BUILDING INNOVATION
Conference

Building Data for Owners

How the data captured during design & construction can benefit building owners at handover

About Today’s Presentation

INTRODUCTION

TITLE	**Building Data for Owners**
DESCRIPTION	▪ Overview of how the data captured during design & construction can benefit building owners at handover to help them manage their facilities. ▪ Discover concepts related to digital data for the design/build/operate sector, including the Building Information Modeling (BIM) process. ▪ Learn the uses and benefits of this data, how it is typically captured, and best practices. ▪ This presentation will benefit both the building owners and the consulting teams that work with them.

About Your Speaker

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Vice President of Technology Solutions
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- Registered Architect
- Past president of AIA Northern Virginia
- Co-Chair of the COBie Workgroup at NIBS
- Recognized expert in Revit, AutoCAD, COBie, and BIM
- Speaker at AU, BILT, NFMT, CFTA, NIBS
- Almost 30 Years of Experience in the AEC Industry
- 20+ Years as a technology consultant

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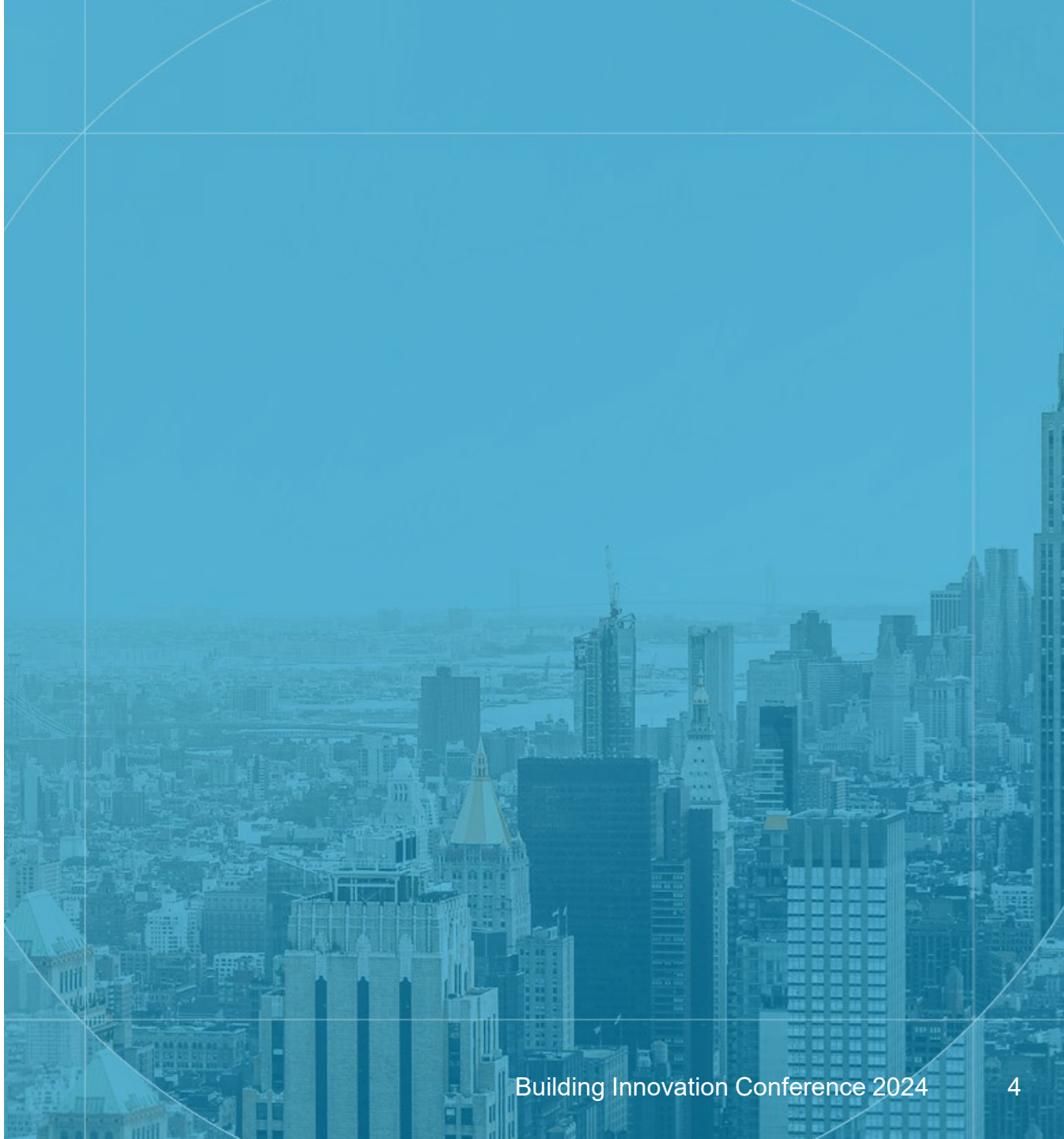
The Foundation

Laying the groundwork for today's session



Terminology

THE FOUNDATION

Model	CDE	LOD	BEP
Revit Files	**Common Data Environment**	**Level of Development**	**BIM Execution Plan**
• A digital Version of the design. • RVT files are relational databases that include both graphical and informational data.	• A single source of data for the project. • A place to collect, manage, and disseminate the documentation, models, and other informational data for the entire team.	• The amount of graphical and informational data in the model elements. • Often denoted as a number: 100, 200, 300, 350, 400, 500	• A document created to each BIM project that details how the BIM process is going to be followed by the team. • Not to be confused with BIM requirements or BIM standards.

