

# Project Execution - PM Elements

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## Risk Monitoring and Mitigation

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***It is Better to Solve a Problem Before it Becomes a Problem!***

Risk identification, monitoring and resolution are key tools to successfully completing a project. Part of controlling a project during the performance life cycle phases is to have an established risk management process that is unique to the project. This process is begun as part of project planning and is kept current until the project close-out. The key elements to this process are:

- Creating a central repository for risk information and associated documentation of risk items and resolution strategies
- Summarizing information on a risk form
- Assigning a Risk Manager, which should be either the project manager or a member of the status tracking/reviewing team (this assignment should have been done at project baseline, but definitely by the early days of performance)
- Including a risk summary in the regular status meetings
- Providing a consistent and ongoing evaluation of risk items and development of risk strategies:

⇒ **Identify the risk**

⇒ **Evaluate the risk**

⇒ **Define a resolution strategy**

***What is After Risk Assessment?***

The risk control process is started at project planning, is baselined at project startup, and is fully maintained during project performance. Provided in the planning section was one view of a risk model that can be used for this process. This form is shown in the next figure. The key is not the format of the data, but that a plan is developed, baselined, and kept current during the performance phase.

Remember, risks are not events that have occurred, but rather events that might occur that would adversely impact the project. Events that have occurred and are impacting the project are addressed in either the Change Management and/or Issue Management processes.

# Project Execution - PM Elements

## Risk Monitoring and Mitigation

Initial Release	1.0
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### Form - PM 05 Risk Management Worksheet

Project: _____				Prepared by: _____			
Project No: _____				Date: _____			
Risk Category / Event	Loss Hours	Probability	Risk Hours	Previous Risk Hours	Preventive Measures	Contingency Measures	Comments
<b>Personnel</b>							
<b>Equipment</b>							
<b>Customer</b>							
<b>Software</b>							
<b>Logistics</b>							
<b>Organization</b>							
<b>Other</b>							
<b>Total Risk Hours</b>							

# Project Execution - PM Elements

---

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Initial Release	1.0
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---

### *The Evolution of Risk Control*

As the project evolves through the various project life cycle phases, the ability to define and specify the risk items increases. This is attributable to the fact that more is known about the project and the associated issues.

During the execution period, risks are more definitive, and tangible resolution strategies emerge. This allows for the development of realistic contingency plans, including specific action plans. These actions are then tracked. The actual format for the risk management plan may need to reflect these activities. Some projects may, for example, want to allow room to show the assignment of a risk item on the risk form.

### *Risk Monitoring is an Iterative Process*

In all cases, risk analysis is an iterative process that is performed throughout the project. Risk analysis examines the risk and its potential impact on the project and defines actions to eliminate or to mitigate the impact of that risk, should it occur.

The process starts with the risks identified in the project plan and the first definition of resolution strategies. There are typically three types of resolution strategies:

- **Eliminating** or avoiding the specific threat, usually by eliminating the cause. The project team can never eliminate all risk, but specific risk events can often be avoided through careful planning.
- **Reducing** the expected cost associated with a risk through mitigation. This is a mathematical solution to containing the risk impact on a project. In some ways it can be seen as “insurance.”
- **Accepting** that a risk will occur and developing contingency plans should the risk event occur. It can also be expressed by increasing the cost of the budget to some threshold to deal with a specific risk item.

The risk management process, which is a cyclical and iterative process, includes four overlapping steps:

- Risk identification
- Risk assessment and prioritization
- Risk reduction and contingency planning
- Risk tracking and reviewing

