Electric
Gas
Water

Market Trends in the Utilities Industry
Maximo for Utilities Industry Solutions

Terry L. Saunders

ISPM Industry Solution Product Manager E&U

World-wide Utilities Industry Leader

Pulse2012

Meet the Experts. Optimise your infrastructure.

May 31 – June1

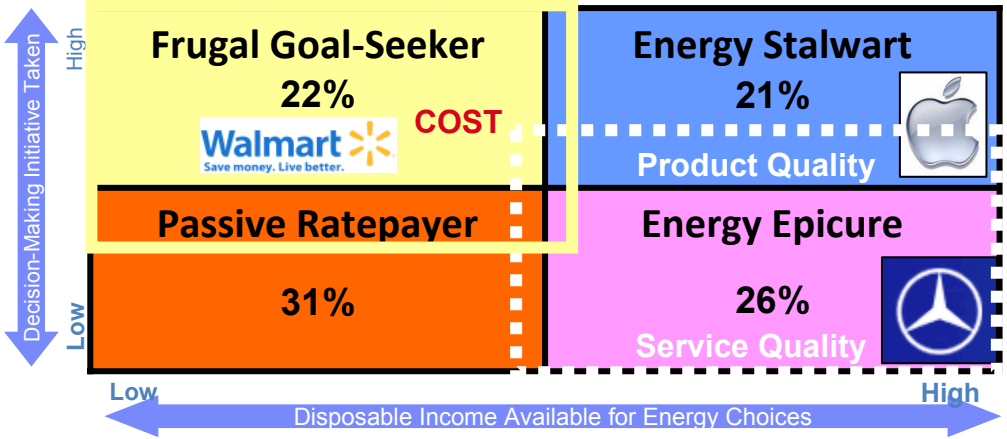
Sheraton on the Park Hotel, Sydney

Over 300 Utilities World-wide are using Maximo for Asset and Work Management

Market Forces

Customer Demands & Expectations – Focus on the Customer

- Demand Response – Customer Education - Transform the customer Experience Conserve energy – save money – lower environmental impact - Customers have different Motivators
- Concern for Privacy & Health Effects
- Pricing Pressure – Affordability – Choice
- Increased Customer Services



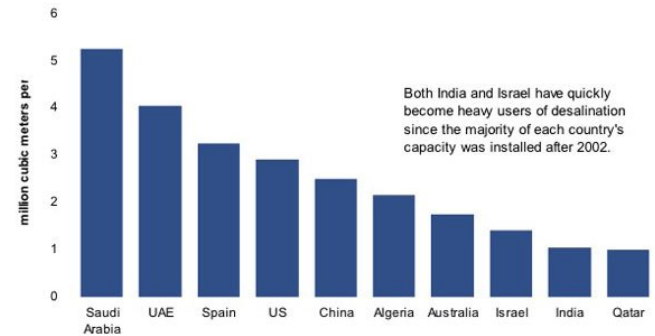
Ten Trends in the Water Industry

$450 Billion Water Market
Global Water Consumption is doubling Every 20 years

Dramatic Price Increases
Increased Spending on Infrastructure
Financial Crisis – Lower household incomes

1. Water Re-Use will become a new Water Supply
2. Desalination systems are growing around the world
3. Highly contaminated water is energizing water treatment
4. Membranes are displacing chemicals in water treatment
5. Forward osmosis is the new form of desalination
6. Ultraviolet light disinfection is replacing chlorine
7. Chinese competition in high-tech sectors like filtration is growing
8. Growth opportunities in water efficiency products
9. Point of use treatment is becoming more popular
10. Distinction between water service and equipment providers has been blurring

Figure 4. Top 10 Countries by Installed Desal Capacity Since 2003



Source: Global Water Intelligence Reports

Source: Citi Investment Research and Analysis

http://www.businessinsider.com/10-fascinating-trends-in-water-companies-poised-to-gain2011-5#

Trends in Natural Gas Transmission & Distribution

- India & China the powerhouse behind demand
  - 18% AGR in China (45% of WW gas consumption)
- LNG Demand driven by Fukushima disaster
- More Abundant Gas Reserves (50% OPEC members)
  - North America & Australia (shale gas & coal bed Methane)
  - Gas consumption rising in North America (Mfg and Power Gen)
- Increases in Trading via Pipeline: Turkmenistan to China; Russia to Europe and USA to Canada (38% increase)
- Conveyance of Pipeline Maintenance under investigation
  800K – 900k leaks in gas mains and service lines every year in the US alone, a potential disaster and lost revenue
- Trenchless Technology and installation of CIP Cured in place liners
  - polyethylene piping can now withstand higher pressure
- Increased Market penetration of Maximo In Gas Utilities - Spatial

Table 1

Reserve re-evaluations and new gas discoveries – the top 10 countries

Country	Change 2011/2010 (Gm^3)	Change 2011/2010 (%)
Iran	3,480	+11.7
Turkmenistan	1,660	+19.9
USA	488	+6.3
Venezuela	459	+9.1
Israel	125	+138.8
Australia	110	+3.1
China	102	+3.7
Saoudi Arabia	96	+1.2
Brazil	59	+16.5
Egypt	25	+1.1

Source: Cedigaz

(1) See Panorama article "Non-conventional hydrocarbons: evolution or revolution?"

Source http://www.ifpenergiesnouvelles.com/publications/notes-de-synthese-panorama/panorama-2012

Move to Renewables: Hydro – Solar – Wind – Geo-Thermal

- 19% of electric generation is from renewables
  - ✓ 16% Hydro and 3% other re-newable
- Solar is the fastest growing more than doubling every 2 years since 2007: ~67,000MW Capacity
- Wind is growing >20% annually: ~238,000MW
- Largest Geo-thermal Field is the Geysers (750MW) – Calpine Corporation – uses Maximo
- Solar Generators may produce most of the worlds electricity within 50 years (International Energy Agency Projection)
- Some countries get most of their power from renewables: Iceland and Paraguay (100%), Norway (98%), Brazil (86%), Austria (62%), New Zealand (65%), and Sweden (54%)

Maximo is being used to manage renewables as they are added to the fleet

In 2010, renewable power consisted about a third of the newly built power generation capacities

Renewables Status Report 2011: http://www.ren21.net/Portals/97/documents/GSR/GSR2011_Master18.pdf

Move to Lower Cost / Cleaner Fuels

- US Price of Natural Gas plummeted > 80% since 2008, ~45% last year
- Utilities are switching over from Coal to Natural Gas to lower cost and emissions
- Southern Companies Georgia Power filed to cut rates 6% citing 19% drop in fuel costs (Xcel Energy, AEP, and Dominion investing in Coal to Gas Switching)
- Coal accounts for ~ 47% of generation and this could be reduced to ~ 22% by 2030 due to this trend and renewables cutting power plant emissions by over 40%

Significant Reduction in Asset Management Cost without coal handling equipment

Move to Intelligent Utility Networks IUN, Smart Grid, and Demand Response

- ~21M Smart Meters installed in US ~59M Planned
- 110M installed in Europe by 2015
- 350M Installed in Asia Pacific by 2016
- 600-700M in China by 2020
- Evolving from Meter to Cash to a Premise to customer end to end information Network
- The tension between data access and privacy is evident today in the smart electrical grid
- Customer Education for benefits and acceptance is key

IBM has supported smart meter programs representing:

- 80 million installed or planned electric meters globally, supported by IBM
- In excess of 80 utilities, globally

North America:

American Electric Power
Austin Energy
BC Hydro
BELCO
CenterPoint Energy
Con Edison
Consumers Energy
CPFL Energia
Entergy
First Energy
Florida Power & Light
Hydro One
Hydro Ottawa
IESO (Ontario)
London Hydro
NV Energy
Oncor
Ontario Energy Board
Pacific Gas & Electric
Pacific Northwest National Laboratory
Pepco Holdings Inc (PHI)
Progress Energy
Smart Meter Texas
Southern California Edison
Toronto Hydro

Europe:

A2A - AEM Torino
A2A - ASM Brescia
Alliander
EDF (France)
EDF Energy (UK)
EDP
EnBW
Endesa
Enemalta
Enel
ESB Networks
Göteborg Energi
MVV Energie AG
Nuon
Oxxio
RWE npower
Scottish & Southern Energy
30 Italian distributors

Australia:

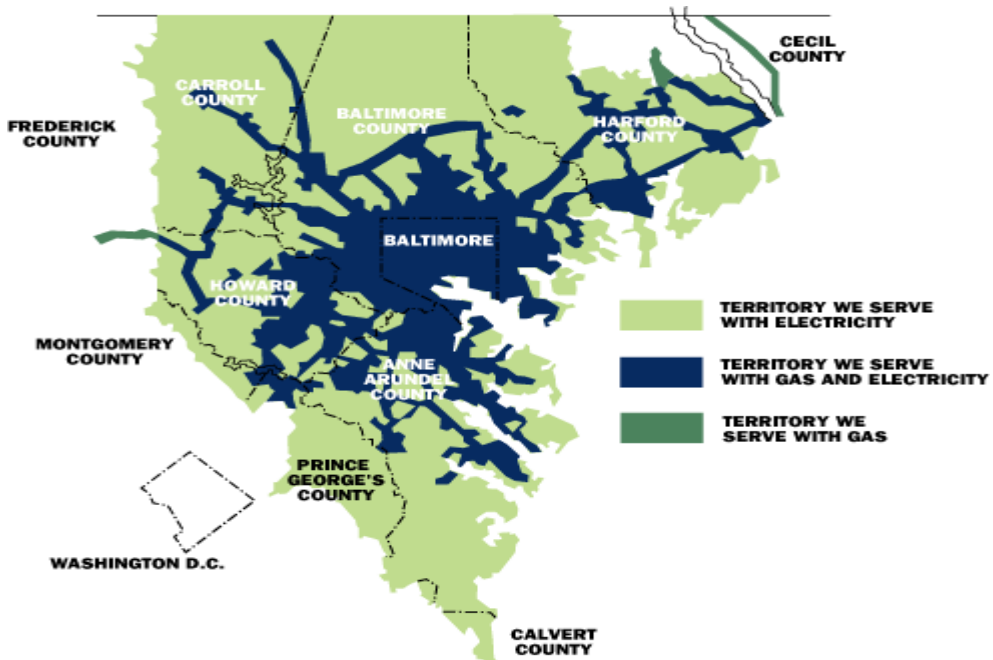
Country Energy
AusGrid
Western Power

Baltimore Gas and Electric Energy Delivery

BGE
We're on it.℠

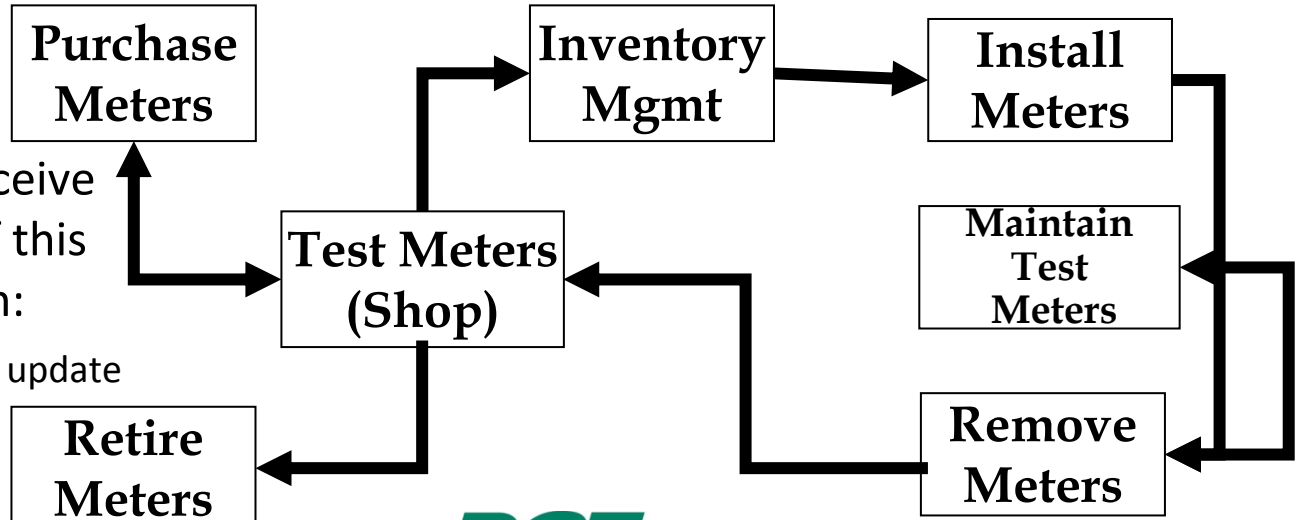
Smarter Meter Management with Maximo

- Service Territory (square-miles)
  - ✓ Electric: 2,300
  - ✓ Gas: 800
- Customers
  - ✓ Electric: ~1.2 Million
  - ✓ Gas: ~ 650,000
- Electricity assets:
  - ✓ 250 substations
  - ✓ 24,500 circuit miles of distribution lines
  - ✓ 1,300 circuit miles of transmission lines
- Natural gas assets:
  - ✓ 6,883 miles of gas main
  - ✓ 12 gate stations
  - ✓ Three peak-shaving gas storage plants



Currently in a 3 year project to replace 1.2 M analog electric meters and 650K Gas meters

Simple Meter Life Cycle



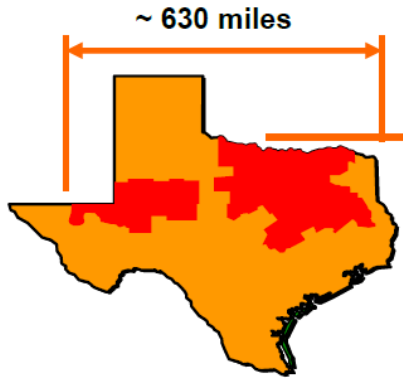
Maximo needs to receive data at every step of this process ranging from:

- Asset specification update
- Test result
- Status change
- Location update
- Sub assembly (spare part) modification

BGE We're on it.SM

Advance Metering System (AMS) Profile

- 27,000 square miles of territory
- 3.1 million meters
- 87 customers (Retail Electric Providers – REPs)



Customer using Maximo to manage Smart Meters

Work & Asset Management

- AMS Deployment 2008 - 2012
- 3.4 million AMS meters by 2012
- Current count is over 1.4 million AMS meters
- Smart Energy Profile 1.0

