Unit 11 – Risk and issues

Unit 11 - Learning Objectives

To gain an understanding of how to:

- Identify and quantify risks
- Structure a risk using the meta language
- Perform an assumptions analysis
- Present risk and contingency data
- Recognise potential consequences and opportunities of risks
- Understand viable responses to risks
- Monitor risks
- Allocate of contingency
- Manage issues

Risk management

Risk is the potential of a situation or event to impact on the achievement of specific objectives (APM BoK).

Risk management is a process that allows individual risk events and overall risk to be understood and managed proactively, optimising success by minimising threats and maximising opportunities.

A helpful way to describe a risk event is by using a structure known as the risk meta-language which consists of a single statement made up of the following three clauses:

- Cause or existing condition e.g. 'because of...'
- Risk event e.g. 'this may happen...'
- Impact/effect e.g. 'leading to...'

An example is:

'Due to existing public opposition to the project, a public enquiry may be held, leading to extensive delays and additional costs.'

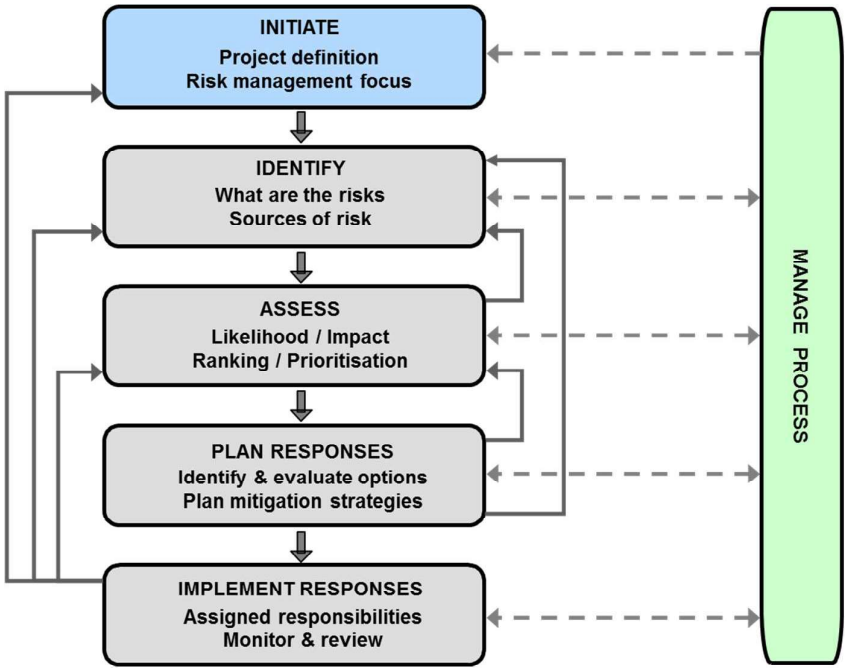
It is quite common to only think of risks as having potentially negative effects, but the term 'risk' should consist of both threats and opportunities.

An example of an opportunity is:

'Due to public support for the project, additional funding may be available, leading to a higher quality solution.'

The risk management process

The process described in this section is based on the APM's Project Risk Analysis and Management (PRAM) guide.



Initiate

This first stage of the process sets the scene and establishes a baseline upon which to proceed. The first aspect of initiation is to be clear about the objectives, scope, success criteria and benefits of the project. This is vital as risk is something that may have an effect on those objectives, scope, success criteria and benefits.

Once these have been established the second aspect of initiate is to decide and document how risk management is going to be applied to the project. This will be determined by many factors including organisational governance requirements, risk management organisational maturity, the importance of the project, its size or value, complexity, stability/novelty, etc.

The process must be agreed along with the metrics for measuring risk (e.g. high impact = >3 months, low impact = <£10 000). One of the outputs of the initiate stage will be the **risk management plan**, which in addition to the above will document the risk roles and responsibilities, any tools and techniques used to manage risk and risk reporting requirements. The risk management plan (created by the project manager and approved by the sponsor) will normally be part of the project management plan (PMP).

