Asset Management Point of View

Innovative Infrastructure 101: Building Asset Management Capacity in Rural Communities

Don Barry
IBM Asset Management Practice Leader, Canada & Caribbean
IBM Global Business Services
dbarry@ca.ibm.com
Topics requested to discuss

1. Overview of asset management and its value to all communities (including small and rural ones)
2. Presentation of the maturity model for asset management as a way for communities to situate themselves on a path of improving practice
3. Talk about the steps to moving forward on this curve – different practices, tools, etc.
4. Possibility of mapping Canadian communities onto the maturity model to get a sense of national picture
The Planet is becoming smarter...

- Smart traffic systems
- Smart oil field technologies
- Smart cities
- Smart energy grids
- Smart water management
- Smart supply chains
- Smart buildings
- Smart regions

A smaller, flatter, faster and “smarter” planet

INSTRUMENTED

INTERCONNECTED

INTELLIGENT
Asset management is a discipline related to managing an enterprise's assets over their lifecycle from design, build, procurement, operation, maintenance, modification, and disposal.

Asset Management ¹

systematic and coordinated activities and practices through which an organization optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organizational strategic plan

---

How does a Smarter City/Building deliver value?

**Governance and Business Strategy**
- Comply with Fed/State regulations and company or organization goals.

**Energy and Environmental Management**
- Energy use tracking and benchmarks
- GHG measurement
- Regulatory compliance

**Real Estate Portfolio Management**
- Lease and contract administration
- Strategic portfolio planning
- Budgeting and forecasting expenses

**Space and Facilities Management**
- Space utilization
- Capacity planning
- Move, add, change request

**Capital Project Management**
- Capital planning
- Construction/remediation estimates
- Project management

**Data Center Infrastructure Management**
- Space, power and cooling optimization
- Move, add, change
- Cable management

**Building Process Integration**
- Connect disparate systems to enable the transfer of business information to and from various technologies.

**Operations Management**
- Asset management
- Work order management
- Contracts management

**Service Management**
- Facilities service desk
- Contracted services management
- Customer billing

Comply with Fed/State regulations and company or organization goals.
IBM’s Asset Management Center of Excellence Capabilities

More than 1000 EAM Consultants

Dedicated Team

Asset Management Frameworks

Strategic Alliances
ERP, MES

Thought Leadership

Business Analytics and Optimization

Offerings & Methodologies

Enterprise Asset Management Tools

Asset Management Pyramid
Asset Management Lifecycle Model
Maturity Models
Best Practices

Support Leading ISVs

IBM Offerings in Asset Management

Opportunity Workshops
RCM Training/Facilitation
Accelerated Solutions Strategy
EAM Assess/Strategy
EAM Optimization
Package/Solution Selection
Maintenance Parts Strategies
Solution Implementations

Maintenance Assessments
Inventory Optimization Tools
RCM2 Practitioners
Total Life-cycle Asset Management
Condition Based Monitoring Strategy

Industry Solutions Verticals
Asset Management Centric Training

- Physical Asset Management (UofT Certificate Program)
- Maintenance Leading Practices
- Reliability Centred Maintenance (Introduction, Facilitator Training for RCM2)
- Maintenance Parts Excellence Program (UofT, Maintenance Masters Series)
- Maximo / Tririga Fundamentals and Systems Training
The Traditional Value of Asset Management

Facility

Supplier

Asset

Value

Maintenance

Parts

Procurement

Accounts Payable

Customer

Traditional Value/Focus of Asset Management
IBM has helped leading companies around the globe to travel the Maturity Path from Innocence to Excellence

(*) Note: Based on IBM assessment of Maximo implementation and IBM observations/team analysis. Should be further validated by each client.
IBM Approach for Smart Asset Management – comprehensive methodology and unique capabilities to achieve excellence in asset management

IBM’s Maturity profile of Asset Management can help our clients look a level deeper, focusing on 10 Strategic Categories

Unique understanding of people dynamics in asset management

Leading Program Management Techniques

A comprehensive TLAM portfolio, enabling our clients to select the most appropriate way to get started

