Tips for Successful Use of FM Technology: From Strategy to Implementation

Angela Lewis, PhD, PE, LEED AP
Mayra Portalatin, SFP, LEED AP O+M

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Meet Our Presenters:

Angela Lewis, PhD, PE, LEED AP
Project Manager
Facility Engineering Associates

Mayra Portalatin, SFP, LEED AP O + M
Project Manager
Facility Engineering Associates
Learning Objectives

• Understand the value of creating a FM technology strategic plan
• Gain awareness of what should be included in an FM technology strategic plan
• Understand the value of data, standards and metrics to when implementing a strategic plan
• Creating a plan to succeed
• Importance of data standards and configuration
• Integration and information exchanges
• Identifying process improvements
• Determining metrics to support reporting and dashboards
• Three tips to take away
Technology is our friend ....or is it?
Two of the top ten issues in FM are related to technology:

- Increasing complexity of building technology
- Increasing quantity and complexity of data available
### IT Project Failure Statistics

<table>
<thead>
<tr>
<th>Studies</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Gartner Group Study</td>
<td>64%</td>
</tr>
<tr>
<td>2. Standish Group Study</td>
<td>66%</td>
</tr>
<tr>
<td>3. The Robbins-Gioia Survey</td>
<td>51%</td>
</tr>
<tr>
<td>4. Conference Board Survey</td>
<td>40%</td>
</tr>
<tr>
<td>5. The KPMG Study</td>
<td>61%</td>
</tr>
<tr>
<td>6. The Chaos Report</td>
<td>84%</td>
</tr>
<tr>
<td>7. The OASIG Survey</td>
<td>70%</td>
</tr>
</tbody>
</table>

*To err is human; but to really foul things up takes a computer.*
Top Five Reasons (Internal)

1. Lack of Strategy (Outcomes)
2. Inadequate Resources/Investment
3. Inconsistent Data Standards
4. Lack of FM Process Understanding/Training
5. Unsuccessful in Selling the WIIFM

Bonus – Client/Vendor Speaking Different Languages
Top Five Reasons (Vendor)

1. Vendors Often Lack FM Expertise
2. Difficulty Understanding Expectations
3. Delta in Sales vs. Implementation
4. Train on Software not FM Processes
5. They Are Not – “Not-For-Profit”
Common Data Problems

- Data is not standardized
- Information is outdated
- Information is missing
- Too many “cooks in the kitchen”
- Data management system selected prior to development of processes and reporting needs
- Level of granularity
Creating a Plan to Succeed
What to do...

- Establish goals and objectives
- Develop strategic optimization plan
- Provide process and data maintenance training that answers “Why?”
- Use metrics to define and measure success
What to Include in an FM Strategic Plan

Purpose
• Goals and objectives
• SWOT (Strengths weakness, opportunity and threat) analysis

Existing FM Technology
• Technologies used: What and how
• Processes and data used

Future Plans for New FM Technology
• Implementation plan
• Optimization plan
Implementation Plan

• Transitioning from existing systems
  – Data cleaning and migration
  – Quality assurance processes
  – Plans for staff training

• Installation and configuration

• System acceptance

• Future upgrades
Optimization Plan

- Data standards and configuration codes
- Integration and information exchange requirements
- Process improvements
- How technology will support improvements
- Metrics, reporting and dashboard requirements
Importance of Data Standards and Configuration

“The greatest thing about standards is that there are so many to choose from”
– Andrew Tanenbaum
Select a Standard

• Naming Conventions
  – Omniclass (Tables 21 & 23)
  – CSI MasterFormat
  – CSI Uniformat
  – ASTM Uniformat II

• Information Exchange Standard
  – Construction Operations Building Information Exchange (COBie)
### Determine Level of Granularity of the 4 Major Industry Standard Nomenclatures

<table>
<thead>
<tr>
<th>Nomenclature Standard</th>
<th>Uniform (merged)</th>
<th>MasterFormat</th>
<th>OmniClass 21</th>
<th>OmniClass 23</th>
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</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
<td><strong>Minimum PM Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Attributes/Energy/Gas</td>
<td>Energy/Gas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Attributes/Type/Steel</td>
<td>Type/Steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Attributes/Temp/Medium</td>
<td>Temp/Medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Type/Hot Water</td>
<td>Hot Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Components /Boiler</td>
<td>Boiler</td>
<td>Components/Boiler</td>
<td>Pressure,</td>
<td></td>
</tr>
<tr>
<td>3 System/ Heating</td>
<td>Heating</td>
<td>Energy/Gas</td>
<td>System/Heating</td>
<td>Boiler Controls</td>
</tr>
<tr>
<td>2 D30 HVAC</td>
<td>HVAC</td>
<td>Type/Steel</td>
<td>HVAC</td>
<td>Commercial Boilers</td>
</tr>
<tr>
<td>1 Services</td>
<td>Services</td>
<td>Boiler</td>
<td>Services</td>
<td>HVAC Specific Product</td>
</tr>
</tbody>
</table>
Parent/Child Relationships

