

**BIM FOR
QUANTITY SURVEYORS
ENHANCING EFFICIENCY**

Principal at BIM DnA Group

CEO (Past-President) buildingSMART Canada

Director of Design Technologies at Diamond Schmitt Architect

Director of Digital Practice at MJMA

BIM Manager / Architect at Moriyama + Teshima

Founder and Former Chair of torontoBIMcommunity

Licensed with the OAA and an OAA Mentor

University of British Columbia - Master's of Architecture

Ryerson University - Bachelors in Architectural Science

I ❤️
BIM

what we do

Our focus is on preparing you in your own digital transformation journey that supports your unique business.

consulting

education

change

evaluations

**BIM
DNA
group**

learning never ends

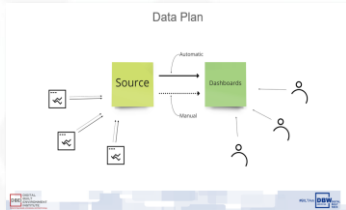
it enables adaptation and professional growth.

BIM Contract Appendix

4 Documents

1. Guidance Document
2. IBC 190-2014 (also Contract Appendix)
3. IBC 201-2014 (List of Development and Submittal Items)
4. Model Element Table

CONFERENCE



Dynamo Beginner

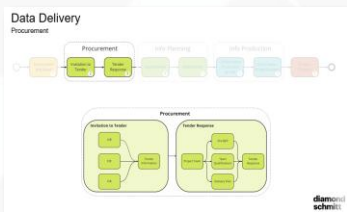
Dynamo - Beginner (01:21)

Grasshopper Intermediate

Grasshopper - Inter... (01:12)

Enscape 3.3 What's New

Enscape 3.3 (01:13)



INTERNATIONAL OPENBIM IMPLEMENTATIONS

why openBIM is integral to the conversation in Canada

ISO 19650 - BIM Framework

International Organization for Standardization

BIM Fundamentals

BIM Fundamentals (01:03)

Dynamic Template

Dynamic Template (02:01)

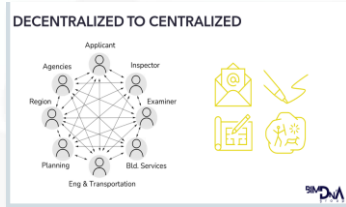
Revit Best Practices

Revit Best Pract... (02:00)

4 Key Takeaways

1. Technological Advancements
2. Knowledge Resources
3. Decentralized Organizations
4. Users and Operators

Why openBIM is integral to the Conversation in Canada



Emphasis on model or drawings

Need a balance. Efforts should correspond to deliverables.

- Assigning people to model elements
- Assigning people to sheets

They are responsible for the graphics of the drawing

Reference definitions

SWOT for each domain. Colour coded - white sticky's are neutral and haven't been placed yet

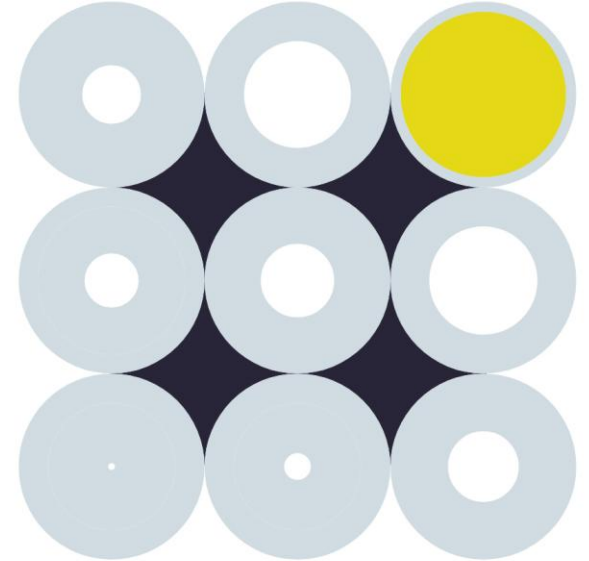
Goals and KPIs with priorities

Workshop 2 & 3 (no peaking)

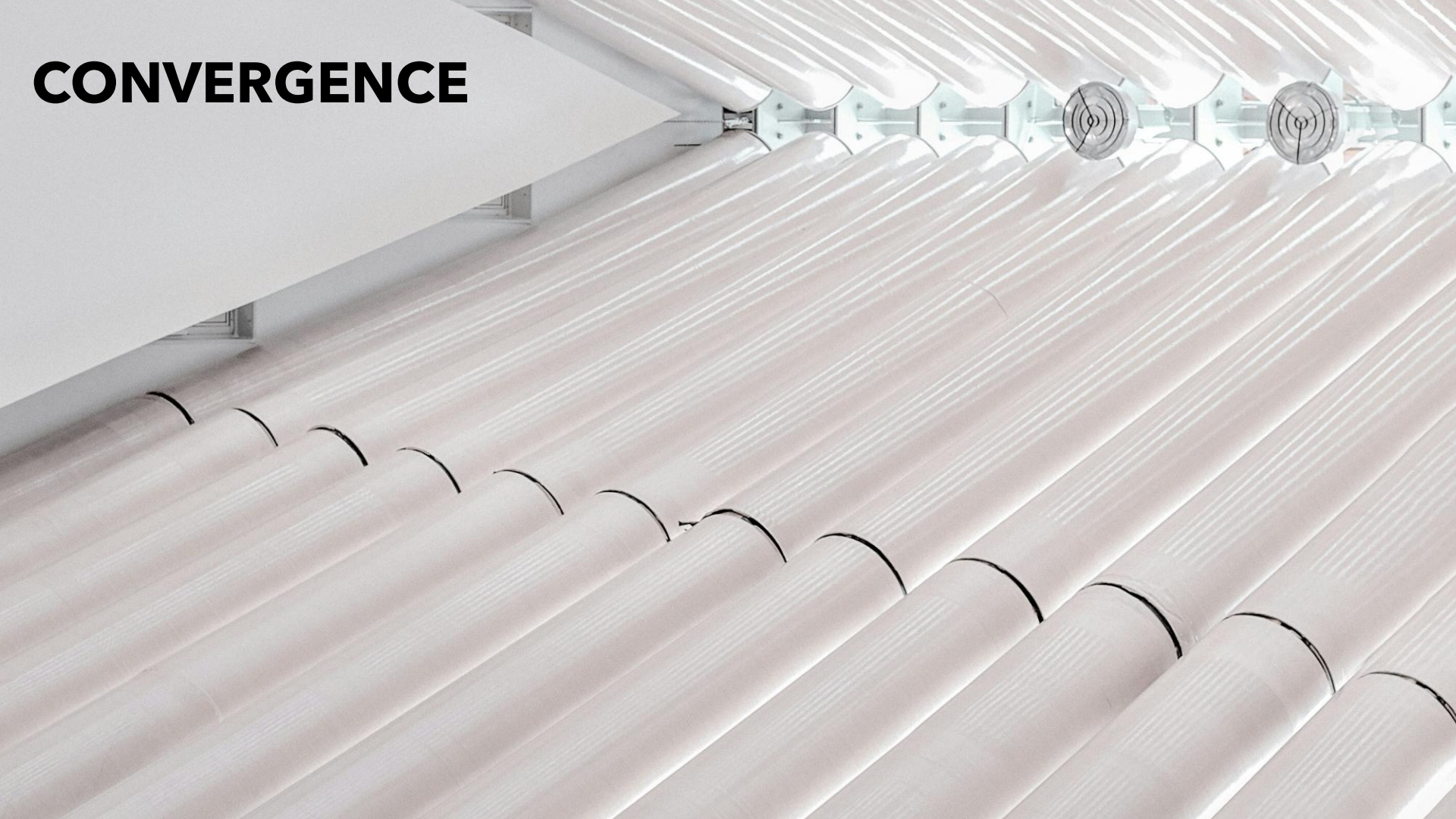
Keynotes Conferences Guest Lecturer Lunch n' Learns Con't Ed. Workshops Roundtables

FULL AGENDA

1. Overview
2. BIM Foundational Concepts
3. Business Benefits and Opportunities
4. How to get started
5. Q&A



CONVERGENCE



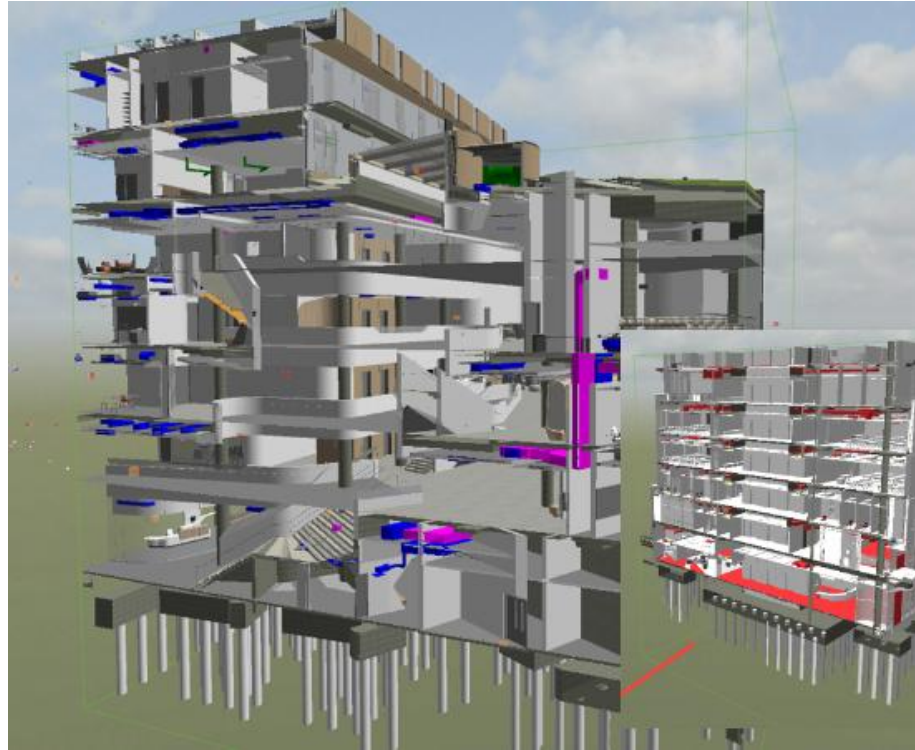
While a quantity surveyor may use a BIM to speed up some basic quantity take-off, the true value of the quantity surveyor is not in counting objects in a model
rather

The **interrogation and analysis of the models**. This enables the quantity surveyor to **recommend alternatives** and provide **assurance to the client** that the most **cost-effective option** has been put forward.

“The professional skill of a quantity surveyor is still needed for assessing the **validity** of the source data and source materials, ensuring the coverage of the take-off, proposing **alternative solutions** and **analyzing the results.**”

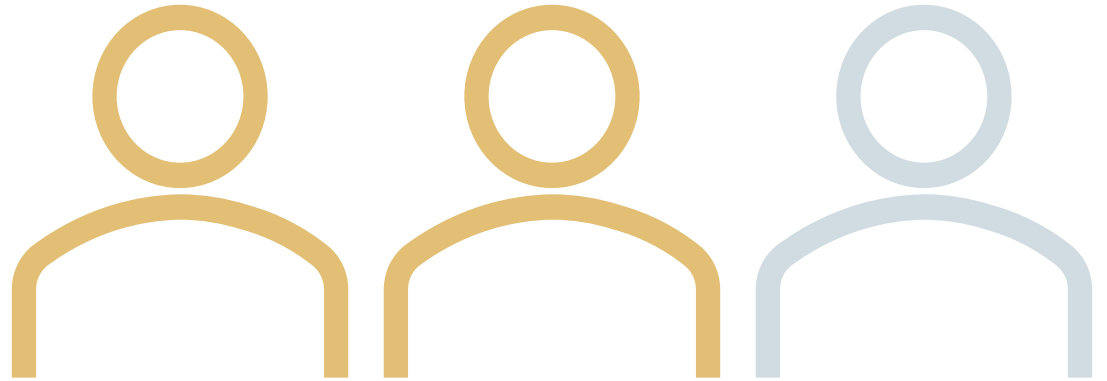
MISCONCEPTIONS

All quantities reside within the model and can be taken from a BIM



MISCONCEPTIONS

An architect or engineer can extract quantities from a model, so they can now do the role of the quantity surveyor



MISCONCEPTIONS

Bill of Quantities can be produced with the click of a button



WHY IS BIM IMPORTANT FOR QUANTITY SURVEYORS?

