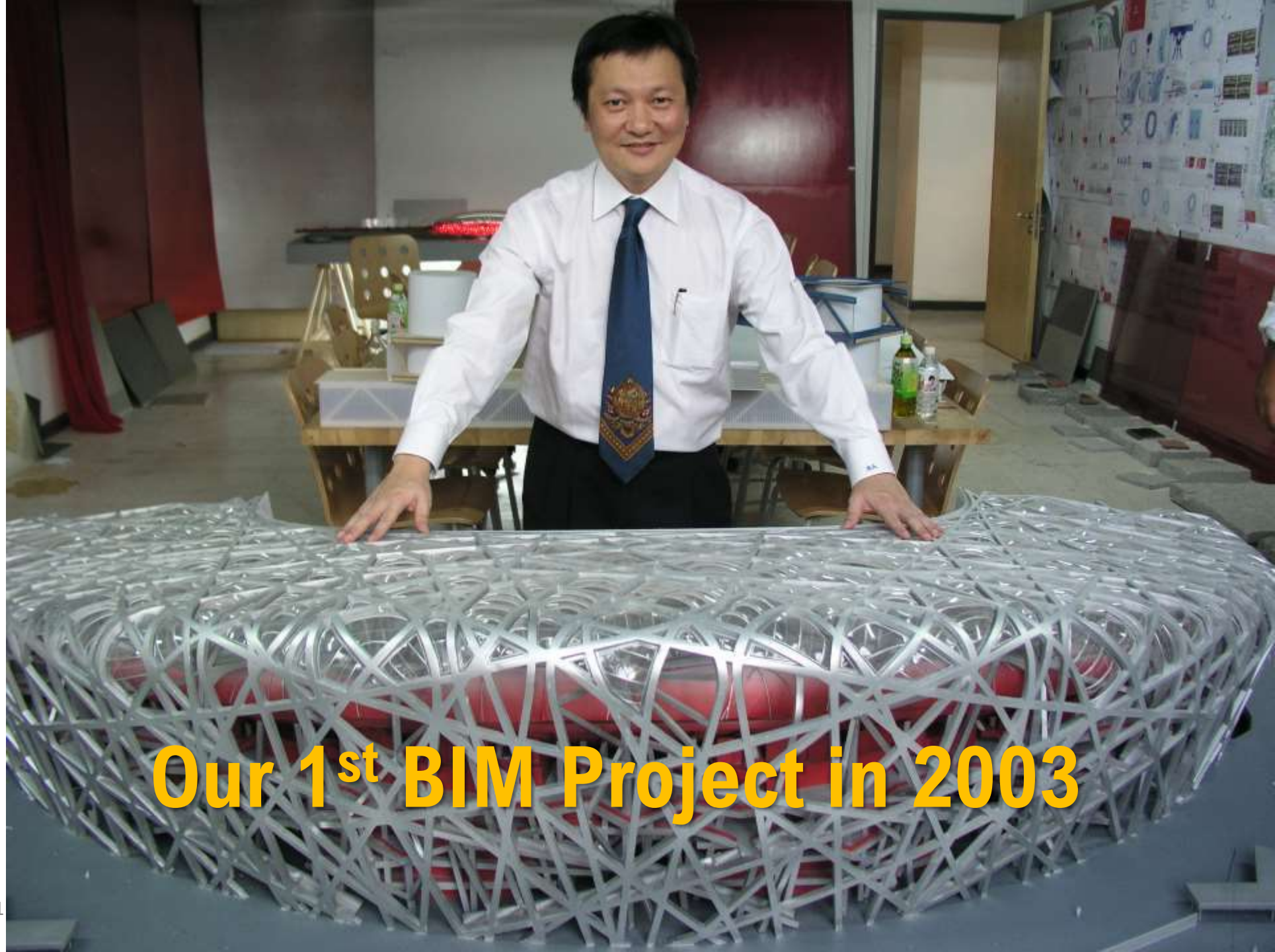


**Stephen AU / MTECH  
Engineering Co., Ltd.**

**9.12. 2021**

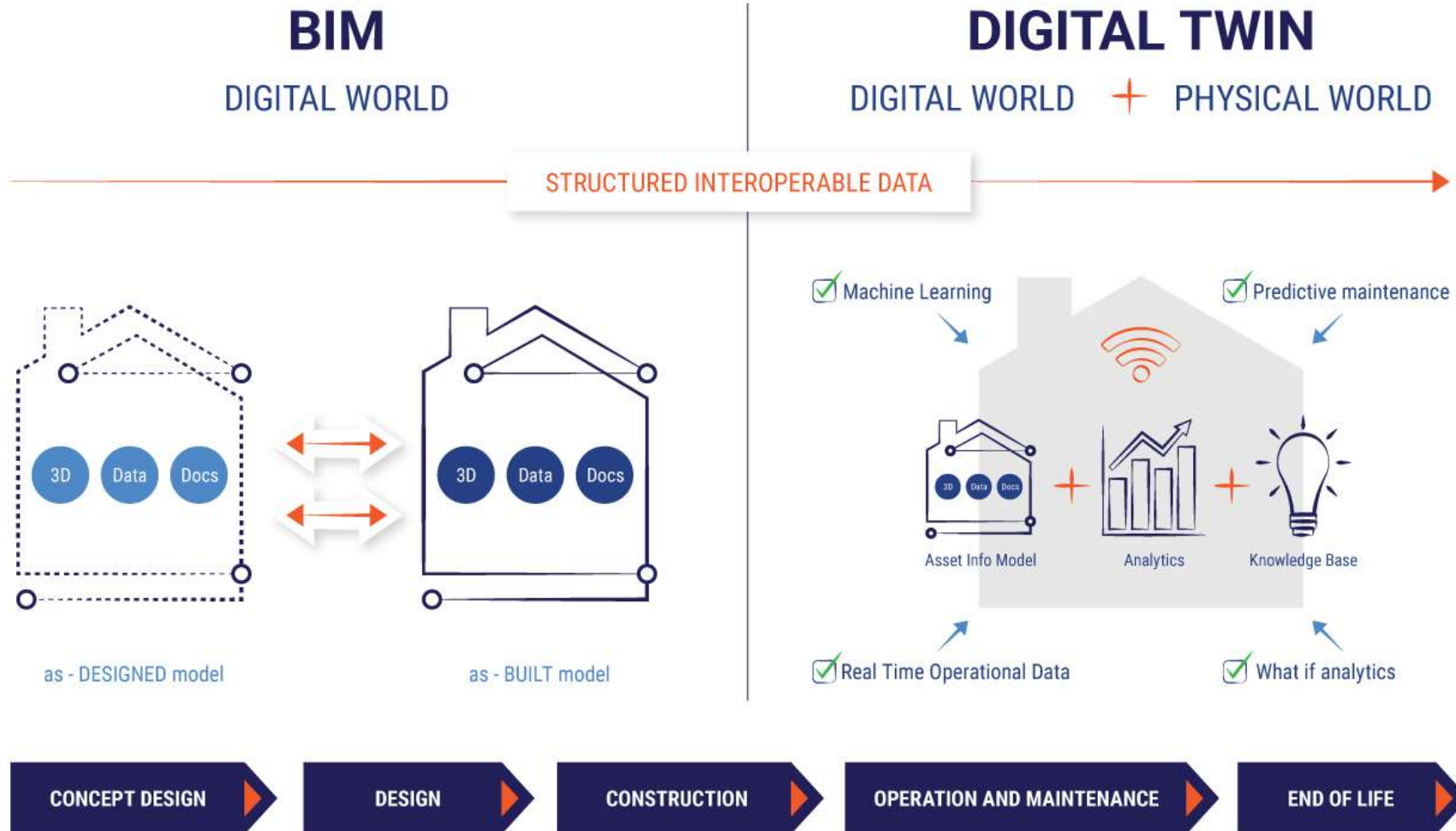
# Successful BIM Project Execution Management



**Our 1<sup>st</sup> BIM Project in 2003**



# Digital Construction



# Building Information Modeling

- Building Information Modeling (BIM) which has been defined as “a **digital representation** or visualization of physical and functional characteristics of a facility. In addition BIM serves as a **shared knowledge** resource for information about a facility forming a reliable basis for **decisions** during its life-cycle from inception onward”





