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UNCERTAINTY

Risk and Uncertainty are often considered to be the same thing - but they are not! They are two different types of unknown - and need different techniques to manage them.



Risk applies to those unknowns where we know enough about the determinants to put probabilities around outcomes - the throw of a dice, for example. In asset management, risk applies to the life of an asset, or the timing of a maintenance intervention, where through observation, data analysis and testing, we understand the underlying drivers of asset wear and tear and deterioration - age, use, conditions of use (or abuse) - and are thus enabled to calculate the probability of outcomes from given actions.

Uncertainty refers to those unknowns, for example the nature and timing of technological innovation, climate change, social or structural change, where we do not know enough to be able to assign probabilities. (Any 'probability' not assigned on hard evidence and sound judgement, is a 'guess' and not a probability.) Risk management techniques, based on probabilities, are not appropriate means of dealing with true uncertainty. However, because they have served us so well in other areas, and because we know them, there is a tendency to want to use them for all cases of the unknown, perhaps on the 'if the only tool you have is a hammer ...' principle.

So, in this issue we look at **ways of dealing with Uncertainty** - structural frameworks that reduce the chance that something will go wrong (pp 3-4); and scenario thinking which helps to ensure that the system you adopt is robust or resilient enough to cope with all (or at least most) contingencies.

Risk management techniques are largely engineering techniques; structural frameworks and scenario thinking are management techniques. Both benefit from data and analysis.

Dr Penny Burns, Editor, AMQ International
08 8359 0559 www.amqi.com



EDITORIAL: Thoughts on Risk and Uncertainty

Management in the private sector is about reducing risk to a liveable level whilst opening up the maximum opportunity for growth and gain. The public sector is more cautious, more risk averse. It aims at minimising risk whilst keeping a balance between demand and supply. This is why demand management is a tool much more likely to be applied in the public than in the private sector.

In both cases the statement 'if you can't measure it, you can't manage it' applies to risk, it doesn't apply to uncertainty. Risk can be measured - probabilities are measures. Uncertainty cannot: uncertainty refers to those situations where we do not know enough to put measured probabilities on the outcomes.

It can be useful to think of uncertainties that arise from operations *within* our own organisation - and thus are more amenable to control, removal, or at least reduction, and those uncertainties that arise from *outside* our sphere of control and to which we can only manage our response. Let us call them Internal Uncertainties and External Uncertainties.

Internal uncertainties can be reduced by the structural frameworks or systems we adopt. Here I consider just three of the possibilities - systems for choosing the right investments to make, systems that improve the performance of our systems, and systems that seek to improve the systems themselves. Or: Investment Logic Maps, AM Plan Review, and Peer Audits. (pp 3-4)

Similarly our ability to respond to or withstand external uncertainties is also determined by the systems we adopt. How robust or resilient are our systems to future possibilities? To answer this question we turn to "Scenario Thinking". (pp 5-10)

Do consider, and enjoy!
Penny

Managing Internal Uncertainty

This is the role of the systems, frameworks and working rules that we develop in our organisations. Rules for when to invest, for example, or when to renew, modify or abandon an asset. Rules for how to interact with the community, and how to interact with each other. Some of the clearest rules I have seen for the latter two I have written up in SAM 299 (Organisation- a better way). and we have looked at many a different organisational structure. Without rules we have chaos - maximum uncertainty. However even with rules, we may not avoid all possible internal uncertainties. As times change, as people change, rules need to be examined and modified.

Peer Review

It is often difficult to see what changes are needed when you start from within the existing framework. That is why leading organisations constantly challenge their framework decisions by benchmarking, or better, seeking peer review. Some years ago I came across some New Zealand councils who were doing this most successfully. Some simply asked for comments on their plans or structures, others swapped asset managers for a period of weeks during which each asset manager strove first to understand what was being done and why, and then to suggest alternatives. New Zealand has been very successful at its asset management.

Internal Checking

Most organisations I know pride themselves on their Asset Management Plans, yet how rigorous are they? The following is drawn from correspondence I had recently with Menno Nagelhout, Rijkswaterstaat, The Netherlands. You might wish to ask yourself how rigorously your plans are checked **from above**.

Penny:

An AM Plan will normally list the various elements for which renewal is due, based on an assumed economic or useful life, but where do these 'lives' come from, how rigorous are they, can they be altered by better usage or maintenance, etc. A friend of mine who was the General Manager of Sydney Water for a while would question his asset managers on the reason for the inclusion of different elements of renewal - and if they could not justify the inclusion, he would insist they remove it from the plan. He was a very experienced asset manager himself before becoming GM but I don't know of others who are as rigorous.