- Leveraging the 3D model and information being generated by design and construction team
- Fast and efficient quantity validation and verification
- Rapid processing of design revisions/updates, More efficient identification and costing of design changes
- Quickly cost design options to allow early informed decisions

WHY IS BIM IMPORTANT FOR QUANTITY SURVEYORS?

- Increased visualization
- Efficient data extraction for estimating at various design stages, as well as leveraging off the model and producing schedules of quantities
- Opens new services opportunities and reframes the role of Quantity Surveyors in the supply chain



BIM FOUNDATIONAL CONCEPTS

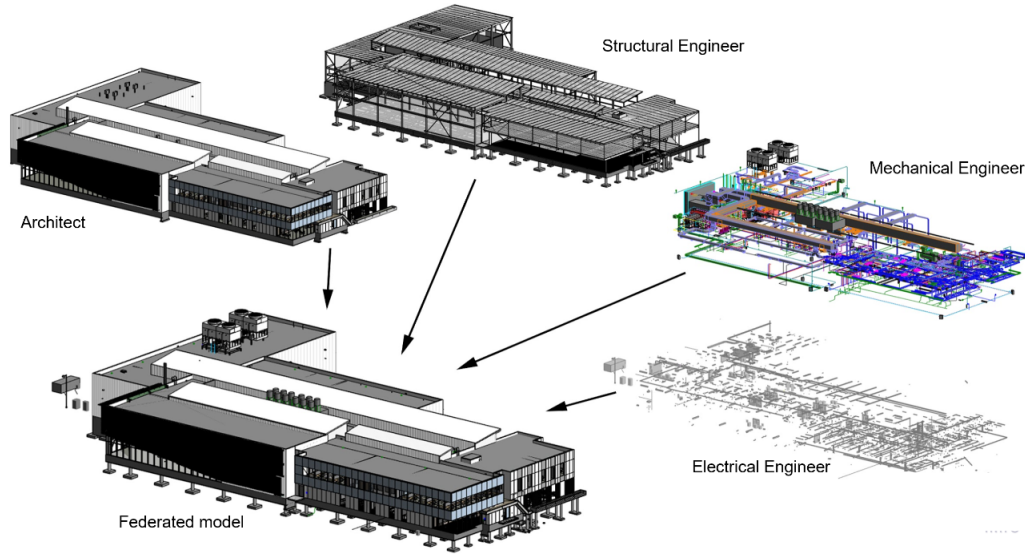
BIM: BUILDING INFORMATION ...



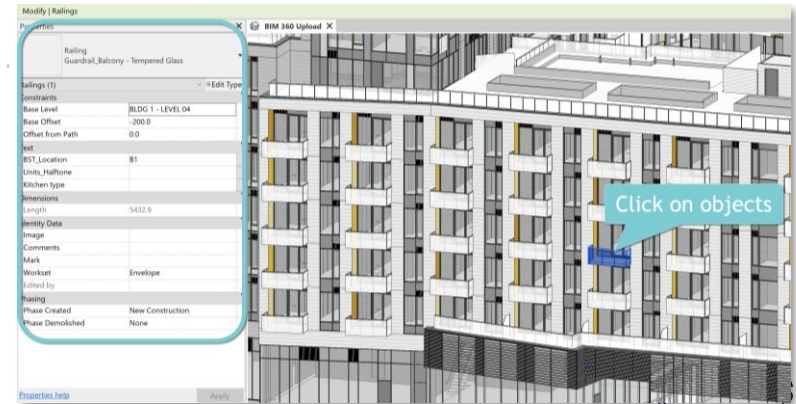
Defined as representing 3 separate but linked functions

VERBS

BIM: BUILDING INFORMATION MODEL



Is the DIGITAL REPRESENTATION of physical and functional characteristics of a facility, a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its entire life cycle.



BIM: BUILDING INFORMATION MODELING

Is a PROCESS for leveraging building data to design, construct and operate the building during its lifecycle. BIM allows all stakeholders to have access to the same information simultaneously through interoperability between different technology platforms.

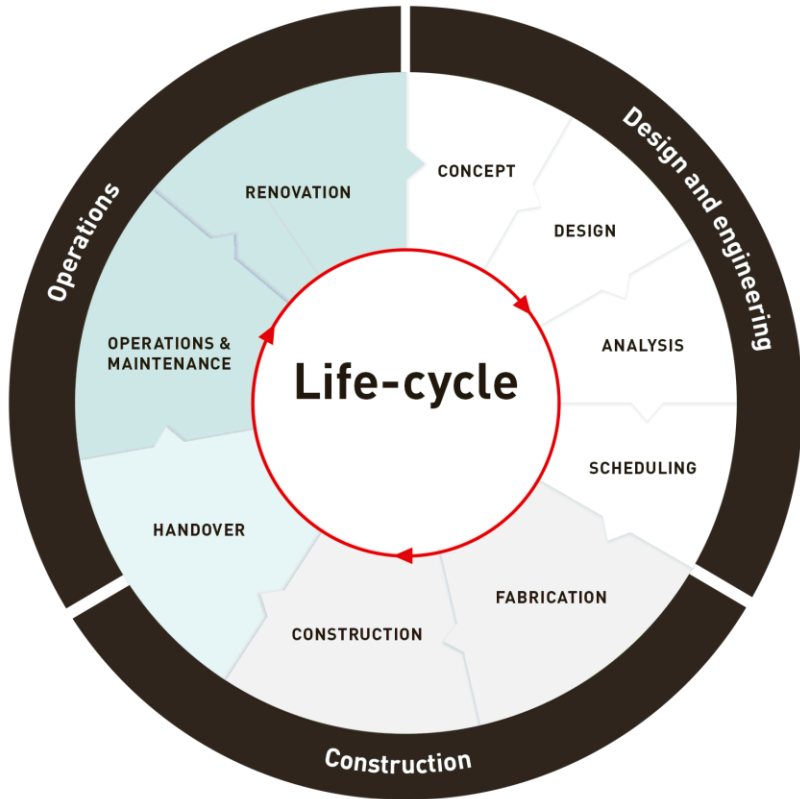
Process



International
Organization for
Standardization

ISO 19650-1	ISO 19650-2	ISO 19650-3	ISO 19650-4	ISO 19650-5	ISO 19650-6
Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling Part 1: Concepts and principles	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling Part 2: Delivery phase of assets	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling Part 3: Operational phase of assets	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling Part 4: Information exchange	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling Part 5: Security-minded approach to information management	In Development

BIM: BUILDING INFORMATION MANAGEMENT



openBIM[®]
Information

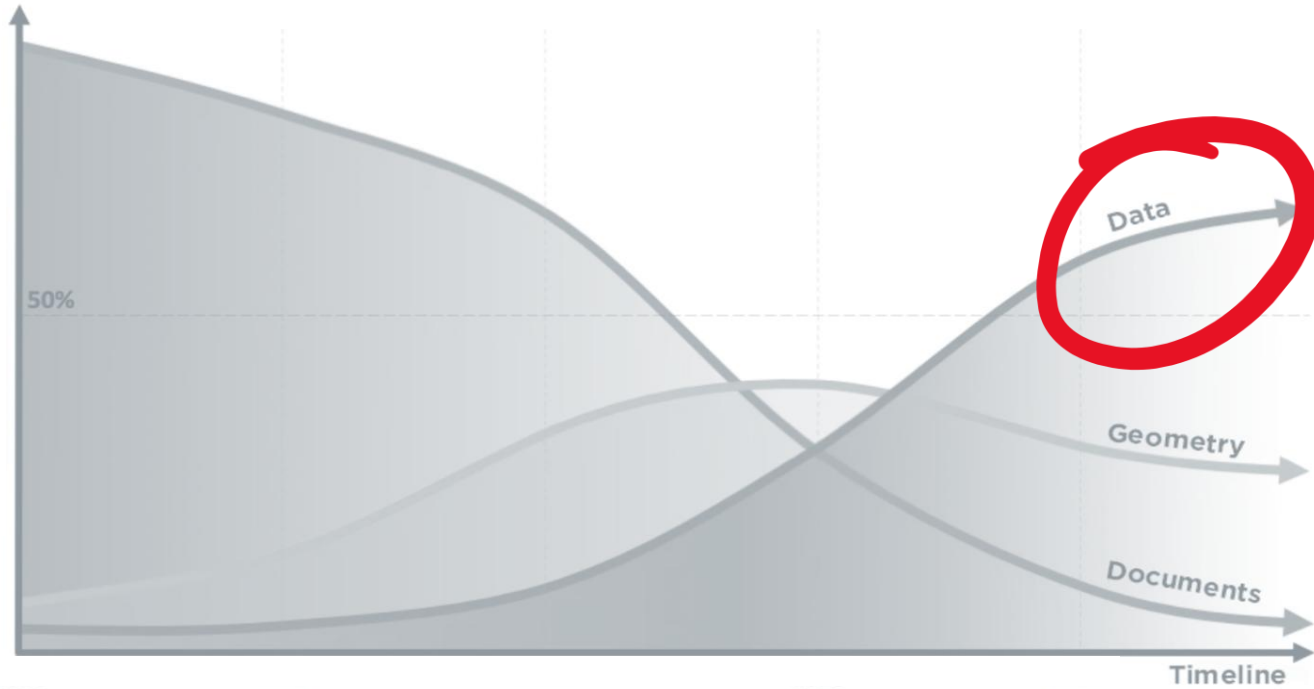
Management: Is the ORGANIZATION & CONTROL of the process by utilizing the information in the digital prototype to affect the sharing of information over the entire lifecycle of an asset, effectively developing an asset lifecycle process and model from conception to retirement.