# Digital Construction Portfolio

## IV. Digital Construction

10. Fabrication & Detailing (DFMA / MIC) 	11. Safety 	12. Detailed Excavation Design 	13. Site Preparation & Schedule Control 	14. Tender & cost control 	19. Inspection & Renovation 
--	----------------	------------------------------------	---	-------------------------------	---------------------------------

## III. Detailed Design

4. Detailed Design & Engineering a. Structure Steel b. Structure Concrete c. MEP 	5. Civil Engineering & Landscaping Design 
6. Simulation & Analysis 	7. Civil Engineering Advanced Structural Analysis 
8. Component Design & Simulation 	9. Systems Integration 

## V. Operation & Facility Management

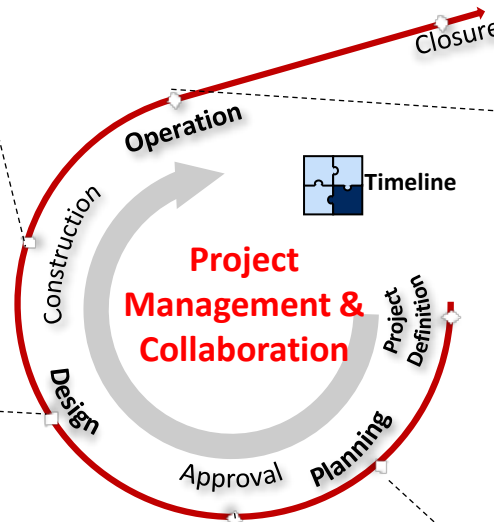
15. Asset Monitoring & Upgrade 	18. Operation & Maintenance Management 
16. Integrated Building Monitoring 	17. Space & Equipment Management 

