

A Series on Advances in Project Management

From the editor: Managing Project Uncertainty

Risk management is primarily concerned with what we can anticipate or see. It offers mechanisms and approaches for addressing chunks of the future that we can conceive. Increasingly however, more organizations allocate additional contingency resources for other things that we do not know about. While risks can be viewed as the known unknowns, uncertainty is concerned with the unknown unknowns that are not susceptible to analysis and assessment. It is these unknown unknowns that challenge project managers and require new skills and understanding. This is where the handling and managing of project uncertainty become a key skill.

Decision makers (including project managers) are not comfortable in the presence of uncertainty. The impact of uncertainty often defers decisions and delays actions as managers attempt to figure out their options. Indeed, the presence of uncertainty has been shown by psychologists to reduce the effectiveness of decision makers in different areas.

This article by David Cleden explores some of the implications of uncertainty offering tools and approaches for making sense of and responding to uncertainty. It is derived from his recent book which is part of the Advances in Project Management Series published by Gower.

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That Uncertain Feeling

By David Cleden

Here's a fundamental truth that all project managers would do well to heed: all risks arise from uncertainty, but not all uncertainty can be captured as risks. This means that over-reliance on risk management can leave a project exposed to unexpected 'bolts from the blue' forcing the PM to be reactive not proactive.

No forecast of future events can ever be perfect. Consequently risk management can only take us so far -- we also need a strategy for managing uncertainty. Of course, dealing with uncertainty is fundamentally hard because we are trying to grapple with what we don't know. So to stand a chance of keeping uncertainty within manageable limits we need to understand its characteristics and learn to recognize its warning signs. Here are five guidelines which will help.

1. Aim to contain uncertainty, not eliminate it. You can't bring order to the universe and neither can you protect your project from every conceivable threat. Managers who try, labour under unworkable risk management regimes, constructing incomprehensible

risk logs and impossibly costly mitigation plans. Amidst all the effort being poured into managing small, hypothetical risks, a project manager may be too busy to notice that the nuts and bolts of the project -- where the real focus of attention should be -- has stalled. Concentrate instead on detecting and reacting swiftly to early signs of problems. Whilst uncertainty can never be entirely eliminated, it can be contained, and that should be good enough. Ultimately, this is a far more effective use of resources.

Visualize a project as existing in a continual state of dynamic tension. (See Figure 1). The forces of uncertainty continually try to push the project off its planned path. If left unchecked, the problems may grow so severe that there is no possibility of recovering back to the original plan.

The project manager's role is to act swiftly to correct the deviations -- setting actions to resolve issues, implementing contingency plans, or nipping problems in the bud. This isn't risk management (at least, not entirely). Some of these problems will have bubbled up from the vast, nebulous cloud of 'unknown unknowns.' The PM's only real defence is mindfulness and agility -- in other words, spotting things going wrong at the earliest possible stage and being both creative and effective in damping the problems down.

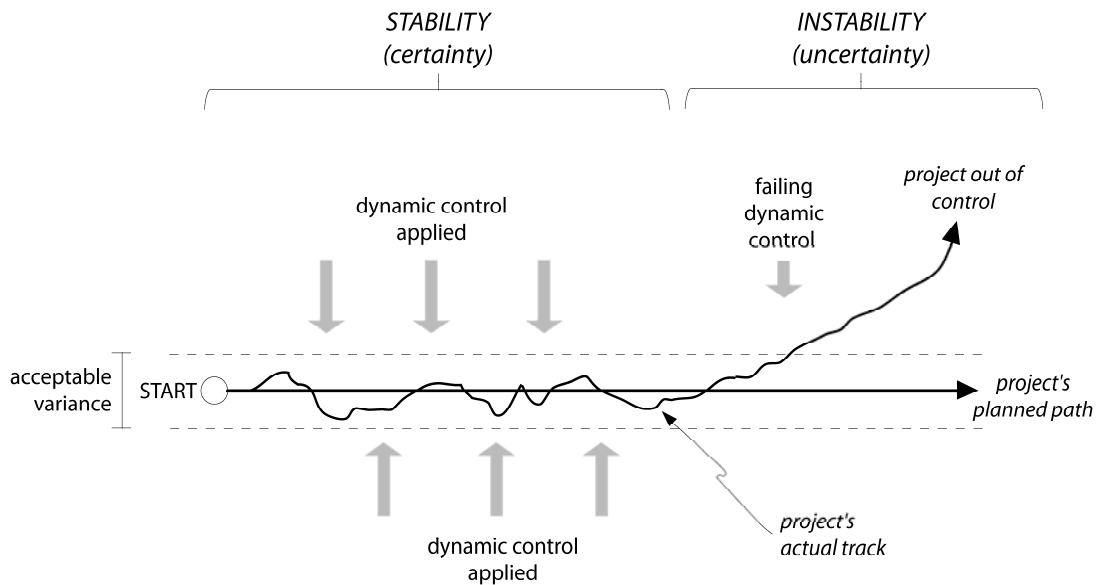


Figure 1: The illusion of project stability.

