9 DEALING WITH TROUBLE

And while the sun and moon endure, Luck's a chance, but trouble's sure.
Houseman, *Last Poems*

In trouble, to be troubl'd, is to have your trouble doubl'd.
Defoe, *The Further Adventures of Robinson Crusoe*

In this chapter we look at events that have not been anticipated. We discuss how you find out – early or late – that trouble has come, the tactics you might use to meet trouble and the possible consequences for the project.

OUR KNOWLEDGE OF TROUBLE

No matter how thoroughly you set up and plan a project, unanticipated things may happen. 'Black swans', 'events', 'blow-ups': whatever you call them and whatever their impact, a project manager, backed by the project owner and senior management, has to respond and deal with them.

The 2x2 matrix in Figure 9.1[1] is divided into four:

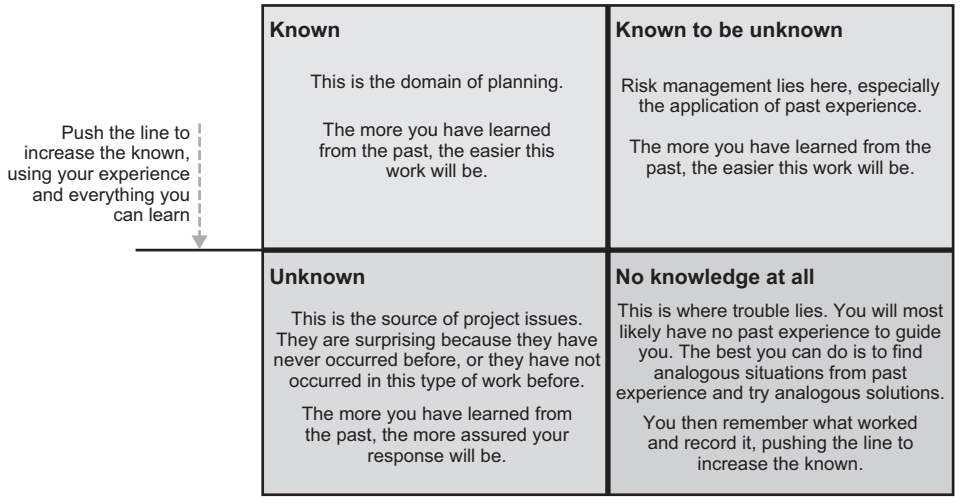
- what we know (top left);
- what we know might happen but are not sure will happen: it is 'known to be unknown' (top right);
- what we don't know about, though others might: the 'unknown' (lower left);
- what no-one knows, where there is 'no knowledge at all' (lower right).

Known things we are very sure of and plan for with confidence. They are described in the project management plan that covers all work the project is expected to do.

Our (collective) aim is to make this box as large as we can. We use the collective experience of the business, project owner, manager and team, with additional advice from users and other stakeholders. If we could extend this to cover the whole scope of the project we would not need to think about risks.

1 Our diagram is based on the Johari Window (cognitive psychology tool) related to Myers-Briggs. We have adapted the idea to illustrate our points. If you are interested in the original idea, one reference to consider would be by Joseph Luft (1982), taken from Human Relations Training News 1961. You can find further references in Wikipedia.

Figure 9.1 Degrees of knowledge about different aspects of a project



Known to be unknown are things we are not sure of, perhaps a new way of working or a familiar method of working applied in a new situation. In any case, we consider these to be risky and manage them in that way.

Unknown things evoke the 'Damn, we should have thought of that' response. They were not anticipated but someone somewhere knew about this and so we could have found out, if we'd known whom to ask. The consequences of the event (or of coping with them) may require drastic changes of course or even cancellation of the project.

No knowledge at all refers to unprecedented things, which are outside everyone's calculations and beyond most people's experience. Such events are likely to result in radical changes to the project.

The two top boxes are things we are aware of (some are risks). The bottom boxes are things we don't know about, though someone else might (and we may be able to use their experience). The project manager's task is to move the line down as far as possible, by any means available. This will increase the project manager's knowledge, decreasing the extent of guesswork and reducing the risk of trouble.

Let's illustrate this with a well-known example of trouble with drastic consequences, the sinking of the Titanic:

- What was **known**. The designers of the Titanic (and many other people) 'knew' the ship was built to be unsinkable. That was the plan.
- What was **known to be unknown**. The designers identified the risk of the ship being holed and designed a sequence of watertight compartments, sufficient to stand all (previously known) accidents. That was their risk avoidance action.

