AMQ International

Strategic Asset Management

Issue 51, December 15th, 2000

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Special GHD Issue

In this issue Bruce Marshall of GHD introduces a new initiative by the Queensland Government. If you have not heard about GAMS yet, you will want to find out about it very soon—it can make your life as an asset manager very much easier.

Roger Byrne and Larissa James of GHD look at the question of managing risk—perhaps the key issue in asset management.

To find out more about GHD, check out the back page.

An Opportunity for All!

A Web-Based Knowledge System for Asset Management

Imagine

- being able to access all of the information you need for asset management by a simple 'click and find',
- including instructions, data, guidelines, policies, regulations – the works!
- software available to marshall all of a State's information necessary for asset management and make it readily accessible and updatable.
- **that the licence for the software is free!**

The Queensland Government has developed such a system and is making the *licence freely available to Australian State Governments – in exchange for information for benchmarking*. Licence is also available to large government organisations and utilities for a small licence fee and an annual upgrade and maintenance fee. The State commits to apply all fees received to the continual improvement of GAMS

To find out more (before you pressure your State Government or Organisation to take part in this great initiative), read the following article by Bruce Marshall, of GHD.

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The Government Asset Management System (GAMS) — a web-based knowledge management system

by Bruce Marshall

The need for GAMS

In December 1998, the Queensland Government's Cabinet Budget Review Committee (CBRC) instructed its Property Management Committee (PMC) to prepare a report for a long-term strategy for efficient government property management in the context of accrual output budgeting.

The PMC report identified a number of excellent asset management related policies, procedures, better practice guidelines, decision support tools, and information systems. However, it found these were sometimes inconsistent, and fragmented across a number of central and lead agencies. It recommended the development of the Government Asset Management System (GAMS) to:

- align all asset management processes with the government's "Managing for Outcomes" accrual output budgeting initiative
- identify and address any apparent gaps in the asset management knowledge base, focussed upon better practice worldwide
- provide a single point of access to the asset knowledge base and related information systems, and
- devise and seamlessly integrate within all asset management processes a generic system to monitor, manage and continuously improve both asset and asset management system performance.

In August 1999 following a competitive tendering process Innovative Strategic Management Pty Ltd (ISM) was appointed to develop GAMS, providing a new leading edge approach to Whole of Government asset management.

About The GAMS

GAMS is a web-based knowledge management system with over 1,550 web pages and in excess of 34,500 hypertext links to legislation, policies, better practice guidelines and information systems. It does not duplicate existing material — it simply links directly to the appropriate text. It provides a better practice forum where the collective and continued learnings of all budget sector agencies can be captured and disseminated. All decision support material is organised around generic processes that apply to each phase of the asset life cycle, each of the three levels of asset management, and to all major asset classes.

GAMS and "Managing for Outcomes"

As illustrated in Figure 1 below, under Queensland's "Managing for Outcomes" initiative, the government purchases certain outcomes from its budget sector agencies, based upon seven *Government Policy Priorities*. GAMS defines Outcomes as "All the impacts or consequences of the program beyond its direct outputs". Outcomes are often delayed or long term and they may be intended or unanticipated. Outcomes should be distinguished from outputs. For example, the output of a training program may be a *skills training course*, while the government's desired outcome is *increased employment*.

