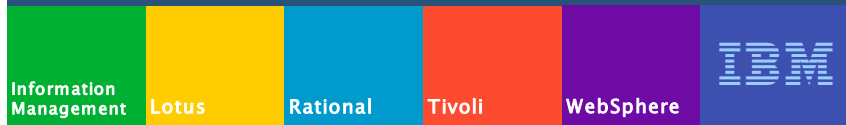Smarter Solutions for a Smarter Government.

Welcome to the Smarter Government Briefing Series

4nd Session - Thursday, November 11
Smarter Asset Management

Steven Meagher
*IBM Global Business Services*
Partner, Supply Chain Practice.

IBM Software Industry Solutions

Information Management   Lotus   Rational   Tivoli   WebSphere   IBM

Agenda

- Smarter Planet and Asset Convergence

- Imperatives, Trends and Challenges for Governments

- Asset Management to Address Government Challenges

- Examples of Smarter Asset Management

- How can we help you get started?

- Q&A

Transportation Infrastructure
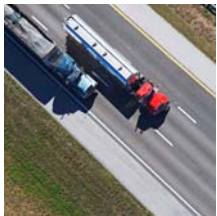
Facilities Infrastructure
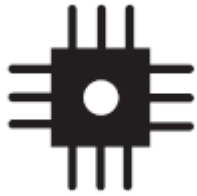
Production Infrastructure

Technology Infrastructure

Communications Infrastructure

Something profound is happening….

INSTRUMENTED

We now have the ability
to measure, sense and
see the exact condition
of practically everything.

INTERCONNECTED

People, systems and
objects can communicate
and interact with each
other in entirely new ways.

INTELLIGENT

We can respond to changes
quickly and accurately,
and get better results
by predicting and optimising
for future events.

What are the Asset Management Imperatives for Government?

- **Imperatives**

  – Meet the needs of citizens
  – Preserve capital
  – Reduce operating expenses
  – Reduce maintenance costs
  – Meet regulatory requirements

Unprecedented economic conditions, low confidence in major markets and the global financial crisis have created the most challenging environment witnessed in decades.

Source: **Government 2020 and the Perpetual Collaboration Mandate** IBM Institute for Business Value, 2008

What are the Trends Impacting Governments?

- Changing demographics

- Accelerating globalization

- Rising environmental concerns

- Evolving societal relationship

- Growing threats to social stability and order

- Expanding utilization of technology

The future of societies around the world is being shaped by six drivers outside the realm of government control. These six powerful changes will affect virtually every government, demanding individualized responses suited to each nation, region or locality.

– IBM Institute for Business Value, 2008

Source: **Government 2020 and the Perpetual Collaboration Mandate** IBM Institute for Business Value, 2008

Government Challenges

- Remaining mission-ready

- Budget decreases and cost reductions

- Managing security risks for borders, IT and information

- Accountability and compliance with regulations

- New, innovative business models

- Increased demand for social services

- Managing multiple assets types and departments

- Globalization of systems

- Managing service providers

While societies are continuously evolving and challenging their leaders for new and unique capabilities, governments must be prepared and equipped to manage rapid change.

A More Dynamic Infrastructure is Required to meet Government Challenges

An infrastructure that is Instrumented, Interconnected and Intelligent

An infrastructure that brings together business and IT to create new possibilities

Mobility Infrastructure		Facilities Infrastructure		Production Infrastructure		Technology Infrastructure		Communications Infrastructure
	+		**+**		**+**		**+**	

REDUCE COST

Not just containing operational cost and complexity, but achieving *breakthrough* productivity gains through virtualization, optimization, energy stewardship, and flexible sourcing.

IMPROVE SERVICE

Not only ensuring high availability and quality of existing services, but also meeting customer expectations for real-time, dynamic access to innovative *new* services.

MANAGE RISK

Not only addressing today's security, resiliency, and compliance challenges, but also preparing for the new risks posed by an even more *connected* and *collaborative* world.

Asset Management to Address Government Challenges

- **Total Cost of Ownership**
  - Asset costs throughout their lifecycle
  - Useful life of assets

- **Efficiency**
  - Operational & labor efficiency; production reliability
  - Service levels and customer satisfaction

- **Compliance**
  - License/regulatory/environmental & safety compliance risk

- **System Consolidation**
  - Multiple, siloed asset management systems

- **Asset Convergence**
  - Operational & IT assets

Asset Management enables government to efficiently and effectively manage critical assets that have a direct and significant impact on operations and mission performance.

Asset Management
Helps improve service, reduce cost and manage risk by

✓ Managing assets through all the stages of their lifecycle

✓ Managing all asset classes in a single system – Production, Facilities, Transportation, Technology, Communications

✓ Supporting converged assets as they become intelligent and interconnected

✓ Applying deep industry specific solutions

IMPROVE SERVICE
REDUCE COST
MANAGE RISK

Dynamic Infrastructure
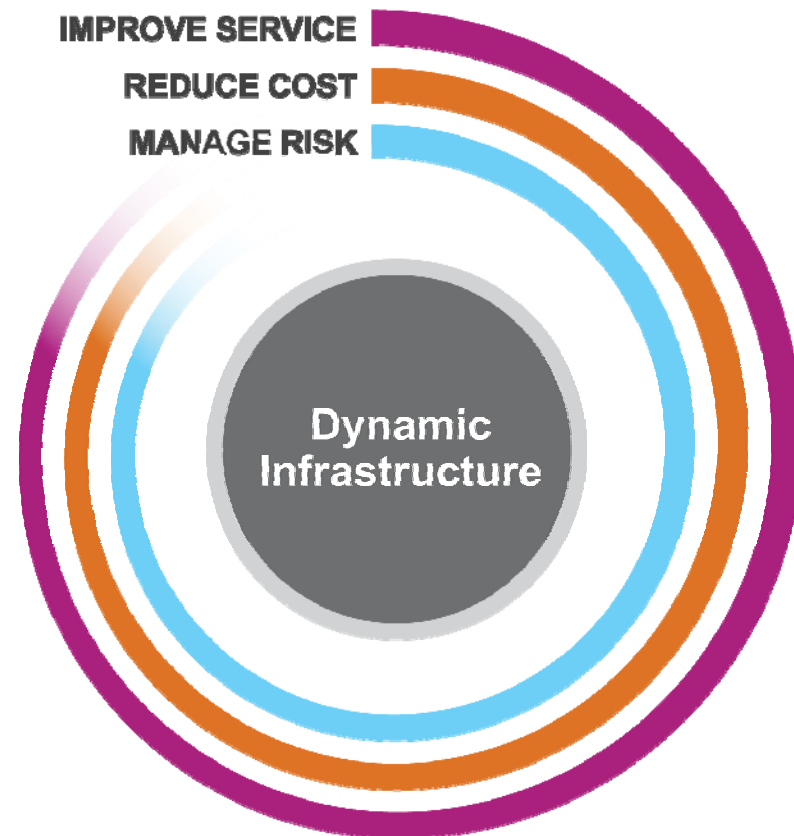
The need and opportunity for progress is clear…

