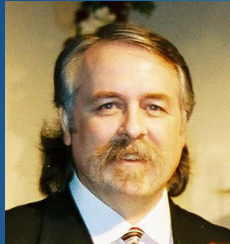


Practical Application of BIM in Building Design

Current and Future Uses, Developments and Expectations



Presented to CIBSE ASHRAE Group

By David J. Branson, PE

Executive Vice President/Chief Operating Officer

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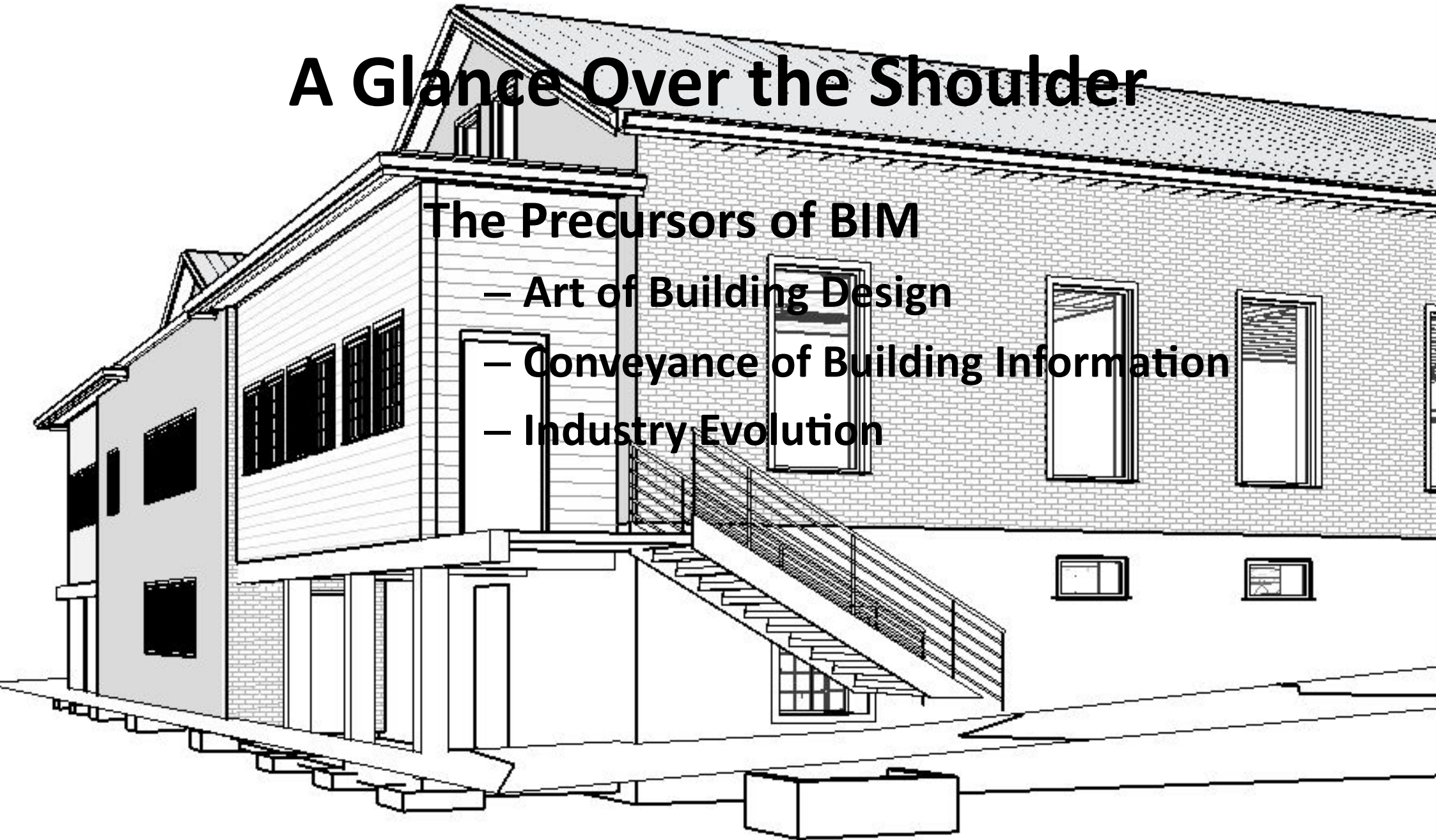
Engineers • Architects • Scientists

14 March 2012

A Glance Over the Shoulder

The Precursors of BIM

- Art of Building Design
- Conveyance of Building Information
- Industry Evolution