Maturity Profile

Thought Leadership

Transformation Management

Strategy

People

Metrics

Value Realization

Total Asset Life-cycle

Processes

Technology

Best-of-Breed Technology

Leading EAM Solutions, advanced analytics and alliances with all relevant technology suppliers

From value driven implementation to track the realization of benefits

Thought leadership in asset management: increase the value perception of maintenance and its contribution to ROA
IBM’s Maturity Profile for Asset Management can help our clients look a level deeper, focusing on 10 Strategic Categories:

1. Strategy
2. Management
3. Data Management
4. Materials Management
5. Planning & Scheduling
6. Tactics
7. Measure
8. Autonomous Maintenance
9. Reliability
10. Process Re-Design

Asset Management Center of Excellence Pyramid

Ten Strategic Categories
- Strategy
- Management
- Data Management
- Materials Management
- Planning & Scheduling
- Tactics
- Measure
- Autonomous Maintenance
- Reliability
- Process Re-Design

amcoe
Asset Management Center of Excellence

Maturity Profile

Building a smarter planet
## Maintenance Maturity Model

### Rating Levels

<table>
<thead>
<tr>
<th>1. Strategy</th>
<th>VI Innocence</th>
<th>IV Awareness</th>
<th>III Understanding</th>
<th>II Competence</th>
<th>I Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly Reactive Breakdown Maintenance</td>
<td>Prevent Maintenance Improvement Program</td>
<td>Annual Improvement Plan</td>
<td>Long Term Improvement Plan</td>
<td>Established and Communicated Maintenance and Asset Strategy</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Organization / Management

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Centralized</td>
<td>Manual or Ad-hoc specialty Systems</td>
<td>By default</td>
<td>*Absence of storeroom management practices</td>
<td>Little or No Formal Planning, Scheduling, or Engineering Support</td>
<td>No Systematic Approach, Maint. Cost Not Available</td>
<td>No Failure Records</td>
<td>Directed Workforce, No Teamwork, Maint &amp; Production relationship strained</td>
<td>Processes not documented. Some procedures available High Reactive Work Percentat</td>
</tr>
<tr>
<td>Prevent Maintenance Improvement Program</td>
<td>A &quot;System&quot; that Allows for Some Scheduling and Parts Tracking</td>
<td>Time Based Inspections</td>
<td>*Some storeroom controls</td>
<td>Some Troubleshooting Support, Inspection Scheduling</td>
<td>Some Downtime / Reliability Records Maint. Costs Not Segregated</td>
<td>Collect s Failure Data but make little use of it</td>
<td>Directed Workforce, No Teamwork, Good cooperation of Maint. And Production</td>
<td>Some processes documented. Moderate amount of procedures available High PM Workload</td>
</tr>
<tr>
<td>Decentralized Mixed Trade Teams</td>
<td>Fully Functional Asset Mgmt. Stand Alone System</td>
<td>Time and Use Based Inspections</td>
<td>System computerized Stock levels set – no Maint. Input. Lead time and Safety Stock Levels set – Rare;</td>
<td>Maintenance Planning Group Established Ad-hoc Engineering</td>
<td>Downtime by Cause Maintenance Costs Available</td>
<td>Failure DB Established. Used for Analysis</td>
<td>Directed Workforce, Some Teamwork Maint./ Production cooperation at working level</td>
<td>Processes Documented Planning and Scheduling disciplines are prevalent Medium amount of Reactive and PM Workload</td>
</tr>
<tr>
<td>Some Level of Multi-Skilled Staff</td>
<td>Fully Functional Asset Mgmt System liked to Financials and/or Inventory Systems</td>
<td>Some CBM Some Prev. Maint. Few Surprises</td>
<td>*Alliances developed *(Free Issues ) *Streamlined processes *Material Delivery Process Established</td>
<td>Job Planning with Engineering Support</td>
<td>Mean Time to Failure / Repair Records Available Separate Maintenance Costs</td>
<td>Some FMECA used</td>
<td>Self Directed teams Maint./ Production Teamwork at all levels, Team work at organization levels</td>
<td>Processes documented Evidence of periodic review. Procedures well documented and organized</td>
</tr>
<tr>
<td>Multi-Skilled Independent Trades</td>
<td>Fully Integrated to common databases Data Standards in Place</td>
<td>All Tactics Based on Analysis</td>
<td>*Service levels 95%+ *On line material requisitioning *Turns exceed 1.5</td>
<td>Long Term Major Project Planning for both Maintenance and Engineering</td>
<td>OEM Benchmarking Full Cost Database</td>
<td>RCM Program in Place Risk and Root Cause Analysis Program</td>
<td>Decentralized teams Business based decisions Excellent cooperation with Maint./ Production Teamwork a hallmark of entire organization</td>
<td>Processes documented and coordinated with support areas (Inv. / Purc) Evidence of regular review cycle</td>
</tr>
</tbody>
</table>