Menno:

The example you gave of your friend as GM with Sydney water is very similar to my experience; which is that the way asset management plans are challenged by the higher management, is often based on individual style of management by the manager in charge. In your example, it's most certain your friend asked these questions because he himself was an asset manager before becoming GM. So, some managers do challenge our plans, but not all and certainly not all on the same level and in the same way. For example; when we make a suggestion for renewal in our strategic network

plan (or AM plan for that matter), we have a basic principle that this renewal on a certain level of PBS- product breakdown structure of your asset- has to be the better choice than maintaining the current state of the asset by means of life cycle costing (but the period in which this LCC choice has to prove itself is short- only 5 -10 years. When the span of LCC benefit is longer than 10 years, the renewal is rejected). But then again, not every manager manages this aspect. This is one of our challenges- to deal with this personal, cultural way of management.

Safe Systems

Some systems are designed to guard against human failings. One that we have discussed on previous occasions - the Investment Logic Maps, now so successfully used by Victorian State Government Departments as well as Local Government - starts with recognising that the primary reason that projects do not deliver their full benefits is that insufficient attention was paid *at the beginning* to what the real problems were, what options existed to address those problems, and how much benefit each option would contribute to the total outcome. Furthermore benefits were rarely tracked. Simply by focussing on the problem, rather than the project or the asset, the Victorian Government has been able to greatly reduce its project costs. You can read about it in SAM (Issues 246 introduction; 277 review of practitioners' work) or go directly to the Victorian Website, see below.

The key element of their success is highly structured and strictly time observed two-hour workshops by specially trained external facilitators who are able to ensure that the key decision makers in your organisation are present.

Not content to rest on their laurels, the Investment Management team at the Victorian Treasury has continued to improve the support that they provide to their facilitators - who have to be re-certified every x years to ensure they keep up to date.

Even if you have absolutely no intention of becoming a facilitator

~ and especially if you think that you can do just as well in house (especially in the current financial climate) ~

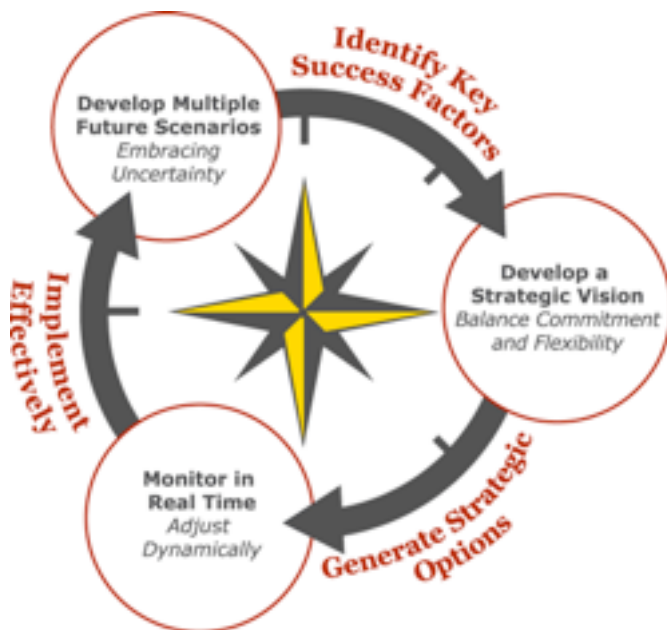
I would strongly recommend you to
ATTEND A ONE DAY introduction to Investment Management COURSE

I did it several years ago. The cost is low and it takes only one day of your time - but you will come away with a much greater understanding of what can (and so often does) go wrong at the problem definition stage. You will also gain a greater appreciation of what an external consultant can achieve for you, far more than would have been possible by yourself, no matter how skilled an asset manager you are.

Go to www.dtf.vic.gov.au and click on Investment Management. Read what is on offer, or watch the videos - and then take yourself off to Melbourne. Why not make it part of your improvement program this year?

WHY SCENARIO THINKING?

What will the future be like? Most of us cannot answer that question and - despite the fact that when we look back at all that has happened in the last 5 -10 years that we never expected, and despite acknowledging that 'we live in a time of change', when it comes to forecasting the future need for our assets over the next 10-15 years (let alone the 60-80 years that they are designed for), we fall back on the idea of 'incremental change' and assume that the future will be more or less like today (only better).



Can we do better?

Scenario Thinking offers a way for individuals and groups to face up to the threats and opportunities of the future. Decision-makers in this situation may not fully understand the complexities and ambiguities that the future may hold. In fact they may not even think about the future and simply continue with their present course of action. What is needed is a way of thinking about the future that is open to all possibilities.

“The Scenario method offers one approach to understanding and analyzing seemingly intractable

problems where there are “critical uncertainties” that span a range of subject areas or disciplinary boundaries. It is an approach that is inclusive, rather than selective. As such, it can be used in conjunction with, can incorporate information and data from, and can provide input to, other methods. It can be used by individuals, but is particularly suited to groups with different organizational, social and disciplinary backgrounds.

