

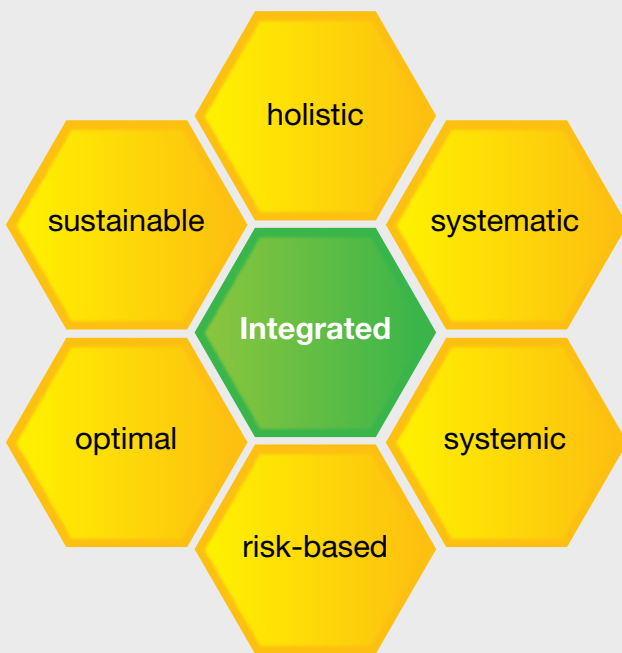
# The Landscape of Asset Management Information Systems



# What is 'Best Practice' Asset Management?

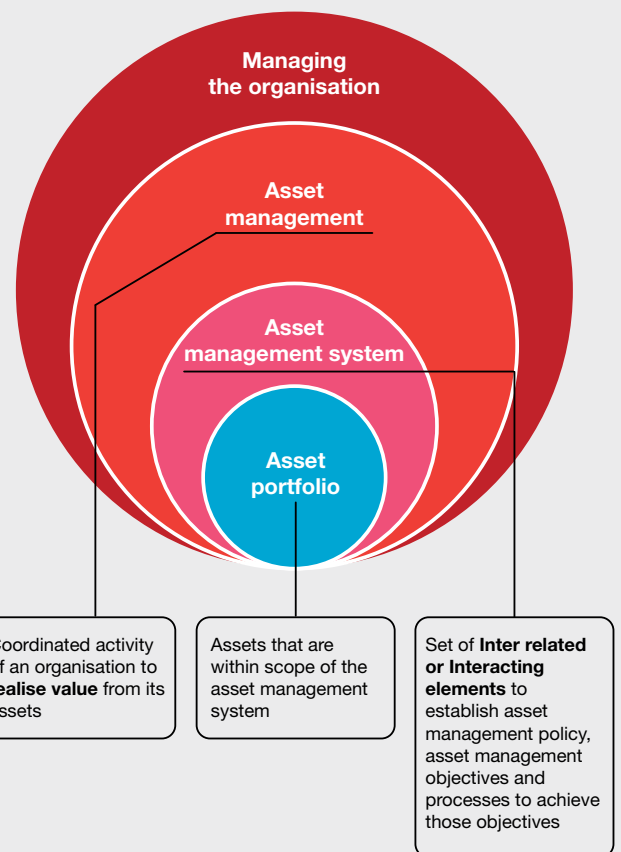
Asset management as defined in the BSI PAS 55:2008 standard requires 'a holistic view and one that can unite different parts of an organisation together in pursuit of shared strategic objectives'. It is Holistic, Systematic, Systemic, Risk Based, Optimal, Sustainable and Integrated.