Oncor Electric Delivery

Maximo for Utilities is Smart Grid Ready

- New features added to support smart meters as a new asset class.
  - Improve receiving rotating assets in bulk
  - Improve issues and transfers by pallet number or Box
  - Store meter test results
  - Define meter sampling templates
  - Define meter sampling groups
  - Create random sampling work orders
  - Automate administrative functions that support dispatching of work orders

TrustPower

Live on Maximo for Utilities 7.5 for Revenue Meter Asset And Work Management

9 ½ Weeks Session 5 3:45pm-4:35pm

The TrustPower Maximo Story

Grand Ballroom II

http://www.trustpower.co.nz/

Our TrustPower employees are located across New Zealand but the majority of our employees are based in the beautiful Bay of Plenty at our Head Office in Mount Maunganui,

Tauranga, NZ

mike.torr@trustpower.co.nz
Mike Torr
Business Manager - Meter Assets
Phone +64 7 574 4888 | Cell +64 21 221 6545
TrustPower Limited | Private Bag 12023 | Truman Lane | Tauranga

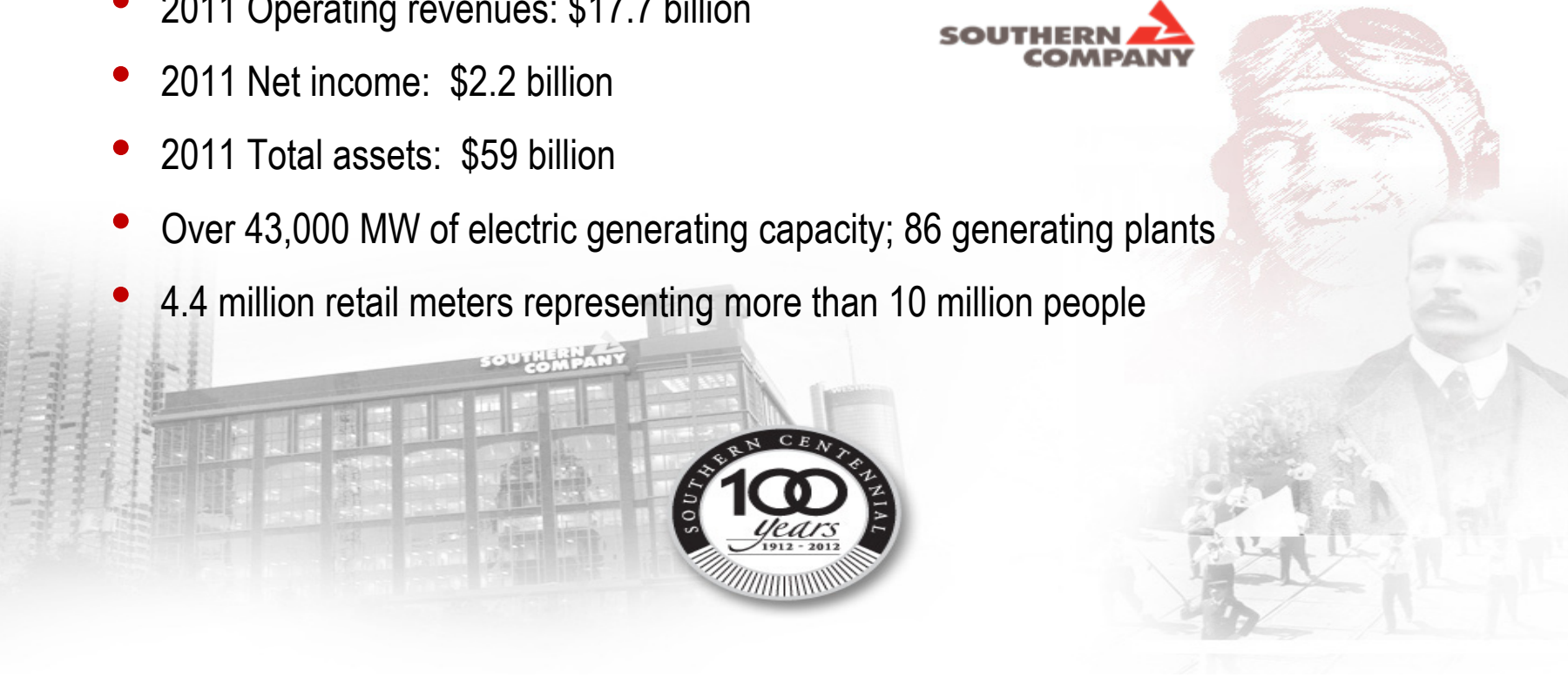
TrustPower is live on Maximo for Utilities 7.5

- Live in 9 ½ weeks on Maximo for Utilities 7.5 for Revenue Meter Asset & Work Management
- TrustPower is New Zealand's fifth largest electricity retailer, fifth largest electricity generator.
- TrustPower owns 36 small to medium size Hydro Generating Stations and two Wind Farms, with a further Wind Farm in South Australia. They produce electricity from renewable sources and their power stations produce enough electricity for around 220,000 Kiwi households!

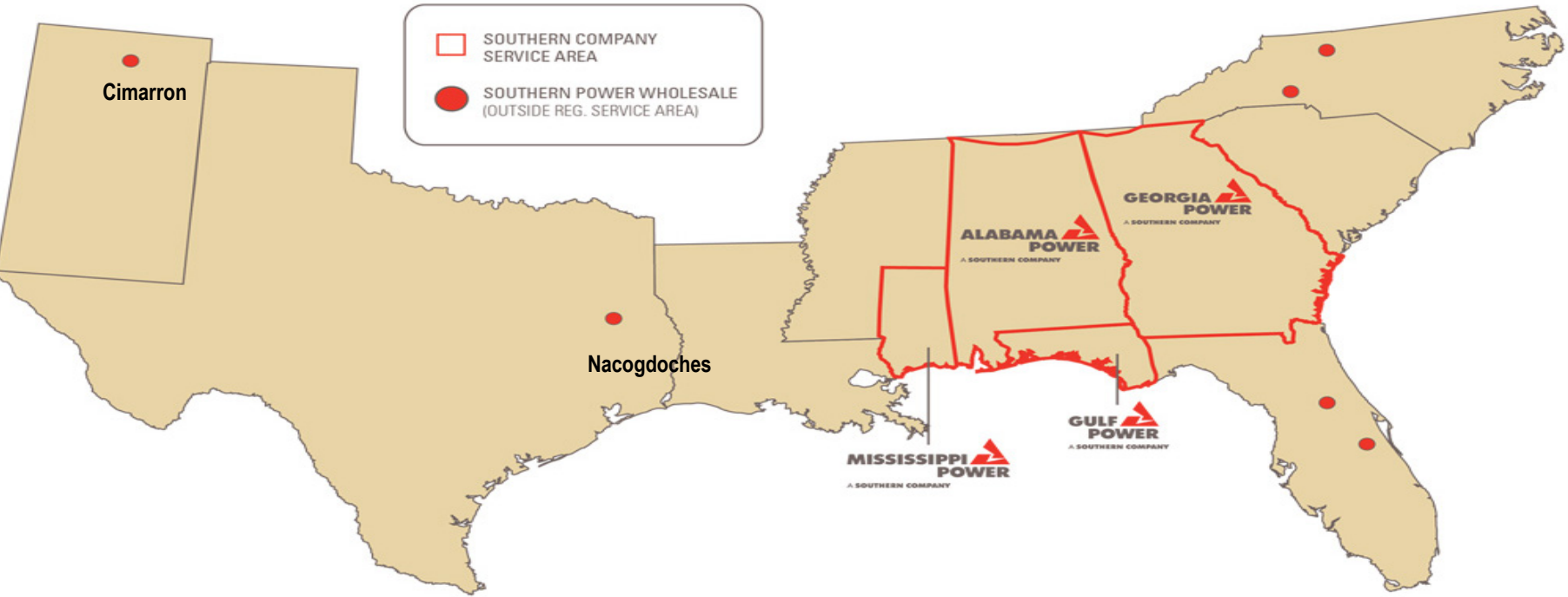
- With assets of over $2 Billion, TrustPower is majority New Zealand owned and is listed on the New Zealand stock exchange.
- **Mission Statement:** To be New Zealand's energy industry leader in excellence of customer service achieved through innovation.
- Based in Tauranga, with regional offices in Auckland, Wellington and Christchurch.

Southern Company Vital Stats

- 2011 Operating revenues: $17.7 billion
- 2011 Net income: $2.2 billion
- 2011 Total assets: $59 billion
- Over 43,000 MW of electric generating capacity; 86 generating plants
- 4.4 million retail meters representing more than 10 million people



Who is Southern Company?



~ 14,000 Maximo Users, 96 sites, 689 storerooms, 901,082 Locations, 728,396 Assets

SOUTHERN COMPANY

Alabama Power | Georgia Power | Gulf Power | Mississippi Power
Southern Nuclear | Southern Power | SouthernLINC Wireless

Maximo Support for Standards – PAS 55 and CIM

Standards of Interest to Utilities:

- PAS 55 Publicly Available Specification
- CIM Common Information Model

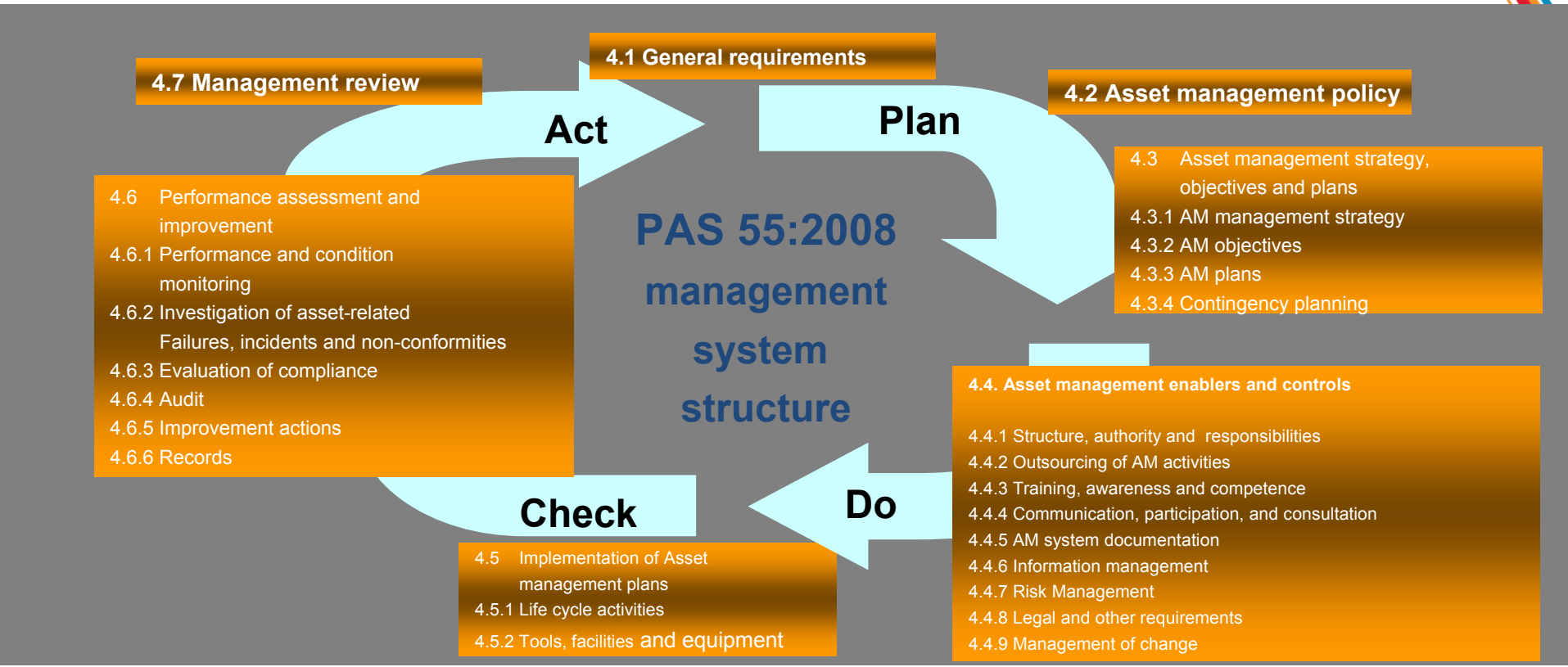
PAS 55 – What is it ?

- The Institute of Asset Management and the British Standards Institute (BSI) worked together to develop strategies to help reduce risks to business-critical assets.
  This project resulted in the **Publicly Available Specification (PAS) 55-1/2: 2008**, but first published in 2004.

- . This specification (standard) is the culmination of the latest thinking in terms of best practices in asset management systems.

- Assets include plant, machinery, property, buildings, vehicles, construction, etc. that have a distinct and quantifiable business function or service

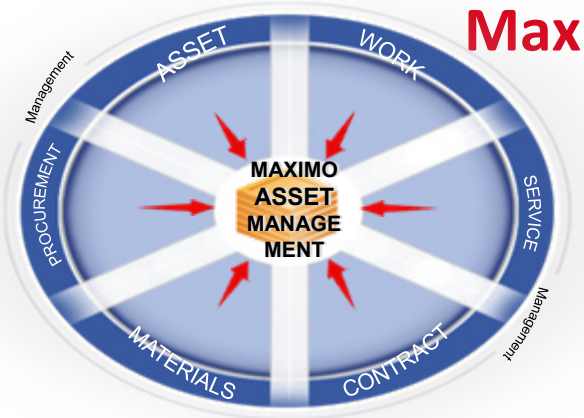
PAS55:2008 Management System Structure:
measurable continual improvement is an integral part



Deployment of the PAS 55 standard encourages to:

- *Achieve* **asset management good practices**
- *Challenge and reduce current time-based work and replace with a* **"risk-based" management approach**
- *Organize around true* **lifecycle asset management processes**
- *Start processes to map the entire asset base and create the* ***information strategy*** in accordance with the **company's overall strategy**
- *Position asset management-specific accountability from the* **"shop floor to the top floor"** *and create* **motivational performance management**
- *Focus on* **building the asset management knowledge base.**
- *Understand and target the tools, and* **engage the entire organization**
- *Adopt a* **truly holistic approach** *by continuously challenging good or best practices.*

Maximo Asset Management leverages PAS 55



- **Enables a natural alignment with PAS 55**.. Using IBM Maximo Asset Management software supporting PAS 55 can help to:
  - improve customer service, increase return on assets, enable greater compliance, improve asset performance, reduce risk—all in a shorter time period, provide better visibility and control of all required information to better align with the organization's overall business goals and objectives.
- **Supports full Maintenance Management requirements.** This is optimized at **process level**.