3 Main Activities to Operate a Facility

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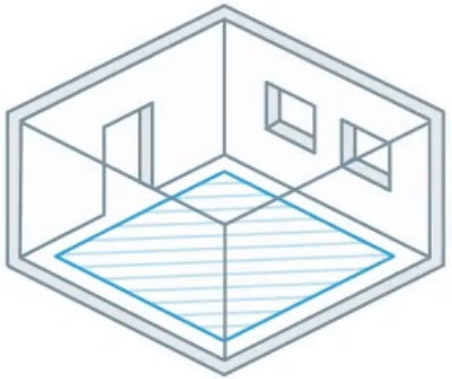
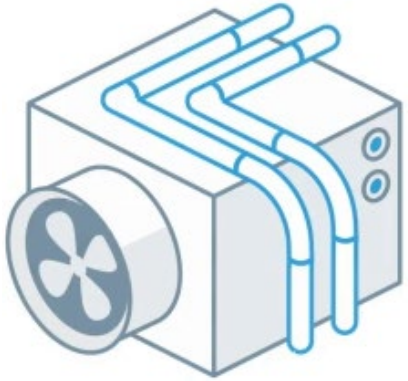
Space Management



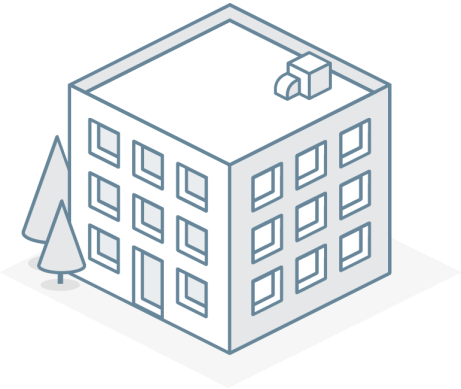
- Tracking people and square footages

Asset Management



- Tracking maintainable equipment

Design & Construction



- Renovation projects and new construction

Types of Data

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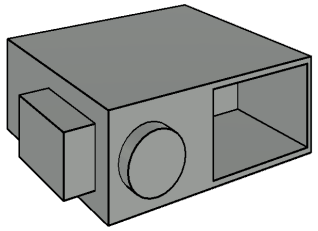
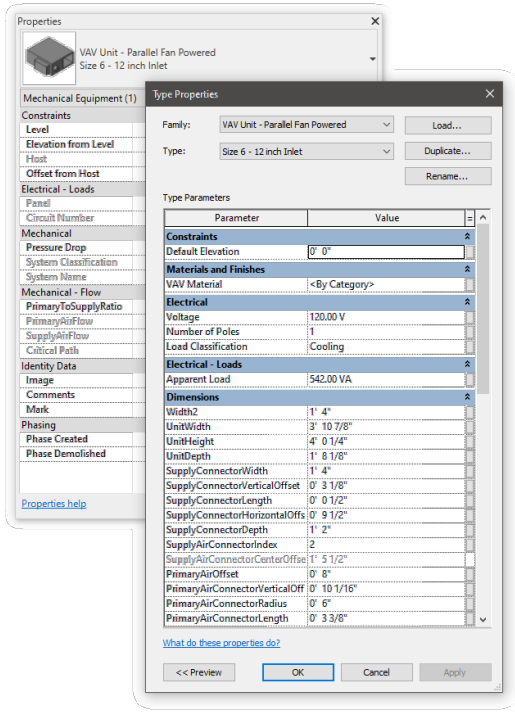
Graphical Data



- Structural elements
- Core & Shell elements
- Site elements
- Fixtures, furniture, and equipment (assets)
- Simplified for digital twin
- 2D for space planning
- Asset ID

Informational Data



- Identification (manufacturer, make, model, etc.)
- Location (floor, room, etc.)
- Engineering/functionality (power, flow, etc.)
- Installation (serial number, warranty information, etc.)
- Manuals (operational, maintenance)
- Asset ID

BIM Requirements vs BEP

THE FOUNDATION

BIM Requirements Document

- Your **over-arching documentation** that applies to all projects following a BIM process.
- Defines specifically **what you want** out of a BIM process and model deliverables.
- Will probably end up being a **contract addendum**.
- Addresses the critical task of **collecting and organizing** data.

BIM Execution Plan

- Defines the BIM process details **specific to a project**
  - **Who** = the project stakeholders
  - **What** = is being modeled
  - **How** = to what LOD
  - **When** = submittal dates
- **Works in conjunction** with BIM Requirements (by referencing it for definitions, steps to take, tables of data, etc.)
- Typically, it's a **spreadsheet**

BIM Requirements vs BEP

THE FOUNDATION

FUNCTION	BIM REQUIRMENTS	BIM EXECUTION PLAN
Project Team Roles	Defines typical roles	Identifies specific people and their role in the project
Submittal Requirements	Defines different project types and requirements for each submittal	Identifies the project type and specific milestone dates
Model Organization	Provides suggested methods	Details specific models required, how they should be named, and how they are linked
Modeling and Data Standards	Defines specific standards to be followed	Identifies specific exceptions to the standards for a project
LOD	Defines all the different LOD based on Revit categories	Identifies which LODs are required by each project stakeholder at each submittal
Parameters	Defines all names and categories to which they apply	n/a
Additional BIM Tasks	Describes each of the possible additional tasks	Details specific additional tasks for a project

