Digitize Your Checklists - Computerized Airport Maintenance Management

Tuesday, February 26, 2019
2:00-3:30 PM ET
Purpose


Learning Objectives

At the end of this webinar, you will be able to:

• Describe asset management in an airport context
• List the elements of an Asset Management Plan and explain how to quickly and effectively apply it to inform budgets
• Describe how the CMMS can help manage a variety of assets across different airport systems
• Discuss how to design and implement the CMMS with the end in mind
ACRP Webinar
Digitize Your Checklists — Computerized Airport Maintenance Management

February 26, 2019
Charles Marshall
Hartsfield-Jackson Atlanta International Airport (ATL)

- Asset Management and Sustainability, ATL
- Certified Energy Manager, Certified Building Commissioning Professional, Project Management Professional, & EcoDistrict AP
- ACRP Ambassador Emeritus & Panel Participant
- Board of Directors Member of International Facility Management Association, Atlanta Chapter
Five Ways to Get Involved!

1. Join the ACRP IdeaHub community
2. Volunteer for a project panel
3. Prepare a research proposal
4. Answer an ACRP survey
5. Apply the research results

Visit us online: www.trb.org/ACRP
Today’s Speakers

Larissa James, WSP
Gary Merrow, Hartsfield-Jackson Atlanta International Airport

Presenting ACRP Report 69

Asset and Infrastructure Management for Airports—Primer and Guidebook

John Fortin, Jacobs
Laith Alfaqih, Stantec

Presenting ACRP Report 155

Advanced Computer Maintenance Management Systems Integration for Airports
Asset and Infrastructure Management for Airports – Primer and Guidebook

Larissa James
Gary Merrow
Larissa James, Principal Investigator and Gary Merrow, VP of Facilities

- VP Asset Management and Business Strategy, WSP
- Former Asset Systems Manager and Asset Performance Improvement Manager
- Experienced in multi-sector asset management projects in Australia, USA and Canada
- Atlanta Airlines Terminal Company
  Vice President of Facilities for Hartsfield-Jackson Atlanta International Airport
- Adjunct Professor in Integrated Facilities Management at Georgia Tech, Atlanta, Georgia
- 35-years experience in Facilities Operations from “wrench-turner” to Senior Executive
ACRP Report 69 Oversight Panel

Karen Scott, Louisville Regional Airport Authority, (Chair)
Carol M.F. Davis, Dallas/Fort Worth International Airport
Josh Francosky, Ricondo & Associates
Royce Holden, Asheville Regional Airport
Joyce K. Johnson, CAD Concepts, Inc.
Therese Norcross, Missoula County Airport Authority
Kevin C. Willis, FAA Liaison
Matthew J. Griffin, Airports Council International North America
Thomas Palmerlee, TRB Liaison
ACRP Report 69: Asset and Infrastructure Management for Airports – Primer and Guidebook

- Primer for executive-level decision makers at airports of all sizes
- Role of Executives in establishing policy, objectives, and governance, and in providing leadership
- Guidebook instructions in the development and implementation of an asset and infrastructure management program
- Captures best management practices
- Provides guidance in developing and incorporating asset and infrastructure management programs at airports of all sizes
- Published 2012
Airport Participants

Miami International Airport
Corpus Christi International Airport
Toronto Pearson International Airport
Cincinnati/Northern Kentucky Int. Airport
Churchill Manitoba Airport
Jackson Municipal Airport
Minneapolis/St. Paul International Airport
Sacramento International Airport
Fresno Yosemite International Airport
Hartsfield-Jackson Atlanta International Airport
Chicago O’Hare International Airport
Dallas/Fort Worth International Airport
Reno-Tahoe International Airport
McCarran International Airport
Bangor International Airport
Greenville Spartanburg International Airport
Palm Springs International Airport
Jacksonville International Airport
Oakland International Airport
Charlottetown Airport
Memphis International Airport
Seattle Tacoma International Airport
Vancouver International Airport
Elephant Butte International