BIM

BIM is the use of a **shared digital representation** of a **built asset** to facilitate design, construction and operation processes to form **a reliable basis for decisions.**

Definition according to ISO 19650-1 / ISO 29481-1:2016

FUTURE DIRECTION



INFORMATION

Component Based Information + Geometry

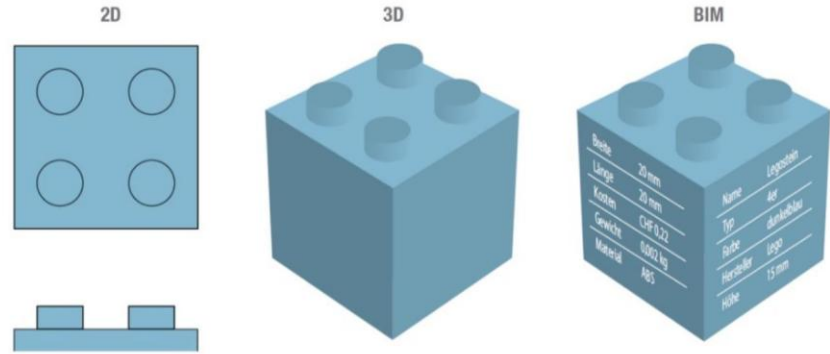
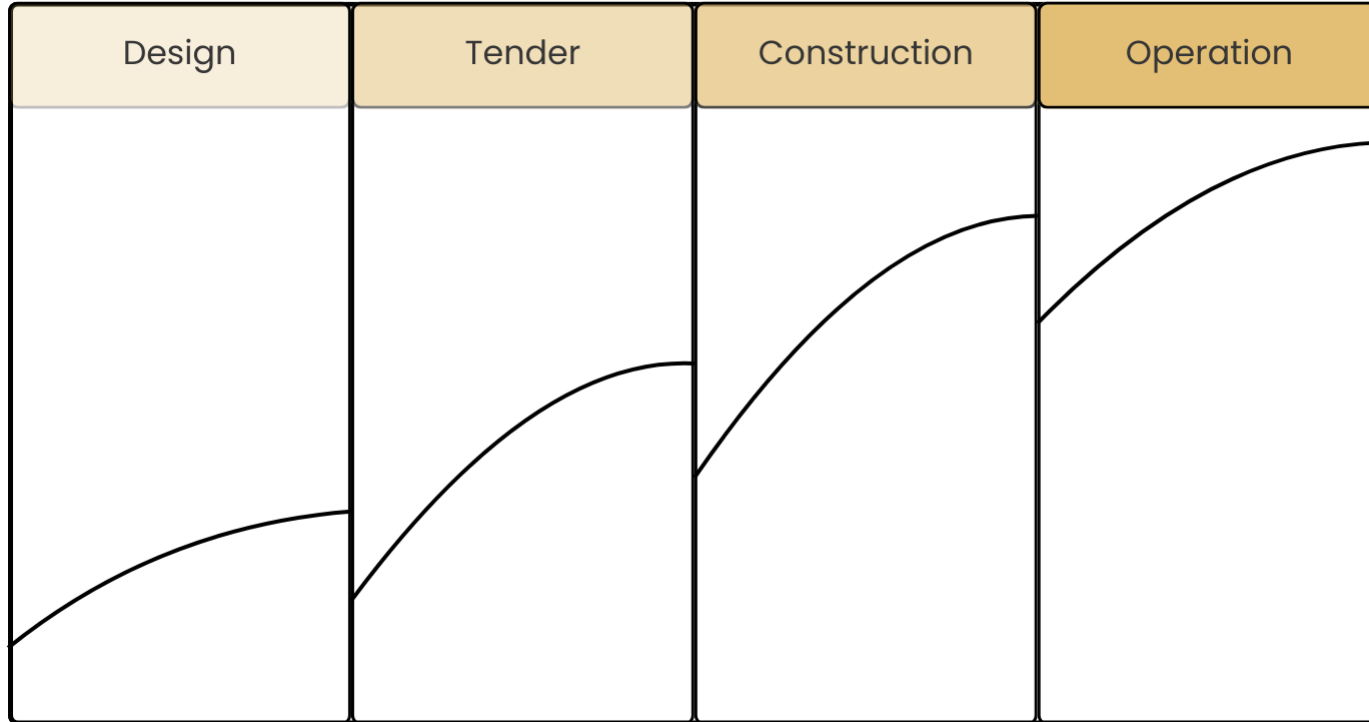
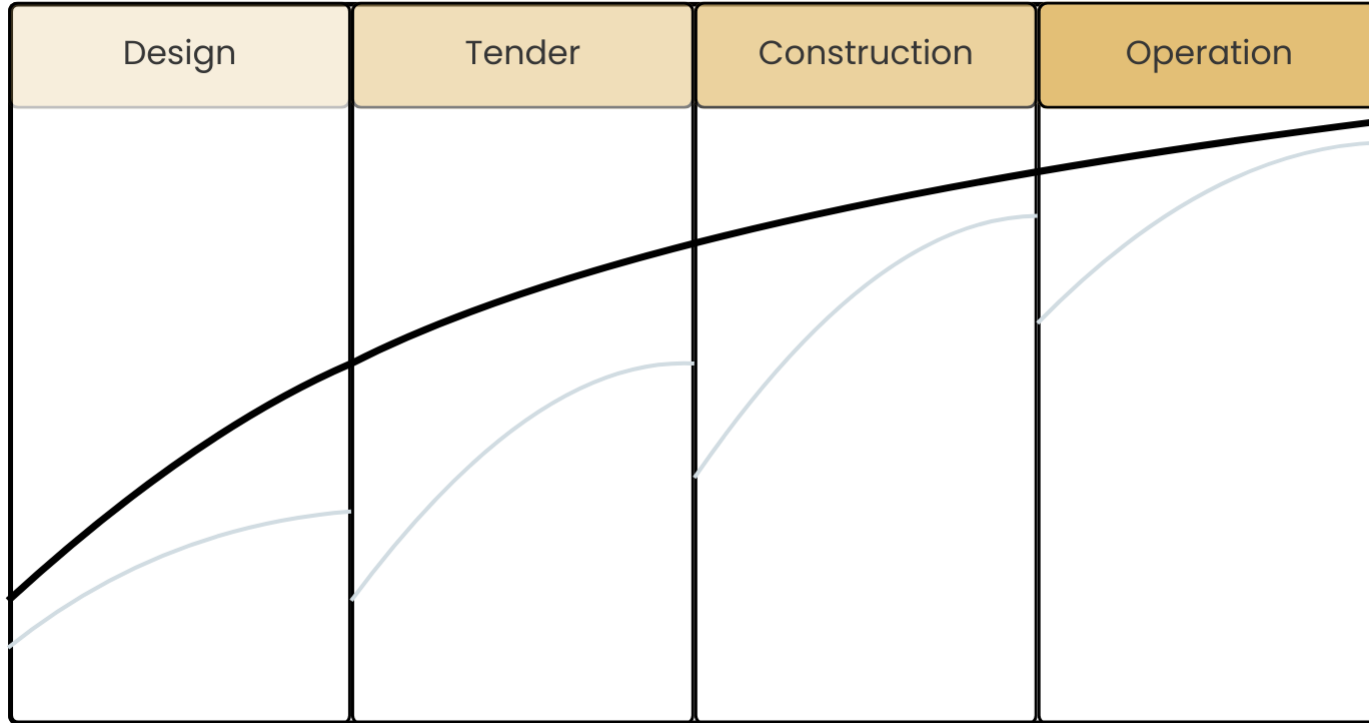


Image source: M. Baldwin, *The BIM Manager* (2018)