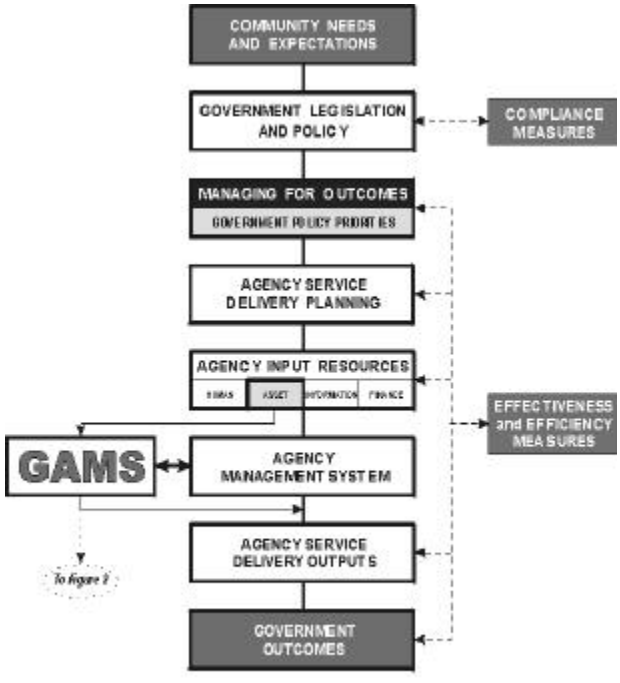

Figure 1 — Placing the GAMS in a Managing For Outcomes environment

GAMS Framework

Figure 2 below graphically depicts the GAMS Framework

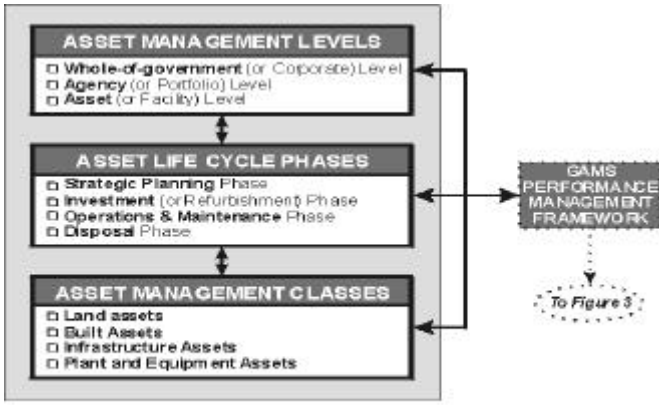

Figure 2 — The Government Asset Management System Framework

GAMS supports asset managers and planners at all asset management levels, namely the:

- Whole-of-government (or corporate) level
- Agency (or portfolio) level, and,
- Asset (or facility) level.

It also supports all asset practitioners in the asset life cycle disciplines of Strategic Planning, Investment, Operations & Maintenance, and Disposal.

It further supports all asset practitioners responsible for different classes of assets, namely Land Assets, Built Assets, Infrastructure Assets, and Plant & Equipment assets.

GAMS also has plans in place to develop further guidelines to address a range of issues that impact on effective and efficient asset management. These include:

- Heritage and Cultural issues
- Contaminated Land issues
- Native Title issues
- Ecologically Sustainable Development, and
- Self-paced professional development training courses for all asset practitioners.

GAMS Performance Management Framework

The fundamental feature that sets GAMS aside from all other systems of public sector asset management worldwide is its Performance Management Framework (PMF). The GAMS PMF provides generic step-by-step processes outlining how to establish a performance management system to monitor, measure, analyse and continually improve the performance of the:

- physical asset as an input resource to service delivery outputs
- asset management processes
- asset management system.

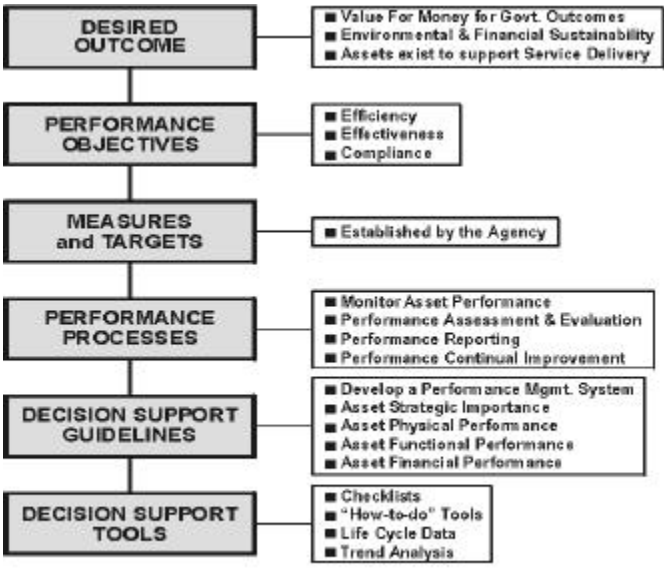

Figure 3 — The GAMS Performance Management Framework

1. The desired Outcome

The GAMS PMF consists of six key elements as graphically depicted in Figure 3 above. The overarching PMF desired outcome consists of three basic elements, namely that:

- "Value for money" is achieved by asset inputs to agency service delivery outputs
- all input assets to service delivery outputs are both environmentally and financially sustainable
- public sector assets exist only to support service delivery outputs.