67%

Sixty-seven percent of Best-in-Class companies focus on **improving asset utilization** to reduce overall costs

30%

Enterprises that begin an IT Asset Management program experience up to a thirty percent **reduction in costs** the first year … and continue savings of 5-10% for the next 5 years

92%, 96%,97%

Best-in-Class companies **perform at the following levels:**
- 92% Operating Equipment Efficiency
- 96% Throughput
- 97% On Time Delivery

86%

Best-in-Class companies are eighty six percent **more likely to integrate** MES/CMMS with ERP and fourteen percent more likely to integrate plant floor automation with EAM to improve asset utilization

What's Smarter about our Asset Infrastructure?

Centerpoint uses Smart Meters to reduce power consumption through demand response.

A bridge on I-95 in New London CT has built-in sensors to monitor stress and indicate potential failure.
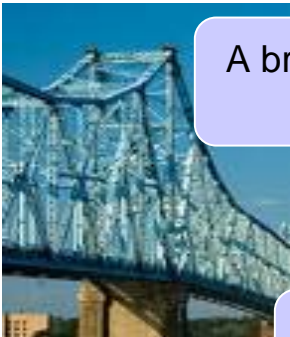
Locomotives built by Bombardier have on-board computer systems using telematics for real-time diagnostics.
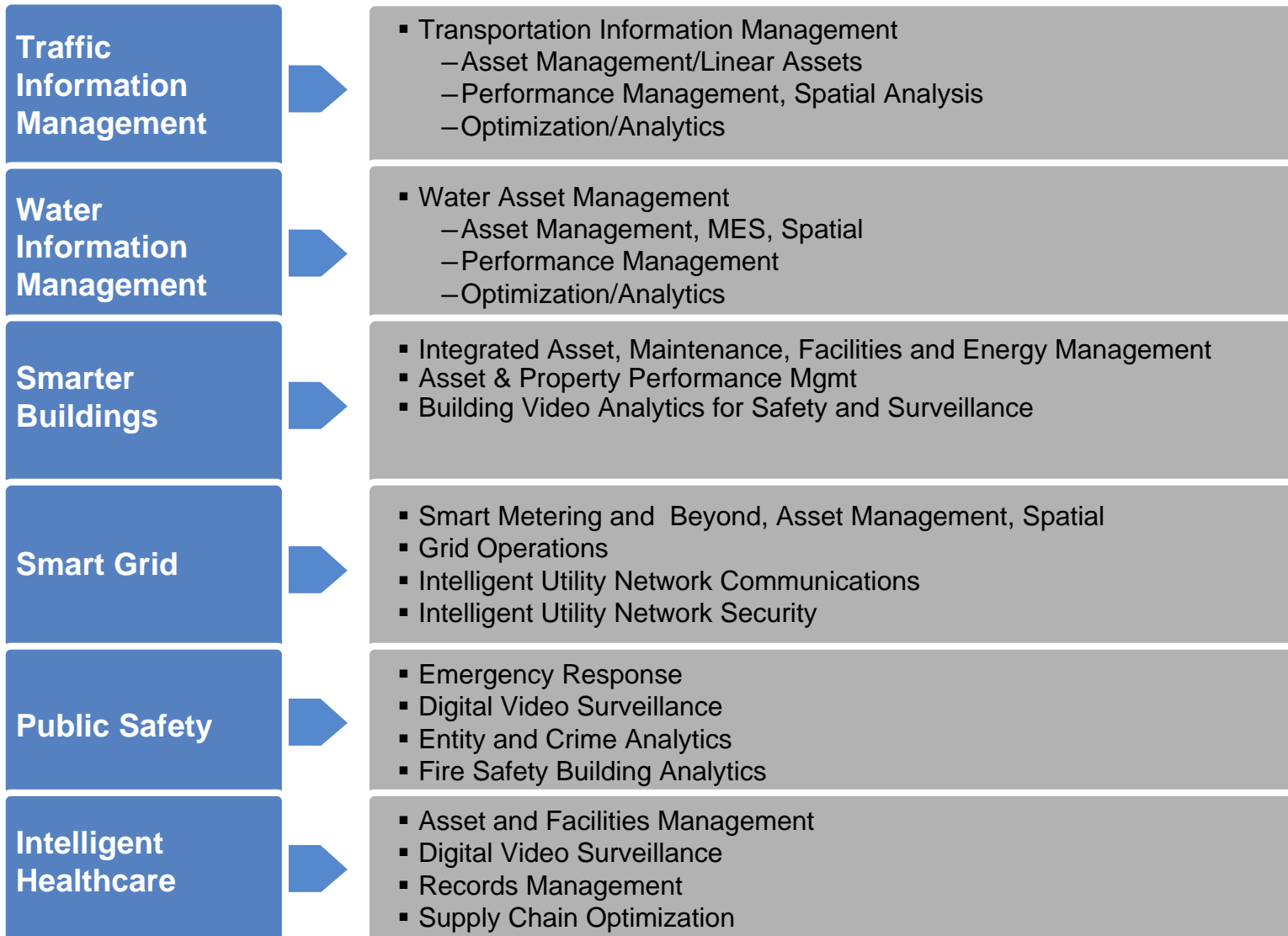
A datacenter reduces energy consumption and optimizes service delivery by collecting power, thermal and temperature inputs from IT equipment, datacenter infrastructure and facilities.

Smart buildings use building automation systems to optimize comfort, safety and energy consumption.

