sup>nd</sup> ed*, by J. Davidson Frame (chapter on politics)
8. [www.spspro.com/resources.htm](http://www.spspro.com/resources.htm)