



cutting through complexity

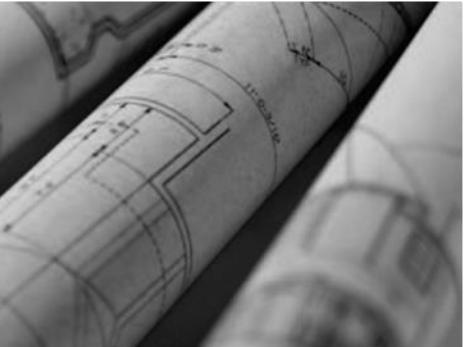
Assets and the City

Strategies for infrastructure productivity in the urban environment

Global Infrastructure Hub

Shanghai

February 25th 2016



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City Infrastructure challenges

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Evolution of City
Infrastructure Management

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Successful city asset
management strategies

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Benefits and Case Studies in
City Asset Management

Urban infrastructure is in growing need for productivity

*Owners and operators of urban infrastructure are **struggling to balance current and future needs**, whilst living within **constrained means**...*

- By 2030, most urban infrastructure (utilities, public transport) will need some replacement/upgrade.
- Citizens have higher expectations, and access to mass media to influence decision makers.
- By 2050, 50% more people will live in cities, some doubling in size in 15 years.
- Most cities do not have the resources to meet the demands on them, now.

Ageing and tired Infrastructure

Citizens' voices – A new power

Urbanisation and migration demands

Limited resources and outdated skills

*...We need to become **more productive**, to create substantially more output from less resources*

The case for better asset management of city assets

*Asset management involves **balancing infrastructure expenditure, opportunities and risks** against the desired **performance of assets**, to achieve organizational objectives...*

Public asset infrastructure value is created and sustained by managing the trade-offs between service, risk and expenditures over an asset's lifecycle. Understanding these factors, and their contributors, help us to...

Align assets and service delivery with current and future objectives

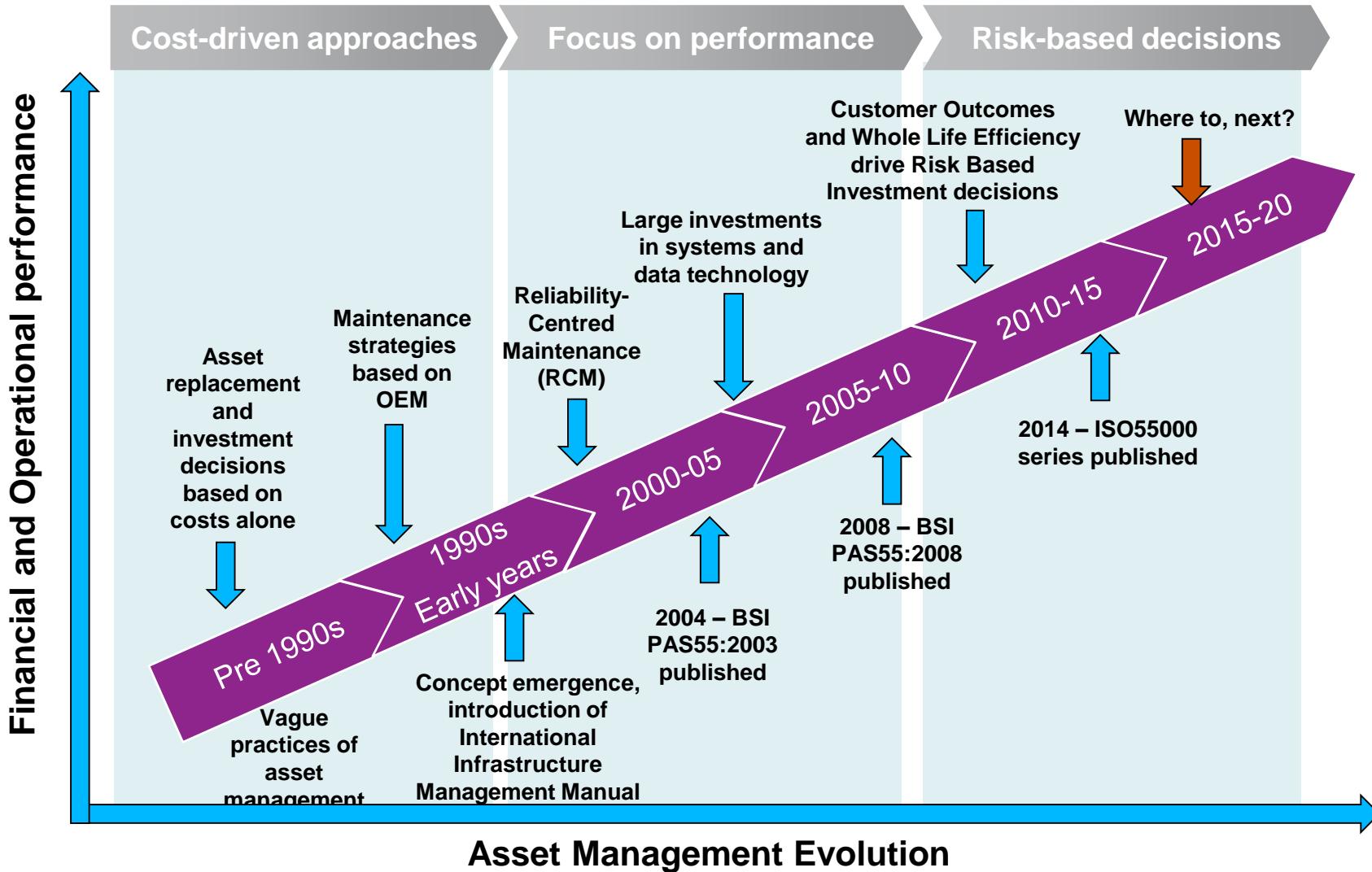
Manage the asset risks associated with meeting these requirements