Emergence of Smarter Solutions

Traffic Information Management ➤
- Transportation Information Management
  - Asset Management/Linear Assets
  - Performance Management, Spatial Analysis
  - Optimization/Analytics

Water Information Management ➤
- Water Asset Management
  - Asset Management, MES, Spatial
  - Performance Management
  - Optimization/Analytics

Smarter Buildings ➤
- Integrated Asset, Maintenance, Facilities and Energy Management
- Asset & Property Performance Mgmt
- Building Video Analytics for Safety and Surveillance

Smart Grid ➤
- Smart Metering and Beyond, Asset Management, Spatial
- Grid Operations
- Intelligent Utility Network Communications
- Intelligent Utility Network Security

Public Safety ➤
- Emergency Response
- Digital Video Surveillance
- Entity and Crime Analytics
- Fire Safety Building Analytics

Intelligent Healthcare ➤
- Asset and Facilities Management
- Digital Video Surveillance
- Records Management
- Supply Chain Optimization

Yarra Trams - Computerised Asset Management System Implementation

YARRA TRAMS

Client Background:
- Acquired by MetroLink Victoria Pty Ltd, a joint venture partnership between the major Australian company Transfield Services and the leading European transport operator, Transdev. The franchise is responsible for operating the entire Melbourne Tram Network.
- They were moving out from the traditional paper based system to maintain and repair their assets, along with streamlining their internal asset management and maintenance processes to achieve high efficiency in service delivery.

Project Details:
- Implementation of MAXIMO Asset Management system to meet the streamlined asset management and maintenance process requirements including several complex workflow processes. IBM Global Business Services Engagement.
- Integration with Ellipse for all Financials and Human Resource Register .
- **Integration with Automatic Vehicle Monitoring (AVM System) to provide every trams status, kilometrage and current location captured every 10 seconds.**
- Integration processes to Automate Vendor Purchase Order notifications.
- Implementation of Syclo's MAXIMO Mobile Work Manager Solution to provide a subset of MAXIMO information to field users at the touch of a button. Customization also provided the ability to select the relevant workgroup for the day and download all related assignments and crew details for execution.

Project Challenges:
- Establishing consistent business processes as far as possible.
- Matching high system performance with complex integration processes.
- To facilitate accurate and timely information.
- Support a more effective workforce

Yarra Tram Facts
- In 2004, took over the operation of the entire Melbourne Tram Network.
- With 8 depots, 27 routes, 1800 staff and 500 trams, they manage more than 150 million passenger trips in 2005/2006.

Project Facts
- Jan 2006 to March 2007.
- 100+ users.

Scope
- Computerized Asset Management System Implementation.
- Achieve high work performance and management using Syclo's MAXIMO Mobile Work Manager.

ConnectEast - Strategic Asset Management Implementation

CONNECTEAST

Client Background:

➢ ConnectEast is a single-purpose entity dedicated to the successful delivery of the EastLink tollway, Australia's largest infrastructure project. It is responsible for the financing, design, construction, maintenance and operation of the landmark project.

➢ EastLink will connect the Eastern Freeway in Melbourne's east to the Frankston Freeway in the south and is due to open in June 2008.

Project Details:

➢ ConnectEast have purchased Maximo, which is being implemented by IBM GBS, for the management of the EastLink highway assets and Operations Centre facilities, these include all assets under the concession, grouped by civil, tolling and M&E.

➢ The majority of Maximo v6.2 functionality is being used by ConnectEast including the interface to MSProject and the Syclo Maximo Mobile suite.

➢ Customisations to the product were kept to a minimum in favour of configuration of Maximo.

➢ ConnectEast have contracted Thiess John Holland to undertake the design and construction of the Project. Transfield Services have been engaged to supply operations and maintenance services.

Project Challenges:

➢ As ConnectEast was a greenfield site, no established business procedures in asset management.

➢ Data migration proved to be a major challenge for the Maximo team as it was being supplied by a number of 3rd party sub-contractors each responsible for a section of road under construction. The data cleansing and migration has taken a substantial amount of effort, but the commitment was made to collate an accurate data set for the highway.

ConnectEast Facts

➢ Listed on the Stock Exchange in November 2004.

➢ Australia's largest infrastructure project.

➢ ConnectEast will delivered the $2.5 billion motorway to Victorians on June 2008.

Project Facts

➢ Apr 2007 to May 2008.

➢ 35+ users.

Scope

➢ Asset Register for ConnectEast's entire asset portfolio to track asset depreciation.

➢ Asset Management of the asset base – Reactive and Preventative Maintenance and resource planning.

➢ Mobile work management using Maximo on mobile devices.

Goulburn Murray Water

GOULBURN-MURRAY WATER

- **Client Background:**
- G-MW manages water storage, delivery and drainage systems involving 70% of Victoria's stored water;
  - Gravity irrigation supply
  - Surface and sub surface drainage
  - Surface and groundwater diversions
  - Domestic and stock water supply
- **Project Details:**
- G-MW has engaged IBM GBS to implement an Enterprise Asset Management solution that supports its asset management strategies to store and manage current and historical information about bulk water, water distribution, infrastructure, facilities and electrical components assets as well as provide the analysis tools for continuous operational improvements.
- IBM is deploying the following as an integrated solution across the organisation:
  - Maximo 7.1 EAM, including Syclo mobility solution, utilities industry solution, linear asset management, asset valuation framework and integration to Finance One, MS Project and MS Active Directory.
  - **Maximo Spatial and ESRI GIS Integration.**

- **Project Outcome:**
- Design phase was completed in May 2010 and delivered a blueprint design for improved asset management, work management, procurement and service delivery enabling operational effectiveness.
- G-MW and IBM are now proceeding with finalising the realisation phase which will deliver the implementation and deployment to each business unit.

Client Facts

- Manages water-related services in a region of 68,000 square kilometres.
- G-MW is a partner in Victorian Water Register, using it to manage more than $4 billion of water entitlements and trade.

Project Facts

- Transformation program aligning asset management solution to maintenance and operations strategy – 100+ users
- Project kicked off in February 2010. Target completion by September 2010
- Team of 8 IBMers based in Tatura, Victoria.

