

AIA Technology in Architectural Practice

The Future of Specifications

BIM... BIM... BIM... anybody talking specifications?

Specifications integrated within BIM design environment?

From paper to digital deliverables?

AIA Learning Objectives

- 1) Lead a discussion within the firm to consider project workflow requirements to support specification automation.
- 2) Discuss the concepts of integrating specifications with BIM.
- 3) Discuss the concepts of making specifications digitally accessible to all project participants.
- 4) Discuss the concepts of how product manufacturers might deliver product information to specifiers and designers in a more useful format.

Got Questions?

Please use the Chat box in the GoToWebinar app pane to submit a question.

Questions will be answered at the end of the webinar as time allows. When able, all questions will be sent to the speakers for written response and published on the TAP website.

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Today's Speakers



Rob Dean, AIA, CSI, CCS
President
Building Systems Design
rdean@bsdsoftlink.com



Michael Brennan
President
InterSpec
mbrennan@e-specs.com



Mark Kalin, FAIA, FCSI, CCS LEED
President
Kalin Associates
mark@kalinassociates.com

Let's start the discussion...

The Future of Specifications

Robert Paul Dean, AIA, CSI, CCS
Building Systems Design, Inc.



Do Specifications Even Have a Future?

- Some people expect that construction specifications will go away altogether when BIM becomes more prevalent:

A Building Information Model (BIM) in theory could contain all the information needed to construct a building, including detailed information about every product. . .

Do Specifications Even Have a Future?

- There are a few little problems with that idea, however:

For example, where would we put all the administrative details, such as sample submittals and quality control requirements?

And how would we handle the issue of legal documentation if all the data about a building were encapsulated in a modifiable BIM?

Do Specifications Even Have a Future?

- Specifications as legal documents will continue to be required for the foreseeable future. . .

*But the future of specifications is
inextricably tied to the future of BIM*

What is BIM, anyway?

- First, a definition*:

A Building Information Model (BIM) is a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its lifecycle from inception onward.

*From the official NBIMS

What is BIM, anyway?

- First, a definition*:

A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update or modify information in the BIM to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.

*From the official NBIMS

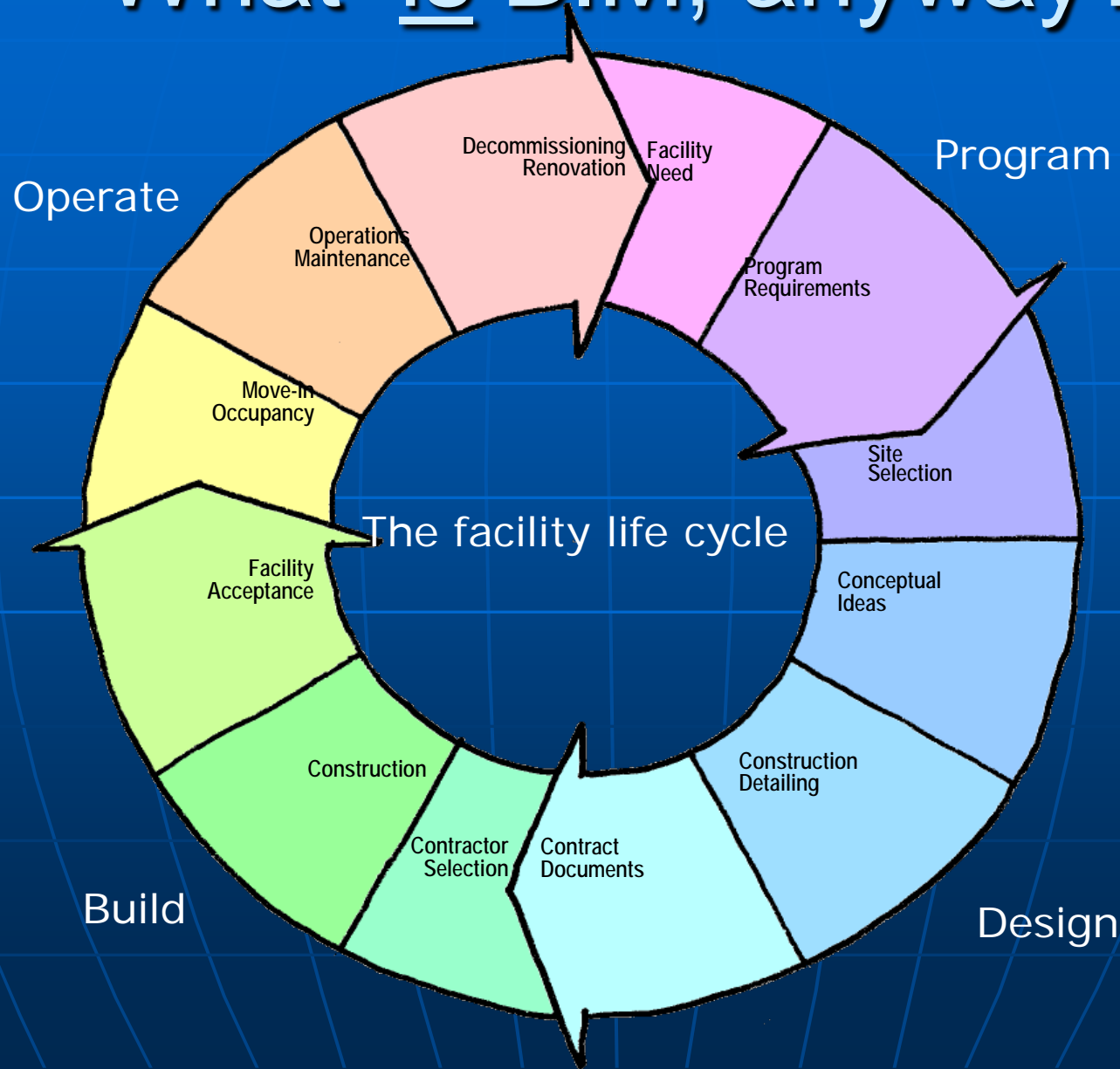
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*From the official NBIMS

What is BIM, anyway?



What is BIM, anyway?

- How is BIM different from 3D modeling?

Some 2-D & 3-D CAD programs do store material or product properties other than those needed for graphical representation

but...

Many properties of products needed for specifying completely are not relevant to graphical representation and would unduly burden the modeling software

What is BIM, anyway?

For example, in Autodesk's Revit, the door objects provided include height, width, thickness, and swing direction. . .

but. . .

*They don't include much of the basic information needed for cost estimating and specifications applications, such as:
Wood or metal?*

What is BIM, anyway?

In addition, the drawings do not include all elements that would need to be specified, scheduled, and estimated

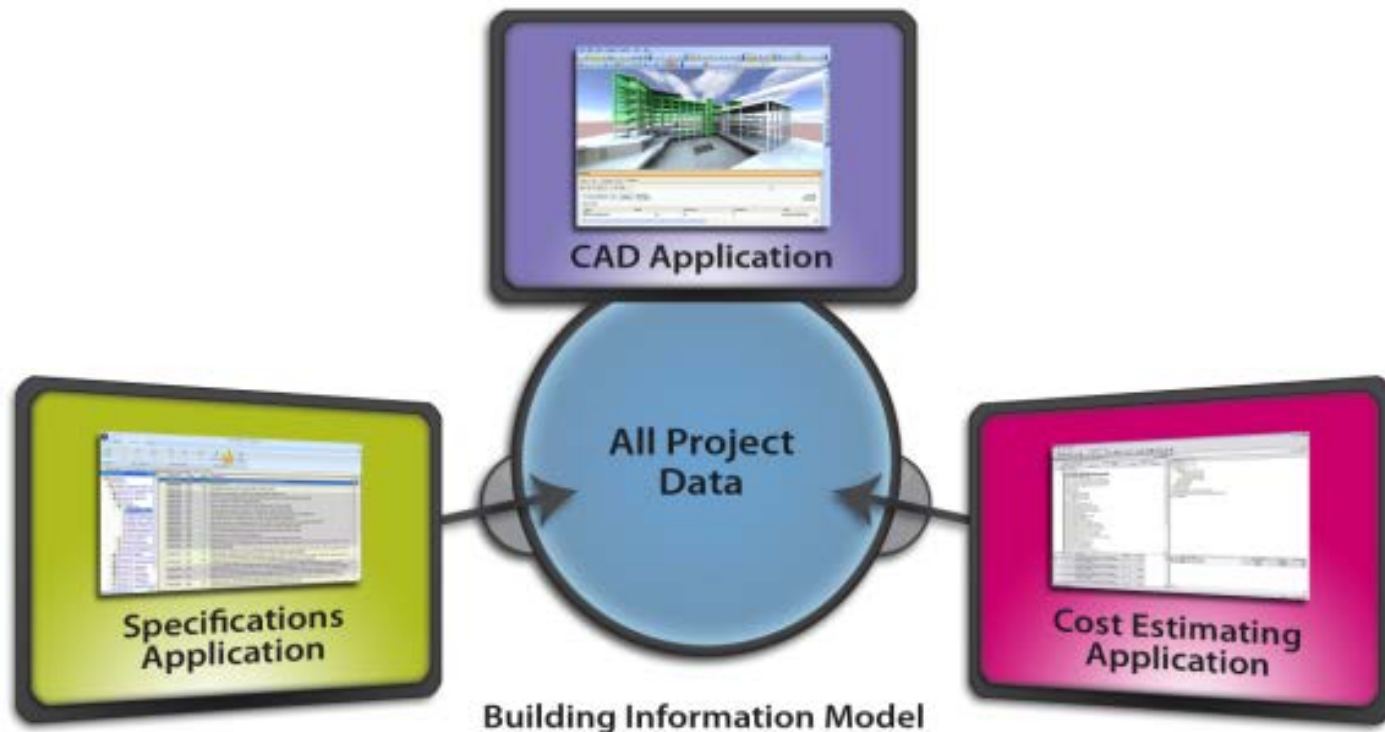
Nor do programming, specifications, cost estimating, and scheduling tools include any of the graphic elements that would need to be included in a comprehensive building information model (BIM)

What is BIM, anyway?

There are two fundamentally different concepts for storing BIM data for use in different applications:

- *Centralized data concept (in 3-D CADD)*
- *Distributed data concept with linkage*

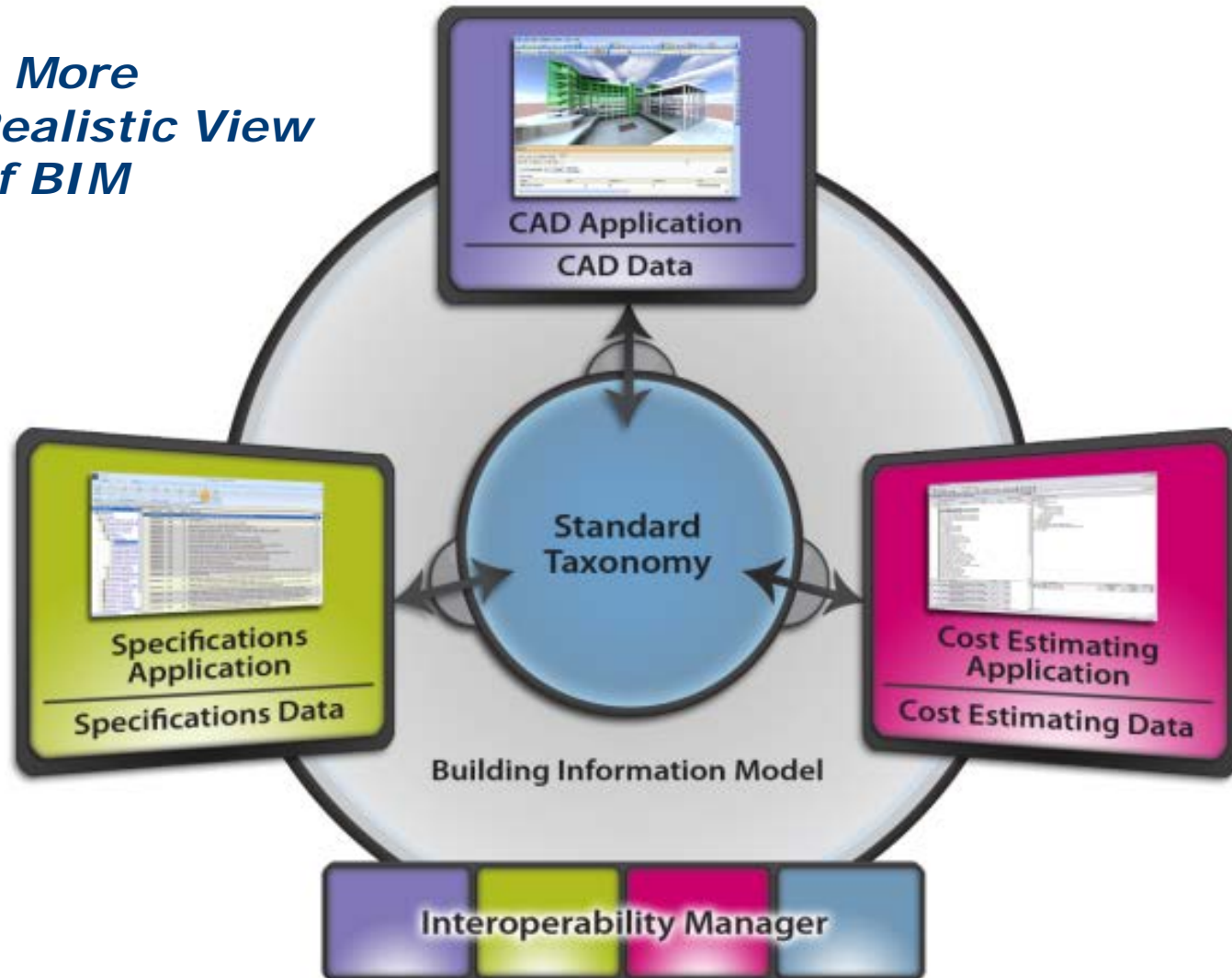
What is BIM, anyway?



A "Traditional" View of BIM

What is BIM, anyway?

*A More
Realistic View
of BIM*



How Can Linkage Be Achieved?

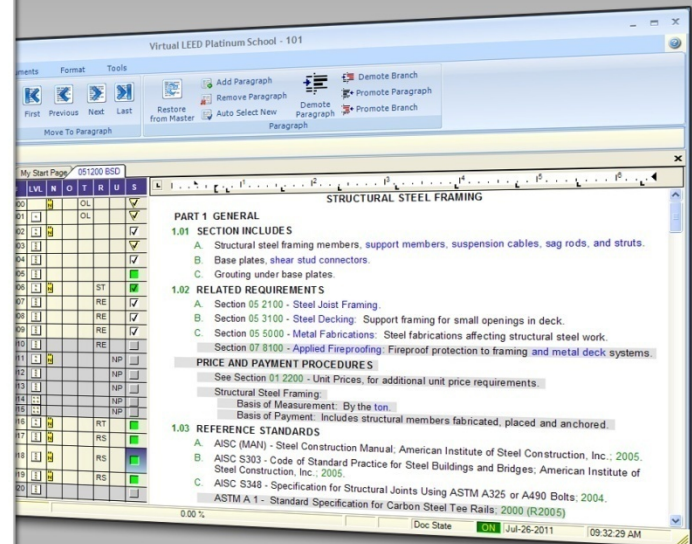
- Linking dissimilar construction applications for *automated* transfer of useful data requires that:
 - *The applications be relational databases*
 - *The relevant objects (products, assemblies, spaces, etc.) be identified or tagged with unique identifiers (GUIDs)*
 - *The GUIDs in turn should ultimately be linked to a central data repository based on a standardized set of properties*

Specifications Organized for Use in an R

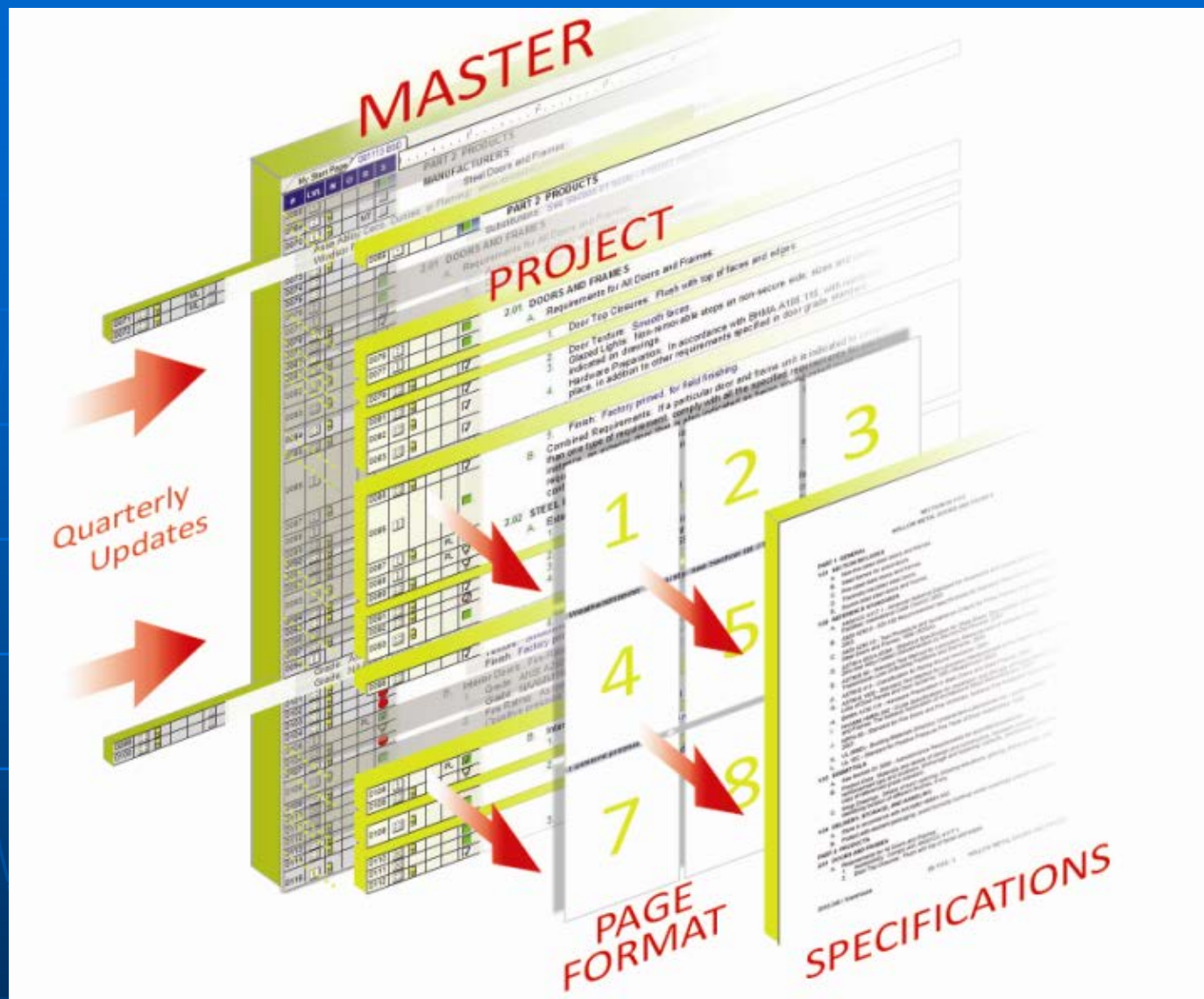
Text	AISC S303 - Code of Standard for Steel Buildings and Bridges; American Institute of Steel Construction, Inc. Choice 1
Choice 1	2005
Sequence Number	0018
Hierarchy Level	03
Master Note	Y
Project Note	N
Origin	M
Spec Type Tag	None
Requirements Tag	RS
User Tag	None
Links to this Segment	051200:BSD.0072, 051200:
Links from this Segment	None