Note: the risk management plan does NOT contain any risk events or how they will be managed. They are recorded in the risk register.

Identify

The purpose of this stage is to capture the risks that will be subsequently managed. It is therefore important that the right stakeholders must be involved, and the most effective methods/techniques employed.

Identified risks should be entered into a project risk register/log. This document should be kept up to date throughout the project and will show the latest status of risk events.

The techniques for identifying risks include:

- **Brainstorming**. A diverse group of people connected with the project are gathered together in a meeting to collectively suggest or 'brainstorm' a wide range of risks from their individual point of view and experience. The brainstorm will normally be structured using a series of risk areas and led by an experienced facilitator. The aim is to get a wide range of risks and not to analyse them in any depth as this will be done later. This is a very creative forum for collecting risks.
- **Interviews**. A more targeted way of identifying risks is to hold structured interviews with relevant stakeholders. They range from an informal discussion to a structured time-bound interview with a set of pre-agreed questions. The interview has the advantage of being personal and can identify risks which individuals may be reluctant to suggest in a more open forum.
- **Checklists.** These use a set series of statements or questions that an individual or a group can work their way through. For example: 'Does the project have any novel technology? If yes, what are the risks?'
- **Lessons learned.** This is a rich source of identifying risks. The past has a habit of repeating itself and seeing what risks were identified in previous projects and what issues occurred can help in populating a new risk register. The cause of the lesson and not just the effect should be considered so that risks can be fully understood and not just copied.
- **Questionnaires.** These are similar to interviews but are remote and can be sent out to a wide range of stakeholders. The questions need to be carefully crafted and must be unambiguous and the responses collected and analysed so that the concerns of the responders and the associated risks can be understood.

- **SWOT (Strengths, Weaknesses, Opportunities and Threats) Analysis.** The strengths and weaknesses of the organisation and/or the project team are potential internal sources of risk e.g. good infrastructure, lack of skills. The opportunities and threats represent external risk to the project e.g. higher demand for a product, economy crash. The use of SWOT can add structure to a brainstorm. PESTLE can also be used.

Assess

This is where the identified risk events are assessed and understood for their probability and impact. The combination of probability and impact produces the severity of risk (i.e. probability x impact = severity). This represents the inherent risk (i.e. before mitigation). This will be a key consideration when prioritising risks and deciding on responses.

Another aspect of assessing a risk is consideration of its 'window', i.e. when or within what period the risk could occur (e.g. imminent, within stage, within project, beyond project). This will allow responses to be scheduled.

Once the individual risk events have been assessed, the overall project risk can be calculated to understand the project and organisational exposure.

Risk severity should be reassessd after applying a response strategy

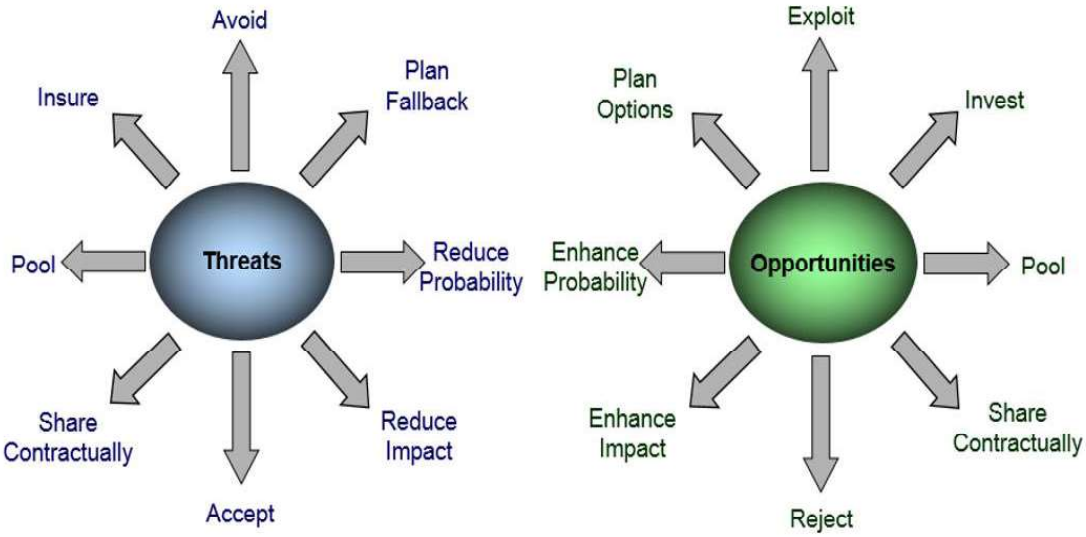
A probability/impact matrix (showing both threats and opportunities) is often used as shown in the example below. This allows the risk levels to be visualised both before and after mitigation