  Examples are reactive, preventive and planned maintenance combining materials and service management. A
- **Supports Asset Risk Management.** This is optimized at **asset performance level**.

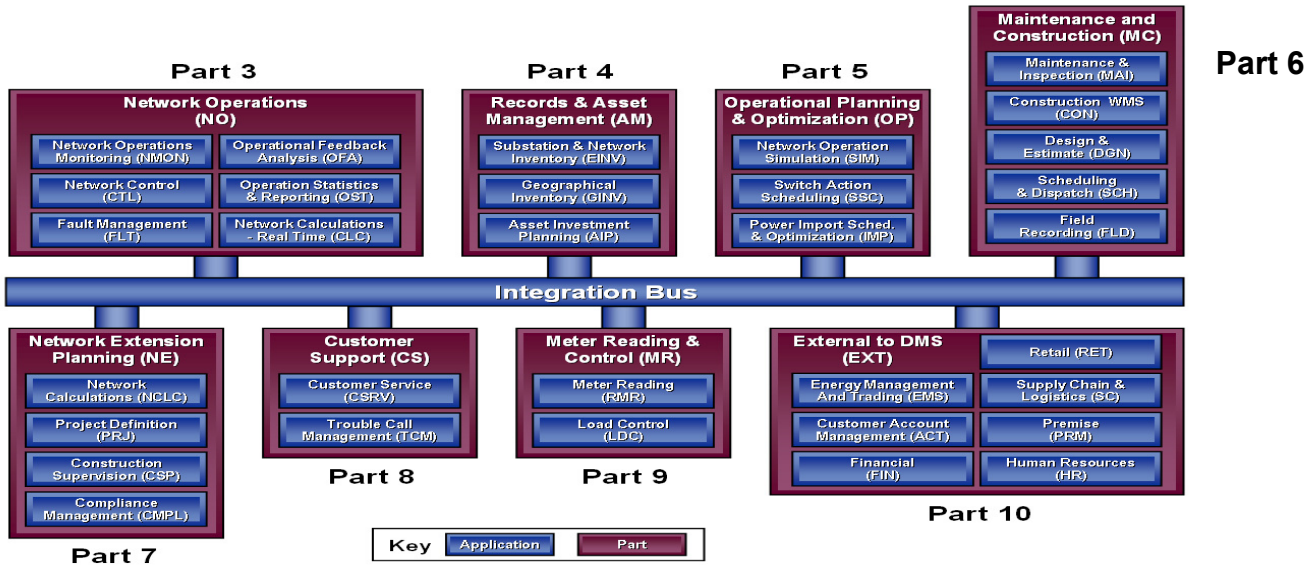
  Examples are asset reliability, service and performance management. Maximo Key Performance Indicators (KPIs) and metrics as Mean Time To Repair (MTTR), Mean Time Between Failure (MTBF) addresses such requirements.
- **Supports Infrastructure Management** - This is optimized at **service performance level**. Examples are utilities and facilities management. Maximo's spatial and linear asset management, facilities and integrated workplace management capabilities (based on integration with Tririga's IWMS).
- **Supports IT Asset Management** - which is important managing today's complex assets and to integrate requirements from shop floor to the corporate office.

Link to the Detailed White Paper:
ftp://public.dhe.ibm.com/common/ssi/ecm/en/tiw14035usen/TIW14035USEN.PDF

CIM - Common Information Model

Support for Common Information Model CIM 61968 part 6

IBM passed the first interoperability test for part 6 by creating a web service to receive a request in the CIM format. This web service creates a work order and responds with the new work order number. The web service also supports work order updates.



International IEC CIM Interoperability test in March 2011, concentrating on the testing of IEC 61968 interfaces. Multiple vendors: TIBCO, Oracle, Alstom, IBM, Telvent, GE, Siemens and others were interoperating by implementing CIM compliant SOA based integration.

CIM - Common Information Model - Status -

Nada Reinprecht - IT Architect, IBM Global Business Services
Nada leads development of 61968-6 Common Information Model (CIM) extensions for Work Management in IEC Technical Committee 57, WG14. E-mail nadarein@au1.ibm.com

Javier Torres, IBM Software Group, Javier serves as the team focal point for energy & utilities industry standards, advocating for the use of standards across IBM software and solutions. He participates in various industry groups such as CIMug, OpenSG, NIST SGIP and others. E-mail jrtorres@us.ibm.com

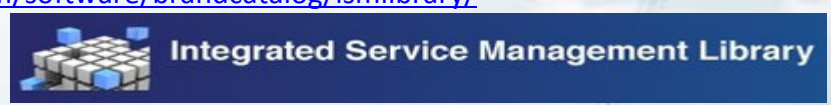
Vinicius Garmatz – Maximo Design Architect responsible for Utilities Industry Solution. He is now participating with Nada and Javier to support CIM compliance for interoperability. Intial work was done at the end of 2011 working with EPRI supporting the Grid InterOP event. E-mail vgarmatz@br.ibm.com

Currently working with eMeter for demonstration of two use cases:

1. eMeter sends Maximo a request to create a work order to inspect a meter based on an alarm code or a series of alarm codes. The intelligence to create the work order is configured in eMeter. (CIM Part 6 compliant)
2. eMeter sends Maximo meter events to Maximo's condition monitoring which determines to create a notification email, a work order or just update the history of the meter asset with the alarm code. (CIM Part 9 compliant)

Software assets which result form this work will be made available on the IBM Integrated Services Library.

ISM Library: https://www-304.ibm.com/software/brandcatalog/ismlibrary/

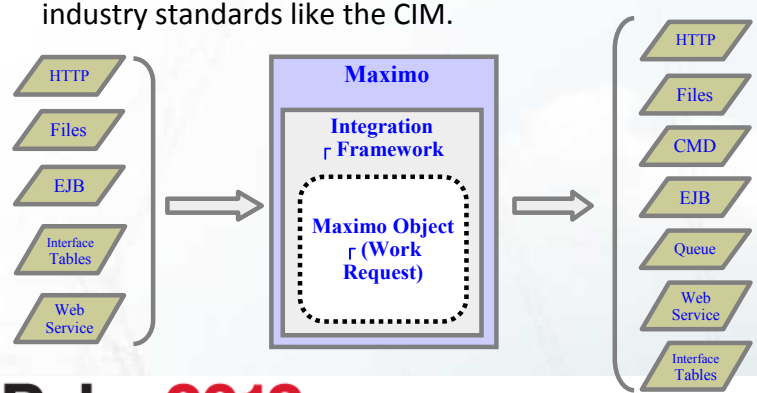


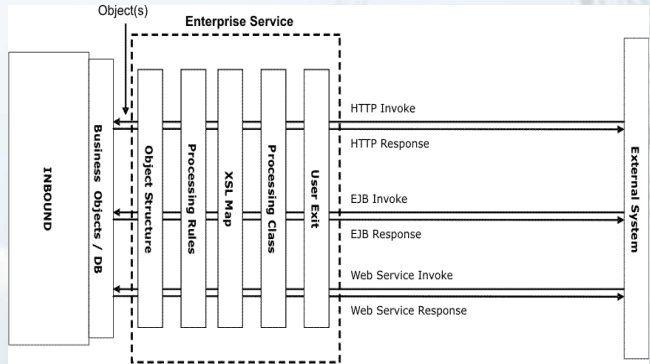
CIM - Common Information Model – Supporting Details

To support standards based integration with external applications, a core and essential component used in the CIM IOP implementation is the Maximo Integration Framework.

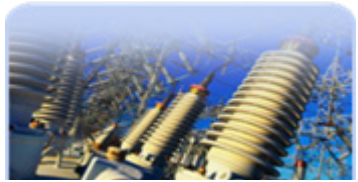
The framework architecture is made up of highly flexible components which provide the SOA technologies for data, transport, and communication necessary to expose Maximo content. Core to the integration framework, Maximo uses what are known as object structures to define the common data layer for all inbound and outbound data. The object structures are the basis to publish, query, add, update, and delete Maximo data via channels (for outbound transactions) and/or services (for inbound transactions). Out of the box, the framework includes predefined content for integration to some common business objects. As well as a tool kit to extend or define new integration content and integration points, along with support to transform integration content using tools like XSL and Java.

To meet the varying integration requirements of external applications, the framework can be quickly configured and customized to support multiple integration approaches. As shown in figure 5 below, the integration framework facilitates scalable data exchange in real time or batch mode, synchronously or asynchronously over a variety of communication protocols, including: Web services, HTTP, JMS, and flat files. It is this robust framework, with its highly flexible and customizable components that provide support for industry standards like the CIM.





EAM Solution Areas



T&D

GIS → Mobile Workforce → Service Management → Integrated Supply Chain → Remote Asset Monitoring

Asset Portfolio

Generation

RCM → Condition Monitoring → Work Management → Integrated Supply Chain → Portfolio-based Decision Making

Visualizing assets, locations, work orders, and service requests

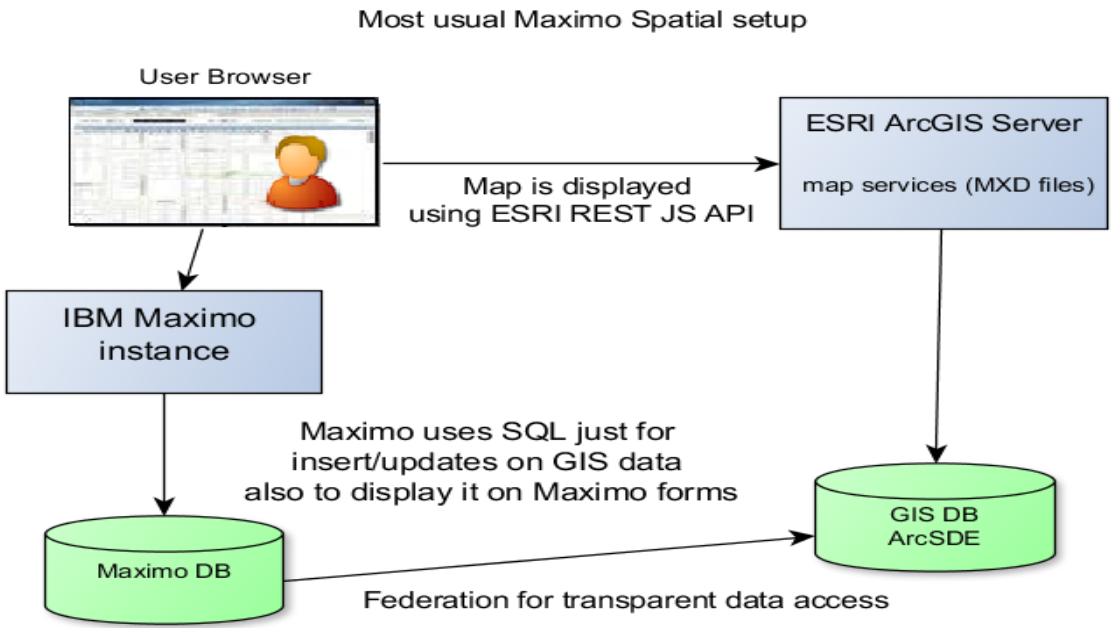
Maximo Spatial Asset Management extends the capabilities of the following IBM Maximo Asset Management applications by adding maps:

- **Assets and Assets (T&D)**
- **Meter Assets (T&D)**
- **Locations**
- **Work Order Tracking and Work Order Tracking (T&D)**
- **Service Requests**
- **Service Address (Spatial)**

- **On the Map tab, or in map windows that are opened from application records, content from the production geographic information system (GIS) and from linked Maximo Asset Management records can be displayed.**

- **You can view assets in a geospatial context, so that you can easily and dynamically visualize the spatial relationships between your assets and the roads, buildings, pipelines, and other mapped features around them.**

Overview of Maximo Spatial architecture

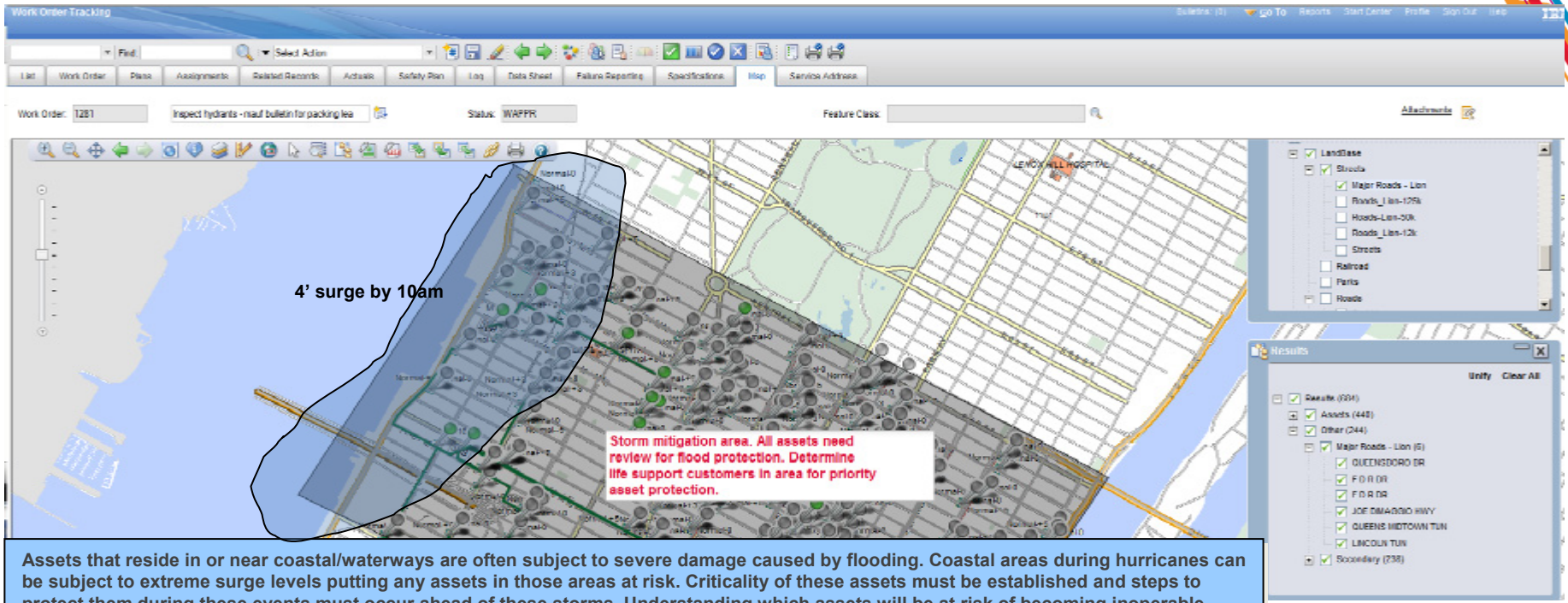


Database Federation provides

- No data replication needed as GIS data can be exposed and displayed on Maximo forms
- Distributed database transactions to ensure consistency
- Higher performance for batch read and creation of GIS records and Maximo records
- All Maximo framework functionality and security available when displaying and editing GIS data
- Multiple geo databases support