Optimize asset lifecycle Totex and minimize total cost of ownership

The push for better asset management for public infrastructure is being supported at many levels: Federal, Regional and Local.

Asset Management continues to evolve...

From small steps to **International Standard**...



Asset Management proven results in delivering value

Case studies – *Benefits of adopting Asset Management practices...*

Leading Electricity Transmission Operator in Europe

- **10-20%** reduction in **total Opex** within four years
- **5-15%** saving in major projects **whole life costs**
- **25%** sustainable savings in **spares held**
- **28-50%** reduction in **planned downtime**
- **60%** reduction in **safety incidents**
- **10-30%** increase in **customer satisfaction**



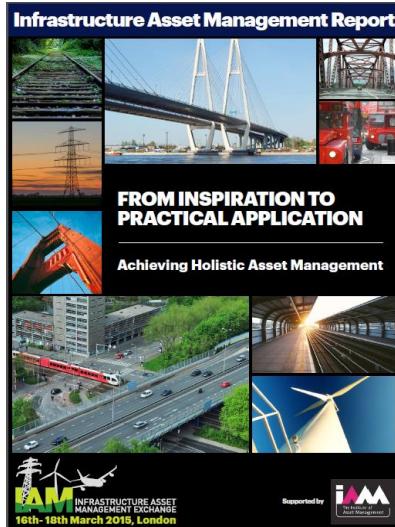
One of the largest Oil and Gas Companies in the world

- **40-50%** reduction in **total Opex** within four years (over **USD 220 million**)
- **Production up time** raised by **17%** over four years
- **Production cost** reduced from **\$15/ bbl** in 1980's to current level of **\$2/ bbl**
- **USD 8-12 million** saved in **new plant construction**
- **60% inventory reduction** in material service company
- **USD 78 million production losses** per annum avoided in North Sea



Data and analytics, the biggest challenge and opportunity

Infrastructure Asset Management reviewed the challenges Facing asset owners and managers in 2015, “Leveraging an organization's data” was identified as No 1 priority...



Executive Summary

This report reviews the current state of Infrastructure asset management with special focus on some of the perceived challenges and top priorities for the year ahead. It also touches upon various critical elements in asset management and provides insights on the benefits, drivers, ROI and challenges to the deployment of a robust asset management strategy at corporate level.

Who took part in this survey?