### Real Estate and Facilities

### Plant and Production

### Infrastructure

### Mobile Assets

### Information Technology

© 2013 IBM Corporation
Analyze your Maintenance maturity and prioritize opportunities

Prioritized Initiatives
- Governance Model
- Prioritized Initiatives
- Benefits Determination
- Budget by Initiative

Plan

Implement

Analyze

Trend

Gap

Interview

AMcoe Pyramid

Your Company

Maintenance Staff

Questionnaire

Maturity Profile

1. Genesis Corporation - Asset Management Implementation Plan
   Fri 5/21/04 - Fri 12/29/06

2. Implementation of Reliability Project governance
   Mon 3/14/05 - Fri 10/29/04

3. Formulation of Maintenance training in each area
   Mon 7/12/04 - Wed 11/2/05

4. Identify critical spares
   Mon 4/25/05 - Fri 7/9/04

5. Implement process to involve maintenance in new
   Mon 4/25/05 - Fri 7/9/04

6. Implement warranty tracking
   Mon 8/2/04 - Fri 10/22/04

7. Implement Lifecycle Costing (LCC)
   Fri 2/4/05 - Fri 5/21/04

8. Implement a recognized catalogue naming convention
   Fri 7/2/04 - Fri 4/8/05

9. Assess corporate contracts to Corporate Purchasing
   Mon 11/15/04 - Mon 1/9/06

10. Enhancements to CMMS Prod
    Mon 11/15/04 - Mon 1/9/06

11. Conduct a maintenance skills needs analysis
    Fri 10/29/04 - Mon 1/9/06

12. Define work history details to be recorded by technicians
    Mon 11/15/04 - Mon 1/9/06

13. Integration of CMMS Prod to Baan
    Mon 11/15/04 - Mon 1/9/06

14. Centralize MRO purchasing
    Mon 11/15/04 - Mon 1/9/06

15. Assess Corporate Contracts to Corporate Purchasing
    Mon 11/15/04 - Mon 1/9/06

16. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

17. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

18. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

19. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

20. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

21. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

22. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

23. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

24. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

25. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

26. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

27. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

28. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

29. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

30. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

31. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

32. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

33. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

34. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

35. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

36. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

37. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

38. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

39. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

40. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

41. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

42. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

43. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

44. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

45. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

46. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

47. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

48. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

49. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

50. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

51. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

52. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

53. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

54. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

55. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

56. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

57. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

58. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

59. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06

60. Implement Reliability
    Mon 1/9/06 - Thu 11/3/06
Example: Opportunities for ‘a Client’ - Cost vs. Benefit Assessment

Perceived Costs / Effort to Implement

Modified Workshop Priorities shown

- Strategy
- Management
- Tactics
- Planning
- KPIs
- Data
- Autonomous Maint
- Reliability
- Process
- Materials

Very Large

Small

S<$50K<M<$250K<L<$1M<VL
Value Realization: typically there are four initial areas that drive ROA –
Driving costs down while we drive production, safety, environmental and
regulatory compliance up

