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Where to now?

Presentations at Asset Management Conferences tend to fall roughly into two groups. The first, and these are the majority, deal with what *has* happened (e.g. the 'asset management journey', being organisations' first hand experiences, and case studies in the application of different techniques and approaches) or what *should* happen (instructions on good or 'best practice' techniques). The second group consists of *concepts* - ideas on the principles that guide good asset management.

I find that the first group of papers tells us where we are at the moment, or at least where the leading edge of the industry is, whereas the second group tells us something about the directions we are moving in.

Looking over the programs of the leading Asset Management Conferences around the world today reveal that certain ideas (concepts) are becoming more prevalent. A relatively recent contender is the *concept of resilience*. Closely related to this is the concept of *leadership and culture*. We are also seeing increasing interest in the idea of data to provide *meaning* (as distinct from providing records) which, in turn, is related to the *concept of service delivery*.

In this issue I have focused mostly on resilience and culture. As you read these issues, ask yourself how much your work in asset management is helping or hindering and then consider the following provocation.

Provocation: If, as asset managers, we persist in (a) putting the asset first (asset centric) and (b) insisting on asset longevity as the prime determinant of asset action (as in our life cycle and asset renewal models, and asset management information systems), it is us who will become redundant, obsolete and irrelevant!

As always, please enjoy (and, if you should feel so inspired, do respond!)
Penny

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EDITORIAL: On Concepts and Programs

In the current issue I have concentrated on Concepts rather than Programs. What is the difference?

A program can be written down, codified, checked off, and updated. A concept cannot.

A program, once it is written down, can be followed by others - and they do not necessarily even need to understand it to do it. A concept cannot. For a concept to be used, it needs to be thought about and interpreted. It then needs to be translated into action.

I suspect that a lot of what passes today for 'political correctness gone mad' is a premature attempt to codify actions from only partially understood concepts. Much the same could be said for many of the silo-based KPIs we suffer under. For example, the mistaken notion (and associated KPIs) that sustaining assets means replacing the consumption of assets *on an annual basis!*

Resilience is a concept. So is Leadership and Culture. So, for that matter, is getting meaning from data or the use of service delivery as a guide to decision making. None of these can be codified or mandated. Instead we need to understand them and use that understanding when making asset decisions. In this sense concepts are both ongoing - and personal (no one can do our understanding for us).

In this issue I look at

3. Why the term "Resilience" is becoming more important to us now.
- 4-5 What Resilience is and what it requires
- 6-7. Why Resilience is a 'Wicked Problem' and what this means for AM
- 8-9. Understanding culture to become more resilient
10. Where to now?

Your reactions are much welcomed

RESILIENCE

The ability to survive, even thrive, after disaster

Resilience is often described as the ability to ‘bounce back’, to recover and even to surpass the previous state. It is much admired in individuals, and essential for critical infrastructure.



Why are we now seeing a surge of interest in infrastructure resilience?

This is not difficult. Large scale environmental disasters (e.g. the Queensland floods, the Christchurch earthquakes and Hurricane Sandy) seem to be happening with greater frequency than we had previously estimated (‘guessed’ would be a better word). We are no longer confident that a ‘1 in 30 years’ event’ or a ‘1 in a 100 years’ event’ really has any validity. We simply do not know how to put probabilities on these events.

As we explained in an earlier SAM on ‘Risk AND Uncertainty’, risk management is about using probabilities. When we do not know, and cannot work out, the probabilities, we are not dealing with risk any more, we are dealing with uncertainty, which is much harder. **Resilience is about living with uncertainty.**

So what does Resilience encompass?

In the last few years, the UK, Australia and New Zealand have all produced reports on the concept of infrastructure resilience, analysing what it is, and how to get it. The diagram here is from the UK Report “Keeping the country running: natural hazards and infrastructure (2011)” Unlike the diagram, the contribution to resilience in any particular case will not be equal, but will depend very much on the circumstances.



