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# STRATEGIC ASSET MANAGEMENT

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WHAT FUTURE WILL OUR  
ASSETS INHABIT?

**“Thinking about the future is not a normal human activity.”**

Robin Williams (ABC Science Show), “Future Perfect”.

It is, however, what **Strategic** Asset Managers need to do. We may say that we are thinking about the future when we model and project future renewal, but that is really not enough - we have to have some idea about what kind of future our assets are going to be serving. Else, how do we know that they need to be renewed at all?

**It is one of life's paradoxes that everything changes but nothing is new.**

Ten years ago I made a presentation to the Institute of Asset Management in London, looking at what changes *had* taken place, *were* taking place, and *might* take place in the future. Some of the problems I discussed then have become more severe, a few have improved, new problems have arisen, *but many of the challenges we faced then are still with us*. In this issue, I present a condensed version of that original 2004 paper. Which issues have we solved and what are still with us? What new ones have arisen. The answers are likely to differ from one organisation to another. What is critical is what is relevant to you. If you let me know I will try to include a discussion of them in coming issues. I look forward to hearing from you. Till then...

Enjoy!  
Penny

Dr Penny Burns, Editor, AMQ International  
08 8359 0559 [www.amqi.com](http://www.amqi.com)

# WHAT ARE TODAY'S CHALLENGES? AND TOMORROW'S?

## Introduction

Global warming; The Rise of China; Declining population growth and population ageing; Changing Religious Balance; Global system interdependence; The Community's declining trust in the professions and their increasing activity in support of the environment.

How do these issues, now being increasingly discussed, impact on the future of asset management? But first, let us briefly look back at what changes we have already experienced and where we are today. (Remember as you read this that for 'today' you need to read '2004' - what changes would you make to bring this up to 2014?)

## Where we were

**Focus** - our focus used to be project based; for example, building a bridge. Today, 2004, it is program based and decisions centre on asset collections such as a transport corridor. We have widened our base of thinking. This means that more of the previously external impacts of our actions are now internalised – and thus taken into account.

**Emphasis** - our emphasis used to be not only on individual assets such as the bridge; it was short term. Most of our interest was in construction and our project focus meant that we worked towards hand-over. Today, 2004, it is more likely to be on asset systems and long term. This has made asset management *more holistic* in its approach.

**Options** - It used to be that we considered only design and construction options. However, today, 2004, we need to think about design & construction and to continue that thinking forward to include operations and maintenance, renewal, replacement and eventual disposal as parameters.

**Who** - It used to be that our work was mostly in-house. Today, 2004, there are many more options; for example, buying services rather than assets, contracting out, and integrated facility delivery.

**Systemic and Systematic** - It used to be that our approach was piecemeal and ad hoc. Today, 2004, we are moving towards a process that is holistic and systematic. In today's world, input and feedback are essential. Good quality data, well organised and evaluated is critical.

**Funding** - It used to be that public sector capital was funded by government borrowing or by tax revenues. Today, 2004, public sector capital is increasingly being provided by the private sector and we have a raft of Private Public Partnership and Private Finance Initiatives of incredible variety – and complexity. Where governments retain capital provision, it is far more likely to be subject to commercial rules of return on investment and tax equivalent payments. Where services have been privatised, extensive government regulations have developed. As a result, legal complexities have exploded.



### Exercise:

**Cast your mind back to 2004. Were you aware of these changes then? Are you aware of them now? Different organisations, of course, develop at different rates. Where are you NOW?**

## These changes have taken place in a very short space of time.

They have influenced both the need for asset management and the way that asset management has developed as a discipline. In many cases asset management has been adopted as a means by which one level of government can control the outputs and quality of a lower level of government, or a means of controlling private sector processes to ensure a greater focus on the longer term.

No longer focused on the asset; no longer using approaches that are piecemeal and ad hoc, asset management today is summed up as being **systemic and systematic**: systemic, because it focuses on asset systems, collections of assets, portfolios of assets; and systematic, because it follows recognised processes consistently.