- GIS data insert and updates requires both databases from the same vendor. Oracle+Oracle, or DB2+DB2, or SQLServer+SQLServer

Use Cases – Risk Mitigation preparing for Storm Surge



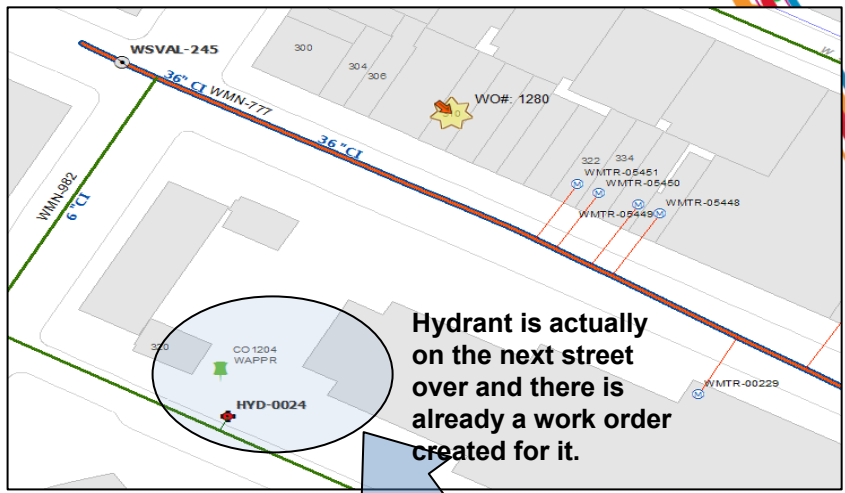
Assets that reside in or near coastal/waterways are often subject to severe damage caused by flooding. Coastal areas during hurricanes can be subject to extreme surge levels putting any assets in those areas at risk. Criticality of these assets must be established and steps to protect them during these events must occur ahead of these storms. Understanding which assets will be at risk of becoming inoperable also contributes to the quality of the disaster recovery plan.

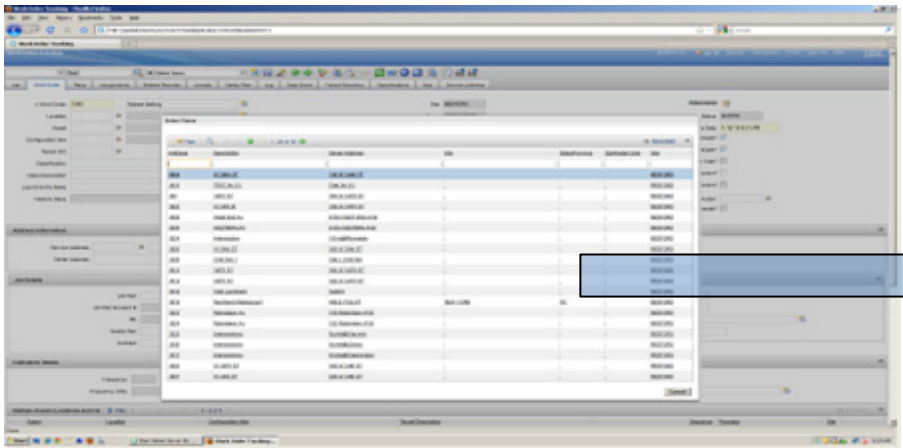
In Manhattan I have a section of the island that is extremely low elevation. I can use Maximo Spatial to identify the assets in this area. I can overlay the forecast from the weather bureau and see the extent of surge flooding that will occur. My list of assets include a tunnel which will require major work to prevent flooding. In a matter of minutes I can select the assets within these areas, create work orders for my storm mitigation job plans and procedures.

Use Cases – Customer Premise Call

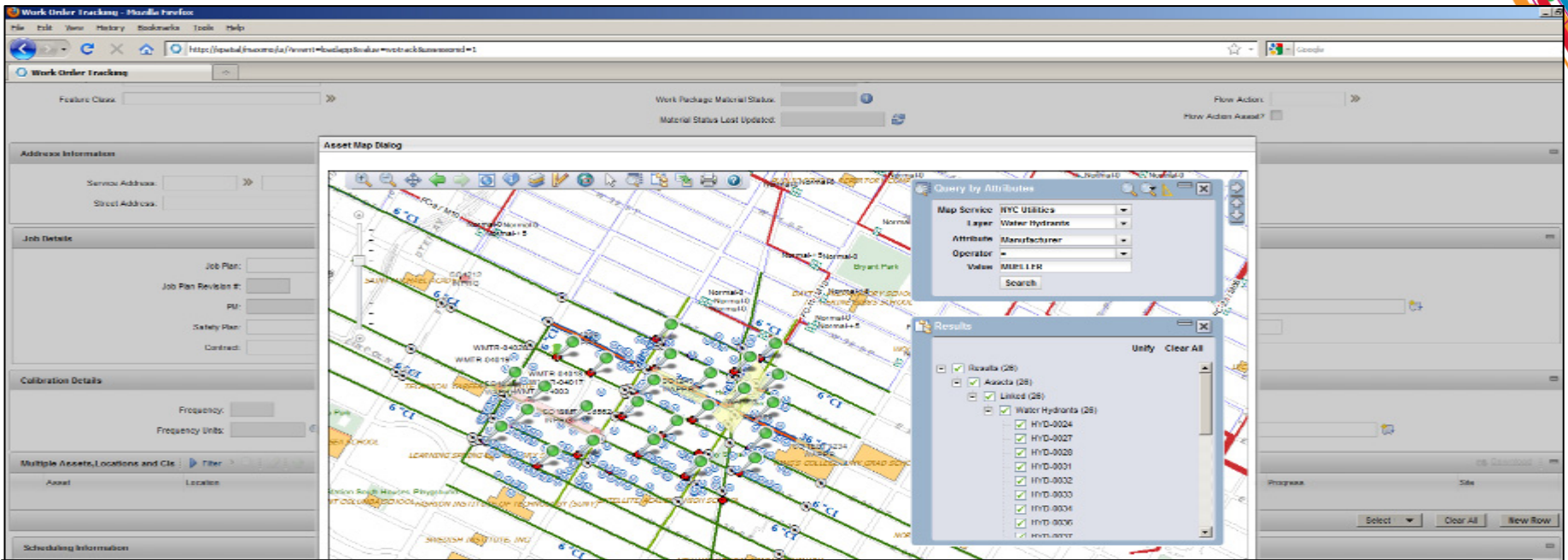
A typical way utilities discover problems with their assets is customers calling in reporting a problem. Often these calls do not provide the right level of information about the problem and location to properly assign and direct a field resource to the asset for inspection and repair. Using GIS can help improve the quality of the information provided to the field resources, potentially reducing cost related to drive time and assignment of the right resource for the problem occurring.

A customer calls in reporting a hydrant is leaking. Maximo Spatial can use the customers address to open a map displaying all the utilities in the area. The service rep does not see a hydrant at that location which prompts for more questions about the location of the leaking hydrant. The conversation reveals the customer was walking their dog on the next street over where they saw the hydrant, not in front of their house. With the improved quality of the location information the Service Rep can complete a work order with a specific location for the problem hydrant reducing the amount of time required to find the problem asset.





Use Cases – Technical Bulletin on Hydrants (packing leak)



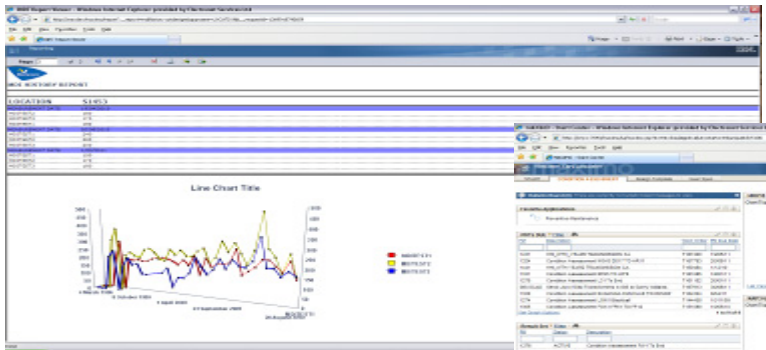
Manufacturers often issue technical bulletins alerting customers of product problems. The manufacturer of Mueller hydrants has found the dome packing in their high-flow hydrants starts leaking after a certain amount of time under certain environmental conditions. When I received this bulletin the first thing I need to do is determine how many of these hydrants do I have and where are they physically located.

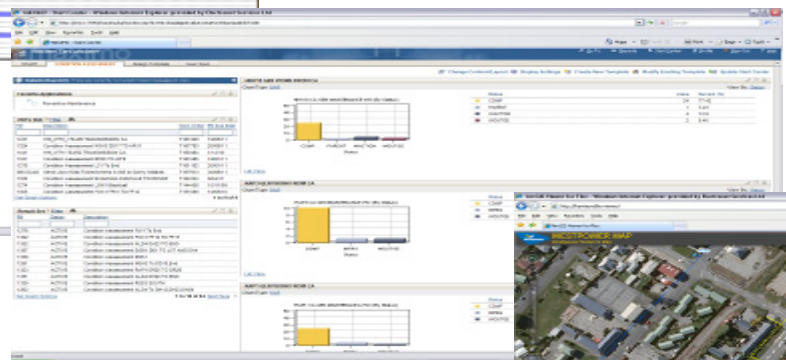
I use Maximo Spatial to query my asset database for Mueller hydrants. I need to create an inspection work order with these assets and their location so I can send someone to inspect for leaks. Process of identifying which assets need inspecting and expediting work order with more specific location info for the hydrants to be inspected resulted in reduced time to complete work process.

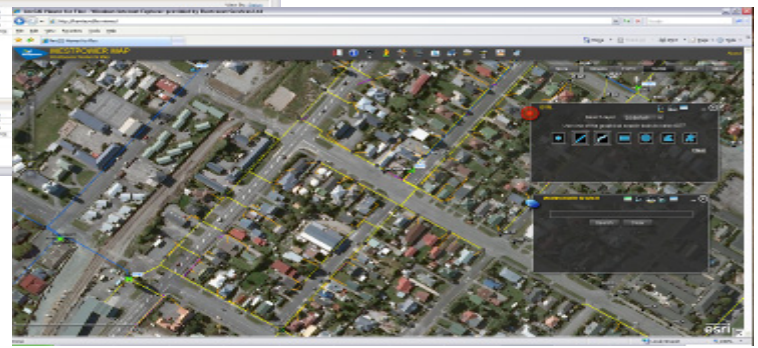
Maximo for Utilities with Spatial Asset Management