A dynamic balance exists between uncertainty and corrective actions which gives the illusion of stability.

2. Failure to execute project management processes thoroughly is not the sole cause of uncertainty. Some people think uncertainty is a symptom of a poorly managed project. They argue that if everything is done right and in sufficient detail, there shouldn't be any uncertainty. Not true. Recognizing the existence of uncertainty is the first step to dealing with it effectively. Don't shut yourself off from that possibility -- and don't trust to your chosen management methodology to eliminate all uncertainty from your project. It won't.

3. Uncertainty is an attribute, not an entity in its own right. Some PMs set aside a few hours each week to 'do' their risk analysis and mitigation planning. Then they get on with the 'real' job of managing the project. It's as if dealing with uncertainty is a separate work package, all neatly compartmentalized. That's a simplistic view. Uncertainty can lurk in each and every task, in their dependencies and underlying assumptions. Get into a frame of mind that is alert to the uncertainties in every aspect of the project. Then you'll be ready to deal swiftly with its consequences.

An iterative planning approach is vital. Projects which are planned once (i.e. at the beginning) and then expected to stick rigidly to that plan, rarely succeed. The PM needs to be constantly alert for potential changes, tweaking the plan to keep control of events, not the other way round.

Of the many iterative management cycles in existence (the Shewhart cycle of Plan-Do-Check-Act being perhaps the most famous), my personal favourite is the OODA loop. It was developed by a US Air Force fighter pilot and sounds like something out of an episode of Dr Who. What's not to like?

OODA stands for Observe, Orient, Decide, Act. Like a pilot engaging in aerial combat, the PM needs to judge the pace of events, assess opportunities and threats in the current situation and be on the lookout for warning signs of emerging problems. He or she must cycle through each of the four stages:

- Observe – gather information relevant to the problem; notice patterns and trends; be dispassionate and objective in gathering the facts.
- Orient – place the observations of the problem in context; understand which are the dominant factors; draw on previous (but relevant) experience; filter the relevant from the irrelevant.
- Decide – choose a course of action which will reduce the threat; evaluate a range of possibilities; consider undesirable side-effects as well as the benefits.
- Act – implement the decision swiftly and with precision.

Instead of being forced on the defensive and having to respond to unexpected events, rapid execution of the OODA loop allows the project manager to regain control over an uncertain situation – driving forward with a solution instead of merely reacting to events.

4. Effective decision-making is at the heart of managing uncertainty. When faced with uncertainty, the PM has several options available (see Figure 2). The PM must decide how to act -- either by suppressing uncertainty through plugging knowledge gaps, or adapting to it by drawing up mitigation plans, or detouring around it and finding an alternative path to the project goals. Whichever action is taken the quality of decision-making determines a project's survival in the face of uncertainty, and is influenced by everything from individual experience, line management structures, to the establishment of a blame-free culture which encourages those put on the spot to act in the project's best interests with confidence. Remember the old saying: Decisions without actions are pointless. Actions without decisions are reckless.

