AMQ International

Strategic Asset Management

Issue 183 Jan 23, 2006

The nature of Strategic questions

What is a Strategic Question?

Bill Keon responded to the last issue with the following insightful comment:

*'Although the questions may be asked - the accuracy of the data, the need for data and resistance from silo mentality leads back to your July presentation - **if you ask the same questions you get the same answers**. Some managers don't want the new questions."*

It reminded me that Vivian Hutchinson, the social activist from New Zealand, took issue with the theme of the 2005 Adelaide Festival of Ideas "What is to be done?"

He said that this was the **wrong question!** *It was too pragmatic and encouraged quick answers and little real thought.*

Instead, he proposed the more strategic question

"What is it for?"

This requires more thought so that the eventual practice grows out of a real understanding and not what springs first to mind.

Think about this as you consider Part 2 of Portfolio Planning by Ype Wjnia and Joost Warners on pp 11-12; How to encourage—and support— AM thinking on the part of your architect, on pp 13-14; and how oil prices and related changes may impact demand for your services as well as your costs, on pp 15-16. And then consider whether this level of thinking can be done by a computer program, p. 10.

Enjoy - and ask *strategic* questions!

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Strategic Thinking

'I have a program that can do that!"

Many times when I am talking about forward thinking and strategic asset management some enthusiastic and well meaning marketer will tell me 'I have a program that can do that!"

Do they?

Forward Thinking a.k.a Strategic Thinking is incumbent on all of us as Asset Managers.

It is no more, and no less, than imagining the world that our assets will inherit some 10, 20, 30 years or more down the track—and mentally checking the functional fit.

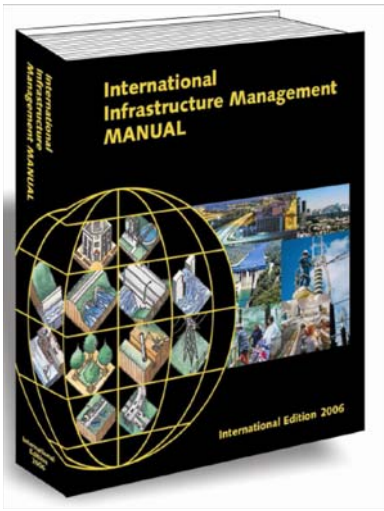
Programs can help to illustrate the consequences of a given set of assumptions.—but THEY CANNOT GENERATE - OR TEST - OR CHOOSE BETWEEN THOSE ASSUMPTIONS.

Programs do only what their programmers tell them to. If your programmer has not foreseen the (many possible) consequences for your particular assets in your particular configuration, in your location and future climate, with your current and future likely customers, customs, rules and regulations—and under a wide range of future possibilities for climate change, commodity prices, demand change, etc. - then you don't "have a program".

Indeed, if it were able to do all these things and show you the likely outcomes under a whole range of future possible outcomes—you would still need to choose between them and take appropriate action!

Be grateful! - The Strategic Asset Manager is not about to be replaced!

Just Released. The 2006 edition of the International Infrastructure Asset Management Manual



Is your current copy of the IIAM manual looking pretty tattered? Why not get it updated?

Improvements in the 2006 edition include;

- More accessible for people new to the topic and easier to find your way around with summaries of each sub-section.
- Guidance within each section on how to develop the core (basic) elements of AM planning and advance to more sophisticated approaches where appropriate
- More case studies from NZ, Australia, UK, USA, South Africa and Canada including local government, water, transport, electricity, rail and health
- Better guidance and examples on data collection and maintenance.

And more!

AND BEST OF ALL— IF YOU ALREADY HAVE THE IIAM AND YOU ORDER BEFORE MARCH YOU WILL GET A DISCOUNT ON THE NEW UPDATED EDITION.

http://www.nams.org.nz/Home

Portfolio Planning, Part 2: Making it work

YPE WIJNIA & JOOST WARNERS

Making the portfolio decision work

In the last issue, Ype and Joost explained the principles of their portfolio planning system—here they show you how they apply it in practice, ranking the different project proposals.