Using Spatial Integration for Smarter Electricity Management

Live on Maximo for Utilities 7.5 With Spatial Asset Management





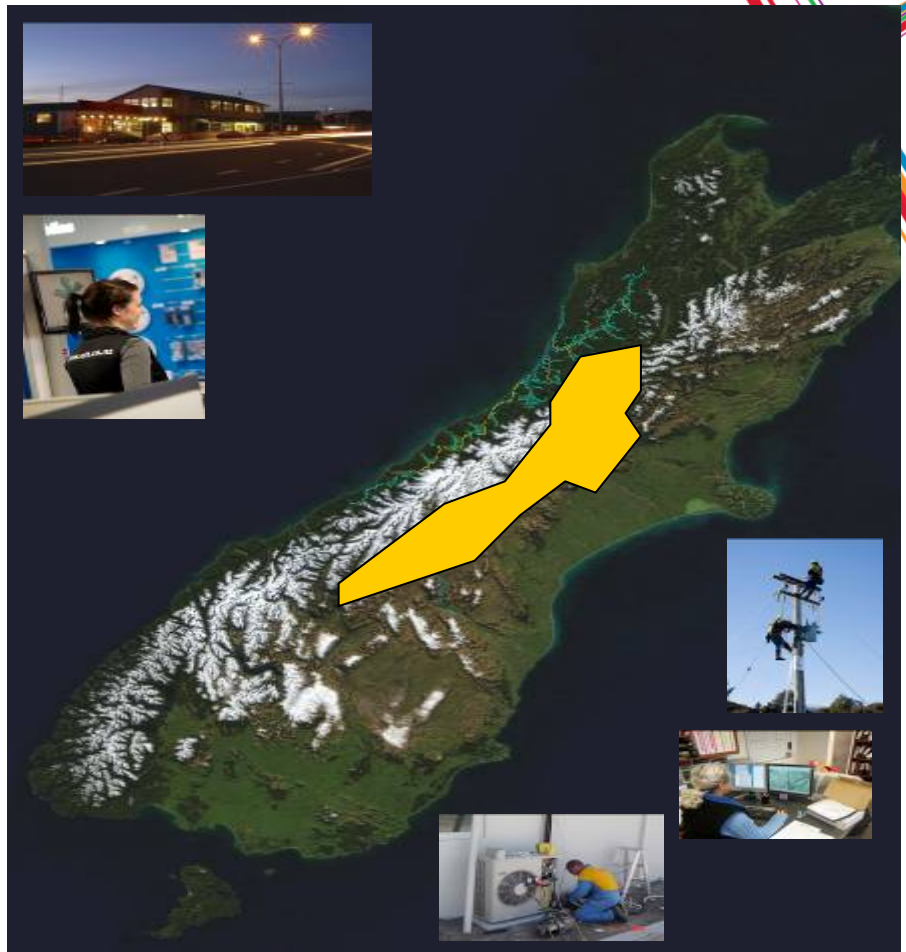


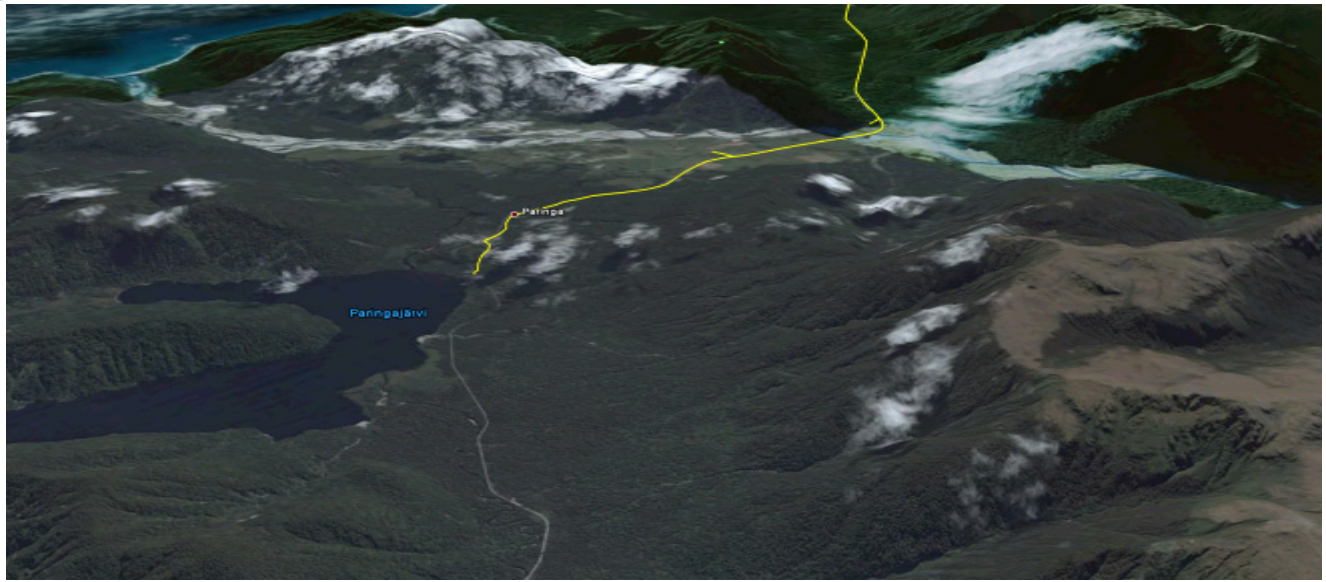
Cary Lancaster, GIS Administrator
146 Tainui Street, Greymouth, NZ
PH 037682735 Fax 037682766
Cary.lancaster@electronet.co.nz

- Westpower is a trust owned electricity distribution business supplying approximately 18,000 sq. km. of the West Coast of NZ's South Island.

- In addition to owning and managing the high voltage electricity network, Westpower's subsidiary Electronet Services provides design, electrical services and mobile phone retail services.

- The Westpower network connects around 13,000 customers to the national electricity grid.





- Stretches from Lake Paringa in South Westland through to Inangahua in the Buller Region
- Supplying power to 13,000 consumers with over 2,000 km of overhead line.
- Mostly rural and often in rough terrain from mountains to the sea
- Long and narrow, restricting the ability to provide alternate supply
- Surrounded in native (Protected) rainforests.

MUWG – Maximo Utilities Working Group www.MUWG.org

Maximo Utilities Working Work

The **MAXIMO** Utility Working Group (MUWG) is an industry group representing over 145 utility companies, counties and cities throughout the U.S., Canada, China, South Africa, Japan, and the Caribbean that exchange information related to the implementation and application of the MAXIMO asset management system. Two workshops are held each year, one in the Spring/Summer, the other in Fall/Winter. If you are a licensed MAXIMO user and meet the criteria of the charter you can attend a workshop.

Established in 1998

- The Maximo Utility Working Group has been meeting twice a year since 1998 making it the longest running industry user group for Maximo Users. This user group is focused on the exchange of information, methods and experiences by Maximo users in the gas, electric, water, and waste water utility industries. The MUWG is a user driven organization run by a steering committee of users and a program manager.

Workshops Twice a Year

- The 30th Workshop was hosted by Southern Companies in Atlanta, Georgia, USA. with 61 companies and 360 attendees.
- The MUWG meeting has a two and a half day format, with a day for extra training at the end.
- IBM supports these workshops by providing technical resources to present new functionality, discuss roadmap plans and collect input for enhancements.

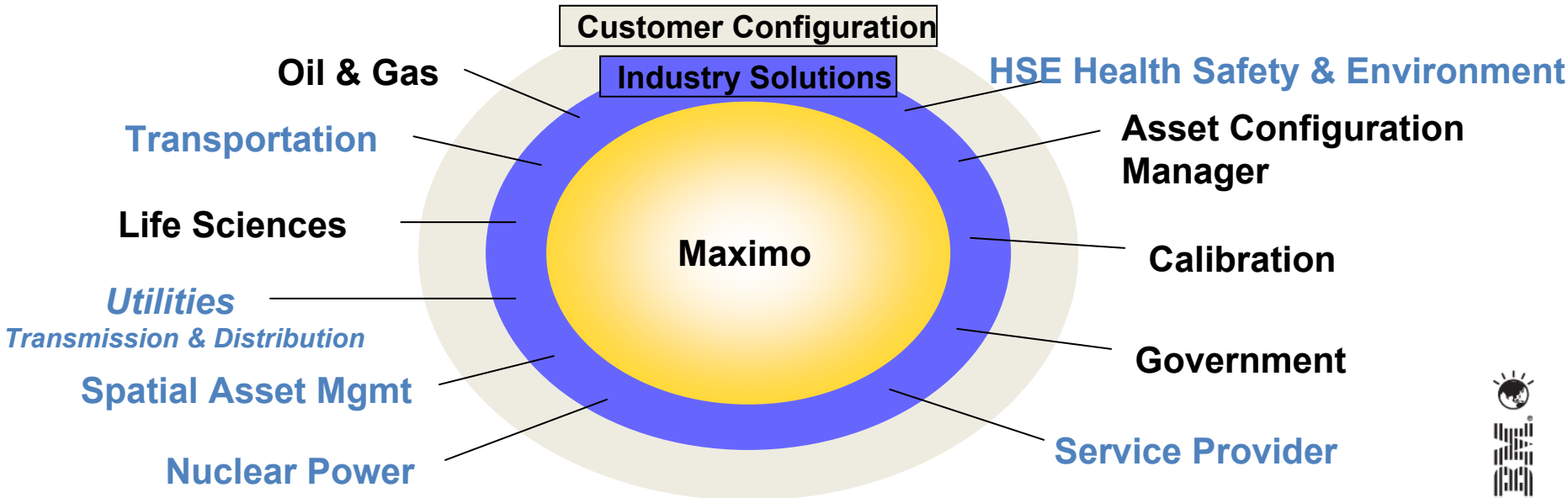
The Benefits

- Network opportunities with customers to share best practice, implementation designs and customer development results.
- Network opportunity with business partners to share solutions that solve specific business requirements.
- Next MUWG meeting is the week of October 22nd in Dallas Texas, USA. Hosted by Luminant

MUWG Blog Update:
https://www-304.ibm.com/connections/blogs/1f062ee8-a76e-4e2b-9554-819673462f3b/entry/southern_company_hosts_largest_maximo_utility_working_group_meeting_to_date3?lang=en_us

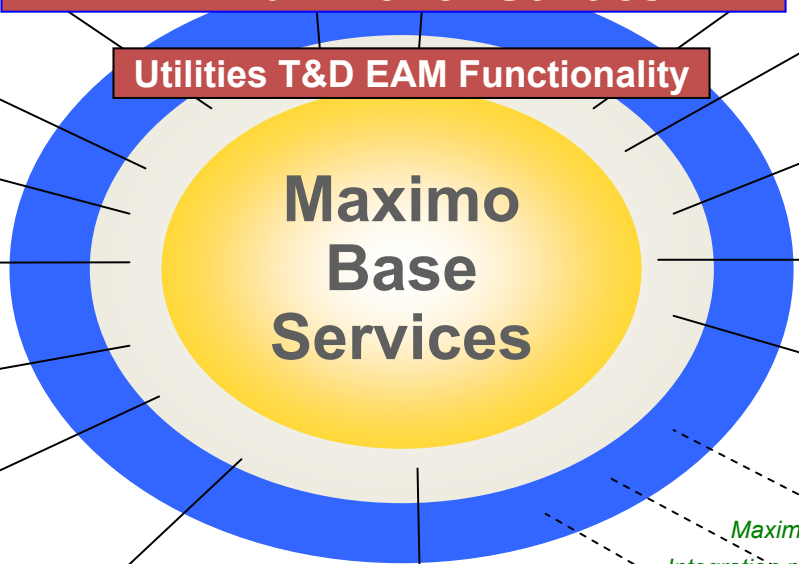
Product Expansion Model

1. IBM Maximo as the foundation for product offerings
2. Industry Solutions built on top of IBM Maximo platform
3. Customer Specific Configuration built on top of Industry Solutions
4. Industry Solution Partners positioned as part of total solution



IBM Maximo for Utilities

Utilities T&D EAM Functionality



Crew Management
A collection of resources working together: Skills, Crafts, Qualifications, Labor and specific people, vehicles and tools.

CU Compatible Units Library
Construction Estimating Standards

CU Estimating
Design Standards for Construction Estimate, comparison and selection

Maximo Spatial Asset Mgmt.
GIS Integration to Esri ArcGIS Server

Map in Maximo
Map Tab for Assets, Meters Locations, Work Orders, Service Requests

Crew Scheduler
Crew support to Maximo Scheduler add-on product.

Auto Locate and Create
Find Assets, Locations, WO's and SR's easily on a map to Understand proximity and context

Smart Meters as Assets
Asset Lifecycle Management
For Revenue Meters including:
Bulk receiving and Bulk Transfer

Polygon Selection Sets
Draw a specific polygon on a map and select actions: create Work Oder/s Inspections, etc.

Revenue Meter Sampling
Sample Templates and Random Sampling support for meters required Regulators, Report Status and store Test Results.

Redlining Support
Map Redline draw tools Supporting Export, Imports and Query by Attributes

Meter Alarms
Condition Monitoring
Web Service to capture specific meter Alarms such as tamper or low battery To launch work order to investigate.

Task Prerequisites
Supports Administrative work requirements Identifying predecessor and successor Relationships to required work order tasks Such as an occupancy permit prior to Energizing the site.

Maximo Integration products

Primavera Integration

ERP Integration

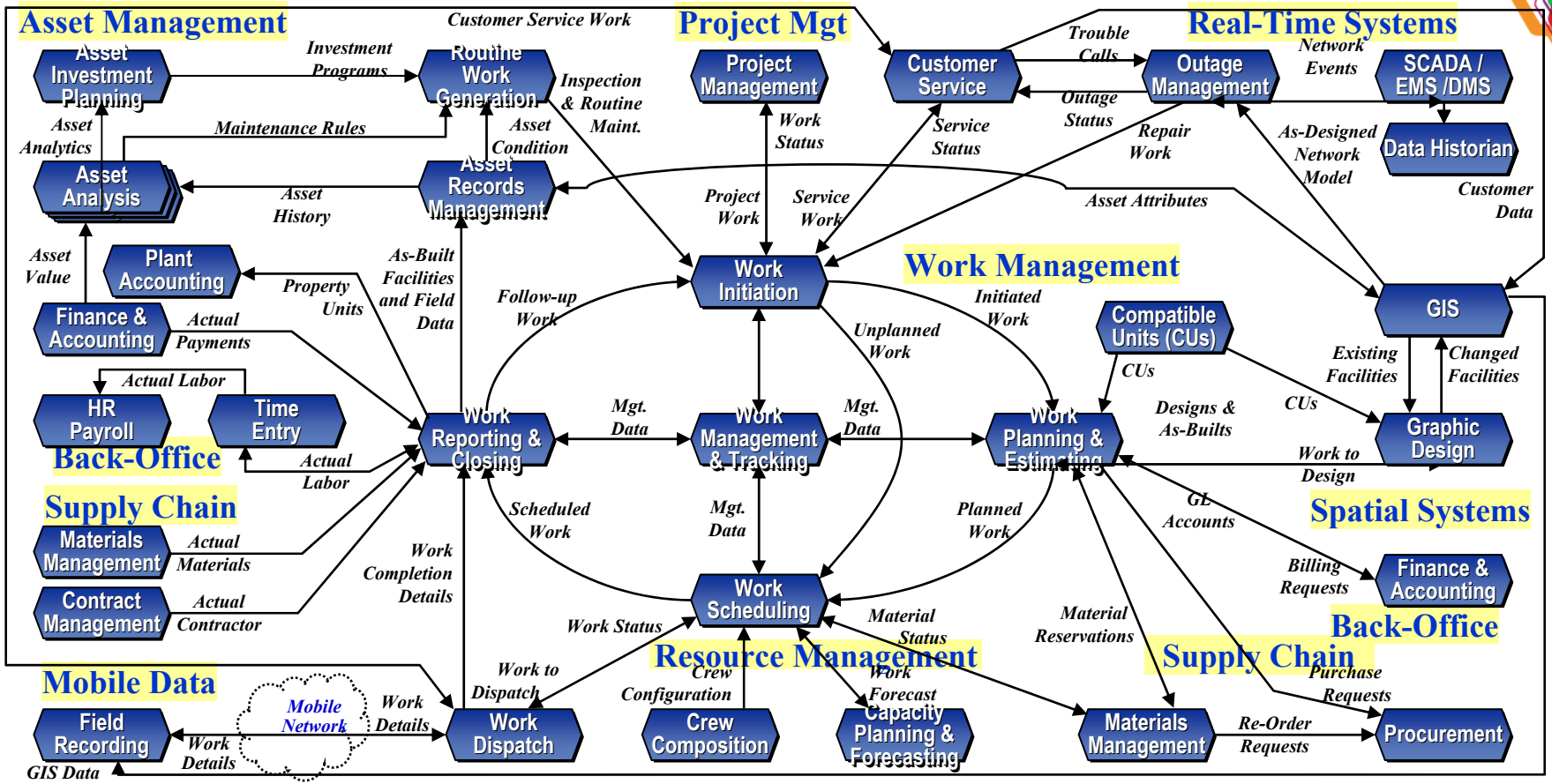
EDM Integration
Standard FileNet integration available

Integration Framework ISM
Integration SDK type support downloadable, as is, from the ISM Library to assist with:
Mobile Work Force Management Integration
Graphical Design Tool Integration
Fixed Asset Integration for Unitization