The publication of the new ISO 55000 asset management standard also highlights the need for an objective driven, highly integrated, fully coordinated, systematic approach;



Key Principles & Attributes of Asset Management

Source: PAS 55-2:2008



*'An asset management system is a set of interrelated and interacting elements of an organisation, whose function is to establish the asset management policy and asset management objectives, and the processes, needed to achieve those objectives. In this context, the elements of the asset management system should be viewed as a set of tools, including policies, plans, business processes and information systems, which are integrated to give assurance that the asset management activities will be delivered.'*

Source BS ISO 55000:2014

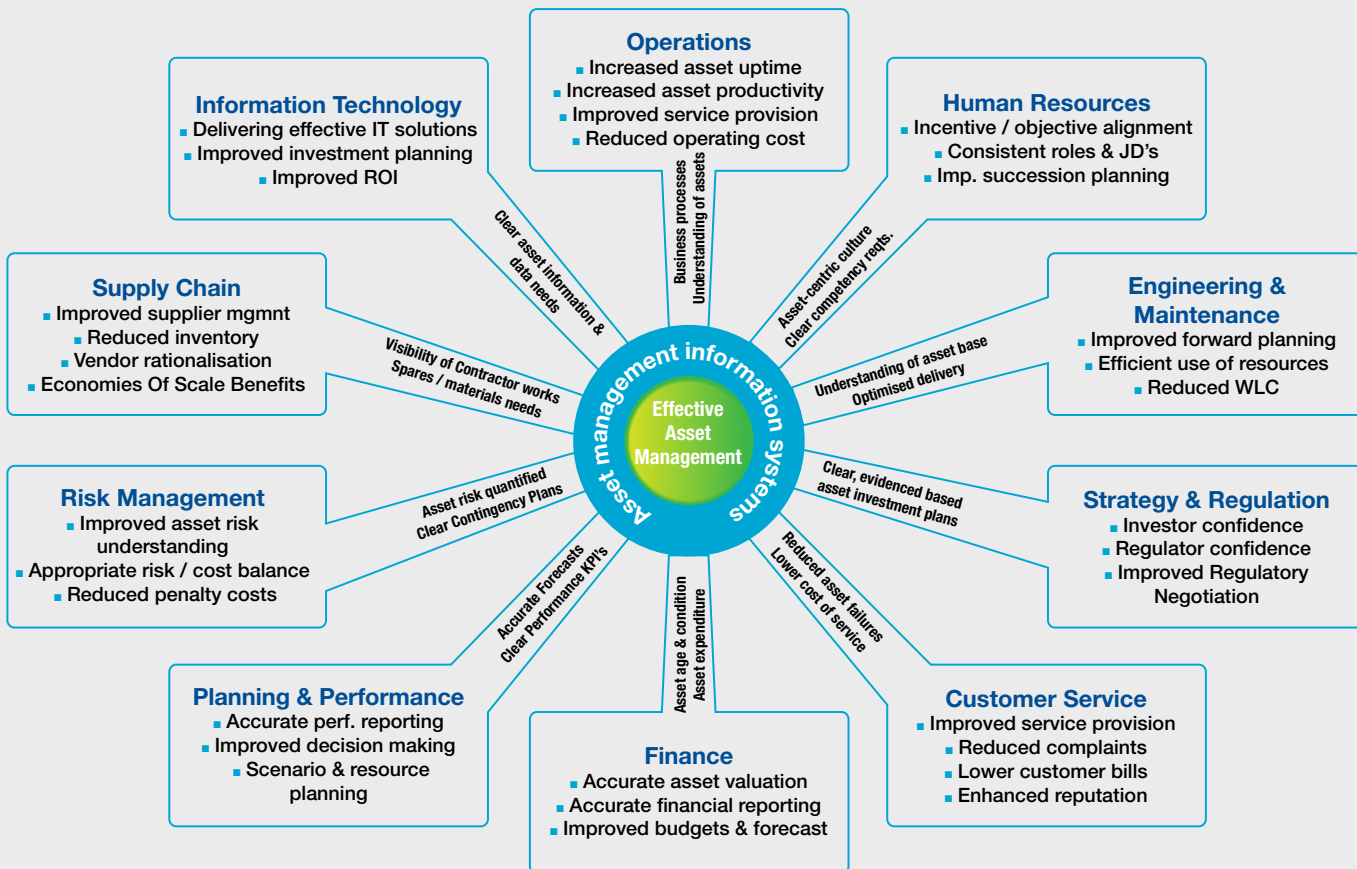
# How can Information Technology help?

