

Issue 73
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**JUSTIFYING INVESTMENT
IN AN
ASSET INFORMATION SYSTEM**

**WITH CONTRIBUTIONS
FROM**

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I frequently get requests like this one from Christine in Canada. What's the answer?

Dear Dr Burns,

I would like to get information about integrated infrastructure management. I'm searching for studies/articles/analysis showing the advantages of integrated management of public utilities (about return on investment, assets life-cycle or depreciation curves for example). **I need to prove that computerized asset maintenance increases return on investment.** I had you as a major reference by Eric F. .He told me that you could possibly help me. I would really appreciate to have an answer as soon as possible. Thank you for your help.

Christine F

In this issue I am publishing my response to Christine and, with their permission, the responses of a number of other experts in the field whom I have asked to assist her.

*Researched and written by Dr Penny Burns, AMQ International.
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An open letter from

**Penny Burns, Editor
AMQ International and
"Strategic Asset
Management"**

**Think about
investment in AIS as
you would any other
investment**

calculate the life cycle costs and benefits.

While it can be argued that information is so critical that no organisation can exist without it this is not true of all information—and, since the costs are significant, there is the need to be selective.

Dear Christine,

If only it were that simple!

I can refer you to articles and websites on public utility asset management, life cycle analysis, and textbooks about degradation (depreciation) curves - but none of this will help you prove that computerised asset maintenance will increase the return on investment in your organisation.

What you need to do to prove that point is

(1) **identify** what, in your organisation, is not being done, or is being done inefficiently because you do not have computerised maintenance procedures.

(2) **Estimate** the cost of these omissions or inefficiencies to your organisation as an annual cost - which become an annual SAVING when you correct them (but remember that the cost of correction will normally require more resources than simply switching to computerised maintenance processes so you will need to calculate the NET SAVING after allowing for these extra resources.)

(3) **Calculate** the annual cost of computerised maintenance procedures (software, learning, ongoing upkeep etc less the cost of any manual operations that can now be dispensed with)

(4) **Demonstrate** that the annual SAVINGS from reducing your omissions and inefficiencies is greater than the annual COST of the computerised maintenance procedures.

Once you have done this, you are on a winner. Because management can see precisely what they are going to get for their money.

Most people don't want to do this, it seems like too much hard work. But this is what is required of every other investment that your organisation engages in – i.e. a 'good business case', and acquiring a computerised maintenance system is an investment just like any other.

Once you 'bite the bullet' and tackle this approach, it really isn't so difficult. And the results are easy for your organisation to understand.

(Having done this, would you publish your results? If you think you wouldn't, that may account for why no one else does either. If you would I would love to print them as a guide to others.)

Kind regards, Penny

PS. Do look at my website www.amqi.com for examples of the studies you requested.

An open letter by

**Norman Eason,
Founder and Past
President of the
Institute of Asset
Management and
Managing Director of
Rapier Software
Ltd.**

Dear Ms. F.

Many thanks for your email.

I'm afraid that there is a paucity of information on the return on investment from the installation of maintenance and asset management information systems. This is not really due to the application being new; maintenance management information systems have been installed since the early eighties. The reasons are more to do with the fact that such systems take a very long time to bear fruit and when they don't appear to provide returns, the purchasing organisation seldom states so openly. There are a number of reasons for the latter which I won't go into in this email, but they are exhaustively covered in a book entitled 'Maintenance and Asset Management Information Systems', that I have written, but so far have not yet had published.

AIS is not a 'quick fix'

It takes time for organisations to learn to use and work with their information systems

Maintenance and asset management systems are peculiarly difficult to implement properly. This should not be the case, but the problem stems from the fact that they are often driven by IT departments who have little real knowledge of maintenance or asset management activities or of the real information drivers required. This is coupled with maintenance and asset management personnel who might be perfectly computer literate in a user sense, but have not fully appreciated the data and information life cycles that such systems imply. Thus there are often good mechanisms for the installation and implementation of the software, but not for the build-up and testing of data and for the ongoing feedback validation of information and processes throughout the life of the system. It is this latter activity, which will stretch over several years, that will make or break the system. There are so many influencing factors that very few organisations do a proper audit at a stage when sufficient data will have been gathered to establish the effectiveness of the system.