High Value Areas

- Effective planning and scheduling of work
- Spares & support materials management driven by planning & scheduling activity
- Proactive definition of what maintenance should be done to manage reasonably likely failures
- Process Automation and Optimization

Key to Success

- **Mindset**
  From traditional thinking to scientific, business-based thinking

- **Integration**
  Maintenance Planning and inventory must work as one

- **Eliminate Barriers**
  Cooperative approach among production, operations and engineering

- **Strategic Approach**
  Leading a well planned and managed change program

- **Knowledge**
  Understanding best practices in planning, scheduling, proactively identifying maintenance requirements
IBM’s asset intensive clients have benefited from our Value Realization approach

<table>
<thead>
<tr>
<th>Business Scenarios</th>
<th>ROI Points</th>
<th>Customer Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor Utilization</td>
<td>Up 10-20%</td>
<td>• A major US railroad saved US $5M by better tracking labor to specific work</td>
</tr>
<tr>
<td>Asset Utilization</td>
<td>Up 3-5%</td>
<td>• A large OEM reduced overhaul process time from 56 days to 21 days</td>
</tr>
<tr>
<td>Equipment purchases</td>
<td>Down 3-5%</td>
<td>• A fleet management company saved US $9.5M by meeting 100% availability</td>
</tr>
<tr>
<td>Warranty recoveries</td>
<td>Up 10-50%</td>
<td>• A consumer products company increased warranty recovery 50%</td>
</tr>
<tr>
<td>Inventory needs</td>
<td>Down 20-30%</td>
<td>• A large passenger railroad was able to identify US $18M in excess or obsolete inventory</td>
</tr>
<tr>
<td>Inventory carrying costs</td>
<td>Down 5-20%</td>
<td>• A nuclear power conglomerate reduced inventory value and associated carrying costs by 26%</td>
</tr>
<tr>
<td>Material Costs</td>
<td>Reduced 10-50%</td>
<td>• A rail maintenance service company reduced costs 20% by optimizing material purchases.</td>
</tr>
<tr>
<td>Purchasing labor</td>
<td>Reduced 10-50%</td>
<td>• A fleet management company reduced purchasing staff by 20%</td>
</tr>
</tbody>
</table>
Thought leadership in asset management: increase the value perception of maintenance and its contribution to ROA

Maintenance Philosophy Related Issues

**Traditional Approach**

- Maintenance is about preserving physical assets
- Routine maintenance is about preventing failures
- The primary objective of the maintenance function is to optimize plant availability at minimum cost
- The maintenance department on its own can develop a successful, lasting maintenance program

**New Approach**

- Maintenance is about preserving the functions of assets
- Routine maintenance is about avoiding, reducing or eliminating the consequences of failures
- Maintenance affects all aspects of business effectiveness and risk – safety, environmental integrity, energy efficiency, product quality and customer service, not just plant availability and cost
- A successful, lasting maintenance program can only be developed by maintainers and users of the assets working together

Source: John Moubray, Maintenance Management – A New Paradigm
Maximo is a Complete Asset and Service Management Solution

- **Asset Management**
  - Facilities, Operations, IT, Fleet
  - Assets, Locations, Failure Reporting, Condition Monitoring, Meters

- **Work Management**
  - Preventive, Corrective, Projects, Emergency, Safety Plans
  - Work Hierarchies, Planning, Status, Assignments, Actual Metrics

- **Procurement Management**
  - PR’s, PO’s, Receipts, Invoices

- **Materials Management**
  - Items, Storerooms, Inventory, Reorder, Issues, Returns

- **Contract Management**
  - Master, Purchase, Warranty, Lease/Rental, Labor Rate

- **Service Management**
  - Self Service Requests & Status
  - Platform for asset owners, asset managers and service providers

- **Next Generation Architecture**
  - J2EE Platform
  - Standards-based
  - Service Oriented Architecture (SOA)
Gartner has recognized IBM as a leader in The Magic Quadrant for Delivery Utility Enterprise Asset Management