Regulatory Tracking and Support
NERC / CIP
Asset Identification as Critical Infrastructure or relationship to Regulations. Work can be tracked as job plans supporting regulatory requirements and Inspections on all related assets. Sabotage of any asset can also be Identified

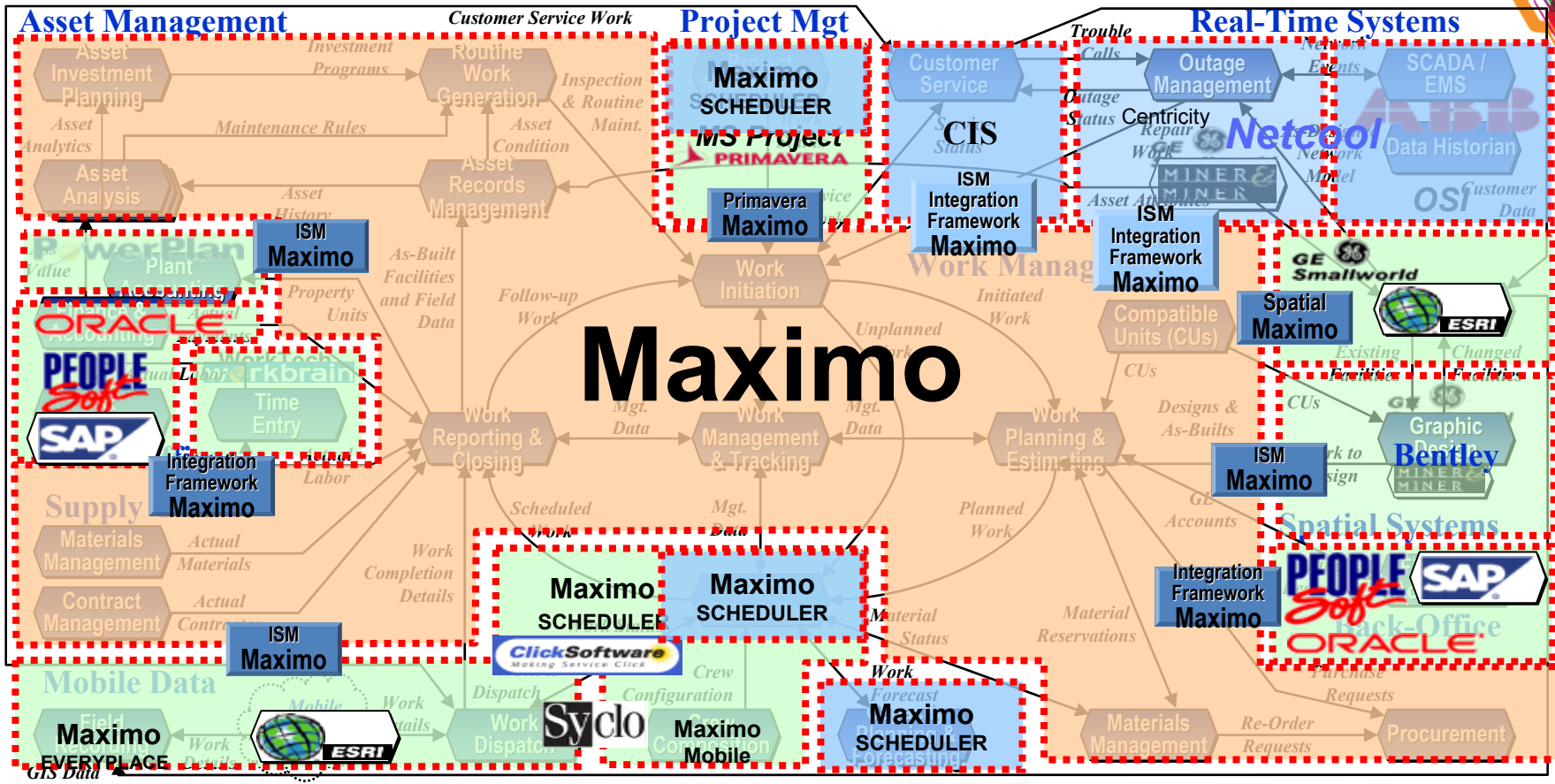
http://publib.boulder.ibm.com/infocenter/tivihelp/v49r1/index.jsp
https://www.ibm.com/developerworks/wikis/display/maximo/Spatial+Asset+Management

Utility work and asset management ecosystem



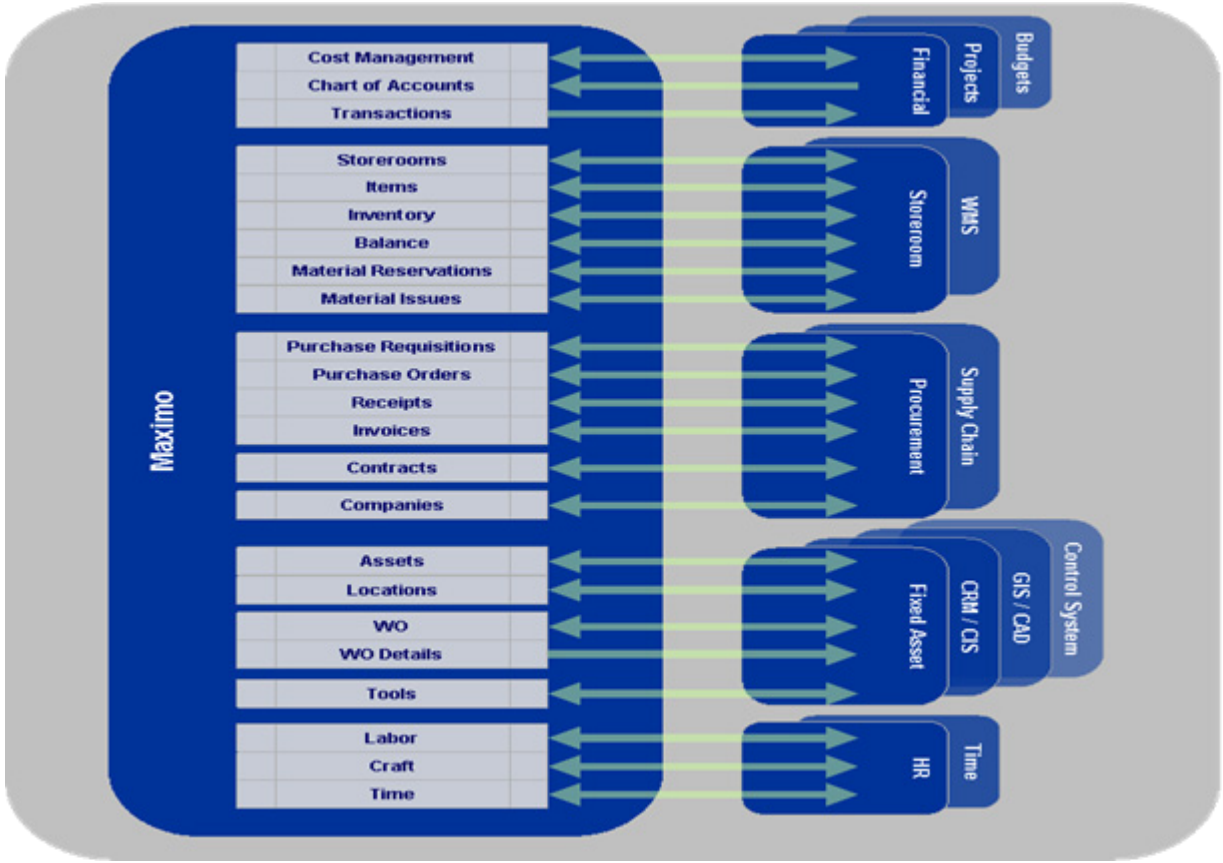
Enterprise Content Management

Maximo for the Utilities

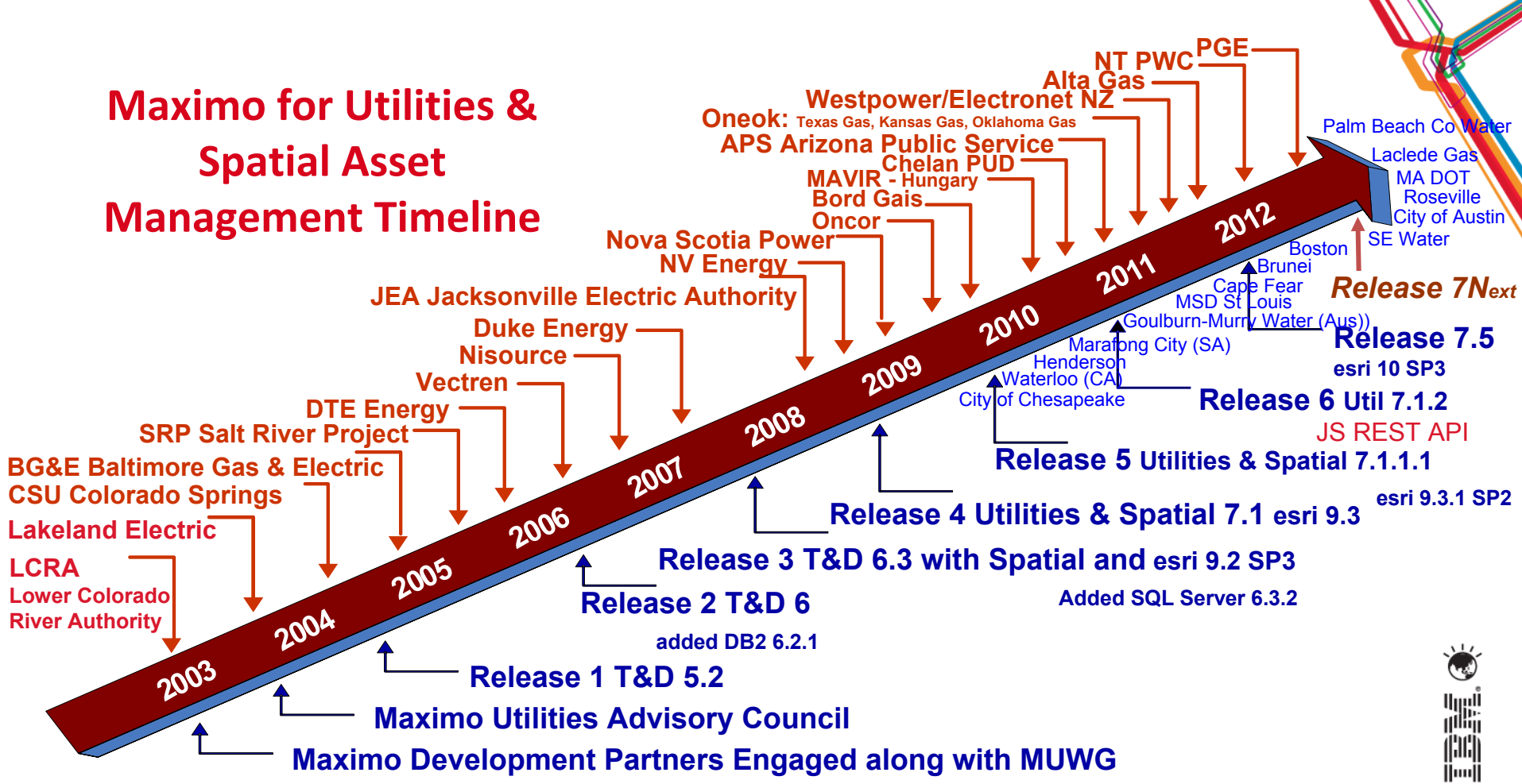


FileNet for Enterprise Content Management

Comprehensive Approach to Integration – MIF Maximo Integration Framework



Maximo for Utilities & Spatial Asset Management Timeline



Maximo for Utilities – Product Roadmap

Released 7.1.1
December 2009

Enhance CUE Perform Accept

UI Improvements

Maximo Scheduler CPM for Crews and Crew Gantt View

Service Address to Support Premise and Geo-Coding *

Auto Create, Auto Locate Work Orders & SRs *

Polygon Selection Sets with defined Actions *

Single Click Linking *

Highlight linked Assets and Locations *

GIS Adm. Defines User Map Services by site *

Support MultiGeo Databases*

Supports ArcGIS Server 9.3.1*

* Delivered through Spatial

Release 7.1.2
November 2010

IUN "Smart Grid" Enhancements

Meter Asset Lifecycle Mgmt

Meter Testing & Sampling

Bulk Deployment of Meters

Utilities Enhancements

Pre-Requisites for Task WO Supporting Contingent Work

Supports Maximo Spatial 7.1.1.1*

Supports ArcGIS Server 9.3.1*

* Delivered through Spatial

Release 7.5
April 2011

PM Forecasting for Crews Supporting Scheduler II

Support for NERC-CIP Regulatory Standards

Associate Asset Criticality

Associate Regulatory Standard to PM s Work Orders s and Service Requests

Support Meter Alarms: Web-service through Condition Monitoring: Tampering, Last gasp, Low Battery

Support for EAM 7.5 and supporting products

Supports Maximo Spatial 7.5*

Supports ArcGIS Server *

* Delivered through Spatial

Release 7.5.Next
eGA TBD

New Add-on Product

Maximo Scheduler - Workforce Management Enhancements

- Dispatching
- Public Map UI Control
- Mobile Everyplace Applications
- Crew Management
- Service Address

- Graphical Assignment
- Schedule Compliance
- Assign other resources
- Work Order Actions

Additional Future Development:

- Utilities Joint Use
- Vegetation Management
- CIM Supported Web Services
- WO Crediting & Unit Reporting
- Capital Work Planning and Forecasting

Notice: *IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.*

Disclaimer

The information on new products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information on new products is for informational purposes only and may not be incorporated into any contract.

The information on new products is not a commitment, promise, or legal obligation to deliver any material, code or functionality.

The development, release, and timing of any features or functionality described for our products remains at our sole discretion.

