For Practitioners, Policy Makers and Planners in Public Infrastructure

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STRATEGIC ASSET MANAGEMENT

ACCOUNTINEERING

Where **Accountants** ---

Think like engineers but ***act*** like an accountant

And **Engineers** ---

Think like accountants but ***act*** like an engineer

Sometimes Accounting and Engineering, the two major disciplines involved in asset management, get on well together, sometimes not. In Hamilton City Council - *see previous issue* - they get on extremely well *because it was designed to be that way.* But what does '**accountineering**' mean in practice and how did it happen? Kevin Bainbridge explains **(pp 2-4).** In this issue we focus on asset management issues at the interface of engineering and accounting: **"Think Triage"** - looks at the cost effectiveness of renewal prioritisation. **(p.5) "When it really has to be done faster"** - understanding and explaining why it costs more! **(p.8) Asset Life -** there is more than one! Understanding what drives life can help you to extend it. By Jo Parker, Watershed Associates. **(p.6-7**)

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ACCOUNTINEERING

What does it mean for Accountants to 'think' like engineers?

> *Engineers are concerned to achieve the lowest life cycle cost for the desired service level. Their perspective is long term. For an engineer, it is imperative that decisions be informed by relevant data and that the assumptions that must inevitably be made to get from where we are now to where we want to be with our assets in the future are transparent and accountable. For an engineer, it is not enough that we 'scraped by' this year and avoided calamity, he/she wants to know what risks we are facing next year - and the year after that. Buying extensive long term risk for the benefit of moderate short term cost savings is not a good deal in engineers' eyes.*

If Accountants could THINK like this but ACT like accountants, in other words manage all the accounting functions such as budgets and cost control that they need to - with these perspectives in mind - then they would be "Accountineers".

And what does it mean for Engineers to Think like Accountants?

> *Accountants have a responsibility for the short term. They know that unless they manage the short term we won't make it into the longer term! So they have to set and manage budgets. Their decisions are guided by cost/benefit ratios. It is not enough for an accountant that some activity be 'a good thing', it has to be the best that can be done at the time - and engineers need to think the same way. Accountants have constraints that engineers do not. Specifically their decisions are subject to annual audit. Accountants think about cash flows, (cash in and cash out), engineers can help here by thinking cash flows over the longer term.*

If Engineers could THINK like this, and ACT like engineers, in other words managing the acquisition, disposal, maintenance and operations of assets with these issues in mind, they too would be "Accountineers".

Asset Management needs Accountineers. It needs that blend of fiscal caution and physical imagination - in ALL of its professionals!

ASSET MANAGEMENT WORKS WHEN PEOPLE MAKE IT WORK

Kevin Bainbridge is the Senior Project Manager of Infrastructure Programming - and as you will see from the Organisation Chart we presented in the last issue - is responsible to the head of Asset Management for just about everything!

Kevin has helped to develop the Hamilton City Approach to asset management since its inception, so I thought I would ask him to say what it was and how it got started. You will note that his answers have little to do with AIS and Asset Recording - *and everything to do with people!*

SAM: How would you describe 'acting like an engineer' and 'acting like an accountant'?

KEVIN I would describe this as an individual who is neither a professional in engineering nor a professional in accounting, but is a generalist in both. Really what we are talking about are "Municipal Infrastructure Professionals" or "Professional Generalists". Since there are no educational institutions who produce what I consider to be Municipal Infrastructure Professional "generalists" you will generally find that these professionals are being born out of municipal governments as a by-product of their efforts to develop Asset Management Plans.

SAM: How did you achieve this 'cross thinking'?

KEVIN We established a group of individuals who came from all corners of the City, from finance to engineering to operational to planning to infrastructure software systems. We also looked for a broad range of experiences in each individual, either with in the engineering or financial worlds (or both, which is rare, Gerry Davis being the exception). For example my back ground coming into the group included, operation supervision (including emergency management), water/wastewater planning and water/wastewater construction. With the exception of design I had worked in positions managing infrastructure assets from the installation of new ones to operational management of old ones.

There are a few things to consider in the personality traits of the individuals, when taking this approach. First each individual must have an open mind and be a strong team oriented person. Secondly and as important they must have a very innovative spirit. The success of this type of group really depends a lot on the individuals and as such choosing them is the foundation and with out it the structure can not and will not grow. In our early years we spent a lot of time on general team building exercises, maybe more time then we spent managing the infrastructure.

SKUNKWORKS

KEVIN Leo introduced me to what is know as "Skunk Works" and that is really how an Asset Management Team needs to work.