Scope

- Maximo 7.1 EAM
- Syclo Mobility Solution.
- Finance One, MS Project and ESRI GIS Integration

Northern Territory Power and Water Corporation

PowerWater

- **Client Background:**
- ➤ Provider for power and water in the Northern Territory:
  - Electricity network services (T&D)
  - Electricity generation services (Combustion turbine, Gas & Oil)
  - Water services
  - Sewerage services
  - Remote operation services
  - Facilities and Retail services

- **Project Details:**
- ➤ NTPWC has engaged IBM Global Business Services to deliver a solution for their end-to-end asset lifecycle management requirements, including asset and works management, capital project management, contracts and supply chain management.
- ➤ IBM is the prime contractor on the Asset Management Capability project, and is deploying the following as an integrated solution across the organisation:
  - ➤ **Maximo 7.1 EAM, including Maximo Mobile, linear asset management, and integration to Oracle Financials, SCADA, MS Project, TRIM, Payroll, Gentrack (retail management)**
  - ➤ **Cognos TM1for budgeting and forecasting**
  - ➤ **ESRI GIS (Geographical Information System)**

- **Project Outcome:**
- ➤ Phase I Stage 2 was completed in June 2010 and delivered a blueprint design for improved asset management, work management, supply chain management and service delivery in accordance with NT and federal regulatory mandates
- ➤ NTPWC and IBM are now proceeding with Stage 3 which will deliver the implementation and deployment to each business unit

Client Facts
- ➤ 5 diverse businesses under one organisation
- ➤ Supplier of power and water to the whole of Northern Territory
- ➤ 900+ employees

Project Facts
- ➤ Transformation program aligning asset management solution to maintenance and operations strategy – 300+ users
- ➤ Project kicked off in September 2009. Target completion by June 2011
- ➤ Team of 10 IBMers based in Darwin, NT

Scope
- ➤ Design, implementation and support of Maximo 7.1 EAM, Cognos TM1 and ESRI GIS

Commonwealth Bank – Property and Facilities management

CommonwealthBank

- **Client Background:**
- ➤ The Commonwealth Bank is one of Australia's leading providers of integrated financial services including retail banking, premium banking, business banking, institutional banking, funds management, superannuation, insurance, Property Portfolio Management, investment and share broking products and services.
- ➤ The Group is one of the largest listed companies on the Australian Stock Exchange and is included in the Morgan Stanley Capital Global Index.

- ■ **Project Details:**
- ➤ The CBA Corporate Services Property Management Team strived to provide world class property management services to the Bank's operational portfolio of over 2.900 properties and this requires a stronger strategic focus on client services and more tightly integrated teams involved in the delivery of Property Management services.
- ➤ Mapping all Locations and Assets, and accurately report on Cost financials.

- ■ **Project Outcome:**
- ➤ Faster cycle times for routine work orders and increased customer service satisfaction
- ➤ Improved end-to-end cost management and reporting on key metrics
- ➤ Better use of space thereby driving greater productivity
- ➤ A work order configuration that benefits the call centre operations by fully automating the population of contractor, contractor specific Job plans, Service Level Agreements, and SAP GL Cost Components based on the Property and work classification

CommBank Facts

- ➤ One of Australia's Big four banks with over 1,009 branches nationally
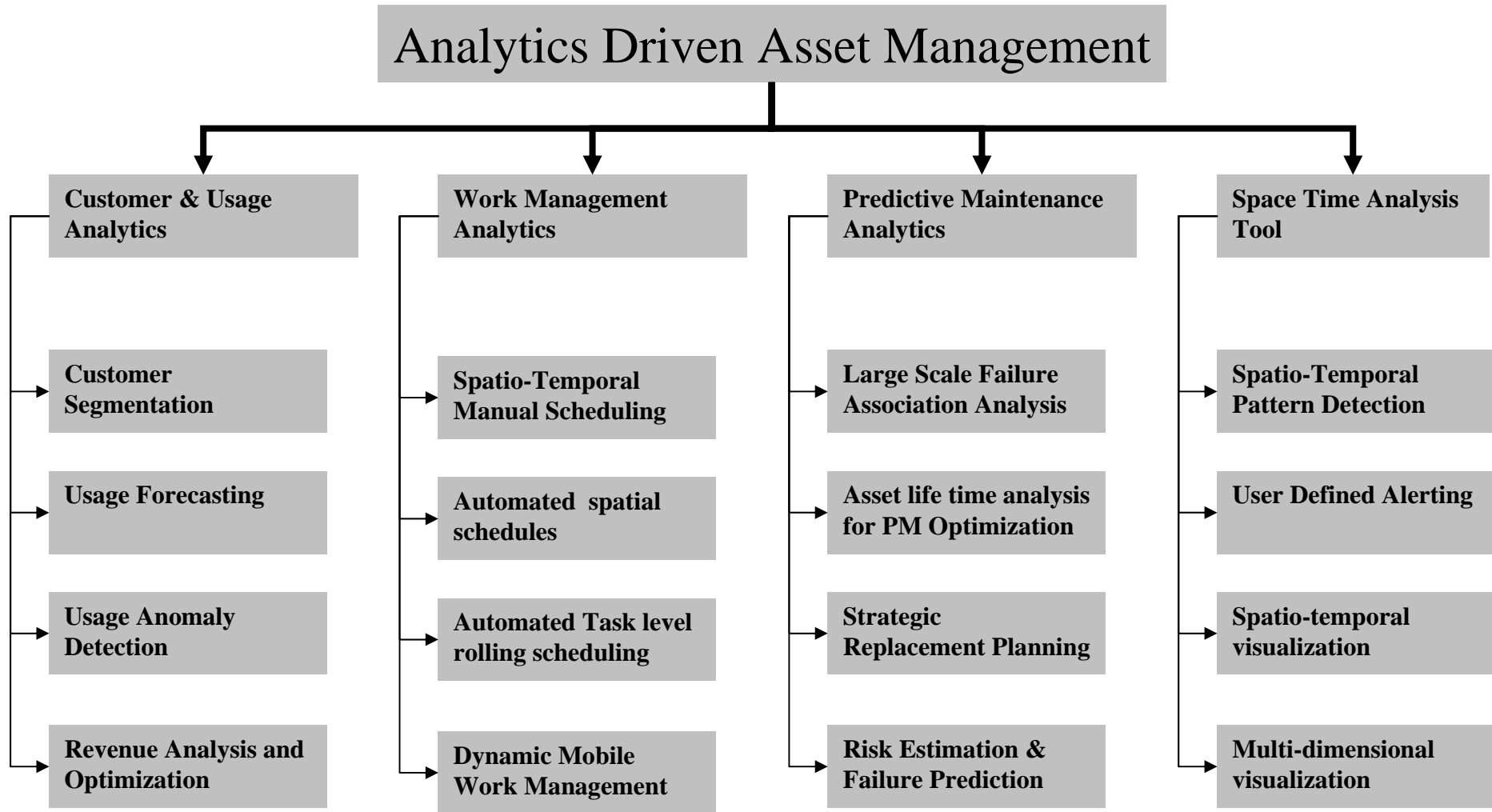- ➤ 2900+ property Portfolio
- ➤ Over 3,300 ATMs nationally