- SECTION 05 1200
STRUCTURAL STEEL FRAMING
- PART 1 GENERAL**
- 1.01 SECTION INCLUDES**
- A. Structural steel framing members, support members, suspension cables, sag rods, and struts.
 - B. Base plates, shear stud connectors.
 - C. Grouting under base plates.
- 1.02 RELATED REQUIREMENTS**
- A. Section 05 2100 - Steel Joist Framing.
 - B. Section 05 3100 - Steel Decking: Support framing for small openings in deck.
 - C. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.
- 1.03 REFERENCE STANDARDS**
- A. AISC (MAN) - Steel Construction Manual, American Institute of Steel Construction, Inc.; 2005.
 - B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.
 - C. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts, 2004.
 - D. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel, 2009.
 - E. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, 2007.
 - F. ASTM A 108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished, 2007.
 - G. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware, 2009.
 - H. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength, 2007b.
 - I. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength, 2009a.
 - J. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric), 2009.
 - K. ASTM A 514/A 514M - Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding, 2005 (Reapproved 2009).
 - L. ASTM A 992/A 992M - Standard Specification for Structural Steel Shapes, 2006a.
 - M. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink), 2008.
 - N. ASTM E 164 - Standard Practice for Ultrasonic Contact Examination of Weldments, 2008.
 - O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society, 2007.
 - P. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society, 2010.
- 1.04 SUBMITTALS**
- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
 - B. Shop Drawings:
 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 2. Connections not detailed.
 3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

Virtual LEED Platinum School 05 1200 - 1 STRUCTURAL STEEL FRAMING



To achieve true interoperability between dissimilar applications, each of the linked programs must incorporate or be based on a relational database, because detailed linkage requires access to *individual records*



Specifications in a relational database, for example, allow for very focused connections and updating to individual paragraphs and choices within them

MSF \$33,280.74

Assemblies for Project Title

General
 B20101341000 Brick wall, cavity, standard face, 4" common back-up, 10" thick, styrofoam cavity

Task
 Brick wall, cavity, standard face, 4" common back-up, 10" thick, styrofoam cavity

Description

Unit Cost \$34,329.75 MSF Assembly ASM B201013410000

Assembly Materials			
Description	Quantity	Units	Total Cost
Washing brick, smooth brick, and wash	1,000.00	SF	\$943.30
Cavity wall ties, Z type, galvanized, 6" long x 1/4" diameter	3.00	EA	\$269.29
Control joint, PVC, 4" wall	49.96	LF	\$122.84
Common brick, wall, running bond, 6.75x5.5 F, 4" thick, includes mortar, 3% brick waste and 25% mortar waste, excludes scaffolding, horizontal reinforcing, vertical reinforcing and groud	1,000.00	SF	\$13,674.10
Face brick, wall, red, running bond, 6.75x5.5 F, 4" thick, includes mortar, 3% brick waste and 25% mortar waste, excludes scaffolding, horizontal reinforcing, vertical reinforcing and groud	1,000.00	SF	\$15,641.70
Lintel angle, structural, unpainted, under 500 lb	1,000.00	LB	\$1,850.60
Wall insulation, rigid, expanded polystyrene, 1" thick, R13	1,000.00	SF	\$1,036.50
Aluminum flashing, flexible, mill finish, .019" thick	100.00	SF	\$436.89
Pico-formed joint seals, backer rod, polystyethylene, 1/4" dia	1.00	CLF	\$112.58
Joint sealants, caulking and sealants, butyl based, bulk, 1/4" x 1/2"	125.00	LF	\$241.95

Lock

Back Next **Apply** Close

Reports for Municipal Library

Select Reports | Preferences | Custom Reports |

- Municipal Library

Organization Name: ABC Archival, Inc.

Report Header: Schematic Design

Project Summary Report

Levels to show in Summary: 6

☐ Include Level 1 Summary

Show Summary Costs

☒ Excluding Markups

☐ With Markups Included

Other Reports

☒ Print Title Page

☒ Table of Contents

☒ Detailed Estimate Report

Show Detail Costs

☒ Excluding Markups

☐ With Markups Included

Print | Preview | Setup | ☒ Save as Default | OK | Cancel

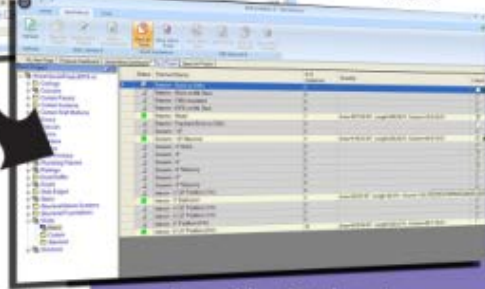
Cost estimating in a relational database also allows for very efficient updating and focused changes from other programs, e.g., 3-D CADD; products identified by GUIDs and their associated quantities could automatically help populate a project cost estimate – and be updated automatically as the design changes

3-D CADD Project

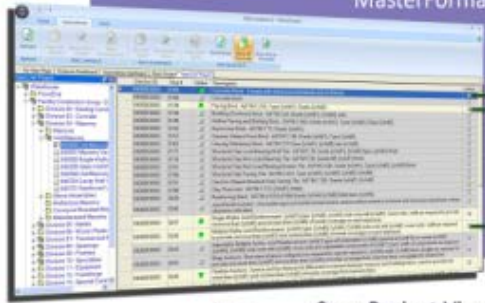


One of the basic data requirements for interoperability is a standard taxonomy that can be “mapped” to data in each application, permitting useful transfer of object information between the various software applications.

3-D CADD Project View



Assemblies Database in UniFormat Organization Products Database in MasterFormat

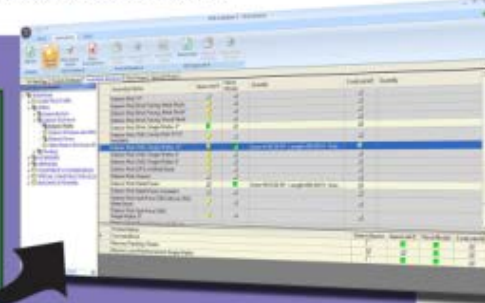


Spec Project View

Central taxonomy is used to “translate” between applications

- Exterior-Brick on CMU
- Generic - 12" Masonry
- Concrete Block
- Facing brick
- Multiple Wythe Joint Reinforcement

Assemblies Dashboard



Assemblies mapped to UniFormat data; products mapped to MasterFormat data



Product Dashboard

Optional Auto-Select Specs

Specifications

CSI standard formats, especially UniFormat, MasterFormat, and OmniClass are logical candidates to form the basis for the central GUID taxonomy

Is There Currently any Linkage?

- There are only two commercial systems on the market demonstrating a level of interoperability between BIM & specs:
 - *e-SPECS® by InterSpec*
 - *BSD SpecLink®-E & BSD LinkMan®-E by Building Systems Design, Inc.*

What They Have In Common

- They both employ a “translator” or interoperability manager between BIM objects and spec text
 - *e-Specs uses “mappings” and a section checklist to “bind” BIM Assembly Codes to corresponding specification text*
 - *BSD LinkMan uses a master database of assemblies and products that are linked to BIM elements (by unique name) and to individual specification paragraphs*

What They Have In Common

- They both provide “keynotes” to relate Revit elements to corresponding specifications
 - *e-Specs extracts relevant keynotes from the project specifications*
 - *BSD LinkMan provides a BIM keynote manager with suggested master keynotes*

How Are They Different?

- There are many differences, which are best explained by their respective owners. . .

Thank you for your attention!

For more information on BSD SpecLink-E
and BSD LinkMan-E
or other BSD Products...

888-BSD-SOFT
(888-273-7638)

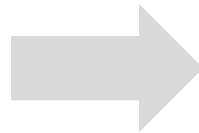
www.bsdsoftlink.com

The Future of Specifications

From document management to
information management

Michael Brennan
InterSpec, Inc.

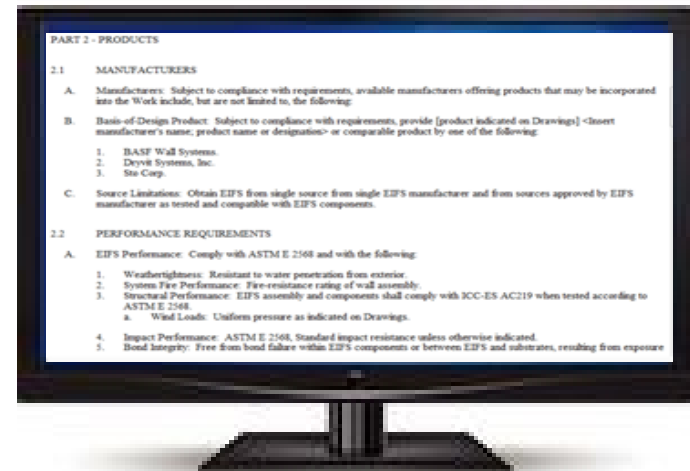
From document management to information management so the specification data can be made available to a wide variety of users and applications in the form they need it, when they need it, where they need it.



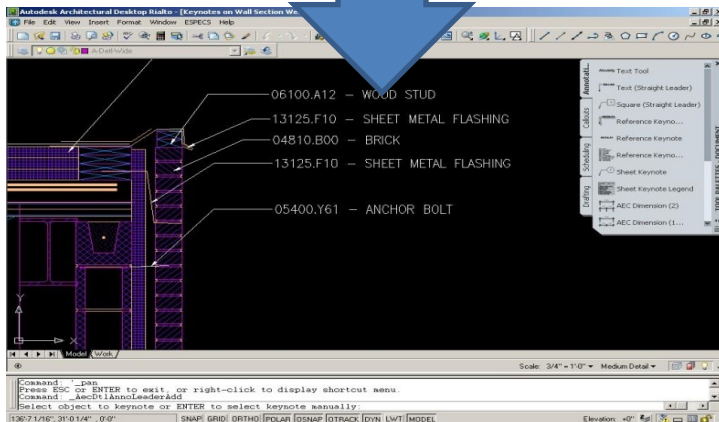
Specification management advancements has been traditionally focused on managing documents, not necessarily the data contained in those documents.



- Improved word processing
- Better standards and taxonomy
 - MasterFormat, PageFormat, Section Format etc.



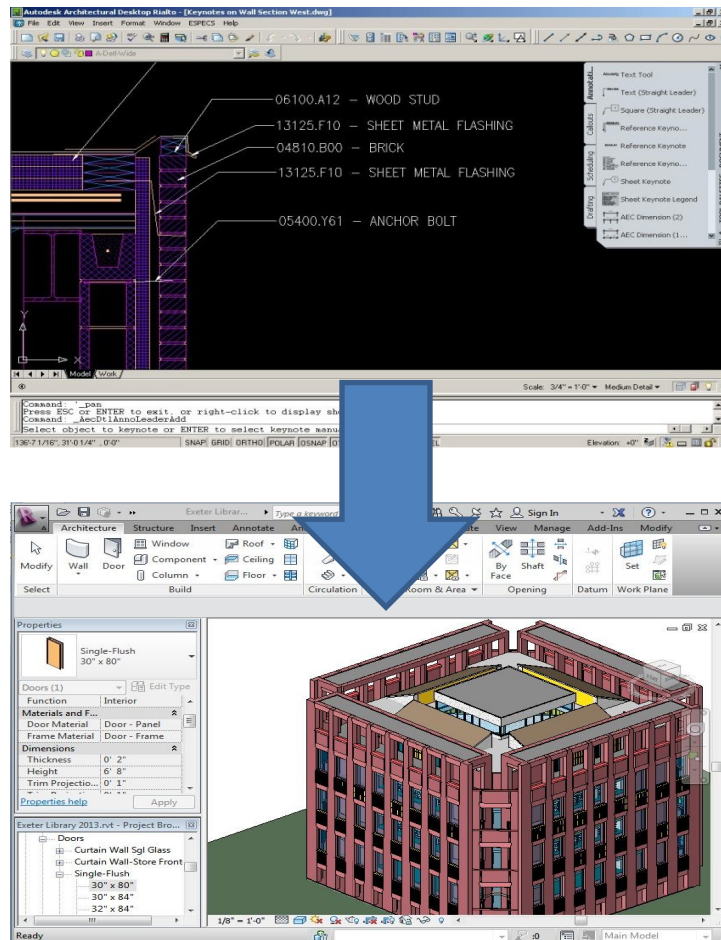
This was perfectly adequate when the constructions drawings were paper or graphical based and the coordination to the specs was by drawing reference.



Annotations &
Keynotes

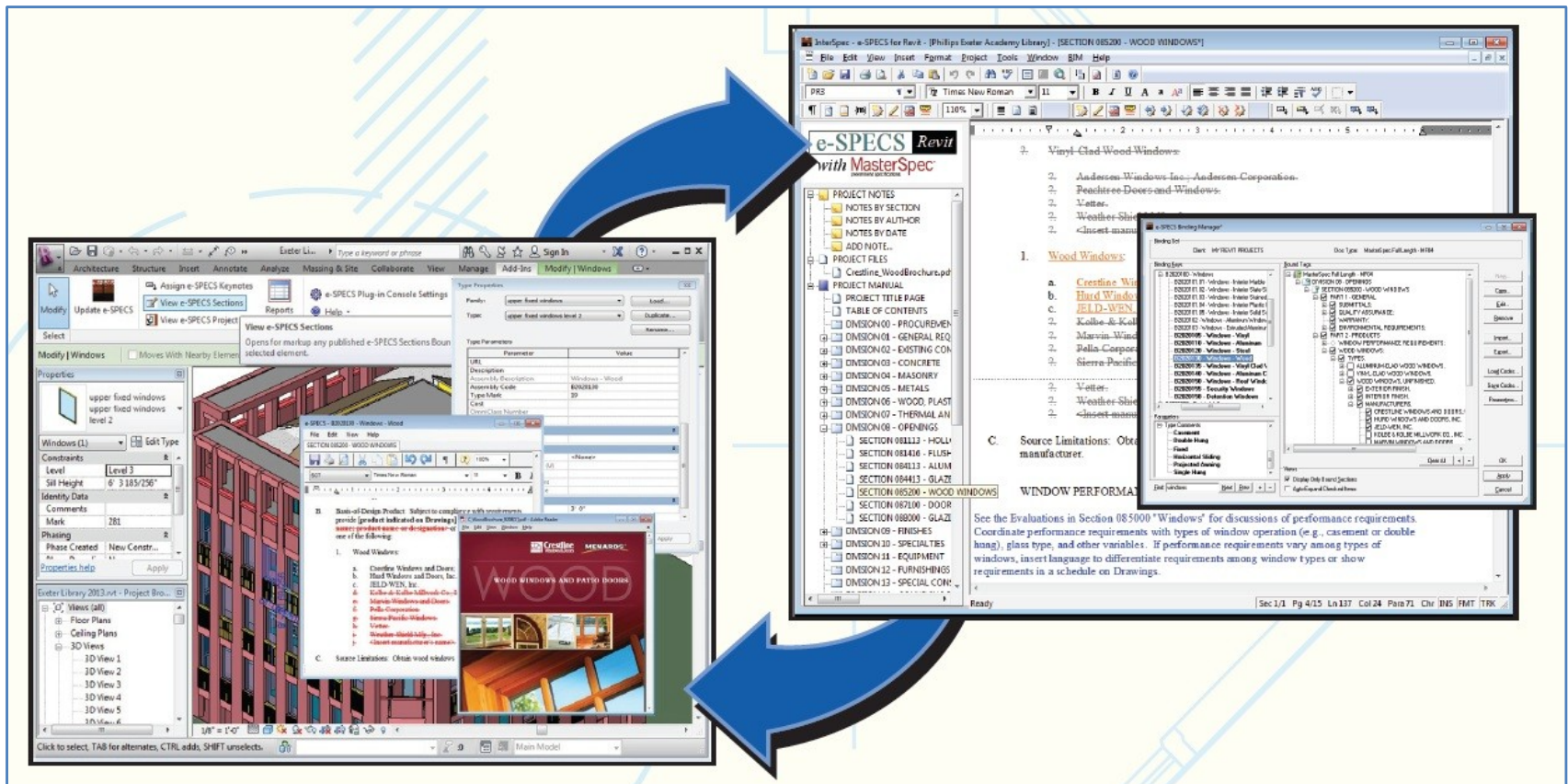
Project
Specifications

Building Information Modeling (BIM) has transformed design into an information based process facilitating contextual integration between the models and specification data.