Little information because

Very few organisations do an effective audit

So this is great news for the vendors! The only semi-formal analysis of return on investment for such systems that I know of was done by a UK publication about two or three years ago. The publication is Plant & Works Engineering, whose web site is www.maintenance-engineering.com. The article was quite disparaging about maintenance information systems. Alternatively, you might look at the very many conference papers published on the subject of maintenance and asset management. There have been a number of papers presented by a user in association with their supplier. These, however, are almost always very biased and are usually presented fairly soon after the implementation of the system - far too early to present an accurate measure of return on investment.

SAM published an interview with Norm Eason, while he was President of the Institute of Asset Management, see Issue 4, Feb 26th 1999

I hope this helps. Please let me know if I can help you further. Data and information management for maintenance and asset management is a big subject with a history of poor implementations. Almost always, this is because the data has not been handled correctly.

For more information on Norman's path-breaking work on the quantification of intangibles, see SAM 33, April 7 2000

Also see Norman's website at www.rapierltd.com

An open letter from

Armin Huefner, Managing Director of Heufner Management Systems. His company's software and asset management bureau services are widely used in local government, primarily for roads, sewer, water and drainage.

<http://www.huefner.com.au>

I mainly concentrate now on intangible data; the measurement of entities that are subjective or are difficult to measure, e.g., cleanliness, ambience, staff attitude. These are areas that are not currently handled by any maintenance or asset management information system - or, in fact, by any other software application. Yet the inability to measure such intangibles severely affects the management of most operations. If you can't measure it, you can't manage it. Or, as some would like to believe, If you can't measure it, it probably isn't there - or it's an intangible!

Best regards.

Norman Eason

Rapier Software Ltd

Dear Christine

In the public sector, eg local government, management of infrastructure includes a "feel good" factor where the manager uses a series of tools to aggregate knowledge with which "better" management decisions can be made and the results made public.

It is in a domain where, even if return-on-investment were measurable, the concept gets muddled as a result of inclusion of services which are not measurable in economic terms.

The challenge (and thrill) of recognising information within the plethora of asset data, and aggregating that information with the next bit of information until clarity, purpose and knowledge are exposed and available, is a significant driver in creating and justifying investment in computerised asset management and maintenance - albeit that it is difficult to measure.

I do not have a calculated cost/benefit story, but however, have two anecdotal stories, one of which has some semblance of economic valuation and the other for which you can do your own calculations.

The first story goes like this:

Quite a few years ago, Rob W, the Sewer Asset Manager of a large NSW inland city called and said, "I have just spoken with one of our contract engineers who has been employed for the past 3 weeks calculating the time available for carrying out repairs downstream of Manhole XYZ in our sewer network by plugging the inlet pipes. I think I can use the asset management system to obtain that information, but I need your help."

We talked through the problem and within 15 minutes, we had an

That ring of confidence!

answer. He then compared our answer with the engineer's answer and found that there was less than 1% difference between the answers.

You can calculate your own cost / benefit ratio, however in this case, the predominant impact was

- a) investment in computerised asset management became much more justifiable and recognisable.
- b) Rob W walked much taller

(P.S. It now takes exactly 16 keystrokes to obtain that information for any manhole/pump station using the Asset Management System).

The second story relates to the impact of having an asset management system with modelling capabilities which not only saved the City millions of dollars, but led to the creation of a bi-annual conference that is now internationally recognised.

The second story goes like this:

Exploring the Options can save millions

The City of Wagga Wagga, a large inland city in NSW, became aware of extensive concrete sewer mains failures. Using a computerised asset management system and modelling different scenarios, that estimated cost to repair rose from an initial \$5M to some \$20M, causing understandable concern on how to resolve the problem.

Colin Earnshaw, Facilities Engineer City of Wagga Wagga found a unique solution by organising a conference at Wagga Wagga at which world experts proffered solutions. The information obtained from the conference was combined with the data from the asset management system resulting in optimum system and contract selection at a total cost of some \$10M or at a saving of some \$10M.

The first Pipes Wagga conference was in 1991, the sixth Pipes Wagga will be held from October 16 - 18 this year.