## The Asset Management Challenges Today

A few years ago, Michael Garvin, Professor of Civil Engineering at the University of Columbia in the United States, summed up the challenges facing asset management. He grouped these challenges under five headings:

- Strategic challenges
- Integration challenges
- Measurement challenges
- Analytic Challenges, and
- Institutional Challenges



**Exercise:**

**How do these relate to our 2014 challenges?**

Not unnaturally, he focussed on the challenges facing engineers. But asset management transcends engineering, it is a multi-disciplinary field, so I would also add three more challenges:

- Conceptual Challenges
- Accounting Challenges
- Costing Challenges

### Strategic challenges

**Procurement processes.** Many alternative arrangements for facility delivery, facility operation and maintenance, and systems operation and maintenance are available today; we need to learn how to evaluate and choose the appropriate one.

**Defining system objectives.** This task is becoming more complex as we broaden our range of stakeholders to include not only the different supplier levels, but also community stakeholders and this will certainly introduce competing objectives. Hence Ralph's definition which has, at its first element, "managing relationships with stakeholders"

### Integration challenges.

**Integrating functional and condition-driven requirements.** Functional requirements dominate at the policy and service provider level, but it is condition-driven requirements that mostly occupy the thoughts of operations personnel and middle level tactical managers.

**Integrating asset classes and sectors.** There are few services that are provided by only one asset class. Generally asset classes, eg rolling stock, track, and signals; and asset sectors, such as passenger and freight traffic are separately managed and maintained. Safety, reliability and efficiency, however depend on *integrated decision-making* – and this is becoming more difficult with the current tendency towards the creation of separate ‘business units’.

**Linking appropriate management and decision support systems.** Existing databases and computer models are generally structured to support asset classes, not asset collections, and cannot ‘communicate’ effectively with one another. All integration challenges are also organisational challenges – how we organise for improved asset management is currently absorbing the attentions of many agencies.



### Exercise

How many of these challenges has your organisation addressed in the last ten years - and how many of them have been brought to a satisfactory conclusion?

## Measurement challenges

**Identifying appropriate indicators.** How do we identify what REALLY matters for service delivery out-comes, what should be regarded as ‘intermediate’ indicators for management purposes and measured frequently (daily, weekly, monthly), and what should be regarded as ‘external reporting’ indicators to be measured yearly – what are the crucial links between them: these are still open questions.

**Establishing comparative baselines,** for both internal and external comparison purposes.

## Analytic Challenges

**Improving data collection and management.** In the early days of asset management when so little was known that any data was considered better than none, a great deal of emphasis was placed on data collection. Today we are learning that there can be quite a gap between data and information and we are becoming more selective: collecting less, analysing and updating more.

**Constructing and evaluating alternative lifecycle scenarios.** Although the principles of life cycle analysis are not new, the development of methods and tools are still being developed. The task, moreover, is becoming more complex as we consider not simply the impact of maintenance on renewal costs but also its impact on operational costs and risk.

**Incorporating flexibility.** Events over a lifecycle are uncertain, so scenario modelling is a useful adjunct to the more quantitative life cycle modelling approaches.

## Institutional Challenges

**Improving communication across the organisation.** Organisations are now experimenting with cross- functional groups or asset management co-coordinators. There is no ‘one right way’ to improve communication, but as individual task complexity grows, the communication channels become both more important – and more difficult.

**Defining roles of public and private sectors.** Even such a seemingly simple task as defining ‘what is core’, and must therefore be retained in-house, is proving more elusive than expected.

Moreover, when private sector contractors work alongside the in-house team, the boundaries are becoming more and more blurred. Where do we go next?

### Conceptual Challenges

**Clarifying Objectives.** A major challenge today, as the community takes a bigger role in determining objectives for service delivery and asset management, is to define, measure and manage 'service levels' -- defined in customer rather than provider terms.

**Linking Activities to Outcomes.** Many organisations define objectives but fail to relate the activities that they do to the objectives defined: this is a task that still needs doing.

### Accounting Challenges

**Accrual Accounting.** In the days of cash accounting, no account was taken of asset deterioration in the books of account. Today, it is still not much better in some countries. In the USA, for example, water agencies are only required to use historic cost – and so far only for those assets acquired in the last 5 to 10 years. No accounting is required for older assets; the very assets that most need to be examined!

**International Harmonisation.** The rules are still being made, even as countries are being expected to apply them. This is likely to be the cause of yet more problems that will need to be overcome in the management of infrastructure assets and others in the years to come.

### Costing Challenges

**Historic Costs.** Agencies that use historic cost for their infrastructure assets are unable to tell how much of the asset is being used up each year or per unit of consumption - in real, current day, terms. Without this, appropriate costing is just a guess.