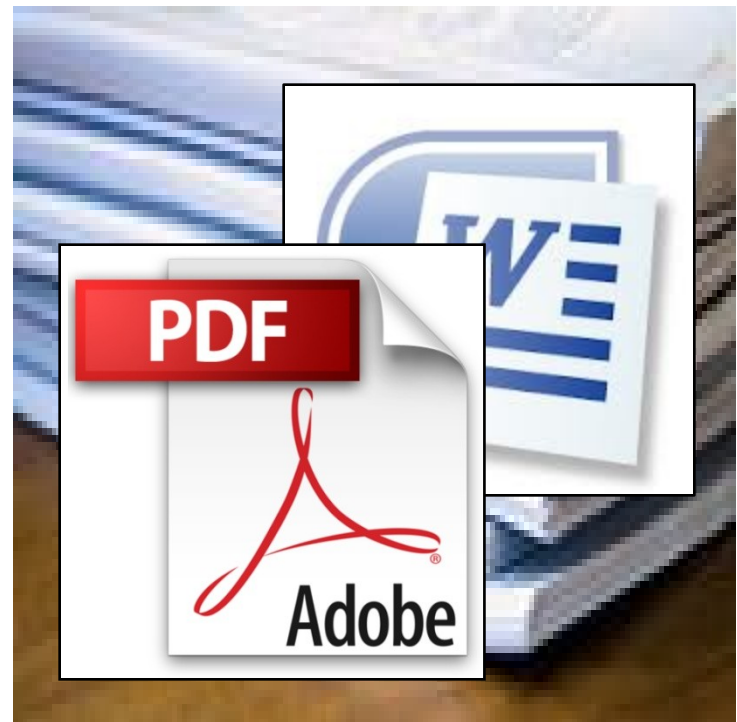
- The focus of BIM is on the management of the information that is used to build the graphical representations.
- Similarly, if the focus on the specifications was on the data that make up the specifications documents, that data can be better accessed to support a multitude of downstream applications.

More recent model integration and management of specifications documents in queryable SQL databases has greatly improved the development and coordination process.



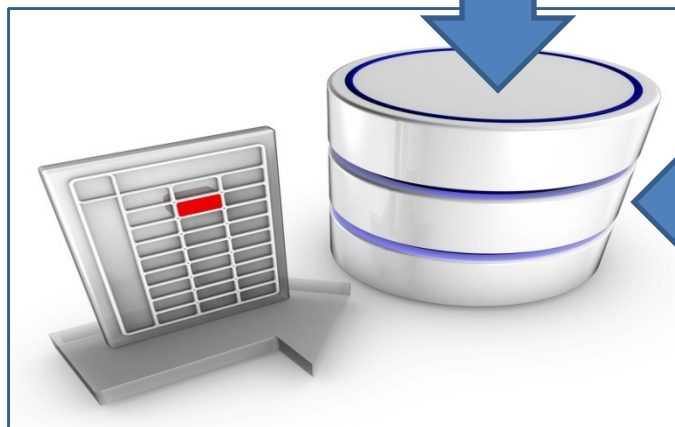
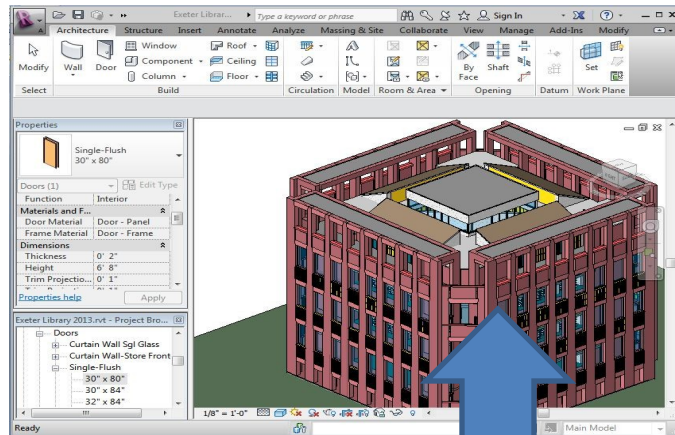
However, the distribution and access to the specifications are still mostly centered around text-based section documents with limited direct access to the spec data for other applications.

- Access to the specification information is still primary text-based by the exchange of .pdf or .doc files.



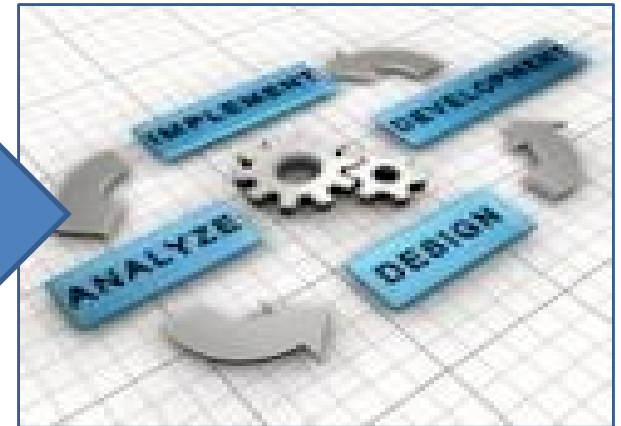
Future technological advances will be focused on integrating BIM applications more directly with the specification **DATA**, not just better ways to manage and distribute specification documents.

- The information locked up in the specification documents is required by downstream disciplines and there needs to be a better way to access it.

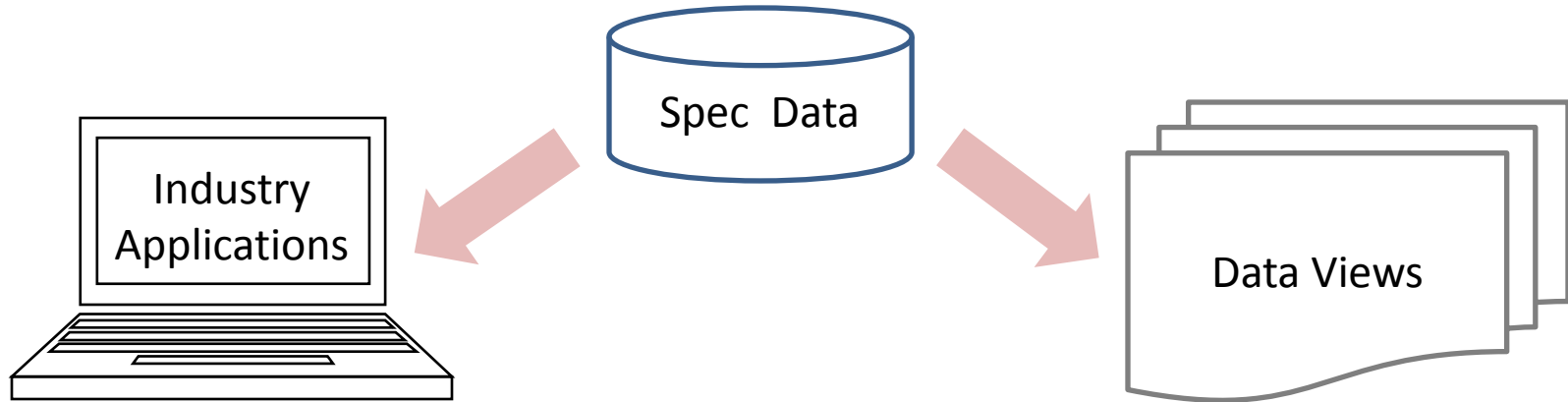


Downstream

Applications



The specification data will be better structured to facilitate integration among various applications and user specific views.



Industry applications data exchange:

- Proprietary app-to-app data exchange where no standards exists.
- Evolving standard data templates: SPIE and COBie are two good examples underway.

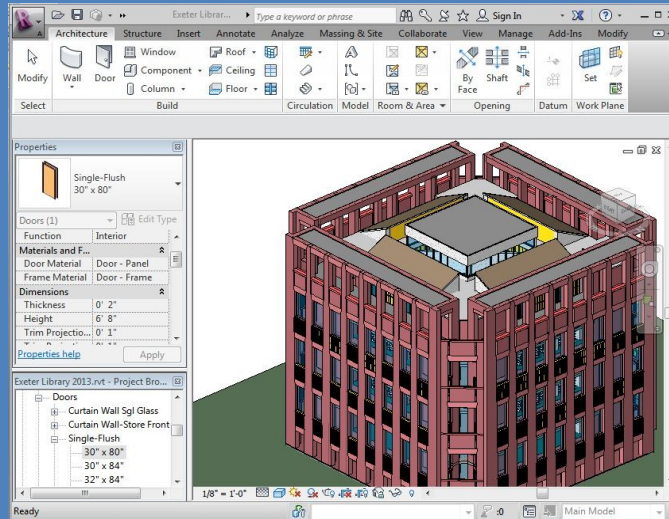
User specific data view templates, from the model context if available:

- Contract documents: full project manual view of specifications.
- Owners: outline view.
- Builders: specific product, material and services data available from the model context.
- Subs: only the specific trade info.
- Estimators, Fabricators, BPMs, etc, etc.

The specification data will be more tightly integrated with the models during design and more readily accessible from the model context.

- Model Information can be hard to access and understand without linked specifications (and vice versa) and they should be developed together.

Model Applications

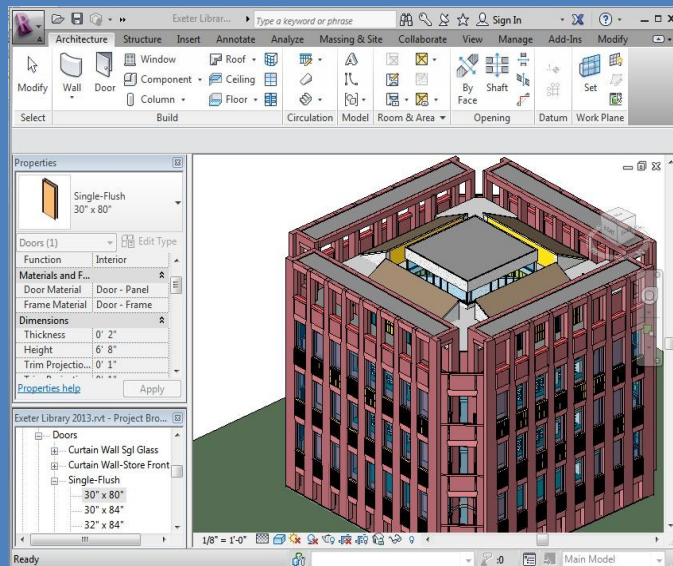


Spec
Module

This **DOES NOT** mean adding all the spec data to the model.

- The models and specifications should be developed together (as they always have been) but the specification data should remain external and available to all construction disciplines.

Model Applications

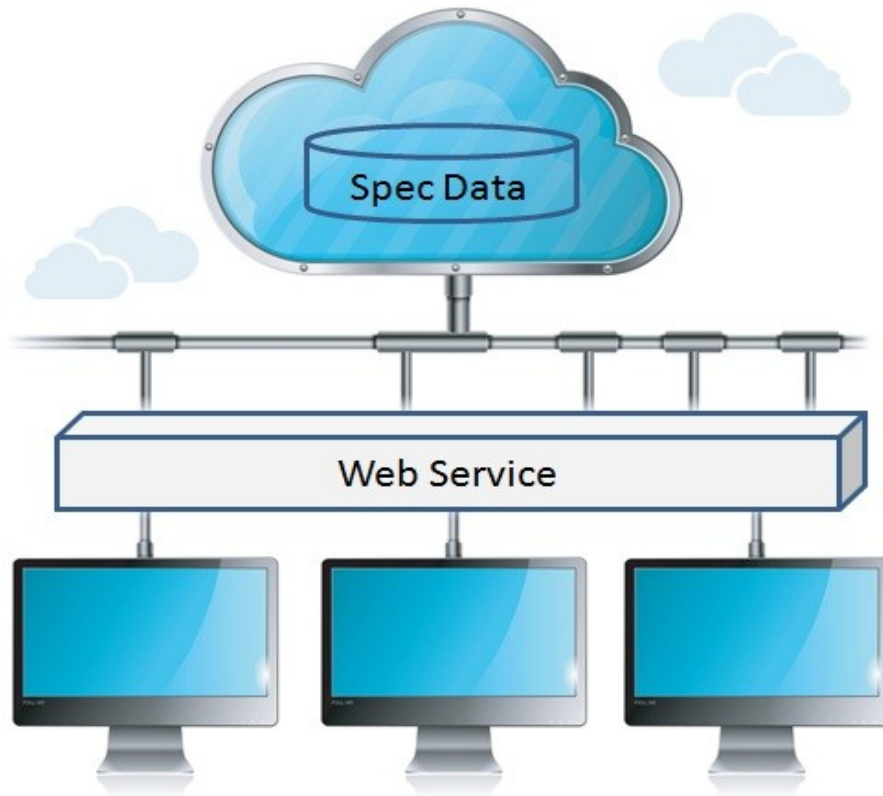


Spec
Module

Spec Database

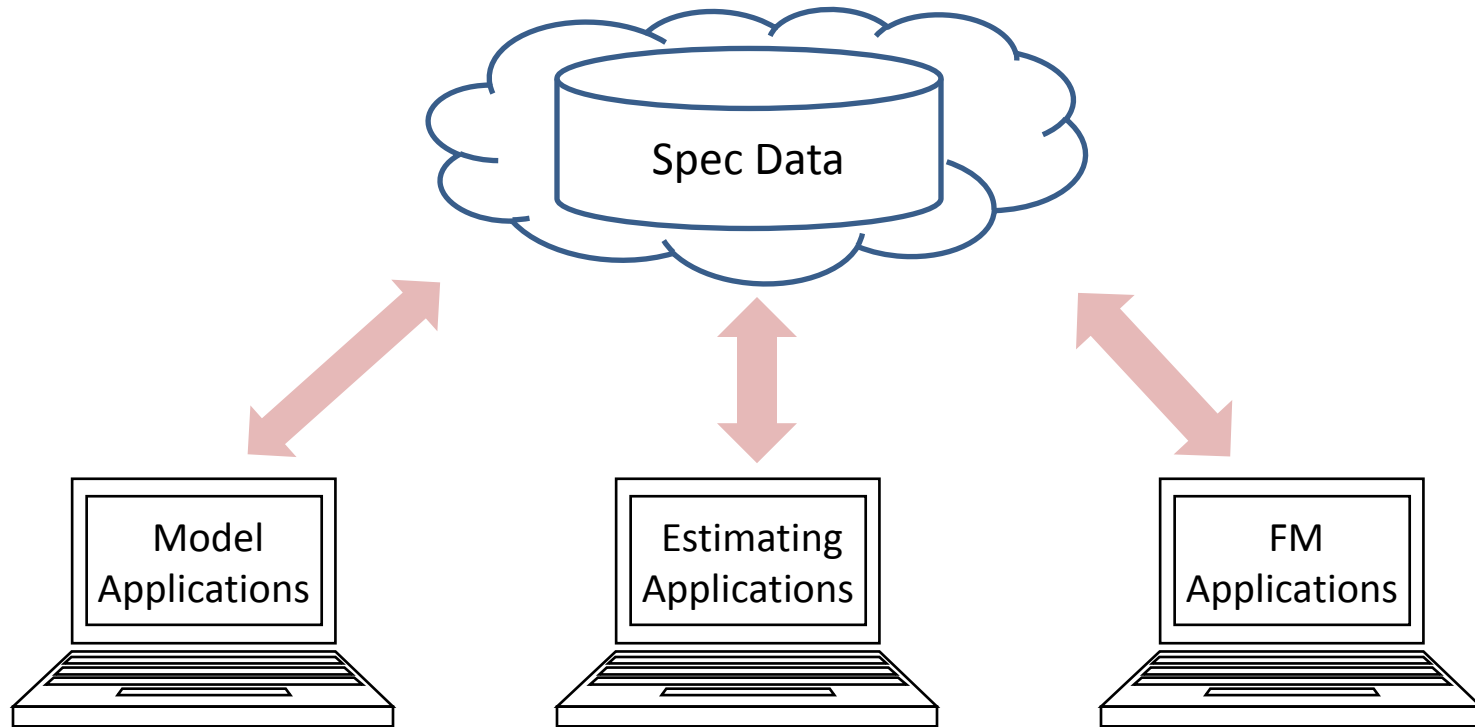
- Project Data
- Prod/Mat Data
 - Element ID
 - Spec Data

The specification data will be more readily and securely accessible to many widely dispersed users and applications.