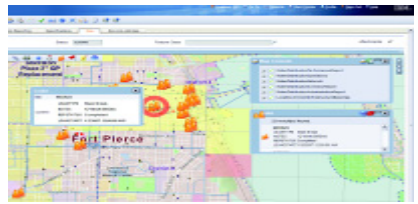
Existing Product Capabilities & Synergy Development will advance Maximo Scheduler for Advanced Workforce Management

- Maximo for Utilities – Crew Management

+

- Maximo Service Provider & Spatial – Service Address

+



- Maximo Spatial Asset Management – Mapping Technology

+

- Maximo Scheduler with ILOG – Scheduling & Routing Optimization

+

- Maximo Everyplace - Mobility

+

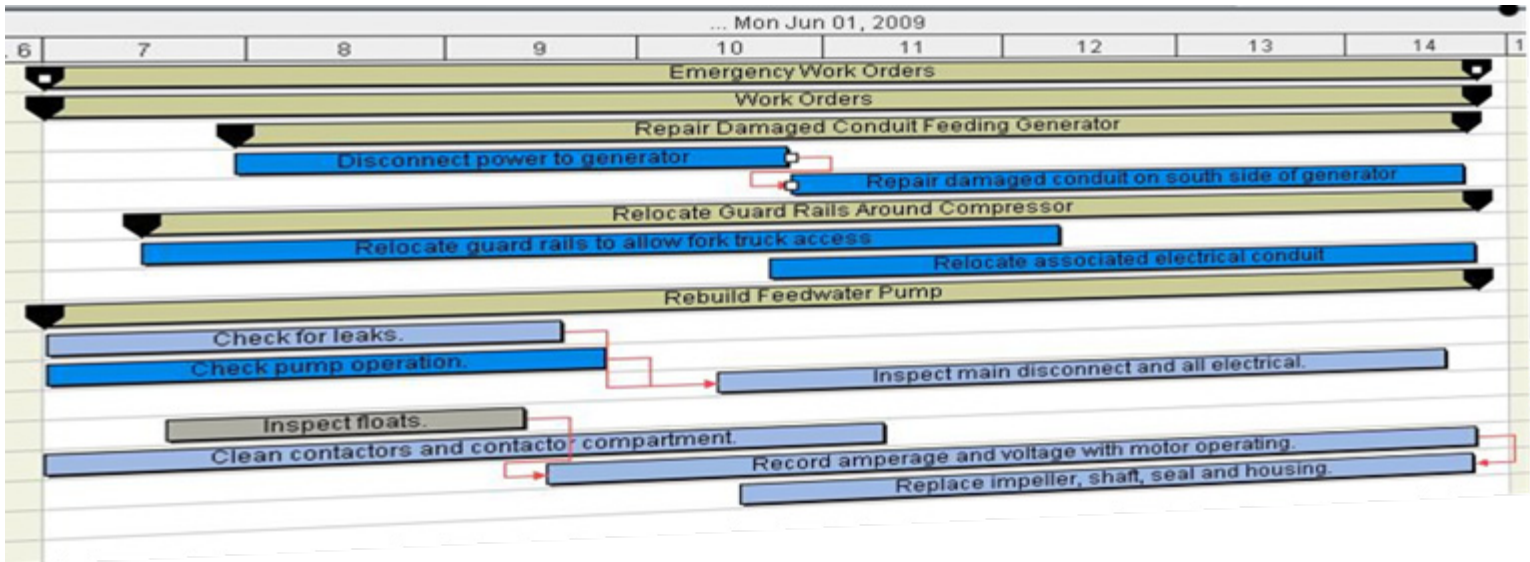
- Dedicated Design, Development, Customer Involvement and Direction

=

- Maximo Scheduler supporting Maximo Mobile Workforce Management

What is Maximo Asset Management Scheduler?

- A Maximo application that contains a Gantt tool to schedule work orders, tasks and PM forecasts graphically

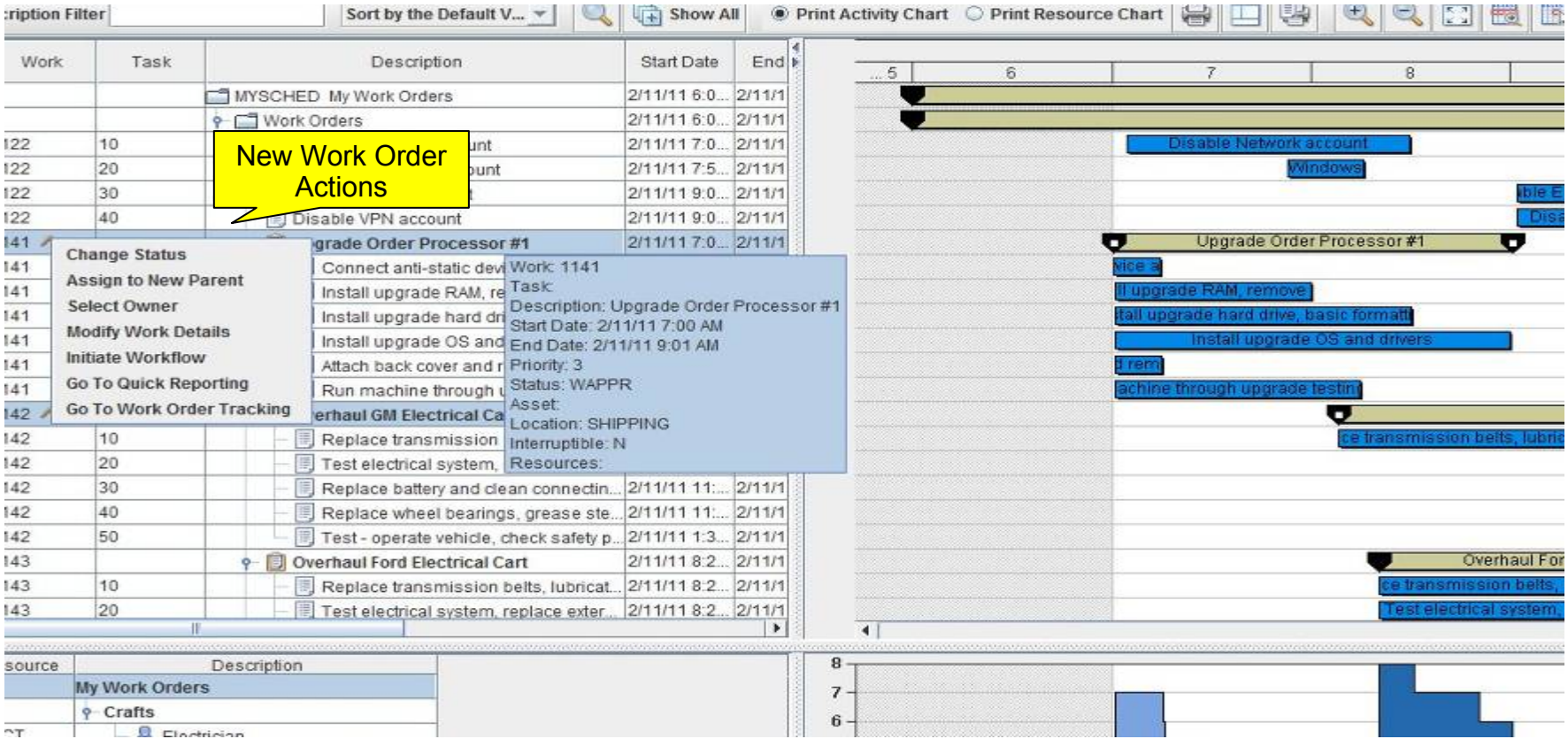


Focus Areas Moving Forward

Capacity Planning	Res. Optimization	Assignment	Dispatching	Real Time Comm.
Forecast Work	Asset Availability	Graphical UI	Map Control	Assign Emergency Work
Identify Resource Gaps	Location Availability	Automated	Route Optimiz.	Communicate to the Crew
	Material &Tools Avail.	Labor & Crew	Automated	
	Labor/Crew Avail.		Labor & Crew	
	Resource Leveling			

Schedule Compliance

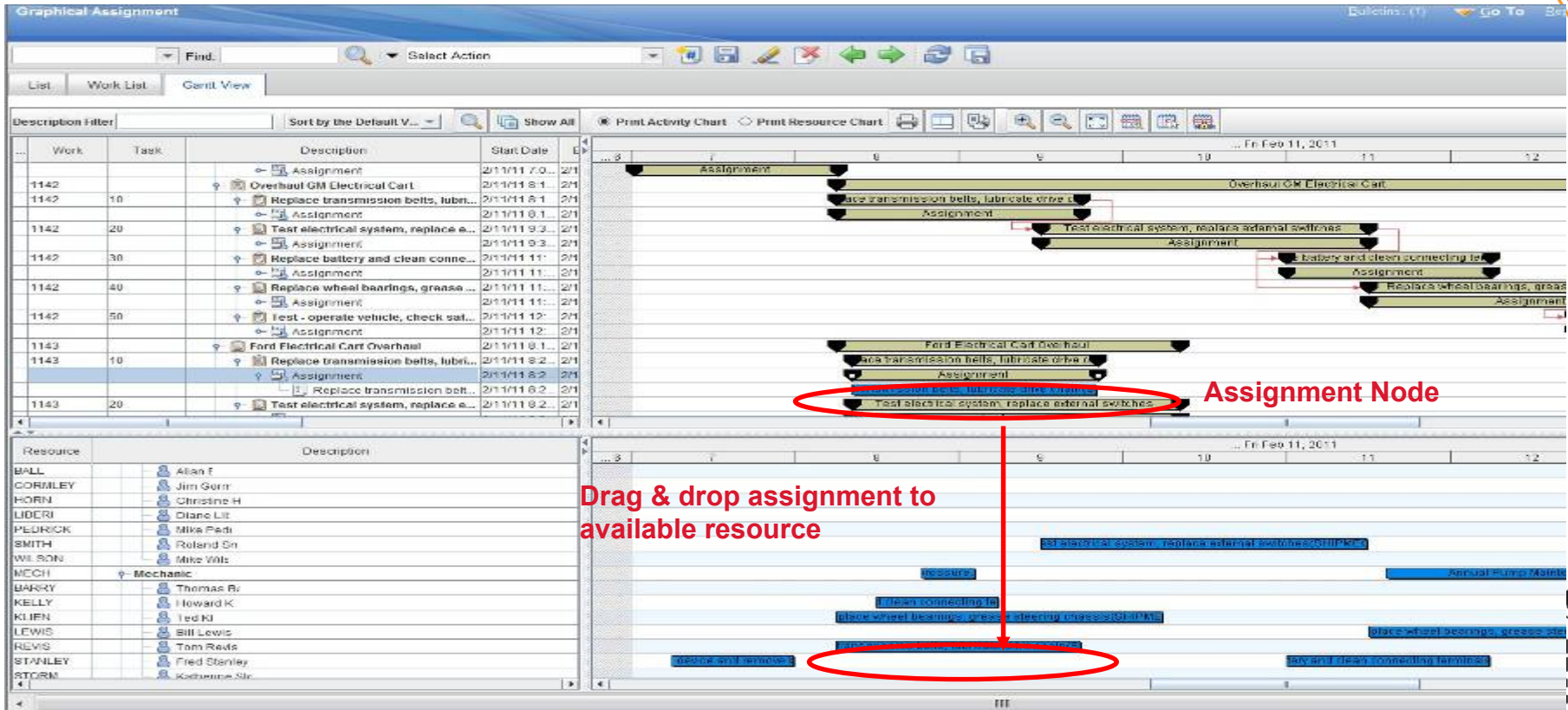
Work Order Actions



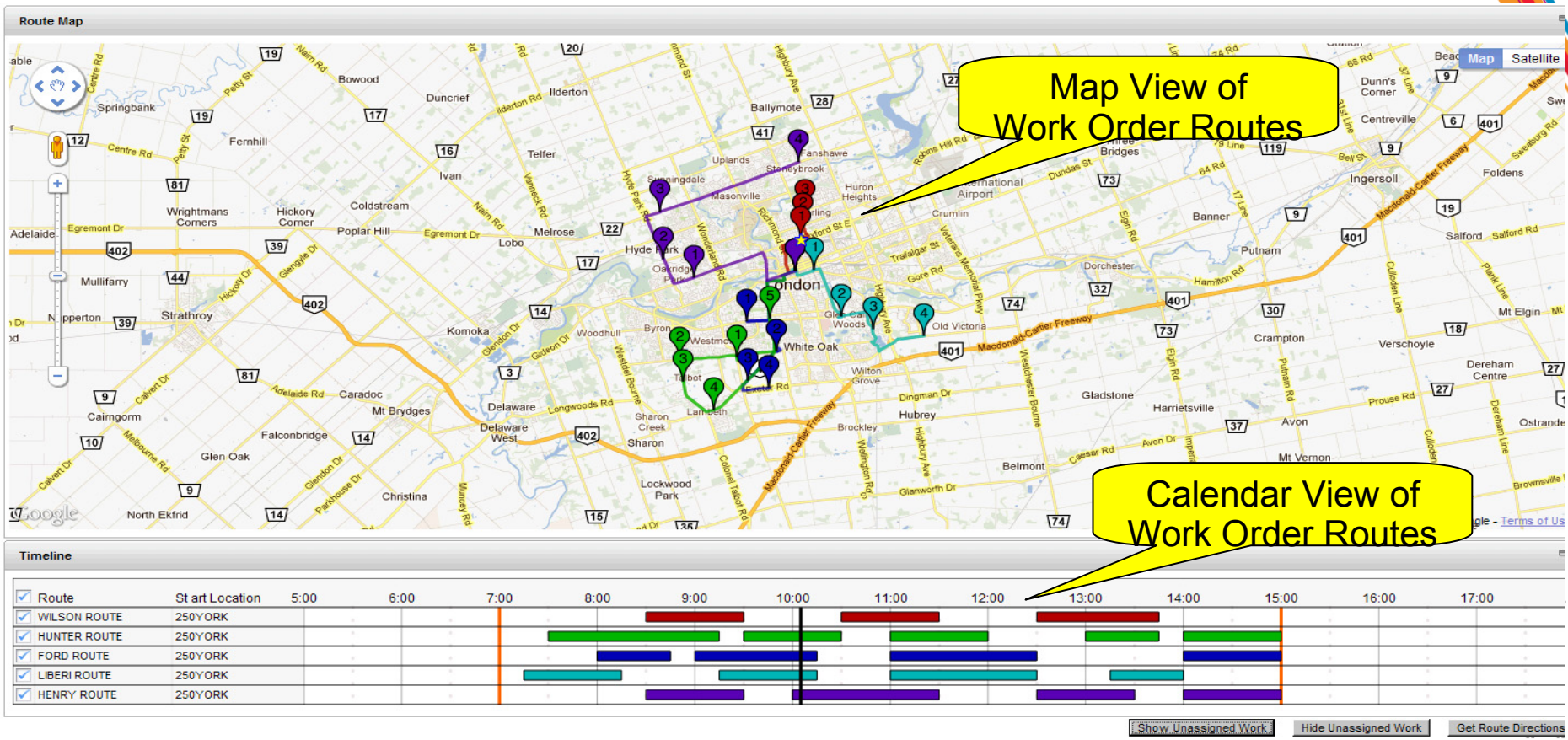
Assignments

- A new graphical UI to assign people to work orders and tasks
- Drag and drop capability
- Supports both Automatic and Manual Assignment
- Ability to view a person's existing assignments, vacation, work breaks etc.
- Ability to split assignments and reallocate to different people