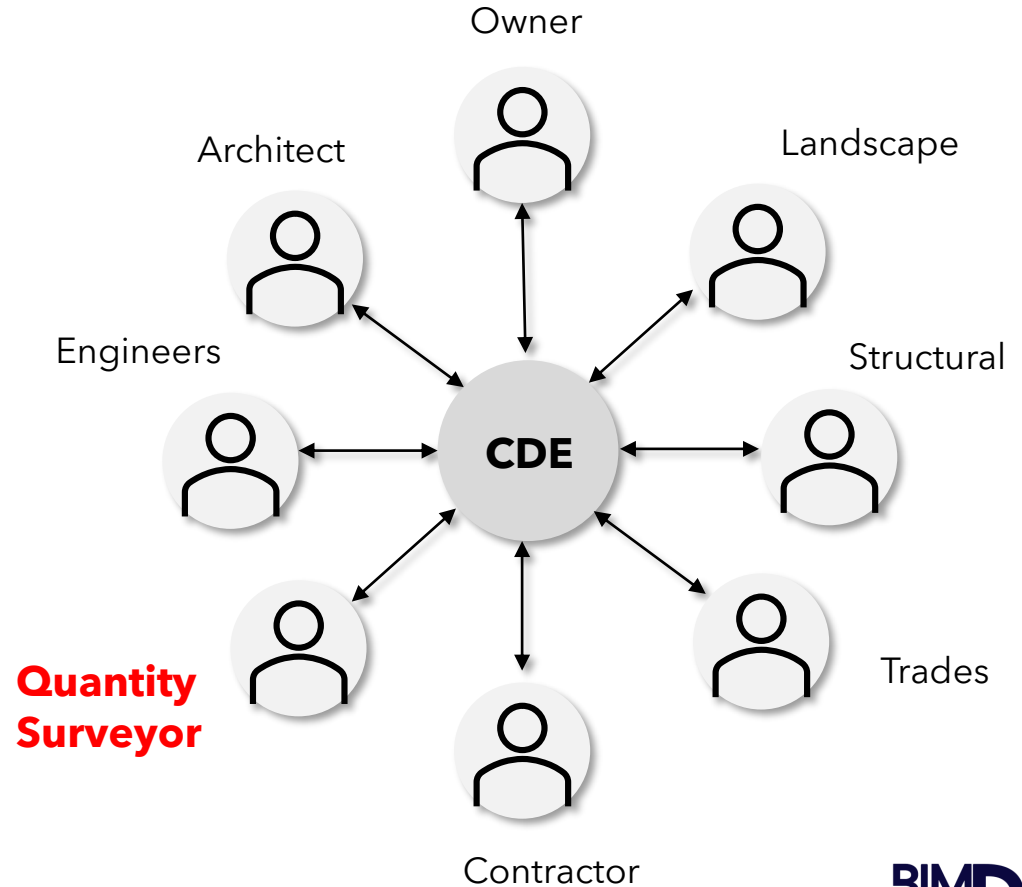
INFORMATION - TRADITIONAL WORKFLOW



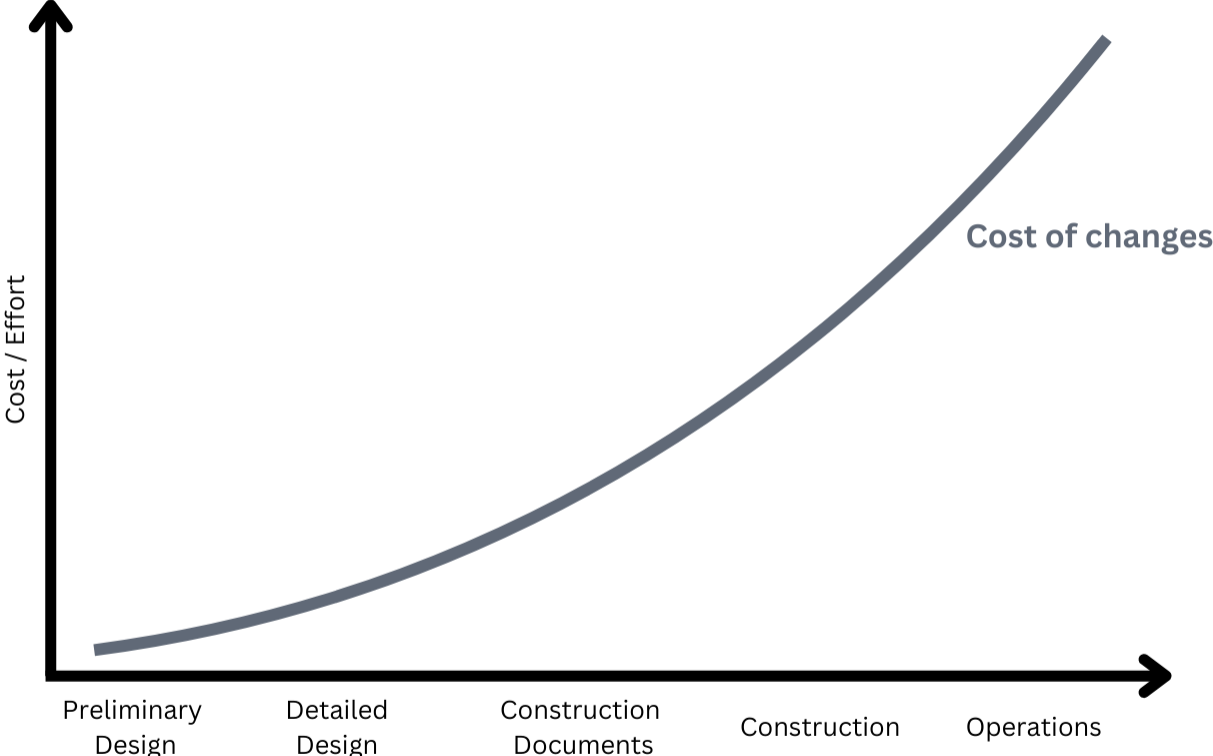
INFORMATION - BIM WORKFLOW



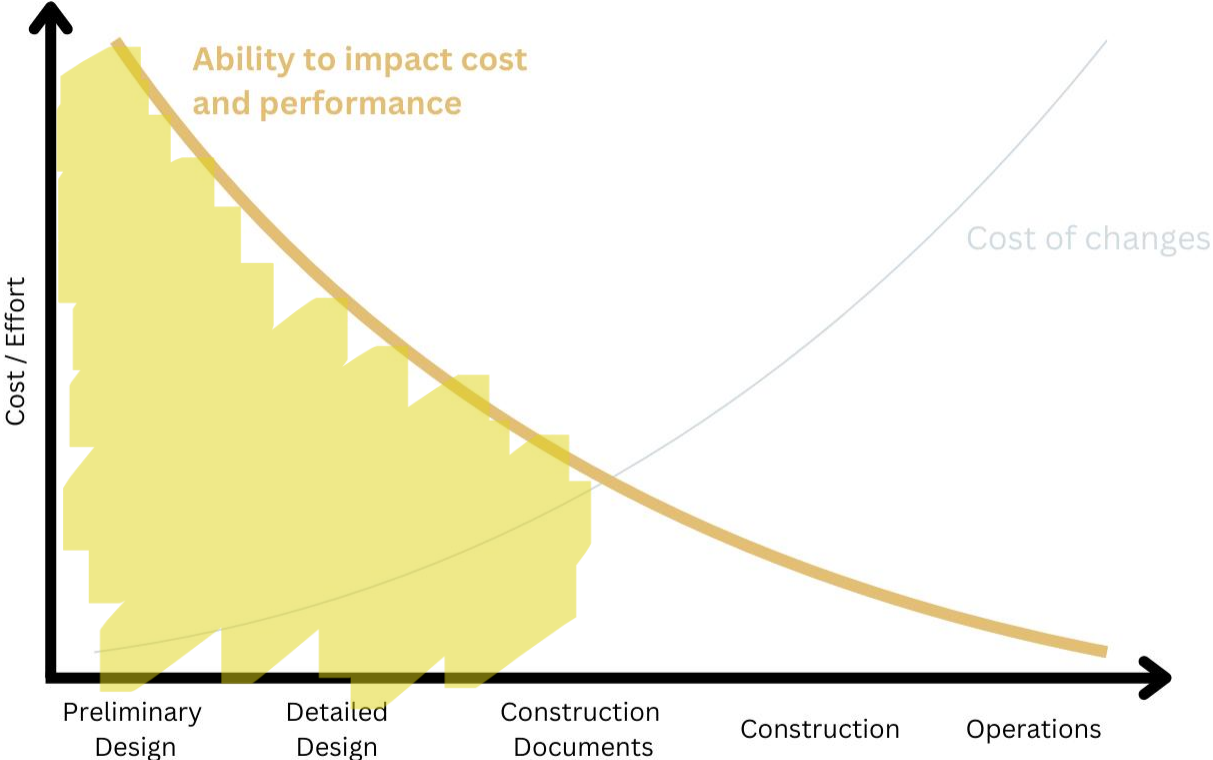
COLLABORATION

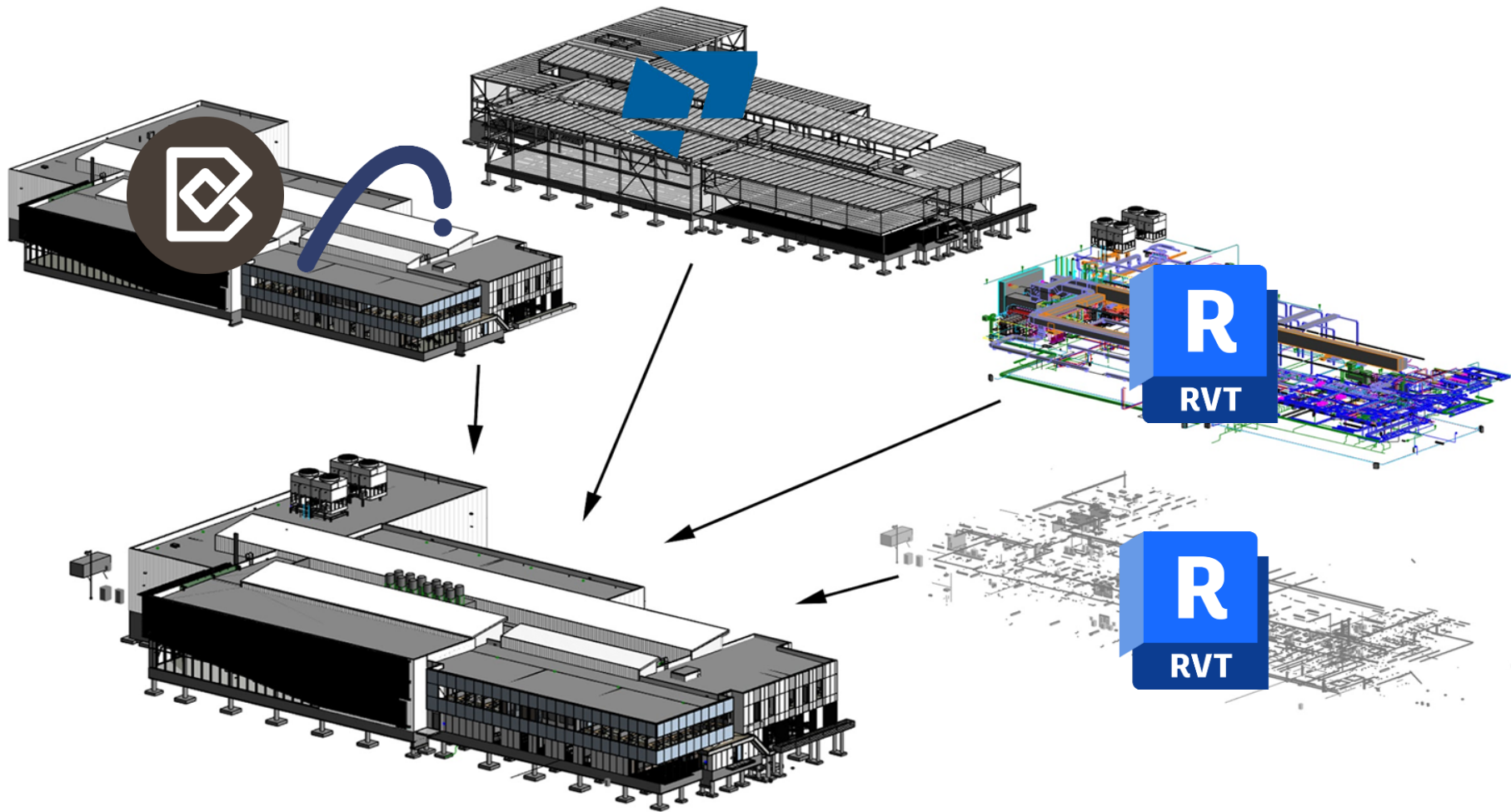


MACLEAMY CURVE



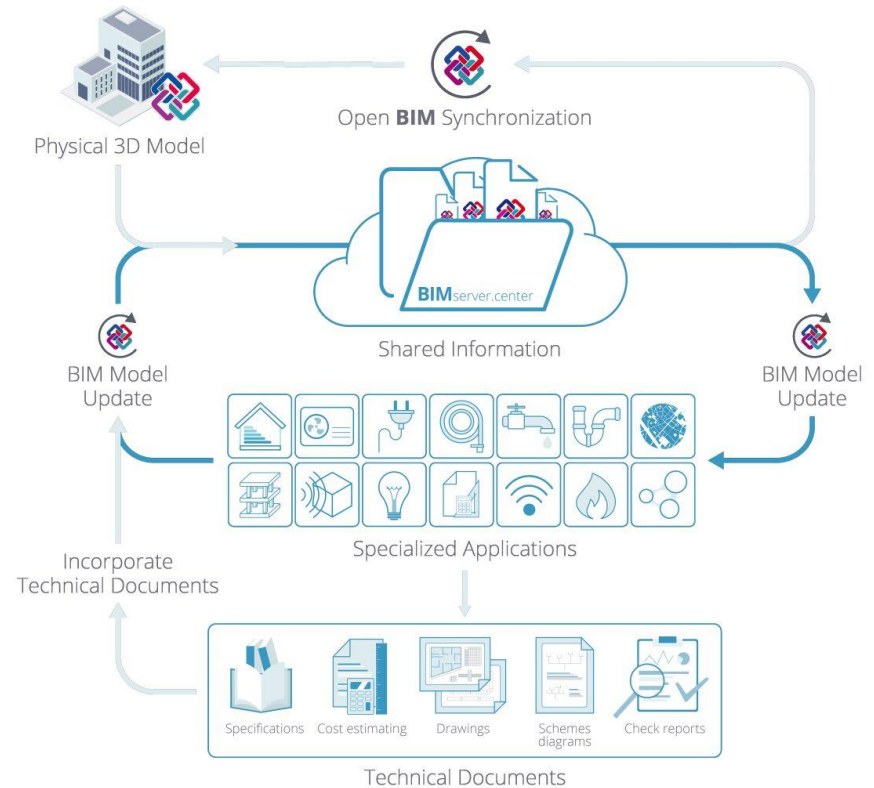
MACLEAMY CURVE



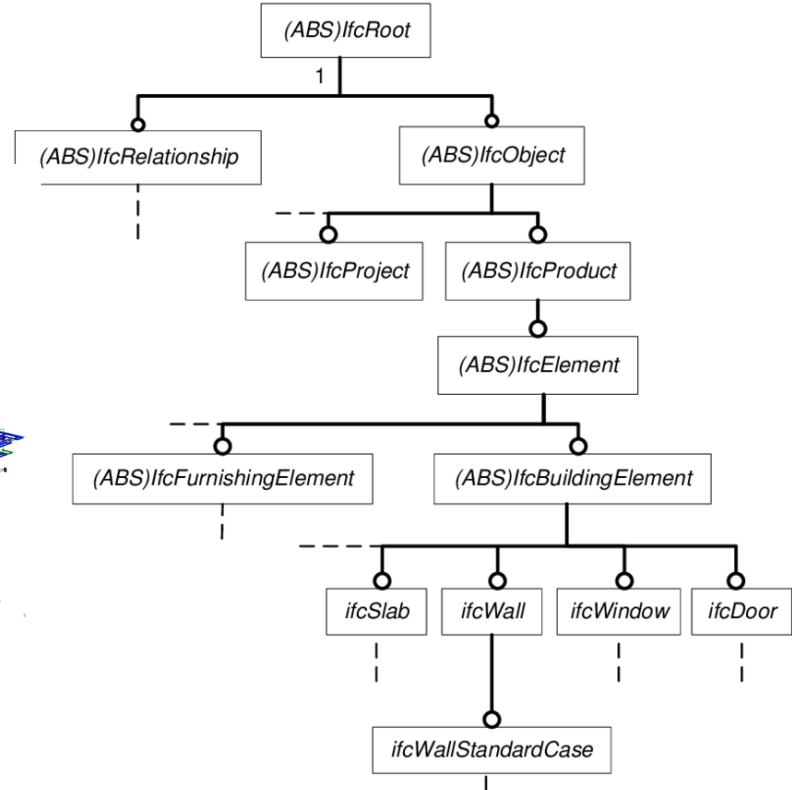
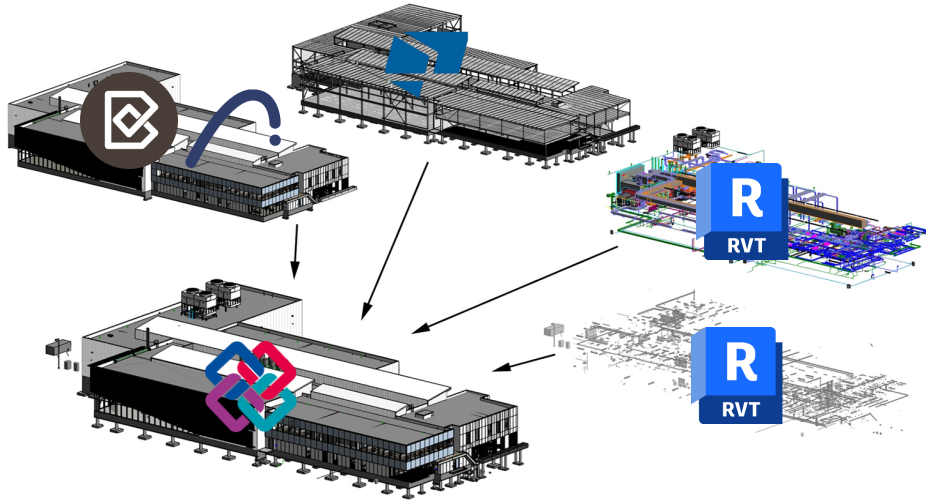


WHAT IS openBIM?