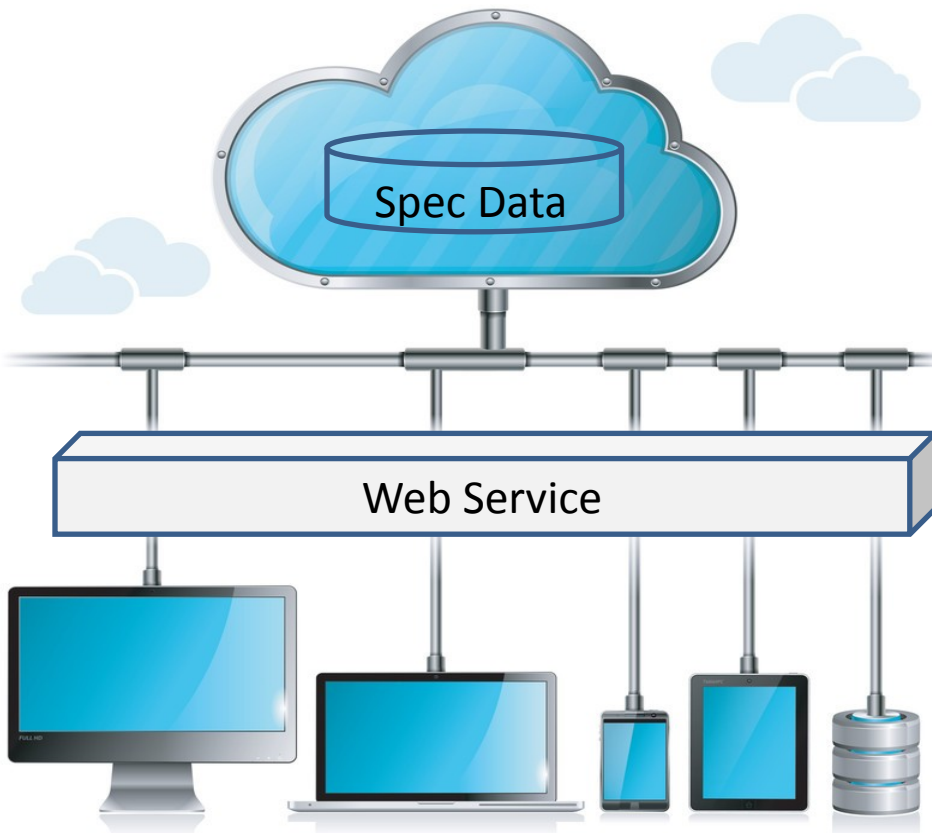


- The expectation of an increasingly connected world will drive adoption of construction data in the cloud.
- High demand project delivery like IPD will continue to increase the demand for access to shared data by those that need it, when they need it and in a format they need it, **SECURELY.**

For example, when the designers, estimators, or facilities managers applications need information contained in the specifications, it should be accessible from a data table, not require a separate installation of the data or accessed from a hard-copy of a spec document.

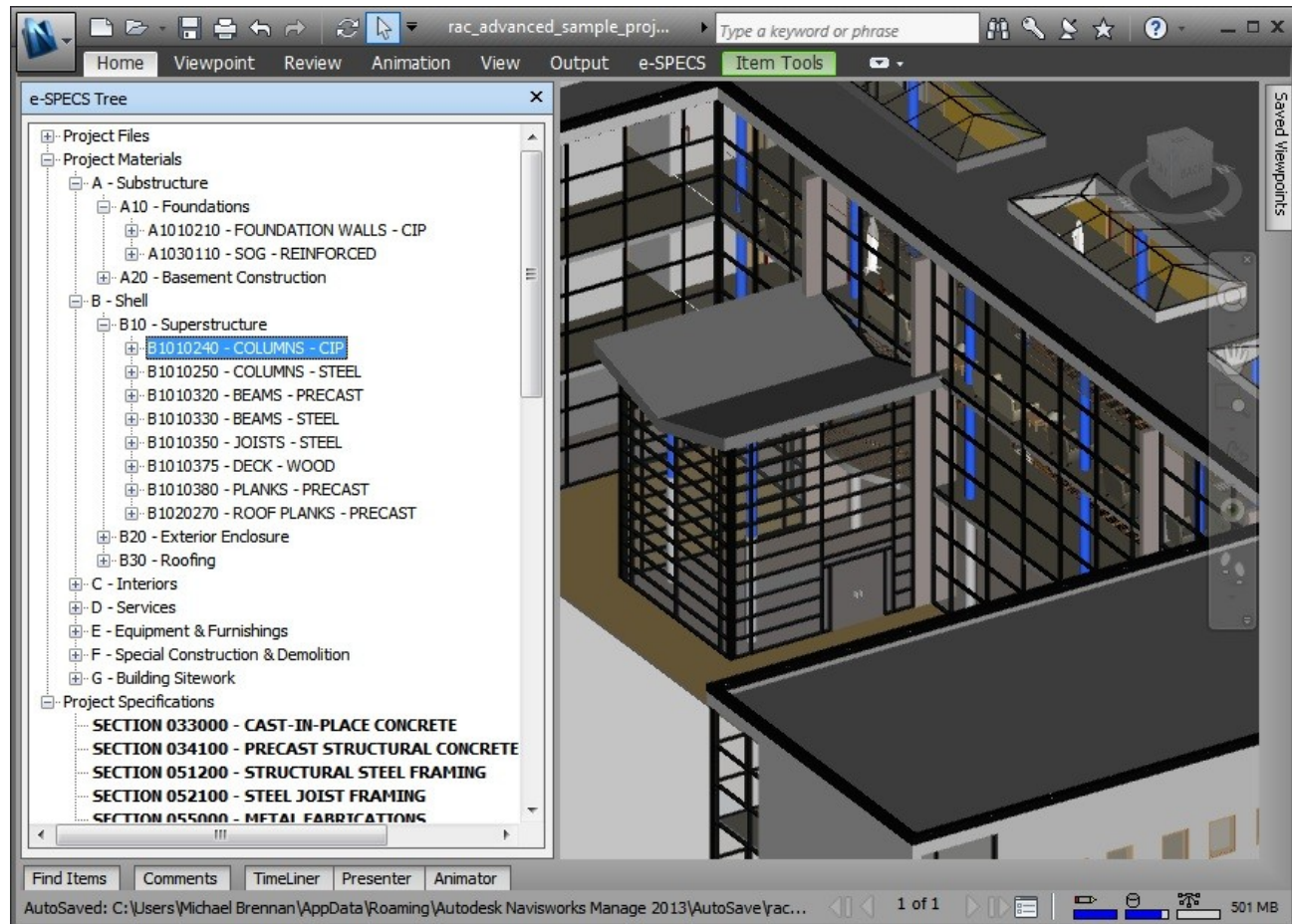


Model and project data access at job sites is standard and mobile apps are becoming popular as well, further driving the need to have specification data tailored to the user.

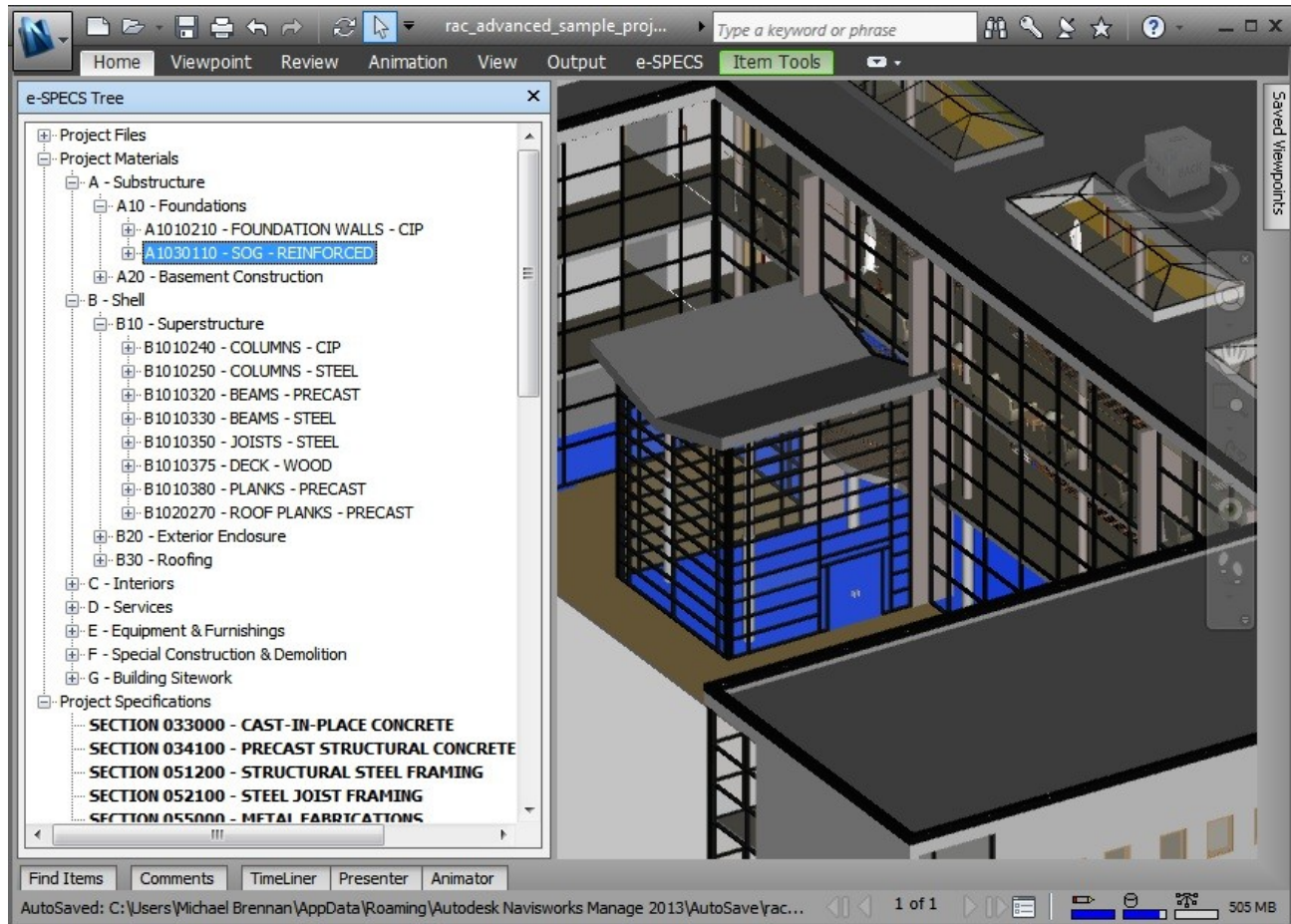


- Access to the specific element data, not a 1000 page pdf file will be/is critical.
- Visual context where applicable will be key to better maintenance and use of specification information.

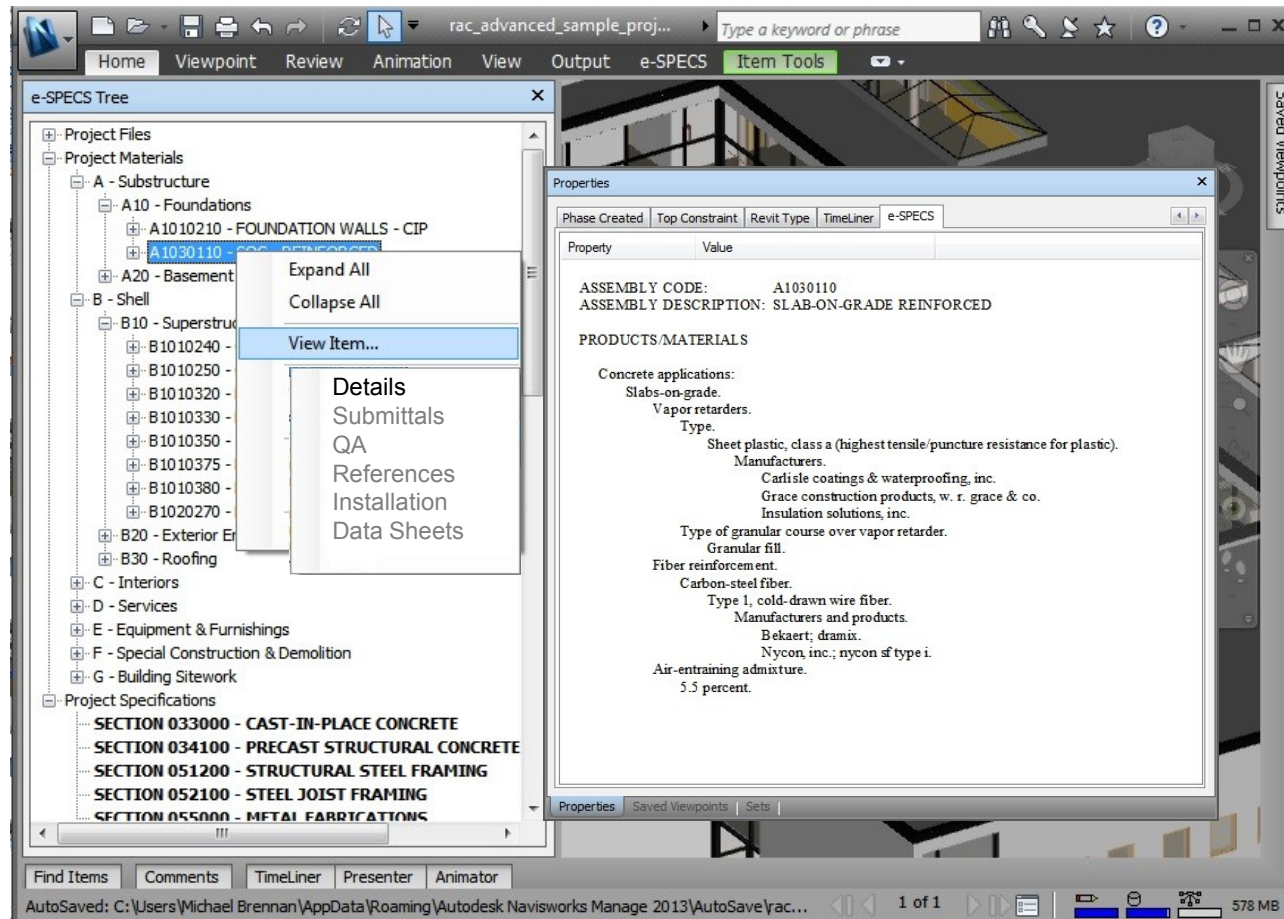
For the contractor that needs information about the concrete columns on the job site... (highlighted in blue in the model)



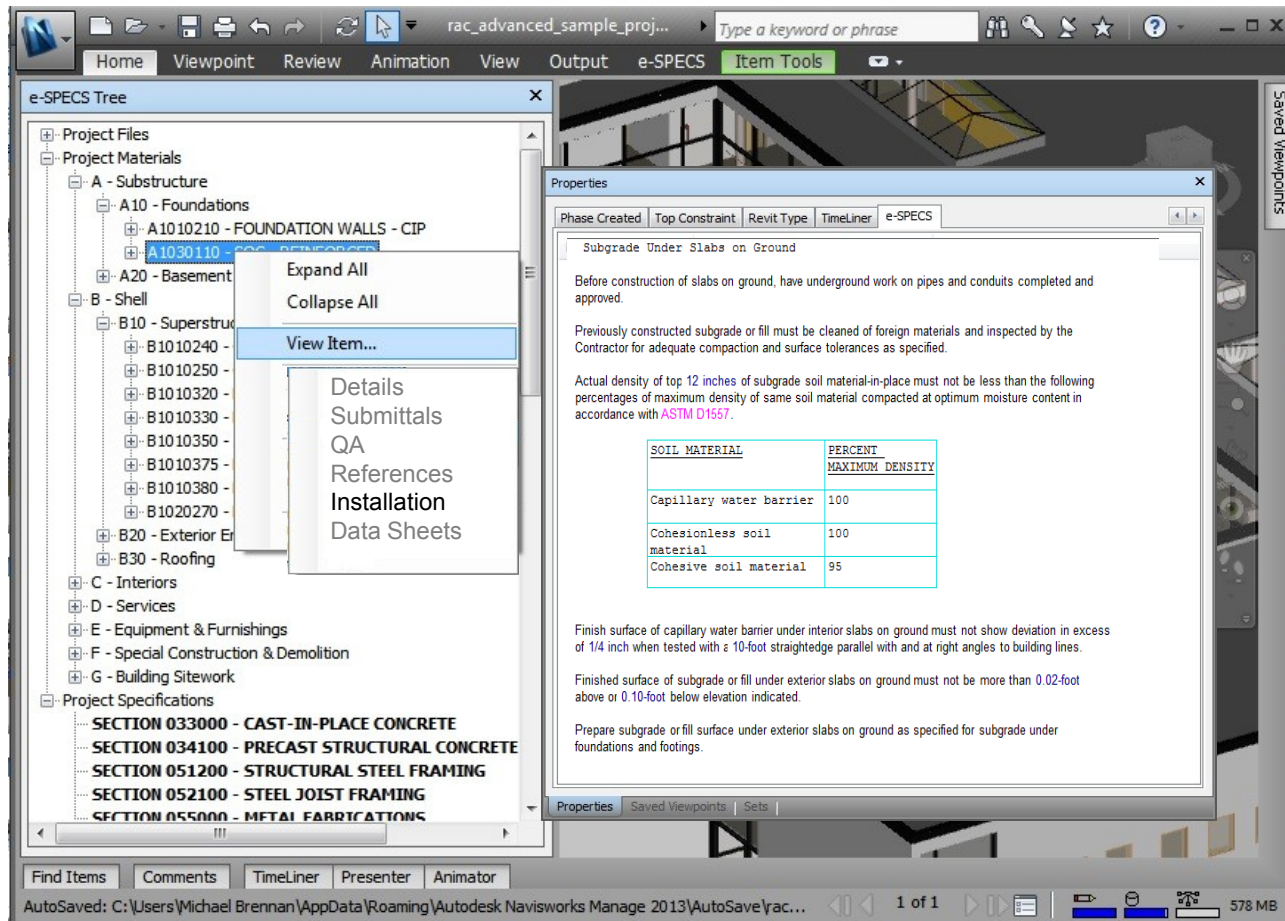
...or perhaps the details about the slab-on-grade...



...they should be able to access the specific specification data directly from the visual context...



...and any other desired information, like installation details...