## I. Conceptual Design

2. Conceptual Cost & Schedule 	1. Integrated Planning 
-----------------------------------	----------------------------

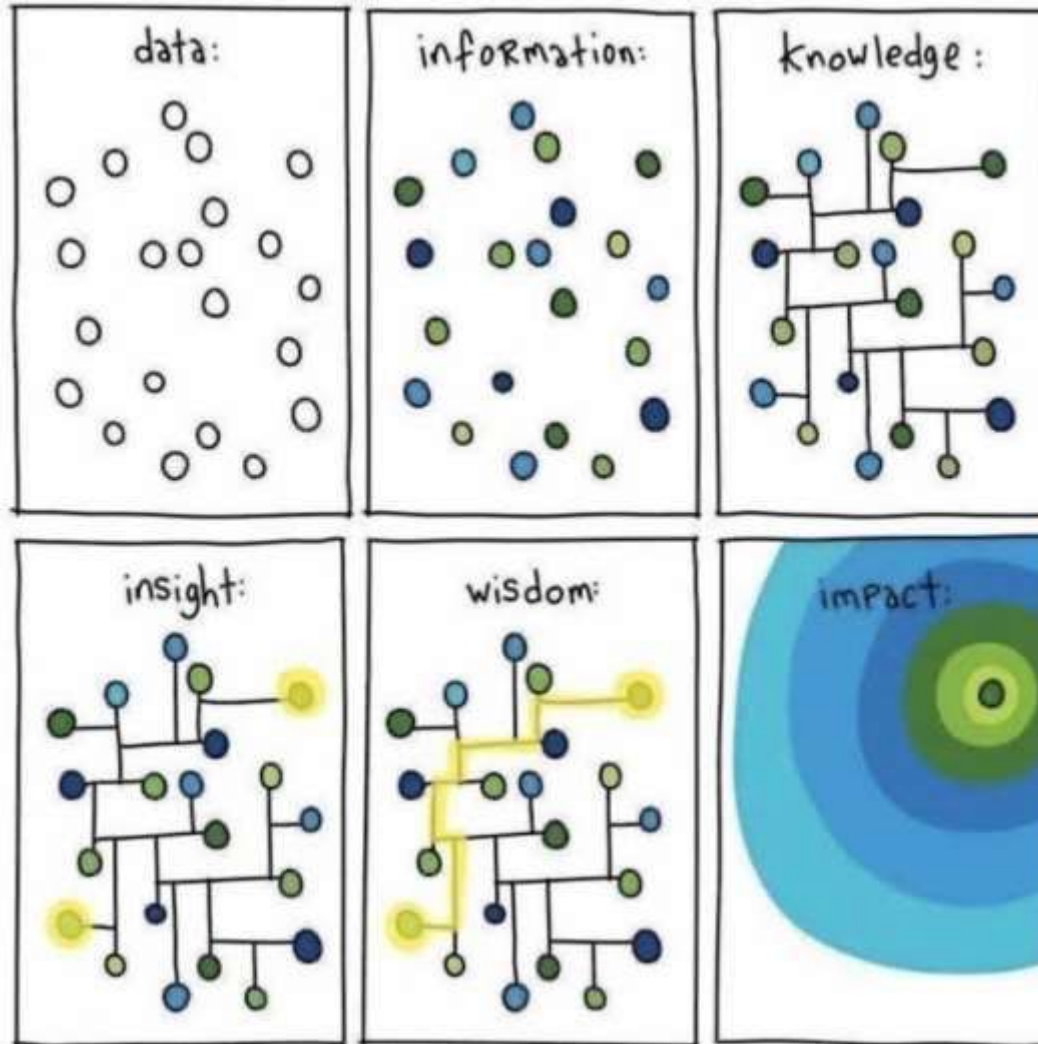