- What was **unknown**. No-one **on the ship** understood the threat from icebergs at that time, in that particular place. The master knew icebergs were forecast but did not investigate further. He was confident the ship was designed to withstand such collisions.
- Where there was **no knowledge at all**. No one knew that a particular iceberg hitting the ship at that particular point would cause enough damage to overwhelm the precautions the architect had built in. Collision damage was beyond the ability of the watertight compartments to contain, and was outside all the design risk assumptions.

So the ship sank, despite all the precautions.

FIRST INDICATIONS OF TROUBLE

You usually find out about trouble in one of two ways – by complete surprise or by early realisation. You should attempt to eliminate the former completely by looking ahead and having a sensitive and effective issue management process.

Taking the 'helicopter view'

In Chapter 7, we stated that anticipation is taking the 'helicopter view' of the project; seeing it as a whole. Note that this is not risk management. When considering risks you consider **specific events** – each tree in the wood. When you 'anticipate' you see the wood as a whole; **not** singular events but the way the project is progressing.

When you anticipate, you should avoid being distracted by specifics. Look at patterns of behaviour and discern, from your experience, what they might lead to. If you are not sure consult others – the project owner, team members – anyone you believe might be able to help.

AN EXAMPLE OF AVOIDANCE

Jeff was managing a project in the US. The project used part of the corporate 'overhead' budget, which was always vulnerable when costs were reviewed halfway through the fiscal year. Jeff needed the project to complete in the fiscal year that had just started and so set a fixed end date one day before the half-year review. This date was not based on a project plan, but was self-imposed to avoid a six-month hiatus in the project timetable. Suffice it to say that the project did complete on that day and after the review all overhead project budgets were cut. Since the project was complete, this no longer mattered.

Issue management

The first manifestation of trouble arising can be an issue.

If **all** issues are taken seriously you have a better chance of you and your team being sensitive to early warning signs and thereby avoiding surprises. Not only that, but you increase confidence in the process and are more likely to see those early signs raised by concerned supporters. If issues are not taken seriously, the chances are that action to forestall the cause of the issue will not be taken until it is too late. Then, the only remedy is to clean up the consequences (issue management is covered in Chapter 8).

LINES OF DEFENCE

You should always attempt to reduce areas of uncertainty. The following examples illustrate what actions can be taken to build a first line of defence.

The examples are derived, but deliberately removed, from actual events. The common theme is that, whether or not the troubles could have been anticipated, they were not.

Gaining knowledge

By finding out more about the business and the project's operating environment, you can reduce the scope of the unknown, enabling pre-emptive action that can forestall issues and trouble that comes from unknown quarters. This is the first and most important line of defence.

THE COST OF TECHNOLOGY PERFORMANCE

The cost–performance curve is linear, with steps. Improved performance has a linear relationship with increased cost – but every so often you reach points when you incur a large increase in cost for a small increase in performance.

For example, Jeff had a laptop with 135 GB of immediate application and data storage. The time came to load a new application and to load a new version of the current one. The new application used 65 GB and the new version used 62 GB. That upgrade meant buying a new laptop (500 GB) at a cost of nearly £1,600.

The need to add storage capacity can trigger other thresholds such as the need for more space (even a new building).

The lesson: You need to forecast future capacity requirements and work out points at which sudden jumps in expenditure will be needed. You should ask the business to think about the possibility and invest rather more than they might otherwise have.

Using your communications skills

Practise your communication skills assiduously, especially listening. Active listening will give you a lot of the information you need to prepare for the reaction of people in the business.

As you pick up information, whether from conversations, discussions, rumours or gossip, develop a keen sense of discrimination to enable you to discard 'hot air' and investigate information that may point to a developing problem.

MULTINATIONAL COMPANY, PACKAGE STRATEGY

A bidder for an IT distribution system contract based their financial model on a standard package for warehousing and logistics. Country preferences were mostly for a different package, the provider of which declined to be involved in the project. Later, due to pressure from local logistics staff, the business introduced 'Country Choice', which enabled departments to choose any package compatible with the requirements. The other provider's package satisfied the requirements and so local departments chose to ignore the standard offering. This so compromised the financial case that it effectively holed the contract below the waterline. The business eventually bought out the successful bidder from the contract: it was, after all, their change that had materially affected the basis of the agreement.

The lesson: Do not assume that a powerful group can be ignored just because your strategy attempts to bypass them. Eventually something will give, and usually it is the strategy that has to change. The ramifications of changing strategy during project execution are significant.

