AMQ International's

# STRATEGIC ASSET MANAGEMENT

# 324

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## INFRASTRUCTURE SUSTAINABILITY


As asset managers one might suppose that we have the long term interests of our infrastructure assets and the services they provide at heart. So how can we explain our mute acceptance of the so-called 'sustainability' measure which not only does not sustain but ensures maximum resource wastage? I examine this at length in this issue as it is critical to future development of infrastructure management. See **"Searching for a measure of Infrastructure Sustainability" pp. 2-6.**

Bernadette O'Connor shows how even our first steps in AM can provide much useful direction. See **"Asset Management, Tips and Tactics". pp. 7-8.**

And in **"We have met the enemy and he is us" p. 9.** we take cartoonist Walt Kelly's message to heart - and look at some of the ways in which we are engaging in what I term 'low level corruption'.

Finally, when I began the **Benchmarking Series**, it was my intention to produce 5 parts: namely **WHY, WHAT, HOW, EXAMPLES, and TIPS, TRICKS AND CAUTIONS**. But on discovering the work of Jan Schippa and Johann Huisma of the UMS Group Europe, I prevailed on them to make it available to you as a rare exemplar of the best in benchmarking - the only study I have yet seen that uses agency performance as the arbiter of good asset management performance. This should be the way of the future! **pp 10-14.**

A lot to consider in this issue,
So please enjoy!
***Penny***

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*My apologies to those who feel that the following is obvious and does not need to be stated. I only wish that were true*!

## The Search for a Measure of Infrastructure Sustainability

Following a suite of studies establishing a lack of financial sustainability in local government, there has been a natural desire to seek out and require performance measures. Regulators are looking for something that is simple, verifiable and repeatable.

At first sight the *Renewal/Depreciation Ratio* appears to fit the bill nicely.

> In essence this says that agencies should use depreciation as a guide to setting the amount that they spend on renewal. And, as a rule of thumb, 80-90% of depreciation is coming to be the accepted ratio.

This is simple and uses readily available information. It certainly looks logical. After all, if depreciation represents the 'wearing out' of assets and renewal represents the 'making good' of this wearing out, then equating the two should ensure a sustainable asset base.

And if we were talking about the equating total depreciation and total renewal, then there would indeed be no problem. No, the problem arises when we seek to equate *annual* depreciation with *annual* renewal. This is because the nature of infrastructure is that it is renewed, not continuously and smoothly over its life time but rather in fits and spurts; it is periodic and 'lumpy'.

Furthermore, renewal (when carried out at the optimum time to sustain the life of the asset at the lowest possible cost) increases as the age of the asset portfolio increases. So that we get something like the picture below in Fig 1.

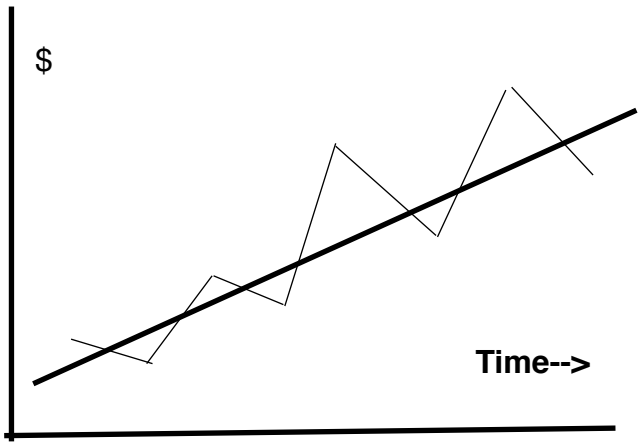
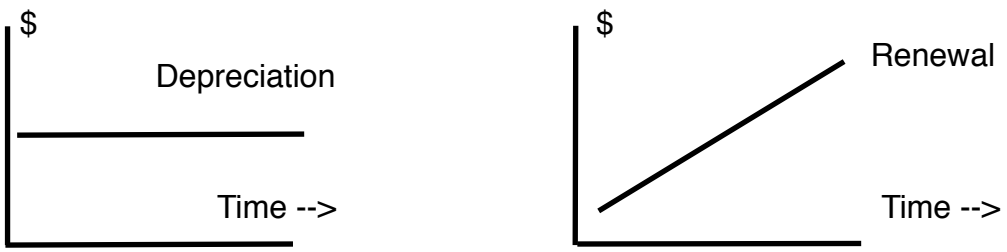