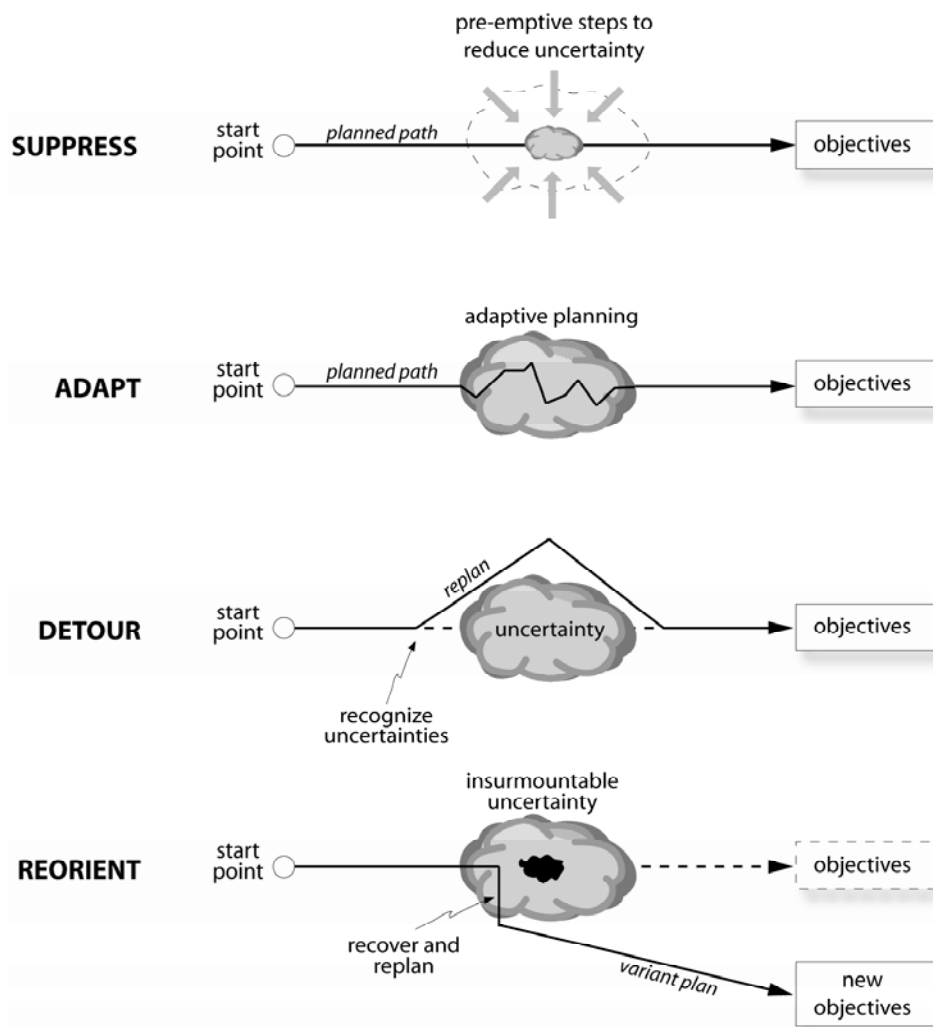


Figure 2: Four possible modes for confronting uncertainty.

5. Uncertainty encompasses both opportunity and threat. It's important to seize opportunities when they arise. If some aspects of your project are uncertain, it means there are still choices to be made -- so choose well. All too often we only think of the negative consequences. Perhaps we can achieve more than was planned? Is there a chance to be innovative? Be open to creative solutions. As Einstein said, "We can't solve problems by using the same kind of thinking we used when we created them."

All approaches to dealing with uncertainty depend to a greater or lesser extent on being able to forecast future events. The classic approach is linear: extrapolating from one logical situation to the next, extending out to some point in the future. But with each step, cumulative errors build up until we are no longer forecasting but merely enumerating the possibilities.

Suppose instead we don't try to forecast what will happen, but focus on what we want to happen. This means visualizing a desired outcome and examining which attributes of that scenario are most valuable. Working backwards from this point, it becomes possible to see what circumstances will naturally lead to this scenario. Take another step back, and we see what precursors need to be in place to lead to the penultimate step – and so on until we have stepped back far enough to be within touching distance of the current project status. (See Figure 3).

This approach focuses on positive attributes -- what are the project's success criteria -- not the negative aspects of the risks to be avoided. Both are important, but many PMs forget to pay sufficient attention to nurturing the positive aspects. By 'thinking backwards' from a future scenario, the desired path often becomes much clearer. It's ironic to think that backward is often just what's needed to lead a project forward to successful completion.

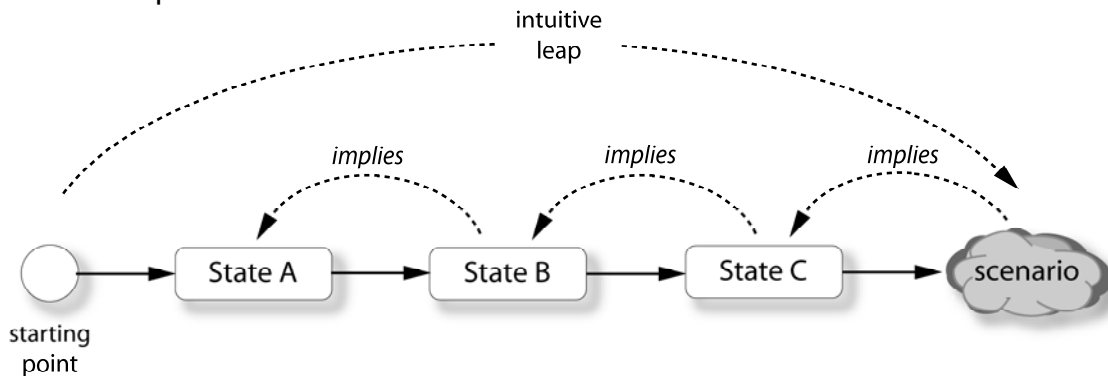


Figure 3: Making an intuitive leap to visualize a future scenario.

Thinking backwards identifies the key factors which need to combine to achieve the scenario. Understanding this sequence reveals where there are key uncertainties.

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David Cleden is a senior project manager with nearly twenty years experience of commercial bid management and project delivery, mainly within the public sector. With a successful track record in delivering large and technically challenging IT projects, he also writes widely on the challenges faced by modern businesses striving for efficiency through better management processes. He is the author of *Managing Project Uncertainty* published by Gower Publishing, part of the Advances in Project Management series edited by Professor Darren Dalcher. David can be contacted at david.cleden@btinternet.com.