To get this right without undue delay requires active listening and raising the matter with senior management.

MESSAGES ABOUT ACCEPTANCE

Indecision about whether or not acceptance criteria were met is a 'red flag' for the project and may indicate a breakdown in consent. In response, you might even have to revisit project objectives and acceptance criteria.

It is usually to everyone's advantage to stay as close as possible to the scope, schedule and budget. Start by working out, with the project owner, exactly what the business expectations are. If they appear unreasonable you will both need to work with the business to agree a set of reasonable expectations. If you fail to agree, questions must be raised about the project's continued progress. If you can agree, then you can move forward.

If you can reach agreement on an option whose impact, effort and delay are acceptable, use a change proposal to redefine the project. You will need revised expectations, objectives and benefits.

If the option has a significant impact on schedule or cost, you, the project owner and the business will need a rethink and possibly a new direction. A change to the project may not be enough.

The lesson: React quickly – you also take advantage of any positive bank balance you have. Incidentally you gain knowledge and communicate!

Making confident decisions

If the unexpected arises despite your preparation, by all means take time to analyse your options – but not too much time: the quicker the response, the better. To reduce reaction times be prepared to make decisions about change, including the possibility of deciding whether to change course and if so, how and by how much to change. Decisive action fosters confidence, and speedy decisive action forestalls the spreading of rumours.

To react quickly you need flexibility. You must trust your instinct and make decisions even without having all the information you would really like. You, your team and the stakeholders should be able to handle process changes whilst work continues, saving time by adjusting to changed circumstances. You must be prepared to change or even abandon the project if there is no other choice.

When a decision is made, the future is unknown to everyone. Judging a decision with the benefit of hindsight is easy; anyone can do that. But if you censure someone because their decision turned out to be wrong, all you do is make it more likely that others will be afraid to make decisions. You will replace a situation where people are confident and make good decisions sometimes, with one where people are afraid and always fail by delaying decisions until it is too late.

You need a reliable and consistent way of making decisions, one that allows decisions to be made in a timely way. This is far better than not making a decision for fear it might lead to a poor outcome.

Take advantage of your positive bank balance

Your decisions to improve, change or stop work will not face so much opposition if you have built a reputation for competence and honesty with the stakeholders. You will have a 'positive bank balance' of trust to draw on when difficult decisions need to be made.

A former colleague, a project manager with a good record of success, claimed: 'It is better to ask for forgiveness later than to await permission now.' If the stakeholders trust you, and your experience and available evidence justify a decision that must be made quickly, go ahead and make the decision. It may not work out. But you can still justify making the decision because it was the right thing to do at the time.

Experience – knowledge of the past

Your store of experience is immensely valuable. It can, and should, be supported by analysis, but the analysis will be directed by your instinct for where things might be going wrong. Some of this is about anticipation, which can be supplemented by

developing 'what-if' plans to increase your understanding of the sensitivities of the plan to different kinds of events. Such preparation also improves your ability to react quickly should the event arise.

Suppose you have frequent problems in one subsystem of the software product your project is building. Not only that, but you recall that this subsystem had been one of the most frequently discussed during the design stage. The risk is that there is a deeper flaw in the design and problems are coming up because, in the effort to fix one, others are exposed. You might not carry out a full-blown investigation, but you would ask an experienced designer to take a look (especially if they have experience of similar software). You want to forestall a sudden catastrophe with, or a creeping degradation of, the subsystem.

AN EXAMPLE WHERE TECHNOLOGY WASN'T OBVIOUSLY LOGICAL

Jeff wrote a program to analyse steel mill output. He returned a year later, after the program had been extended and had stopped working. It was now running on a new IBM computer. The errors proved easy to track, but one remained: using the same test data pack, the output totals from the revised program did not match those from the original. Jeff found that some test data was off-specification: alphabetic characters being used where numeric values were specified. This custom pre-dated the computer system and not all of the operators had changed. This did not cause trouble on the previous computer, which used ASCII internal codes, but it upset the new one, which used EBCDIC, and the effect was to send the logic astray. A full desk check of all the data records proved that this explained the discrepancy in the totals.

The lesson: Same data, same code, but a different result from a different computer. The project management lesson is to not treat any discrepancy carelessly.