Project Facts

- ➤ July 2008 to Dec 2008.
- ➤ Peoplesoft person interface to Maximo
- ➤ Maximo to SAP invoice interface
- ➤ Automated contractor email/fax dispatch of work orders

Scope

- ➤ Maximo 6.2 Implementation
- ➤ Actuate Reports
- ➤ Automated Work Order dispatch (Fax/Email)

Smarter is "*Analytics Driven Asset Management*"

Analytics Driven Asset Management

Customer & Usage Analytics	Work Management Analytics	Predictive Maintenance Analytics	Space Time Analysis Tool
Customer Segmentation	Spatio-Temporal Manual Scheduling	Large Scale Failure Association Analysis	Spatio-Temporal Pattern Detection
Usage Forecasting	Automated spatial schedules	Asset life time analysis for PM Optimization	User Defined Alerting
Usage Anomaly Detection	Automated Task level rolling scheduling	Strategic Replacement Planning	Spatio-temporal visualization
Revenue Analysis and Optimization	Dynamic Mobile Work Management	Risk Estimation & Failure Prediction	Multi-dimensional visualization

Benefits of ADAM

Work Management Analytics: Customer Benefits		
Analytic Type	**Customer Business Process**	**Customer benefit**
Spatially Sensitive Schedules	By generating schedules for crews which better utilities crews	Lower cost of maintenance
Task Level Rolling Schedules	By splitting large jobs into skill specific tasks	Lower idle time, better utilization of crews

Predictive Maintenance Analytics: Customer Benefits		
Analytic Type	**Customer Business Process**	**Customer benefit**
Failure Association Analysis	Asset Replacement process	Improved Quality of Service
	Procurement Decision Support	Lower Procurement Costs
	Vendor Negotiations	Lower Maintenance Costs
Failure Risk Estimation & Prediction	Preventive Maintenance Process	Lower PM Costs
	Asset Replacement Process	Higher QoS
Risk Optimized Preventive Maintenance Scheduling	Preventive Maintenance Process	Lower PM Costs

Smarter is - Revealing
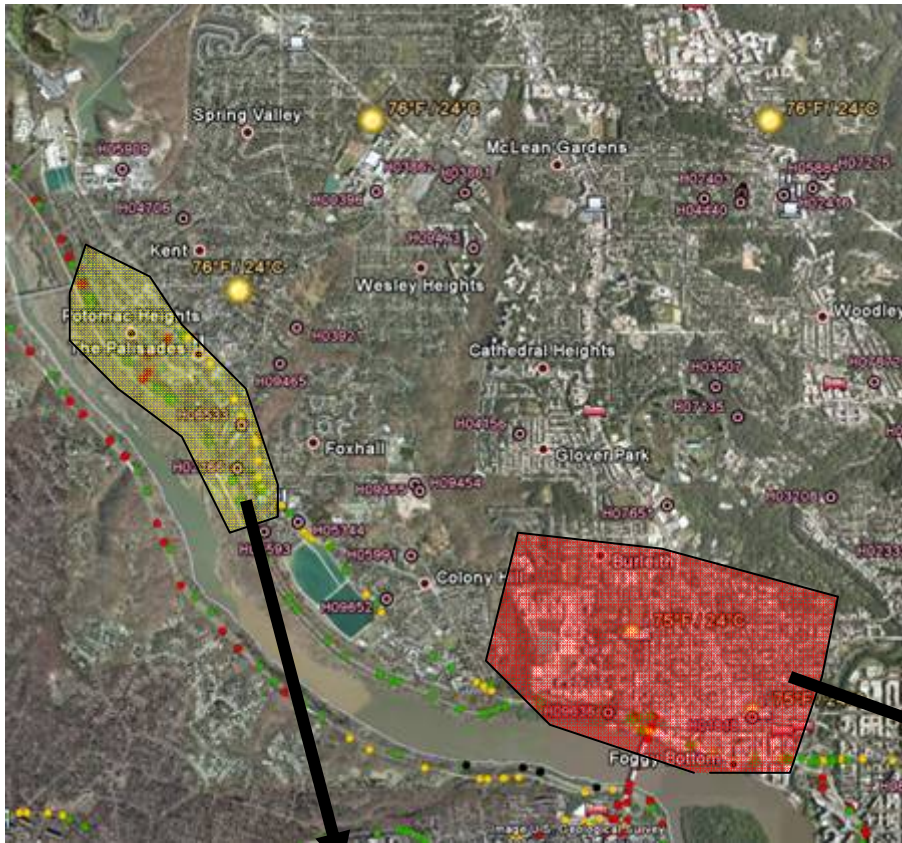
Association Discovery
Alert: Hydrant's from company
ABC fail under high temperature

Spatio-Temporal Queries
Highlight regions where fire hydrants have
had more than 3 failures in the last 8 weeks

Spatio-Temporal Alerting
Alert: Unusual clustering of fire hydrant failures:
Dispatch crew to look for common failure reasons

Smarter Asset Management in Healthcare

1. Asset Tracking

- Clinical equipment
- Wheelchairs
- Beds, Stretchers
- Medical assets
- IT assets

2. Staff Tracking

- Process/workflow
- Scheduling patient transports
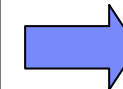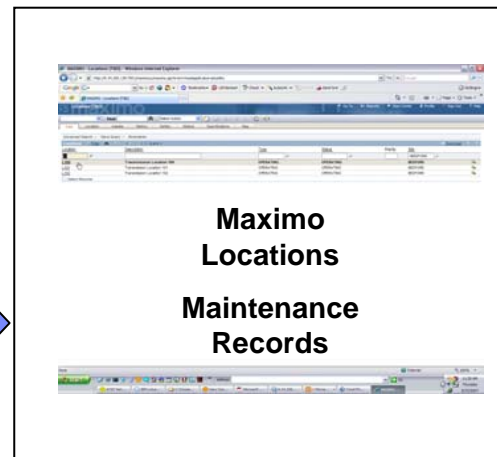- Staff safety / alarms