Fig 1. Typical infrastructure renewal pattern, increasing in spurts over time

However whilst the *underlying trend of lumpy* renewal expenditure needed to maintain the infrastructure at minimum cost *increases over time,* depreciation doesn't, being commonly measured as an even allocation of cost over time.

**Fig 2**




And when we relate renewal to depreciation we can see that, because depreciation is an average over time and needed renewal expenditure increases over time, depreciation will exceed needed renewal in the early years when little renewal is being done or needs to be done and in the later years renewal will thus be far greater than depreciation.

This is shown schematically in Fig 3. below

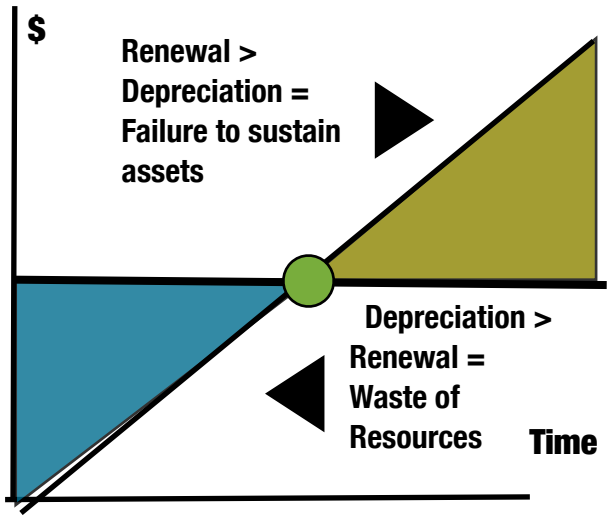



**Fig 3.**

The Horizontal line is the constant depreciation figure.

The upward sloping line is the increasing renewal figure.

## QUESTION: DOES IT MATTER?

Whereas economists and senior policy makers, not be familiar with the lumpy and periodic nature of infrastructure renewal, may not be aware of this mismatch between ANNUAL depreciation and ANNUAL renewal, all asset managers are definitely aware. It is after all, their daily experience.

Even so, I have had very experienced asset managers - who are very conscious that insufficient attention is being paid to maintenance - argue that:

### 1. Well, it's not perfect, but it's better than nothing!

Not at all! A broken clock will still tell the correct time twice a day - *you just won't know when.* The danger comes when to start to believe that the time it is telling is actually true. At least when have no clock at all, you know that you have to DO SOMETHING, this may be check your computer or mobile phone, ask someone, or ring 'dial the time'. Whatever! In other words, in order to find out the time, you know you have to take ACTION**.** If you are relying on a broken clock you may fail to do this. And that is the danger of the renewal/depreciation rule. It doesn't (and can't) determine WHAT *needs* to be spent - but, if we believe it can, then we ***stop looking!***

### 2. There's nothing better, in the absence of AMP data

If it motivated better, i.e. AMP data, then good - but the reverse can also happen (and in some areas is already happening!) - it is it is being used as a prop to avoid or defer the effort necessary to develop good AMP data. See "There is a better way", p.

### 3. Having councillors think about the depreciation/ renewal relationship has value.

Thinking about needed renewal is indeed valuable. But this doesn't help to come to grip with real renewal needs which have nothing to do with depreciation and everything to do with age, renewal profiles and service delivery.

### 4. For certain classes of assets, it is OK.

Yes, for computers, motor vehicles and other short lived assets, this rule is not a danger. But these assets are only a small proportion of the total!

### 5. Yes, Depreciation will exceed Renewal for young asset portfolios and fall below it for ageing assets - but when you take all assets together, the 'overs' balance out the 'unders'.