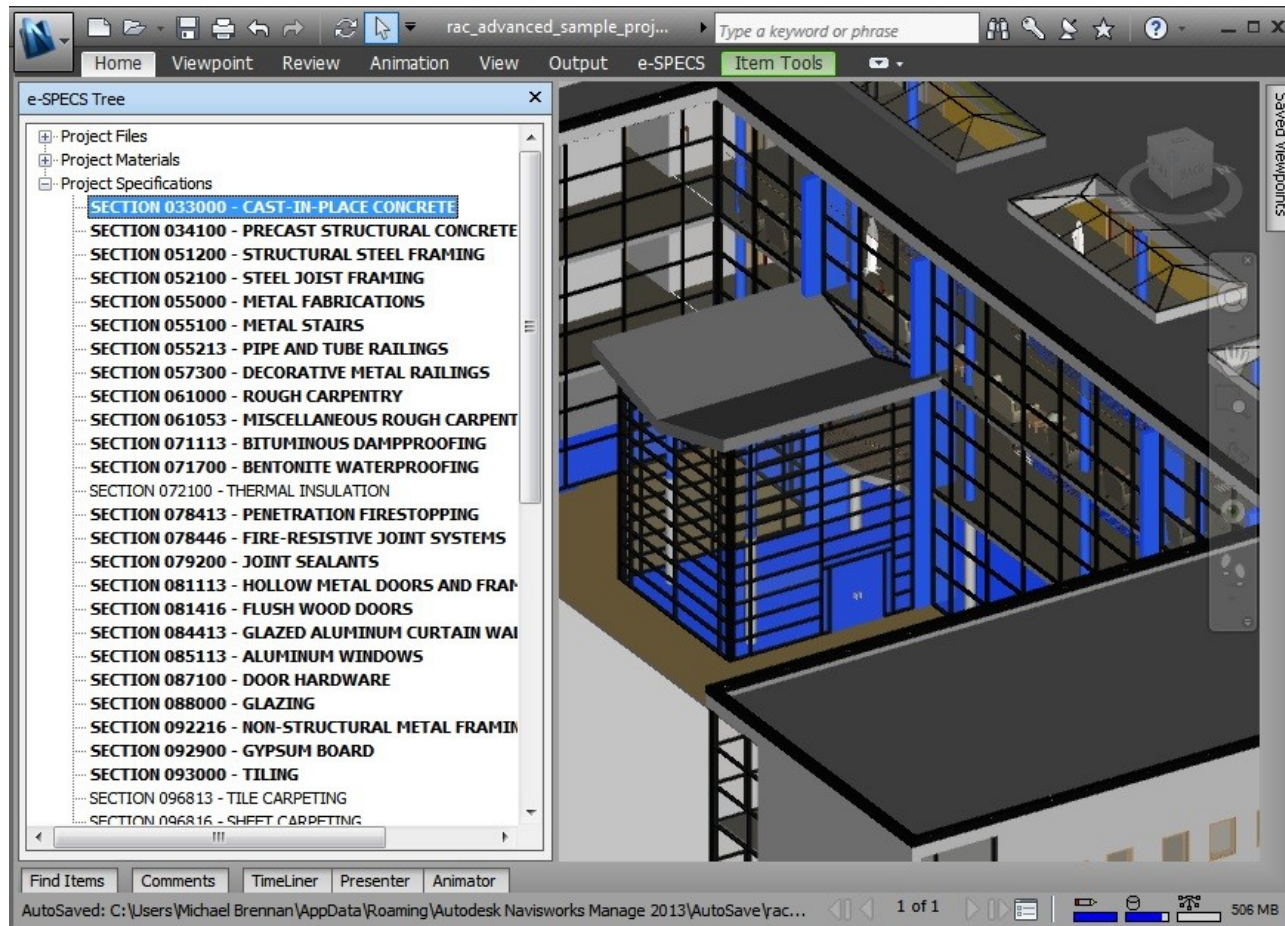
...product data sheets, or any other information that is contained in the specifications or referenced from the specifications for the specific product or material element of interest.

The screenshot displays the Navisworks Manage 2013 interface. The 'e-SPECS Tree' on the left lists project elements, with 'A1030110 - CONCRETE' selected. A context menu is open over this item, showing options: 'Expand All', 'Collapse All', 'View Item...', 'Details', 'Submittals', 'QA', 'References', 'Installation', and 'Data Sheets'. The 'View Item...' option is highlighted. The 'Properties' window on the right shows the 'e-SPECS' tab, displaying 'Table 3-1. Maximum allowable stationary live load'. The table lists slab thicknesses (inches) and corresponding stationary live loads (lb/ft²) for different concrete strengths (550 lb/in², 600 lb/in², 650 lb/in², 700 lb/in²). A diagram of a slab with a live load is also shown.

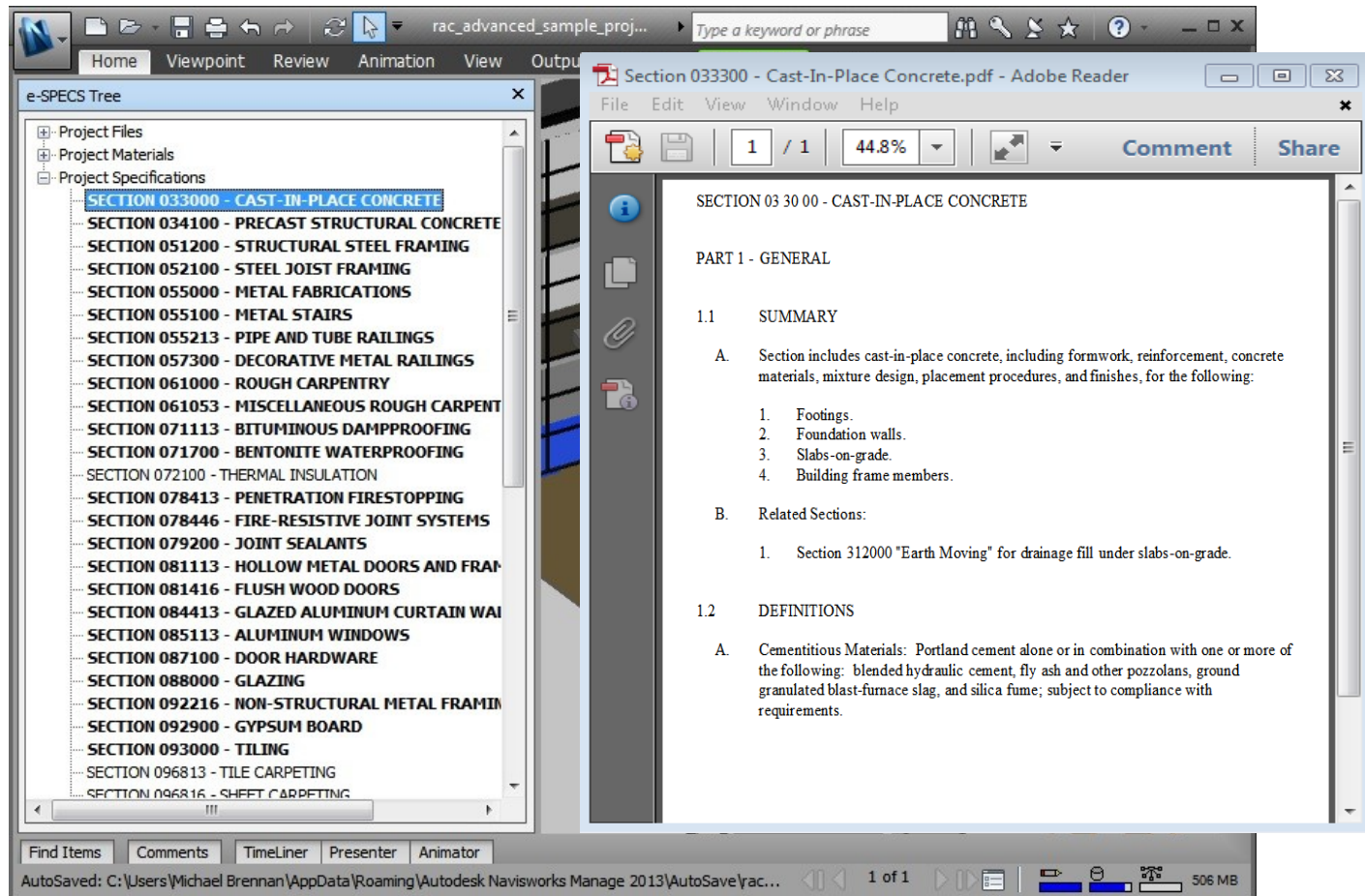
Slab Thickness inches h	550 lb in ²	600 lb in ²	650 lb in ²	700 lb in ²
6	868	947	1,026	1,105
7	938	1,023	1,109	1,194
8	1,003	1,094	1,185	1,276
9	1,064	1,160	1,257	1,354
10	1,121	1,223	1,325	1,427
11	1,176	1,283	1,390	1,497
12	1,228	1,340	1,452	1,563
14	1,326	1,447	1,568	1,689

Diagram: STATIONARY LIVE LOAD

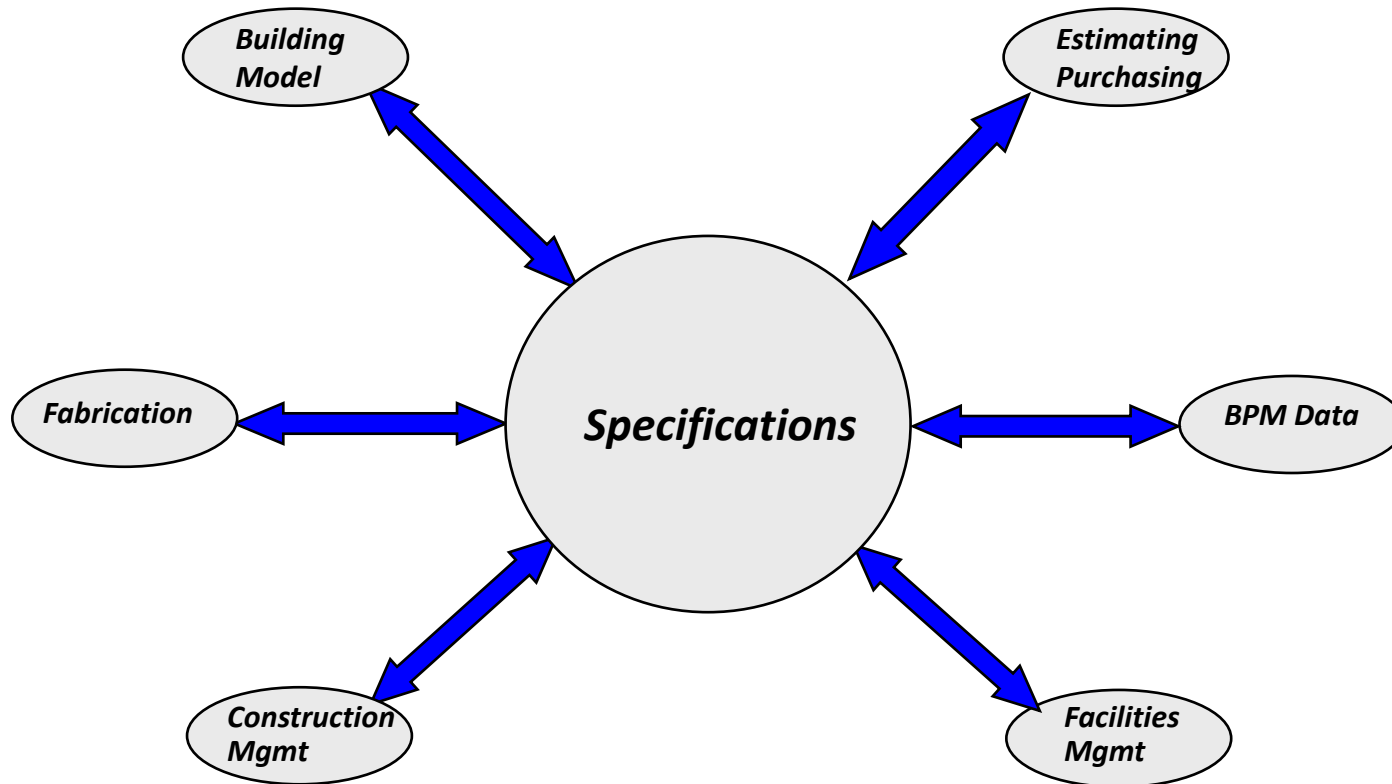
This is certainly more efficient than lumping all similar elements together...



...and parsing the desired information from a pdf document.



The specifications are required by all disciplines and getting the information to the project team members when they need it, how they need it and where the need is the opportunity ahead.



The Future of Specifications

From document management to
information management

Thank You!

The Future of Specifications Webinar

BIM, Specs, SPie and COBie

February 2013

Presenter: Mark Kalin FAIA FCSI CCS LEED AP
Kalin Associates Specifications

Former Chair, AIA Masterspec Review Committee
Former Chair, AIA Specifications Practice Group
Former Chair, CSI National Technical Committee

What's a Spec?
What's a Property Set?
What goes into BIM?

Product
Literature



Mars Panels with ClimaPlus Superior Performance/
Dow DX/DXL Suspension System

LEED Credits
Recycled Content: 76%
ClimaPlus Superior Performance for Mold and mildew

MR				EQ		
Waste Reduction ¹	Recycled Content	Regional Materials ²	Recycle/Renewable Materials	Low-Emitting Materials	Daylight and Views	Acoustical Performance
●	●	●	●	●	●	●

Features and Benefits

- Excellent noise reduction (NRC .70)
- High light-reflective finish (LR-.89) reduces light fixtures and energy use
- Washable and Scrubbable finish – Impact and Scratch Resistant
- Meets USDA/FSIS guidelines for use in food processing areas
- Coordinates visually with Halcyon for open/closed plan applications
- Non-directional, monolithic visual reduces installation time and waste
- ClimaPlus™ 30-year lifetime system warranty against visible sag, mold and mildew

Applications

- Offices
- Healthcare
- Classrooms
- Corridors
- Reception areas and lobbies
- Department stores and retail
- Dining rooms, kitchens and food preparation areas

Substrate

- X-Technology mineral fiber



Fine-textured panel

Call 888.874.2450 for samples



White

Page 2 has the info
 Designers and
 Specifiers and
 Contractors
 really need

	Edge	Panel Size	Class	Item No.	UL Classified			Color	Grid Options	VOC* Emissions	Anti-Mold & Mildew	Recycled Content ²	Panel Cost
					NRC	CAC Min. ³	LR ⁴						
<div>30</div> <div>Year System Warranty</div> <div>No visible sag</div> <div>Mold/mildew protection</div> <div>Mars ClimaPlus Panels</div>													
	SQ	2'x2'x3/4"	Class A	86185	.70	35	.89	White	A, B, C	Low		76% HRC	\$S
		2'x4'x3/4"	Class A	88185	.70	35	.89	White	A, B	Low		76% HRC	\$S
	SLT	2'x2'x3/4"	Class A	86785	.70	35	.89	White	D	Low		76% HRC	\$S
		2'x4'x3/4"	Class A	88785	.70	35	.89	White	D	Low		76% HRC	\$S
	FLB	2'x2'x3/4"	Class A	86985	.70	35	.89	White	E, F, G	Low		76% HRC	\$S
		2'x4'x3/4"	Class A	88985	.70	35	.89	White	E, F, G	Low		76% HRC	\$S
		30"x30"x3/4"	Class A	86830	.70	35	.89	White	E, F, G	Low		76% HRC	\$S
<div>Legend</div> <div><div> Low Emissions (VOC Class) Classified as low-emitting per standards established by the Collaborative for High-Performance Schools (CHPS), following California Specification 01350 testing methods.</div><div> ClimaPlus Superior Performance⁵ Contains a broad-spectrum antimicrobial treatment on the face and back of the panel that provides guaranteed resistance against the growth of mold and mildew.</div><div> High Recycled Content Classified as containing greater than 50% total recycled content. Total recycled content is based on panel composition of post-consumer and pre-consumer (post-industrial) recycled content per FTC guidelines.</div></div>													
Grid Profile Options	A DX®/DXL™	B DXW™	C CENTRICITE™ DKT	D DX/DXL	E CENTRICITE DKT	F FINELINE® DXF	G FINELINE® 1/8 DXFF						
<div>Physical Data/ Footnotes</div> <div><div><div>Product literature Data sheet: SC1966 ASTM E1264 classification Type IV, Form 1 and 2, Pattern E, G ASTM E84 surface burning characteristics Class A Flame spread: 25 Smoke developed: 50 Weight .96-1.05 lb./sq. ft. Thermal resistance</div><div>Maintenance Can be cleaned easily with a soft brush or vacuum. Scrubability Exceeds 1000+ scrub cycles without surface break or the extent of abrasion (ASTM D2486). Washability Exceeds 1000+ wash cycles without surface break or the extent of abrasion (ASTM D4828). Water Resistance Absorption of 1,680 mm² per 24hrs</div><div>Cleaning Recommendations To clean panel, use a clean, white cloth with water or a mild detergent and wipe surface. To disinfect panel, lightly spray surface and wipe clean with a clean, white cloth. Acceptable colorless disinfectants include: – Hydrogen peroxide – Isopropyl alcohol – Quaternary ammonium – Sodium hypochlorite Patented technology This product's unique combination of sag resistance and antimicrobial properties</div><div>Footnotes 1. Applies when USG acoustical ceilings recycling program is utilized. 2. For details, see LEED report generator at usgdesignstudio.com. 3. Adding sound masking can be as effective as using a ceiling panel with a higher CAC rating, providing increased privacy between enclosed office spaces. 4. LR values are shown as averages. 5. Panel face and back surfaces treated with a patented, broad spectrum anti-microbial standard formulation that</div><div>see Ceiling Systems Warranties and Limitations (SC2102) and ClimaPlus Ceilings Certification of Performance (SC2451). 6. No formaldehyde is added to any ingredient or during the manufacturing process for all mineral fiber acoustical ceiling products manufactured by USG Interiors, Inc.</div></div></div>													

CSI Masterformat

3-part section format
with the same info
as in the product
literature

Project Name	Architect
Project Location	Date

SECTION 09-51.00

ACOUSTICAL CEILINGS

PART 1-GENERAL

1.1 → SUMMARY

A. → Provide acoustical ceilings and suspension systems.

1.2 → SUBMITTALS

A. → Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. → Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

C. → Extra Stock: Submit extra stock equal to 2 percent of amount installed.

1.3 → QUALITY ASSURANCE

A. → Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. → Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities. Acoustical performance based on project requirements.