**Life cycle data.** Even where full replacement costing is used absence of good life cycle data presents its own costing challenges and make it impossible to determine reliable annualised costings that can be used for decision-making and pricing.

**Activity Based Costing.** Few agencies have good activity based costing in place to tell them how much each activity costs.

**All of these challenges will continue to be faced by Asset Managers, but they will be doing so in an increasingly difficult environment. It is that environment that I would like to explore now.**

### What Will Be The Asset Management Challenges from 2004 on?

#### Demographic change

Over the next several decades Australia's population and, indeed, that of all developed countries will age significantly. This ageing has two technically different dimensions – numerical ageing (primarily caused by high / increasing life expectancies which increase the *absolute* numbers of elderly), and structural ageing (primarily caused by low/falling birth rates which increase the *proportion* of the population that is 'old')

The two dimensions, which have different implications for institutions, have two further but somewhat less understood features – natural decline, which occurs as deaths exceed births (expected in Australia from around 2035) and absolute decline, which will occur if the numbers of migrants become insufficient to replace the ‘lost’ births and increased deaths (in Australia from around the middle of the century.) Currently (2004) around 13% of the Australian population is aged 65+ years, and this is projected to increase to over one-quarter by 2051.

However while we think this age structure is ‘old’, it is relatively young when compared with those of most other developed countries. The United Kingdom, for example, currently has around 16%, Sweden 17% a, Germany 18% and Italy 19%.

Numerical ageing, structural ageing, natural decline and absolute decline will be experienced by most of the world’s countries during the present century – developed and developing countries alike. In Australia, the shift to natural decline is expected around the mid 2030s – sooner if net international migration falls much below 100,000 per year, while absolute decline will almost certainly begin during the second half of the century. As a comparison, many European countries are already experiencing natural decline, while a few, including many other more recently developed countries such as Japan, are also experiencing absolute decline. By 2050 approximately 33 countries are projected to have begun absolute decline, among them even China.

Except in rare cases, increased migration levels will be insufficient to resolve ‘the problem’. First the numbers required are enormous. For example, if the European Union wanted to keep its current age structure constant between now and 2025, it would need an annual net gain of approximately 8 ó million migrants, compared with its current ó million.

Second, over the shorter term, migrants also add to structural ageing in that they tend to have lower birth rates than their host populations ( a phenomenon that is exacerbated by recruiting skilled migrants.) These points notwithstanding, it can be expected that international (and subnational) competition for skilled migrants will soon become fierce.

This has enormous implications for asset management both in terms of demand – and in terms of labour supply.

## Global Integration

Global integration as a phenomenon is already well underway.

- On August 14, 2003, the largest power blackout in North American history affected eight States and the Province of Ontario, leaving up to 50 million people with no electricity.
- Failure to keep transmission wires clear of overhanging trees in Switzerland resulted in blackouts in Italy!
- A fire at the Moomba Gas Plant in South Australia earlier this year left South Australian residents largely unaffected because it was possible for South Australia to tap into the new SEAgas line coming in from Victoria – however major industrial users in New South Wales had to close down!

Nor do areas need to be adjoining neighbours for impacts to be felt. It is very likely that Australia – and Europe - will be impacted by the rapid increase in electricity demand in China, estimated at 5% a year for the next 15 years, and by the billion of dollars that the USA are providing for renewal in the wake of the blackouts that will place heavy demands on existing sources of component supply.

We are now interdependent whether we like it or not. In 1953 I remember seeing a picture of the Blue Streak Missile on the front page of our Australian daily paper with the bold caption “Britain Goes it Alone”. As a 12 year old, recently arrived, immigrant to Australia from London, it made me feel proud of the indomitable fighting spirit of the British who against all odds, would continue alone and independent. However, today, to be hankering after solitary independence is to be willfully blind to reality. We might as well learn to live with the fact that we are now *interdependent* – and develop the skills to manage in this more complex world that affects our supply chains and expands enormously the range of our stakeholders.

Future planners will need to take account of the fact that every business will, in this sense of interdependence, be a global business. And it will bring interesting contradictions – wind power, for example, so renewable, so green – will only be possible in the UK because it is backed up by supply from France – produced by nuclear power!