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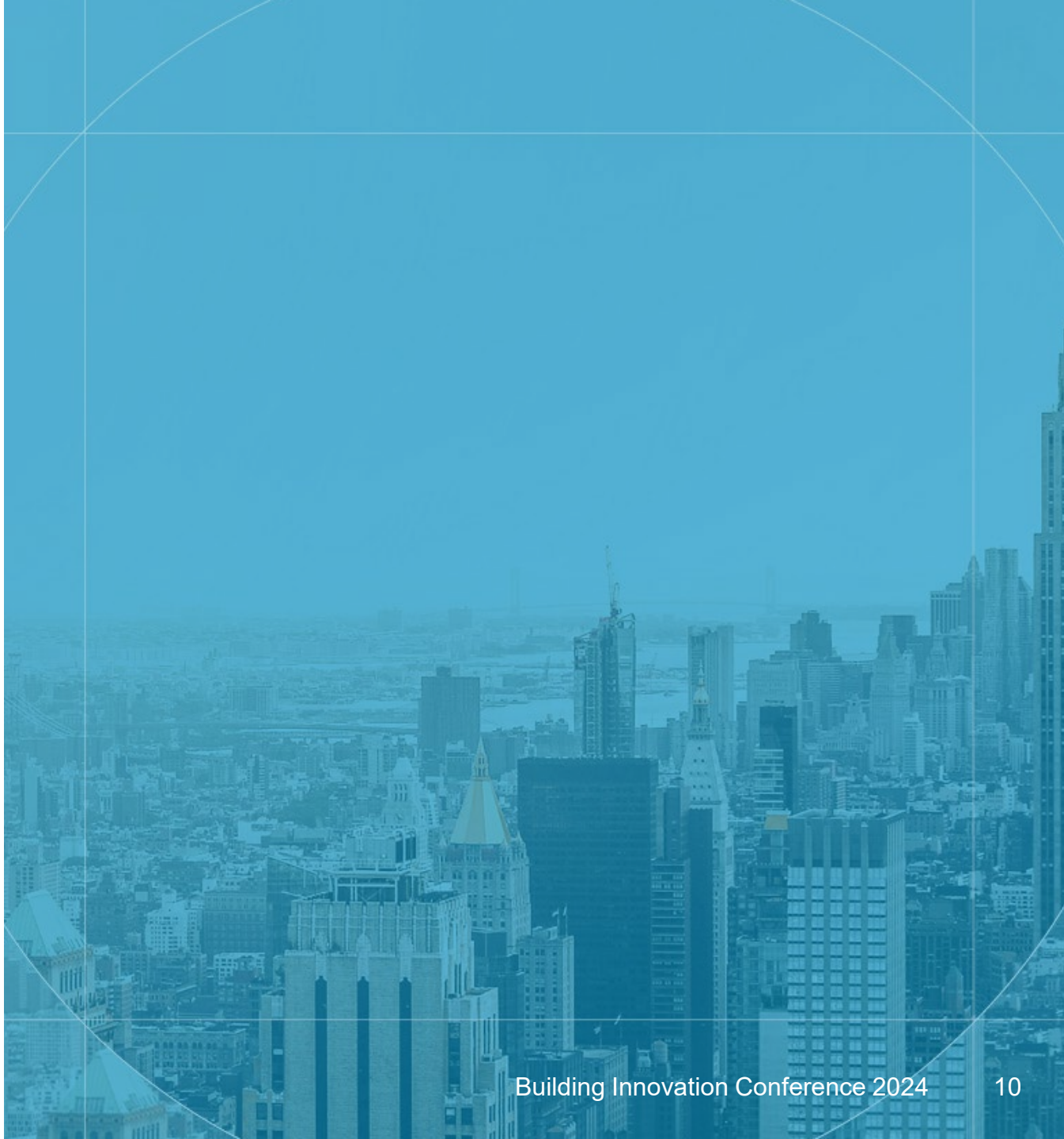
Model Lifecycle

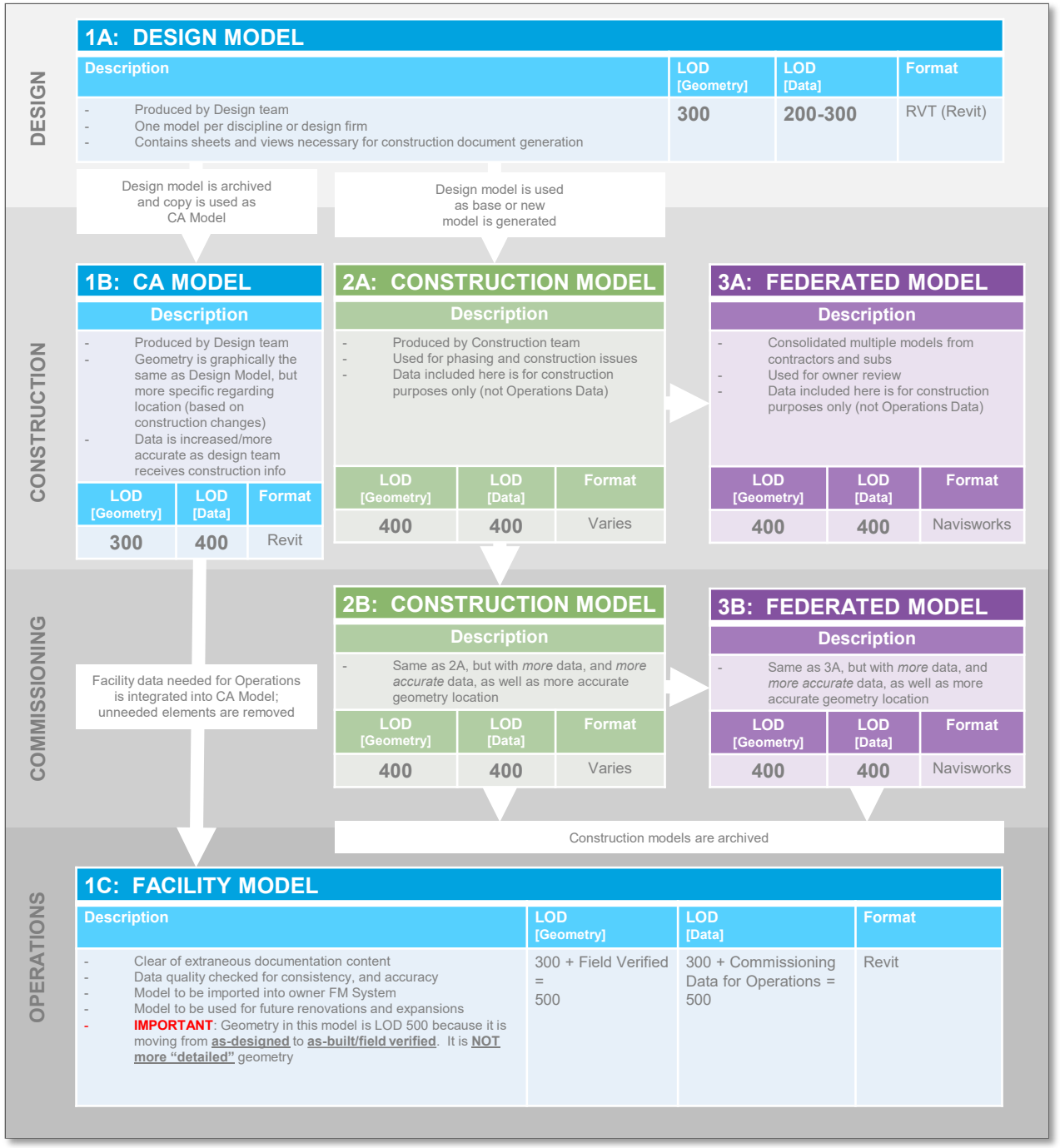
How to ensure good models for operations