This is theoretically possible, *but how do you know?* Moreover, in over 150 studies of councils and government departments that I have been involved in, *it hasn't happened yet!*

## ANSWER: YES IT DOES MATTER!

### Because a Renewal: Depreciation Ratio Approach -

### 1. ENCOURAGES WASTE!

For all asset portfolios that have renewal profiles on the LHS of diagram 3 (and this is still the great bulk of our assets, even though they are ageing!) spending on renewal at the level of depreciation will waste resources.

### 2. FAILS TO SUSTAIN THE ASSET!

For those asset portfolios in genuine need - i.e. on the RHS of diagram 3 - the renewal: depreciation ratio will discourage the needed level of renewal.

### 3.PROVIDES NO GUIDANCE AS TO HOW THE MONEY IS TO BE SPENT

So you want to spent 80-90% of your depreciation on renewal? What assets? What type of intervention? In the absence of other information, the natural thing to do is to apply this rule to each asset class individually (and when we do this, there is, of course, no scope for the 'overs' cancelling out the 'unders') and we get the worst of all possible worlds.

### 4. FAILS AS A PERFORMANCE INDICATOR

For a renewal: depreciation ratio to be useful as a performance measure ***it must be possible to determine when the ratio represents an improvement and when it doesn't.*** So what is better - a smaller or a larger ratio? A moment's thought (and another look at Figure 3) will show that this is a nonsense question. The relationship between actual expenditure on renewal and the level of depreciation ***means nothing.***

## *Fortunately*
## THERE IS A BETTER WAY

What we really want to know is not what proportion our lumpy renewal expenditure this year is of the constant depreciation amount - but instead ***Are we spending the right amount to do the job?***

This means knowing what we are spending - as a proportion of what we need to spend this year. What we should be using is the **ratio of actual renewal expenditure to the amount of renewal falling due** (using age, renewal profile and service level information).

**Too difficult for you?** The Victorian Government has been doing this successfully now for more than 6 years. Tracking this percentage, *the renewal gap*, over time is a measure of how well councils are performing in asset management. Why is this a 'better way' ?

## Why is this a 'better way'?

Councils can reduce their renewal gap by *increasing the resources devoted to renewal,* thus making their asset portfolios sustainable -

**but they can also reduce the gap** by taking steps to reduce the amount of renewal falling due. They can do this by such means as disposing of assets that are no longer 'earning their keep', by extending asset lives through better usage and maintenance or selecting a more appropriate service level, and by a better understanding of asset lives and asset condition. Victorian councils are justly proud of reducing their renewal gaps and some have completely eliminated them!

For those of you who, like me, wonder how this Renewal:Depreciation Ratio seems to have captured the popular imagination, let me suggest some reasons:

### 1. The Lure of Simplicity

Every one likes simple rules, and this one is about as simple as it gets. But, as Einstein advised, a rule should be as simple as possible - but no simpler. By omitting the AGE and the fact that infrastructure renewal is LUMPY, the simple Renewal = Depreciation rule is TOO SIMPLE: TOO SIMPLE To be useful and Too simple to be safe!

### 2. The Attraction of a Short Term Solution (even at the expense of the long term good)

Asset Managers know that infrastructure renewal is lumpy, they know also that the required renewal is a function of age (as well as of the importance of the service provided to the community). *However, in their desire to get more maintenance for 'their' asset, they may not challenge the illogic of the R is a function of D rule.* (**Please see p. 9 "We have met the enemy and he is us!"**)

### 3. Seeming Support from the Financial Management Guidelines

The otherwise excellent IPWEA's Financial Management Guidelines unfortunately lend support to the use of a renewal/depreciation ratio by listing it in a section on performance indicators.

True, it does say that the ratio should take into account the age of the assets and their renewal profile, but like all caveats this is being ignored for the sake of simplicity. And the real damage is doe by implying that there is any basis for a ratio at all!

### 4. And finally, a misunderstanding of two paradigms

Depreciation allocates the cost of the asset over **a finite life span**. However the whole rationale for piecemeal renewal of infrastructure assets is to keep them going **indefinitely*.** So setting up a ratio between these two incompatible paradigms (both of which are useful in their own setting) is bound to cause a problem.