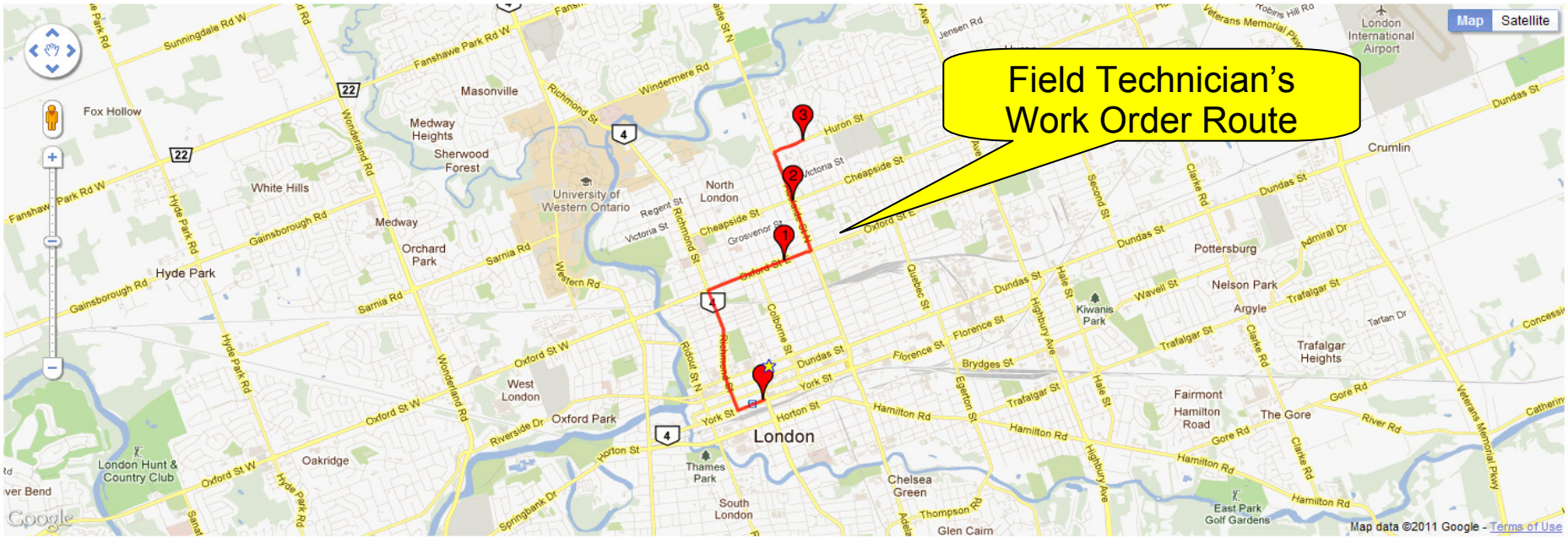
Graphical Assignment



Dispatching Application



Field Technician Application



Route Details 1 - 3 of 3

Work Order	Location	Scheduled Start	Scheduled Finish	Hours
1195	**500OXFORD**	**10/27/11 8:30 AM**	**10/27/11 9:30 AM**	**1:00**
1167	999ADL	10/27/11 10:30 AM	10/27/11 11:30 AM	1:00
1169	700HURON	10/27/11 12:30 PM	10/27/11 1:45 PM	1:15

Questions & Discussion

Our world is becoming

INSTRUMENTED

Our world is becoming

INTERCONNECTED

Virtually all things, processes and ways of working are becoming

INTELLIGENT

IBM

Terry L. Saunders
Utilities Industry Solution
Product Manager
Tivoli Maximo Development

550 King Street
Building LKG1 – A2523D
Littleton, MA. 01460

terry.saunders@us.ibm.com
Tel +1 978 899 2627
Mobile 1 617 513 0347

IBM

Vinicius Garmatz
Maximo Product Architect
Office: +55 11 3298-4845
E-mail : vgarmatz@br.ibm.com

Education

Government

Food

Cloud Computing

Cities

Oil

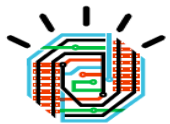
Energy

Public Safety

Telcom

Healthcare

Products


Rail

Infrastructure

Intelligence

Work

Buildings

Banking

Retail

Water

Traffic

Let’s build a smarter planet.

Trademarks and disclaimers

© Copyright IBM Australia Limited 2012 ABN 79 000 024 733 © Copyright IBM Corporation 2012 All Rights Reserved. TRADEMARKS: IBM, the IBM logos, ibm.com, Smarter Planet and the planet icon are trademarks of IBM Corp registered in many jurisdictions worldwide. Other company, product and services marks may be trademarks or services marks of others. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml

The customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-IBM products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by IBM. Sources for non-IBM list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. IBM has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-IBM products. Questions on the capability of non-IBM products should be addressed to the supplier of those products.

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

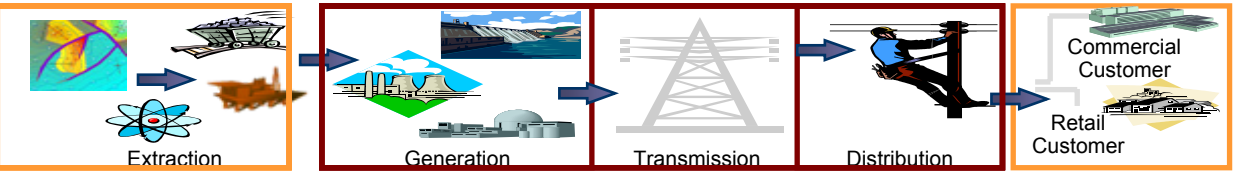
Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in IBM product announcements. The information is presented here to communicate IBM's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

Prices are suggested U.S. list prices and are subject to change without notice. Starting price may not include a hard drive, operating system or other features. Contact your IBM representative or Business Partner for the most current pricing in your geography.

Photographs shown may be engineering prototypes. Changes may be incorporated in production models.

Energy & Utilities Value Chain



- Field development
- Drilling operations
- Crude oil & gas Production
- Mining Coal
- Fossil Generation
- Hydro Generation
- Nuclear Power
- Wind Power
- High Voltage transmission
- Substations
- Mobile Inspection
- Work Management
- Operations Management

Notable Success

SOUTHERN COMPANY · Duke Energy · Dominion It all starts here. · VECTREN Live Smart · NVEnergy · MAVIR

300+ Utilities Clients

Growing market share in all sectors

17 of 30 Fortune 1000 Utility Companies

Investor Owned, Merchant, Municipal or Agency

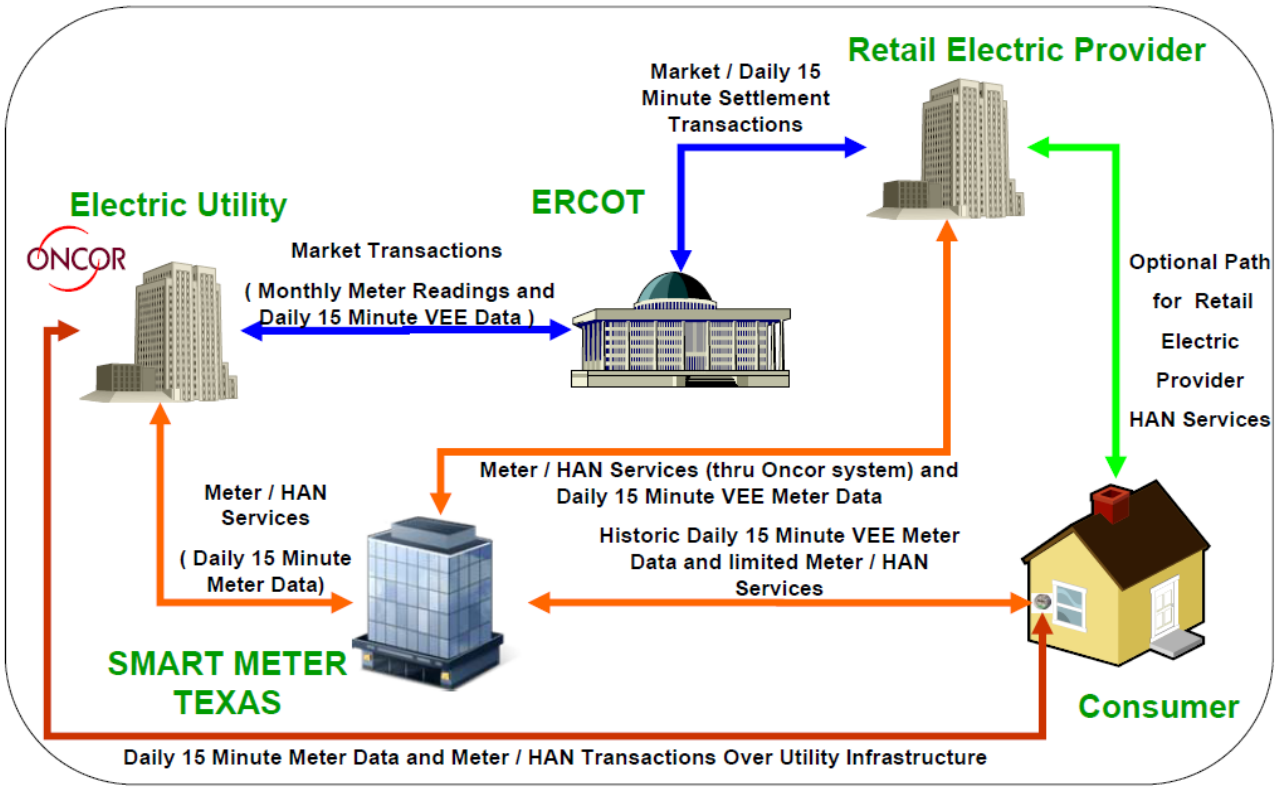
Key Utility Sectors

- **Fossil/Hydro Generation** – 45% North American Fossil Generation and 55% of North American Hydro Power Generation (160)
- **Nuclear Power –** 16 Customers, 42 Units WW Presence. Marketshare: 12% World, 24% NA
- **T&D** High Voltage Transmission & Substation Maintenance (38) Distribution (22) Gas Pipeline & Distribution (24)

Top Reasons for Selecting Maximo for Utilities

1. **Consolidation of asset management solutions** – for Power Generation, Electric & Gas T&D, Facilities, Vehicles, & IT assets
2. **Technology** – J2EE Certified, Service Oriented Architecture (SOA) platform – standardization, scalability, usability, security
3. **Capabilities** – Feature rich solution for managing nuclear power & T&D assets
4. **Convergence of OT & IT** – IT systems are leveraging the utilities ability to stay competitive
5. **Leadership Position** – In both the Gartner MQ and the Energy insight's Short List
6. **People** – Dedicated development teams and client development partners for Nuclear and Transmission & Distribution

Advance Metering System (Market Perspective)



Oncor Electric Delivery

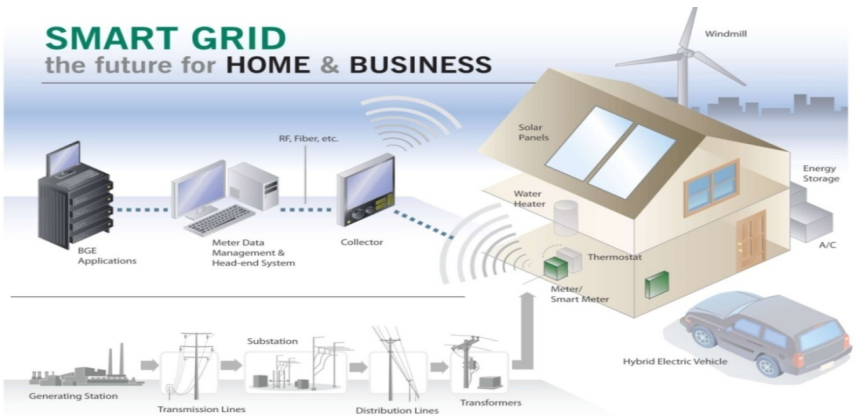
Smart Grid - Not just new meters

Smarter Meter Management with Maximo

- Transforms customer operations
- Reduces customer peak demand
- Reduces customer energy usage and costs
- Improves customer satisfaction
- Improves reliability and BGE's operational efficiency
- Delivers environmental / societal benefits
- Enables future Smart Grid consumer and operational technologies

Smart Grid Initiative (AMI/Smart EnergyPricing)

- Foundational for Smart Grid
- Pilot completed 2008
- Average customer demand reduction 26-37%
- Customer satisfaction 93%
- Planned deployment to all customers



PeakRewards℠

- Target 450K thermostats / A/C switches by 2011 = 600MW
- Target 165K electric water heater switches by 2012 = 170MW
- Customer web portal
- Substation feeder pilot ongoing

BGE We're on it.℠

Conservation

- 226K CFL's and 2,592 appliance rebates to date
- 1,654 HVAC/equip rebates to date
- 650 home energy audits completed - 4,600 measures installed
- New construction program launched

CIM - Common Information Model - Status & Discussion -

- Vinicius Garmatz as the Utilities Solution Architect continues his CIM work efforts.

- No certification process or independent validation exists at this time as this is an emerging standard which will continue to evolve for the seeable future.

Service-Orientated Architecture (SOA) with Web Services providing concepts to define self-contained services in loosely-coupled system architecture was the chosen CIM integration architecture implemented in the IOP. The main characteristic of the CIM-compliant SOA implementation is a semantic built in Web Service Definition Language (WSDL) which enables an easy integration. Predefined WSDL provides product vendors with a contract to build against. This has enabled multiple vendors across countries and continents to interoperate by exchanging these messages, understanding their meaning and reacting to these messages appropriately.

The International Electrotechnical Commission [IEC] 61970 and 61968 series of standards, collectively known as the Common Information Model [CIM], have emerged as one such set of standards critical to smart grid.