Throughout each stage of the asset lifecycle from conception through to disposal, information is required to support asset management processes, workflows, planning and decision making. In many ways information could be described as the *life-blood* of the asset-intensive organisation.

The way in which information is designed, captured, stored, maintained, used and disposed of through the use of technology also has the ability to impact the effectiveness of the asset management organisation. If information is the *life-blood*, then the technology to manage and use that information is the *heart and veins* - pumping the information

(*life-blood*) around the body of the asset organisation to the place where it is most needed and where it can enable the decisions that will deliver the greatest benefit.

If asset management best practice is characterised as having a ‘holistic, systematic, systemic, risk based, optimal, sustainable and integrated’ approach then both information *and* technology (and the way they are deployed and utilised) are fundamental to enabling such a best practice approach. Exactly how this could be achieved is described in more detail below.

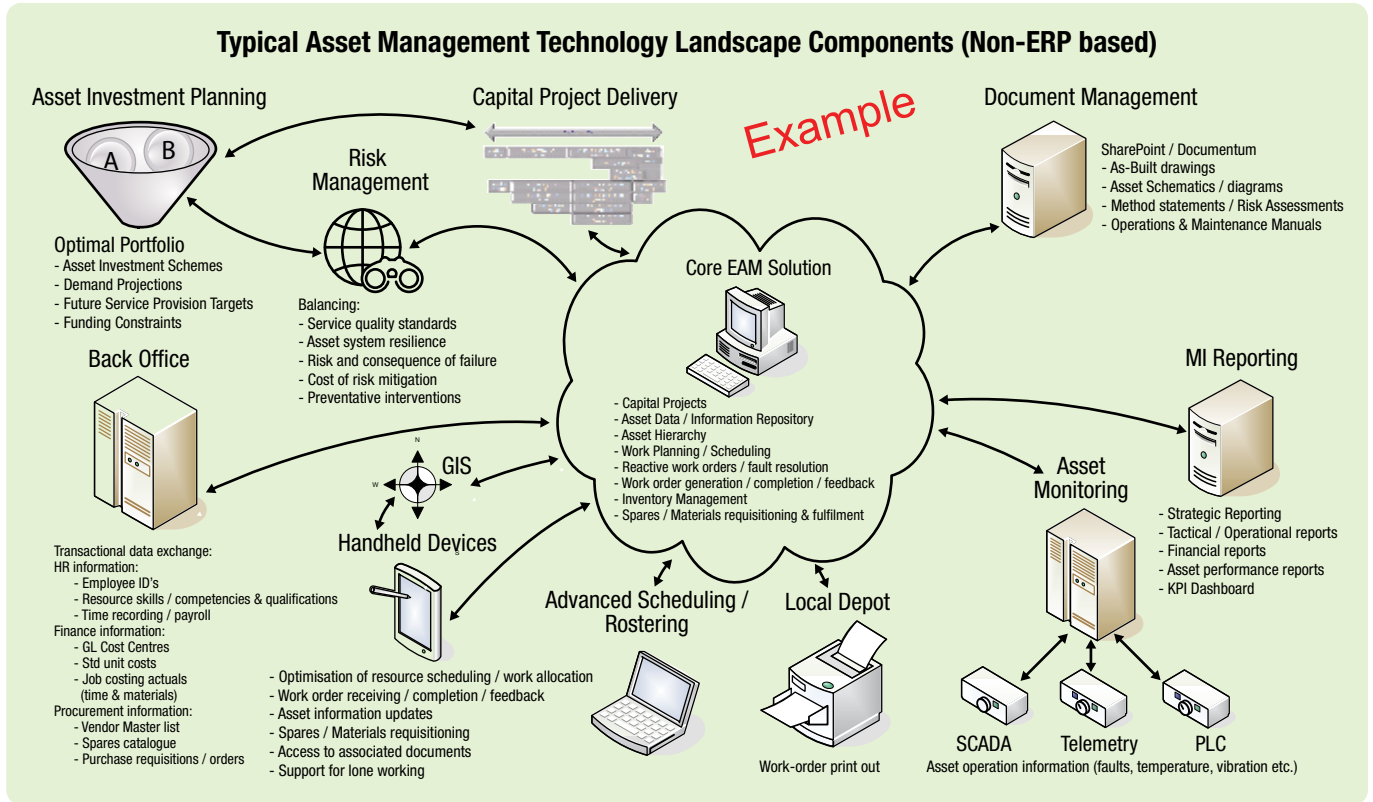


The benefits of being aligned and integrated to deliver effective asset management

*‘Asset management requires accurate asset information, but an asset management system is more than a management information system. Asset management interacts with many functions of an organisation. The assets themselves can also support more than one function and more than one functional unit within the organisation. The asset management system provides a means for coordinating contributions from and interaction between these functional units within an organisation.’*

Source: ISO 55000 2014

# Exploring the Asset Management Technology Landscape



The diagram above highlights the key technology elements (and their relationships) of a 'typical' asset management IT landscape, supporting the asset lifecycle from conception through to disposal. In the sections below five components of this landscape are explored in more detail with a focus on some characteristics of 'The Leaders' and the potential benefit of deploying technology in support of a best practice approach.

## 1. Asset Investment Planning

*The investment needs are many but the funds are often limited.* Asset Investment planning technologies enable asset Planners, Operators, Maintainers, Finance and Risk Managers to identify, evaluate and select the investment schemes which make improvements to the asset portfolio to deliver better on the corporate objectives.