## II. General Arrangement

3. General Arrangement & Documentation 
--



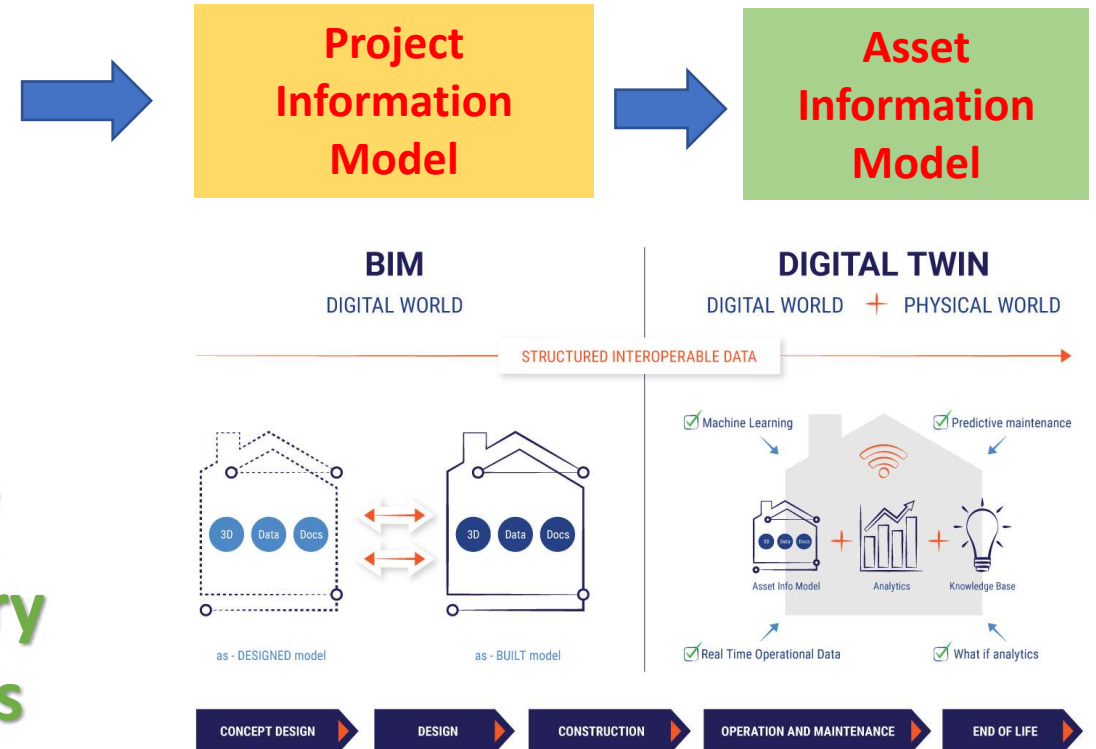


# The Challenges of BIM Project Execution