LESSONS LEARNED

Learning lessons, which we discuss in more detail in Chapter 10, is a way of 'pushing the line' in Figure 9.1 that is directly derived from current experience and your situation. It may throw light on the unknown and perhaps make your team aware of things where you previously had no knowledge at all.

The ideal is where you are repeating the project often, almost as though it were a product. This rare case can arise if a portfolio of projects that succeeds once is applied to a similar situation, for a different business or for another part of the same business.

OLYMPIC PROJECT

One supplier has been providing the systems and hardware to support real-time (or near real-time) data for journalists and the public from the Olympic Games since the Summer Games of 1984. They supply similar support for the Winter Olympic Games and for the FIFA World Cup. This brings great advantages, for both supplier and customer. This experience, gained over many years, reduces the risk of failure and gives the supplier both opportunity and incentive to keep improving system reliability. The supplier can introduce functional and performance improvements regularly and – knowing the customers well – has an accurate sense of which improvements are the best fit to the customer's thinking as times change.

This runs counter to the more common practices of changing suppliers with each new project, or appointing what used to be known as 'rainbow teams' to complete a piece of work. It works in this case because familiarity with the problem and with the customer reduces the risks incurred. The supplier has been pushing back the boundaries of the unknown for the last 30 years. As a result, they are in a far better position to execute a successful project.

Even if you don't fit this ideal case, you can look for similarities (between releases, for example) where you can apply the lessons you learned from one release to a later one. That can be especially useful when, for example, comparing actual time spent and cost incurred compared to the estimates. You can then make adjustments to the planned schedule based on experience.

MULTINATIONAL BUSINESS, APPLICATION COUNT

Sometimes, despite your efforts, trouble still strikes. In bidding for a contract to provide IT support to field repair teams (equipment maintenance, upgrade and repair), an important cost driver was the number of different applications to be supported. The business had carried out a preliminary due diligence and specified that each bidder would need to confirm their application count by undertaking their own due diligence. The winning bidder arrived at a count of 1,500, consistent with that of the business, and so set the financial model to work with that. A few years later, the number of applications discovered had reached 4,500 and was still rising. As a result the contract was not profitable.

The lesson: Sometimes, there is no lesson (unless, in this case, it is to be perfect at due diligence). The contractor could have employed forms of torture to extract a true account of how many applications people had hidden on their laptops, but this is likely to be considered as unacceptable behaviour.

SEVERE TROUBLE

Troubles come at different levels of severity. Most can be dealt with by efficient and sensitive issue management, coupled with anticipation. However, there are times when they cannot be covered by precautions.

SALES ANALYSIS, DATA STRATEGY

The data strategy was very important for meeting performance requirements. The idea was to associate records from a key sales area in the same parts of the database in the same servers, placed near each other. This would aid performance, minimising path-length variations in access for records in the same sales area.

A couple of years into the project, the business decided to alter their sales areas and devolve responsibility for records to the new managers in the new areas. But the new area boundaries did not coincide with the old. There were cases where a salesman's patch in adjacent towns within a new sales area had data in completely different parts of the database. The strategy had to be revised from the bottom up, and the data had to be completely reorganised. This took almost a year of work (jointly between the supplier and the business) and cost a lot of money.

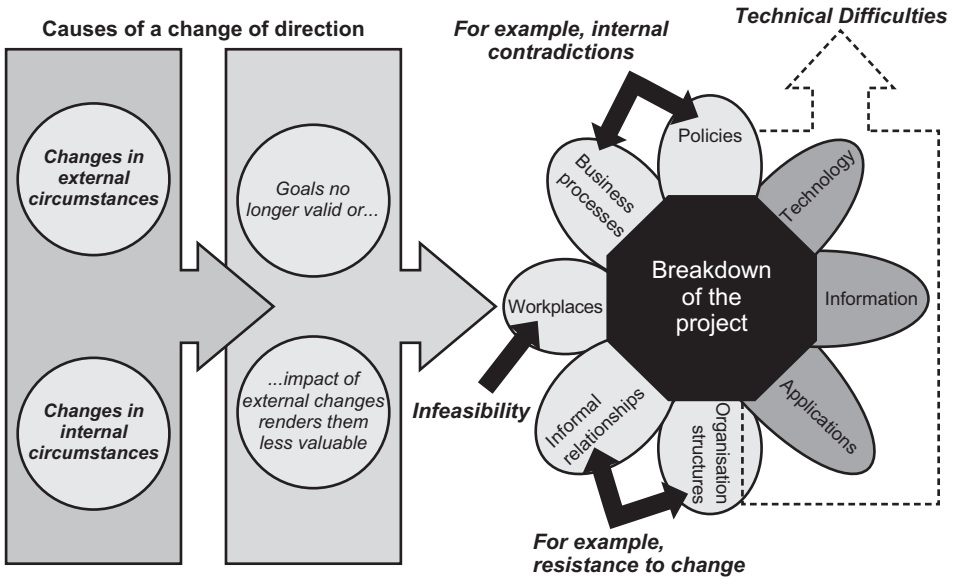
The lesson: It is difficult to see how to anticipate this. To avoid the impact, you need a completely flexible data strategy to guarantee consistent performance, irrespective of any changes made to the way the data is organised or stored.