Role

A Director/ Head of Asset Management/ Operations/ Engineering	18.0%
A Manager, Engineer, Project Manager	37.6%
An Industry Consultant and / or Analyst	27.8%
A Solution Provider	16.6%

Job function

Asset Management	43.8%	Technology	2.0%
Asset Strategy & Performance	18.7%	Investment Projects	3.0%
Operations	7.0%	Risk Management	2.0%
Maintenance	0.5%	Data Management	2.0%
Engineering	6.0%	Other	6.0%

Sector*

Water Utilities	24.7%	Manufacturing	2.0%
Gas Utilities	7.0%	Automotive	0.7%
Electricity	21.7%	Nuclear	2.7%
Oil and Gas	13.7%	Wind Power	3.3%
Roads	14.4%	Hydro Power	2.0%
Rail	0.4%	Public Sector (Councils)	14.7%
Airports	4.3%	Other	16.7%
Ports	2.7%		

Region

Western/Northern Europe	54.8%	South America	1.7%
Eastern Europe	2.4%	Australasia and Asia Pacific	16.3%
Middle East	2.7%	Africa	4.8%
North America	13.8%	Other	3.7%

Employees

0 - 100	0.1%
100 - 1,000	30.4%
1,000 - 5,000	32.4%
5,000 - 10,000	12.2%
10,000+	15.9%

*Respondents could select more than one answer option.

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What are the top priorities in asset management?

Building a coordinated asset management strategy at corporate level is imperative and one of the priorities that received the highest responses from both asset owners and solution providers. Although from the result shown, data management and data quality improvement appear to be the number one priority for organisations in 2015.

In contrast solution providers surveyed believe that their customers' top priorities are (a) to build a coordinated asset management strategy at corporate level and (b) prioritising and planning asset investment.

WHAT DO ASSET OWNERS IDENTIFY AS THEIR TOP PRIORITY?

28.6% ■	improving data management and data quality
26.6% ■	Prioritising and planning asset Investment
24.9% ■	Building a coordinated asset management strategy at corporate level
15.0% ■	Improving risk assessment and management
5.0% ■	Implementing new regulations and standards

WHAT DO SOLUTION PROVIDERS THINK THEIR CLIENTS TOP PRIORITIES ARE?

29.6% ■	Building a coordinated asset management strategy at corporate level
28.2% ■	Prioritising and planning asset Investment
21.1% ■	Improving data management and data quality
14.6% ■	Improving risk assessment and management
6.6% ■	Implementing new regulations and standards

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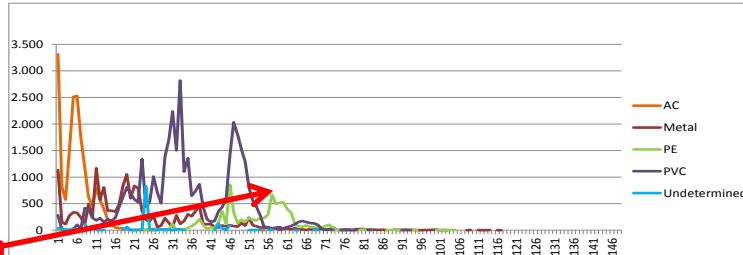
Trend towards visualizing and managing assets in real time.....

Leading organizations have **integrated** their asset register, financial systems, investment planning, and work order management system to improve balance sheet, efficiency...

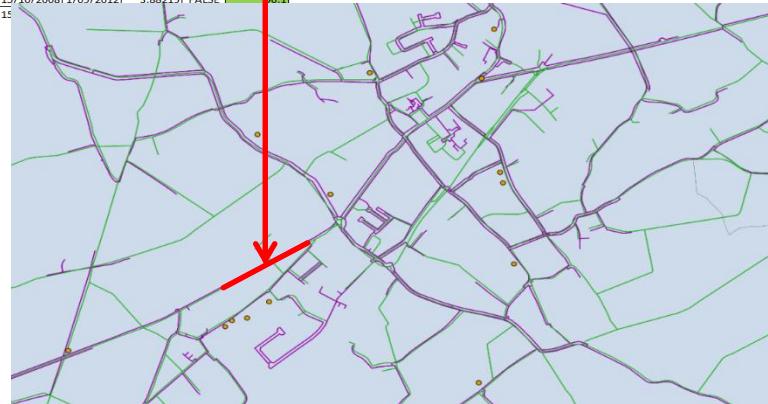
Detailed asset register:

asset_nr	Diamet	Leng	Material	Soil	Road	Date_0	Date_1	Yearfr	Failure	MRL
6851857000	160	57,1	PE	Zand	Toegangswegen	1/11/2008	1/09/2012	3,83562	FALSE	101,5
4426271000	50	50	PE	Zandleem	Toegangswegen	31/10/2008	1/09/2012	3,83836	FALSE	83,8
1078415000	90	39,1	PE	Zandleem	Toegangswegen	31/10/2008	1/09/2012	3,83836	FALSE	86,2
4428844000	90	15,6	PE	Zandleem	Toegangswegen	31/10/2008	1/09/2012	3,83836	FALSE	87,8
1078403000	50	140,6	PE	Zand	Toegangswegen	31/10/2008	1/09/2012	3,83836	FALSE	90,2
4312417000	90	19,6	PE	Zandleem	Toegangswegen	30/10/2008	1/09/2012	3,84111	FALSE	87,5
4312357000	90	15	PE	Zandleem	Toegangswegen	30/10/2008	1/09/2012	3,84111	FALSE	87,8
4460254000	90	10	PE	Zandleem	Toegangswegen	30/10/2008	1/09/2012	3,84111	FALSE	88,2
4301367000	90	37	PE	Antropogeen	Toegangswegen	28/10/2008	1/09/2012	3,84658	FALSE	88,8
4454499000	63	10	PE	Zand	Toegangswegen	28/10/2008	1/09/2012	3,84658	FALSE	100,3
4306191000	50	43,4	PE	Leem	Toegangswegen	27/10/2008	1/09/2012	3,84932	FALSE	84
4310231000	50	38	PE	Zand	Voetgangerszone	27/10/2008	1/09/2012	3,84932	FALSE	102,6
4281845000	90	6,2	PE	Antropogeen	Toegangswegen	26/10/2008	1/09/2012	3,85203	FALSE	90,9
4309374000	90	73,5	PE	Zandleem	Toegangswegen	23/10/2008	1/09/2012	3,86027	FALSE	84
4452192000	63	177,4	PE	Zandleem	Toegangswegen	22/10/2008	1/09/2012	3,86301	FALSE	76,5
4285744000	90	16,6	PE	Antropogeen	Verbindingswegen	22/10/2008	1/09/2012	3,86301	FALSE	79,8
4349194000	90	75,6	PE	Leem	Toegangswegen	22/10/2008	1/09/2012	3,86301	FALSE	83,6
4282572000	63	38	PE	Antropogeen	Toegangswegen	22/10/2008	1/09/2012	3,86301	FALSE	87,6
4647104000	50	25	PE	Antropogeen	Toegangswegen	22/10/2008	1/09/2012	3,86301	FALSE	87,9
4526485000	110	15	PE	Zandleem	Toegangswegen	22/10/2008	1/09/2012	3,86301	FALSE	88,7
4499940000	500	9,7	PE	Leem	Wegen voor regionaal verkeer	23/10/2008	1/09/2012	3,86571	FALSE	79
4271042000	50	49	PE	Antropogeen	Toegangswegen	20/10/2008	1/09/2012	3,86849	FALSE	90,3
4276523000	110	15,1	PE	Zandleem	Toegangswegen	16/10/2008	1/09/2012	3,87245	FALSE	88,7
4330710000	90	17,9	PE	Antropogeen	Toegangswegen	15/10/2008	1/09/2012	3,88219	FALSE	90,1
4370073000	110	15	PE	Antropogeen	Toegangswegen	15				

Aggregated view on asset portfolio level:

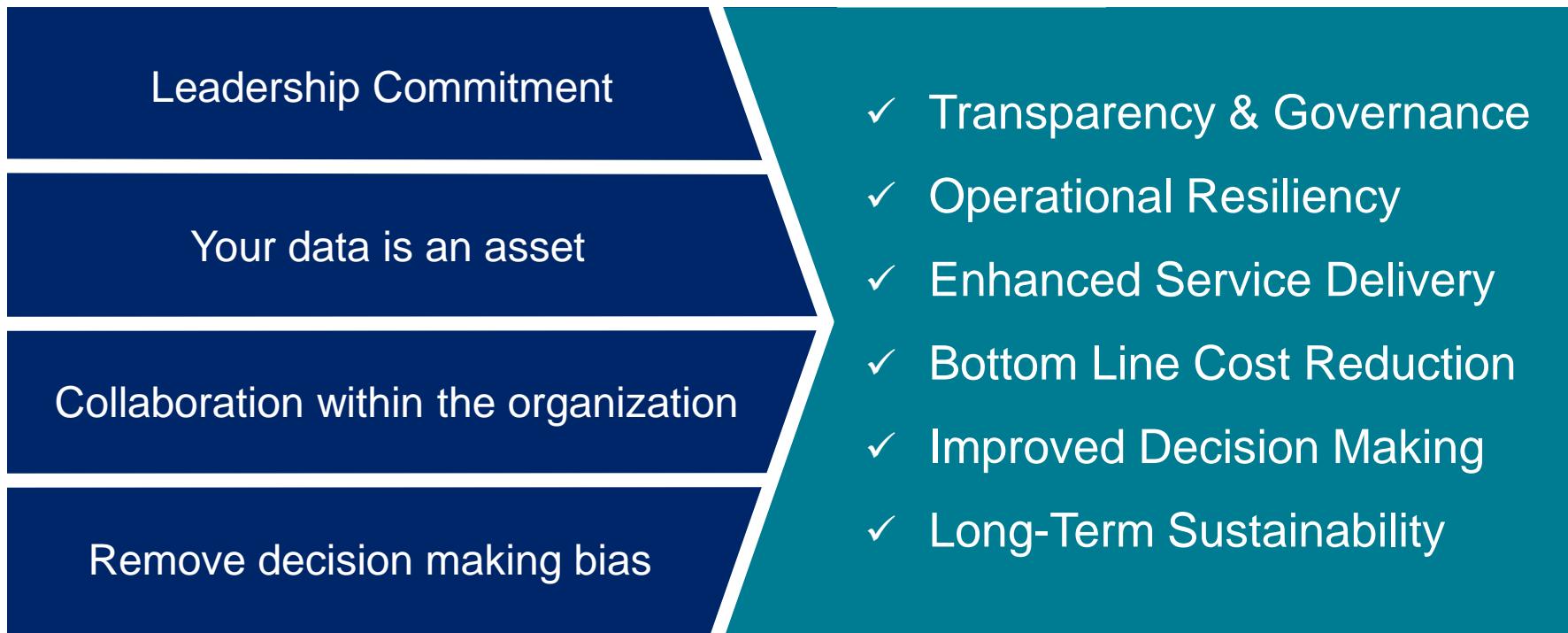


Link with GIS for geographical representation:



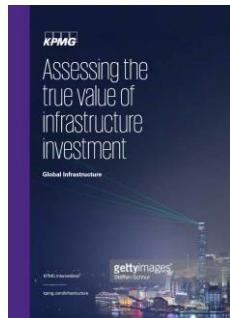
Ingredients necessary to implement Asset Management.....

*The case for Asset Management is straightforward. Urban infrastructure owners and operators have the opportunity to **leverage their investments in technology** at the asset level.*



KPMG role as thought leaders offers deep industry insights to urban infrastructure clients

Selected KPMG publications...



Assessing the value of Infrastructure investments

Assesses the “true” value of infrastructure investment and explores the current infrastructure investment assessment and prioritisation process in three merging markets – Brazil, India and South Africa – as well as the UK.



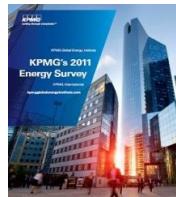
Who controls our infrastructure

Explore some of the big challenges and trends influencing the debate around control. Taken together, their viewpoints and experiences paint a telling picture of the ongoing debate now at play across the sector.



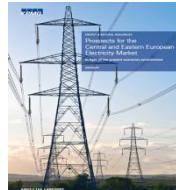
Infrastructure 100 – World Markets Report

A report showcasing 100 best-in-class infrastructure projects and key trends driving infrastructure investment around the world.



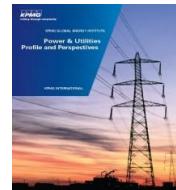
KPMG's 2011 Energy Survey

Provides quantitative findings on executives' outlook on oil prices, industry challenges, impact of shale oil and gas, R&D investment in alternative energy, clean energy sources, capital spending, M&A, the global workforce, and operating costs.



Prospects for the Central and Eastern European Market

Compiled to report on and frame prospects of development till the year 2020, specifically in light of the preset economic environment.