Magic Quadrant for Delivery Utility Enterprise Asset Management
Kristian Steenstrup
September 20, 2012

This Magic Quadrant graphic was published by Gartner, Inc. as part of a larger research note and should be evaluated in the context of the entire report. The Gartner report is available upon request from IBM. G00230880

© 2012 Gartner, Inc. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.
Advanced Analytics for Asset Performance Optimization
A3PO Module Solution Framework

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Pre Processing</th>
<th>Analytics</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEM Data</td>
<td></td>
<td></td>
<td>Failure Patterns</td>
</tr>
<tr>
<td>Asset Data</td>
<td></td>
<td></td>
<td>Root Cause</td>
</tr>
<tr>
<td>Environmental Data</td>
<td></td>
<td></td>
<td>Usage Patterns</td>
</tr>
<tr>
<td>Usage Data (Logs, CPU, Memory)</td>
<td></td>
<td></td>
<td>Asset Health</td>
</tr>
<tr>
<td>Activity / Network logs</td>
<td>Data Cleansing / Joining</td>
<td></td>
<td>Cost Analysis</td>
</tr>
<tr>
<td>Maintenance Logs</td>
<td></td>
<td></td>
<td>Anomaly Patterns</td>
</tr>
<tr>
<td>Historical Data</td>
<td></td>
<td></td>
<td>Condition Analysis</td>
</tr>
<tr>
<td>Sensor Data (near real time)</td>
<td>Sensor Data Pre-processing</td>
<td></td>
<td>Others</td>
</tr>
</tbody>
</table>

- Text analytics
- Sensor Data Pre-processing
- Asset Module
Total lifecycle planning uses three key assessment engines: performance analysis, needs assessment and investment planning to enable a comprehensive assessment of operations and capital needs.

- Annual programs (e.g., snow cleaning, leaf pickup)
- Reactive maintenance (road repair, water main breaks, street light problems)
- Predictive/proactive maintenance (e.g., inspections, hydrant flush)

- Asset replacement based on age, condition or failure
- Federal funding, regional expansion, new development, private-public partnership
- Improving quality of service
- Constant average asset life

- Asset lifecycle costing and analysis
- Optimal allocation of O&M vs Capital money
- Integrated asset management
Analytical modeling is the key decision enabler at each of the three lifecycle phases in Planning Analytics for Asset Lifecycle Management (PALM)

**Performance Analysis**
- **Asset condition assessment**
  - Current condition of asset
  - Unified condition across all asset classes
  - Condition forecasting
- **Remaining service life forecast**
  - Survival curve by asset
  - Remaining service life
  - Expected future failures

**Needs Assessment**
- **Repair vs. rehab vs. replace vs. run-to-failure**
  - Alternative prescription / intervention mapping by application time
  - Expected performance improvement
- **Impact of O&M vs. capital work**
  - Future O&M and capital costs
  - Prescription costs and performance impact

**Investment Planning**
- **Needs identification & prioritization**
  - Block level cross asset end-of-life synchronization
  - Identify capital planning candidates for next 1 – 30 year
  - Identify O&M candidates and expected cost
  - Long term sustainability analysis
  - Predictive maintenance plan

**Project bucketing**
- Identify project groups by:
  - Spatial proximity
  - Prescription type (??)
  - Contractor capacity (??)

**Project budgeting**
- Apply alternative funding sources
- Build an optimal budget based on best projects to be executed

**Budget scenario analysis**
- Analyze multiple scenarios based on
Technology and processes are important, ultimately successful transformation is about engaging people in the change.

- Maintenance
- Production
- Engineering
- HR
- Procurement

It will be more about harmonizing processes than ... 

... but at the end of the day, it will mainly be about changing PEOPLE’s behavior and mindset.