Drivers of Change

- Global Communications
- Growth of Computer Automation
- Advancement of Building Sciences

Economies of Design

- Compressed Timeframe
- Increased Detailing
- Decreased Cost
- Management of Resources
 - Costs
 - Availability

Harbinger of BIM

- **Development of Automated Tools**
 - Drafting
 - Design
 - Presentation
 - Industry Standards Convergence
 - Promise of Productivity Increases



Traditional Approach:

- ❖ Design Aspects – Some Abstraction
- ❖ Construction Techniques – Some Constraints

BIM Approach:

- ❖ Design Aspects – Visual Influences
- ❖ Construction Techniques – More Constraints

**Building Information Modeling has changed
the way people think about building design
& construction**

BIM Emergence



- **Initial Hype**
 - Architecture
 - Engineering
 - Promised Favorable ROI
- **Segmented Launch**
 - Development
 - Roll-Out
 - Adoption

Initial Use of BIM

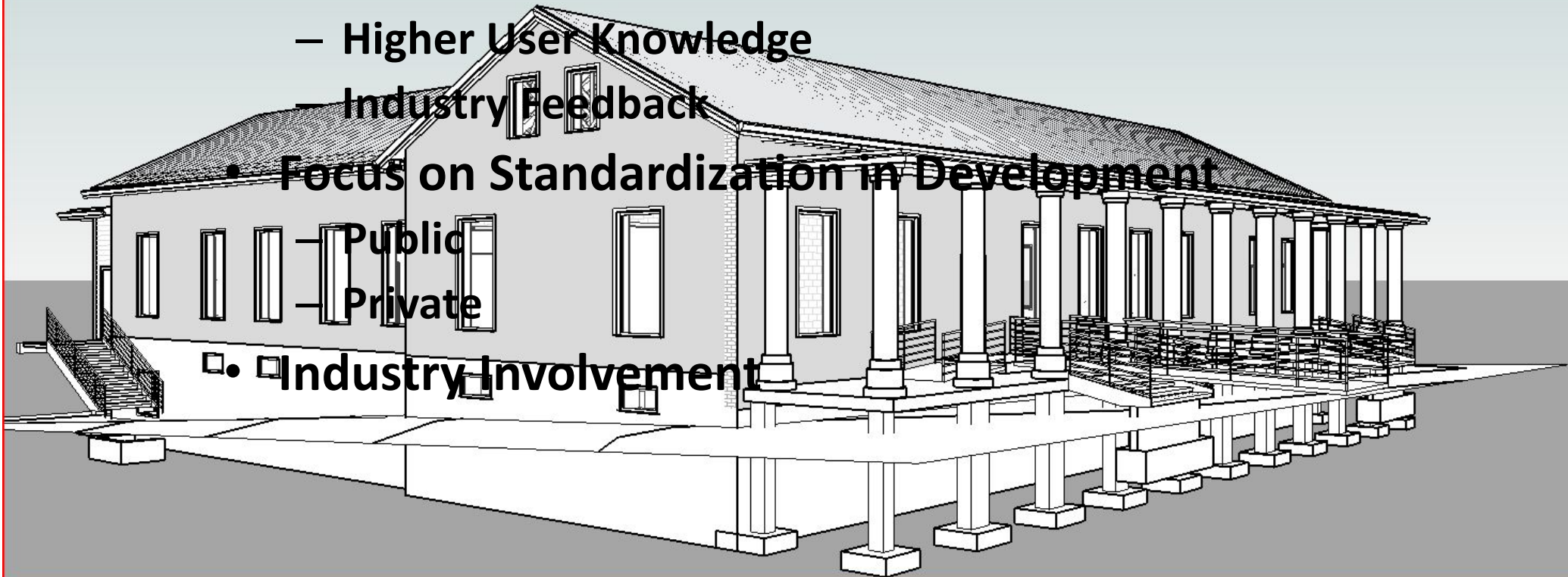
- **Graphics**
 - Adequate for Depiction of Design Concepts
 - Expandable Data Structures
 - Limited Support by Manufacturers
 - Embraced by Many Architects – Few Engineers
- **Analytical Design Tools**
 - Sparse Selection for Engineers
 - Engineering vs Architectural BIM Use

Current State of BIM

- **Feature-Set Enrichment**
- **Availability of Soft Tools**
 - **Maturing Software**
 - **Higher User Knowledge**
 - **Industry Feedback**
- **Focus on Standardization in Development**