Thus there is no ‘one size fits all’ infrastructure resilience method. This makes it very much a concept that needs to be thought about in every case rather than a program that can be codified and delegated.

Ken Simpson who writes a blog on resilience, describes resilience as a ‘wicked problem’ (see pages 6-7)

Resistance is the traditional “Prevent” mode - building resistance to a hazard or its primary impact. (this will be limited by the nature of the threats we envisage and plan for and by our historical measures - which are not proving very reliable just now)

Reliability is about ensuring infrastructure components will operate under a range of conditions. This is a feature that must be designed into infrastructure components.

Redundancy applies to the network/system level. The previous component was defined at the component level. Again it must be a design factor. The UK report makes a very important point “The resilience of networks reduces when running at or near capacity.” [p16]

Note: Historically, we used to build more redundancy into networks and systems as a matter of course. This enabled our systems to continue to operate effectively when maintenance and renewal was severely cut back and when extra demands were put on the systems. Redundancy is not now designed into systems, under the notion of achieving greater productivity. The limits may now have been reached and we need to rethink.

Response and Recovery is considered to be the “ability, capacity and capability to respond and recover”. Business Continuity is considered a key discipline in this component.

Ken Simpson, the resilience blogger doesn't see this going far enough. It is clearly stated in the UK report that planning will be driven by “reasonable worst case scenario for each type of hazard”, as specified in the National Risk Assessment. These represent the limits of threat/impact that need to be planned for. He believes that given the limitations of historical-based risk assessment that this will introduce for the first three components, this item needs to be clearly articulated as needing to provide the level of Adaptive Capacity to deal with a failure of anticipation and impact identification in the earlier components.

An Australian Resilience Expert Advisory Group (REAG) produced a position paper entitled “Organisational Resilience” in 2011. This paper identifies four approaches to resilience, namely:

Decline - the organisation accepts that adversity may cause it to cease operating

Survive - the organisation's resilience objective is to exist in a reduced form after adversity

Bounce back - the organisation's resilience objective is to regain its pre-adversity position quickly and effectively

Bounce forward - the organisation's resilience objective is to improve aspects of the organisation's functioning so that in adversity it not only survives but possibly gains from the situation

The REAG identified three indicators of high levels of resilience

Leadership and Culture

Resilient organisations are said to cultivate a culture of enthusiasm and support for challenge, agility, flexibility, adaptive capacity, innovation and taking opportunities when they present (for more discussion on AM leadership and culture, see pp 8-9)

Networks

Organisations that establish relationships, mutual aid arrangements and regulatory partnerships, that understands its community interconnectedness and its vulnerabilities across all aspects of supply chains and distribution networks, will be more resilient

Change Readiness

A change ready organisation anticipates and prepares for future challenges, develops warning systems of disruption threats and their effects through sourcing a diversity of views, increasing sensitivity and alertness and understanding of social vulnerability, promotes decision making using both rational and intuitive abilities and promotes critical reflective learning, lesson retention, knowledge sharing and continuous improvement.

The position paper presents seven case studies and their resilience lessons

In New Zealand, 'Resilient Organisations' is a 6 year research project designed to assist New Zealand organisations to recover economic competitiveness after hazard events. You can find out more from their website.

This diagram summarises the issues.



QUESTION:

How resilient is your infrastructure, your organisation, your asset management group? How do your AM attitudes, behaviour, knowledge help or hinder? You may wish to read the next two articles before you answer this question.

Wicked Problems

Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them

Laurence J. Peter

Resilience is a wicked problem

The following explains why Resilience is a 'concept' rather than a 'program' and therefore cannot be addressed by standards, or rules. It is taken from Ken Simpson's blog (<http://www.blog.vrg.net.au/informed/resilience-thinking/resilience-is-wicked/>)

A wicked problem is one that is almost impossible to solve, and where addressing some part of the perceived problem will often create adverse consequences in other areas.