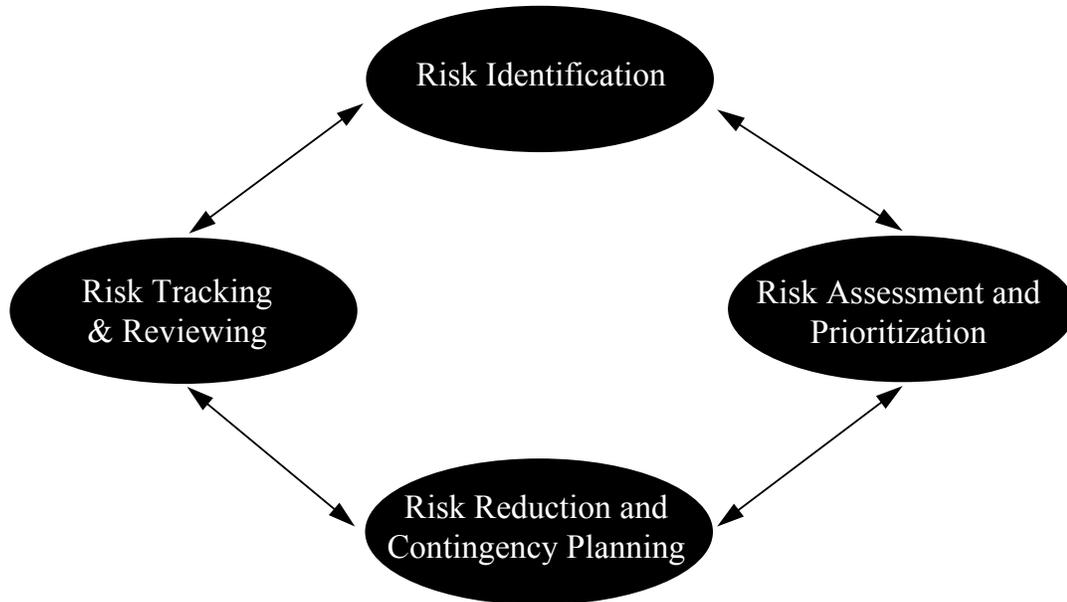
The risk control cycle is shown below.

# Project Execution - PM Elements

## Risk Monitoring and Mitigation

Initial Release	1.0
Date:	January 1997

### Risk Control Cycle



### *Risk Manager*

Risk control responsibility is assigned in the planning phase and is documented in the Project Plan. The risk manager is responsible for ensuring that risk management is performed throughout the project. This person may be the project manager, although in most large projects this is not the most advisable approach. It is primarily a workload issue.

During the planning stage, the functions may be performed by the project manager. In implementation, risk management may require a separate full- or part-time position to sufficiently handle the workload.

This person should:

- Be senior enough in the project organization structure that they would have the ability to request that specific risk contingency plans be assigned and staffed.
- Attend the project management status meetings.
- Have an understanding of the overall project.

The identity of the risk manager should be publicly announced and should also be reflected in the project organizational chart. In most cases, the risk manager will also be fulfilling another management or lead technical role on the project team. The notation can be in the form of an asterisk or sub-