Ype and Joost would be the last to admit that this is the ultimate solution and are still looking for ways to improve it, so—if, as you read through it, you have questions or suggestions—be assured of a good reaction if you forward them to the authors at

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Using one scale to rank the alternatives

As the different opportunities address different business values, the relative importance (weights) of the business values are needed. To determine those weights basically two options exist.

1. Direct assessment: The decision makers are asked to express the monetary equivalent of a business value, the amount of money they are willing to spare on the improvement of KPI for measuring the business value by one unit. For example, management is prepared to spend 1 million euro to improve the quality of supply by one minute per customer per year.

2. Pairwise comparison: Decision makers are asked to express the preference of any two business value over each other. For example, safety is seven times more important than image. All these pairwise comparisons can be combined into weights of the business values.

We used a direct assessment method.

Top management was asked to envision incidents per business value ranging from negligible to catastrophic. We then asked them to determine the amount of money they were willing to spend to prevent one such incident from happening. The content of the incidents was used to determine the Key performance indicators, whereas the total willingness to spend per business value was used as a weight. However, because a) the envisioned incidents per business value were not necessarily measurable on a single quantitative scale and b) the current performance on the business values was not proportionate to the weights, these weights are by no means absolute. It is better to state that the weights represent the relative willingness to pay for a percentage improvement on a business value. For example, if safety is valued twice as high as reliability, management is willing to spend twice as much on improving the safety by ten percent than on improving reliability with ten percent.

This relativity had an additional benefit. Multiplying, for each business value, the weight with the relative improvement, summing those products over all business values would result in a weighted performance improvement. This is the single scale to measure project value against. Dividing this improvement by the costs of the project would produce a yield, the weighted performance improvement per euro. A selection containing the highest yielding projects within budget limit would be the best value for money.

To make a portfolio decision work, the list of proposals has to exceed the budget

Finding opportunities

This meant proposals had to be written with at least the partial objective to be rejected.

However, in a case by case culture, it is often seen as a defeat if a project proposal does not make it. In this kind of culture, the engineering staff only addresses the opportunities which they think will make it. Even if the effort is increased, it will produce only more proposals of the same kind. This is not enough to get real value out of the portfolio. Therefore, a new way of identifying opportunities had to be introduced.

We decided to use a risk based approach.

Starting with a wide risk identification workshop, we identified all risk with, to or around our assets. Those risks were classified, and for the highest risks mitigation strategies had to be defined. This gave the engineers an incentive to think creatively, as their normal solutions would not alter the risk classification, but only sustain it at the current level. Furthermore, for each risk, all the assets where the risk occurred had to be specified, and not only the ones where the engineers thought the risk was unacceptable. This created a list of opportunities that was much larger than that would normally show up in the form of a project proposal. An additional benefit was that the time invested in a proposal for a single location was much smaller, therefore reducing the *defeat* if the project was not accepted. Besides, all engineers produced such a long list. This distributed the perceived defeat, thus sustaining current status.

To assess all proposals in terms of key performance indicators takes time. This means the process has to start earlier

Assessing the opportunities

If the assessment would be carried out on a case by case basis, this would take much more time than was available. To facilitate the assessment, we introduced the concept of an Asset Performance Model. This is a standardized model for a certain type of asset to assess its risk, based on known characteristics of the asset. For example, the reliability risk associated with an electricity cable depends on its age, length, load, material, location and so on. The asset performance model is basically a formula that translates the scores on those aspects into a risk figure. This figure allows the engineers to rank the assets according to their risk. Using their expert knowledge the engineers can then tune the model so that the produced ranking matches their best estimate. By relating the actual risk of the group to the risk figure of the model, an estimate of the KPI effect per project can be generated. Dividing by the current business performance on the KPI gives an relative improvement figure. The numbers produced this way are rough estimates, but they are enough for ranking purposes, as we will see in Part 3: “Making the decision” in the next issue.

In the next issue we look at using the information generated by this process to make the Portfolio Decision

Asset Management is for more than Engineers; Architects and Designers have a critical role to play

Asset Management Thinking for Architects & Designers

How do we bring asset management thinking into design?

Only a few elements are addressed here, but you may be able to suggest more.