SOURCES OF TROUBLE

What we need to consider are the events that have a severe, possibly existential, impact, where the necessary project response may well be a change of course. This ignores events such as natural disasters – earthquake, flood, quantum fluctuations and so on – and concentrates on sources close to the set-up and conduct of the project.

We'll make use of a diagram first used in Chapter 2 as a framework. Figure 9.2 shows the diagram, using it to illustrate sources of trouble. These divide into three types – changes in the 'need for change', revising the goals of change and matters that arise as the change (including the project) proceeds.

Figure 9.2 Sources of trouble that cause a change of direction



Game changers

A game changer is 'a newly introduced element or factor that changes an existing situation or activity in a significant way'.[2] This type of trouble is the easiest to discuss. Changes here affect the drive to change or reset the goals of change. They have the greatest impact and are mostly beyond the ability of the project owner or manager to influence. Typical examples are:

- new competitors or products that alter the 'rules of the game' for the business;
- more, and unexpected, legislation – often a response to a political or other public crisis – that renders part or all of the goals irrelevant, not viable or of lower priority;
- a change in management – CEO, minister or chairman of an NDPB are examples – that brings the whole change objective into question;
- restraining of ambition that puts a question mark over the scope or depth of the change.

This kind of trouble cannot be influenced. The first consideration is whether, in the project owner's view, the project should continue at all. The project manager should seek to accommodate the change within the project, providing information to the project owner to argue a case for continuation of the work, if in a different form. If senior management

2 Source: merriam-webster.com.

agree then a change of direction can allow the project to continue, often with significant reversals of work already done. The cost of this will figure in the analysis.

Modification of the goals

Modification of the goals is less likely to cause cancellation. The original impetus remains, though with reduced strength or new emphasis. Matters for discussion now, are whether changes can be accommodated in the technical solution, whether the business has the capability to perform the work and how much of the already-completed work can be reused in the revised project.

The project owner or senior management who carried out this analysis originally may lead it again. The project manager supports this, considering the ramifications of each revised goal, revisiting the work carried out in setting up the project.

The result may still be to abandon the project, if the challenge is too great. However, the more likely outcome is a shift in emphasis and an increase in the pace of work.

Matters arising

Discussion of the third category of trouble is problematic. The range of trouble is wide and some – for example resistance to change in the organisation – may be beyond the project manager or owner's ability to deal with.

We split these broadly into four: internal contradictions, infeasibility, technical difficulties and resistance to change.

- Internal contradictions happen where there is a clash between a process and a policy that does not appear in analysis but rears up in implementation. In our experience these arise because management 'forget' to consult the workforce, who would be perfectly capable and willing to point out the consequences. Here are two examples:
  - A retail organisation had a 'push' system for stock and a flexible customer returns policy. The IT applications associated with 'push' systems treat the provision of stock as a one-way flow from central warehouse to store (possibly) then to customer. Flexible returns, where a customer can return an item to a different sales point from where they bought it, complicated this simple principle, thereby complicating the application and the procedures to deal with stock. The consequence was a loss of control over stock to the tune of some 10–12 per cent of the value of the annual stock turnover.
  - A logistics operation was set up, with goods stacked by type, and orders were picked automatically. Distribution was by customer order, with the vans having to be stacked in reverse delivery sequence, irrespective of the type of goods on order. The result was that many of the advantages of automatic picking were not realised.
- Infeasibility is where the project team discovers, after the project is underway, that the technical demands cannot be met by the workplace. Examples include:

  - a building whose wall cavity space is insufficient to hold the volume of cable required for communications;
  - an airport where the concrete service pipe bore, while ample for military use, is not sufficient for civilian use;
  - a demand for power to a building that is greater than the loads originally envisaged. In this case the demands raised by the project's system may only be part of the total and so the problem would have been foreseen if the project's demands had been coordinated with others at an earlier stage.
- Technical difficulties arise when technology doesn't behave as expected or is misaligned with the implications of the requirements (not all of which might be known at the time the analysis was carried out).
  - A data centre needed so many more servers as a result of an implementation, that it started to drain local power. An arrangement had to be made to draw more power from the grid and to provide more backup generator capacity.
- Resistance to change in the organisation can have a wide variety of impacts. People are mindful that change can lead to unforeseen consequences for their situation and can react in any way between the extremes of mindless optimism and total pessimism. Everyone connected with the project – led by the project owner – must be constantly on guard for symptoms of these reactions that show as, for example:
  - someone who has a key skill for the project being redirected to business operations;
  - resentment at not being chosen to take part in the project;
  - fear of not having been chosen – nagging fears that they were not chosen because of some lack in themselves. Even those chosen may doubt there will be a place for them once the project is complete.
  - managers concerned about having to meet more challenging targets without either having been consulted or being provided with the means to improve performance;
  - spreading of unfounded rumours about the consequences of the changes being made;
  - challenges to changes of role in the organisation;
  - management disputes over ownership of aspects of the new ways of working;
  - resistance from senior management because of loss of control due to devolvement of decision making;
  - calls to slow down deployment 'to ensure safe implementation'.

DEALING WITH THE CONSEQUENCES

Dealing with the consequences of trouble often means increasing the budget – spending more money. Sometimes that is the only way out and then the question of value has to be put to senior management. If they authorise additional spending, the result may

be to curtail the scope, to try and find a clever way around the problem or – in the final analysis – to cancel the project. A refusal to increase budget most often arises where organisational resistance is at the root of the trouble.

Table 9.1 gives a brief summary and suggestions for how to deal with various types of trouble.

The best concluding advice we can provide is to quote an old saying, modified for those with no religious conviction:

> When tested, let me have the courage to cope with the trouble I can handle, let me have the patience to work through the trouble I cannot handle; and above all, let me have the wisdom to know the difference between these two.

Table 9.1 Dealing with trouble

Event type	Timing	Impact	Consequence for the project	Action
The need changes as external circumstances are changing	Any time after starting work.	Probably extreme.	Abandon it – at best make drastic changes to the objectives.	Little to be done – salvage as much as possible.
The need changes as internal circumstances are changing	Most likely after design work is complete (which is when the consequences become clear).	Severe, possibly extreme.	Accept changes to objectives but stress that the need for business change remains.	Argue a carefully thought-out case with senior management.
Modified goals	Most likely after design is complete, possibly as late as initial deployment.	Moderate, possibly severe.	Revisit the analysis: decide how to revise objectives, scope and schedule. Accept a small chance the project has to be abandoned.	Shift the priorities as needed, possibly increase the pace of work.
Internal contradictions between policy and new processes	Early prototypes might uncover this – deployments will uncover it. Model office testing, if done, could uncover it.	Moderate – the main impact is for senior management, to reconcile the policy and process. The reconciling position can affect objectives.	Little direct consequence, as it is a business problem. However, the resolution may result in changes to objectives or scope that are difficult to handle.	As soon as a contradiction is found (or forecast by someone with experience) bring it to the attention of senior management (with a recommended remedy).

(Continued)

Table 9.1 (Continued)

Event type	Timing	Impact	Consequence for the project	Action
Infeasibility of work-place modifications	With luck it is found at the design stage. If you are unlucky, it is found in deployment.	Moderate to severe.	Often, workarounds can be found. The most likely effects are delay and budget increases.	As soon as something is found bring it to senior management (with a recommended remedy).
Technical difficulties	Usually found at design or early testing stages.	Small to moderate; severe if there was an omission in the original analysis, though this is (should be) unlikely.	Often, workarounds can be found. The most likely effects are delay and budget increases.	As soon as something is found bring it to the attention of senior management (with a recommended remedy).
Resistance to change	If the project team's antennae are working efficiently, this can be found early. If not then it is found at deployment.	Anything from small to extreme, depending on how 'real' the cause is and how long it has been allowed to fester.	Usually small, but if it is severe it can result in the project being abandoned.	Preventive action is key.[1] If that failed then all-out damage limitation is the only remedy.

Note:
[1] If the workforce is organised, with trades union or equivalent local associations present, talking to these groups at an early stage can forestall a lot of problems later on. It is an approach we strongly recommend.