Maximo
Locations

Maintenance
Records

3. Patient Tracking

- Patient flow
- Wanderers
- Long-term care, elderly care
- Control pandemics
- Manage disasters

Benefits
- **10-20% reduction in assets needed**
- **5-10% Staff productivity improvement**

Step 2- What other data is required to assess condition

Condition by component by system by individual asset

Asset location & operating performance
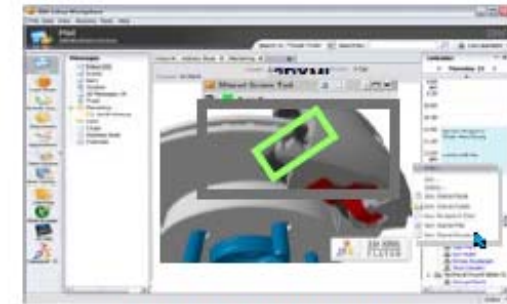
History of the asset, systems & components and for the asset type

Individual & co-located sensor condition

An integrated view of asset condition related to operational purpose with alerts
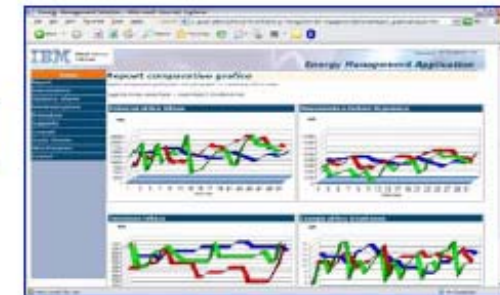
History of the asset and asset type

The **second requirement** is a holistic view of the asset condition comprising condition and operational data at a point in time together with the operating history of the specific asset, its systems and components and for the entire asset class

Smarter is - New Ways to Respond

Member of public calls in to report water main break

Incident center operative enters details on system which generates CAP event

Parking enforcement on patrol sees main break reports it via PDA device

Remote sensor picks up drop in pressure

Water Company's SCADA system

Asset Management

Enrich event with co-ordinates of affected area and location of upstream water main valve

Common Alerting Server

Event Server correlates multiple reports into one incident report

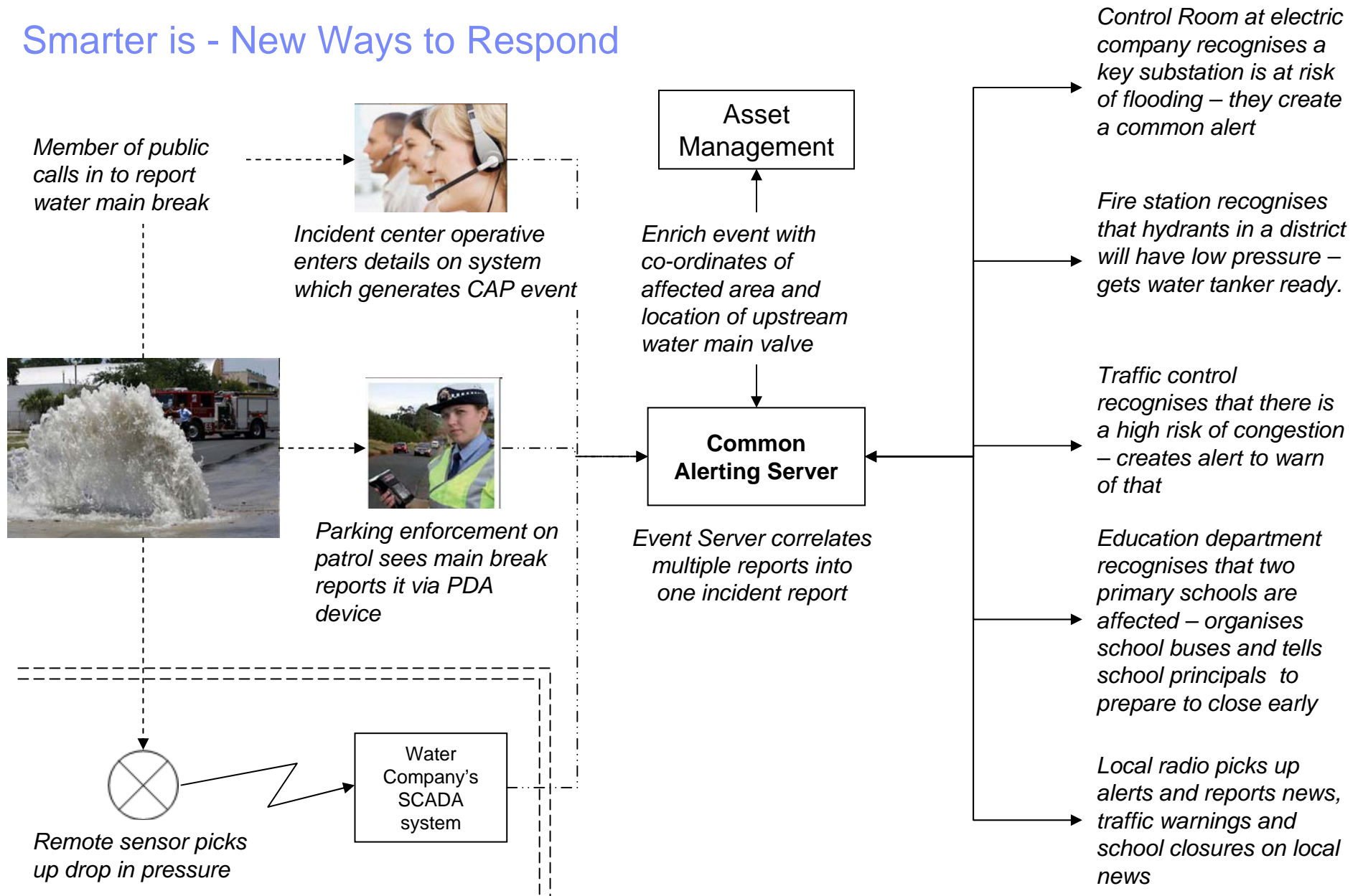*Control Room at electric company recognises a key substation is at risk of flooding – they create a common alert*

Fire station recognises that hydrants in a district will have low pressure – gets water tanker ready.