## Climate Change

Also widening our planning ambit is the impact of Climate Change or Global Warming. For years it has been simply a talking point, an academic issue – but now Asset Managers are taking the implications seriously. Not surprising in Australia (the world’s driest continent!) this is most evident in the way we are now planning for the management of our water assets. For years we have assumed certain catchment yields and have not varied our estimates – but now we are starting to recognise that we may not have as much as we thought we had. Our information base is so far not good and few studies have been done, but in Western Australia where they have records spanning 40 years they have seen a fall of about 50% in catchment yield over these four decades. This is spurring other water bodies to assume similar effects in their own areas and to take seriously such things as leak management, pressure management, and – especially – demand management.

The most extreme form of demand management is rationing or restrictions and both Victoria and South Australia have introduced permanent water bans between 10 am and 6 pm, and a complete ban on hosing down driveways or cars. Now even Sydney (which periodically suffers months of extremely wet weather including devastating hailstorms) is also considering bans. – leading one radio commentator to remark that “our nightly news now has a new addition - Stock market up; stock market down; Australian dollar up; Australian dollar down; Level of Warrangamba Dam up; Level of Warrangamba Dam down”!

Yarra Valley Water in Victoria is one of the leading asset management organisations. It is already researching the composition of water demand by using data loggers installed in homes that record the amount of water used in cooking, washing, showers, toilet and garden. The data-logging sample includes small size and large house blocks and other variables that allow Yarra to predict likely future demand and to find ways to manage it.

While some reject the climate change connection, others see significance in the fact that Florida is now being hit by the fourth major hurricane in as many weeks, and that parts of Europe are now regularly experiencing extreme weather conditions that were not the norm some years ago.

### Exercise

**Are our water panics now behind us with Australia-wide access to expensive but available desalination plants? Has this changed government thinking?**

It is currently fashionable to live on the coastline but if extreme weather conditions increase, we may see a movement of the population inland and this could have major impacts on the location of assets.

## Global Terrorism

The other global trend, of course, and one that is currently dominating our newspapers, is global terrorism. It is a strange thing to say but in some ways terrorism has done asset management a favour! For the last four years we have focused sharply on avoiding the worst impacts of breaks in service delivery and, as a result, asset management, which many still saw as an exercise in preserving the condition of assets - an older, inward-looking, perspective - is now rightly seen as focusing on service provision.

We do not wish to do without the benefits of integration, but they have made us more vulnerable so we have been encouraged to rethink. Redundancy, once excoriated in the name of efficiency is now seen to offer safety benefits. In Australia, the CSIRO (and probably scientific organisations in other places as well) is looking at distributed production, with overlap, as a means of combating system vulnerability. Focus on Critical Infrastructure has also raised general public awareness of infrastructure more generally. (2004 is the Year of the Built Environment, of which infrastructure is of course such a key part.) Nevertheless this awareness may be bought at a high price if it encourages unwise, knee-jerk, politically motivated resource allocation. The truth of the matter is that we are still more at risk of losing service through poorly maintained and fund-starved assets than we are from a terrorist bomb. Still, heightened security concerns is one of the new factors that Asset Managers have to allow for in their planning.

## Loss of Trust in Professionals

Not perhaps as dramatic as Global Terrorism as a trend but one that could, in the longer term, prove to be even more significant, is the Loss of Trust in the Professional. Large business collapses, political scandals and child abuse claims against the Church have left the public reeling. Who can they now trust, except themselves? One reaction has been to place less trust in all professionals – including us – and to demand that the common man be heard; to hold the belief that the view of the man in the street is equally as valid – if not more so – than that of the professional. We see it in the rise of community involvement, in the willingness of the layman to ignore the advice of the professionals – particularly when a lot of that advice is seen to be self-serving, or selected to serve a given point of view.

Asset Managers are now being forced to justify themselves and their decisions, and what is more, they are being required to do this in layman's language. Courts are ruling that provision of information that is overly convoluted, excessively technical or simply too much, is no information at all! Clear communication and attention to the needs of the people is the new requirement on Asset Managers.

Once it was sufficient to be technically competent and asset management was a back room activity, designing efficient configurations. Not any longer! July, for example, saw this news item: "ElectraNet is extremely disappointed with the decision of the District Council of Grant to refuse its Development Application for the new transmission line between its South East and Snuggery

substations. It appears that DC Grant has ignored professional advice and counsel regarding the uncommercial costs of under-grounding the proposed new transmission line – to the detriment of its constituents and the wider South Eastern community.”