PART 2-PRODUCTS

2.1 → MATERIALS

A. → Mineral Fiber Acoustical Ceilings:

1. → Manufacturers: USG, Mars, ClimaPlus 86985 tile and Finline DXF/DXLF grid; Armstrong Ultima Fine Texture 1912 tile and Silhouette XL grid; CertainTeed, Symphony 1222BF-OVT tile and Smoothline Grid.

2. → Performance Criteria:

a. → Panel Size: 24 by 24 by 3/4 inches.

b. → Panel Color: White.

c. → Panel Classification: ASTM E1264 Type IV, Form 1 or 2, Pattern E.

d. → Panel Surface Burning: ASTM E 84, Class A.

e. → Panel NRC - UL: 0.70 or better.

f. → Panel CAC - UL: Not less than 33.

g. → Panel LR: Not less than 0.89.

h. → Panel VOC Emissions: Low.

i. → Panel Anti-Mold: Yes.

j. → Panel Recycled Content: 70 percent or better.

k. → Grid Finish: Prefinished white.

l. → Grid ASTM C635: Intermediate-duty.

m. → Grid Recycled Content: 30 percent or better.

n. → Edge Molding: Reveal type.

o. → Hold Down Clips: Yes.

p. → Acoustical Sealant: Low-VOC < 50g/L.

q. → Installation Standard: ASTM C636.

r. → Installation Reference: Cisca Ceilings System Handbook.

CSI Format (page 2 of spec)

Project Name	Architect
Project Location	Date

PART 3-EXECUTION

3.1 → INSTALLATION

- A. → Install materials and suspension systems in accordance with manufacturer's instructions and recommendations, and ASTM C 636. Coordinate installation with location of mechanical and electrical work to ensure proper locations and anchorage.
- B. → Level ceiling to within 1/8 inch in 10 feet in both directions. Scribe and cut panels to fit accurately. Measure and lay out to avoid less than half panel units.
- C. → Removal and reinstallation at existing ceilings: Remove and store materials for reuse when allowed. Handle with white gloves and avoid damaging corners and edges. Clean tiles and grid system, which have been removed. Provide additional materials to complete the work and to replace damaged existing materials. New materials shall match existing materials as approved.
- D. → Adjust, clean, and touch up all system components.

END OF SECTION

BIMformat

Same product
info goes into the
BIM Model

SPie
Specifier's
Properties
Information
Exchange

Type Properties

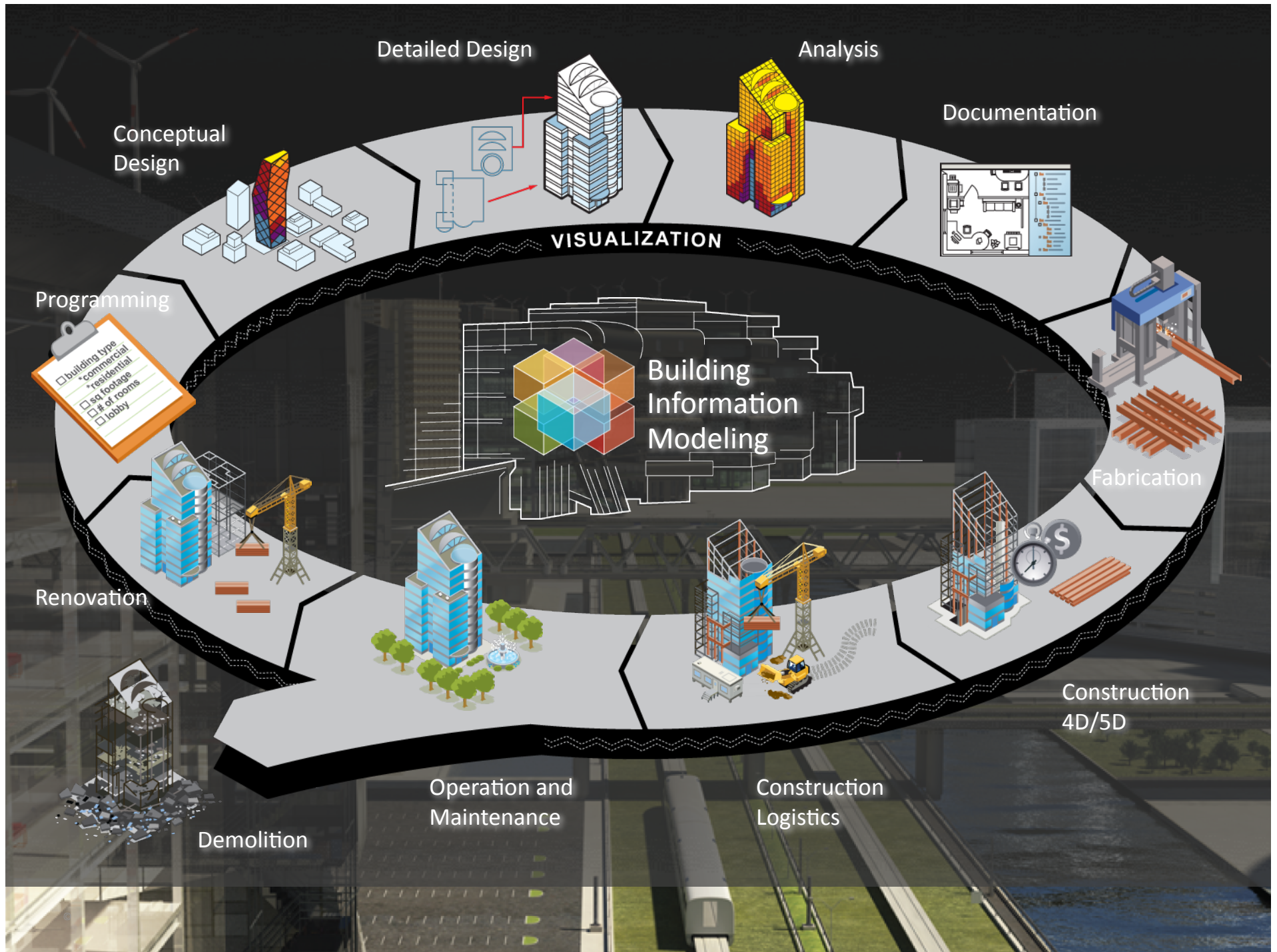
Family	Ceilings
Type	Acoustical Ceilings
Uniformat Number	C1070
Masterformat Number	09 51 00



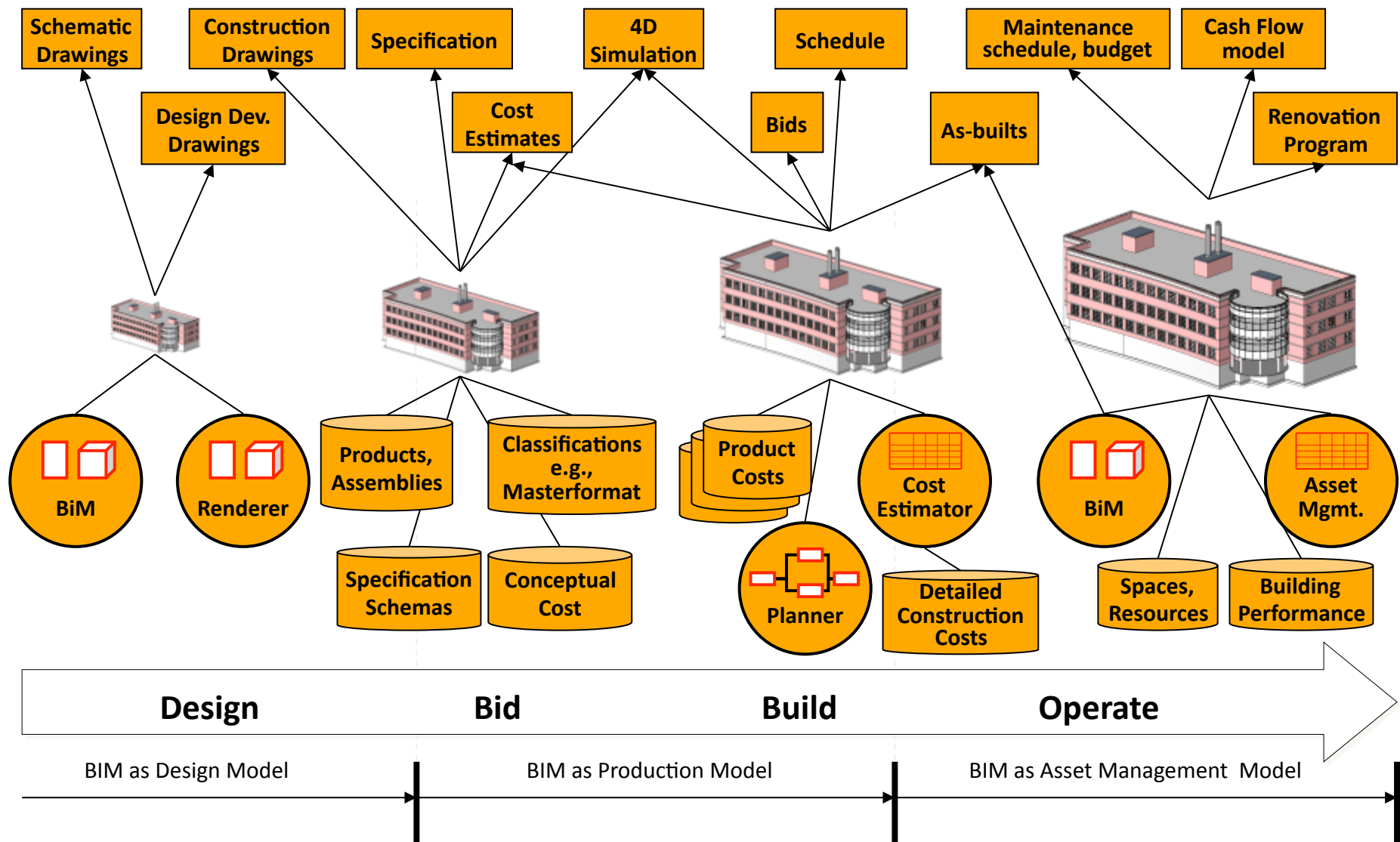
Type Parameters

Parameter	Value		
Keynote	ACT-1		
Manufacturer	USG Corporation	Armstrong	CertainTeed
Product Name	Mars ClimaPlus	Ultima Fine Texture	Symphony
Product Number	86985	1912	1222BF-OVT
Grid Profile	Fineline DXF/DXLF	Silhouette XL	Smoothline
Panel Size	24 by 24 by 3/4 inches		
Panel Color	White		
Panel Classification	ASTM E1264 Type IV, Form 1 or 2, Pattern E		
Panel Surface Burning	ASTM E 84, Class A		
Panel NRC - UL	0.70 or better		
Panel CAC - UL	Not less than .33		
Panel LR	Not less than .089		
Panel VOC Emissions	Low		
Panel Anti-Mold	Yes		
Panel Recycled Content	70 percent or better		
Grid Finish	Prefinished white		
Grid ASTM C635	Intermediate-duty		
Grid Recycled Content	30 percent or better		
Edge Molding	Reveal type		
Hold Down Clips	Yes		
Acoustical Sealant	Low-VOC < 50g/L		
Installation Standard	ASTM C636		
Installation Reference	CISCA Ceilings System Handbook		

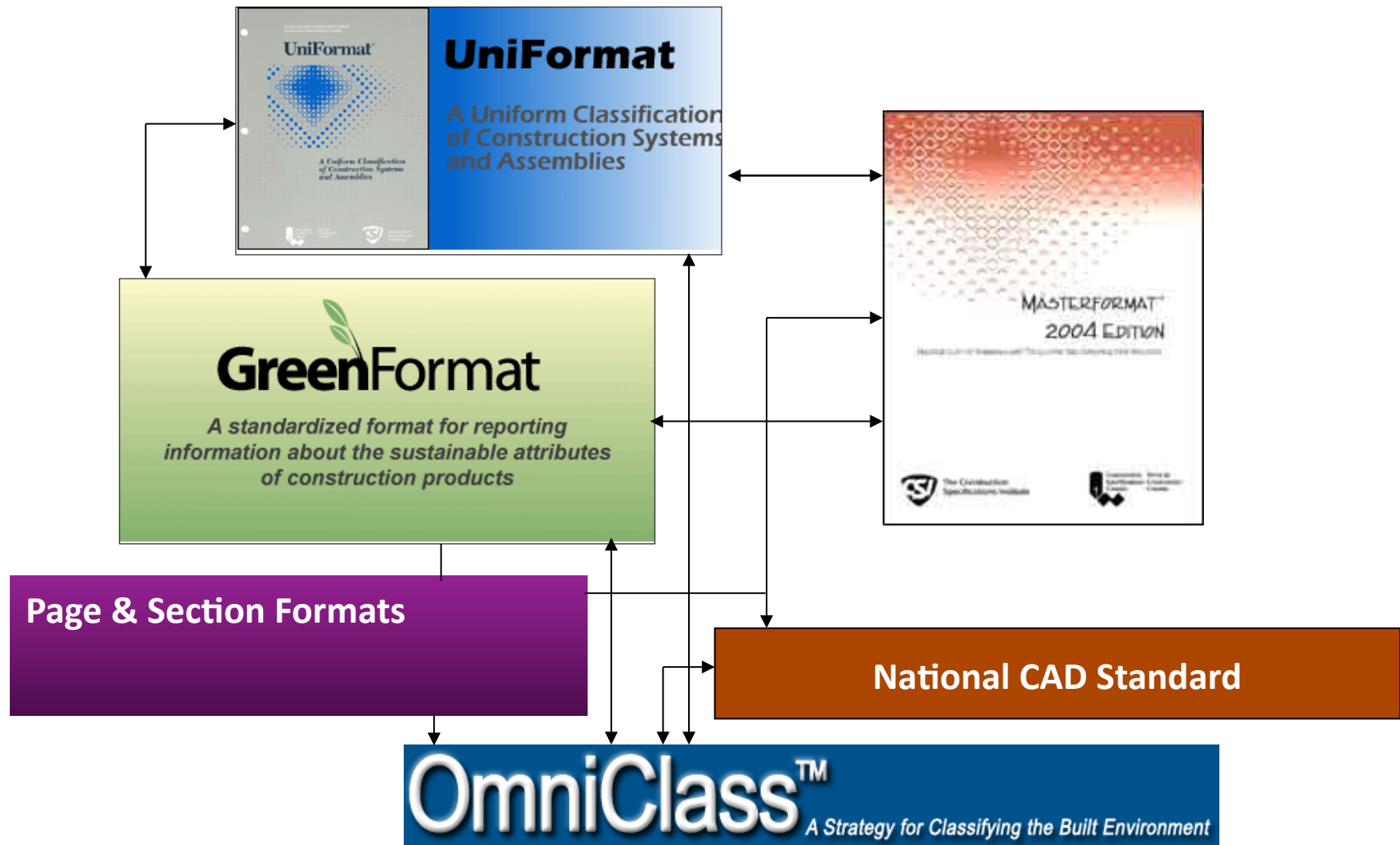




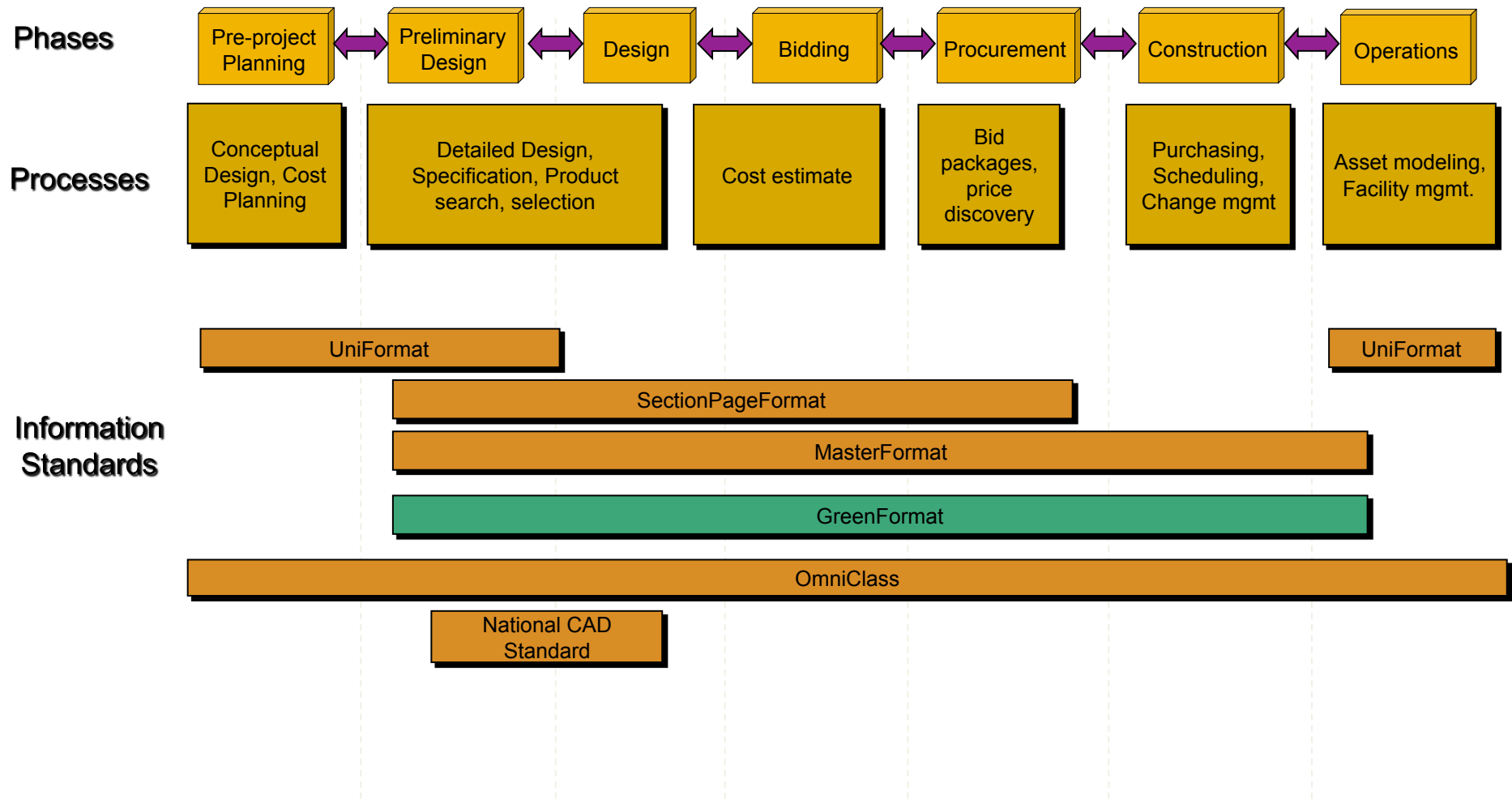
Project Information is distributed in multiple formats, and changes over time