As well as using the past as a guide, The Leaders in asset investment planning use systemised predictive modelling to project forward in time to evaluate different future scenarios affecting demand and supply, for example; population growth, cost of service provision, technological advances, future service levels and the impact of climate change. The leaders are able to use technology to identify, capture and carefully evaluate a wide range of candidate investment schemes to meet these potential scenarios in a standardised, balanced

and fully evidenced way. They understand current and future risks and how and in what ways the proposed investment schemes mitigate these risks.

They are also able to use technology to demonstrate the alignment of the investment with corporate level and asset management strategy drivers. They understand the benefits the investment will provide as well as the whole life cycle cost - not just the cost of the Acquisition Phase. Utilising these techniques and good quality information The Leaders can use technology to define the optimal asset investment portfolio to meet any given future scenario. They harness the processing power of IT systems to quickly test and understand the impact of changes in the underlying assumptions or financial constraints on their forward asset investment programme.

Having a mature approach to asset investment planning supported by information technology enables organisations to provide transparency and clearly demonstrate to customers, shareholders and regulators alike that they have a fully evidenced asset investment plan which balances cost, risk, return on investment and service provision in an optimal and effective way. In turn, this provides those stakeholders with the confidence and assurance that the organisation is 'doing the right thing'. Customer perception of the organisation is improved, satisfaction rates are higher and complaints lower.

Regulatory audits are also less challenging and it becomes easier to secure future price increases. It is also easier to obtain future funding at lower financing costs.

## 2. Capital Project Planning & Delivery

Research suggests that about 80 % of lifecycle costs are locked in to the asset at the design stage<sup>1</sup>. Technologies supporting this critical phase enable asset owners to track and manage the planning, design, construction and handover of the physical assets and their accompanying asset information sets.

The Leaders understand the impact of the new assets upon the existing asset base long before they are built. Computerised infrastructure models show how the various 'asset systems' are connected together to perform a function and deliver a product or service. Using technology in this way makes it much easier to understand the risk and criticality of the asset replacement / construction project and thus the appropriate level of focus on ensuring everything is delivered according to plan.