Probability	Threats Risk Score = Probability x Impact					Opportunities High (RED) / Med (YEL) / Low (GRN)				
0.90 Very Likely	0.05	0.09	0.18	0.38	0.72	High	High	High	Med	Low
0.70 Likely	0.04	0.07	0.14	0.28	0.56	High	High	Med	Med	Low
0.50 Possible	0.03	0.05	0.10	0.12	0.40	High	High	Med	Low	Low
0.30 Unlikely	0.02	0.03	0.06	0.12	0.24	High	Med	Med	Low	Low
0.10 Very Unlikely	0.01	0.01	0.02	0.04	0.08	Med	Low	Low	Low	Low
	0.05	0.10	0.20	0.40	0.80	Very High	High	Med.	Low	Very Low
	Example Impact Definitions – May Be Tailored to Each Project Objective Impact on an Objective (e.g. Cost, Schedule, Scope, Quality)									

The risk register should be updated to show probability and impact of each risk.

Plan responses

The diagram below shows possible responses for both categories of risk:



There are two main types of response to threats and opportunities – a proactive and a reactive approach.

Proactive approaches include:

Threats:

- **Avoid** - Change objectives or practices so that the risk cannot occur.
- **Insure/transfer –** Pass the responsibility for bearing the impact to another party (insurance is one example of this). Important to appreciate that making somebody (such as a contractor) the risk owner does not automatically transfer the risk to them.
- **Pool** – This is where an organisation self-insures itself against risk and absorbs the impact by having a risk pool with other projects.
- **Reduce impact and/or probability –** Action is planned in advance to reduce either the probability and/or the impact. This is probably the most common form of risk response.
- **Accept –** The risk is accepted, and no mitigation is planned. It is important that the risk is monitored and reported on and not ignored as risk severity can change.

Opportunities:

- **Share contractually –** This is where the impact of the risk is shared by two or more parties e.g. a client and a contractor. This should incentivise both parties to work collaboratively to manage the risk.
- **Enhance probability or impact –** Action to make the opportunity more likely to occur or the impact greater.

- **Reject –** This is where an opportunity has been identified (e.g. early delivery through incentivising contractors) but has been rejected (e.g. because the support team will not be in place to accommodate the earlier delivery).
- **Exploit –** An example of this is where a fixed price contract has been placed and the contractor identifies areas where they can do things more efficiently than planned. This will increase their profit levels.

Reactive approach:

- **Contingency plan –** This is the provision of additional time or money to deal with the risks should they happen

All responses should be assessed as to their effectiveness and cost. It is important to consider the level of risk remaining, following the application of mitigation.

These are called the **residual risks**. As a result of mitigation, additional risks may be created, and these are called **secondary risks**. The risk register should be updated to show planned responses.

Implement responses

Plans need to be resourced, implemented, monitored, and adjusted as required and reported on. Consideration must be made regarding the amount of resources required for the responses and every risk should now be allocated an owner who is responsible for ensuring the agreed actions are implemented. Monitoring and reporting requirements should have been agreed and documented in the risk management plan.