It has been publicly stated that an essential (but unquantified) component in the saving of \$10M has been the ability to model different scenarios using a computerised asset management system.

Clearly, if all of the financial benefits above were gained as a result of investment in a computerised asset management system, there would be no debate about "return on investment". In real-life, the scenario is a little more muddled.

Perhaps the answer lies in management of risks and the fact that we as

asset managers will not walk as tall if we do not have, and use, computerised asset management tools.

Kind regards

Armin E Huefner
Huefner Management Systems

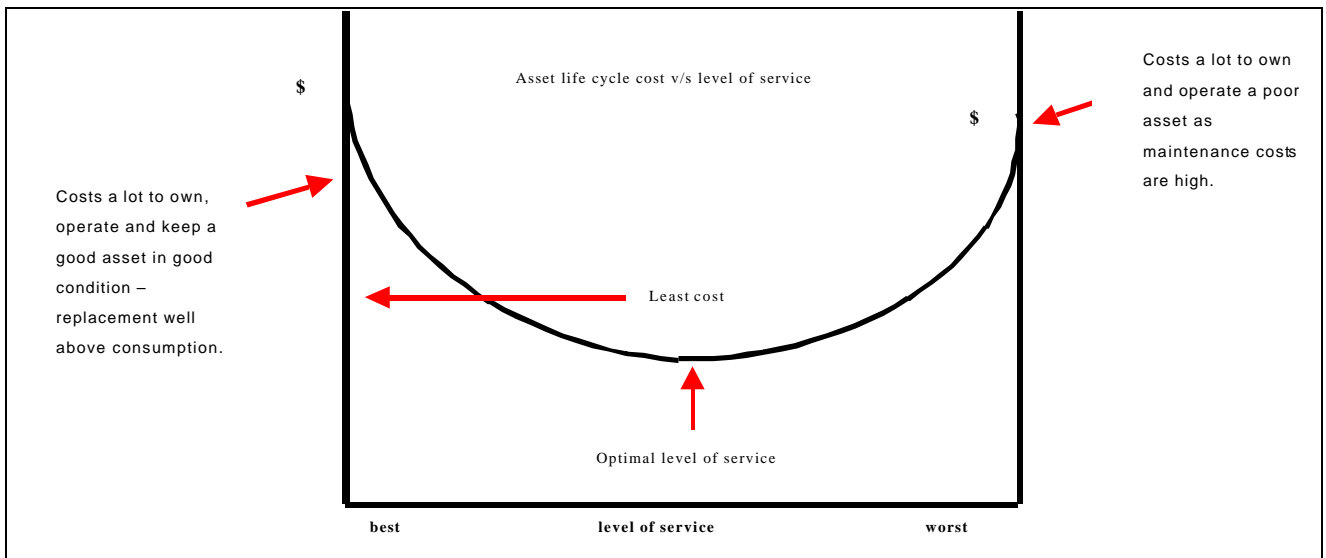
An Open Letter from
Ashay Prabhu, Senior
Consultant, Inframax,
Intelligent Asset
Management

Dear Christine,
I read your questions to Penny Burns with great interest. Firstly lets clarify a few terminologies. Firstly computerised asset maintenance or management - The key here is to understand that computers do not solve the problems - they enable storing incredible amounts of data and provide the processing ability to analyse data and do complex optimisations. In short they are able to assist us in **converting data into decision-making information**.

Secondly return on investment - this has to have a long term focus. It usually relates to the ability of an asset to deliver a higher level of service to the users (better returns than expected) or deliver a profit to the owner from use of the asset. The profit in layman's terms is simply the revenue earned less the cost of owning the asset (acquire, maintain and renew).

Therefore the critical thing in demonstrating value from intelligent asset management is the ability to be able to

- Ensure that the asset is not being consumed at a rate higher than it is being replaced
- Predict the optimal level of service at which the asset may be maintained for least long term costs as shown in the figure below. If the level of service were to be improved - is the revenue likely to be greater.



Computerised information systems make modelling possible

Neither of the above two objectives can be achieved without computerised systems. The mathematics of data analysis and optimisation is too complex for the human mind to analyse.