(*note: *indefinite* does not mean *infinite*, simply that we have no way of knowing at the beginning how long we will want to keep the asset going.)

Even a small amount of preliminary data, such as collected in order to complete the balance sheet accounting requirement for PSAB 3150, can yield valuable management information - if you know how to use it. Consider the following short report by Bernadette O'Connor, Opus International, which was published in the most recent BC AM newsletter. If you would like to see what else is being done by the very active BC group, you can access all their current activities and their newsletters here: http://www.assetmanagementbc.ca/

# Asset Management: Tips and Tactics

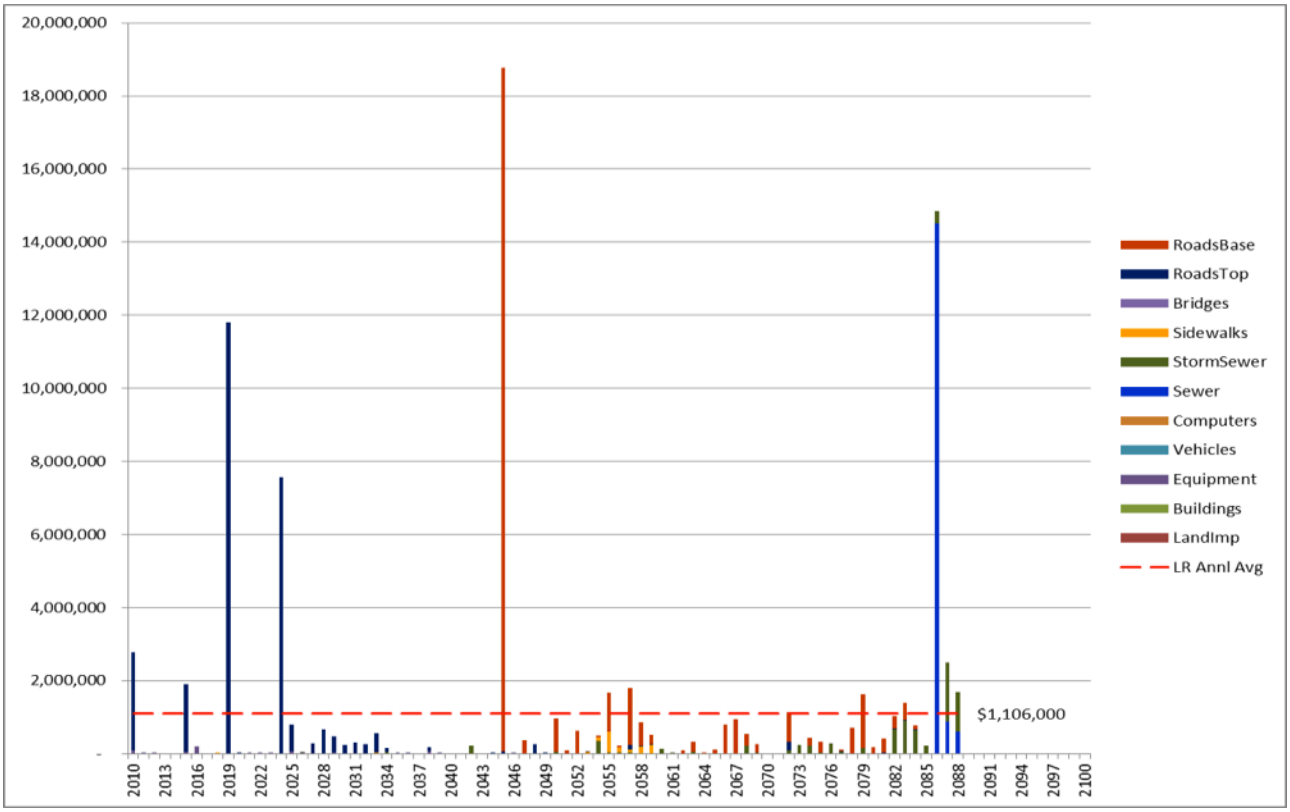
*By Bernadette O'Connor*

## Fast track to quick wins

It is important for every community to understand their asset replacement liability. There are many mechanisms for generating a long-term forecast for replacement of existing assets. Some of these mechanisms have been discussed in this newsletter. However funding a detailed study or finding the staff time to collaborate and participate in a study can be a challenge. This is particularly evident in some smaller communities where resources are limited.