# Project Execution - PM Elements

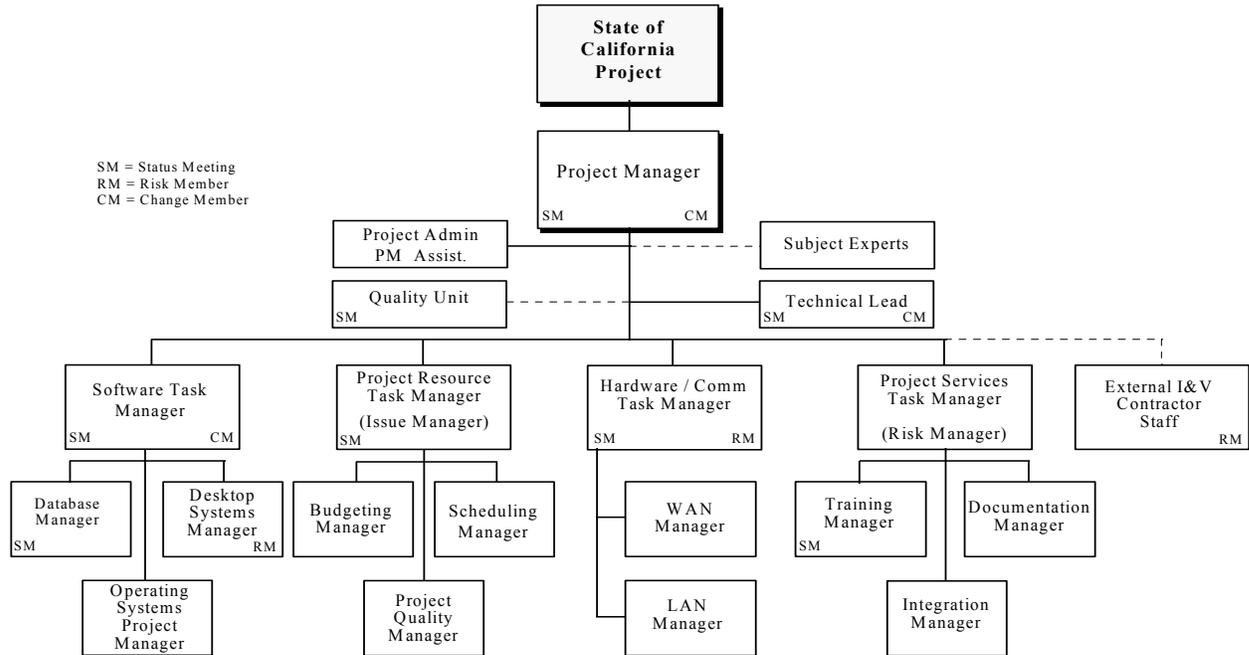
## Risk Monitoring and Mitigation

Initial Release 1.0  
Date: January 1997

heading. A risk management box may be assigned, and names will be repeated for different functions.

An example is shown below. As shown below, some projects update the organization chart to indicate those who will be attending the project status meetings, risk meetings, and change control board meetings.

### Sample Organization Annotated



### Risk Meetings

The risk process is *not* just completing the risk assessment form during project planning and then forgetting about it. Risk management, of which risk control is part, is a process that involves all members of the project team and occurs throughout the project life cycle. Risk meetings are part of and contribute to the process of identifying risks and developing ways to approach the risks.

- **Risk Identification Meetings.** It is during this process that the current risk list is reviewed and updated.
- **Executive Review Meetings.** A summary of the top risk items for the project is included in the executive project review meeting.

# Project Execution - PM Elements

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## Risk Monitoring and Mitigation

Initial Release	1.0
Date:	January 1997

---

### *Ongoing Risk Identification*

- This should be not more than one page and should list the risk, state the defined resolution, and indicate the current status.
- **Project Status Meetings.** On a weekly or bi-weekly basis (depending on the cycle chosen for the project), the individual responsible for risk should report to the project status group on the current status of project risk. There should be a written summary, preferably using the actual risk form, including information on all contingency plans currently underway.

The initial list of risks that begins with the project will evolve over time. To ensure that new risks are added and resolved risks are eliminated, risk identification meetings should be held. How often this should occur is based on the size of the project and the “perception” of the project team and key stakeholder as to the degree of risk that exists for the full project. For most projects, monthly or quarterly risk identification meetings are adequate.

The format for these meetings should be open and interactive to facilitate a wide consideration of risk areas. Some suggestions on meeting format include:

- Brainstorming
- Breakout sessions
- Other meeting approaches that encourage the free flow of information should be used.

The starting point for this meeting is the previous risk list; additionally, some general areas should be considered. The group should be given some ground rules in terms of the degree of risks that will be tracked and ways to eliminate or include risk items. Some criteria for risk tracking include timeframe (when it would possibly occur) and value (what would be the cost if it occurred). The risk manager should provide this information to the group.

Current problems are not to be considered, as these are issues for the change and issue management process.

The meeting, depending on the number of participants, may require a leader, facilitator, and note taker. At a minimum, it will take a leader and a note taker.

From this meeting, the risk manager will have an updated list of risks. This group assists in the process of prioritizing the risks by determining the probability of their occurrence and the impact the risk could have on the project. Specific procedures for risk management are defined by the specific project manager and team.