In keeping with the best practice theme of a holistic, joined up view across the asset lifecycle The Leaders use technology to engage and integrate with their suppliers during the construction and commissioning process. Web-based portals are often utilised to improve accessibility and contractors and suppliers are encouraged to use these to manage the delivery of the assets - they may even have it mandated in their contract.

Crucially, the leaders view asset information as being just as important (if not more important) than the actual physical asset being built. Model / manufacturer information, schematics, 'as built' diagrams, installation dates, and operation & maintenance manuals handed over by suppliers will form the information baseline for nearly all future asset decisions. The Leaders may have suppliers entering information directly in to the core asset management systems (subject to data input validation and quality rules) or a staging environment where it can be validated and quality assessed before loading to the live environment. Projects are not 'complete' and suppliers not paid until all asset information is handed over and its quality verified.

Using information technology as an enabler during the capital delivery phase facilitates closer integration between asset supplier and asset owner / operator. When a joint, collective view is held of what is being built where, when and how construction projects are progressing it becomes much easier to 'manage' the supplier; reducing costs, improving delivery and minimising costly delays. A high quality baseline asset information set improves the quality and confidence in all

future decision making right the way through the remaining elements of the asset lifecycle.

## 3. Core Asset Management Information System

Whether a best of breed or ERP based tool, the core asset management system holds the register or inventory of physical assets (typically in a structured hierarchy). It also provides a way to manage and track the maintenance and repair of assets. Asset management systems often also have functionality to manage the provision of the spare parts and consumables needed to keep the assets fully operational and minimise unplanned down-time.

The Leaders have an asset management information system that is able to cope with the variety and complexity of their asset base without the need for inventive manual 'workarounds'. Whether it be a fixed point, linear or mobile asset The Leaders have the technology that enables them to quickly and easily find an asset in the hierarchy and access all of its attribute information including its performance and maintenance history. The Leaders have developed efficient workflows within the systems that enable and empower their workforce rather than constrain them.

Equally, the workforce genuinely sees the asset management technology as an essential part of their toolkit. It provides them with a trusted and cherished source of information, equipping them with just what they need to get the job done right first time, every time – so that they can focus on keeping the assets operating. For this reason the workforce see it as very much in their interest to maintain the quality of information and invest the time and effort to enter information correctly and proactively identify and resolve information / data errors.

The asset information management systems of The Leaders have intelligent asset intervention policies in place. The Leaders are able to fully exploit the advanced capability of their asset management systems such as the ability to undertake predictive maintenance based on a combination of factors like asset utilisation rates, local operating environment conditions and past performance history rather than on a straight-forward time or operation cycle based frequency.

Continuing the anatomical analogy described in earlier; if information is the *life-blood* of the asset management organisation then the core asset management information system is the beating *heart*. The key benefits come through the dissemination of information and the support for asset management activities through the operate and maintain phases of the asset lifecycle where approximately 80% of the asset lifecycle costs are incurred. If carefully designed and deployed and effectively used the core asset management

<sup>1</sup> Source: *Asset management – the whole life management of physical assets* – Thomas Telford Press.

information system will be a key enabler to increase productivity, reduce whole life cost and facilitate strategy delivery.

#### 4. Management Information & Business Intelligence

Management information & business intelligence technologies enable asset owners, operators and maintainers to have a clear visibility of the key metrics and KPI's of the physical asset base and the activities to manage it. This enables critical decisions to be made that will enable the assets to be managed in an optimal way throughout their lifecycle.

*'Information is not knowledge'*. The Leaders in asset management understand what knowledge they do and do not need to have, and having understood their corporate goals, are able to successfully translate these to asset management drivers, strategies and plans which guide their asset management activities throughout all levels of the organisation.