Ways that design can enhance asset management include:

- ♦ Access by design: The ease of access to services greatly impacts on the cost of maintenance and certain design trends increase these costs.
- ♦ Longevity by design: Each element within a building has its own natural life cycle, determined by both functional obsolescence and normal 'wear and tear'. Good design enables those elements that have naturally shorter lives to be easily removed and replaced. The use of non-standard sizes and fittings can double or treble the cost of renewing these shorter life components.
- ♦ Efficiency by design: Buildings vaunting 'latest technology' or trend-setting design features may be at risk if the technology or features chosen are such that operating performance is unknown, maintenance requirements are not fully understood, spare parts are difficult/expensive to find, and/or no local supplier is available/qualified to maintain or work on it.

Life cycle cost analysis

Ongoing costs can exceed the initial capital cost by a factor of three or more. Fully two thirds of these costs are determined before the building even gets to the construction stage. This is not to say that the costs *are incurred* by this stage, but rather that the pattern of these costs is laid down at the project brief, planning and design stages.

If expected life cycle is very short, then whole-of-life issues will be about fairly rapid adaptability with a relatively short life-cycle for the building. If it's long-term, then alignment with the client's overall portfolio will be as important as the functionality of the building. It may be that cost models for a range of life-times might be needed for a client to determine the ideal life-cycle objectives for the building.

Environmental issues are now forcing use of life cycle analysis. Potential for 'designing in' lower life cycle costs will be increasingly exploited as owners are required to focus on ongoing costs, rather than capital costs, to reduce energy usage under stringent new environmental standards, and as they become more aware of the ability to use design to reduce ongoing costs in total.

Opportunities to reduce life cycle costs rest predominantly at the concept/design stage. As the building passes through the concept to the project development and design stage the cost reduction potential decreases and the costs required to make any changes increases. Once the design stage has passed, most of the opportunities have gone and change costs rapidly escalate. *This is why the designer is so critical to asset management goal of minimizing life cycle costs.*

Within each building or facility the life cycles vary with each component. The implications of varying life cycles is that the proportion that an element contributes to the first up capital cost may be very different from its contribution to life cycle cost.

Some materials and building systems are particularly reliable or durable and repay their higher initial costs with savings in future operation and maintenance efforts. Other materials or systems may be selected because their lower initial costs meet the limits of available construction budgets and, with proper use, are likely to deliver entirely satisfactory service. Sometimes safety, security, or aesthetic concerns warrant both higher initial and future costs. Designers and owners of buildings recognize that there are many such choices and trade-offs among initial construction costs, recurring operations and maintenance (O&M) costs, and building performance.

Unexpected use of the building, unusual events such as storms or earthquakes, poor construction practices, changes of ownership, budgetary constraints, or financial conditions may alter the strategy for minimizing life cycle cost.

Decisions about a building's design, construction, operation, and maintenance can in principle, be made such that the building performs well over its entire life cycle and the total costs incurred over this life cycle are minimized.

In practice, defining and controlling the life-cycle costs are difficult. The future behavior of materials and mechanical and electrical systems is uncertain, as are the future uses of the building, the environmental conditions to which it may be exposed, and the financial and economic conditions that influence relationships between present and future costs. Finding the best course of action and assuring that it is followed are challenges that continue as long as a building is in use, challenges that life cycle cost analysis can help decision makers to meet.

The future client

Within the private sector there is a trend to design, build and maintain contracts. Some of these contracts extend to design, build, maintain *and* operate (with the contractor providing ongoing catering, cleaning, security, etc services). As competition for these contracts increases, the need for minimizing the life cycle costs for a given level of service will become the driving force behind design.

Within the public sector, clients are now increasingly required to take life cycle costs into account in assessing designs. Expect more of this. In particular, expect to see:

♦ Client briefs that include an explicit assessment of design alternatives that influence life-cycle cost as an element of the scope of work and fees of agency designers.

♦ Clients requiring VE programs, construction contract incentives and other procurement mechanisms to demonstrate savings in expected life cycle cost rather than construction cost only.

♦ Clients that direct their designers to clearly document their design decisions made to control life cycle cost and the subsequently expected operating consequences for each facility.