Even in medium sized communities, access to a quick overview can be very useful to provide guidance while a more detailed analysis is being generated.
In most cases, Municipalities can use the base asset data that has been generated for TCA (Tangible Capital Asset) reporting under PSAB 3150. This data will include install date, expected lifespan and historical cost.

It will be necessary to establish replacement cost, if this is not already included in the asset dataset. A reasonable approximation for replacement costs can be achieved quickly and inexpensively by applying current market unit rates. The result can be graphed for presentation purposes.




**The quick wins that can be gained from this initial, rudimentary long-term forecast, include:**

☒ Inexpensive overview of the big picture;

☒ Initial indication of the average annual funding required;

☒ Understanding where to put the effort into measuring asset condition or improving attribute data;

☒ A starting point for addressing sustainable funding issues with elected representatives;

☒ A simple platform for testing the sensitivity of key inputs and understanding the impact of missing or low accuracy data;

☒ Appreciation of the potential magnitude of peak expenditure and the likely funding challenges associated with these; and

☒ Understanding how much or how little time is available to resolve any significant issues.


### We have met the enemy and he is us

*"I attempted to explain each individual is wholly involved in the democratic process, work at it or no. The results of the process fall on the head of the public and he who is recalcitrant or procrastinates in raising his voice can blame no one but himself. "*

Walt Kelly (1913 - 1973) American cartoonist and animator, creator of the comic strip "Pogo"

## Are we experiencing a surfeit of 'low level corruption'?

It has become commonplace for all of us, asset managers and the general public alike, to blame politicians' greed, or desire for ribbon-cutting, for wrong infrastructure decisions. But I think we need to step back and take a closer look at our own actions and motivations.

The following are just three of the many stories I hear.

1. A master plan for the University had been constructed and no assessment had been made of the condition or suitability of the existing buildings. The FM people knew it and they knew that it should have been done but, because they wanted new facilities, they didn't say anything. *This did not involve any personal financial gain for the FM crew but, by ignoring their professional responsibilities, is low level corruption none the less.*

2. The project was substantial and required an independent review. The review showed quite clearly that annual savings from the project were less than $5,000 a year while increased annual costs were over $50,000! I would have thought this to be a lay-down misère, but apparently no. *The reviewer felt that he had to 'tread carefully' He did not wish to offend, or his next 'independent' review might be affected.*

3. A consultant study for a project that was to be partially funded by the Federal Government and partially by the recipient council presented its findings showing that the project was marginally worthwhile - but they omitted to count the substantial interest and depreciation on the capital to be borrowed! *Sloppiness or a desire to 'give the answer that was wanted'? Either way, it is not good enough.*

*So next time, before we sound off about the behaviour of those 'up the line', perhaps we need to take a closer look at what is happening 'down below'?*

## BENCHMARKING FOR BEGINNERS:
## A guide for public sector asset managers

Part 6: Asset Management and Business Performance:
a benchmarking 'exemplar'

### Introduction: The importance of business performance

*The most common problem with all benchmarking studies that do not involve one to one, or small group, on-site, explorations is the failure to relate the benchmarked activity to the quality of outcomes obtained. In other words there is no link between AM practice and business performance.*

*This question was faced head on by the ITAMS (International Transmission Asset Management Study) by the UMS Group Europe. Jan Schippa, Managing Director of the UMS Group Europe has generously allowed me to present the following excerpt from the White paper by himself and Johann Huisma. The full paper can be accessed at* www.umsgroup.com/viewpoints/viewpoints.asp

*In this 'Benchmarking Exemplar' it is worth noting for the following:*

1. *Data is approached with a question in mind - Part 1: the hypothesis.*
2. *Business Outcome Measures are defined - Part 2: Outcomes*
3. *Asset Management Practices are defined - Part 3: AM Practice*
4. *Results expressed graphically - Part 4: Results*