# Project Execution - PM Elements

## Risk Monitoring and Mitigation

Initial Release	1.0
Date:	January 1997

***Do Not Work More Risks Than There Are Staff to Do the Work***

Risks must be prioritized to ensure that the key risks are dealt with. Be careful not to identify so many minor risks that major risks are buried. The basic ground rules for prioritization are:

- There should generally be about 5 to 10 risks being “worked” at any one time. These should be the risks with the highest probability of occurring. For very large projects, each subsystem or major activity may be tracking this number of risk items.
- The list of actively monitored risks should generally be no longer than a single sheet. Keep a separate list of lower priority risks so that they can be reviewed at future risk identification meetings.
- Select the risk items that have the greatest possible impact on cost or schedule.
- The prioritization process starts with the group that identified the risk, but also includes the project manager, stakeholder, and executive management.

From this risk identification process, the risk team determines the three elements that characterize a risk. These elements are:

- **Risk event** - a statement of what might happen in the project.
- **Risk probability** - how likely the event is to occur.
- **Amount at Stake** - the severity of the consequences should the risk occur.

A very simplistic approach to getting a prioritized list of risks would be to conduct the following calculation:

**Risk Event Value = Risk Probability x Amount at Stake**

It is impossible to give a hard-and-fast rule on what method should be used for prioritization, since this is a process that needs to be driven by the actual project. As the project team works with risk management, they will get more proficient at knowing what should be considered as the top risk, which ones need the most attention, and at what time.

# Project Execution - PM Elements

---

## Risk Monitoring and Mitigation

Initial Release	1.0
Date:	January 1997

---

### EXAMPLE:

For a large database system development project, one risk item is that “the software maintenance staff have not been trained on the database that is being used to develop a major new system.”

This risk item has been ranked high because of the probability of its occurring and the cost to the project if the risk occurs. All agree that this is an item that must be addressed.

The current project is in the design phase and has an anticipated schedule of two years. Should the risk be prioritized and included in the top risk list?

For a project with few other risks, a contingency plan may be set up whereby the software maintenance staff receive training and participate in development to achieve technology transfer. In another project with numerous high risk items, this risk item may be moved off the top risk list because there are at least 15 other risk items that, if they occur, will ensure that the project will not make it to maintenance at all.

The conclusion is that, even though risk prioritization and evaluation methodologies are mathematically based, this process is still based on assumptions and judgment.

### ***Risk Resolution***

For the “top risk” items, mitigation/resolution strategies must be developed. From the steps above, a view of the risk is developed that includes: where, when, and to what extent the risk will impact the project.

With these factors identified, the following options can be considered:

- ***Eliminating*** or avoiding the specific threat, usually by eliminating the cause. The project team can never eliminate all risk, but specific risk events can often be avoided.
- ***Reducing*** the expected cost associated with a risk through mitigation. This is a mathematical solution to containing the risk impact on a project. In some ways it can be seen as “insurance.”
- ***Accepting*** that a risk will occur and developing contingency plans to be executed should the risk event occur. It could also be in the form of increasing the cost of the budget to some threshold for specific risk items.

# Project Execution - PM Elements

---

## Risk Monitoring and Mitigation

Initial Release	1.0
Date:	January 1997

---

### *Eliminate*

Eliminating a risk usually involves taking specific action to change a planned event in the project. That is, if a risk is identified that will occur “if” the project continues on its current course, the option is to change the course. Risk elimination depends on the extent of change that would be required to the overall project plan, considering the cost (in terms of dollars and/or time) to make the change, and the calculated severity of the risk should it occur. As a general rule, elimination should be pursued when the risk cannot be managed away or it will be costly to the project.

### *Reduce*

The area of reducing risk is the most familiar resolution approach used during the planning process. This is also termed risk mitigation and it involves developing reserves. It is defined as a set aside of project dollars and/or schedule to be used to cover the problems that a risk event would cause. The reserve can also be a calculated figure as was presented on the form in the *Risk Plan*.

### *Accept*

A risk contingency plan can be developed for the project that defines the actions taken, the resource plans, and the factor(s) that trigger an action, should a given risk occur. Contingency plans are pre-defined action steps to be taken prior to or if an identified risk event should occur.

### *Historical Record*

It is always a good idea to maintain a history of the project risks. This information can be used as “lessons learned,” and the project team can benefit from reviewing past risks and occurrences.

### *References:*

Provided in Appendix B: *Templates & Sample Forms* is the risk management worksheet that was presented here.