... I.T. systems

Degree of Support for the Change

Time
The 8 critical success factors provide a sustainable approach

- **Compelling need for change**
  - A clearly defined problem or a compelling opportunity
  - Justification for the investment

- **Clarity of direction**
  - Clearly understood long-term goals and scope of change
  - Vision linked to supportive actions and accountability

- **Visible and committed leadership**
  - The implementation has a high-level executive sponsor or sponsoring group
  - The executive committee shares the same goals as the front-line managers
  - An effective project office team

- **Targeted, effective communications**
  - Individual needs are met
  - Consistency in the messages
  - Effective two-way communications in existence
  - Successes being leveraged
  - Complete and open communication
  - Enterprise wide learning taking place

- **Disciplined project management**
  - Consistent milestones established
  - Roles and responsibilities clearly defined and made visible

- **Measurable goals**
  - Effective project goals in existence
  - Performance tied to compensation

- **Broad-based participation**
  - An enterprise wide culture change being considered
  - Skills available to implement the change
  - The current management style is effective for the change

- **Single program focus**
  - Related activities effectively aligned and coordinated
What is a Formula for Smarter Asset Management?

**Maturity Profile**
- Understand where you are in your Maintenance Maturity
- Prioritize opportunities and execute a formal program

**Total Asset Life-cycle**
- Consider all aspects of TLAM in Asset planning
- Leverage RCM2 to effect optimal costs across the life-cycle

**Thought Leadership**
- Increase the value perception of maintenance and its contribution to ROA
- Apply Leading practices in Asset Management

**Best-of-Breed Technology**
- Aligned with your maintenance maturity: leverage leading EAM Solutions, advanced analytics relevant technology
- Start with a leading CMMS solution – Maximo

**Value Realization**
- Target opportunities that positively effect Asset created value and maintenance costs
- Apply a formal benefits realization approach to reaching the target value

**Transformation Management**
- Apply strong transformation Management disciplines to change
- Lead the change with your people to ensure success
Extensive Experience: with 300+ clients across many industries, our experience covers all aspects of asset management.

Some IBM Clients

- Assisted WEB Aruba in maintenance maturity assessment and developed a transition strategy. Assisted in P&S and RCM programs and Change Mgmt.
- Assisted Barbados Light and Power in maintenance maturity assessment and developed a transition roadmap to assist in their Maximo upgrade.
- Partnered with City of Cambridge in a mutual development of a data analytics solution in Life-cycle Asset Management.
- Partnered with DC WASA in maintenance maturity assessment and developed a data analytics solution in Life-cycle Asset Management.
- Assisted City of Timmins Works in maintenance maturity assessment workshop and developed a transition roadmap including metrics.

Mtce Strategy and development engagements

<table>
<thead>
<tr>
<th>Strategy</th>
<th>People</th>
<th>Process</th>
<th>Metrics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Asset management excellence, anywhere in the world with unmatched depth and breadth of practitioner skills

- Deep cross-industry expertise
- Serving clients with EAM expertise, 16+ yrs
- Majority of staff is certified on latest version of Maximo and/or has an Asset Management background
- Industry and technical experts for infrastructure and integration solutions

- Aligned closely with Software Development and Lab Services
- Delivery Excellence Tiger Team, templates, sustained with Maximize Methodology™
- Proprietary ‘add-ons’ to accelerate value
- Asset Management Center of Excellence (AMcoe), enhanced IP, and proven BVA

- History of complex multi-site, multi-geo implementations across broad range of industries
- Utilize our global integrated enterprise
- The largest EAM consultancy in the world organized by 18 integrated management teams directing 730 industry, solution, and technical experts sustained by the Maximize Methodology™

Revised content reflects current EAM strategy and technology enhancements. Published Nov. 2010. ISBN #: 9780849303005

Delivered right, on time, the first time
At a competitive price
And prepared for future functionality

IBM Global Business Services
Food for Thought

1. Are you getting the optimal ‘value’ and ‘return on asset’ across your asset life-cycle?

2. Where are you in your over-all Asset Management Maintenance Maturity?

3. Are you leveraging thought leadership and appropriate technologies today and for your organization’s future?

4. Are you leading your transformation with full staff buy-in and participation?
## Smarter Cities Attributes

<table>
<thead>
<tr>
<th>Smarter Cities Attributes</th>
<th>Asset Management Maturity in Smarter Cities</th>
<th>IT Sophistication in Smarter Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance and Business Strategy</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Energy and Environmental Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Building Process Integration</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Real Estate Portfolio Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Space and Facilities Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Maintenance and Operations Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Capital Project Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Asset Life-cycle Management and Investment Forecasting</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Service Management</td>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
</tbody>
</table>