*Your hypotheses, outcomes and practice definitions may be different, but each should be present. Results do not have to be presented graphically - but they are more powerful if they are.*

### The International Transmission Asset Management Study

### 1: The hypothesis

Design of the desired framework began in October 2009 based on testing the hypothesis:

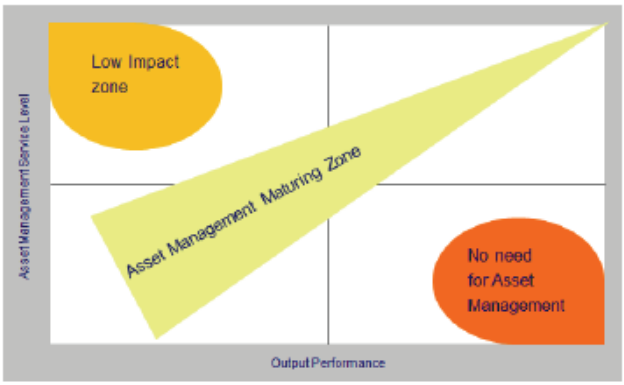
"Best performers in delivering high levels of business outcomes/success will tend to be those who also have high service levels in Asset Management."

The hypothesis was then further refined:

"Developing an Asset Management orientation will always bring you to a higher level of business output and success."

In the framework (see Figure 1) the zone where this hypothesis holds is defined as the "Asset Management Maturation Zone." Two other zones are identified in this framework. In the "Low Impact Zone" can be found companies which have highly developed Asset Management service levels, but lower than average business outcome performance. In the "No Need for Asset Management Zone" can be found companies that deliver a very high level of business outcome performance without having a clearly articulated Asset Management orientation. If the results of the benchmarking identified any companies in this last zone, it would indicate that the initial hypothesis was wrong and that the framework needed to be re-thought.

**Figure 1. Asset Management Service Level vs. Output Performance**

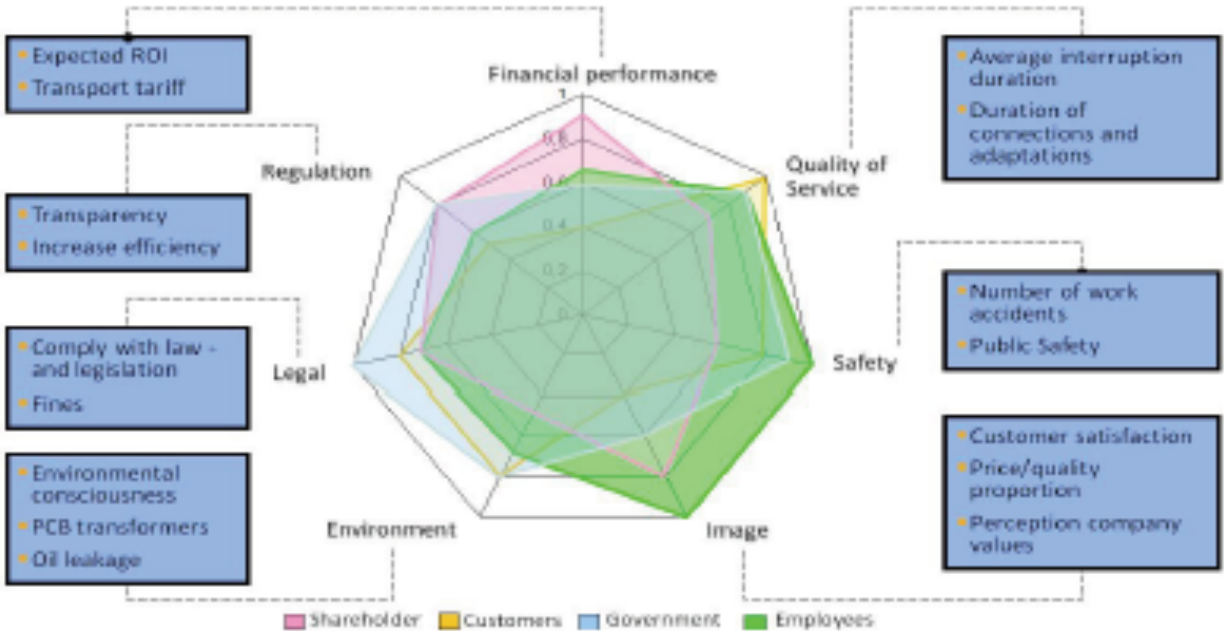



After developing the framework for analysis, the next step was to define Asset Management service level and outcome performance.