*'What gets measured gets done'* is also a truism. The Leaders are also able to take what knowledge they do need to know and they have translated this in to meaningful and specific performance metrics and KPI's. The Leaders then make these KPI's very relevant and tangible to the people that are most empowered to affect them. This affords a level of immediacy and transparency as the impact visibly rolls-up through the layers of a structured performance reporting hierarchy. This way it can be easily seen how the actions taken on the ground affect overall asset management delivery and performance. This is consistent with what PAS 55 describes as 'the line of sight'.

Typically, asset management dashboards are developed for specific roles or user groups and where possible these report from 'live' data in the core asset management information system. The presentational layers within the dashboards can be customised to suit the users and operate on a 'self service' model rather than waiting for a centralised reporting team to churn out a range of standard reports which are then emailed out. Consequently, this improves the speed of decision making.

Continuing the anatomical theme of this paper management information and business intelligence technologies are the eyes and ears of the asset intensive organisation. They provide visibility of what has gone before, what is happening now and can help visualise / predict what might (or might not) happen in the future. This enables sound, defensible, evidenced based asset management decisions to be made whilst taking in to account the complexities of competing factors such as cost, risk, performance and sustainability.

Good decisions help to optimise whole life performance and cost and provide assurance to stakeholders (internal and external) that the right decisions have been made.

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*'Asset management is data intensive and new tools and processes are often necessary to collect, assemble, manage, analyse and use asset data. The creation and use of these tools can stimulate and improve organisational knowledge and decision making'.*

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Source: ISO 55000 2014

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#### 5. Integration with other key business functions

As described in earlier sections, best practice asset management requires *'a holistic view and one that can unite different parts of an organisation together in pursuit of shared strategic objectives'*. The integration of asset management information systems with information systems supporting other key business functions is a key enabler to best practice.

The Leaders successfully integrate their core asset management information systems with key business functions. Typically there are three key integration points (with an example of the value);

- Finance integration can be used to ensure that corporate level unit costs can be pulled from the core finance system to aid with asset management estimating, planning and budgeting and forecasting. Equally, 'actuals' costs are passed back to the general ledger to aid financial reporting and cost analysis at the corporate level. It can also be used to further refine unit costs which is a good example of the circular benefits characteristic of a holistic approach.
- Procurement integration can enable requisitions to be raised for materials, spares and specialist parts from catalogues within the asset management system which align with the catalogue in the corporate procurement system. Requisition approvals can then be processed through structured approval workflows in the corporate procurement system. Goods can also be receipted in the asset management system triggering supplier payments in the corporate system. This negates the need for users to learn and maintain their knowledge of multiple systems in order to perform a simple business activity.
- Integration of human resource / personnel information enables the asset management information system to be kept up to date and accurate with personnel records, training and competency information. This enables work to be allocated only to staff who are appropriately trained, certified and authorised to carry it out. This ensures compliance with statutory and safety standards and reduced the risk of safety-related incidents.

The integration of asset management systems with the IT systems supporting other key business functions is a key enabler to a best practice approach. System integration will provide better support for end-to-end cross-functional business processes and facilitate two way exchange of information. This means that decisions will be made by the asset management community and across the wider business as a whole using one set of joined up information rather than multiple, disparate versions of the truth. This is completely aligned with the 'holistic, systemic, systematic and integrated' PAS 55 approach.

### Conclusion

Research has suggested that the overall financial benefit impact of the implementation of a best practice approach to asset management could add up to about 20 percent of the total spending portfolio over a 5 year period<sup>2</sup>. There is no doubt; the potential reward for successfully developing, implementing and embedding a best practice asset management approach can be substantial. It is getting there that is the hard part.

Organisations thinking of embarking upon an asset management transformation programme would do well to recognise that simply implementing a new IT system alone will not make them an exemplar of best practice asset management. Effective asset management requires an ethos, a philosophy, a way of thinking and acting that challenges the

traditional view that has been prevalent in many organisations for the last few decades. As we have explored in this paper Information Technology clearly holds the potential to enable organisations to adopt, embed and support a best practice approach to asset management. However, it is largely down to individual organisations as to exactly how and to what degree they choose to exploit information technology in support of their own specific asset management ambitions.