## The Rise of Environmentalism

In the same month, in the USA, Connecticut Light and Power was required to underground high voltage power lines in its 69 mile transmission line upgrade that are near schools, playgrounds or anywhere near children. People were concerned with the health consequences of magnetic fields. Only if technically infeasible or unsafe was the utility to be excused. Undergrounding high voltage lines increases costs by a factor of around 10, so this is a significant political decision. This rise in ‘people power’, as it were, is coming at a time when there is heightened awareness of the environment. It is becoming harder and harder for infrastructure agencies to get environmental protection agency approval for new construction. The result is that companies are making existing assets do more and more and the Asset Managers are being squeezed.



### Exercise

**How much are you affected by lack of support for your professional expertise?**

Higher utilisation rates result in greater wear and tear and more need for maintenance, yet, at the same time, there is less opportunity for downtime to actually do the maintenance. More maintenance is therefore being carried out on live assets, even in electricity, and even for renewal. A New Zealand team is using a process for increasing the height of poles by creating small platforms that are inserted under existing poles – without disturbing current flow. They can even insert poles through live wires.

It is commonplace, of course, for sewerage renewal to require by-pass lines to permit continued operation; for road renewal to work a lane at a time to keep traffic flowing; and for hospitals to be renewed while the work of the hospital continues. The need to renew while continuing service adds to the cost of renewal and the cost premium can be high. It is a prime factor in the differential between ‘green field’ accounting values and ‘brown field’ renewal values. Good decisions on the level and timing of renewal can generally not be made using accounting values.

In Australia, a number of colleagues and I are working on a valuation and depreciation methodology acceptable to accountants but based on actual renewal costs and timing. Environmentalism is also affecting the cost of asset disposal. Restoring contaminated land is neither easy or cheap. The implication for Asset Managers is that they are being required to keep the asset in service for longer so as to postpone the day of reckoning.

## Impact On Labour Resources

Maintaining increasingly older, increasingly more intensively used assets is not a task for the amateur. The demands on maintenance personnel are changing. If we are not going to make our asset management performance gains through acquiring new assets, or disposing of older, hard to maintain, assets, then the only option left is to do better operations and maintenance.

New technology will help but a lot of the gains are going to depend on how well the personnel are able to respond. A simple example helps to make the point:

Claude Piccannin, Water Services Association Australia, argues that the next big move in reducing risk will be in Configuration Management. He explains it this way: A team goes out to do a job, shuts off three valves, re-opens two once the task is done but gets called away to another emergency and leaves the third valve still shut. The paperwork is not done till the end of the week, by which time, the still closed valve has been forgotten. Later on, they are called to a job where the shut off is thought to affect only 4,000 – but because of the forgotten closed valve, it really affects 20,000 and there are major problems with the Regulator. Configuration management is about getting this fine detail right so what we think we know about the system is reliable.

How do you overcome these people risks? Particularly when they are exacerbated by the chance that English is not the first language of any of the crew. Well, technology may help – icons on handheld recording devices can overcome the language barrier AND do the recording straight away so it is not left to the end of the week when it might be forgotten. But quality systems are also required. WSAA reports that they could get not one person in the water industry to stand up and say that they had this problem covered and the association had to go out to the electricity industry for exemplars.

What this means is that we are becoming more and more reliant on the skills and abilities of our people. No longer are they mere mindless cogs; robotic people with spanners! We have all experienced the construction stage where the focus was on building more (which peaked in the late 1960s in Australia and probably in Europe also) and the information gathering stage, where the focus was on gathering more and more data. We are now in the 'Third Age', where the focus will be on assessing and analysing the data in the light of changing circumstances. This is hard to automate. We are going to have to rely on our people – and we are going to have to train our people!

## **And with this, we have come the full circle!**

For at just the time when we are becoming more reliant on skilled personnel, we are facing a dearth of them! Population trends as we saw earlier are making it more difficult to attract and hold qualified people.

### **Final Exercise**

**Which of these issues are you grappling with today?**

**Which issues do you think that you should be grappling with but cannot get attention from management?**

**What new issues have arisen?**

**WHAT STRATEGIC ISSUES SHOULD *STRATEGIC ASSET MANAGEMENT* BE DEALING WITH OVER THE COMING YEAR?**

**Please take a moment to send a short email to me at [penny@amqi.com](mailto:penny@amqi.com)**