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:

• Many airports today are managing assets that were built during the high growth era, and are now quickly approaching the end of their useful life. Because of this, many U.S. airports are either retrofitting their facilities while incurring very high capital replacement costs, or they are currently suffering under the highest possible level of ongoing operating costs.

• The industry faces a much needed shift toward active management of Total Cost of Ownership “TCO” at most airports to improve procurement decision making and the use of both capital and operating funds.

• TCO tool is well developed in other sectors like utilities, oil and gas, transit, etc.
Introduction continued:

- TCO is now quantifiable, not theoretical, in these industries and many lessons and tools can be adopted and modified by airport decision makers.

- Recent ACRP Projects including:
  - Theory, practice and technology for Asset and Infrastructure Management established in ACRP Projects 69 and 09-05.
  - Sustainable operations and maintenance guidance establish with ACRP project 110.
  - Critical milestones for maintenance input on infrastructure projects established in ACRP project 09-07.

- This research is timely from the standpoint of bringing asset management and TCO technology and best practices together in one place for the aviation industry.
O&M Ready:

Existing Gaps
Capital Asset Procurement Siloes

- Very little upfront O&M input in design
- Design is not Executed with TCO as a decision making guideline
- 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
- 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
- Lack of solid CMMS data to help inform repair and replacement investment decisions

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

Closing Gaps in the Asset Procurement Process
O&M Ready:

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

Capital Asset Repair and Replacement Planning

Asset Design

Asset Construction

Ongoing O&M

“TCO TOOL” Repair and replacement investment decisions over time

Decommissioning

- Very little upfront O&M input in design
- Design is not Executed with TCO as a decision making guideline

- 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

- 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

- Lack of solid CMMS data to help inform repair and replacement investment decisions
- Lack of proper CMMS data available to baseline TCO tool

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
Research Hypothesis:

“The current procurement, design, and operational gaps Airport directors face can be closed by identifying leading industry best practices around people, process and technology, and compiling them into a comprehensive guidebook and accompanying TCO Tool.”
Research Framework:

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

**Task 2**
**Data Collection Plan**
- Data collection methods and protocols
- Draft interview questions and agenda

**Task 3**
**Data Collection**
- Documentation of data from literature review

**Task 4**
**Data Analysis**
- Airport case studies
- Industry interviews
- Analysis of collected data process, results and discussion

**Task 5**
**Develop Guidebook Concept**
- Annotated outline and sample chapter

**Task 6**
**Develop TCO Tool Concept**
- TCO tool mock up, flow charts, and screenshots

**Task 7**
**Interim Report**
- Complete interim report
- Prepare workshop material and conduct workshop

**Task 8**
**Draft Final Deliverables**
- Submit draft final deliverables

**Task 9**
**Final Deliverables**
- Submit final deliverables
Ways to Participate in this Research Project:

• **Focus Group**
  – Discuss Lifecycle Gaps / Best Practices
  – Develop Industry Survey Questions

• **Case Studies**
  – Document “Leading Organization” Practices

• **TCO Tool Development**
  – Build Off Other Developed Tools
  – Populate with Mockup Data for Primary Asset Classes (provided by Focus Group)

• **TCO Tool Beta Testing**
  – Few Airports Test-Drive Beta Tool (cost estimating for repair/replacement, utility costs, etc)

**Major Research Outputs:**
1. Best Practices Report
2. TCO Calculator Tool and Guidebook
Thank You

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