What You Need From Models

MODEL LIFECYCLE

1. Closely represent your **as-built conditions**.
2. Can be used as **backgrounds** for future renovation projects.
3. Are all in the **same format** (Revit RVT).
4. Follow your **standards** for modeling and data.



- Construction models do not make good operations models.
- They include too much detail and are modified to accommodate means and methods in construction.
- Design models updated with redlines should be carried through to operations.
- Ideally, LOD 300 models (geometry), as they will be your backgrounds for future work/renovations.
- You want all the data and just enough geometry.

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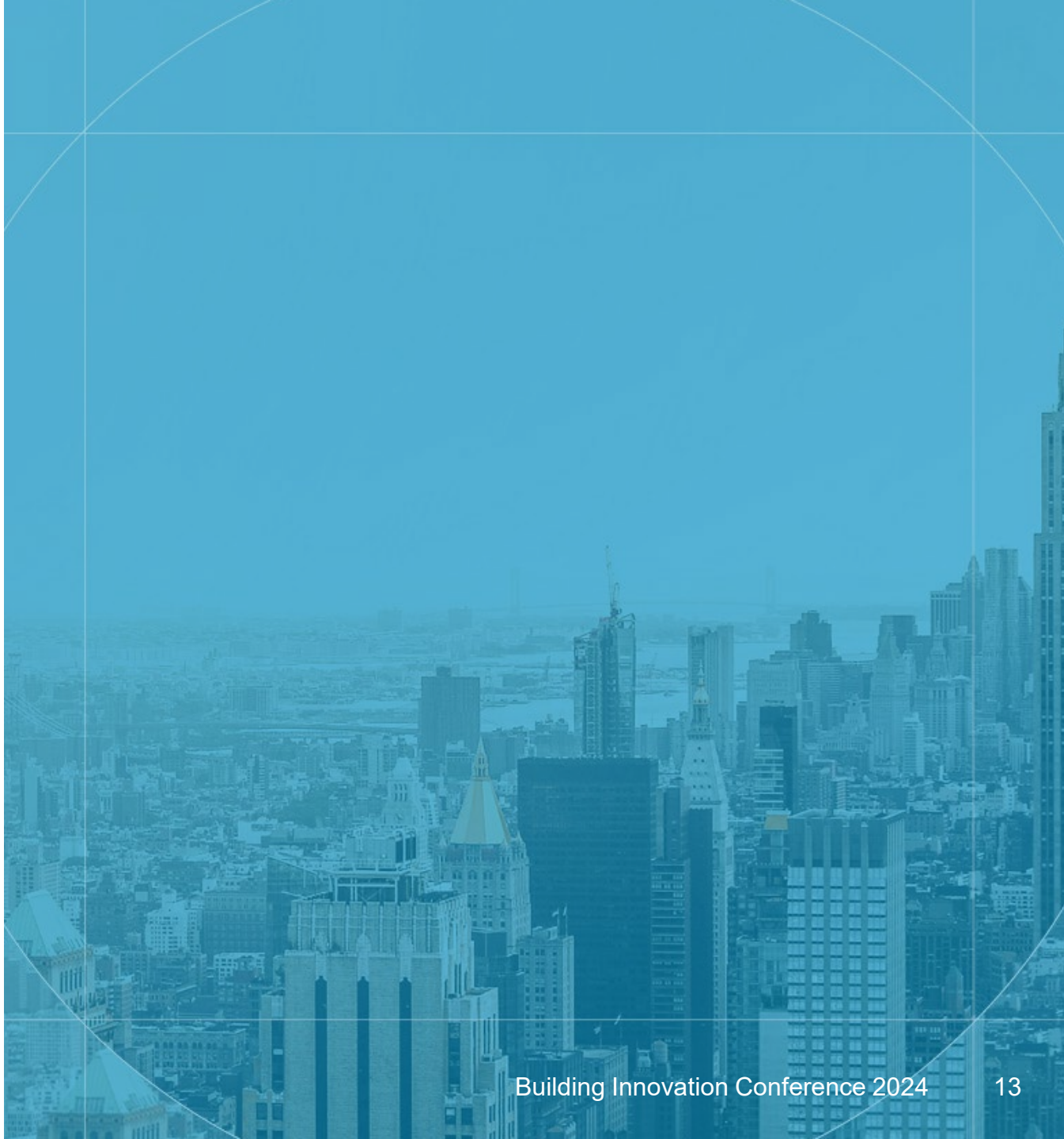
Modeling Requirements