♦ More knowledgeable clients – with a reduction in new buildings and an increase in their size, agencies will have both the ability and incentive to allocate the resources for client control.

Keeping up to date

The designer's vision needs to be combined with the field knowledge of engineering services engineers, property management people, quantity surveyors and valuers (and specialists such as façade technology consultants). Asset management is very much multi-disciplinary field.

All professional fields are rapidly evolving – and asset management is no exception. To keep up to date in this field without investing inordinate amount of time, visit and bookmark AMQ International's *Emerging World of Asset Management* at www.amqi.com, and make practice of regularly catching up with the latest in the section *Using Asset Management: For designers and urban planners*. This section of the website is currently under development and is managed by architects and other design professionals, for people in their professions.

Supply impacts on

FUTURE OIL PRICES

In the last issue we looked at the impact of rising demand on the price of oil. Given a stable supply situation, rising demand will lead to rising prices. So we need to ask: Do we have a stable supply situation?

An increasing number of analysts are saying No. They point to a phenomena known as "peak oil"

Peak Oil

The price of oil can be contained if the supply of oil grows to match the demand. But will it? In fact, can it? In 1956, Dr M. King Hubert, a geophysicist working for the Shell Oil Company predicted that oil production in the USA would peak between 1965 and 1970 and thereafter start to decline. At the time, his prediction was scoffed at, but he proved to be right. Now commonly known as Hubert's peak, his theory explains that production rates of oil and gas will increase to a peak and then rapidly taper off as reserves are depleted.

The argument is that initially oil is cheap to extract because there is so much pressure in the ground that it literally bursts forth; this top light crude is cheap to access and cheap to process. But at about the half way mark – when half of the oil in a reserve has been extracted, the remaining oil becomes more difficult to extract, water has to be pumped in, pressures have to be raised. Moreover the heavy crudes that remain cost more to process. In addition to his prediction for the USA, Hubert also predicted that world production would peak around 2000. Global production did not peak in 2000 but Hubbert's projections were made in 1956 and thus were not able to take into account the slow down in demand brought about by the 1973 and 1979 OPEC oil shocks.

Can we keep prices down?

We often see arguments and letters to the editors arguing that

- Governments should make oil more affordable by reducing their excise taxes, and/or
- OPEC countries are keeping prices up by limiting the amount of oil they make available to the market—and that they should release more

If the peak oil arguments are correct, these would give merely short term relief —— and, indeed, by allowing us to consume more, would speed the arrival of the peak and subsequent production decline.

You can read about peak oil on the web and make up your own minds on this issue.

What are the longer run options?

- Major new oil discoveries of easy to access light crudes

  Likely? Probably not, the rate of new oil discoveries has fallen away considerably in recent years. In fact there are good arguments to believe that our current assessments of reserves in Russia and the Middle East may, in fact, need downward revision.

- Changed behaviour on the part of users—e,g, reduction in use of "off road vehicles" for city use; cessation or reduction of motor car racing as a sport; more moderate use of air-conditioning, etc.

  Likely? Probably only with a considerable hike in the price that makes these things unaffordable.

- Changed technology. This is the one that everybody is pinning their hopes on. We have seen so much technology change in recent years that we believe it can solve all problems—and so it might, *in time*.

  - Hybrid cars (but consider the oil consumption needed to produce them)
  - Bio-fuels
  - Hydrogen
  - Wind energy
  - Wave energy
  - Solar energy

Can we afford to be complaisant?

Not everyone believes that oil supply will decline or that security of energy supply is critical. They point to new capacity coming on stream in the next ten years, hybrid cars, conservation, new energy sources, and to prices impacting economic growth and thus a slow down in energy demand.

If you are not factoring in continuing oil price rises in your 10 year, 20 year or longer term planning— what are you relying on to keep prices down—technology, new discoveries, what? Could these 'solutions' also have impacts for your assets?

If you are taking rising oil prices into account, in what ways are you expecting them to impact you, your clients and the wider community and economy (including exports and tourism)—and what steps are you taking?

In future issues, we hope to explore the thinking and action planning of companies, councils, departments.