The concept was originally proposed by Horst Rittel in 1973 . The concept sets social or cultural problems as different to those faced by scientists and engineers. The opposite of a wicked problem is a tame problem. A wicked problem was defined in terms of 10 attributes, some of the key ones being;

1. There is no definitive formulation of a wicked problem
 - in order to describe a wicked problem you have to have some ideas about possible solutions
2. Wicked problems have no stopping rule
 - You do not know when you are done, because the real problem is not clearly defined. Generally these efforts stop when the entity runs out of money or time – asserting that the result is “good enough” Do I need to go on? Surely this alone tells you that most Business Continuity and Risk Management programs are covered.
3. Solutions are not true/false but good/bad
 - perhaps better/worse rather than good/bad, because of this, the outcome is going to be perceived in terms of the judgement of others
4. There is no immediate and no ultimate test of a solution
 - In the case of resilience – you don't know if you have succeeded until there is a major problem. This is the notion that resilience is an emergent property
5. Every solution is a one-time option
 - Every wicked problem is essentially unique. Like resilience it needs to be addressed in the context it occurs. Therefore standards and standard operating procedures are irrelevant

Essentially the general principle this is based upon is that anything that works will be used in progressively more challenging applications until it fails. To pursue building resilience in organisations we need to try something new, not simply apply the same old ideas.

[Keith Grint](#) is a Professor at Warwick Business School in the UK. He offers a couple of useful ideas that can be applied to these wicked problems.

The first is that wicked problems require ‘clumsy’ solutions – rather than the ‘elegant’ solutions that are often the result of architectural and top-down design processes. Grint offers the metaphor of ‘bricoleur’ (the do-it-yourself craft, or patchwork). The idea that making do with the material available at hand is not just the best way forward – but the only way.

Elegant solutions tend to be the result of scientific approaches and processes. These address tame problems.

The wicked problem requires that we merge and blend different approaches to craft a solution that will meet enough of our needs.

The second concept is about how we need to exercise power and direction in addressing wicked problems. Grint offers a typology with three different types of problems;

- Tame
- Wicked
- Critical

A critical problem would be construed as a crisis – very little time for decision making and action. To deal with each different type of problem we need to take a different approach;

- Critical Problems require Command
 - The leader provides the answer to the problem and dictates what needs to be done
- Tame Problems require Management
 - By definition we know how to address a Tame Problem
 - Hence we address this by application of scientific method and managing the application of Standard Operating Procedure
- Wicked Problems require Leadership
 - The leader asks the right questions, rather than provides the right answers
 - This requires a strong collaborative culture to succeed

Resilience is not a new name for the process known as Business Continuity Management (nor Risk Management for that matter).

It is the result of a body of work that touches the people and culture of an organisation. A wicked problem. If you approach it as just another management system process, it is likely you will fail.

Ken Simpson asks:

Are you re-framing resilience into a management process?

Are you able to define a ‘stop condition’ for your Business Continuity Program

I would also ask:

Are you leaving yourself enough scope in an increasingly standardised approach to asset management to take part in resilience discussions - or will you be a blockage?



Leadership and Culture

The other concept that I want to address in this issue is ‘leadership and culture’. Almost every Asset Management conference nowadays will furnish at least one presentation, usually a keynote, on this topic - and for very good reasons. It is not only very closely allied with our ability to be resilient, but an indication of the progress that we have made in the last 30 years. From being largely undocumented and unaccounted for (30 years ago we did not have current valuation, condition, and life data on our assets and much of the time we did not even know where they were or whether they were ours or someone else’s!) asset management has now become central to infrastructure organisations. We have, in previous SAMS, given cogent examples of what can happen when the organisational culture is not conducive to asset management.

What do we need to be looking at?

