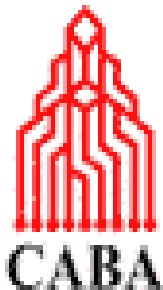


ASHRAE Guideline 20P

XML Definitions for HVAC&R

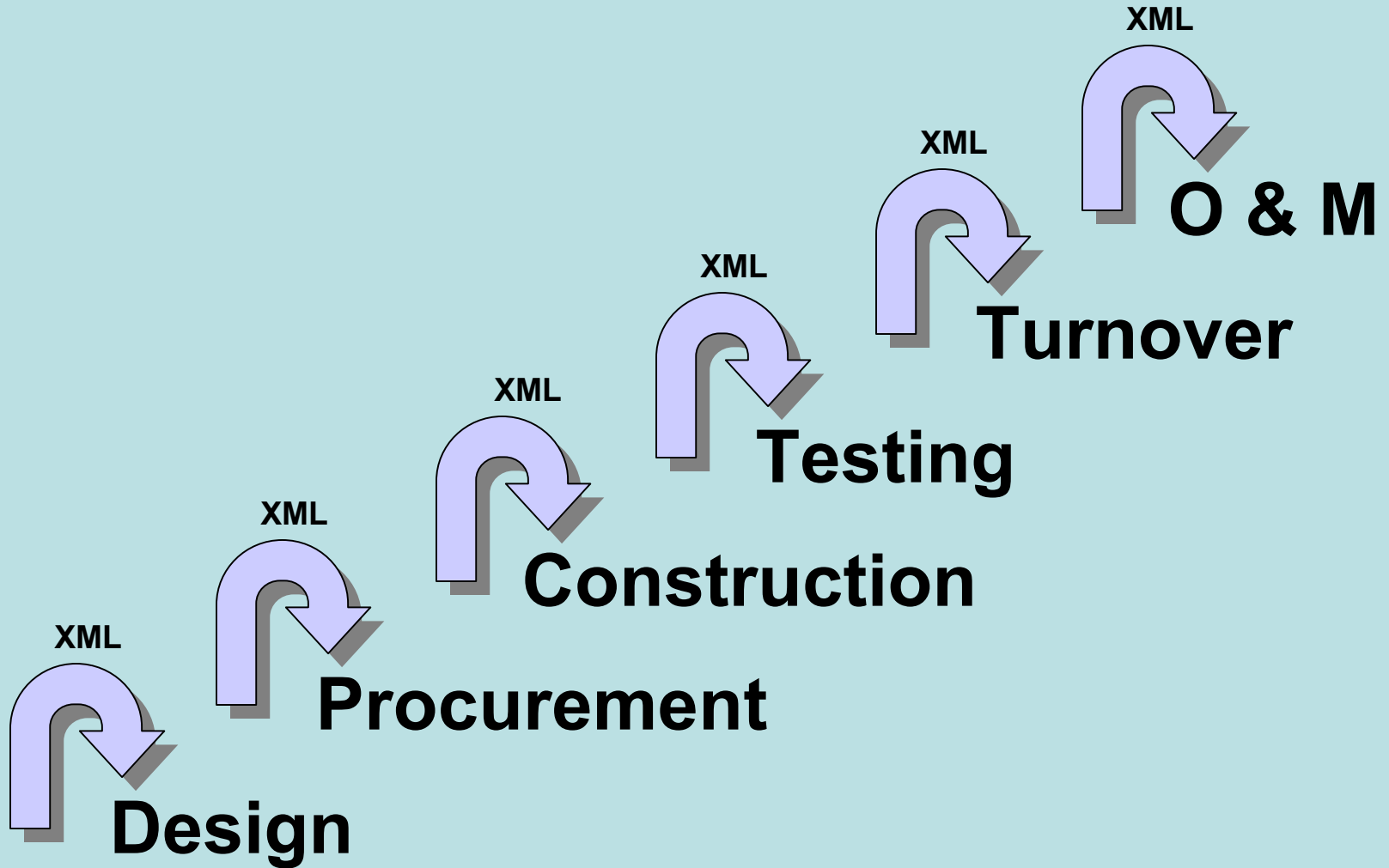


ASHRAE Direction

- Title
 - XML Definitions for HVAC&R
- Purpose
 - To establish a common data exchange format for the description of commodity data and HVAC&R information via the standard XML (extensible Markup Language) formatting language.
- Scope
 - Data types would include catalog definitions in areas such as, but not limited to, chillers, air-handling units, fans, pumps, fittings, controls, as well as analytical or operations, building performance data.