Nashville International Airport
Gatwick, UK
Addison Airport
Arlington Municipal Airport
Baltimore Washington International Airport
Chicago O’Hare International Airport
Denver International Airport
Detroit Metro Airport
George Bush Intercontinental Airport
Minneapolis/ St. Paul International Airport
Austin Bergstrom International Airport
Cincinnati/Northern Kentucky
Colorado Springs Municipal Airport
General Mitchell International Airport
Lambert St. Louis International Airport
Manchester Boston Regional Airport
Memphis International Airport
Sacramento International Airport
South West Fl. International Airport
Vancouver International Airport
Albuquerque International Airport
Bangor International Airport
Grand Canyon National Park Airport
Metropolitan Knoxville Airport Authority
Missoula International Airport
Pittsburgh International Airport
Saint John Airport Canada
San Diego International Airport
Atlantic City International Airport
Baton Rouge International Airport
Corpus Christi International Airport

Des Moines International Airport
Fresno Yosemite International Airport
Gerald Ford International Airport
Greenville Spartanburg International Airport
Huntsville International Airport
Long Island Macarthur Airport
Preston Smith International Airport
Tallahassee Regional Airport
Tucson International Airport
Tulsa International Airport
Vallejo International Airport
Wichita Mid-Continent Airport

Site Visits
Dallas/Fort Worth International Airport
Miami International Airport
Addison Airport
Greenville Spartanburg International Airport
Sacramento International Airport
Miami International Airport
Brisbane Airport Corporation
Auckland Airport
Charlotte Douglas International

Conference Calls
Port Authority of NY and NJ
Port of Seattle
Sarasota International Airport
Denver International Airport
Cincinnati International Airport
Main Findings of the Research

An enterprise approach to asset management helps us to

- Do more with less
- Identify and manage risks to the business
- Make better investment decisions
- Extend asset life, reduce downtime, achieve better control over performance
- Align decision makers to a common purpose
- Respond more easily to changes in the regulatory and commercial environment

Examples of benefits:

- 13.5% increase in pavement life
- Pavement levels of service maintained with 30% reduction in budget
What is Asset Management?

“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 purposes of achieving its organizational strategic plan.”

An organizational strategic plan is defined as: “Overall long-term plan for the organization that is derived from, and embodies its vision, mission, values, business policies, stakeholder requirements, objectives and the management of its risks.” Source: PAS 55 Part 1 2008 Publicly Available Specification for the Optimized Management of Physical Assets

**ISO 55000:**
An asset is defined as:
“item, thing, or entity that has potential or actual value to an organization”

Asset Management is defined as:
“coordinated activity of an organization to realize value from assets”
AM System

Legal and stakeholder requirements and expectations (customers, shareholders, regulators, employees, suppliers, society)

Other organizational requirements and systems

Organizational strategic plan

PAS 55 Asset management system

Asset management policy
- Asset management strategy
- Asset management objectives
- Asset management plans

Organizational values, functional standards, required processes

Acquire/create
Utilize
Maintain
Renew/dispose

Portfolio of asset systems and assets (diversity of types, criticalities, condition and performance)

Continual improvement

Performance and condition monitoring

Asset management enablers and controls
What Asset Management could mean for you

CEO and Board—Better understanding of future needs to service customers competitively.

Budget and Finance—Reduce unforeseen post-budget capital needs; provide 10-year and beyond forecast of capital, operations, and maintenance needs; allow establishment of price paths to address changing infrastructure investment needs.

Planning Manager—Incorporation of planning requirements for infrastructure and assets in airport asset management plans.

Engineering Manager—Greater lead time on project work load, processes for continuous improvement in design and construction standards, improved engineering records, data and knowledge management.

Operations Manager—Support for, and focus on, achieving operating efficiency and effectiveness, and service level outcomes.

Maintenance Manager—Increased support for improved maintenance processes and practices.

Environmental Manager—Awareness of the environmental consequences of infrastructure failures and ability to pre-plan mitigations.

