ACRP 09-14

Advanced Computer Maintenance Management System (CMMS) Integration for Airports

John Fortin, CMRP, LEED AP
Asset Management Context – Definitions

• ISO 55000 definition:
  ✓ the coordinated activity of an organization to realize value from assets.

• Another common definition:
  ✓ An integrated set of processes to minimize the lifecycle costs of owning, operating and maintaining assets, at an acceptable level of risk, while continuously delivering established levels of service.
Asset Management Context – Lifecycle View
Introduction to Asset Management

• Various frameworks for gap assessments
  – BSI PAS 55:2008 (forerunner standard)
    • (British Standards Institution - publically available standard)
  – New ISO 55000 Standard – became available 2014
  – Uptime Elements table/system for AM performance
  – Customization and industry-specific best practices (typical approach)
ISO 55000 Asset Management Framework Documents:

• BS ISO 55000:2014 - Overview, principles and terminology
• BS ISO 55001:2014 - Management systems - Requirements
• BS ISO 55002:2014 - Management systems - Guidelines for the application of ISO 55001
Uptime Framework (by ReliabilityWeb.com):
Introduction:

- **CMMS** can be used to **manage a variety of assets** across a number of different functions and thus **can be overwhelming when implementing a new or replacement CMMS**

- **Robustness** of the features and functionalities of **CMMS’** available today also **adds to the complexity**

- **Phasing of systems** into the CMMS may result in a more successful implementation, and development of a business case

- Users of past CMMS have struggled with the details of classifying and grouping asset tracking

- **Recommendations** for logical groupings are needed for various levels of tracking
Introduction continued:

• **Reporting** from the CMMS for airport executives **is generally inadequate** for business decision making

• The **objectives of this research** are to develop guidance:
  – identify which airport system is likely to provide the highest value when implementing a CMMS
  – describe the steps necessary to implement the identified system into a CMMS
  – provide the factors that an airport should consider when prioritizing the systems for inclusion into the CMMS in a phased approach
  – provide the steps for integrating CMMS into business decision making.
Introduction continued:
ACRP 09-13: Total Cost of Ownership (TCO)

Existing Gaps
Capital Asset Procurement Siloes

- **Capital Asset Repair and Replacement Planning**
  - Very little upfront O&M input in design
  - Design is not Executed with TCO as a decision making guideline

- **Asset Design**
  - Technology bridge to CMMS inadequate
  - Asset hierarchy and naming conventions not addressed in design
  - O&M staff input minimal
  - TCO data not available to fine tune decisions

- **Asset Construction**
  - Commissioning process is disjointed and incomplete
  - O&M brought in late in the commissioning process
  - BIM information, record drawings, PM’s, warranty data, and CMMS bridge are incomplete

- **Ongoing O&M**
  - Lack of solid CMMS data to help inform repair and replacement investment decisions

- **Repair and replacement investment decisions over time**

- **Decommissioning**

**Needed:** total cost of ownership data to scientifically inform ongoing capital asset planning and procurement decisions

Closing Gaps in the Asset Procurement Process
ACRP 09-13: Total Cost of Ownership (TCO)

CH2M HILL approach to ACRP 09-13

“Operational Readiness”

- Develop project teams
- Use of TCO data in capital asset decision making
- BIM standards
- Develop technology bridges
- Staff perform design review with TCO data
- Project teams work with contractor during the commissioning process
- Data links are established
- Project teams work with designer and contractor to load the CMMS asset registry
- Solid CMMS data provides baseline for TCO tool

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Ongoing O&M

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- Lack of proper CMMS data available to baseline TCO tool

“TCO TOOL” Repair and replacement investment decisions over time

Decommissioning

Total cost of ownership TOOL is used to scientifically inform capital asset planning and procurement decisions

Operational readiness, our approach to closing the procurement gaps
CMMS Research Hypothesis:

“The current state of CMMS implementation and utilization at airports can be advanced by practical and user-friendly guidance that includes templates and tools identified from leading cross-industry CMMS practices that have been adapted to fit the airport environment.”
CMMS Research Framework:

**Task 1:** Project Planning & Mobilization
- Amplified work plan
- Project charter and kick off

**Task 2:** Data Collection Plan
- Data collection methods and protocols

**Task 3:** Data Collection
- Bibliography
- Summary of findings from literature review

**Task 4:** Data Analysis
- Summary of findings from analysis (including airport systems that provide highest value)

**Task 5:** Interim Report
- Interim Report write up
- Interim Report meeting

**Task 6:** Develop Guidance Concept
- List of cohesive airport systems
- Best practices
- KPIs

**Task 7:** Draft Final Deliverables
- Submit draft final deliverables

**Task 8:** Final Deliverables
- Submit final deliverables
ACRP Research Process Diagram

Major Research Outputs:
1. Guidebook
Ways to Participate in this Research Project:

• Focus Group
• Industry interviews
• Case Studies

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1. Guidebook