*enables global
universal data-sharing
for BIM data
regardless of
proprietary BIM
platform or BIM tool*



INDUSTRY FOUNDATION CLASS





BUSINESS BENEFITS AND OPPORTUNITIES

INTEGRATED IN THE PROCESS

Solibri Office - Impianto Sportivo

FILE MODEL CHECKING COMMUNICATION INFORMATION TAKEOFF BOF LIVE CONNECTOR SCORE CARBON CHECKER SIS AREA CALCULATION AREAS AND VOLUMES COBIE ONECLICK LCA + VIEWS

Spin Markup

SEARCH

CHECKING

Ruleset - Checked Model

- Controllo Modelli
- NORME CONI PER L'IMPIANTISTICA SPORTIVA
 - 1 - Scope e campo di validità
 - 2 - Caratteristiche degli impianti sportivi
 - Individuazione aree funzionali
 - Space Requirements
 - 3 - Dotazioni
 - Spazi richiesti come dotazione minima
 - Spazi richiesti come dotazione ulteriore
 - 4 - Fruibilità da parte dei disabili
 - 5 - Impianti di esercizio
 - 6 - Caratteristiche delle aree
 - 6.1 - Localizzazione
 - 6.2 - Recinzione esterna dell'area
 - 6.3 - Aree di sosta
 - 7 - Spazi per le attività sportive
 - 8 - Servizi di supporto per l'attività sportiva
 - 8.1 - Spogliatoi per atleti
 - 8.2 - Spogliatoi per i giudici di gara/istruttori

INFO

Spazi richiesti come dotazione minima

Description

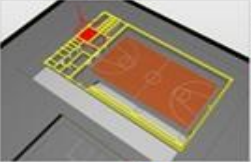
In linea generale, come dotazione minima, l'impianto sportivo dovrà comprendere:

- spazi di attività (campi, piste, pedane, vasche ...) con relative attrezzature per la pratica sportiva;
- spogliatoi per gli atleti, con propri servizi igienici e docce;
- spogliatoi per giudici di gara/istruttori, con propri servizi igienici e docce;
- sistemi per la custodia degli abiti (armadietti, depositi abiti, appendiabiti e simili);
- magazzini per gli attrezzi, materiali ed attrezzature varie;
- locale di pronto soccorso, dotato di proprio servizio igienico;
- impianti tecnici essenziali (idrosanitario, drenaggio e irrigazione campi gioco all'aperto; smaltimento acque meteoriche e fognarie, produzione acque calde per le docce; illuminazione e riscaldamento dei diversi locali, in relazione all'uso ed al clima...);
- parcheggi per gli atleti, giudici di gara/istruttori.

ISSUE DETAILS

Responsibilities and Labels

Communication Components



1 2

Arch.Bronzo: Dimensione degli spogliatoi non approvata. Rivedere

RESULTS

No Filtering Automatic

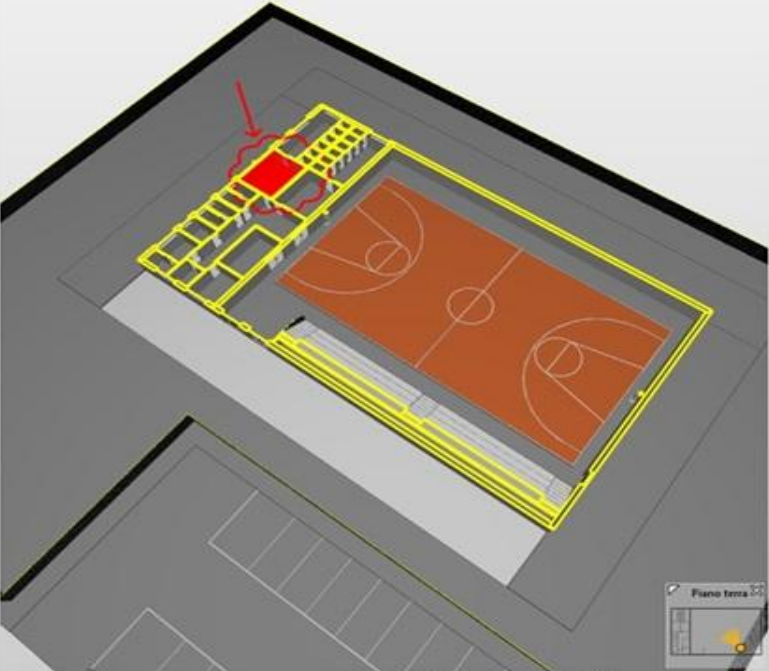
Results

- Too Small Spaces [1/2]
- Spogliatoio [1/2]
 - Spogliatoio | 17.09 m²
 - Spogliatoio | 17.33 m²

RESULT SUMMARY

Issue Count	0	2	0	1	0
Issue Density	-	-	-	-	-

Start Markup (Press Esc to Cancel)



Fiano terra

Role: BIM Coordination Selected: 1

INSTANTANEOUS CHANGES

Properties

Area Plan
Mixed Use Project

Area Plan: P-LEVEL 1

Graphics

View Scale: 1:200
Scale Value: 1:200
Display Model: Normal
Detail Level: Coarse
Parts Visibility: Show Original
Visibility/Graphics Overrides: Edit...
Graphic Display Options: Edit...
Orientation: By Scope Box
Wall Join Display: Clean all wall joins
Discipline: Architectural
Show Hidden Lines: By Discipline
Color Scheme Location: Background
Color Scheme: RESIDENTIAL AREA SCHEME
System Color Schemes: Edit...
Default Analysis Display St...: None
Sun Path:

Underlay

Range: Base Level: None
Range: Top Level: Unbounded
Underlay Orientation: Look down

Extents

Crop View:
Crop Region Visible:
Annotation Crop:
View Range: Edit...
Associated Level: LEVEL 1
Scope Box: 11X17 CONCEPT PLANS
Depth Clipping: Clip with line

Identity Data

View Template: <None>
View Name: P-LEVEL 1
Dependency: Independent

Title on Sheet

Referencing Sheet
Referencing Detail
Workset: View "Area Plan (Mixed Use..."
Edited by: designtechK6UL9
Folder: 01-PRESENTATION

[Properties help](#) Apply

P-LEVEL 1

1:200

P-LEVEL 3

1:500

Area Schedule

	A	B
Level	Area	
LEVEL 1		559
LEVEL 3		3866
LEVEL 6		2364
LEVEL 7		2110
LEVEL 8		846
LEVEL 9		15774
Total		25519

P-LEVEL 8

1:500

ANALYSIS



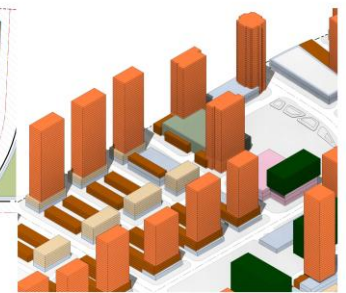
MASTER PLAN 3D VIEW COLOURED BY USE TYPE



Parcel 4

NEW AREA	10520 m ²	0.47 acres
PLAN	17700 m ²	0.52 acres
EXISTING AREA	10480 m ²	0.50 acres
TOTAL	10520 m ²	0.47 acres

- ROAD
- COMPANY
- CONVENTION
- OFFICE
- INDUSTRIAL
- RESIDENTIAL
- RECREATION
- COMMERCIAL
- ROAD RIGHT OF WAY (R.O.W.)



PARCEL 4

LIFE CYCLE COST ASSESSMENT

The image displays a comprehensive BIM software interface for Life Cycle Cost Assessment. The main window shows a project schedule with columns for Room Number, Room Name, Program, Design, Room Date, Furniture Status, and Assessment Date. The schedule lists various rooms such as 'LECTURE THEATRE', 'CLASSROOM ACTIVE LEARNING', and 'COMPUTER LAB'. Below the schedule, there are several panels:

- 3D View:** A 3D rendering of a multi-story building with a red box labeled "Result: report in 3D view".
- 2D Floor Plan:** A 2D floor plan view of a room with a red box labeled "Result: report in 2D floor plan view".
- Target Law Sentences:** A table with columns for Item, Unit, and Status. A red box labeled "Target law sentences" highlights a row with a value of 1000.00.
- Detailed Report:** A table with columns for Item, Unit, and Status. A red box labeled "Result: Detailed report" highlights a row with a value of 1000.00.

PROPERTY CONDITIONS ASSESSMENT

The image displays the Autodesk Recap Pro interface. The top-left window shows a 3D point cloud of a building. The top-right window shows a 2D floor plan view of the same building. The bottom-left window shows a 2D floor plan view of a building interior with columns. The bottom-right window shows a summary dashboard with various risk metrics and a table of data.