Information Technology Manager—Greater awareness and understanding of the specific system functionalities needed to support the business.
5 Asset and Infrastructure Management for Airports—Primer

5.1 Why Asset Management for Airports?
5.2 What Can Asset Management Do for You?
5.3 Primer Overview
6 Introduction to Asset Management
10 Asset Management Policy
11 Asset Management Objectives, Strategies, and Plans
12 Asset Management Enablers
15 Implementation of Asset Management Plans
15 Performance Assessment and Improvement
16 Management Review
17 Putting It All Together: Implementing an Asset Management Framework
18 Concluding Observations
Primer Highlights – Tips for new adopters

- Be clear about what the airport is endeavoring to achieve
- Undertake a maturity assessment
- Establish a leadership and a governance structure early
- Regularly review progress and performance
- Since information systems support processes, understand your process and procedure requirements and drive the configuration of systems to support them
- Do not underestimate the role of change management
Guidebook Outline

**Chapter 1** Guidebook Asset and Infrastructure Management for Airports
31 Introduction
32 Guidebook Objectives
32 Intended Audience
32 Document Structure and Content Overview

**Chapter 2** Implementing an Asset Management Framework: Establishing the Foundation
34 Introduction to Asset Management
36 Maturity Assessment, Implementation Planning, and Best Appropriate Practice
40 Organization, Leadership, and Change Management
42 Committee Functions

**Chapter 3** Asset Management Objectives
45 Strategic Planning, Airport Master Plans, and Asset Management Objectives
48 Customers, Regulators, and Performance Requirements

**Chapter 4** Asset Management Strategies and Plans
49 Asset Management Plans, Content, and Development

**Chapter 5** Airport Information and Data Systems
79 Airport Information Systems for Asset Management
80 Decision Support Tools
83 Functionality Requirements for Maintenance Management
86 Functionality Requirements for Asset Accounting

**Chapter 6** Implementation of Asset Management Plans: Lifecycle Processes and Best Appropriate Practices
90 Project Initiation, Planning, and Design
91 Capital Project Delivery
94 Operations and Maintenance

**Chapter 7** Performance Assessment and Improvement
97 Monitoring and Managing Performance to Achieve Objectives

**Chapter 8** Management Review
100 Strategic Priority Review and Strategy Adjustment
101 Improving Business Processes, Procedures, Data, and Information
101 Auditing Performance against the Plan
Guidebook Highlights

🚀 Step by Step guidance on developing Asset Management Plans
🚀 Examples and guidance for large and small airports

Some key questions for defining assets and the hierarchy structure are as follows:

1. Does the hierarchy structure align with the functions of the business?
2. How will the item be replaced/renewed/retired?
3. Will the item be replaced as a unit with a parent asset?
4. Will the item be replaced individually?
5. Does the item have a capital replacement value?
6. Is the item critical?
Asset Management Planning

1. What is the current state of my assets?
   - Develop Asset Registry
   - Assess Performance, Failure Modes
   - Determine Residual Life
   - Determine Life Cycle & Replacement Costs
   - Set Target Levels of Service (LOS)
   - Determine Business Risk (“Criticality”)
   - Optimize O&M Investment
   - Optimize Capital Investment
   - Determine Funding Strategy
   - Build AM Plan

2. What is my required level of service?

3. Which assets are critical to sustained performance?

4. What are my best O&M and CIP investment strategies?

5. What is my best long-term funding strategy?

US EPA Asset Management Plan Ten Step Process
### Business Risk Exposure – Condition v Criticality

#### Table: Asset Register and Hierarchy

<table>
<thead>
<tr>
<th>Current Year</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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<td>-1 - Gate</td>
<td>-111 Gate</td>
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<td>-1112 Condenser</td>
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<td>-1121 Cord</td>
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<td>-1122 Plug</td>
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<td>-113 Potable Water</td>
<td>-1131 Cabinet</td>
<td>-1132 Hose</td>
<td>-1134 Interiors</td>
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<td></td>
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<td></td>
<td>-114 Wall covering</td>
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<td>-1142 Carpet</td>
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<td>-1183 Tire Pneumatic</td>
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<td>-119 Lift Column</td>
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<td>-1191 Lift Column Motors</td>
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<td>-124 Bag chutes</td>
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<td>-126 USA-802 power meter</td>
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</table>