2. Performance Objectives

In the GAMS PMF, the Desired Outcome is supported by three performance objectives:

- Effectiveness
- Efficiency
- Compliance

Effectiveness in asset performance is defined in GAMS as 'the extent to which an asset, or the various asset lifecycle processes are achieving their planned results or intended purposes'.

Efficiency in GAMS refers to the 'relationship between the result achieved and the resources used'. Efficiency has traditionally been focused on the ratio between inputs and outputs with the aim being to minimise inputs while still maintaining the specified outputs. While this is considered an important objective to achieve, the PMF expands the scope of the term to focus on how well the asset manager uses information systems and human and financial resources and applies best practice procedures to all phases of an asset's life cycle.

Compliance in GAMS is defined as the 'fulfilment of a requirement'. Compliance deals with those matters of a mandatory nature that must be observed. It is in effect, a measure of good governance.

3. Measures & Targets

While the GAMS PMF features an extensive guideline on the characteristics and development of good performance measures and targets — these are to be established and monitored by the agency. The GAMS focus is on continually monitoring, managing and optimising the performance of the asset as one of the four fundamental input resources. (refer Figure 1).

4. Performance Processes

Asset performance in GAMS is not an elective or standalone guideline — it is seamlessly integrated within the step-by step asset management system, at all asset management levels and asset life cycle phases.

5. & 6. Decision Support Guidelines and Tools

A comprehensive range of step-by-step decision support guidelines and tools support the PMF.

Future initiatives for GAMS

The State of Queensland (represented by the DNR) wishes to continually improve GAMS, and benchmark Queensland's public sector asset management activities on a 'like agency basis' with another State or Territory jurisdiction. To facilitate this, Queensland is willing at no cost to licence GAMS to such a jurisdiction, providing that it agrees to:

- Customise GAMS to accurately reflect its current legislation, policies, procedures, and better practice guidelines.
- Facilitate a thorough understanding and acceptance of GAMS at all levels of asset management within its budget sector Agencies.
- Benchmark on a 'like agency basis' with Queensland budget sector agencies for a minimum period of five years.
- Agree to promptly and freely advise the DNR of all improvements, potential improvements and innovations to GAMS, for a minimum period of five years.

In return, Queensland undertakes to provide that State or Territory jurisdiction with all future updates, enhancements and innovations to GAMS at no cost, for the duration of its GAMS licence.

Similarly, Queensland is willing to licence GAMS and its supporting GLR information system (in exchange for a similar commitment to those above), to major Federal, State, Territory or Local Government organisations, Utility Companies and Government Owned Corporations, for a small licence fee, and an annual upgrade and maintenance fee. The State commits to apply all fees received to the continual improvement of GAMS.

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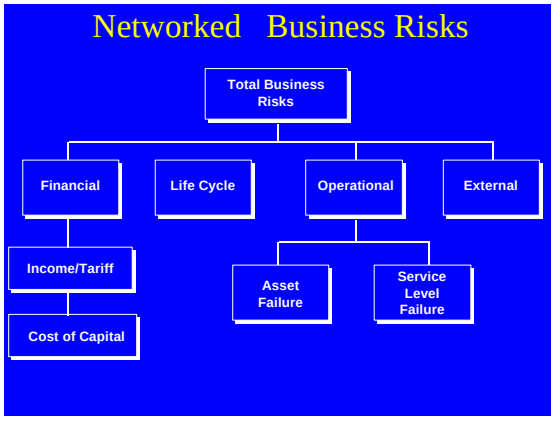
"Understanding and Managing Network Infrastructure Operational Risks" Part 1:

A paper by Roger Byrne & Larissa James of GHD's Asset Management Group .