OVERVIEW

9 Floors
196 Count of Room

Overall Risk

Overall Risk	Count of Room	Area (sqm)
5.00	0	0.00
5.15	38	103.08
4.15	28	523.98
8.15	20	133.20
2.00	18	157.45
6.00	12	560.43
3.00	5	41.75

Area by Space Type

Space Type	Area (sqm)	Percentage
01 Office	0.566	0.28%
02 Open Space	0.16K	0.08%
03 Corridor	0.11K	0.05%
04 Warehouse	0.04K	0.02%
05 Elevator		
06 Meeting Ro...		
07 Toilet		
08 Technical R...		
09 Cafe Area		

Ov Risk

Floor	Floor -2	Floor -1	Floor +0	Floor +1	Floor +2	Floor +3	Floor +4	Floor +5	Floor +6	Total
0.42%	8.50									0.42%
0.00%	0.00		6.43%							0.71%
0.00%	3.00	0.78%	3.57%			0.85%				23.10%
3.78%	5.15	1.30%	5.59%	3.30%	6.44%	3.85%	4.33%	3.87%		3.78%
4.03%	7.50			7.19%	6.41%			5.97%	16.80%	4.03%
4.89%	8.15	5.83%	6.21%	4.10%	4.13%	4.11%		4.12%	11.82%	41.77%
5.78%	2.00	42.72%	7.43%	4.77%	1.58%	1.82%	1.38%		11.34%	5.78%

Av of Aggregation Risk
1.08

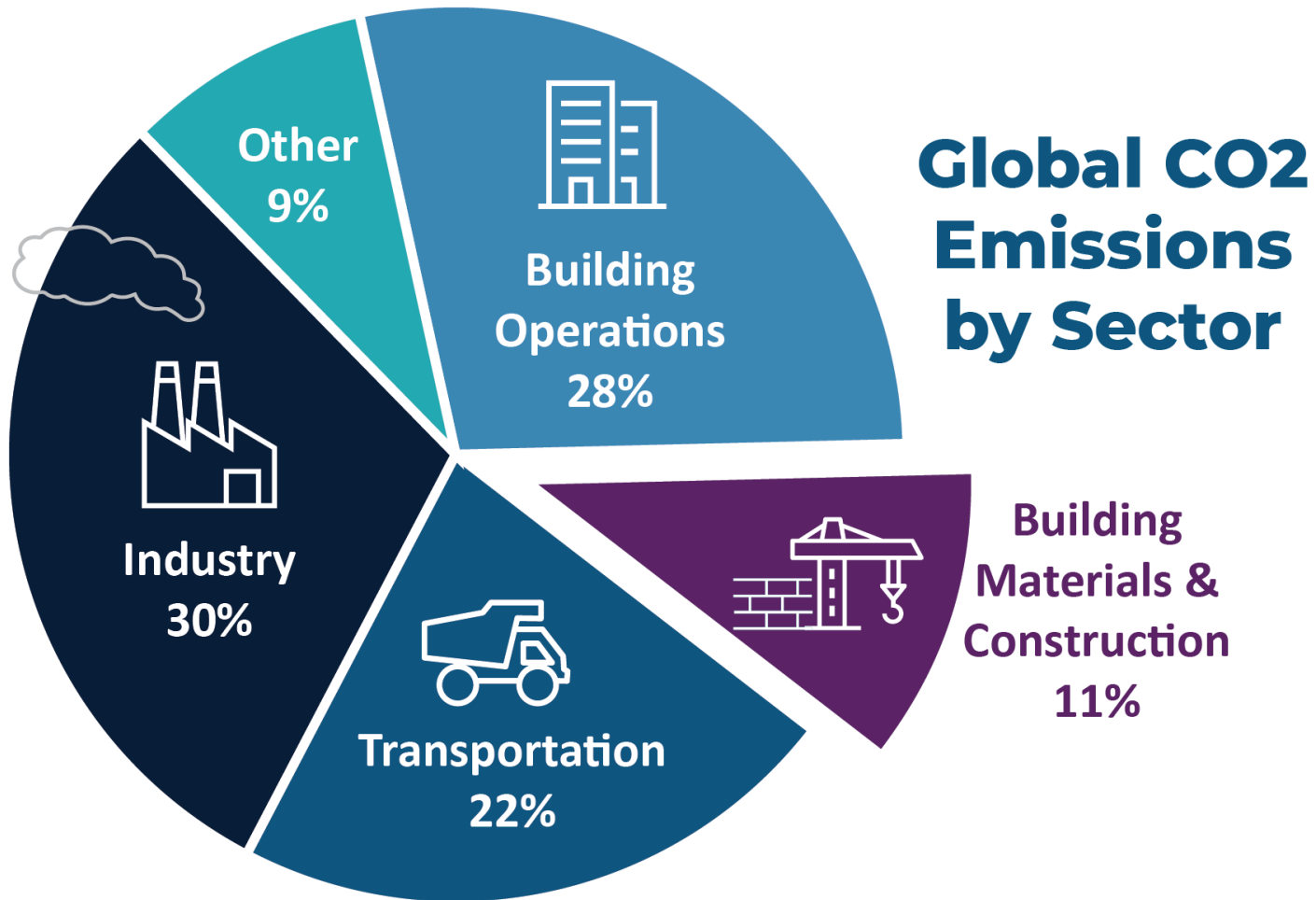
Average of Exposure Risk
1.97

Average of Proximity Risk
1.99

Average of Overall Risk
5.05

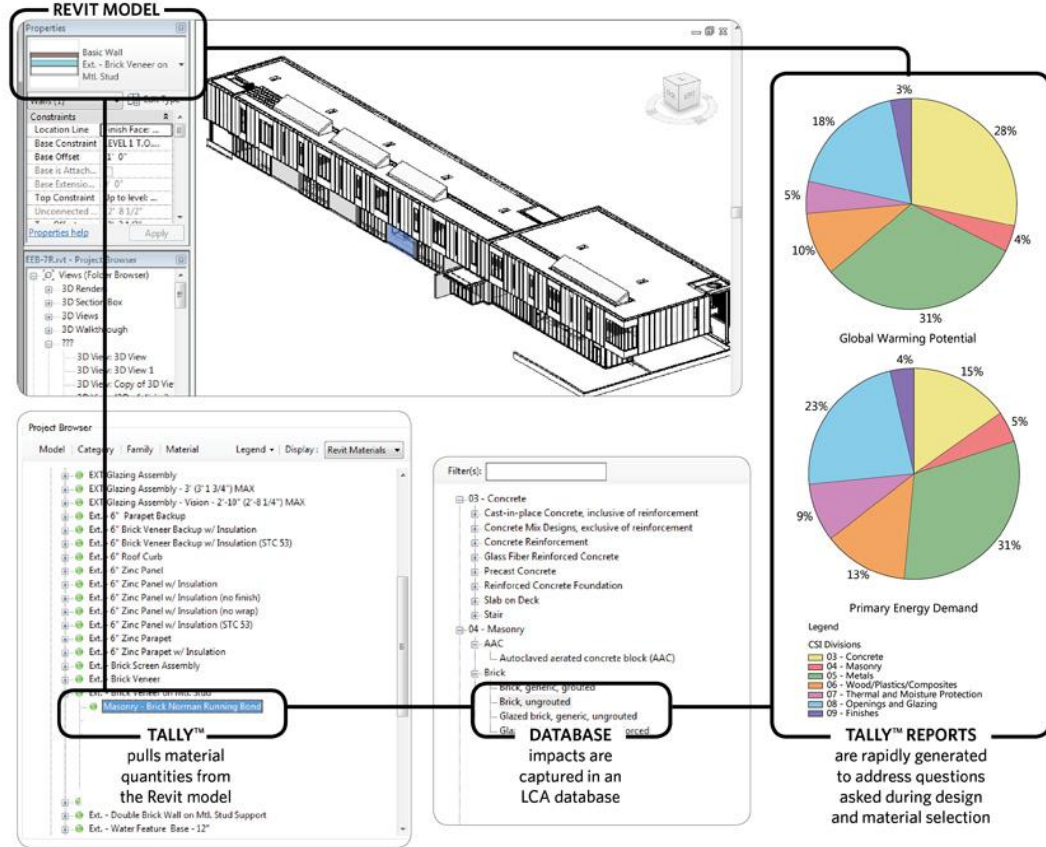
2.73K
Area

196
Count of Workers

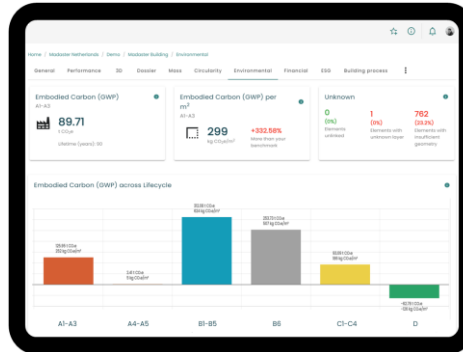
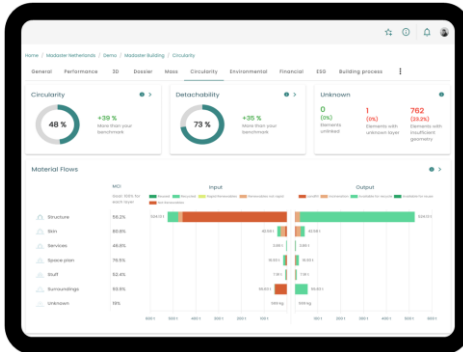
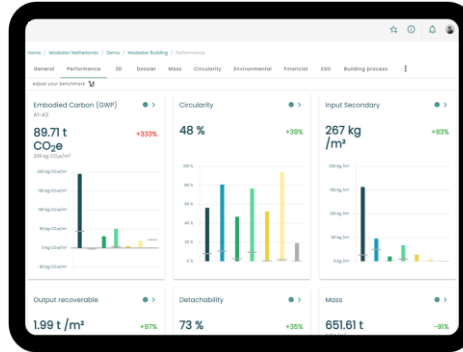
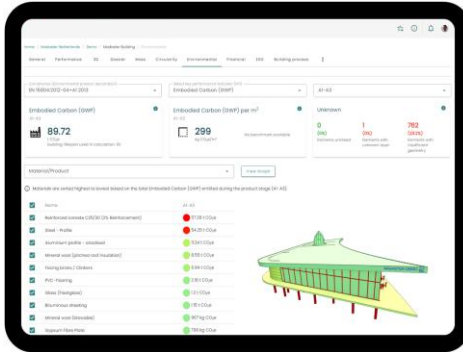


Source: Adapted from the World Green Building Council, Global Status report, 2019.