#### Probability of Failure

- **Rating**
  - Calculated: 0, 1, 2, 3, 4
- **Loss of Service Impact**
  - Tab C: 1, 1.5, 2, 2.5
- **Public Health & Safety**
  - Tab C: 0, 0.5, 1, 1.5
- **Airport Credibility**
  - Tab C: 1, 1.5, 2, 2.5
- **Cost of Failure (Restoration Cost)**
  - Tab C: 0.2, 0.3, 0.5, 0.7
- **Resource and Operational Impacts**
  - Tab C: 1, 1.5, 2, 2.5
- **Level of Service Impact**
  - Tab C: 0, 0.5, 1, 1.5
- **Regulatory Violations, Air/Water/Land Contamination**
  - Tab C: 0, 0.5, 1, 1.5

#### Figure E-6: Business risk exposure.

- Tunnel Assembly
- Tunnel Roller Assembly
- Lift Column Motor
Passenger Boarding Bridge Example

**Investment Profile - Passenger Boarding Bridge**

Figure E-7. Investment cash flows for example PBB.
ISO 55001 Certification and ACRP Report 69

Flight Plan

- Linkages between ACRP Report 69 and ISO 55001
- Challenges to implementation of ISO 55001
- Examples of success of ISO 55001
- Sustaining and growing ISO 55001
ACRP Report 69 – PAS 55 – ISO 55001

- Inherited a PAS 55 mindset based on ACRP Report 69 and Guidebook
- One start towards ISO 55001 had started and stopped
- Enterprise Asset Management system – INFOR – established under guidance of Chapters 5 and 6 of Report 69 Guidebook
- Asset Management Planning slide – followed with an in-depth triennial assessment
  - Focused holistically
  - Utilized software tool to aid with Capital Plan for airport
- Processes established to keep “sustainable” and partnership formed between the Department of Aviation and the Atlanta Airlines Terminal Company, LLC
ISO 55001 Implementation

- Introduced in 2015 by one of our vendor / partners
- Industrial Engineer (IE) hired to focus on journey
- Leadership direction changed direction – IE was promoted into another position
- Ball picked back up in 2017 – new IE hired
- Senior leadership champions – CEO and VP of Facilities
  - Heavy support from VP of Business Administration
- Consulting support from Jacobs (CH2M at the time) Engineering
- Didn’t “eat the elephant”
  - Focused on two central plants (Domestic Terminal and International Terminal)
- Changing culture and language
- Begin to focus on strategic risk, business continuity and disaster recovery
Examples of Success of ISO 55001

Examples of Success

- During strategic risk assessment had a real world failure bringing both plants down
- Drove more in-depth risk assessment allowing us to mitigate another controls failure two months later
- Systems now have more resiliency allowing proactive measures against future risks
- Cultural language now spilling over to electrical, plumbing, vertical/horizontal transportation, fire life safety, and baggage handling systems
- Working with vendor partners to begin ISO 55001 journey’s for the above
Sustaining and Growing ISO 55001

Sustaining and Growing ISO

- No “ISO-washing”
  - Culture must embrace from all levels and
  - All departments
- Honest assessment of cost
  - Initial start
  - The first leg of the journey
  - Year two on...
  - Growing to other systems
- Honest assessment of time commitments for the above (and that cost)
- Internal development of auditing and assessing skill sets vs. consultants (or hybrid)
- Keeping “champions” engaged
- Is there an ROI
A Guidebook for Advanced Computerized Maintenance Management System Integration at Airports

John Fortin – CMRP, IAM, CRL
Laith Alfaqih – PhD, PE, CRL
John Fortin  
Principal Investigator

- CRL, CMRP, IAM
- Vice President and Global Director, Asset Management at JACOBS
- Previously self-employed AM Consultant
- Live in Boston, MA
- Interests
  - Fitness
  - Home construction projects
Laith Alfaqih (alfa-key)
Deputy Principal Investigator and Project Manager