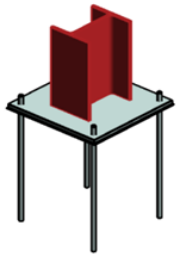
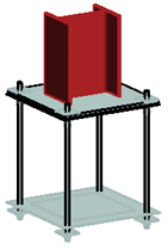
What you need to ask for from your consultants



The Problem with LOD

MODELING REQUIREMENTS

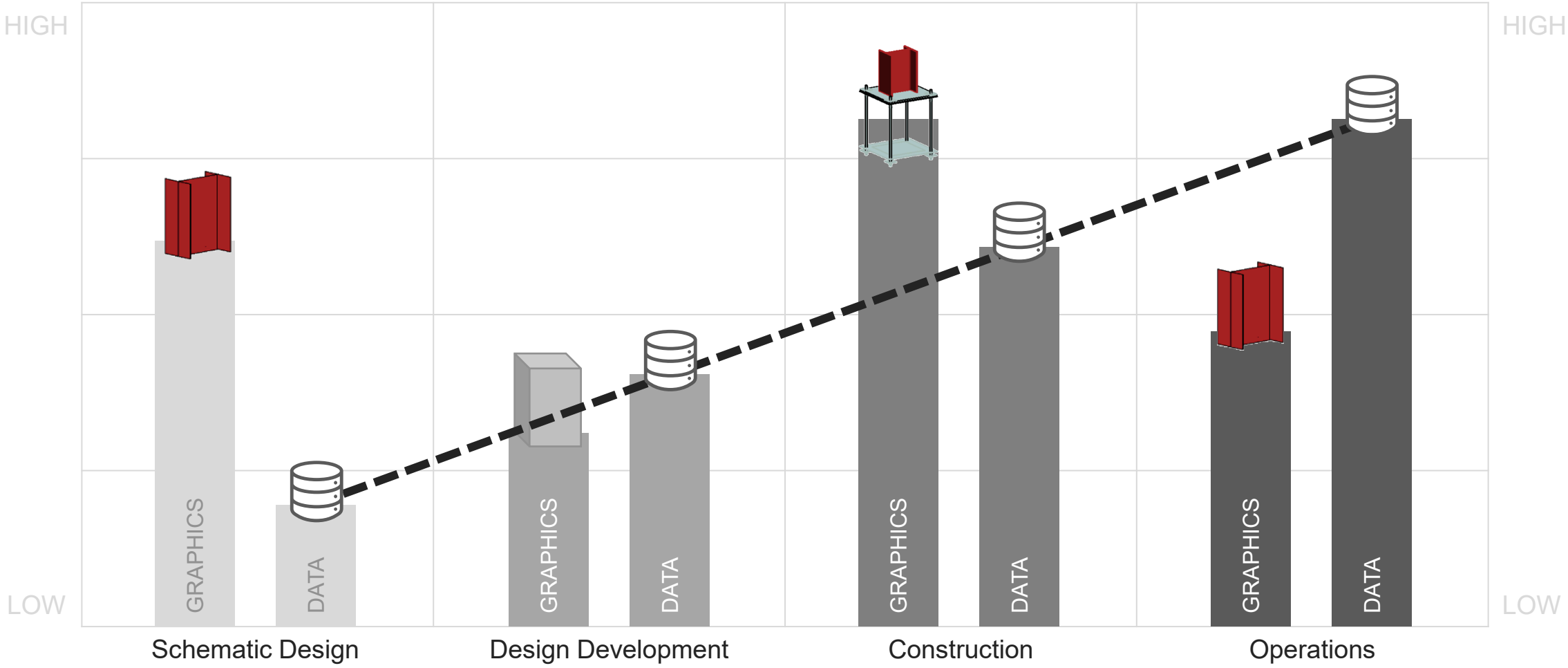
- Almost all LOD specifications show a linear progression.
- As the detail of the graphics increases, so does the information.
- But, this is not what an owner actually needs.
- **Owners need lots of data, but too detailed graphics cause poor model performance.**

200	Inclusions: • General shape	
300	Inclusions: • Specific section type and size	
350	Inclusions: • Member connections such as, base plates and gusset plates, anchor rods • Connection details with correct and reliable dimensions • Steel structure reinforcements and stiffeners (e.g. for penetrations) • Cap plates	
400	Inclusions: • Welds • Coping of members • Washers, nuts, etc.	