It is important as part of continuous improvement that the process effectiveness is monitored by the project manager with action taken as required. It is important that new risks are captured, and existing ones are reviewed for changes throughout the life cycle and that the risk register is updated.

Closure of risk

Once the possibility of a risk occurring has passed or the risk has occurred and been dealt with, it can be 'closed' by updating its status in the risk register and no longer monitored and reported on. Closed risks form an important input to the lessons learned process.

Contingency

For residual risks that may occur contingency plans should be developed in case they do. Contingency plans should be appropriate and commensurate to the impact of the original risk. In many cases it is more cost effective to allocate a certain amount of resources to mitigate a risk rather than start by developing a contingency plan which, if necessary to implement, is likely to be more expensive.

The number of scenarios likely to require a full contingency plan depends upon the project. Contingency planning should not be confused with the normal re-planning necessary to react to minor changes in the developing project plan.

Costing Risk

Risks cost money and we need to be able to plan for this and set realistic budgets. We introduce a little bit of accounting jargon in this section but it contains some useful ideas that could save your career.

It is often the case that time delays are viewed less seriously than obvious cost increases. It is of course possible to put a cost figure on a time delay simply by calculating the cost of staff working on the project for the extra time. The argument that 'We have the staff anyway' retains little credibility these days. If the time delay was unacceptable you may also need to think about the cost of overtime or extra staff to get the project back on track.

Let's look at an example of how this might affect project cost.

There is a project budget of £10k and the project is due to last 10 weeks.

Just to keep things simple we'll say that the only cost of this project to the organisation is staff time amounting to £1k per week.

Suppose there is a 50/50 chance of a risk occurring that will delay your project by two weeks.

What will this project cost?

The answer is that it will cost either £10k or £12k and if you aren't ready to spend £12k then you aren't ready to do the project.

Expected Monetary Value

An accountant may give a slightly different answer to the previous question by looking at the 'Actuarial' cost of the project using the Expected Monetary Value (EMV) of the risk. EMV is a mathematical formula that can help make comparisons between a range of uncertain outcomes.

EMV = p x o

Where p = probability and o = outcome

For example a risk has a 75% chance of occurring and may cost £1k.

The EMV of the risk is:

0.75 x £1,000 so EMV = £750

Using the concept of EMV for comparative purposes suppose someone was to offer you two envelopes. Envelope A contains £1,000 and envelope B has a 50/50 chance of containing £2,500. Which would you choose? Looking at the EMV of each:

A is 100% certain so has a probability of 1 therefore

A = 1 x £1,000 EMV = £1,000

B has only a 50% chance of occurring therefore

B = 0.5 x £2,500 EMV = £1,250

In theory you should take envelope B as the EMV is higher. In practice your decision will depend on how badly you need the £1,000 and whether you are prepared to take a gamble.

Going back to our earlier example of the 10 week project, an accountant might say the expected cost of the project was:

Project budget + EMV of risk

Hence the project would cost £10k plus:

EMV = 0.5 x £2,000 = £1,000

A total of £11k.

This is fine in theory but in practice, if the risk occurred and a budget of £11k is held, there is still not enough to meet the cost of the risk.

Calculating Contingency

The concepts of EMV and Actuarial cost really come into their own when starting to plan for the risks that fall into the accept category. A detailed response plan for each of the individual risks may not be prepared but a contingency sum should be set aside to deal with those risks that do occur.

Suppose there are 10 accepted risks, each is 50% likely to occur and each will cost £2k if it does occur:

The EMV of each risk = Σ 0.5 x £2,000 = £1k so the total for 10 risks = £10k

The project needs a contingency of £10k to cover these risks.

Of course EMV doesn't equal reality. What it is saying is that half of the time £2k per risk will be needed and the other half won't occur. Looked at another way the £10k contingency will only be enough to cover costs half of the time. You can be 50% confident that the project can cover its risks.