CARBON



CIRCULARITY

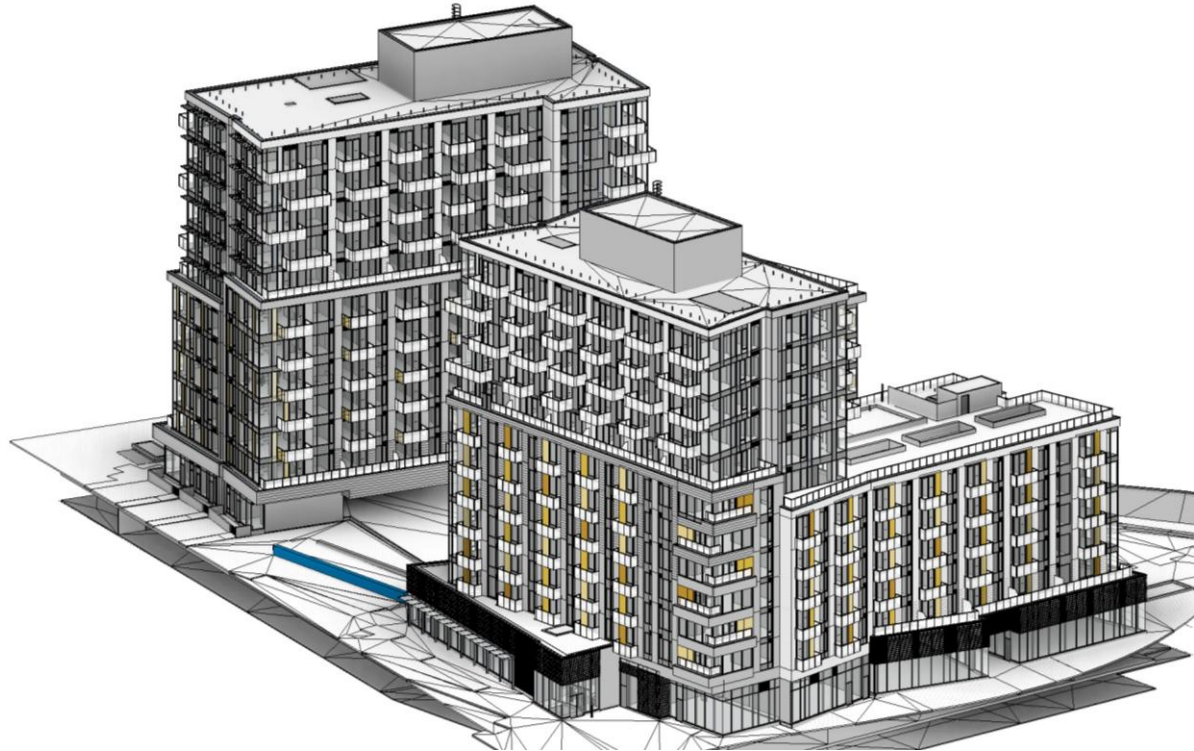




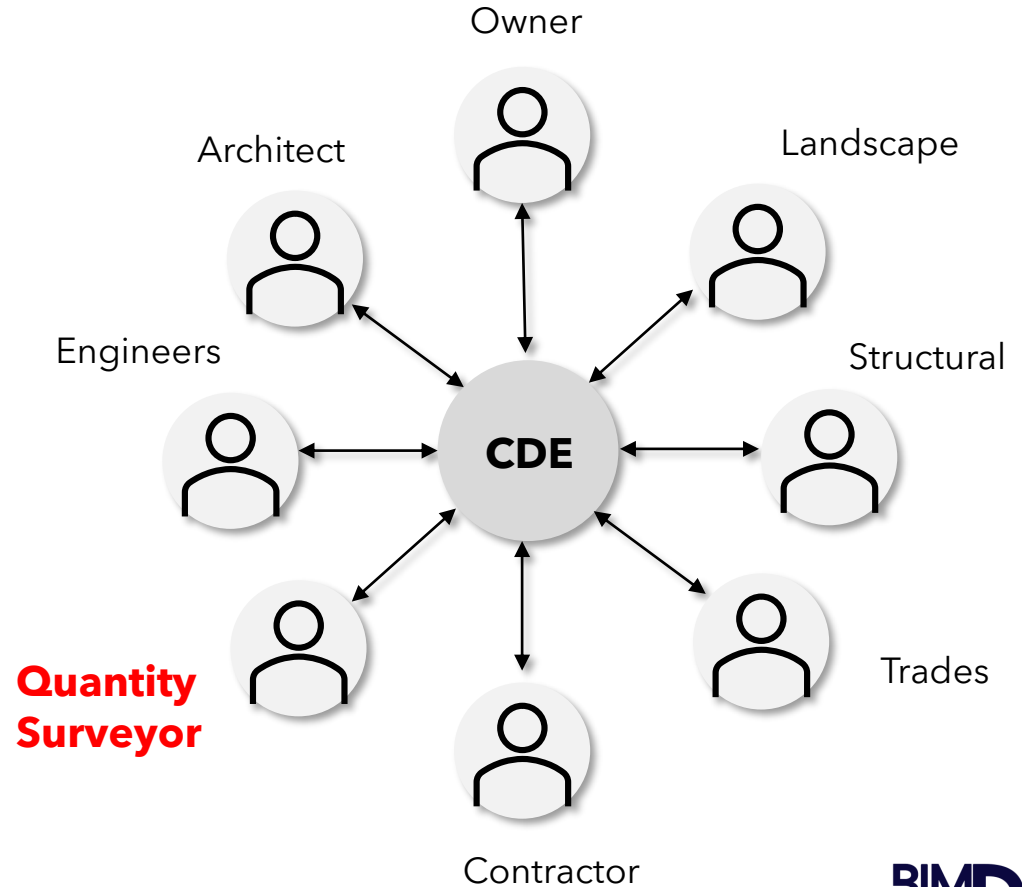
3

HOW BIM WORKS

QUANTITY SURVEYOR'S INPUT



HOW



BIM EXECUTION PLAN

describes **HOW** it should be done.

A BEP should include:

The **name(s) of the person(s)** who will perform the information management function within the project team.

The strategy for the **delivery of information** by the team (e.g. **MIDP - Master Information Delivery Plan**)

The team's responsibility matrix.

The team's proposed methods and procedures for information production.

A **list of the software, hardware** and IT infrastructure that the team will use.



Project description (incl timeline and milestones)



Project Organigram



Use-Cases Process descriptions



Information Delivery (u.a.Master Information Delivery Plan)



Model structure (modelling standards)



Coordination & Quality Control



Technical Requirements

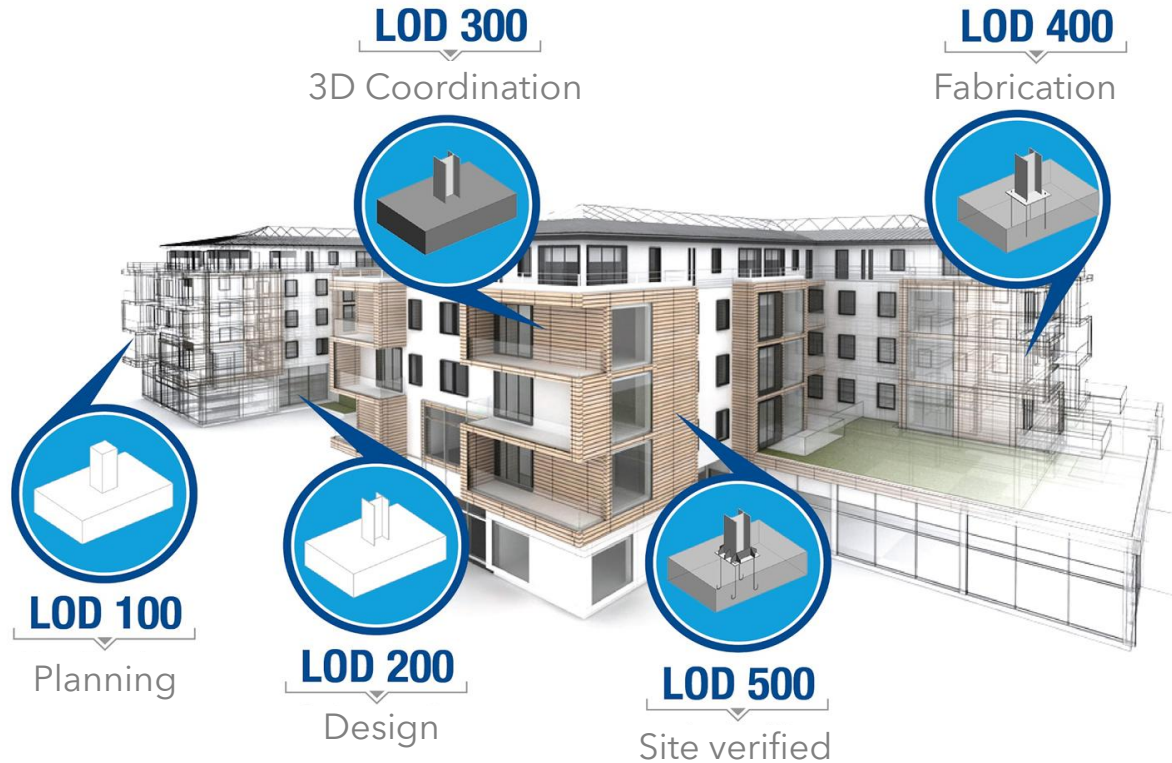


BIM USES

X	PLAN	X	DESIGN	X	CONSTRUCT	X	OPERATE
	PROGRAMMING		DESIGN AUTHORIZING		SITE UTILIZATION PLANNING		BUILDING MAINTENANCE SCHEDULING
	SITE ANALYSIS		DESIGN REVIEWS		CONSTRUCTION SYSTEM DESIGN		BUILDING SYSTEM ANALYSIS
			3D COORDINATION		3D COORDINATION		ASSET MANAGEMENT
			STRUCTURAL ANALYSIS		DIGITAL FABRICATION		SPACE MANAGEMENT / TRACKING
			LIGHTING ANALYSIS		3D CONTROL AND PLANNING		DISASTER PLANNING
			ENERGY ANALYSIS		RECORD MODELING		RECORD MODELING
			MECHANICAL ANALYSIS				
			OTHER ENG. ANALYSIS				
			SUSTAINABILITY (LEED) EVALUATION				
			CODE VALIDATION				
	PHASE PLANNING (3D OCCUPANCY)		PHASE PLANNING (3D OCCUPANCY)		PHASE PLANNING (3D OCCUPANCY)		PHASE PLANNING (3D OCCUPANCY)
	COST ESTIMATION		COST ESTIMATION		COST ESTIMATION		COST ESTIMATION
	EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING

Potential BIM Uses	BIM Use Description	COMMON STAKEHOLDERS						
		OWNER	CONSTRUCTOR	ARCHITECT	STRUCTURAL MECHANICAL	ELECTRICAL	CIVIL FABRICATORS	
3D Coordination/ Clash Detection [¶]	Using 3D models to coordinate different disciplines (e.g. structural and mechanical) and to identify/resolve possible clashes between virtual elements prior to actual construction or fabrication.		•	•	•	•	•	•
Design Review [¶]	A process in which stakeholders view a 3D federated model and provide their feedbacks to validate multiple design aspects. These aspects include evaluating meeting the program, previewing space aesthetics and layout in virtual environments.		•	•	•	•		
Quantity Take-Off/ Cost Estimation [¶]	A BIM Use representing how models are used to generate feasibility studies and compare different budgetary options and the use of models to calculate the quantity of Furniture, Fixtures and Equipment or building materials for the purpose of generating Cost Estimates.		•	•				
Code Checking & Validation [¶]	The process of inspecting a 3D model or model for compliance against predefined specifications or established design, performance or safety codes.			•	•	•	•	
Egress and Ingress [¶]	A BIM Use where models are used to simulate individual/crowd behaviour within a building, either during normal operations or during emergency situations. Egress and Ingress simulations assist in identifying and improving access, circulation and exit routes.	•	•				•	
Site Analysis [¶]	A BIM Use where BIM Software Tools and/or Geographic Information System tools are used to decide on optimal site for a building project and/or to decide the optimal building location within a specified site.	•	•				•	
Solar Analysis [¶]	A BIM Use where models are used to conduct shadow studies, simulate solar radiance on building envelopes, and analyze the effect of building location/shape on solar heat loads...Also refer to Reflectivity Analysis.	•	•					
Lighting Analysis [¶]	Using models to simulate natural and artificial lighting levels. This BIM Use is a form of Building Performance analysis and is not intended for rendering or visualization.	•	•			•		
Energy Use [¶]	A BIM Use and a Building Performance metric measuring how and how-much a facility will consumes energy in a comparative way.	•	•			•	•	
Thermal Analysis [¶]	Using the model to analyze thermal loads, inform Mechanical Systems' Design and relevant Materials' Selection. Thermal Analysis is part of overall Building Performance analysis and measurement.	•	•			•		
Wind Studies [¶]	The use of models to simulate the effects of wind on structures. The simulation is intended to inform the design process by identifying optimal orientations and shapes. Models of existing structures may also be used for the purposes of performing Wind Studies.			•	•			
Sustainability Analysis [¶]	Using the model to calculate the environmental impact of a new construction project or an existing facility. These calculation may include Carbon Footprint, Life Cycle Assessment, Embodied Energy and other sustainability metrics (Often refers to the LEED point system).	•	•					
Phase Planning [¶]	A process in which a 4D model (3D models with the added dimension of time) is utilized to effectively plan the phased occupancy in a renovation, retrofit, addition, or to show the construction sequence and space requirements on a building site. 4D modelling is a powerful visualization and communication tool that can give a project team, including the owner, a better understanding of project milestones and construction plans.	•	•					

LEVEL OF DEVELOPMENT



MODEL ELEMENT TABLE

MODEL ELEMENT TABLE

Project Number: [ENTER PROJECT NUMBER HERE]

File Name: 2 - DSAI-MET-Template_v2

Project Name: [ENTER PROJECT NAME HERE]