From the BIMForum LOD Specification 2023

The Problem with LOD

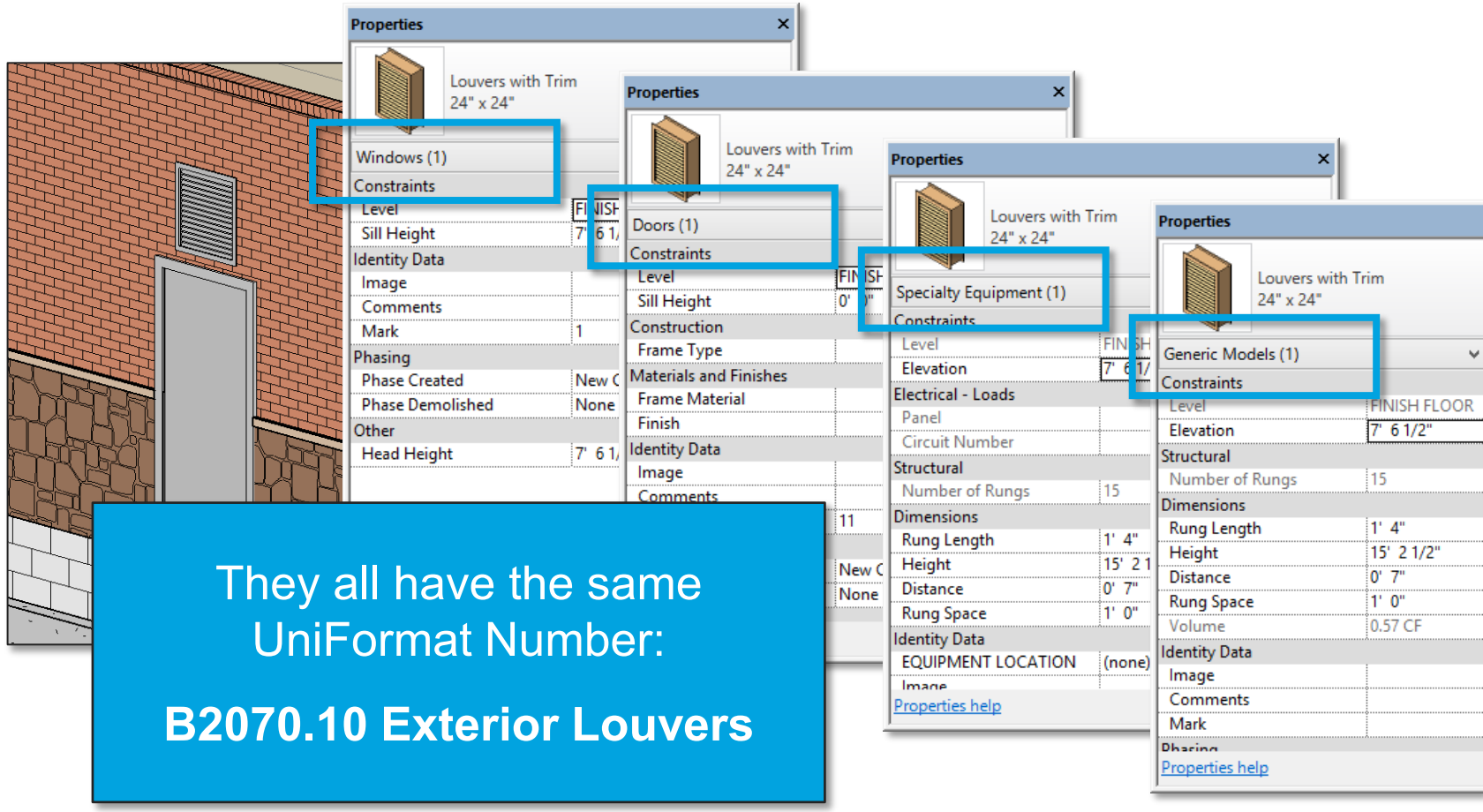
MODELING REQUIREMENTS



Being Specific with How to Model

MODELING REQUIREMENTS

If your modeling standards are not specific, and are based on just classification system designations, then you could end up with a models that meet your **graphics** and **data** requirements, but are all different



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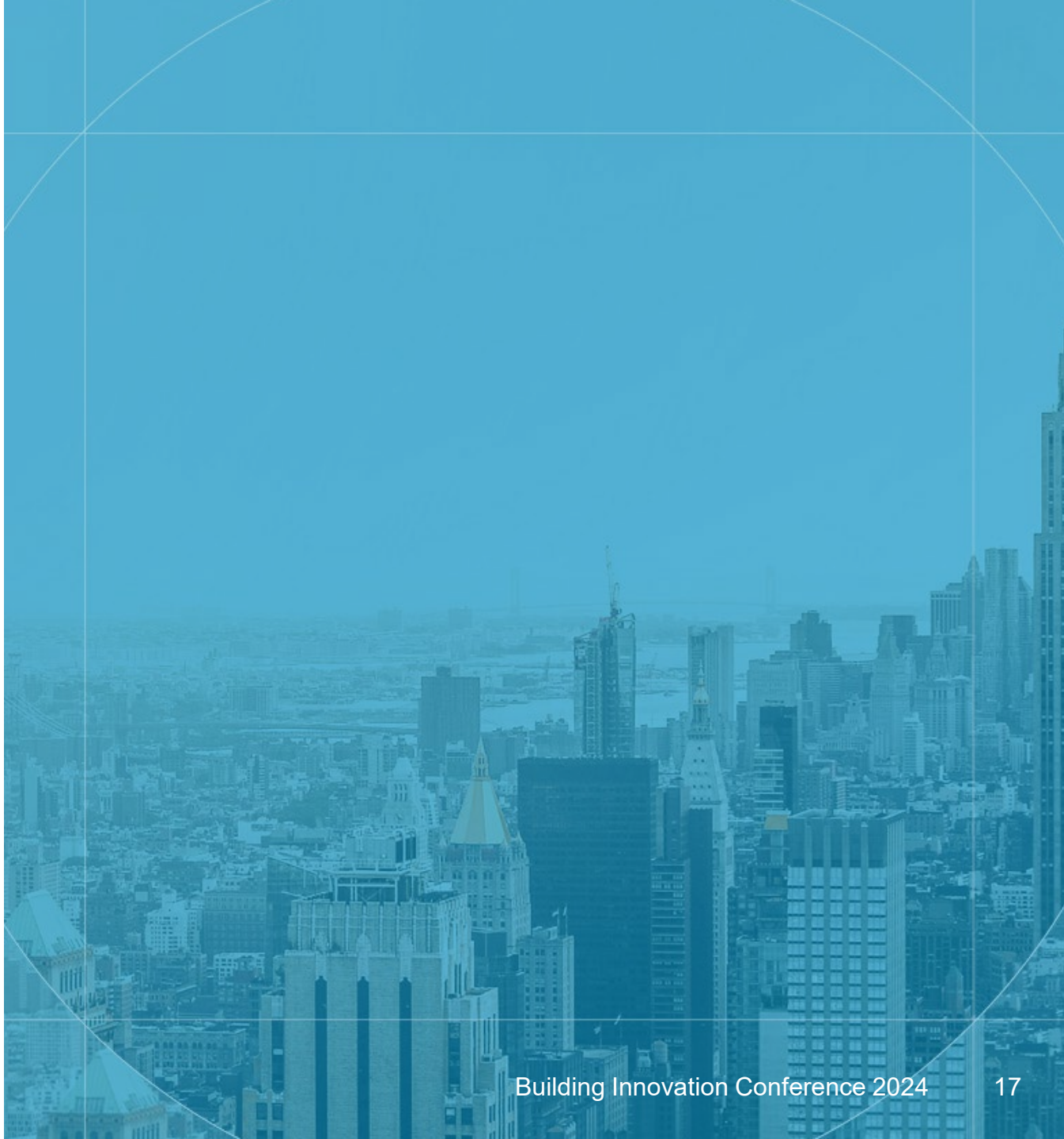
Data Requirements