- **Public**
- **Private**

- **Industry Involvement**



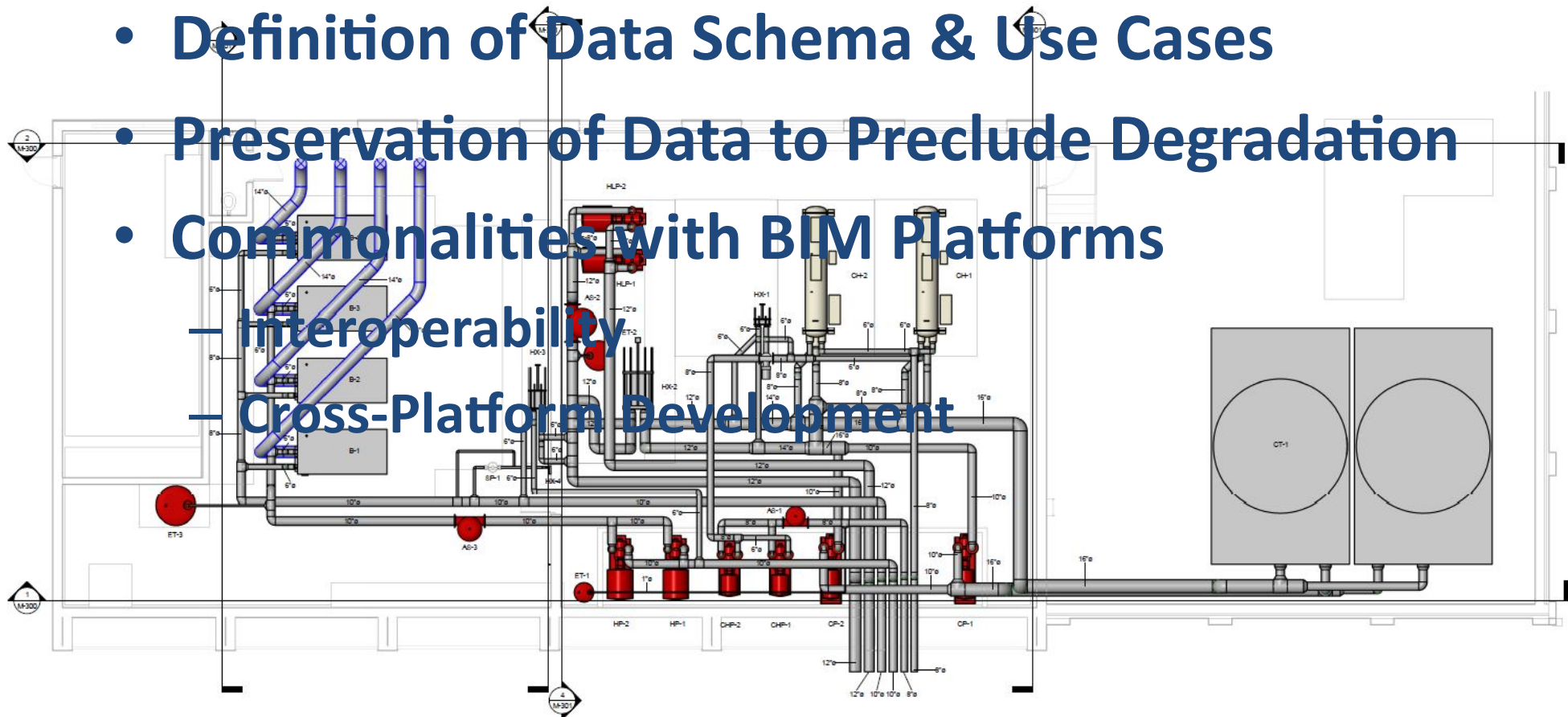
Hurdles Still to Clear

- Sparsely-Populated Data Sets
- Shortcuts by Design Stakeholders to Reduce Overhead in Production
- Sensitivity Issues between Design Disciplines re Side-Effects of Data Voids
- Expectations of Non-Design Model Users



Industry Efforts

- Codes & Standards Interfaces
- Time-Inclusive Tools
- Definition of Data Schema & Use Cases
- Preservation of Data to Preclude Degradation
- Commonalities with BIM Platforms
 - Interoperability
 - Cross-Platform Development





Societal Efforts Related to Growth

- **ASHRAE**

- **Research**

- RP 1032 – Identification and Preservation of Building Design and Commissioning Information
- RP 1468 - Development of a Reference Building Information Model (BIM) for Thermal Model Compliance Testing