Power & Utilities Profile and Perspectives

Contains a broad overview of KPMG's experience and expertise in the industry, including partner perspectives from around the world.



Green Power 2011

Provides insight into global mergers & acquisitions (M&A) activity in the renewable energy sector. The findings are based on a survey of 500 senior executives active in the renewable energy industry worldwide.



Powering Ahead: 2010

Provides an insight into the global M&A activity in renewable energy. The findings are based on a survey of over 250 senior executives active in the renewable energy industry worldwide.

KPMG Asset Management thought leadership provides insights and guidance

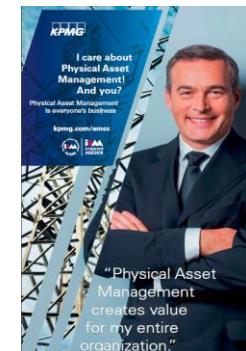
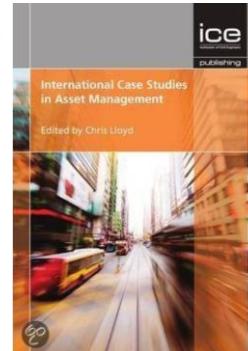
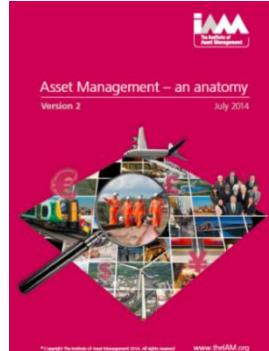
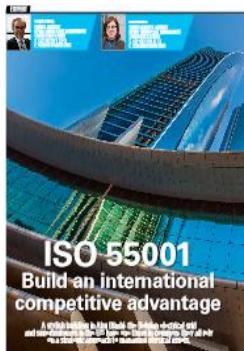
ISO 55001: a new era for asset management

ISO 55001: Build an international competitive advantage

IAM – Asset Management: An Anatomy

Published in the Sunday Times, UK, May 2014

International Case Studies in ISO55000 implementation guides and Asset Management, includes client experiences case study by KPMG



Evolving asset management

A business-driven approach

Infrastructure owners, managers and investors have been talking about asset management for years. But over the past decade, a new view of asset management has emerged and is changing the way we think about infrastructure organizations around the world.

However, achieving real maturity in asset management will not only take patience, insight and a methodical approach, it will also require a shift in perspective to a more holistic view of the environment in which they operate. And our experience suggests that there are still a number of challenges that asset owners will need to overcome if they hope to gain asset management a key competitive advantage in the future.

By Mark Karan, KPMG Global Head of Asset Management

It is not surprising that the focus of asset management has shifted to the infrastructure space. As asset management has evolved, it has become clear that, for producers, good asset management will not only reduce costs, but also improve margins, bring efficiency and profitability, and increase the value of the investment in public assets. In addition, it can help to reduce risks and enhance resilience.

Traditionally, asset management is about determining the management of physical assets to ensure that they are used effectively to sustainably achieve an organization's mission and deliver value to its stakeholders. In this environment, the benefits of improved asset management are clear, but the cost of assets simple can't be ignored.

It's not just legacy businesses that face challenges in asset management. As both an execution-level challenge business and a strategic one, asset management is also challenging for the transportation and energy sectors and managers are also facing significant challenges in terms of safety, health and environmental impact. These often include:

- Increased customer expectations for quality and reliability, particularly in the energy sector, where there is a strong correlation between asset reliability and availability and customer satisfaction.
- The need to manage assets and improve asset performance for passengers.
- Improved technology and innovation, which has led to significant improvements in asset management. For example, new technologies have enabled infrastructure managers to gain valuable insights into the health and performance of their assets, allowing them to identify potential issues before they occur.
- Increased competition in the market, which requires asset managers to adopt new approaches to investment planning, risk management, and operational efficiency.
- New stakeholder interests. As asset management becomes more complex, new stakeholders are emerging, such as local communities, government agencies, and third-party providers. These stakeholders have different interests and requirements, which must be taken into account when developing asset management strategies.

Overall, the challenges facing asset management are significant, but so too are the opportunities. By addressing these challenges head-on, asset managers can not only improve the performance of their assets, but also help to drive innovation and growth in the industry.

Source: KPMG, "Evolving asset management: A business-driven approach", 2014.