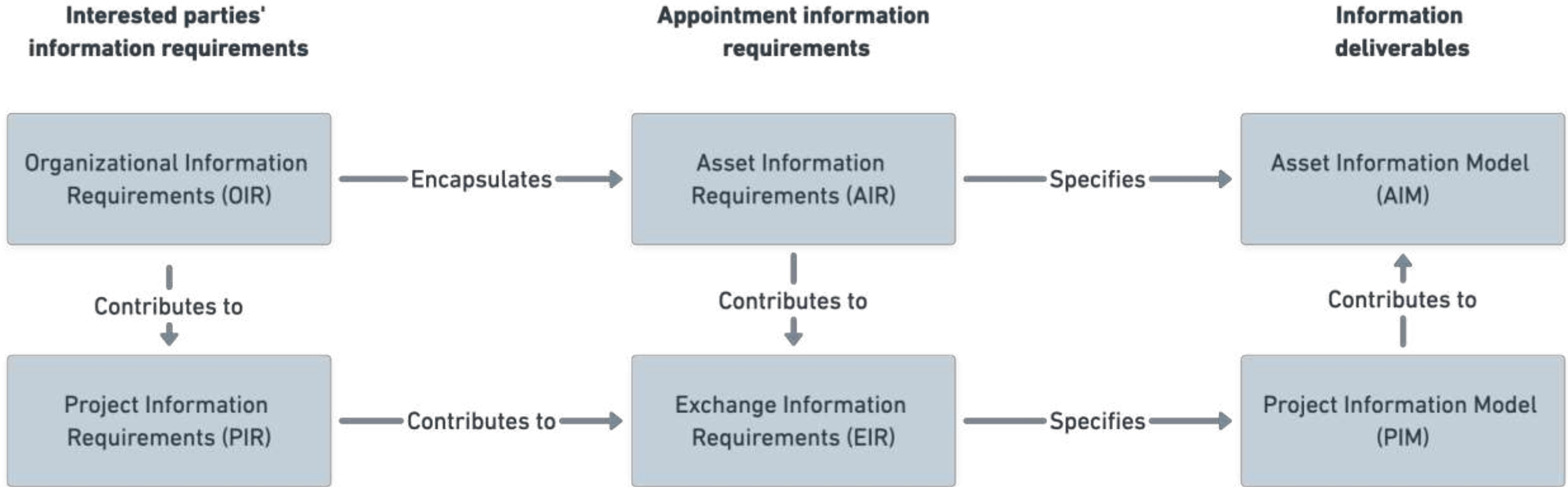


# BIM Project Management Goals



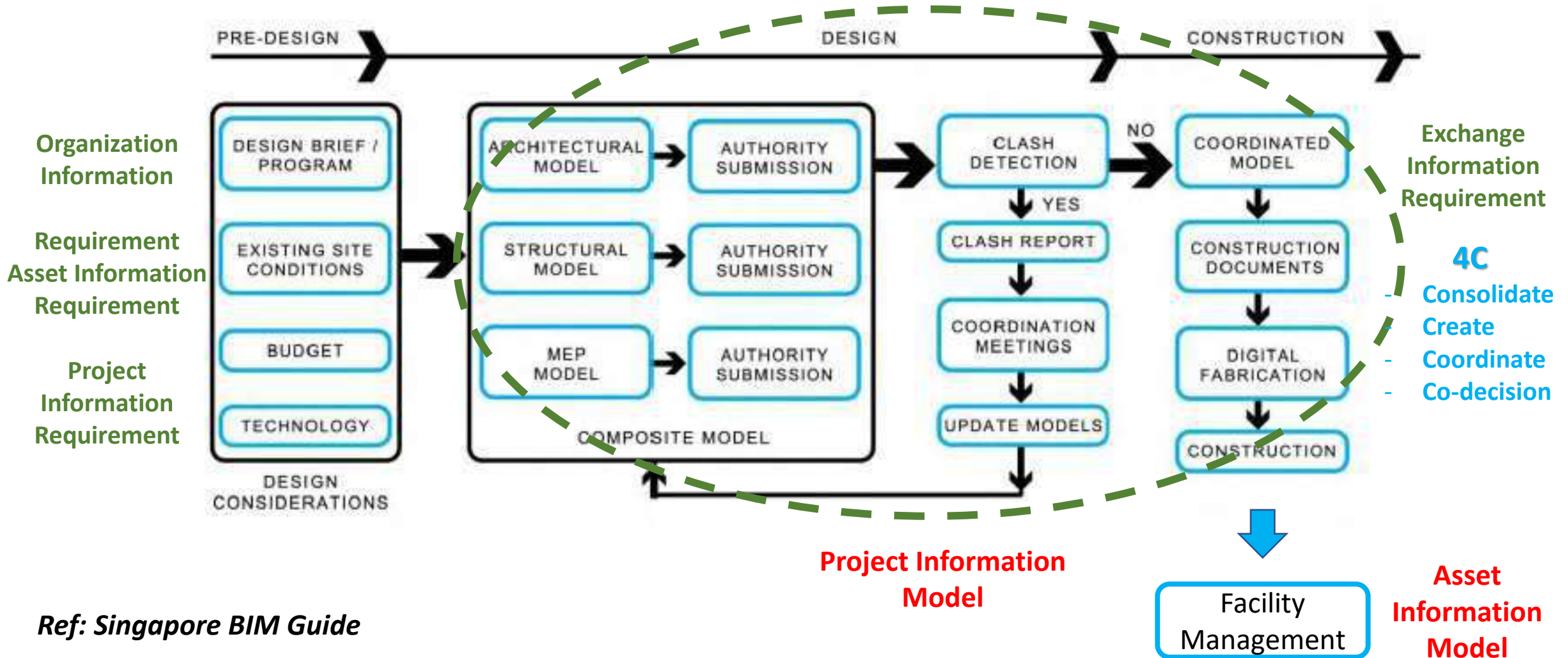


# BIM Project Information Management ISO19650





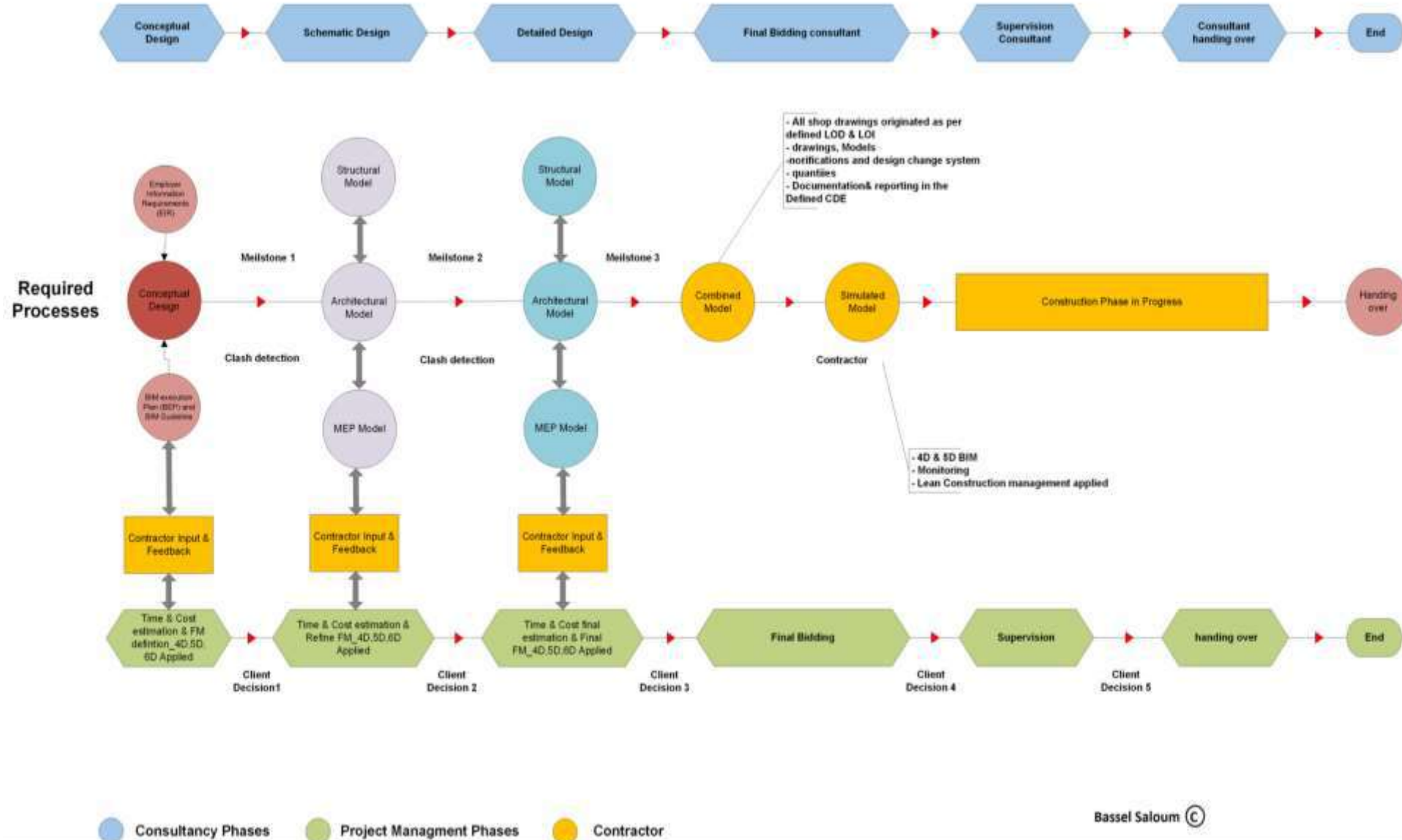