What you need to ask for from your consultants



Data Handover

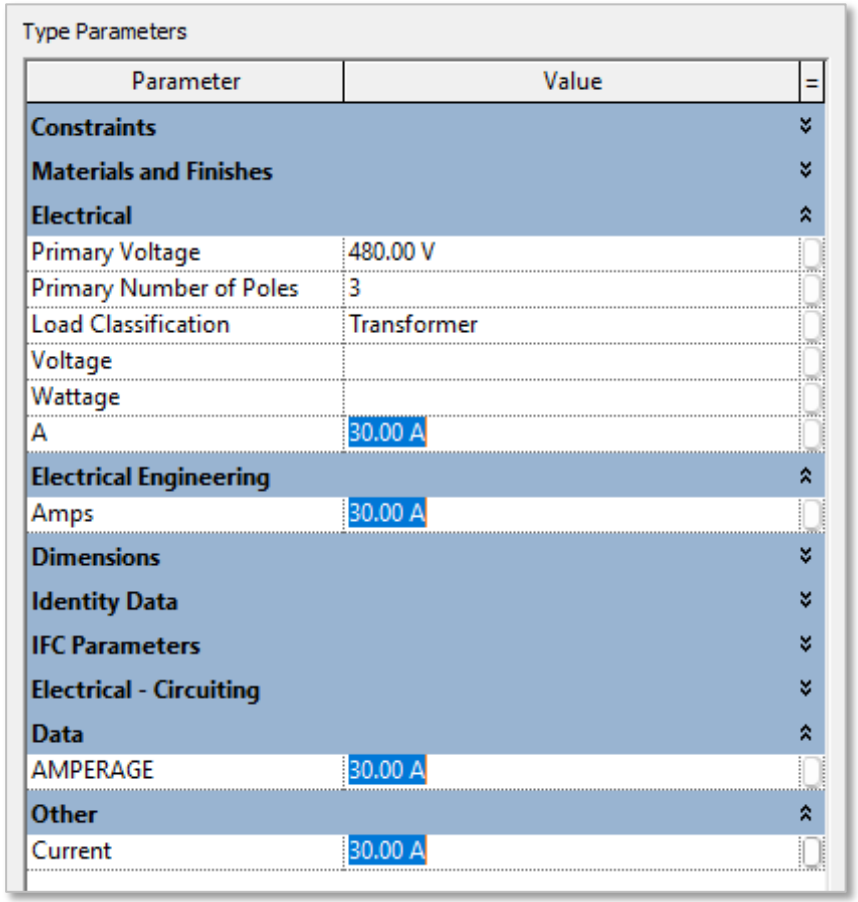
DATA REQUIREMENTS

1. It is important to have a **Data Handover**.
2. This will allow your Space and Asset Management systems to be **populated immediately** after design and construction.
3. This data may be in the **models**, but it may be in a separate deliverable (such as a **spreadsheet**).
4. One format is **COBie**. You may choose your **own format**.
5. It's important **not to ask for too much**.

Data Fields

DATA REQUIREMENTS

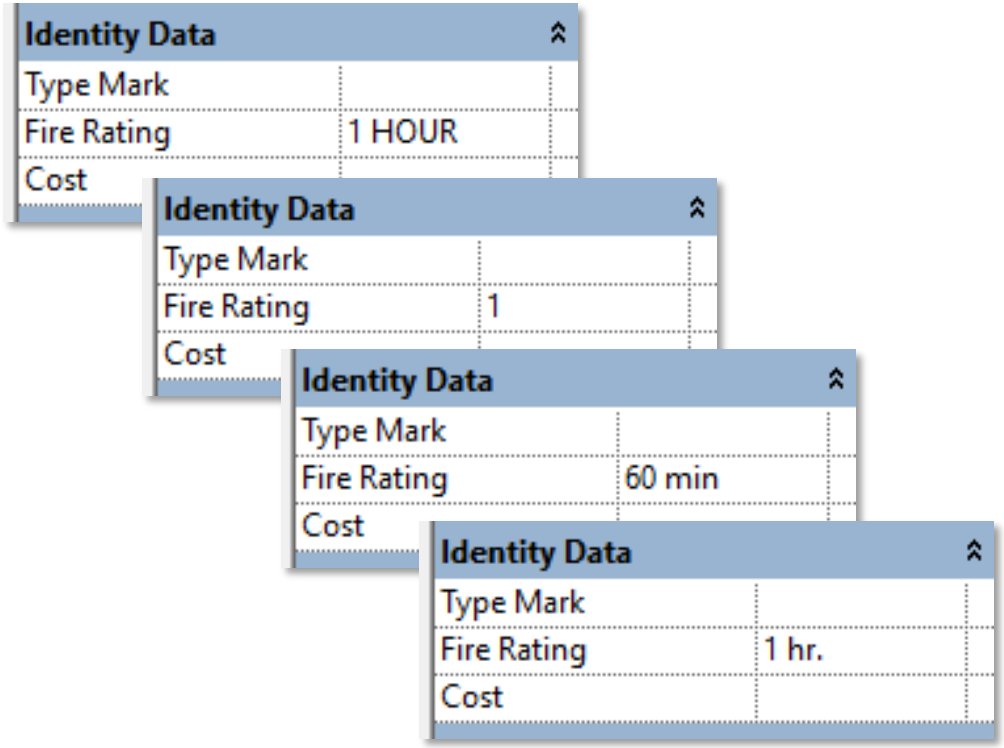
- It’s important to have data standards for the **names** of the data fields.
- This example shows 4 different parameters for Amps.