Contingency for high impact risks

Let's look at another example. Suppose there is a risk that is only 5% likely to occur but if it does it will cost £250k:

EMV = Σ 0.05 x £250,000 = £12,500

It is pointless having £12.5k in the contingency budget if this risk actually occurs. A risk with this level of impact would have to be viewed individually and the necessary contingency would need to exist at the institutional, rather than project, level.

At the risk of stating the obvious, averages only work with a range of numbers. EMV is useful for looking at groups of similar risks. EMV doesn't make sense if you are looking at a single risk with high impact or probability.

Contingency for high probability risks

Let's say there are 5 risks each with an 80% probability of occurring and they will each cost £4k:

EMV = Σ 5 x 0.8 x £4,000 = £16k

Rather than ask for the £16k EMV, the full £20k is needed should all of the risks occur. With a probability of 80% it is much more likely than not that the risks will occur - so plan for them. What this is really providing an opportunity to make savings against a realistic budget. If only 3 of the risks occur £8k of contingency budget will have been saved.

In summary Actuarial cost based on the EMV of groups of similar risks can give a guide as to how much contingency a project requires. Not all of the risks will occur but the contingency should cover those that do. Special arrangements will need to be made where a single risk could have a very high impact. Unless the probability of such a risk is very low it may undermine the business case for the project.

This technique can also be useful in helping you plan your budget. Contingency is not a 'slush fund' or 'padding' to cover for poor project management: it should be justifiable and reviewable. The contingency is there for specific risks and should only be released if a risk occurs. The project Steering Board or its equivalent should authorise the release of contingency funds.

Issue management

In project management, an issue occurs when the tolerances of delegated work have been or will be exceeded. They are different to problems that are dealt with on a day-to-day basis by the project manager and team. Issues require support from the sponsor to agree a resolution (APM BoK).

Issues may develop when a risk event occurs and issues happening may be the result of a new, as yet unidentified risk. A high number of issues may be indicative of poor risk management.

While risk management is a proactive activity, issue management is largely reactive.

The process for managing issues is:

- log and assess new issues
- escalate issues
- assign actions and apply change control
- track issues

Log and assess new issues

Issues are logged in an issue register. Once this is done, rapid analysis is performed to understand the nature of the issue along with its causes and potential impact. Delays at this stage may increase the impact of the issue (e.g. an oil spillage or security breach). If the issue is as a result of a risk that has materialised, the risk register should be updated to show the status of the risk.

Issues are prioritised taking into account:

- Scope
- Quality
- Time
- Cost
- Benefits

Escalate issues

They are escalated by the project manager to the sponsor who may in turn, escalate them to the governance board for resolution if the impact of the issue exceeds the project tolerances set by them. This is a key aspect of project governance and ensures that issues that exceed delegated tolerances are escalated to the owner of those tolerances.

The issue register should be updated to show the date of escalation.

Assign actions and apply change control

Actions are assigned to the person or group who is best placed to address them. They in turn, will identify and implement a resolution in a timely manner. Issues that result in changes to any part of the baseline plan (e.g. scope and quality) where delegated tolerances are breached, should be managed via the change control process.

Track issues

Management of issues should be tracked from identification through to resolution. This includes reporting on the status and progress of the issue as well as updating plans and re-baselining where necessary. This ensures that the actions are both being taken and are effective.

Activities to overcome barriers to issue management

Barriers can include:

- Lack of time to process issues.
- Holding on to issues too long.
- Corporate ‘blindness’ to the underlying cause of issues.
- A culture of blame or ‘bravado’ where the team try and solve problems above their delegated limits.

Activities that can alleviate these include:

- Having an agreed issue management process that is promoted and understood.
- Engagement of a project management office (PMO) to help facilitate the process.
- Having clear and agreed delegated tolerances for each role in the team.

Learning Objectives

You should now have an understanding of the following:

- Identify and quantify risks
- Structure a risk using the meta language
- Perform an assumptions analysis
- Present risk and contingency data
- Recognise potential consequences and opportunities of risks
- Understand viable responses to risks
- Monitor risks
- Allocate of contingency
- Manage issues