"A skunkworks is a group of people who, in order to achieve unusual results, work on a project in a way that is outside the usual rules. A skunkworks is often a small team that assumes or is given responsibility for developing something in a short time with minimal management constraints…A skunkworks is sometimes used to spearhead a product design that thereafter will be developed according to the usual process…The name is taken from the moonshine factory in Al Capp's cartoon, "Lil' Abner.""

LEO GOHIER

And who is this "Leo" who mentored and guided Hamilton on its way to Asset Management? Well, regular readers have already met him. **Leo Gohier** is the author of a number of previous articles in SAM, including "The Magnificent Seven" - the seven key questions you need to ask and answer. Issue 184, Feb 6 2006 and "Liars figure and figures lie" (issues in benchmarking) Issue 178, October 30 2005.

As you can imagine I also wrote to Leo about the imaginative approach that Hamilton had taken to its asset management. What I received by way of explanation of what they had done and how it had happened represents everything that I love about the very best of asset managers - their commitment, their passion, their imagination and their devotion to the cause! To edit it would be unthinkable. So in the next issue I will bring you Leo's response, uncut. And here, just to tempt you are the opening paragraphs.

ASSET MANAGEMENT & PASSION AND FEELING

LEO "Here is my two cents' worth on how we felt (because it was all about feeling – yes, technical people can "feel"!) when we first started in the mid 90's. It truly was about feeling and not process, and that is the perspective that I will provide here:

- It was all about "feeling", and this is where having an open mind was important since we all felt differently – it was about accepting that every direction was actually part of the correct direction and part of the solution – It was about bringing all of this together into a plan to move forward – it really had to start with an emotional experience – it was about a journey, where we had no clue about where we were going but we just believed that something can/should be done
- It was about Eureka moments – it was about Ah-Ha moments
- It was about surrounding yourself with people who are OK outside of their comfort zone, and in fact find it fun – it was about letting them have a piece of the action, ..."

When it comes to prioritising asset renewal, it pays to..

THINK TRIAGE!

In Triage, a judgement has to be made as to where to allocate scarce resources so as to maximise the saving of life. It's not a bad analogy for asset management. When it comes to 'worst first' or 'best first' - the answer is neither! Instead, a decision is made on who is likely to survive if resources are applied to them. Seriously injured people may not receive advanced care if they are unlikely to survive. Advanced triage is used to divert scarce resources away from patients with little chance of survival in order to increase the chances of survival of others who are more likely to survive. Note that in triage, little time is spent on the already dead! I thought of that this week when a reader asked the following question with regard to Issue 216 where Ashay Prabhu discussed his service centric approach to asset management:

> "Was Ashay suggesting that we address the assets that are about to fail ahead of others? *If so, what happens with the assets already failed? Shouldn't they be fixed as a matter of top priority?"*

In response I wrote:

"The idea is to FIRST stop the situation getting worse. To do this you give first priority to those assets that are 'on the turn'. That is you address each problem *just before* the cost of treatment moves from one treatment level to the next. This maximises the return on your dollar - and ensures that you have enough dollars eventually to address the failed assets. If an asset has already failed, the cost of replacement will not get worse through waiting. The same cannot be said of those assets that are not yet failed. What Ashay's model shows is that if you address the failed assets first - you will get more and more failed assets! Worst first may seem an obvious prioritisation, but it is self defeating."

Of course, this applies only if the criticality of all renewal projects is roughly the same. If the failed asset is of much higher criticality then it should be dealt with - but, be careful, if it *really* were of high criticality, it would be unlikely to have reached a failed condition in the first case!

ASSET LIFE - AND DEATH

An asset can 'die' in many ways:

It can physically fail - *"physical life"*
It can be overtaken by technological change or it can be impacted by regulatory or standards change - *"technical life"*
It can cease to be the most cost effective - *"economic life"*
It can be fully depreciated - *"accounting life"*

Death is certain - but life is an estimate!

Which 'life' you are estimating depends on what job you have.

Engineers, with a responsibility to keep the asset functional, would be interested in the 'physical life'. Risk managers may well be keeping an eye on standards change or 'technical life'. Economists and financial planners would look to 'economic life' and accountants record 'accounting life'.

So when we talk about 'the' life of an asset in a multi-disciplinary setting - as in a discussion between engineering and accounting, for example - the stage is set for misunderstanding.

Accounting Life/ Depreciation Rate

"Accounting Life", the life chosen for purposes of depreciation, does not determine when an asset will be replaced. (physical, technical or economic life will determine that).