Data Values

DATA REQUIREMENTS

- It’s also important to have data standards for the **values** in the data fields.
- This example shows 4 different ways to denote 1 hour fire rating.



QA/QC Tools

DATA REQUIREMENTS

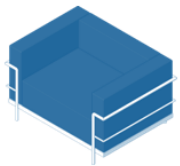
All good BIM Requirements have QA/QC tools & processes defined.

QUALITY ASSURANCE (QA)

Tools to provide to model authors
(In-house or outside consultants)

BIM Req's / BEP

Revit Project Templates



Revit Content (Families)

Designer's Guide

QUALITY CONTROL (QC)

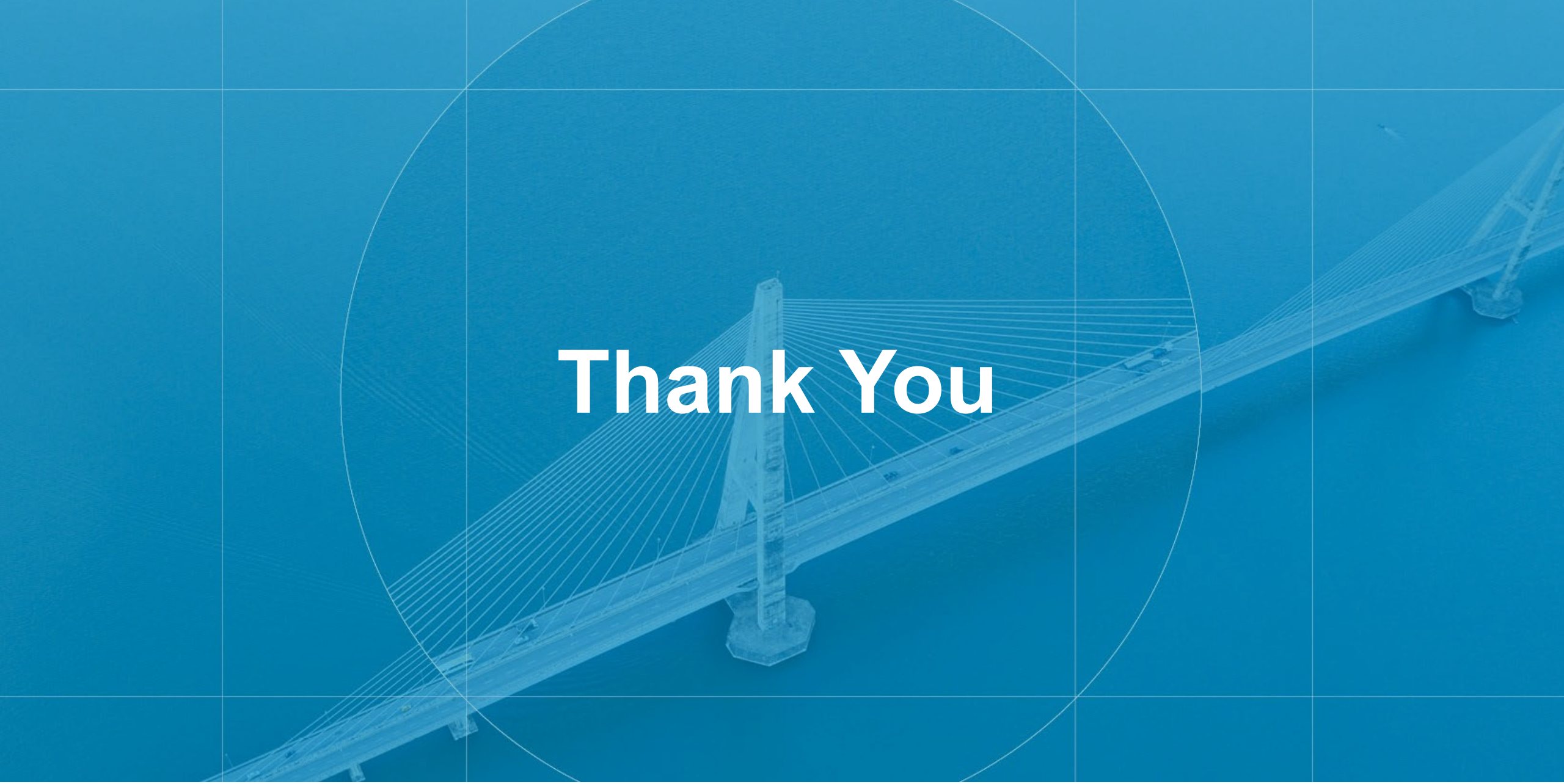
Tools to help you check the models for compliance

Manual Checklist

Automatic Software

Questions

WRAP UP



Thank You