# BIM Workflow for Design-Build Project



Ref: Singapore BIM Guide



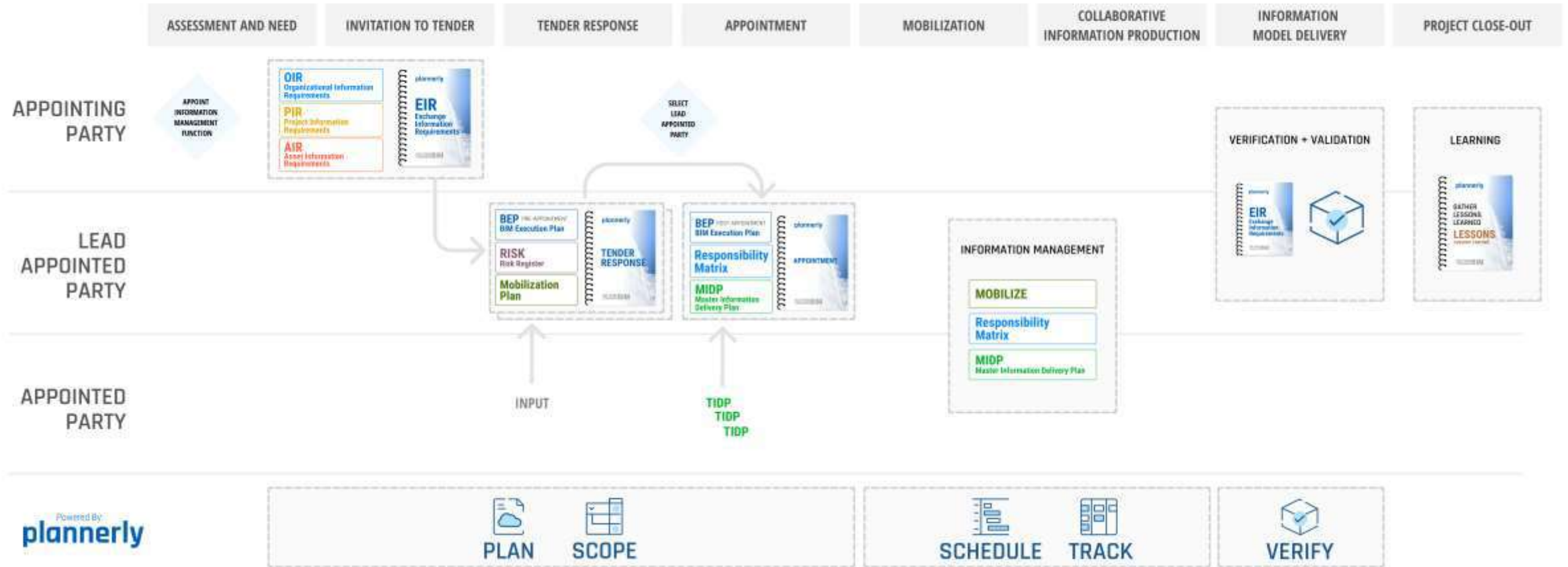
# Design-Bid-Build / IPD / EPC Approaches