Chiller

Motor

Pump

Control Panel

Refrigerant Monitor
**Grouping Samples**
- Sprinkler Heads
- Hose Connections
- Valves
- Stand Pipes
- Pull Stations
- Heat Detectors
- Flow Switches
- Tamper Switches

**Aggregation Sample**
- Fire Pump
  - Motor
  - Relief Valve
  - Pressure Gauge
  - Pump Jockey
  - Controls

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**Data Standards & Configuration**

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[Image: Fire Alarm Interface Components]
Integration and Information Exchange

A : Architect
E : Engineer
C/V : Contractor/Vendor
FM : Facility Manager
ie : Information exchange
Key

**ERP**: Enterprise resource planning

**BAS**: Building automation system

**CMMS**: Computerized maintenance management system

**BIM**: Building information modeling

**GIS**: Geographical information system
What is COBie?

- **COBie**: Construction operations building information exchange
  - Standard method to exchange information between systems to drive down cost

(paraphrased statement from Bill Brodt)

http://thelinkbetween.wordpress.com/2011/02/16/bridge-building/
What COBie is NOT

• “Just” a spreadsheet
  – IFC, ifcXML, spreadsheetML
• “Just” a model
• A process
• A specification for naming data
• A product
• A BIM requirement

COBie is MORE than “just” a spreadsheet

PRODUCT
What is Included in COBie

- Asset data
- Spare part information
- Preventive maintenance procedures
- Closeout submittals, O&M manuals, product data

- Number and names of floors
- Room numbers and names
- Occupancy classification
- Contact information

- Facility
- Design
- Construction

- Floor
- Type
- Spare
- Zone
- Component
- System
- Jobs
- Resources

- Common
- Contacts
- Documents

- Issues
- Impacts

- Coordinates
- Assemblies
- Connections
Value of COBie

- **New construction:** Prevents loss of data between design and construction to facility management handover
- **Existing facilities:** Minimizes data entry
- **Existing facilities:** Use of industry standards reduces cost of software implementation

Image courtesy Birgitta Foster—buildingSMART alliance
Identifying Process Improvements
Process Improvements

• Determine current processes
  – Work order management
  – Maintenance management
• Who owns what in the process?
• Can any process improvements be made?
• Determine current processes
  – Any breaks in process?
  – Anything missing?
  – Any duplication of effort?
• How accurate is your data?
• Do you have a QA program?
• Why not?
Quality Assurance Program

Program Should Address:

• Nomenclature
• Minimum Information
• Standards
• Frequency of QA
• Responsibilities

Reality During QA
% Accuracy of Data

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Asset Identification Code</th>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Serial Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>85%</td>
<td>31%</td>
<td>30%</td>
<td>15%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Determining Metrics to Support Reporting and Dashboards
Metrics: Selecting Key Performance Indicators (KPIs)

1. C-Suite, Executives, Business Officers
   - Productivity, FCI, TCO, PM Compliance, Staff
   - Unscheduled Downtime, PM Compliance, Staff
   - Customer Satisfaction, PM Compliance, Staff

2. Directors, AVPs
   - Emergency Response, PM Compliance, Staff
   - Open WOs, OT Usage, Budget
   - PM to CM Ratio, WO Aging, Staff

3. Managers, Supervisors
   - By Building/Shop – Emergency Response, PM Compliance, Staff
   - Open WOs, OT Usage, Budget
   - Cause Analysis, Staff
   - Training, Hours, Downtime
## Sample Key Performance Indicators