The Asset Management Council (The Asset, 503, 2011, pp18-19) distinguish between the attributes of Leadership and Culture as follows:

Leadership

- Promote asset management as essential to the business
- Establish clear vision and policies
- Motivate staff to be quality providers
- Train and support staff as a learning organisation
- Regularly monitor and review asset management performance
- Communicate and consult with asset management teams
- Recognise the existence of and manage human error
- Drive and support change
- Create an “asset management culture”

Culture

- Create the “long view”
- Risk based approaches
- Competence through training and application
- Confident to question
- Open to failure (ie say what went wrong)
- Rewards based on measured performance
- Know roles and responsibilities
- Accept and understand causes of human error

An assessment of different types of organisational cultures and their likely approach to high-risk (safety) issues as reflected in how they deal with safety information is shown in the following diagram. There are obvious parallels with asset information and our ability to make informed decisions.

Pathological

- Don’t want to know
- Messengers are shot
- Responsibility is shirked
- Failure is punished
- New ideas are actively discouraged

Bureaucratic

- May not find out
- Messengers are listened to if they arrive
- Responsibility is compartmentalised
- Failures lead to local repairs

Generative

- Actively seek it
- Messengers are trained and rewarded
- Responsibility is shared
- Failures leads to far-reaching reforms
- New ideas are welcomed

Getting Started

The Environmental Protection Agency in the USA, in its guideline “Building an Asset Management Team” says:

‘Thinking about your assets differently can be the first step towards having a sustainable water system. With the limited resources of most systems, shifting away from reacting to events and towards making strategic plans can lead to real savings. Asset management focuses on the long-term life cycle of an asset and its sustained performance, not on the day-to-day aspects of the asset. It involves a shift in a water system’s philosophy characterized by:

- Changing the management culture.
- Understanding that all asset decisions are investment decisions.
- Focusing on continual improvement driven by results (sustainability).

Changing the culture requires champions who use a team approach to promote and articulate the benefits of asset management. The champions are the motivating force behind the team that can consist of operators, managers, elected officials, and stakeholders. Each team member fulfills a role and function in implementing an asset management program.’

Creating the Culture

Both pieces of advice are valuable, but for an understanding of the demanding complexity of asset management culture, I would recommend Charles Johnson’s chapter in “Asset Management: whole-life management of physical assets” entitled ‘Creating an Asset Management Culture.’

Charles makes the distinction between ‘culture’ and ‘climate’

Culture:

refers to the shared values of everyone in the organisation
is relatively enduring, stable and resistant to change
impacts on the way staff behave at work

Climate:

refers to staff perceptions of the state of the organisation
is therefore, a relatively unstable snapshot
is subject to change

He explains that “‘culture’ refers to a long-lived set of values, beliefs, attitudes and assumptions which are thought to affect behaviour and performance over the longer terms while ‘climate’ refers to the way in which the underlying culture is manifested and expressed in current staff attitudes and behaviours.” and he points out that climate can be out of kilter with culture when disrupting events such as pay rises or redundancies occur, so that you need to look rather closely at each situation.

In this chapter he looks at the origins of organisational culture, the consequences of failing culture, how to determine the culture you want and then how to create it.

It is worth reading if you are serious about attaining a good AM culture in your organisation. Remember: culture is a concept - there are no check and tick boxes, only understanding the principles will take you to success.



Conclusions - Where to now?

- Is your AM style conducive to the flexibility needed for Resilience?
- How quickly can you react?
- How good is your data, not just of assets, but of the needs for the services that the assets provide?

What other questions do you need to be asking?

What does the following quote (page 6) imply for the way you do asset management? Indeed, for what you aspire to do for asset management?

Wicked problems require ‘clumsy’ solutions – rather than the ‘elegant’ solutions that are often the result of architectural and top-down design processes. Grint offers the metaphor of ‘bricoleur’ (the do-it-yourself craft, or patchwork). The idea that making do with the material available at hand is not just the best way forward – but the only way.

Service Delivery

- How does Resilience relate to Service Delivery?
- How does Service Delivery relate to the data you collect and the meaning that you derive from this data?

What would you like to know more about, wrt Resilience?

- What would you like to contribute to discussion on this subject (e.g. what you have done, want to do, or questions you have)