But it does determine how the cost of capital will be represented and it could determine financial provision for capital renewal,

And then there is.....

Regulatory Life

Every now and then regulators try to make life simpler for themselves by mandating a standard life for similar assets across all agencies (and generally speaking, all conditions of operations) The problems that this raises are well illustrated by an illustration that **Jo Parker of Watershed, UK,** gave me when I met her recently in Niagara Falls. Jo travels the world teaching the fundamentals of asset management to water agencies.

Jo Parker writes: "At a recent training course in asset management a delegate from the Finance Section told me early on 'I don't want to learn all this stuff about operations – *just tell me what the life of an asset is.'*

But can we answer this without knowing about operations?

A Tale of Two Pumps (by Jo Parker)

Consider two pumps, both purchased from the same manufacturer at the same time, installed in two different sewage pumping stations. The first pumping station was designed by an experienced engineer who included good screening and a grit trap in the design before the pump. The operators were very conscientious, checked the installation regularly, ensured the screens and grit traps were working effectively and monitored the pump for any undue heat or vibration. The pump was maintained in line with the manufacturer's specification and the electricity supply was consistent and reliable. The organisation had a trade effluent tariff which encouraged dischargers to install pre-treatment to achieve a minimum standard.

The second pump was installed in a chamber without any grit trap or screening so that the pump was frequently clogged and the impeller was worn. The pump was rarely maintained unless it broke down. The electricity supply was irregular and suffered from occasional surges and dips in voltage, such the control gear broke down too. Finally, an industrial plant discharged effluent that was aggressive in nature attacking the structure of the pumping station.

Now which pump is going last longer? So, what is the life of that asset?

Asset Managers are understandably very interested in the life of an asset. Waiting until the asset fails to supply the desired service may be unacceptable in, say, the case of a major trunk main. The obvious thing would appear to be to collect data on asset failure and base the asset life on a statistical analysis of the likelihood of failure.

However, before they start trying to work that out, it is worth making sure that everything is being done to optimise the life of the asset. The life of a water pipe can be extended if the pressure of the water is maintained within certain limits. A concrete sewer sill last much linger if sulphate attack is avoided by maintaining aerobic conditions. A road will last much longer if reinstatement for any utility excavations is carried out properly. Monitoring asset life could tell you more than just when you need to replace the asset. Benchmarking within an organisation or with other similar organisations may show areas where changes in operation, maintenance, legislation or even tariff structure may extend the life of the asset for a fraction of the renewal cost.

Once everything has been done to ensure that an asset will operate for the maximum length of time, it may still be too simplistic just to analyse the life spans of similar assets. What about other factors which might affect the life span? Soil or traffic loading can affect the lifetime of pipes, weather affects the lifespan of a number of asset including buildings as well as buried assets, and operating regimes may well affect the life of mechanical and electrical plant. These need to be factored in to any model developed to predict asset life."

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WHEN IT ABSOLUTELY, *REALLY,* MUST GO FASTER

In our 'back to basics' in Issue 221, we looked at project scheduling and we saw that one of the major problems in project scheduling is that with new modern software we tend to leave scheduling in the hands of those who do not have full experience - and the tendency is to understate the time requirements - with consequent time and cost blowouts.

But what if you have scheduled sensibly - and then the decision comes from above that it really must go faster!

Firstly, we all underestimate how much time it will take somebody else to do something. How many times have you said to somebody, "It will only take you five minutes!" when in reality a moment's thought would tell you the task will take at least 30!

Some requests to speed up the schedule then may simply be the result of someone's disbelief at length of time projected in the original schedule (which is most likely to be greater than their preliminary planning estimates).

Speeding up the Schedule COSTS

Here is what you can do (from www.hyperthot.com/pm_sked.htm)

1. **Add people to the schedule.** Additional staff must be added early in a project or they will slow it down while learning the ropes. If you add people, you may also need to add staff for supervision and coordination, so staff are fully applied.

2. **Improve productivity and work longer hours**. A good team atmosphere with management support can help make this happen. Without positive nourishment of this process, you could lose your team to attrition.

3. **Review schedule dependencies and look for opportunities to overlap tasks** or make serial tasks concurrent or parallel activities. This requires greater coordination and sometimes involves increased risks which need to be managed carefully.

4. **Review the project scope and remove or delay features** or functionality from the project critical path.

5. **Consider innovative approaches** such as a different development methodology, alternative technologies, or out-sourcing options.

As an asset manager interested in containing costs, you should make it absolutely what can be done to accede to the speed up request - and how much it will cost to do so!