<table>
<thead>
<tr>
<th>Metric</th>
<th>Benchmark</th>
<th>KPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Availability</td>
<td>95%</td>
<td>% = $\frac{\text{Hours Each Unit of Equipment is Available to Run at Capa}}{\text{Total Hours During the Reporting Time Period}}$</td>
</tr>
<tr>
<td>Maintenance Overtime Percentage</td>
<td>5% or Less</td>
<td>% = $\frac{\text{Total Maintenance Overtime Hours During Period}}{\text{Total Regular Maintenance Hours During Period}}$</td>
</tr>
<tr>
<td>Emergency Percentage</td>
<td>10% or Less</td>
<td>% = $\frac{\text{Total Hours Worked on Emergency Jobs}}{\text{Total Hours Worked}}$</td>
</tr>
<tr>
<td>Percentage Candidate of Equipment Covered by PT&amp;I</td>
<td>100%</td>
<td>% = $\frac{\text{Number of Equipment Items in PT&amp;I Program}}{\text{Total Equipment Candidates for PT&amp;I Program}}$</td>
</tr>
<tr>
<td>Percent of Emergency Work of PT&amp;I and PM Work</td>
<td>20% or less</td>
<td>% = $\frac{\text{Total Emergency Hours}}{\text{Total PT&amp;I Preventative Maintenance Hours}}$</td>
</tr>
<tr>
<td>Percent of Faults Found in Thermographic Survey</td>
<td>3% or Less</td>
<td>% = $\frac{\text{Number of Faults Found}}{\text{Number of Devices Surveyed}}$</td>
</tr>
<tr>
<td>Percent of Faults Found in Steam Trap Survey</td>
<td>10% or Less</td>
<td>% = $\frac{\text{Number of Defective Steam Traps Found}}{\text{Number of Steam Traps Surveyed}}$</td>
</tr>
<tr>
<td>Ratio of PM/PT&amp;I Work to Reactive Maintenance Work</td>
<td>A = 70% PM / PT&amp;I</td>
<td>$A% = \frac{\text{Manhours of PM/PT&amp;I Work}}{\text{Manhours of Reactive + PM/PT&amp;I Work}}$</td>
</tr>
<tr>
<td></td>
<td>B = 30% Reactive Maintenance</td>
<td>$B% = \frac{\text{Manhours of Reactive Work}}{\text{Manhours of Reactive + PM/PT&amp;I Work}}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$A% + B % = 100%$</td>
</tr>
<tr>
<td>Description</td>
<td>Showpiece Facility</td>
<td>Comprehensive Stewardship</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------</td>
</tr>
<tr>
<td>Customer Service &amp; Response Time</td>
<td>Able to respond to virtually any service, immediate response.</td>
<td>Response to most service needs, typically in a week.</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Proud of facilities, have a high level of trust for the facilities organization.</td>
<td>Satisfied with facilities related services, usually complimentary of facilities staff.</td>
</tr>
<tr>
<td>PM vs. CM</td>
<td>100%</td>
<td>75-100%</td>
</tr>
<tr>
<td>Maintenance Mix</td>
<td>All PM is scheduled &amp; performed on time. Emergencies (e.g. power outages) are infrequent and handled efficiently.</td>
<td>A well-developed PM program: PM done less than defined schedule. Occasional emerg. caused by pump failures, etc.</td>
</tr>
<tr>
<td>Aesthetics, Exterior</td>
<td>Windows, doors, trim, exterior walls are like new.</td>
<td>Watertight, good appearance of exterior cleaners.</td>
</tr>
<tr>
<td>Aesthetics, Lighting</td>
<td>Bright and clean, attractive lighting.</td>
<td>Bright and clean, attractive lighting.</td>
</tr>
<tr>
<td>Service Efficiency</td>
<td>Maintenance activities appear highly organized and focused. Service and maintenance calls are responded to immediately.</td>
<td>Maintenance activities appear organized with direction. Service and maintenance calls are responded to in a timely manner.</td>
</tr>
<tr>
<td>Building Systems' Reliability</td>
<td>Breakdown maintenance is rare and limited to vandalism and abuse repairs.</td>
<td>Breakdown maintenance is limited to system components short of MTBF.</td>
</tr>
<tr>
<td>Operating Budget as % of CRV</td>
<td>&gt;4.0</td>
<td>3.5-4.0</td>
</tr>
<tr>
<td>Campus Average FCI</td>
<td>&lt;0.05</td>
<td>0.05-0.15</td>
</tr>
</tbody>
</table>
Summary

Key Tips to Take Away
Key benefits to optimizing FM technology include:

- Increased workforce efficiency and effectiveness
  - Improved communication
  - Improved maintenance quality and labor tracking
- Better tracking of asset and equipment histories
  - Organized FM data for better facilities decisions
  - Equipment life extension and improved performance
  - Lowering facility total cost of ownership (TCO)
Tips to Take Away

1) Have a plan
   *Failing to plan is planning to fail*

2) Remember it is not just about selecting a piece of software
   *Processes, standards and metrics are important*

3) Facility decisions and processes define software
   *Software should improve, not impede, organizational effectiveness*
Contact Information

Today’s Presenters:

• Angela Lewis, PhD, PE, LEED AP
  angela.lewis@feapc.com

• Mayra Portalatin, SFP, LEED AP O+M
  mayra.portalatin@feapc.com

Stay tuned for more FEA-U Session Information...

Thanks!