- Senior Strategic Management Consultant – Enterprise Client Services at Stantec
- 17 years of experience
- Work across different industries (Water, Transportation, Airport, Energy, etc.)
- PhD CE (Reducing Risk in Engineering Projects), MS MIS (Ops Management), MS EnvE, BS CE
- Professional Engineer
- Certified Reliability Leader
- Certified Strategic Decision and Risk Management
- Live in Cincinnati, Ohio
ACRP Report 155 Oversight Panel

Sarah J. Demory, City of Boise, Boise, ID (Chair)
Majed Khater, Clark County (NV) Department of Aviation, Las Vegas, NV
Casey Martin, Jacobs, Houston, TX
Bob Montgomery, Southwest Airlines, Dallas, TX
Robert C. Wilson, Kent County (MI) Department of Aeronautics, Grand Rapids, MI
Thomas Mai, FAA Liaison
Raymond “Ray” Zee, FAA Liaison
Paul J. Eubanks, Airports Council International—North America Liaison
Christine Gerencher, TRB Liaison
Marci Greenberger, ACRP Senior Program Officer
ACRP Report 155: A Guidebook for Advanced Computerized Maintenance Management System Integration at Airports

Objectives

- Designed to assist airport staff in determining which systems are best managed in the CMMS and in what order of implementation
- Guidance on the steps necessary to implement a CMMS
- Factors for consideration in prioritizing which systems should be included in the CMMS using a phased approach
- Steps for integrating CMMS data into performance management and business decision making

Approach

- Presents case studies from various airports (location, size, maturity)
- Presents case study from other industries
- Guidebook published 2018
Document Complementary to other ACRP Projects

- Report 69 – Asset and Infrastructure Management for Airports
- Report 19 – Developing an Airport Performance-Measurement System
- Report 19A – Resource Guide to Airport Performance Indicators
- Report 74 – Application of Enterprise Risk Management at Airports
- Report 131 – A Guidebook for Safety Risk Management at Airports
- Report 172 – Guidebook for Considering Life-Cycle Costs in Airport Asset Procurement
## Table of Contents

- **State of the airport industry in CMMS implementation**
- **Designing the CMMS with end in mind**
- **Case studies**
- **CMMS integration into business decision making**
- **Best practices for establishing consistent asset taxonomy, hierarchy and attributes**
- **CMMS implementation and compliance with ISO 55000**
Background

- Airports are made up of complex set of interconnected systems
- Conducting timely, systematic maintenance activities on those systems is necessary to optimize airport operations and avoid negative impacts on levels of service
- Most organizations that use a CMMS find it challenging to appropriately and fully deploy and use the CMMS functions
- Leveraging CMMS for maintenance and asset management strategy implementation and reporting enhances overall operations, maintenance, and business decision making
General CMMS Implementation Facts

- 40 to 80% of all CMMS implementation will fail to deliver expected ROI (Terry Wireman 2016)
- Organizations only use 30% of [CMMS] capabilities (ARC Study 2003)
- Organizations only realize 50% of [the CMMS’s] potential (Aberdeen Research 2007)
- Only 16% of the respondents indicated that their CMMS is integrated with other systems (reliabilityweb.com 2011)
- 91% of respondents viewed work order management is the most important feature of a CMMS (reliabilityweb.com 2011)
Distribution of Participating Airports

- General Aviation Non-Primary
- Reliever Non-Primary
- Non-Hub Non-Primary
- Commercial Non-Hub Primary
- Commercial Small Hub
- Commercial Medium Hub
- Commercial Large Hub

Number of Airports
CMMS Utilization

- Use system to practively manage preventive maintenance
- Use system to manage work requests
- Use system to manage inventory
- CMMS is supported by mobile devices
- CMMS is part of an enterprise asset management system
- Not sure how the system is utilized
- Total
Managed Assets through CMMS