The Australian Electricity Supply Industry comprises some $30 billion worth of assets. GHD estimates that current liabilities or residual risk exposure associated with the distribution network asset portfolios are of the order of $8 billion, and that 60% of these are not covered by regulatory allowances or insurance agreements. This figure is likely to increase as electricity network businesses respond to regulatory pressures by modifying operating practices to generate greater performance / outputs with lower tariffs and real income streams.

Network business risks come in various forms as shown by this following framework;



Australia's tight regulatory framework the need to operate network assets in a less risk averse fashion requires a clearer understanding of the businesses current operating risk exposures and the consequences of all operational and investment decisions. Risks such as :

- Asset failures from major impacts such as Auckland experienced, to multiple minor outages, which are the real or probable risks on which the regulators, politicians and customers will focus.
- Product quality issues such as voltage fluctuations and interference.
- Loss of corporate knowledge that impacts on all areas from response and repair times to tariff and taxation applications, and the way we encourage and support its retention within corporately accessible data systems.
- Availability and accessibility of emergency response plans and instructions to staff and the way wee can support, induct and train new staff in today's mobile workforce's.

However, since industry restructuring, corporatisation and privatisation, network businesses have struggled with the loss of corporate knowledge, data and information – a significant business risk that has not been well managed through industry reform and the sale of some businesses. Hence, the development of knowledge and data management systems is at a crucial stage. The benefits of collecting the right data and implementing the right processes and procedures for data capture and analysis are more necessary and realisable than ever before.

Under the current data driven regulatory environments in Australia, there are a number of benefits of good risk management – those related to the consequences of asset failures such as:

- Damage to assets and repair costs,
- Potential for injury or loss of life.

- The impact on customers through customer minutes off supply.
- The loss of income.
- Reliability and licence performance standards, and associated penalties.
- Third party property damage, and secondary impacts such as bushfires etc.
- Environmental damage.
- Loss of image and shareholder value.

Companies that invest in the data capture, information systems, processes and practices that help optimise asset operational and management decision making have the greatest potential to manage asset related business risks.

These businesses will be able to relate this knowledge to system performance to justify either adequate tariffs and income streams or service licence condition trade offs allowing them to gain some control over the external factors that currently dictate their regulated business environment. Businesses must be able to prove scientifically that they are effective and efficient and that the tariff is insufficient to meet their licence & regulatory obligations including safety.

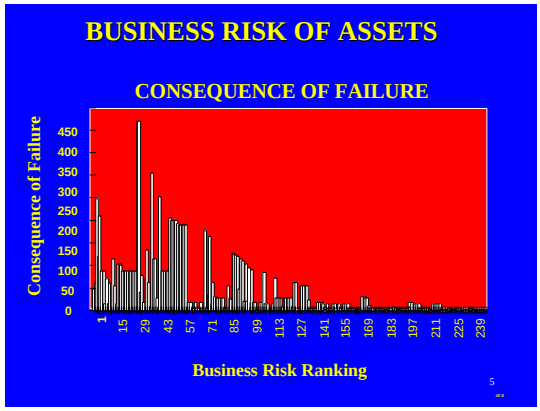
GHD uses a " whole of business" approach that assesses the risk associated with life cycle asset management , the consequences and probabilities of same, that are based on the skills and expertise of staff, and the lines of accountability and performance management mechanisms within the organisation.

In Part 2 we show how a business can identify their risk exposure.

Understanding and Managing Network Infrastructure Operational Risks: Part 2 Identifying Risk Exposure

Where the industry has moved towards the development of asset management and network services companies that operate under service level agreements or outsourcing contracts, a methodology for repeatable risk assessment is required both to evaluate and communicate limits on the creation of additional risk exposure.

While asset managers need to provide incentives for network service providers to develop innovative operating and monitoring solutions, they must first understand what the acceptable limits are on network asset capabilities, and the magnitude of liability that the business is able to cover.