Traffic control recognises that there is a high risk of congestion – creates alert to warn of that

Education department recognises that two primary schools are affected – organises school buses and tells school principals to prepare to close early

Local radio picks up alerts and reports news, traffic warnings and school closures on local news

Chesapeake Named a "Smarter City" by IBM

Chesapeake
VIRGINIA

- Chesapeake has been recognized as a "Smarter City" by IBM for its use of technology to serve citizens

- Every major Chesapeake city department uses IBM Maximo to maintain and manage the vital assets and city resources responsible for Public Utilities, Police, Fire, Public Works, Facilities and Parks and Recreation.

- The software allows the City to keep track of all assets, from water lines to vehicles,

Weather

Water

IT Infrastructure

Power

City Command Center

Traffic

Public Safety

Buildings

Public Transportation

….but the real benefit comes when that information is used to make smarter decisions.!

Chesapeake "Smarter City" Video

How Can We Help You?

ORGANIZATIONS ARE FOCUSED ON…	IBM IS DELIVERING…
Asset lifecycle management	• **End-to-end asset lifecycle management that maximizes the lifetime value of critical assets to the enterprise** • **Improved planning processes to optimize production while reducing operational cost and ensuring safe & reliable operations**
Managing all asset classes in a single system	• **A single platform that can manage all asset classes with service request, incident, problem, change, release, configuration and provisioning management.** • **Web-architected platform built on J2EE with advanced business process management; based on SOA, web services and XML**
Supporting converging assets	• **Support for both operational & IT assets, as well as IT-enabled operational assets on a single system** • **Ability to automate and optimize business processes while crossing EAM and ITAM organizational boundaries**
Delivering industry specific solutions	• **Unique industry functionality that provides out-of-the-box industry specific business processes** • **Complete solutions delivering specific industry and regulatory compliance, while lowering implementation costs**

An Innovative Asset Management Solution…

Asset Lifecycle

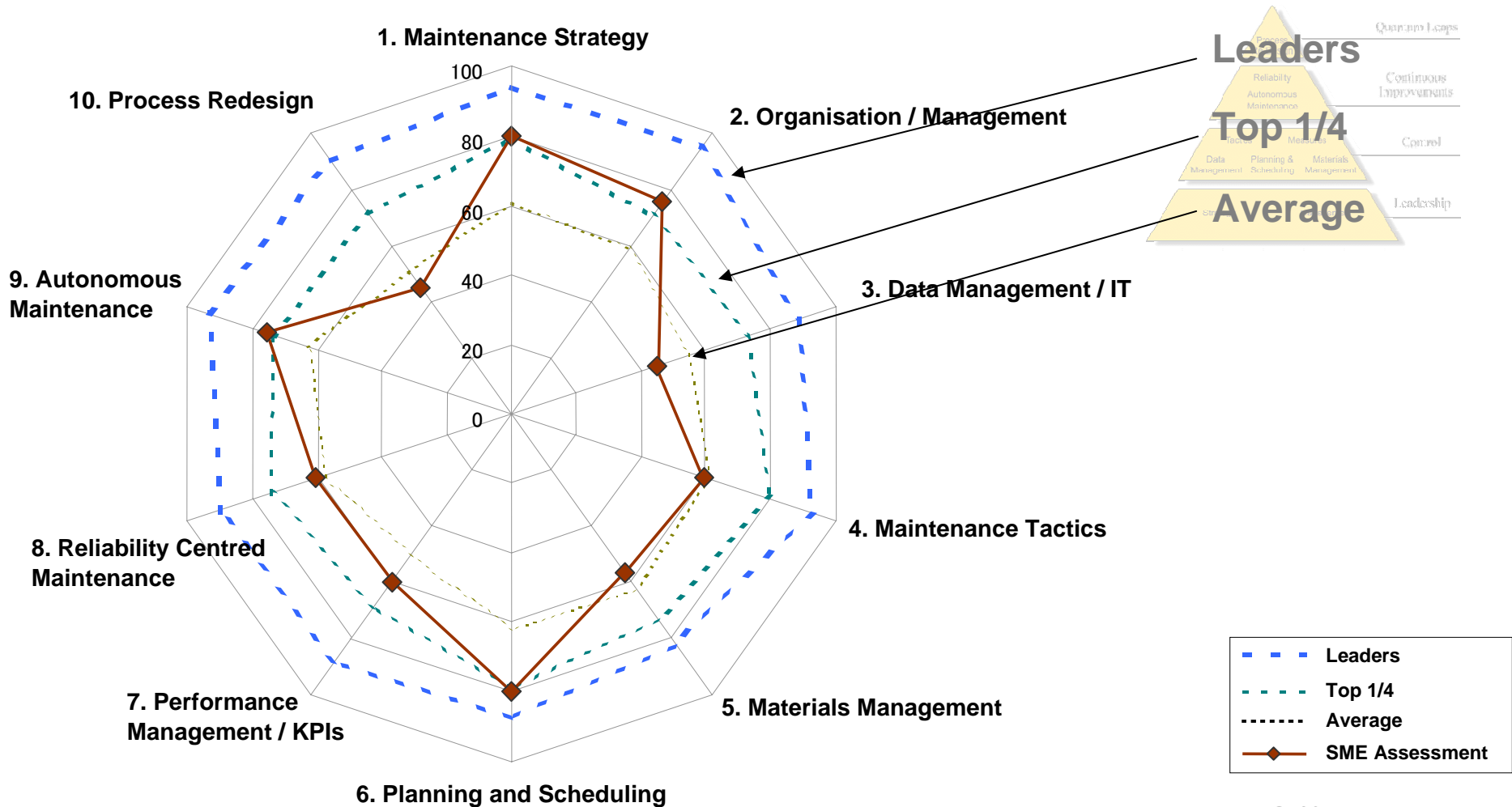| Types of Assets	Asset Strategy	Plan	Evaluate and Design	Create / Procure	Operate	Maintain	Modify	Dispose
Real Estate and Facilities	Land, Offices, Warehouses, Retail Space, Schools, Hospitals, Airports							
Plant and Production	Mining, Textile, Chemical, Petroleum, Electronics, Food, Life Sciences, Power Gen							
Transportation and Fleet	Airlines, Trucking, Shipping, Railroad, Public Transportation, Weapons Systems							
Infrastructure Assets	Railways, Electric / Gas Distribution, Highways, Telecom, Water							
IT Equipment and Network	PCs, Networks, Routers, Applications, Auto Discovery, Service Desk							