Relying upon the approach of “intuitive logics”, groups make sense of the issue by using all available sources, including quantitative and qualitative research data, published reports, media outputs, and so on – any material that is relevant and informs thinking. Scenario method is a democratic process where all viewpoints are considered equal, and all ideas can be aired and discussed using an open and non-confrontational approach. In it, we do not consider the degree of probability of whether or not any event will happen, only its plausibility and the possibility that it could happen.”¹

¹ This and the following quotations come from “Scenario Thinking: practical approaches to the future” by George Wright (Durham Business School, UK) and George Cairns, RMIT (Aus) which was published by Palgrave MacMillan, 2011. This is the work that I have used for the London Workshop and Scenarios on the following pages.

The importance of avoiding ‘Group Think’ - How easy is it for you to suggest a view that is contrary to that of senior management?

“In relation to questions of why no one appeared to challenge what was happening in the cases we have outlined [Xerox, Motorola, global financial crisis], we would highlight a key danger – societal pressures that stand in the way of thinking differently, thinking laterally. We live at a time when there is much talk of people being encouraged to show their individuality, to be different, to be creative. However, we would assert that the reality is very different. Ours is an age in which there are intense pressures to conform, to “go with the flow”, not to ask questions but, instead, to comply passively with increasing regulation and control. Organizations may espouse notions of individuality but, by and large, they expect their members to be predictable corporate citizens.”

With the scenario method, all plausible views are on the table, not as ‘what is going to happen’ but rather as one of many ‘things that could happen’. This reduces the threat level for management.



Resilience

In today’s rapidly changing world, the most important quality an organisation can possess is ‘resilience’, the ability to cope with anything that life may throw at it.

“Essentially, scenario interventions within organizations construct multiple frames of future states of the external world, only some of which may be well-aligned with current strategy. Scenario thinking can facilitate “vigilance” in strategic thinking – in that alternative futures are thought through and strategic options

can subsequently be evaluated against these futures. The process of scenario thinking enhances the evaluation and integration of information, and promotes contingency planning for the unfolding of both favorable and unfavorable futures. Multiple scenarios are pen-pictures of a range of plausible futures. Each individual scenario has an infinitesimal probability of actual occurrence, but the range of a set of individual scenarios can be constructed in such a way as to frame the uncertainties that are seen to be inherent in the future.”

What is driving it?

In each case we look at the future scenarios and analyse what might be driving such a response. Some, such as demographics, may be quantified. Others, such as political change, may be supported only anecdotally.

Stories



“Alternative worldviews can be communicated easily in an organization via the medium of scenario “stories”. Additionally, once a story has been read and the reasoning underlying its unfolding understood, a future has been “rehearsed”. Thus, once the early events in a scenario occur, the decision-maker will be able to anticipate how the future will likely unfold. These “trigger events” will be seen as information among the stream of data that impacts upon the decision-maker. Scenario thinking can promote:

- early contingency action ...
- early recognition of opportunities ...”

My favourite story about the effectiveness of scenario thinking comes from Shell.

Until the oil crisis of the 1970s, Shell had been the least of the seven major oil companies. However, Shell had developed a scenario planning method, looking at plausible future events and considering how they would deal with them. Although considered very unlikely at the time (oil price had traditionally been low and constant), one of these scenarios was the possibility of the oil suppliers creating a cartel and sharply raising the price. Shell was the only one of the oil companies to have foreseen this situation and, having worked through its response should it occur, it was ready to act. None of the others were and so Shell rose from the least to the most significant of the oil companies.

The leading scenario planners from Shell have since set up GBN, the Global Business Network, where they continue to do scenario planning for governments and large corporations. Their website is a veritable mine of information for those who would like to know more about scenario planning.

EXAMPLE: The future of Asset Management

Last November, I ran a small Scenario Thinking workshop in London with Ruth Wallsgrove, Linda Newton, Chris Lloyd and Charles Nelson, looking at this topic. In the time we had available, we could only graze the surface but nevertheless the results are useful and provide a good base for further exploration.

The discussion revolved around HOW Asset Management would develop - not whether it would. Drawing on the ideas discussed I have developed four themes, each of which could lead to a positive outcome for AM or a negative one. Thus the four themes yield eight scenarios, eight plausible pictures of asset management five to ten years from now.

The four themes are

1. A world in which AM develops as a set of regulated procedures,
2. A world in which AM develops as a technology, an advanced box of tools and
3. A world in which AM develops as a management philosophy
4. A world in which AM develops as an arm of central agency direction

You might like to consider other possible themes and, using the framework illustrated here, develop your own plausible scenarios.