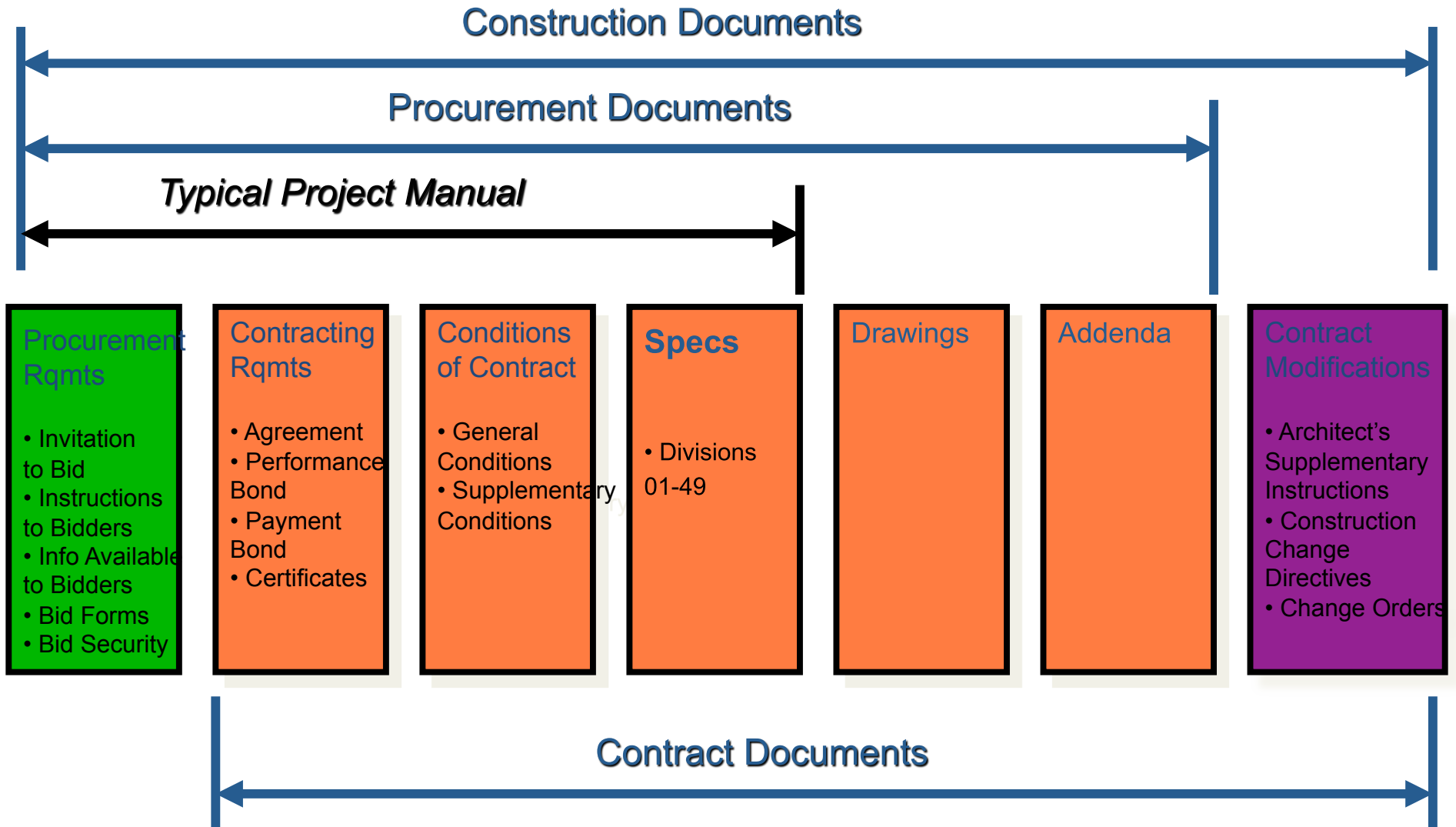
CSI and its formats...



Information Formats and Standards



Document Relationships



SPie

Specifiers Properties Information Exchange

- USACE / NASA / OBO / NIBS / SCIP / CSI
- Design Phase Decisions in the Model
- Product Templates for Manufacturers

SPie

SPie, the Specifiers' Properties information exchange, was developed in 2007 and is actively managed by the buildingSMART alliance

The objective of the SPie project is to create set of product templates that can be used by manufacturers to export product data into an open-standard format consumed by designers, specifiers, builders, owners, and operators. This project extends manufacturers' efforts in Building Information Modeling, e-marketplaces, and standard identification tagging and delivers value through the entire supply chain.

<http://www.buildingsmartalliance.org/index.php/projects/activeprojects/32>.

COBie

Construction Operations Building Information Exchange

- USACE / NASA
- Life-Cycle Capture of Information
- For Operations and Maintenance

COBie

COBie, the Construction-Operations Building information exchange, is the United States standard for the exchange of information related to manage building assets.

There are over twenty commercial off the shelf software products that support COBie. These products cover the entire facility life-cycle from planning, design, construction, commissioning all the way to operations, maintenance, and space management.

<http://www.buildingsmartalliance.org/index.php/projects/activeprojects/25>

SPie Template for Linking UFGS, COBie and OmniClass Specifiers attributes from 498 UFGS spec sections

UFGS Section and Date	UFGS MAY 2012	08 11 13	STEEL DOORS AND FRAMES 02/10
OCCS Table 23 Properties	OCCS MAY 2012	23-17 11 13 15	Steel Doors
Name	COBie Guide	n/a	Type XX Space#-01
Type	COBie Guide	n/a	Type XX
Location	COBie Guide	n/a	space name
Placement	COBie Guide	n/a	space - ceiling - wall - chase - site - roof
Basis-of-Design Manufacturer	COBie Guide	n/a	non-proprietary - proprietary
Basis-of-Design Model	COBie Guide	n/a	manufacturer's model number
Basis-of-Design Notes	COBie Guide	n/a	insert notes
Sustainability	COBie Guide	n/a	regional - low voc - low toxicity - recycled content
System Description	UFGS 1.2	n/a	interior and exterior steel doors and frames

UFGS SPie Template

UFGS Section and Date	UFGS MAY 2012	08 11 13	STEEL DOORS AND FRAMES 02/10
OCCS Table 23 Properties	OCCS MAY 2012	23-17 11 13 15	Steel Doors
Name	COBie Guide	n/a	Type XX Space#-01
Type	COBie Guide	n/a	Type XX
Location	COBie Guide	n/a	space name
Placement	COBie Guide	n/a	space - ceiling - wall - chase - site - roof
Basis-of-Design Manufacturer	COBie Guide	n/a	non-proprietary - proprietary
Basis-of-Design Model	COBie Guide	n/a	manufacturer's model number
Basis-of-Design Notes	COBie Guide	n/a	insert notes
Sustainability	COBie Guide	n/a	regional - low voc - low toxicity - recycled content
System Description	UFGS 1.2	n/a	interior and exterior steel doors and frames
Door Width	COBie Guide	mm (in)	762 mm (30 in) - 914 mm (36 in) - 1066 mm (42 in)
Door Height	COBie Guide	mm (in)	2032 mm (80 in) - 2133 mm (84 in) - 2438 mm (96 in)
Door Thickness	COBie Guide	mm (in)	44.5 mm (1.75 in)
Door Type, Standard	COBie Guide/UFGS 2.1	n/a	standard duty - heavy duty - extra heavy duty - maximum duty
Door Type, Custom	COBie Guide/UFGS 2.2	n/a	NAAMM-HMMA-HMM
Door Material	COBie Guide/UFGS 2.1/2.2	n/a	steel - galvanized steel - stainless steel
Door Finish	COBie Guide/UFGS 2.11	n/a	factory primed - zinc-coated factory primed - factory enamel
Glazing Type	COBie Guide/UFGS 2.13	n/a	tempered - laminated
FEBR Code	COBie Guide	n/a	5 min FE - 15 min FE - 60 min FE – UL 752 Level 1 BR - UL 752 Level 3 BR
Frame Type	COBie Guide/UFGS 2.7	n/a	welded - knock-down
Frame Material	COBie Guide/UFGS 2.1/2/2	n/a	steel - galvanized steel - stainless steel
Frame Finish	COBie Guide/UFGS 2.11	n/a	factory primed - zinc-coated factory primed - factory enamel
Frame Head	COBie Guide	n/a	insert value
Frame Jam	COBie Guide	n/a	insert value
Frame Sill	COBie Guide	n/a	insert value
Fire Label Rating	COBie Guide/UFGS 2.8	n/a	UL 180 min A - UL 90 min B - UL 45 min C - UL 90 min D – UL 45 min E - UL 20 min
Hardware Set	COBie Guide/UFGS 2.10	n/a	insert value
Pressurization	COBie Guide	n/a	insert value
Egress Door	COBie Guide	n/a	insert value

UFGS SPie Template

UFGS Section and Date	UFGS MAY 2012	23 52 00	HEATING BOILERS 04/08
OCCS Table 23 Properties	OCCS MAY 2012	23-33 11 00	Commercial Boilers
Name	COBie Guide	n/a	Type XX Space#-01
Type	COBie Guide	n/a	Type XX
Location	COBie Guide	n/a	space name
Placement	COBie Guide	n/a	space - ceiling - wall - chase - site - roof
Basis-of-Design Manufacturer	COBie Guide	n/a	non-proprietary - proprietary
Basis-of-Design Model	COBie Guide	n/a	manufacturer's model number
Basis-of-Design Notes	COBie Guide	n/a	insert notes
Current	COBie Guide	Amps	insert value
Voltage	COBie Guide	Volts	insert value
Frequency	COBie Guide	Hz	insert value
Input Power	COBie Guide	kW	insert value
Output Power	COBie Guide	kW	insert value
Water Flow	COBie Guide	cu.m/hr	insert value
Entering Water Temp	COBie Guide	C	insert value
Leaving Water Temp	COBie Guide	C	insert value
Vent Diameter	COBie Guide	mm	insert value
Passes	COBie Guide	n/a	insert value
Pressure Drop	COBie Guide	kPa	insert value
Energy Source	COBie Guide	n/a	insert value
Fuel Type	COBie Guide	n/a	insert value
Output Media	COBie Guide	n/a	insert value
Sustainability	COBie Guide	n/a	energy saving - regional sourcing - local supply - scheduled maintenance
System Description	UFGS 1.2	n/a	packaged hot water and steam boiler systems
Boiler Type	UFGS 2.2	n/a	firetube – watertube – cast iron – condensing – hot water heating – steam heating
Fuel Burning Equipment	UFGS 2.3	n/a	gas burner – oil burner – combination gas-oil burner – steam atomizer – mechanical pressure atomizer
Components	UFGS 2.4/2.5/2.6	n/a	combustion control – pumps – radiators – convectors – unit heaters – heating and ventilating units – air handling units
Fittings and Accessories	UFGS 2.12	n/a	blowers – heaters – vents - gaskets – pipes – pipe connectors – valves – air vents – insulation – storage – water treatment

Specifier's Changing Role

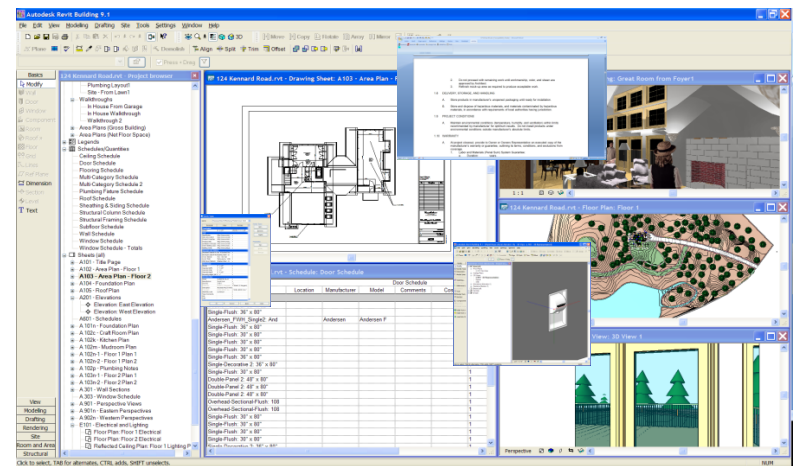
Static

Specification Writer



Dynamic

Knowledge Manager



BIMspec

Specifier's Concerns

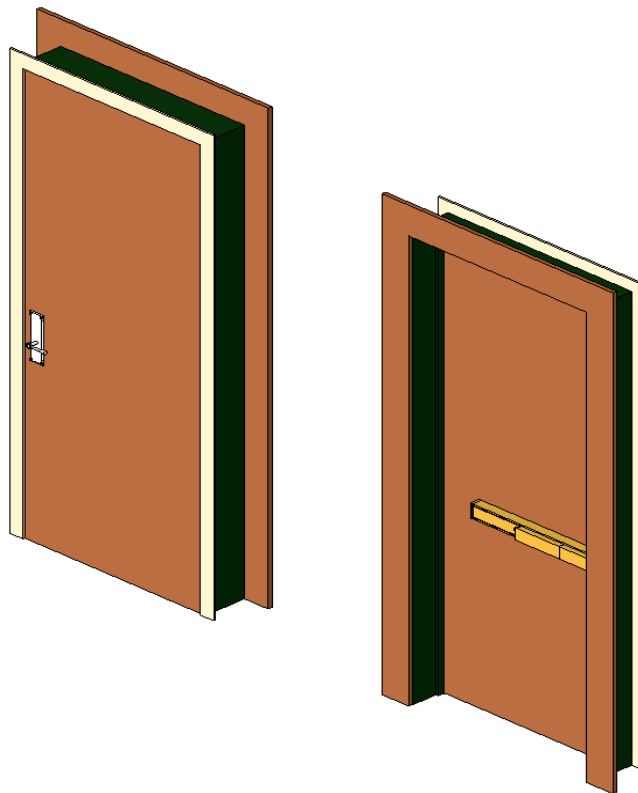
1.1 BIM COORDINATION

A. Acoustical Mineral Fiber Ceilings:

1. Building Information Modeling:
 - a. BIM Software: Revit 2010.
 - 1). Family: Ceilings.
 - 2). Type: Acoustical Ceilings
 - b. Keynotes:
 - 1). 09 51 00.A11 – Tegular Edge (3/4 x 24 x 24).
 - 2). 09 51 00.B1 – 9/16 Tee.
 - 3). 09 51 00.C1 – 9/16 Wall Angle.
 - 4). 09 51 00.D1 – Suspension Wire.
2. CSI Masterformat:
 - a. 09 50 00: Ceilings
 - b. 09 51 00: Acoustical Ceilings
 - c. 09 51 23: Acoustical Tile Ceilings
 - d. 09 53 00: Acoustical Ceiling Suspension Assemblies.
 - e. 09 53 23: Metal Acoustical Ceiling Suspension Assemblies.
3. Unifomat:
 - a. CSI: C1070 – Suspended Ceiling Construction
 - b. CSI: C1070.01 – Acoustical Suspended Ceilings
 - c. CSI: C1070.05 – Ceiling Suspension Components
 - d. ASTM Unifomat II: C30 – Interior Finishes
 - e. ASTM Unifomat II: C3030 – Ceiling Finishes
 - f. ASTM Unifomat II: C3031 – Suspended Ceilings
4. Cost Codes:
 - a. Software: RS Means Costworks.
 - 1). 09 51 23.10: Suspended Acoustic Ceiling Tiles.
 - 2). 095123101125: Mineral fiber tile, lay-in, 3/4 inch thick, fine textured.
 - 3). 09 51 23.30: Suspended Ceilings, Complete
 - 4). 095123300830: Mineral fiber, tegular, 2' x 4' x 3/4" tile.
5. USGBC LEED Contribution:
 - a. Program: LEED 2009 - New Construction
 - 1). MR 4 - Recycled content - YES
 - 2). MR 5 - Regional materials - NO
 - 3). MR 7 - FSC Wood - N/A
 - 4). EQ 4.1 - Low emitting materials, adhesives and sealants - YES
 - 5). EQ 4.2 - Low emitting materials, paints and coatings - N/A
 - 6). EQ 4.3 - Low emitting materials, flooring - N/A
 - 7). EQ 4.4 - Low emitting materials, no added UF - N/A

Construction, Construction Management

- Update of BIM during construction to reflect products actually installed and facilities mgmt data



Element Properties

Family: Constellation_Door_FINAL Load...

