building SMART with COBIE

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Problem – The Cost of Data Entry Precludes Full Use of Maintenance Management Software
Problem - Building Documentation is Fragmented . . .

Architects, Engineers and Construction Contractors each submit design plans, operating instructions and repair manuals in hardcopy which must be organized and maintained in order to support building operations, maintenance and renovation throughout the building’s life.
Problem - Critical data is lost ...

- decisions made as ideas & parts are transformed into designs & buildings are not captured
- translation of information for downstream use loses much of what is known during the previous phase
For portfolio and asset management: **review of key indicators**, not in-depth investigations

For property management: **condition review and prioritization** of projects

For maintenance: **product data, maintenance records, work orders**

For operation: **operating manuals, set points, procedure routines**

For specific priorities and projects, e.g. repair, LEED, ADA, code compliance: **roll ups** of focused data

**In-Depth investigations**

- O&M - Operation and Maintenance
- Roof suitability, drainage, condition
- Plumbing and piping systems
- Electrical and electronic systems
- Heating, Ventilating, and Air Conditioning System
- Energy conservation, e.g. BEPAC, BREEAM
- Electromagnetic radiation
- Indoor Air Quality
- Water and waste management
- Life cycle costs and value engineering
- Life cycle analysis
- Security: Threat and risk analysis
- Financial analysis and audit
- Real Estate market analysis
- POE - Post Occupancy Evaluation

And many other types of in-depth investigations...
Past Practices . . .

- O&M submittals in unusable format - boxes, piles
- Data quickly lost
- Poor preventive maintenance
- More costly repairs
- Warranties not maintained or lost

Result ... Adverse impact on mission of the building occupant
What people have tried . . .

Directly linking contractor and government systems means increasing cost and complexity...

- Legacy System A
- Legacy System B
- Legacy System C
- Legacy System D
- Legacy System E
- Future System ?

Diagram showing connections between the systems.
Federal Agencies Confirmed Interest


Information Technology Innovations Award, National Partnership for Reinventing Government, 1999

Linking the Construction Industry: Electronic Operation and Maintenance Manuals: Workshop Summary, 1999

Incorporated into IAI IFC buildingSMART Model, 2003
COBIE Captures Information at Source – Designers, Constructors & Manufacturers
**COBIE** uses internationally recognized standard and data definitions requirements . . .

WRITE-ONCE . . .

READ AS NEEDED
COBIE Incorporates Related Efforts . . .

- NAVFAC Operations & Maintenance System Information (OMSI)
- NIBS Facility Maintenance and Operations Committee (OMSI XML/IAI 2x2)
- U.S. Army, Department of Public Works, Fort Lewis, WA
- Specification software exports construction submittals
- m-BOMB project. International Alliance for Interoperability (IAI)
- FIATECH Automated Equipment information eXchange (AEX)
- Machinery Information Management Open Systems Alliance (MIMOSA)
- Open Standards Consortium for Real Estate (OSCRE)
- National Institute of Science and Technology (NIST)
  GSA Preliminary Design information Exchange
Technical Data
- PDF format
- link to URL
- or XML database
Benchmarking Participants

Owners
DoD
GSA
Navy
State
UNC-Chapel Hill
VA

A/E/C Firms
Burns & McDonald
CH2M
HOK
Jacobs
Judd Allen
LS3P
Lynn Blair Associates
O2 Resources
Onyx Group
Rush Inc
TRM
Woolpert

Software Firms
Archibus
Autodesk
Bentley
Digital Alchemy
e-specs
Green Building Studio
Infor
Instep
Mapcon
Micromain
MRO
TMA Systems
Tririga

Other
International Code Council
National Institute of Building Sciences
How will we know when it’s right?

- User transparent
- No cost to O&M office
- Costs less than current paper-based method
- Requirements are clearly identified
- Information can be captured as work is accomplished with option for real-time information exchange
- Acceptable to all tiers of contractors, suppliers, subs, etc.
- Simple update format for existing deliverables/contracts
- Framework to store information for later exchange/retrieval
  - Cost of information exchange must be nil
COBIE Construction Operations Building Information Exchange

Conception & Definition Phases
Identify items from the specifications that will require warranty information

Procurement & Execution Phases
Collect information as items are ordered and delivered such as who is warranting, when the warranty starts, how long is the warranty period, what preventive maintenance is required to keep the warranty in force

Utilization & Closure Phases
Read the information collected directly into your CMMS software to ensure that the warranties are supported

COBIE will demonstrate the flow of information through the phases of a facility something that is not yet happening yet is critical to realize the total potential ROI
How can I get started?

- **Owner**
  - Join buildingSMART
  - commit to and communicate a FY07 roll-out

- **Software producer/vendor**
  - Join buildingSMART
  - make import/export transparent

- **Designer, consultant, builder, subcontractor**
  - Join buildingSMART
  - Participate in COBIE pilot projects

- **Manufacturer/supplier**
  - Use buildingSMART standard templates