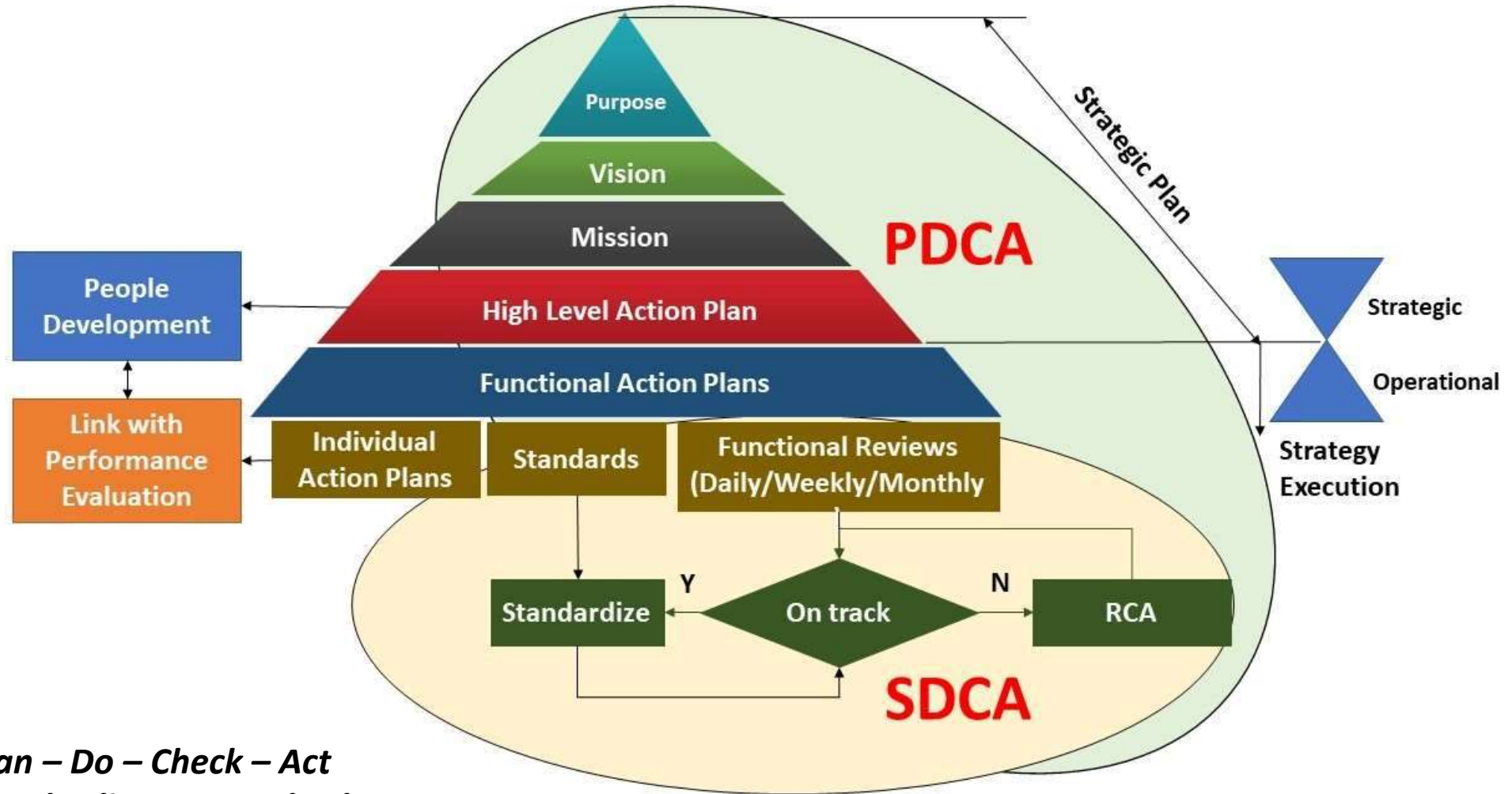
# ISO19650 by Plannerly

## ISO 19650 Workflow (using Plannerly templates)





# Quality Management by PDCA



*PDCA = Plan – Do – Check – Act*

*SDCA = Standardize – Do – Check – Act*

*RCA = Root Cause Analysis*



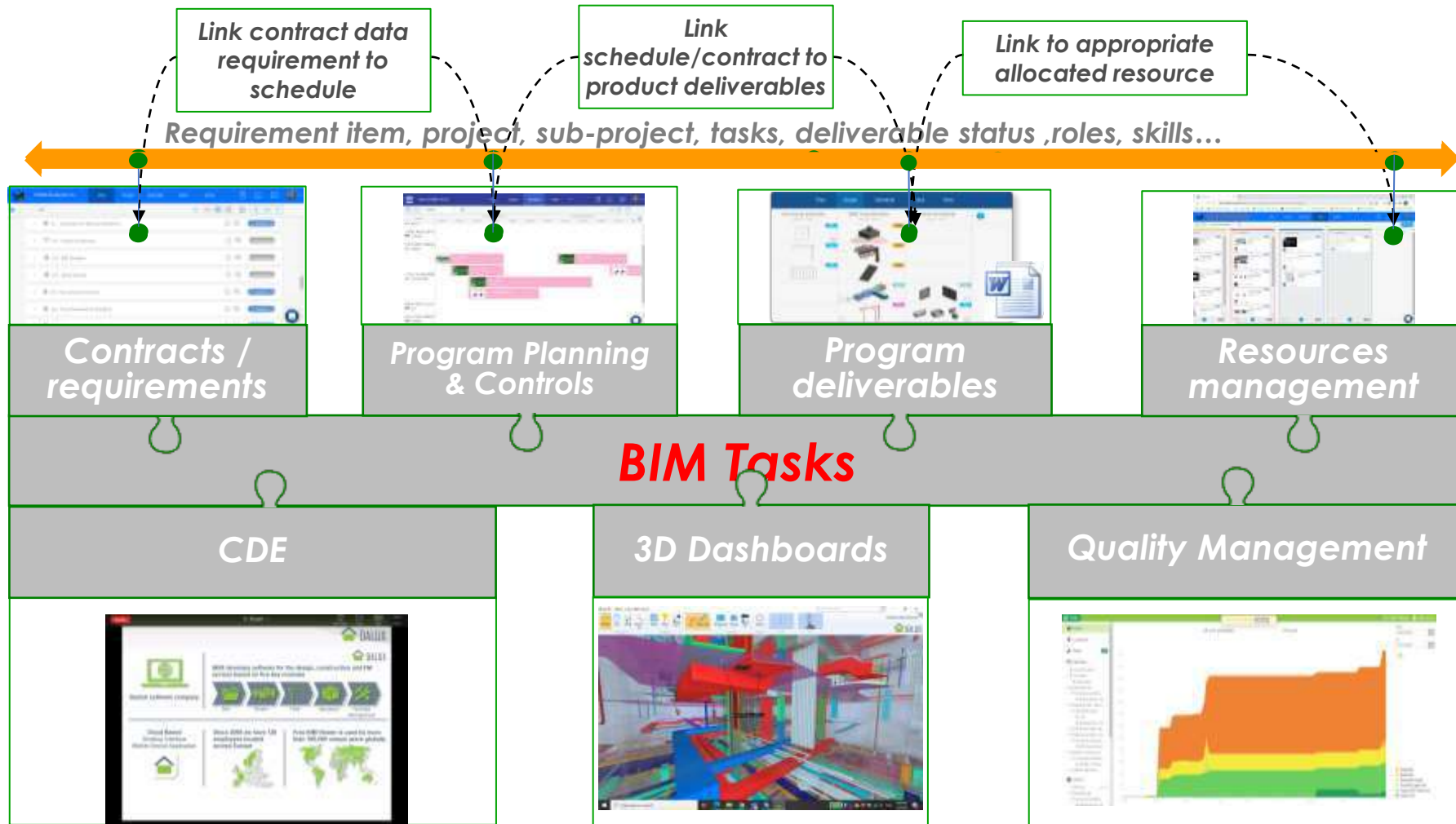
# Check / Act via BIM Model Viewer Dalux