Number of Airports

- Electric
- Terminal Buildings
- HVAC
- Facilities
- Runway Lighting
- Plumbing
- Jet Bridges
- Escalators/Moving Walkways
- Elevators
- Power Plant
- Baggage Handling System
- Parking Garages
- Hangars
- Pavement
- Signage
- Buried Piping
- Stormwater Infrastructure
- Security System
- Fueling System
- Rolling Stock
- Utility/Treatment Facilities on Site
- Deicing System
- IT
- Rental Spaces
Integration of Existing Systems with CMMS

- Financial Software
- Inspection Application (Part 139)
- Geographic Information
- Storeroom
- Airfield Lighting
- Fueling
- Property Management
- Time and Labor Software
- Building Management
- Human Resources
- Fleet Management
- Incident Management
- Electronic Log Books
- Scheduling
- Pavement Management
- Payroll
- Wildlife Hazard Management Plan
- Automatic Vehicle Identification
- Safety Management
- Security
- Resource Management

Number of airports
Airports are at different stages in the journey of implementing CMMS.

Airports are becoming more proactive in managing their maintenance activities.

Airports want to implement systems to improve their maintenance, operational, and capital strategies, but they are perceiving many challenges in implementation:

- Lack of resources
- Funding
- Understanding their systems
- Leadership buy-in

Larger airports have higher chances in considering and successfully implementing CMMS.

Airports are utilizing CMMS systems to communicate data and findings through KPIs and reports.
Case Studies

**Airports**
- Seattle-Tacoma
- Salt Lake City
- Milwaukee
- Toronto-Pearson
- Port Authority of New York and New Jersey

**Non Airports**
- Gwinnett County Department of Water Resources (GCDWR)
### CMMS Selection Comparison

<table>
<thead>
<tr>
<th>Question Category</th>
<th>Question</th>
<th>CMMS Selection</th>
<th>Airports</th>
<th>Non-Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Which of the following MRO inventory and procurement statements were considered in selecting CMMS?</td>
<td>System generates a Spares Reorder Report when the quantity on hand drops below a minimum level</td>
<td>✗</td>
<td>✗</td>
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<td>System has the ability to manage multiple warehouses</td>
<td>✗</td>
<td>✗</td>
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<td>Inventory system is integrated (or can be) with the vendor’s own purchasing system</td>
<td>✗</td>
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<td>If a reorder point is reached, a purchase requisition is generated either manually or automatically</td>
<td>✗</td>
<td>✗</td>
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<td>When the part is received, the system notifies the planner, automatically or manually, which work orders can now be filled</td>
<td>✗</td>
<td>✗</td>
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<td>System produces performance reports for purchasing section that include overdue POs, inactive parts, or inventory valuation</td>
<td>✗</td>
<td>✗</td>
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<td>System automatically tracks costs to the work order on an itemized basis</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>5</td>
<td>Which of the following management reporting statements were considered in selecting CMMS?</td>
<td>System produces reports daily, weekly, monthly, yearly, or at user-defined intervals</td>
<td>✗</td>
<td>✗</td>
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<td>Reports produced by the system are summary reports, lists of information, or exception reports</td>
<td>✗</td>
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<td>System has a report writer in addition to standard system reports</td>
<td>✗</td>
<td>✗</td>
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<td>Reports were designed to be used by system managers, managers, or maintenance personnel</td>
<td>✗</td>
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<td>System has a maintenance budget reporting module</td>
<td>✗</td>
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<td>System reports and forecasts asset downtime</td>
<td>✗</td>
<td>✗</td>
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<td>System tracks asset downtime costs</td>
<td>✗</td>
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</table>
Basic CMMS Project Implementation Plan

Initiate  Define  Develop  Validate  Deploy  Operate

Improve
Key Considerations in Designing the Use of CMMS

Success Factors

- Put together CMMS project team
- Top-Down (Strategic)
- Bottom-Up (Tactical)
- Cross Divisions
- Vision Short-Long
- Commitment
- Build & Implement Change Mgmt Process
- Internal
- External
Choosing Assets/Systems to Include in CMMS