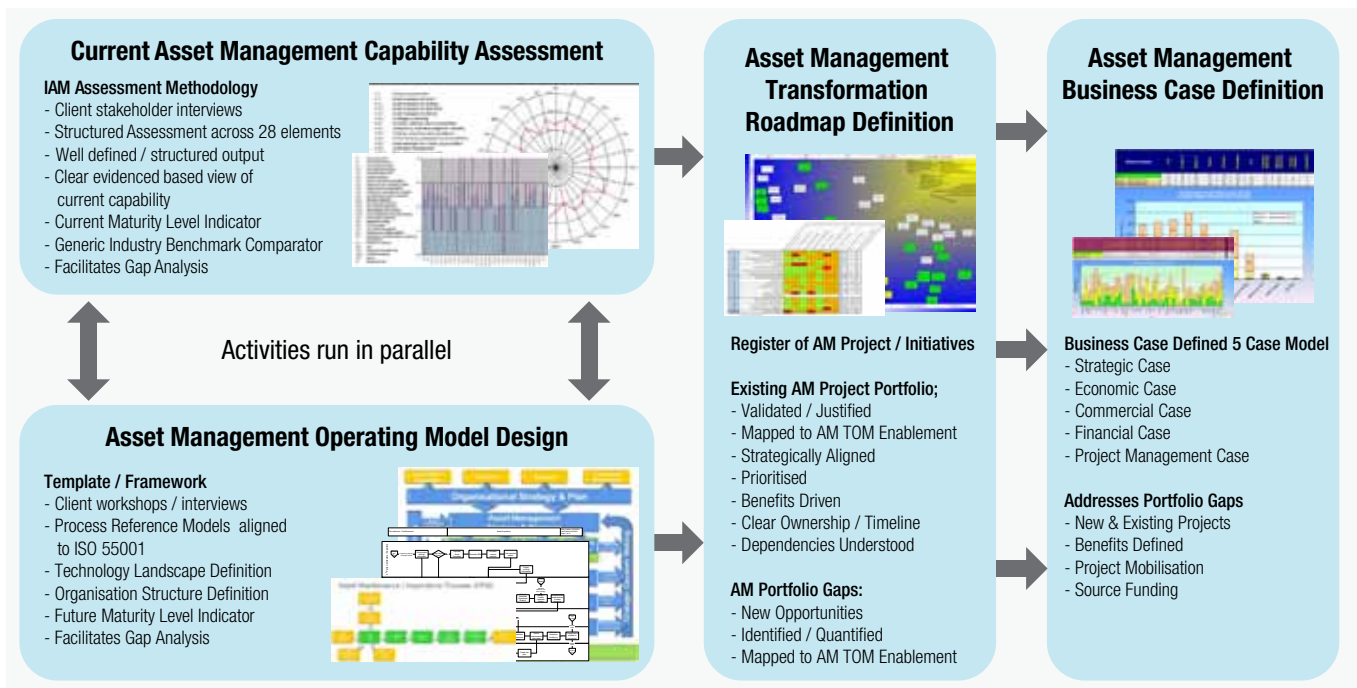
### Capgemini's Asset Management Transformation Service

Capgemini has an in-depth understanding of both asset management and business transformation.

We have a targeted, output-driven service to help our asset management clients:

- Assess their current asset management capability
- Establish a clear asset management business vision
- Define a roadmap of the transformation projects needed to enable the vision
- Develop the business case to initiate the selected transformation projects

As a result early successes are created and a lasting momentum generated for longer term change. Timebased RoadMaps and accompanying business cases detail the programme of strategically aligned, benefits driven improvements projects needed to achieve their asset management aspirations.



<sup>2</sup> Source: IAM Assets Magazine – February 2013.



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