Type: As Specified Edit / New...

Type Parameters: Control all elements of this type

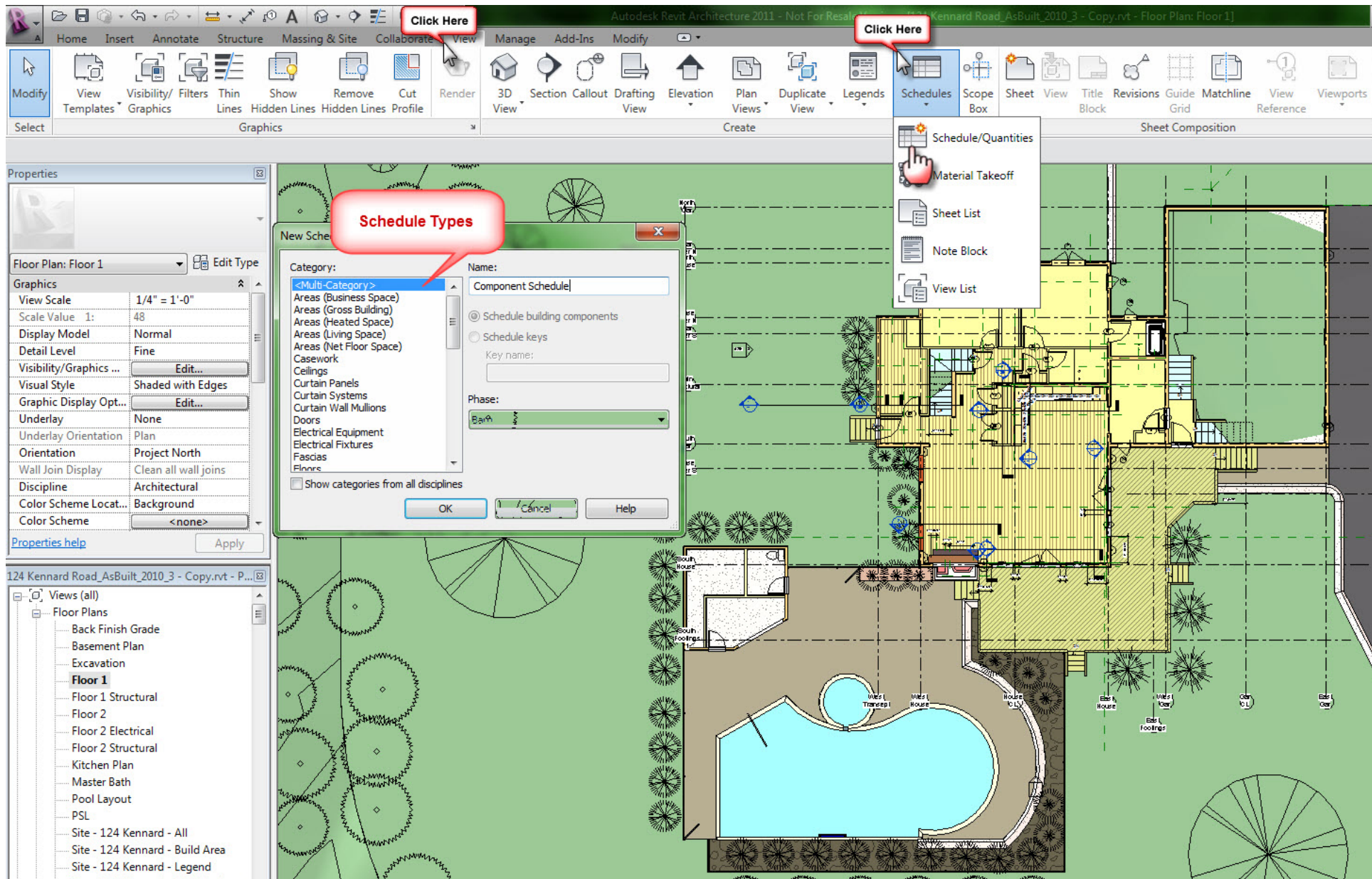
Parameter	Value
Construction	
Wall Closure	By host
Construction Type	
Text	

Instance Parameters - Control selected or to-be-created instance

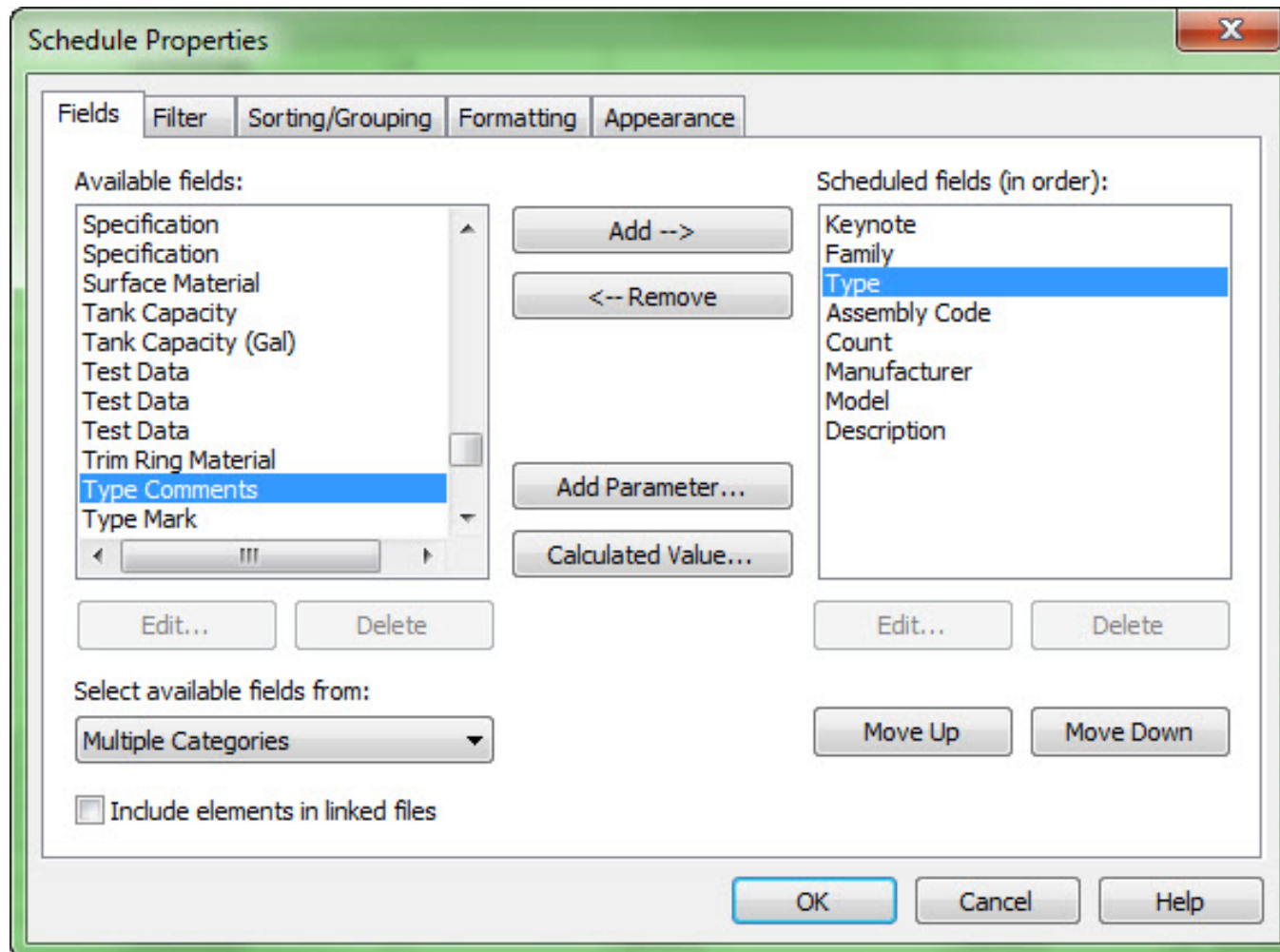
Parameter	Value
Constraints	
Level	Level 1
Sill Height	0' 0"
Construction	
Weatherstrip Type	Weatherstrip : Zero Intl - Model 767
Slab Type	Flush Panel : Designer Doors - 1 3/4" Solid Oak
Interior Handle	Lockset and Lever : Dorma - ML9010-F01 - LR
Interior Casing	Casing : 2 11/16
Exterior Handle	Exit Device : Dorma - 5300
Exterior Casing	Casing : 5 1/2"
Door Hinge Type	Hinge : PBB - 5 Pin Stainless Steel Roller Hinge
Door Frame Type	Frame : Amweld - Level II Seamless Metal Fra
Frame Type	

OK Cancel

Create a schedule



Create a schedule



Organize the schedule

Properties

Schedule: Component Schedule Edit Type

Identity Data

View Name: Component Schedule

Dependency: Independent

Default View Template: None

Phasing

Phase Filter: Show All

Phase: Barn

Other

Fields: Edit...

Filter: Edit...

Sorting/Grouping: Edit...

Formatting: Edit...

Appearance: Edit...

[Properties help](#) Apply

Component Schedule							
Keynote	Family	Type	Assembly Code	Count	Manufacturer	Model	Description
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 52 13	Pella ProLine Casemen	3535 Fixed	B2020130	1	Pella Windows and Doors Inc.	3535 Fixed	Casement Window - Wood
08 55 00							
08 55 00	Pella ProLine Casemen	CM3535	B2020130	1	Pella Windows and Doors Inc.	CM3535	Circlehead Casement Windo
08 55 00	Pella ProLine Casemen	CM3535	B2020130	1	Pella Windows and Doors Inc.	CM3535	Circlehead Casement Windo
08 55 00	Pella ProLine Casemen	(2) 2347LR	B2020130	1	Pella Windows and Doors Inc.	(2) 2347LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 2347LR	B2020130	1	Pella Windows and Doors Inc.	(2) 2347LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 2947LR	B2020130	1	Pella Windows and Doors Inc.	(2) 2947LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 2947LR	B2020130	1	Pella Windows and Doors Inc.	(2) 2947LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 3541LR	B2020130	1	Pella Windows and Doors Inc.	(2) 3541LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 3541LR	B2020130	1	Pella Windows and Doors Inc.	(2) 3541LR	Mulled (2) Casement Windo
08 55 00	Pella ProLine Casemen	(2) 3541LR	B2020130	1	Pella Windows and Doors Inc.	(2) 3541LR	Mulled (2) Casement Windo
08 56 00							
08 56 00	Awning with Trim	24" x 16"	B2020100	1	Pella	3521	Proline Awning
08 56 00	Awning with Trim	24" x 16"	B2020100	1	Pella	3521	Proline Awning
08 56 00	Casement Window	32x48	B2020100	1	Pella	3535	Casement Window
11 45 00							
11 45 00	Res-Appliance_Dshw	Res-Appliance_Dshw	E1090400	1	Generic	Generic	Full Size Built in Resident
11 45 00	Res-Appliance_Refrig-	24" Wide	E1090400	1	Generic	Generic	Side By Side Refrigerator
12 35 00							
12 35 00	Cabinet_Base	15" Wide	C1030410	1	Generic	Generic Base C	15" Base Cabinet
12 35 00	Cabinet_Base	30" Wide Sink Base	C1030410	1	Generic	Sink Base Cabi	30" Sink Base Cabinet
12 35 00	Cabinet_Base	36" Wide	C1030410	1	Generic	Generic Base C	36" Base Cabinet
12 35 00	Cabinet_Base_3Drwr	18" - 3Drwr	C1030410	1	Generic	18" - 3Drwr	18" 3 Drawer Base Cabi
12 35 00	Cabinet_Base_Corner-	24" Angle-LzSus	C1030410	1	Generic	24AngLzSu	24" Angled Corner Cabin
12 35 00	Cabinet_Base_Doors	12"- 1Drw-1Dr	C1030410	1	Generic	12"- 1Drw-1Dr	12" 1 Drawer - 1 Door B
12 35 00	Cabinet_Base_Doors	12"- 1Drw-1Dr	C1030410	1	Generic	12"- 1Drw-1Dr	12" 1 Drawer - 1 Door B
12 35 00	Cabinet_Base_Doors	30" - 1Drw-2Dr	C1030410	1	Generic	30" - 1Drw-2Dr	30" 1 Drawer - 2 Door B
12 35 00	Cabinet_Pantry	12" Wide	C1030410	1	Generic	Generic Pantry	12" Pantry Cabinet
12 35 00	Cabinet_Pantry	12" Wide	C1030410	1	Generic	Generic Pantry	12" Pantry Cabinet
12 35 00	Cabinet_Sink Base_Do	33" - 1Drw-2Dr	C1030410	1	Generic	36" - 1Drw-2Dr	36" 1 Drawer - 2 Door B
12 35 00	Cabinet_Wall_Corner-	12x42 Angle-Sheif	C1030410	1	Generic	12W42AngSh	12"x42" Angled Corner
12 35 00	Cabinet_Wall_Doors	12x42h - 1Dr	C1030410	1	Generic	12x42h - 1Dr	12"W x 42"H 1 Door Wall
12 35 00	Cabinet_Wall_Doors	12x42h - 1Dr	C1030410	1	Generic	12x42h - 1Dr	12"W x 42"H 1 Door Wall
12 35 00	Cabinet_Wall_Doors	30x12h - 2Dr	C1030410	1	Generic	30x12h - 2Dr	30"W x 12"H 2 Door Wall
12 35 00	Cabinet_Wall_Doors	30x30h - 2Dr	C1030410	1	Generic	30x30h - 2Dr	30"W x 30"H 2 Door Wall
12 35 00	Cabinet_Wall_Doors	30x42h - 2Dr_Glz	C1030410	1	Generic	30x42h - 2Dr -	30"W x 42"H 2 Glass Do
12 35 00	Cabinet_Wall_Doors	33x12h - 2Dr	C1030410	1	Generic	30x12h - 2Dr	30"W x 12"H 2 Door Wall
12 35 00	Cabinet_Wall_Doors	36x12h - 2Dr	C1030410	1	Generic	36x12h - 2Dr	36"W x 12"H 2 Door Wall
12 35 00	Cabinet_Wall_Doors	36x12h - 2Dr	C1030410	1	Generic	36x12h - 2Dr	36"W x 12"H 2 Door Wall
12 35 00	Cabinet_Wall_Doors	36x30h - 2Dr	C1030410	1	Generic	36x30h - 2Dr	36"W x 30"H 2 Door Wall
13200							
13200	Fuel-Storage-Tank	330-Gal	D3020200	1	Generic	Generic	Above Ground Fuel Oil S
15150							

All 08 55 00

All 08 56 00

All 11 45 00

All 12 35 00

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CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NUMBER	COLOR	SIZE	FINISH	LOCATION NOTES
APC-ACOUSTICAL PANEL CEILING							
APC-1	OWA	OWA ACOUSTIC COSMOS	68/0	WHITE	600MM X 1200MM		GENERAL CEILING TILE GRID: APPROX 14MM, BEVELED TEGULAR WHITE
APC-2	OWA	OWA ACOUSTIC COSMOS	64/2	WHITE	600X1200		FOR USE AT STORAGE AND UTILITY ROOMS AS NOTED, APPROX. 14MM
APC-3	DECOUSTICS	CLARO		WHITE	VARIES: LARGE FORMAT PANELS		FOR USE AS NOTED IN FINISH SCHEDULE & SEE RCP FOR DIMENSIONS
APC-4	LINDNER	HONEYCOMB B-PERFORATED	LDW0101 LMDE208	ALUMINUM TO MATCH ARCHITECTS SAMPLE	CUSTOM SEE RCP	MICRO-PERFORATED	
CC-CUBICLE CURTAIN							
CC-1	KVADRAT	FILLIPPA BIO	930	GREEN	140 CM	100% TREVIRA	FOR USE IN CLINICAL TRIAL AREAS B1
CC-2	KVADRAT	FILLIPPA BIO	750	BLUE	140CM	100% TREVIRA	CLINICAL TRIAL AREAS L2
CG-CORNER GUARD							
CG-1	C/S ACROVYN			949 WHITE	51MM EQ LEGS, FULL HEIGHT		SEE DISTRIBUTION SCHEDULE FOR LOCATIONS
CG-2	C/S ACROVYN		CO-8M MODIFIED	STAINLESS STEEL			SEE DISTRIBUTION SCHEDULE FOR LOCATIONS
CPT-CARPET							
CPT-1	SHAW CARPET	BEAM OF LIGHT	59465	CAFE HIGHLIGHTS 63309 (WARM)	61CM X 61CM	MONOLITHIC INSTALLATION	FOR USE IN EDUCATION
CPT-2	SHAW CARPET	BEAM OF LIGHT	59465	OPAQUE BLACK 63500 (COOL)	61CM X 61CM	MONOLITHIC INSTALLATION	FOR USE IN EDUCATION

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every month

Triumph of the City - Ed Glaeser



BIM, Specs, SPie and COBie

mkalin@kalinassociates.com



Q&A



Rob Dean, AIA, CSI, CCS
President
Building Systems Design
rdean@bsdsoftlink.com



Michael Brennan
President
InterSpec
mbrennan@e-specs.com



Mark Kalin, FAIA, FCSI, CCS LEED
President
Kalin Associates
mark@kalinassociates.com



Moderator

Michael King, FCSI, CCS
Vice President of
Engineering Specifications
ARCOM
mking@arcomnet.com

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