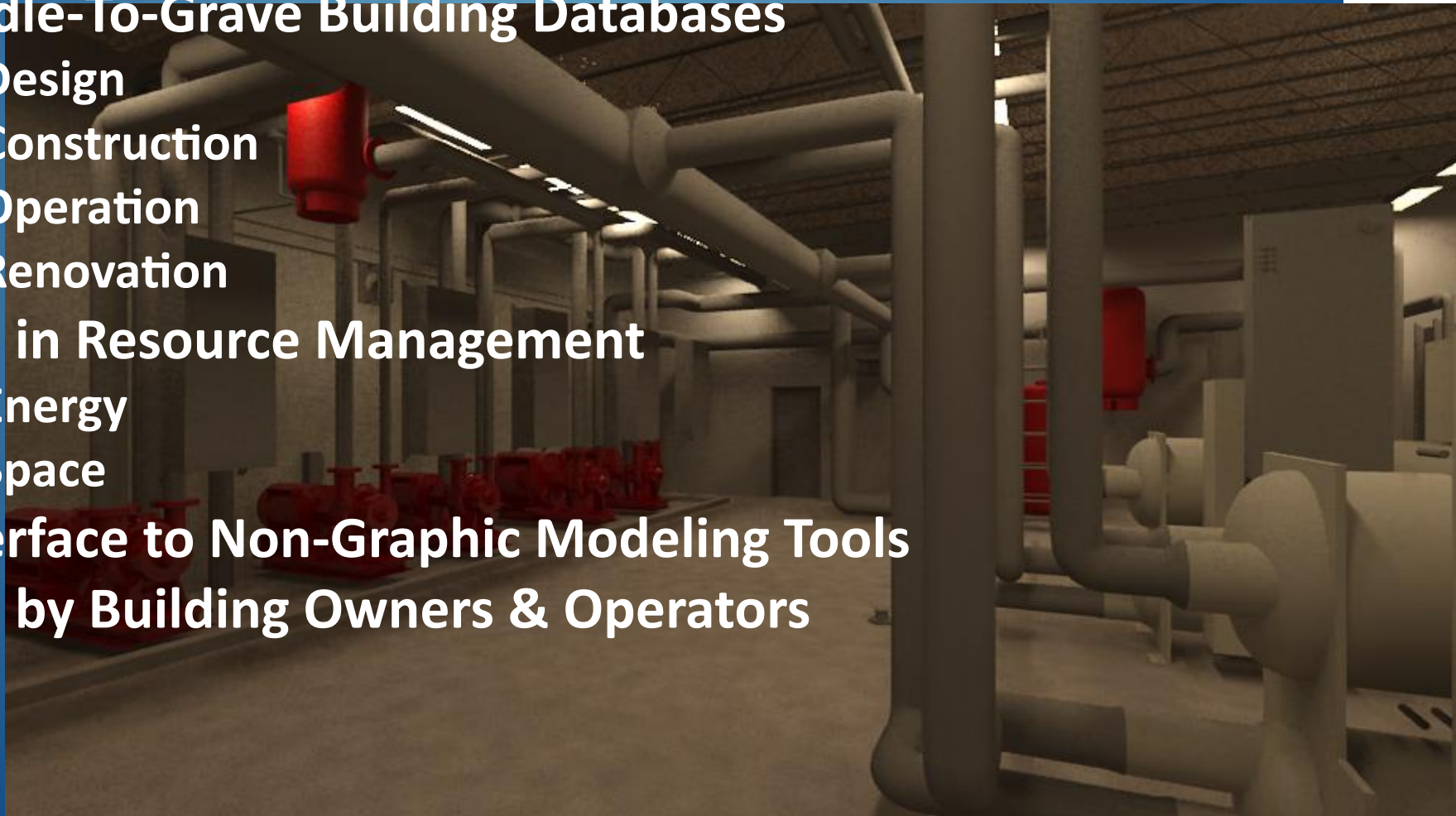
- **Guidelines & Standards Development**

- GPC 20 - XML Definitions for Heating, Ventilating, Air Conditioning and Refrigeration
- SPC 205 - Standard Representation of Performance Simulation Data for HVAC&R and Other Facility Equipment

- **Educational Programs**

Future Expectations

- **Seamless, Integrated Designs**
- **Cradle-To-Grave Building Databases**
 - Design
 - Construction
 - Operation
 - Renovation
- **Use in Resource Management**
 - Energy
 - Space
- **Interface to Non-Graphic Modeling Tools**
- **Use by Building Owners & Operators**



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Questions & Comments