- **Enabling a new approach to address key business issues :**
  - Cost inefficiencies and operational complexity associated with leveraging their asset infrastructure to generate revenue, deliver quality service, and manage profitability
  - Need to measure and manage the asset availability and risk across *all* strategic assets
  - The emergence of "smart" assets, and the associated management challenges that must be addressed in order to leverage technology and innovate

Where are the Opportunities?
How Mature is your Asset Management Organisation ? …

	Strategy	Organization Management	Planning & Scheduling	Maintenance Tactics	Performance Measures	Information Technology	Reliability Engineering
Excellence	Set corporate mtc. strategy/ asset strategy	Multi-skilled, independent trades	Long term & major project planning & engineering	All tactics based on analysis	OEM; bench marking, full cost database	Fully integrated, common database	Full value, risk analysis, RCM and root cause analysis
Competence	Long term improvement plan	Some multi-skilling	Good job planning scheduling & eng'g support	Some CBM, some PM, few surprises	MTBF/MTTR availability, separate mtc. costs	Fully functional; linked to financials & materials	Some FMECA used
Understanding	Annual improvement plan	Decentralize, mixed trade teams	Planning group established; ad hoc eng'g	Time and use based inspections. Some NDT	Downtime by cause; Mtc. costs available	Fully functional; stand alone	Good failure database; well used
Awareness	PM improvement program	Partly centralized for some trades	Troubleshoot ing support; inspection scheduling	Time based inspections	Some downtime records; mtc. costs not segregated	Basic mtc. scheduling, some parts records	Collect data but make little use of it
Innocence	Mostly reactive breakdown mtc.	Highly centralized	No planning, little scheduling & no engineering	Annual s/d inspections only	No systematic approach; mtc. cost unavailable	Manual or ad-hoc specialty systems	No failure records

Samples of "Maturity profiles" can be found in both "Uptime" and "Maintenance Excellence"

… and How do you Compare with Other Organisations ?

Leaders

Top 1/4

Average

Legend:
- **Leaders**
- **Top 1/4**
- **Average**
- **SME Assessment**

Radar chart axes:
1. Maintenance Strategy
2. Organisation / Management
3. Data Management / IT
4. Maintenance Tactics
5. Materials Management
6. Planning and Scheduling
7. Performance Management / KPIs
8. Reliability Centred Maintenance
9. Autonomous Maintenance
10. Process Redesign

Scale: 0, 20, 40, 60, 80, 100

am*coe*
Asset Management Center of Excellence

Build a Roadmap: Asset Management Strategic Evaluation

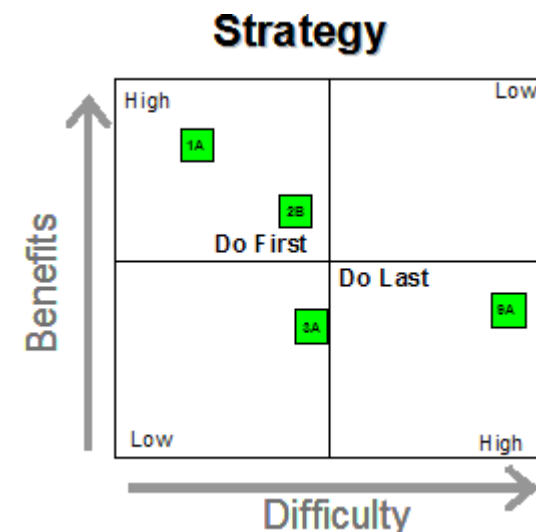**What is our Asset Management Strategic Assessment offering?**
- Broad assessment of maturity and opportunity in 10 strategic areas
- Begins with a self-assessment and benchmarking
- Ranks results against leading industry practices
- Provides recommendations and a plan forward
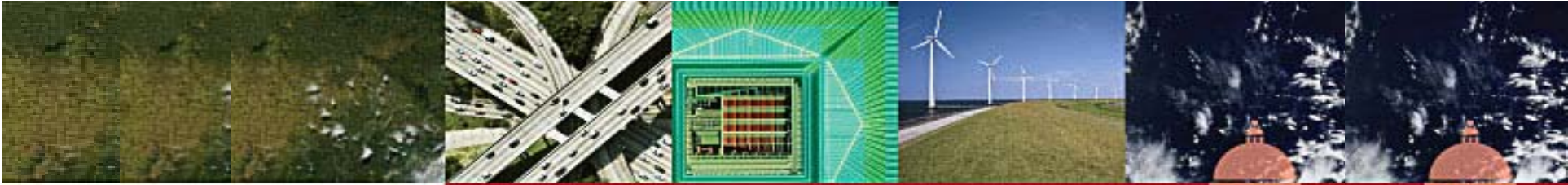- Paid engagement lasting 3 to 6 weeks

What is the result?
- Key findings in 10 strategic areas
- Detailed recommendations, benefits & implementation strategy
- Opportunity matrix for decision making and planning
- High level action plan and MS Project plan file
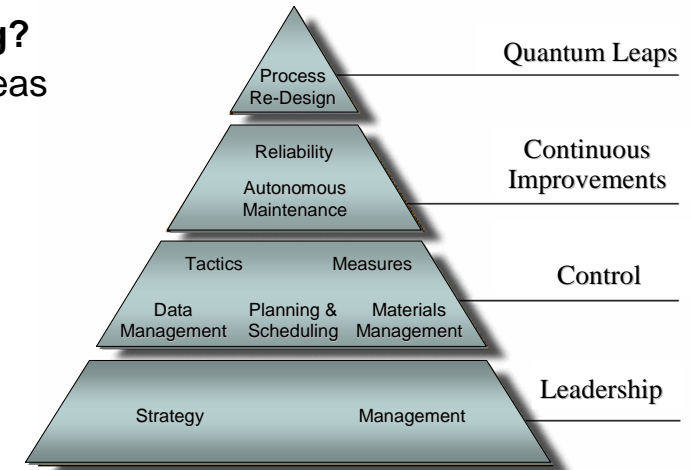
Recommendation	Benefits	Benefit Type
1A – Develop Master Maintenance Manual	Consistency in all the department and locations	Tangible and Financial
2A – Develop Formal Roles and Responsibilities	Corporate Level Roles and Responsibilities with KPI's aligned with all roles	Tangible
3A – Develop High Level Data Standards	Documented Data element standards are used by Maintenance other groups	Tangible
3B – Project to Investigate CMMS Replacement	Commercial CMMS's contain rich functionality and integration NSC desires today	Financial

Strategy

Q and A

IBM Software Industry Solutions