Item #	Description	Minimum Size Required to be Modeled	Element in Model		SCHEMATICS DESIGN		DESIGN DEVELOPMENT T (50%)		DESIGN DEVELOPMENT T (100%)		CONSTRUCTION DOCUMENTS		CONSTRUCTION DOCUMENTS		CONSTRUCTION DOCUMENTS		CONSTRUCTION DOCUMENTS		BID		CONSTRUCTION		CLOSE-OUT		Comments		
			As an object	As a detail	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA	LOD	MEA		LOD	MEA
10100	VISUAL DISPLAYS, CHALK AND TACK BOARDS		YES	YES	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH			
10250	ACCESS PANELS - WALL & CEILING		NO	YES	N/A	N/A	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH			
10240	WALL/CORNER GUARDS		NO	YES	N/A	N/A	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH			
10270	ACCESS FLOORING		NO	YES	N/A	N/A	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH			
10400	ILLUMINATED SIGNAGE		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10500	LOCKERS		YES	YES	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
10510	FIRE CABINETS		YES	YES	100	ARCH	100	ARCH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH			
10520	FIRE EXTINGUISHERS		YES	YES	100	ARCH	100	ARCH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH	200	MECH			
10550	POSTAL SPECIALTIES		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10610	TOILET PARTITIONS		YES	NO	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	297	ARCH	297	ARCH	297	ARCH			
10650	OPERABLE PARTITIONS		YES	YES	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	291	ARCH	291	ARCH	291	ARCH			
10670	STORAGE SHELVING		YES	YES	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH	299	ARCH	299	ARCH	299	ARCH			
10690	WASHROOM ACCESSORIES		YES	YES	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH			
EQUIPMENT																											
11010	WINDOW WASHING EQUIPMENT (ANCHORS)		NO	YES	N/A	N/A	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
11020	SECURITY (CCTV CAMERAS, PANELS)		NO	YES	N/A	N/A	N/A	N/A	100	ELEC	100	ELEC	100	ELEC	100	ELEC	200	ELEC	200	ELEC	200	ELEC	200	ELEC			
11100	PROJECTORS, SCREENS, A/V EQUIPMENT		NO	YES	N/A	N/A	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
11150	PARKING CONTROL EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11160	LOADING DOCK EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11170	WASTE HANDLING		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11400	BUILT-IN FOOD SERVICE EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11410	LARGE PORTABLE FOOD SERVICE EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11430	WALK-IN COOLERS AND REFRIGERATION		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11440	ATHLETIC, THERAPEUTIC EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11500	INDUSTRIAL PROCESS EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11600	BUILT-IN LABORATORY EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11700	BUILT-IN MEDICAL EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
11800	BUILT-IN LAUNDRY EQUIPMENT		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
FIXTURES, FURNITURE, AND EQUIPMENT																											
12010	BUILT-IN FURNITURE		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
12020	LOOSE FURNITURE		YES	YES	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
12500	WINDOW TREATMENT		YES	YES	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
12490	PERMANENT FLOOR MATS AND FRAMES		YES	YES	N/A	N/A	100	ARCH	100	ARCH	100	ARCH	100	ARCH	100	ARCH	200	ARCH	200	ARCH	200	ARCH	200	ARCH			
12710	AUDITORIUM AND THEATRE FIXED SEATING		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
12800	BUILT-IN INTERIOR PLANTERS		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
12110	INTERIOR PLANS AND VEGETATION		NO	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

QUALITY ASSURANCE & CHECKS

Digital Quality Assurance and Quality Control Strategy / 22

Quality Assurance

The following action items will enable Quality Assurance processes for digital practice across the organization and projects. Improvements to the Quality Assurance Strategy and Plan require continuous improvement to increase quality and decrease risk.

1. Determine who will spearhead the process.
2. Outline the areas of focus, the approach, and the importance of the process, including:
 - a. BIM Standards and Guidelines
 - b. BIM Execution Plan templates
 - c. Quality Control and Assurance Processes
 - d. Upskilling and Training
 - e. Lessons Learned
 - f. BIM Resources
3. Determine the approach for continuous improvement.
4. Determine the approach for risk management, including the role of QA, QC, and Compliance.
5. Determine the approach for user engagement and communication.

Digital Quality Assurance and Quality Control Strategy / 23

Quality Control

The following action items will enable Quality Control processes for digital practice across the organization and projects. Improvements to the Quality Control Strategy and Plan require continuous improvement to increase quality and decrease risk.

1. Determine who will spearhead the process.
2. Outline the areas of focus, the approach, and the importance of the process, including:
 - a. BIM Standards and Guidelines
 - b. BIM Execution Plan templates
 - c. Drawing Checks
 - d. Model Coordination Checks
 - e. Model Audits
 - f. BIM Resources
 - g. Issue Tracking
3. Determine the approach for continuous improvement.
4. Determine the approach for risk management, including the importance of the process.
5. Determine the approach for user engagement and communication.

QA QC
Digital
Strategy



4

HOW TO GET STARTED

CHANGE CAN BE UNCOMFORTABLE



“I want you to find a bold and innovative way to do everything exactly the same way it’s been done for 25 years.”

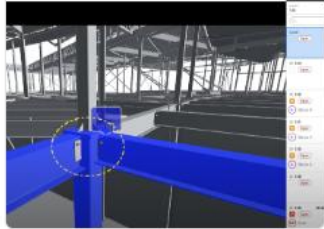


USE CASES

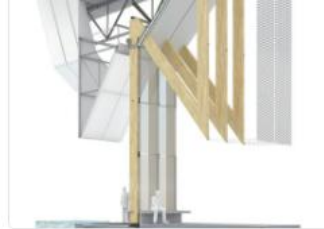
Collaboration



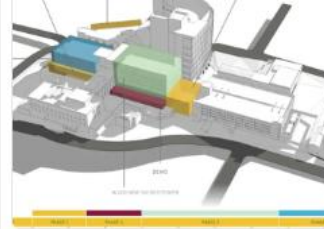
2D Drawing Development



3D Coordination



3D Detailing



4D - Phasing



5D - Cashflow



Tilt



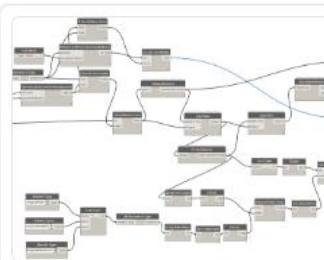
Asset Information Model



City Information Model



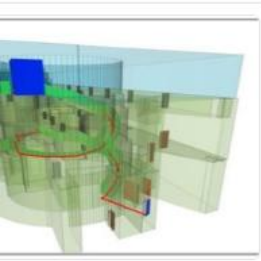
Code Checking



Computational Design



Conceptualization



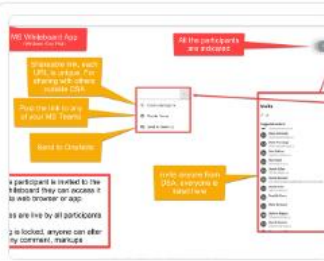
Wind and Pedestrian Simulation



Design Authoring



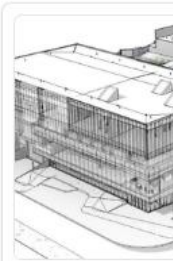
Design Review



Digital White Boards



Energy Analysis



Existing Conditions



Information Center

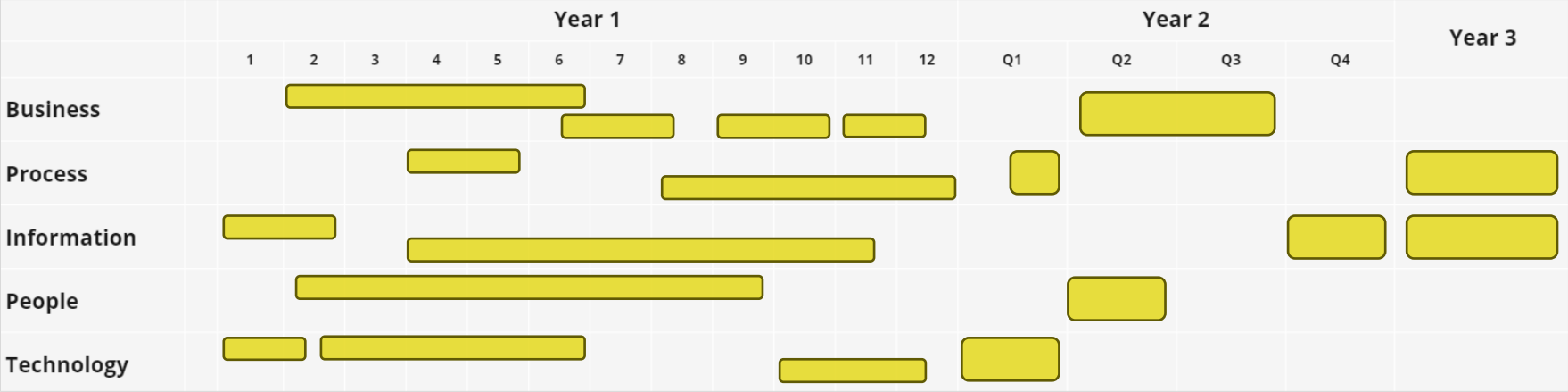


International

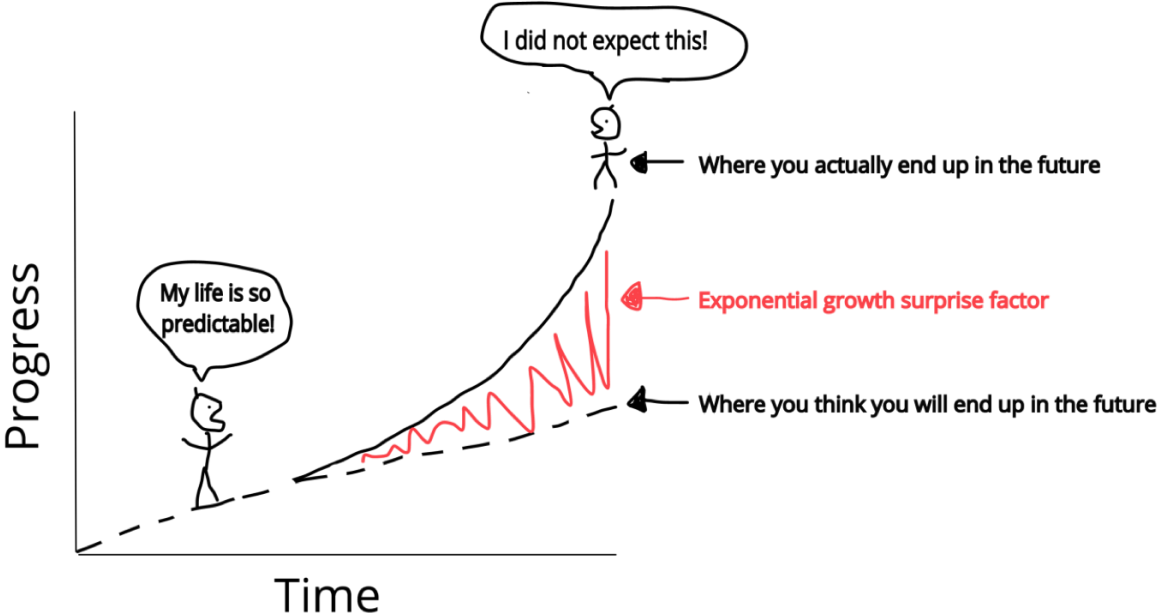


VISION

ROADMAP



DIGITALIZATION IS JOURNEY



Claudia Cozzitorto

OAA, CCMP, MRAIC, LEED AP, M.Arch, B.Arch Sci
Principal

claudia@bimdnagroup.ca

THANK YOU



digitalization is a journey
those who adapt, lead

BIM DNA
group