Each of the eight scenarios looks at a plausible combination of elements that are common to any future scenario of the way that AM may develop, namely

- The way in which top management or senior decision makers view asset management;
- How asset management addresses service levels,
- How it innovates,
- The role that AM plans play,
- Who the key players or what the lead disciplines are,
- How automation, IT and the risk/uncertainty balance is approached, and
- How knowledge is disseminated, through training, research and publication.

These are not necessarily everything that should be considered.

Draft Scenarios

What follows are really only the 'bare bones' of a scenario. If you were using this technique in your own organisation you would want to fill out the details and make the story 'more story-like' before you took the scenarios out to a wider audience. However, here I am talking with practitioners involved in the development of the stories.

I put these scenarios up for discussion on my LinkedIn forum, 'The AM History Project' (which you are most welcome to join!) and Nigel Lowe suggested that we also take into account the size of the asset system and the ability of systems to cope with change. Kerry McGovern suggested that distinctions should be made between developed and developing countries. What other elements should be included? How might these issues affect the scenarios on the following pages?

In the next issue we look at the second of the themes:

A world in which AM develops as a technology, an advanced set of tools



SCENARIO 1. A WORLD WHERE REGULATION HAS POSITIVE EFFECTS ON AM

Major characteristics: clear service delivery objectives, mutual respect increases information, competition spurs innovation,

1. SENIOR MANAGEMENT VIEW, SERVICE LEVELS, INNOVATION

Senior Management see performance in Asset Management as a way of demonstrating superiority and winning favour with regulators. They enjoy competing with other organisations reporting to the same regulator which spurs innovations that are proudly reported at industry conferences. Minimum service levels are set by the regulator but competition encourages a wider range of services and higher service levels.

2. ASSET MANAGEMENT PLANS, LEAD DISCIPLINES

Regulators set targets but avoid prescriptive methods. Targets are set in discussion with the companies. Asset Management Plans serve a dual role, as a funding proposal to attract the support of the regulator, and as a mechanism for implementation by which the organisation will be audited. Asset Management Plans are therefore taken very seriously. The audit process is rigorous and management publicly acknowledges that it contributes to their knowledge and understanding. The Asset Manager has a senior role in the organisational structure. The lead disciplines are economics, (the regulator) and engineering (the regulated).

3. AUTOMATION, IT AND RISK/UNCERTAINTY

Assumptions built into automated processes are required to be justified, and risk management arguments on which much activity depends are rigorously examined and just as rigorously defended. Tools for managing uncertainty are central to the discussions between the regulator and the regulated when deciding on targets.

4. TEACHING, RESEARCH, PUBLICATION

Regulation requires knowledgeable staff and Universities compete to offer the highest quality and most relevant training. Academics are active in research, especially in the analysis of the impact on efficiency and productivity of different regulated procedures and they work closely with the regulators, often acting as auditors. The results of their analysis are written up in the academic management journals and attract spirited discussion.



SCENARIO 2. A WORLD WHERE REGULATION HAS NEGATIVE IMPACTS FOR ASSET MANAGEMENT

Major characteristics: Conflict, Regulations increase in complexity and diminish in transparency, minimum information feed back.

1. SENIOR MANAGEMENT VIEW, SERVICE LEVELS, INNOVATION

Senior management see Asset Management as an obligation, they recognise its necessity (it may be a licence condition) but it is not seen as a value-adding activity so companies seek to minimise its cost and do not engage in value-adding innovation. Management aims no higher than the regulated minimum service levels. The regulated challenge the authority of the Regulator and seek ways to 'get around' the more onerous conditions. Regulators respond by 'tightening up' the regulations, leading to increasing complexity and diminished transparency. Under- resourced regulators are forced to adopt 'tick the box' audit procedure which provides no useful information feed back for management.

2. ASSET MANAGEMENT PLANS, LEAD DISCIPLINES

Asset management plans are considered a compliance issue and responsibility is allocated to administration, divorcing the plans from real management decisions. Lead disciplines are economics for the regulator and administration for the regulated.

3. AUTOMATION, IT, RISK/UNCERTAINTY

Automation of asset management is employed to reduce costs, but s the built in assumptions are not subject to rigorous audit, nor are the companies forced to defend them and the automated models quickly become obsolete. IT is a cost cutting tool, rarely a means to add value. The risk/ uncertainty balance is not well understood and risk management tools are regularly applied to deal with issues of uncertainty.

4. TEACHING, RESEARCH, AND PUBLICATION

There is the occasional article in the popular journals, mostly criticising existing procedures but without providing alternatives, or by an interested party denouncing a particular decision. Academics provide training but the level of take up is low. There is little interest in research and publication.