







Meet the Presenters







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95.5%

of all **data goes unused** in engineering and construction¹

\$7.77

Spent on operations and maintenance over the life of the facility for every \$1.00 of construction costs²

¹ Source: Big Data = Big Questions for the Engineering and Construction Industry, FMI Report

² Source: Ratio of Operating and Maintenance Costs to Initial Costs Of Building Services Systems, Cost Engineering Volume 49/No.12









Data Interoperability Delivers









This presents a tremendous opportunity: Deliver better, more robust digital asset data from the start!

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An **ARORA** Company

But Why Do I Need That Data?

- Contains critical operational and maintenance information
- If you haven't bought it up front, you are buying it over and over again for the life of the facility.









Kansas City International's New Terminal Project









Adoption of these technologies will *REQUIRE* a virtual, data-rich, spatial representation of the built facility.







Kansas City Aviation Department

- The Kansas City Aviation Department owns and operates Kansas City International Airport and Charles B. Wheeler downtown Airport.
- The MCI complex spans more than 10,000 acres, and its three runways can accommodate up to 139 aircraft operations per hour period handled approximately 12 million passengers in 2019.
- Dedicated by Charles Lindbergh in 1927, Charles B Wheeler Downtown Airport is the city's first airport. Located on 695 acres, the airport now attracts many corporate, charter, and recreational Flyers.









New Single Terminal Building and Parking

- 39 gate Terminal replaces existing terminals A, B, and C.
- The total estimated building area for the Terminal is 1,094,000 square feet.
- A 6,400 space six-level garage
- The KCI Terminal will achieve LEED Gold certification.









Proposed design and location of new terminal









The Challenge How does an airport prepare itself to implement asset management in a new facility?









New Project = OPPORTUNITY!

• START FRESH:

- Facilities Design Management: BIM
- Enterprise Asset Management: Maximo
- Good Data: BIM to COBie to Maximo Hand-Off









Pilot with new maintenance building











Project Approach







Project deliverables



COBie Data Standards For All Future Projects

BIM/COBie/Maximo Integration Standard Process

Best of Breed Systems for Both BIM and EAM

The objective: complete and accurate as-built BIM for FM models





- At turnover:
 - All Critical Systems Modeled
 - Accurate Geometry
 - Accurate Asset Data
 - Accurate OEM Files
 - Accurate Space Plans
 - Accurate Shut-Down Plans
 - Model Compatible for Load into Maximo EAM
- Owner is Ready to Immediately Operate and Maintain Facility!







Maximo asset application: 3D model View Tab with Asset Selected

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List View Asset Spare Parts Safety Mete	rs Specifications Relationships Work Service Add	ass Map COBie Data (BIM) 3D View		
Asset: FMS3212 CIRCULATION PUMP-mPMP02	Import ID: 65c8a7da-8480-4308-99d6-46ecfdb68e04	Site: MCI		
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Maximo Asset Application: Selecting Asset From Model And Creating WO









Integrating to Maximo COBie Asset Data Load and Forge Viewer Integration









Overview of Functions Enabled in Viewer

- Navigation Of 3D Model (Zoom, Pan, Rotate, etc.)
- Search Of Model Components (by Maximo or BIM Context)
- Selection of Model Components
 - To View BIM Attribution
 - To Change Maximo Context (if component linked)
 - To View Related Maximo Records (WOs, PMs, etc.)
 - To Create Related Maximo Records (WOs, Tickets, Add Assets to Wos)
- Markup Model View and Red Lining
 - Provide Annotations For Various Purposes







Mobile Enabled









Lessons learned

- Perform Validate Loads Prior to Update Loads!
- Duplicate Records When the "Name" Value Is Not Unique.
- Orphans in the COBie File
- Maintaining a Valid Classification Index (Uniformat Classes.)

- Components That Reference Multiple Spaces in the BIM Model.
- Duplicate Bar Code Numbers
- Document Naming Conventions
- Organization of Models Busy Models are Difficult to Navigate
- Organizational buy in