- Standardization Leads to Normalization
 - Standard Equipment and Material Definitions
 - Normalizes Design, Purchasing, Construction, Operation, and Maintenance Data
 - Using XML the Normalized Data is Transferred Efficiently and Seamlessly
- Normalization Leads to Efficiency/ Quality
 - Efficient - Minimized Data Entry Speeds Design/ Construction/ Operation Work Flow
 - Quality - Reduced Human Errors from Multiple Data Entry of Same Data in Different Programs

Data Flow



Concept

GPC20 XML Benefits

- Design
 - One Time Data Entry (Load Calcs, Equipment Selection, Energy Code Calcs)
 - Built-In Equipment Dimensions for Drawings
 - Automated Equipment Schedules
- Procurement
 - Reduced Excess with Accurate Material Takeoffs (Piping, Ductwork, Fittings)
 - Minimized Equipment Purchasing Errors (i.e. Wrong Voltage, Size, or Type)
 - Automated Submittals to Engineer

- Construction
 - Lead Time Information Automatically Fed to Project Scheduling Software
 - Accurate Dimensions Minimize Lost Time Resolving Spatial Conflicts In the Field
- Testing (T&B, Cx)
 - Automated Test Forms Pre-Filled with Performance Data
 - Tested Results and Final Settings Saved as Baseline for Continuous Cx and Demand Maintenance

- Turnover
 - Automated Development of Turnover Documents
 - O&M Manuals
 - Systems Manuals
- Operation & Maintenance
 - Equipment Operation and Maintenance Data Automatically Imported into CMMS Systems
 - Parts Lists
 - Routine Maintenance Schedules
 - Operating Parameters Imported into Controls System for Alarms, Warnings, and Demand Maintenance

Guideline Development

- Create standardized process for producing HVAC&R XML definitions
- Develop core set of HVAC&R XML definitions (e.g. pump, fan, valve)
- Build a collaborative to standardize HVAC&R XML definitions

Standardized Process

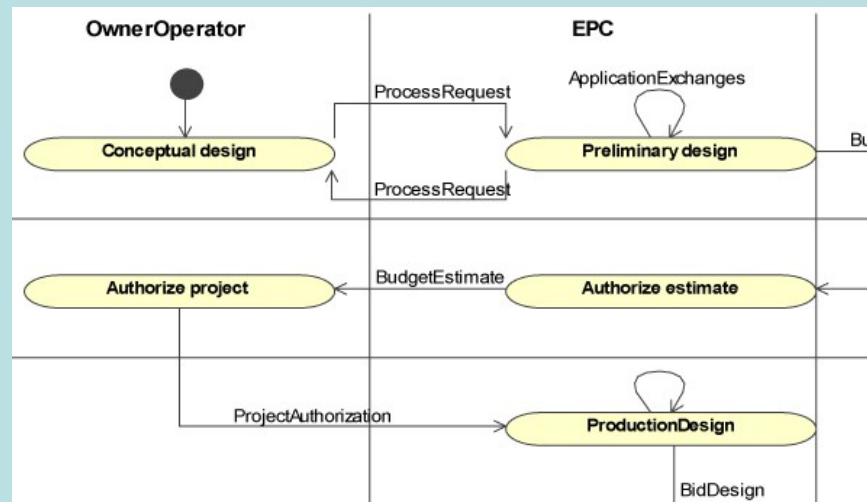
- Use Case Development
 - Use case name, Purpose, Description, Actors, Data Content
 - Transactions, Applications, Performance Goals, Preconditions
 - Begins When, Ends When, Exceptions, Post Conditions
- Ensures Normalization of Data Format and Data Flow

Core HVAC XML Set

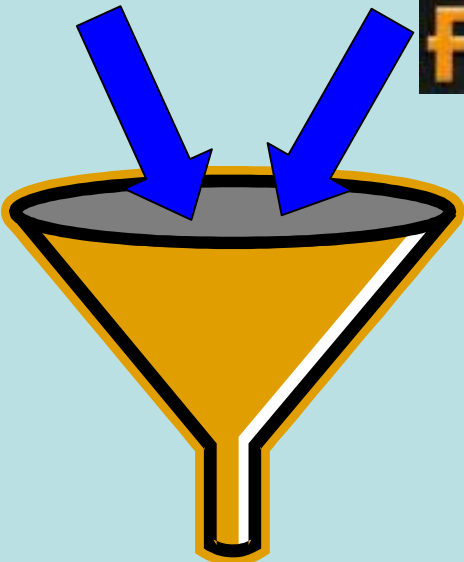
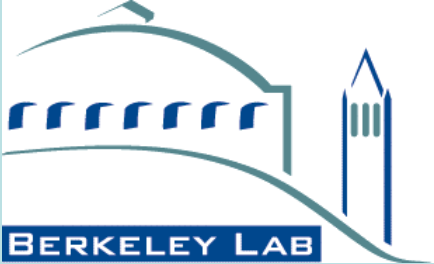
- Basic Building Blocks to Allow for Complex and Custom XML Schema
 - Building Blocks Categorized by Type
 - Rotating Machinery
 - Heat Exchangers
 - Pressure Vessels
 - Within type components will be developed
 - Fan, pump, compressor (rotating machinery)
- XML definition for an assembly (i.e. AHU, Chiller) is a composite of core components

Current Status

- Compiling Matrix of Existing Efforts to Identify Collaboration Opportunities
- Developing Standardized Process for Use Case and XML Schema Development
- Identified 10 Base Equipment Types to Include in First Release
- Estimated 2 Years to Public Review (Jan '07)



Collaborative Strategy



OPEN SOURCE NORMALIZED XML DEFINITIONS