I have developed over thirty performance models for assets using life cycle curves based on real organisational knowledge and historical data. The conclusions are positive and easy to understand. These models demonstrate clearly the following:

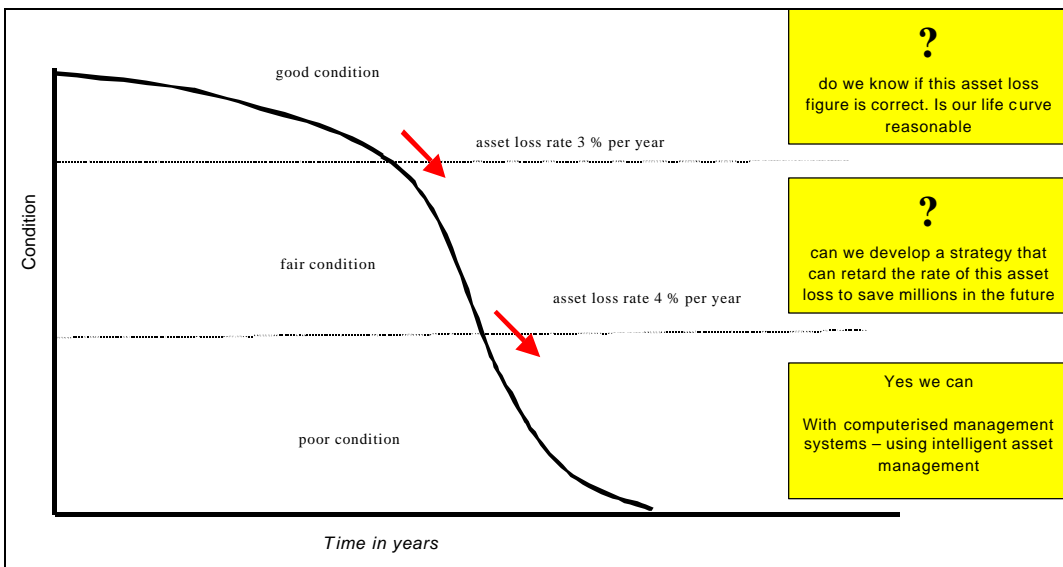
- What the current mix of the asset level of service is – what % of the asset is in excellent, good, fair, poor condition etc.
- What the current consumption rate of the asset is – rate of deterioration.
- What are the impacts in the future (level of service/condition), if current strategies were continued – does this rate increase, decrease etc.
- What the new - least cost strategy is to achieve a long term sustainable goal.
- What the NPV and the EACF is.

The first obvious savings are in being able to reduce future time bombs - the slow trickle of the asset into the poor zone on its life curve. Most models that I have developed demonstrate that the current asset loss from good to fair to poor is higher than the replacement rate in each category.

Good models yield good questions—and good information provides good answers!

Once you have robust performance models that you have confidence in – the answers to your questions are very simple. Generally I tend to give the following example.

Lets look at an asset – say roads (everyone relates to it). Say the organisation’s documented replacement cost of this asset is \$600 million. If you can demonstrate that the use of well developed performance models and data analysis systems can deliver a strategy to prevent or retard the rate of asset loss by even 0.5% each year – this can mean savings of \$ 3 million – asset you have saved from being replaced. The figure of 0.5% isn’t too far out.



I am sure that an investment of \$100,000 in good tools and business processes to achieve such an outcome is worth it.

Regards

Ashay Prabhu
Inframax

To comment on this issue, please write to editor@amqi.com

CONCLUSIONS

No one can say what YOUR return on investment in an asset information system will be, it will depend on

- Where you are now (understanding your current position is critical to any investment decision)
What assets you are managing and how 'mission critical' they are
What resources you are prepared to put into the upkeep of the system, testing, re-calibrating, training, etc
The quality of the analysis you apply to the information provided
The credibility the system and its outputs have with the key decision-makers, and (of course)
Choosing the RIGHT system to meet your needs

And on this topic, why not refresh your memories?

Issues 1 -5 of Strategic Asset Management contain a series of articles on 'What to do before you choose your AIS' including such gems as 'Why it pays to be lean and mean' and 'Never Get an Asset Management System Cleverer than You Are!'.

Further SAM references

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