## 2. The definition of business outcome performance

The definition of outcome performance should be strongly related to the set of stakeholders to which a company must be responsive (see Figure 2).

**Figure 2. Stakeholder Business Requirements**



Since market conditions and stakeholder needs can differ significantly based on company focus, ownership structure, region, etc… it is difficult to define one set of comprehensive outcome performance parameters that are relevant to all companies. However, it was possible to identify a subset of output parameters which are believed to be applicable for all utilities. These five key performance indicators (KPIs), which have been weighted relative to each other, were used in the ITAMS benchmark. They consisted of a quality component, a safety component, a return on assets component and a transparency component in terms of realisation of planned OPEX (operating expenditures) and planned CAPEX (capital expenditures). While these KPIs do not address all areas of operations or asset management, experience has been that high outcome performance in these areas is indicative of an overall high level of performance throughout an organisation.

## 3. The definition of Asset Management Service Level

ITAMS focuses on benchmarking the four areas which are believed to be the key to best practice Asset Management:

Operating (and Accountability) Model;
Processes;
Competences; and
Information Management & Enabling Technology.

A company's proficiency can be scored in each of these areas on a scale of 1-5 which runs from Innocence (lack of awareness) to Excellence. A balanced score in these four areas determines the company's overall Asset Management Service Level.

Core areas of competency are a transparent Operating Model and comprehensive/mature Processes. A best practice company should:

Establish separate key business roles (Asset Owner, Asset Manager, Service Provider) and clearly define responsibilities.
Determine and apply a business value framework and establish comprehensive processes (risk management, asset system strategy, investment planning and investment delivery management).
Enable areas of competency to focus on providing the organisational capabilities for asset management through Information Management and Enabling Technology, as well as through personnel development.

A best practice company should:

Provide the right data for decision-making through a comprehensive asset data repository
Use effective asset management analysis and decision support tools.
Transform from an engineering-based to a business-minded company culture.
Ensure development of asset management related skills and competences.

These four areas provided the basis for the development of a set of service level measures consisting of a mix of quantitative data and qualitative questions to determine the Asset Management Service Level. A subset of the information collected and evaluated is shown in Figure 3.

**Figure 3. Data Elements for Creation of Service Level Measures**

| Business/Operating model (Transparency) | Process (Comprehensiveness) | Competences (Balanced Skill set) | Information Management & Enabling Technology (Data Counts) |
|---|---|---|---|
| - Stakeholder importance | - Process maturity | - Capacity | - Service Level vs. total IM & ET spend normalized by total Spend |
| - R&D budget | - FTEs sub processes | - Technical maturity | - Enabling technology |
| - Number of FTEs (AM,AO,SP) | - Value of developed solutions | - Non-technical maturity | - IM & ET annual budget |
| - Regulatory drivers | - Standardization level | - Organizational and cultural features (capability – quality) | - Decision making tools |
| - Asset Management roles | - Elements of decision making | - Education level | - Information management policy |
| - Management system certification | - Portfolio (short and long term) | - Age distribution | - Information Management staff (FTEs) |
| - Business values | - Contracting (commissioned projects/activities) | - Experience level | |
| - KPI importance | - Refused projects | - Annual education budget | |
| - Highest valued risks | - Maturity of contracting | - Education budget allocation | |
| | - Conformity with terms of agreement/contract | | |
| | - Process maturity matrix | | |