The relative risk of asset failure is possible to quantify with a level of confidence correlated to the quality of the input data used. In the absence of many years worth of time to failure data and knowledge of the relationships between environment, utilisation and decay, a preliminary assessment of network operational risk can identify:

- Asset system interactions and levels of redundancy.
- Asset condition.
- Likely failure modes and consequences of failure measured in $ terms to the business.
- Criticality and reliability ranking of network assets using simulation models.
- Mitigation or risk reduction plans and priorities.

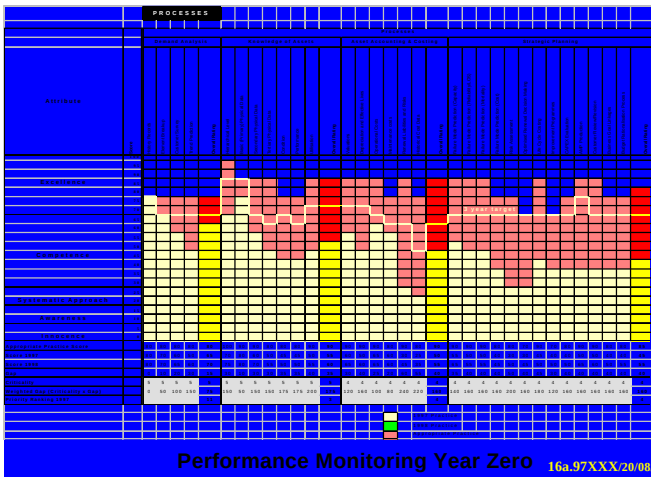
These outcomes form a basis for asset strategy development that includes the formulation of the maintenance and operations plans that are required to meet network performance or licence objectives. They also provide the basis for the terms and conditions of operations and maintenance performance based contracts.

A preliminary risk assessment enables improved management of potential liabilities by providing a level of understanding of network capabilities that can be "hedged" against the insurance options available to the business.

Business risk exposure is evident in all areas of the utility function, not just in terms of asset failure. The failure of an asset due to poor maintenance, operating practices, inability to deliver the required service level is often an indicator of more deeply rooted problems associated with the management of the run – monitor, or delivery aspects of the business. By undertaking a rigorous audit of:

- Data and knowledge management, quality ,accessibility and use Information (Support) Systems functionality versus needs.
- Asset management decision making processes & practices including:
  - Capital investment evaluation and approval, covering renewal , demand, and efficiency improvements maintenance/operations expenditure (CAPEX tradeoffs)
- Skills and expertise of staff.
- Organisation design. responsibilities and function.

The business managers can isolate those aspects of the business activities that should be prioritised for improvement. Regular auditing should be undertaken to ensure that improvement targets are achieved while providing an ongoing base for identifying the next targets for improvement. By using these gap analysis techniques and identifying the benefits of closing same enables GHD to advise organisations on the best program / strategy to improve their network system and financial performance. This gap analysis process is shown in the following example.



Conclusions

When an organisation has all these elements in place they will be able to manage their overall business risks allocating the necessary or available funds in the most effective way ensuring both the business and customers get the best return on this investment. From a corporate or directors viewpoint they know that the business is dealing with all its risks and not just the known ones or the "squeaky wheels" or single identified risks .

GHD Asset Management Group

GHD has extensive expertise in life-cycle and facilities management for roads, drainage, water, sewer, gas, electricity and telecommunication utilities, bridges, ports, airports, railways, buildings, parks and gardens, plant and equipment.

Our assets and facilities management services assist businesses integrate people, processes, data, knowledge, systems and assets to create a work environment that provides improved outputs and support to business objectives.

Clients benefits include the cost-effective achievement of strategic, capital and maintenance objectives, in a world's best asset and facilities management framework, with full consideration of risks and investment timing.

The services that the Asset Management Group can provide to your business are:

- Asset management plans
- Asset management audits / reviews and improvement strategies
- Implementation tactics and techniques
- Valuations and depreciation issues
- Training and awareness raising
- Asset management information systems
- Regulated cost models
- Owner / purchaser / provider issues

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