- An organization may assume that every asset should be included in the CMMS with no real consideration of why.
- It is therefore advantageous to resist the tendency to over-burden the maintenance group with too much data management.
- Before selecting the assets, a complete “consequence of failure” analysis of the assets should be done. How does an asset failure impact the organization, customer interfacing, regulatory, safety, cost, and the achievement of objectives?
Assets/Systems to Include in CMMS

- Facilities
- Electric
- Terminal Buildings
- HVAC
- Runway Lighting
- Plumbing
- Escalators/Moving Walkways
- Elevators
- Power Plant
- Parking Garages
- Hangars
- Jet Bridges
- Signage
- Baggage Handling System
- Rolling Stock
- Pavement
- Stormwater Infrastructure
- Fueling System
- Buried Piping
- Utility/Treatment Facilities on Site
- Security System
- Deicing System
- IT

% of large airports managing the asset in CMMS
Without a clear understanding of organization-wide information needs, the development of accurate and useful KPIs, reports, and BI tools is impossible.

Current CMMS software makes it very easy to build KPI dashboard, ad-hoc reports, custom reports, and use BI tools.

Data needed by maintenance supervisors will be somewhat different from the data needed by technicians or department managers.
Establish success criteria for the overall CMMS implementation or upgrade

Determine and monitor KPIs for the CMMS implementation or upgrade

Determine and monitor O&M KPIs to track via the CMMS

Engage staff data analysts by having them extract and perform data quality analysis for cost trending and the KPI/performance reporting
Useful KPIs

- Scheduled, completed, on hold (with reason), and past-due work orders
- Planned versus actual maintenance actions, labor time, parts utilization, and overall costs with delta (change)
- Mean time to asset failure
- Overall asset uptime versus downtime
- Mean time to asset repair
- Ratio of planned maintenance to reactive maintenance
Help Desk KPI / Dashboard
### Performance Metrics – Toronto Pearson YYZ

<table>
<thead>
<tr>
<th>Performance Metric</th>
<th>Target</th>
<th>Dec 2015</th>
<th>YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baggage Service Availability</td>
<td>99.5%</td>
<td>99.8%</td>
<td>99.9%</td>
</tr>
<tr>
<td>Degraded Mode % normalized for construction</td>
<td>&lt;4.6%</td>
<td>1.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Jams/1000 (over 1 min)</td>
<td>&lt;3.6</td>
<td>3.2</td>
<td>2.9</td>
</tr>
<tr>
<td>PBB – Service Availability</td>
<td>97.4%</td>
<td>98.6%</td>
<td>99.1%</td>
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<tr>
<td>Elevators</td>
<td>96.0%</td>
<td>96.6%</td>
<td>95.9%</td>
</tr>
<tr>
<td>Escalators</td>
<td>96.0%</td>
<td>96.0%</td>
<td>95.5%</td>
</tr>
<tr>
<td>Moving Walkways</td>
<td>96.0%</td>
<td>97.5%</td>
<td>95.7%</td>
</tr>
<tr>
<td>HSW - FEM11</td>
<td>95.0%</td>
<td>98.0%</td>
<td>89.8%</td>
</tr>
<tr>
<td>HSW - FEM12</td>
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<td>95.3%</td>
<td>91.0%</td>
</tr>
<tr>
<td>HSW - FEM12 Normalized for GTAA Holds and Approved Outages</td>
<td>98.9%</td>
<td>93.9%</td>
<td></td>
</tr>
<tr>
<td>Automated People Mover</td>
<td>99.5%</td>
<td>99.7%</td>
<td>99.3%</td>
</tr>
</tbody>
</table>
Organizations have basic understanding of the strategies they should consider relative to their goals and objectives when embarking on a CMMS implementation (staffing, level of maintenance and replacement schedules, preventive maintenance).

CMMS project team defines an organization-wide CMMS strategy and aligns it with the organization’s vision for short- and long-term asset management.

Most important recognized challenges is Organizational buy-in for change management.

Software is the tool to organize and assist in successful implementation. It only a part of the success and not everything.

Your organization is not the first one facing these challenges.
Acknowledgements

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Panelists Presentations


After the webinar, you will receive a follow-up email containing a link to the recording
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