### 3.1 Careful Attention to detail

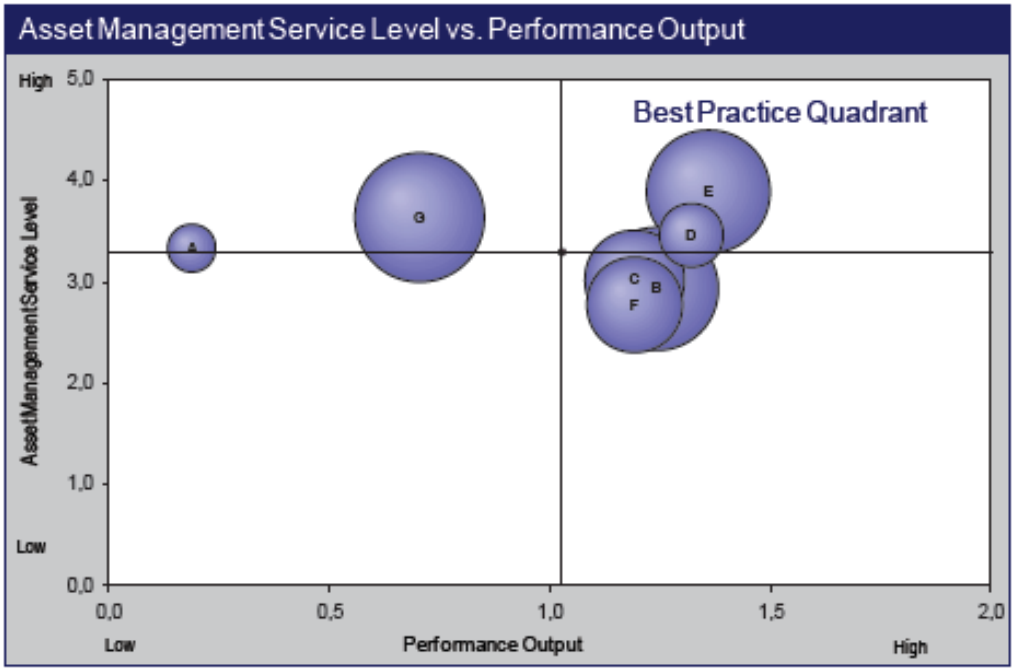
Based on the previously discussed definitions of Outcome Performance and Asset Management Service Levels, UMS Group created a data pack which identified specific data to be collected from each participant, as a well as a definition document which identified the relationship between the ITAMS framework and PAS 55. These were distributed to the consortium participants for data collection, return, and analysis.

## 4. The results of the first ITAMS cycle

Figure 4 presents the results of the ITAMS benchmarking study. Each bubble represents a company and the size of the bubble is a relative measure of the overall TOTEX (total expenditures).

As can be seen in Figure 4, the companies tend to be grouped in the Asset Management Maturation Zone with a few straddling both that zone and the low impact zone. These results suggest a strong likelihood that the hypothesis tested is correct. Furthermore, the analysis performed in the ITAMS study allowed determination of where each participant fell on the continuum of relative Asset Management effectiveness and identification of potential areas for improvement for each company. Finally, the analysis identified several key correlations (e.g. between OPEX and system minutes lost) that demonstrate a positive value for Asset Management.

**Figure 4. Asset Management Service Level vs. Output Performance**




**FOR MORE INFORMATION**

on the global learning consortium that UMS has facilitated for a group of approximately 40 transmission service operators and other benchmarked results including System Minutes Lost, Causes of Delays, see the UMS White Paper at *www.umsgroup.com/viewpoints/viewpoints.asp*

## The Authors' Final Conclusion

The ITAMS study and the framework designed to correlate business performance with Asset Management service levels provides a roadmap for measuring company-specific benefits from the business improvement that comes along with implementing an Asset Management orientation. However, implementing the targeted business improvements identified by an exercise such as this is not the same as implementing a full-scale Strategic Asset Management Transformation. The difference is that adopting Asset Management principles within focused areas of the business provides limited, or one-time benefits, while a full transformation allows a company to move along the Asset Management Maturity scale to a point where continuous improvement is not only possible, but embedded within the organisation's culture.