*To what degree is your organisation doing this today?*
## Maintenance Maturity Model

<table>
<thead>
<tr>
<th>Rating Levels</th>
<th>VI Innocence</th>
<th>IV Awareness</th>
<th>III Understanding</th>
<th>II Competence</th>
<th>I Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Organization / Management</td>
<td>Highly Centralized</td>
<td>Partly Centralized for Some Trades</td>
<td>Decentralized Mixed Trade Teams</td>
<td>Some Level of Multi-Skilled Staff</td>
<td>Multi-Skilled Independent Trades</td>
</tr>
<tr>
<td>3. Data Mgmt / IT</td>
<td>Manual or Ad-hoc specialty Systems</td>
<td>A “System” that Allows for Some Scheduling and Parts Tracking</td>
<td>Fully Functional Asset Mgmt. Stand Alone System</td>
<td>Fully Functional Asset Mgmt System liked to Financials and/or Inventory Systems</td>
<td>Fully Integrated to common databases Data Standards in Place</td>
</tr>
<tr>
<td>4. Maintenance Tactics</td>
<td>Annual S/D Inspections Only</td>
<td>Time Based Inspections</td>
<td>Time and Use Based Inspections Some - NDT</td>
<td>Some CBM Some Prev. Maint. Few Surprises</td>
<td>All Tactics Based on Analysis</td>
</tr>
<tr>
<td>5. Materials Management</td>
<td>*Absence of storeroom management practices</td>
<td>*Some storeroom controls</td>
<td>*Lack of performance measurements</td>
<td>*Turns less than 1.0</td>
<td>*Service levels 95%+ *On line material requisitioning *Turns exceed 1.5</td>
</tr>
<tr>
<td>6. Planning and Scheduling</td>
<td>Little or No Formal Planning, Scheduling, or Engineering Support</td>
<td>Some Troubling Shooting Support</td>
<td>Inspection Scheduling</td>
<td>Maintenance Planning Group Established Ad-hoc Engineering</td>
<td>Solid General Planning and Scheduling Job Planning with Engineering Support</td>
</tr>
<tr>
<td>8. Reliability Centered Maintenance</td>
<td>No Failure Records</td>
<td>Collect s Failure Data but make little use of it</td>
<td>Failure DB Established. Used for Analysis</td>
<td>Some FMECA used</td>
<td>RCM Program in Place Risk and Root Cause Analysis Program</td>
</tr>
<tr>
<td>9. Autonomous Maintenance</td>
<td>Directed Workforce No Teamwork Maint &amp; Production relationship strained</td>
<td>Directed Workforce No Teamwork</td>
<td>Good cooperation of Maint. And Production</td>
<td>Directed Workforce Some Teamwork Maint./ Production cooperation at working level</td>
<td>Self Directed teams Maint. / Production Teamwork at all levels. Team work at organization levels</td>
</tr>
<tr>
<td>10. Process Redesign</td>
<td>Processes not documented. Some procedures available High Reactive Work Percentat</td>
<td>Some processes documents. Moderate amount of procedures available High PM Workload</td>
<td>Processes Documented Planning and Scheduling disciplines are prevalent Medium amount of Reactive and PM Workload</td>
<td>Processes documented Evidence of periodic review. Procedures well documented and organized</td>
<td>Processes documented and coordinated with support areas (Inv./ Purc) Evidence of regular review cycle</td>
</tr>
</tbody>
</table>

© 2013 IBM Corporation
Questions?

Don Barry
IBM Asset Management Practice Leader, Canada & Caribbean
IBM Global Business Services
dbarry@ca.ibm.com
416-478-8108