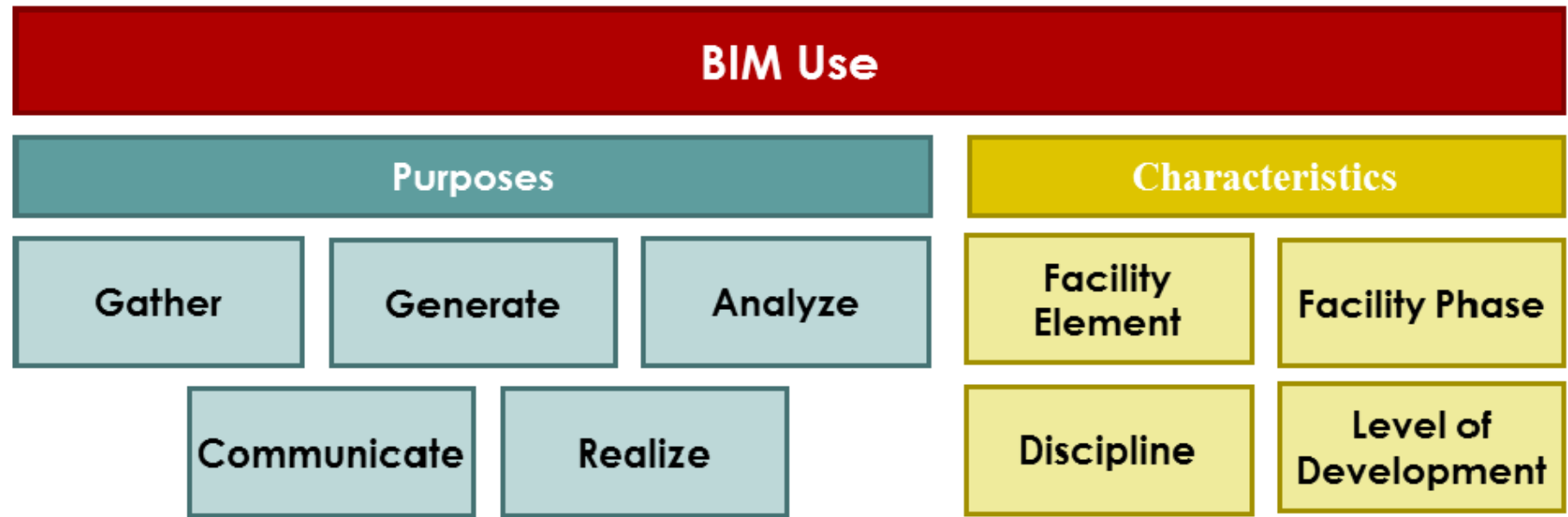
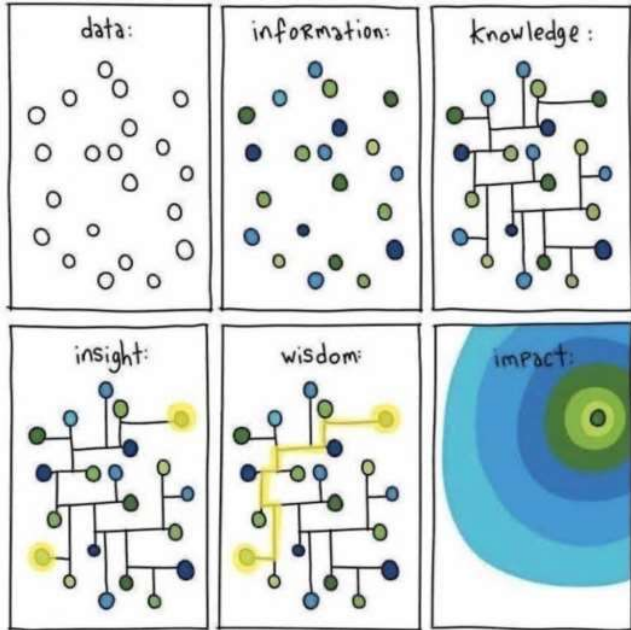
# BIM Project Management Architecture

Real time monitoring of program activities with cross-functional process integration





# BIM Use



Ref: Kreider, Ralph G. and Messner, John I. (2013). "The Uses of BIM: Classifying and Selecting BIM Uses". Version 0.9, September, The Pennsylvania State University, University Park, PA, USA. <http://bim.psu.edu>.



# The BIM Use Propose

BIM Use Purpose		BIM Use Objective	Synonyms
01	<b>Gather</b>	<b>to collect or organize facility information</b>	administer, collect, manage, acquire
	01 Capture	to represent or preserve the current status of the facility and facility elements	collect
	02 Quantify	to express or measure the amount of a facility element	quantity takeoff
	03 Monitor	to collect information regarding the performance of facility elements and systems	observe, measure
	04 Qualify	to characterize or identify facility elements' status	follow, track, identify
02	<b>Generate</b>	<b>to create or author information about the facility</b>	create, author, model
	01 Prescribe	to determine the need for and select specific facility elements	program, specify
	02 Arrange	to determine location and placement of facility elements	configure, lay out, locate, place
	03 Size	to determine the magnitude and scale of facility elements	scale, engineer
03	<b>Analyze</b>	<b>to examine elements of the facility to gain a better understanding of it</b>	examine, evaluate
	01 Coordinate	to ensure the efficiency and harmony of the relationship of facility elements	detect, avoid
	02 Forecast	to predict the future performance of the facility and facility elements	simulate, predict
	03 Validate	to check or prove accuracy of facility information and that is logical and reasonable	check, confirm
04	<b>Communicate</b>	<b>to present information about a facility in a method in which it can be shared or exchanged</b>	exchange
	01 Visualize	to form a realistic representation of a facility or facility elements	review
	02 Transform	to modify information and translate it to be received by another process	translate
	03 Draw	to make a symbolic representation of the facility and facility elements	draft, annotate, detail
	04 Document	to create a record of facility information including the information necessary to precisely specify facility elements	specify, submit, schedule, report.
05	<b>Realize</b>	<b>to make or control a physical element using facility information</b>	implement, perform, execute,
	01 Fabricate	to use facility information to manufacture the elements of a facility	manufacture
	02 Assemble	to use facility information to bring together the separate elements of a facility	prefabricate
	03 Control	to use facility information to physically manipulate the operation of executing equipment	manipulate
	04 Regulate	to use facility information to inform the operation of a facility element	direct



# The BIM Use Characteristics

Characteristics	Description
Facility Element	The system of the facility on which the BIM Use will be implemented.
Facility Phase	The point in the facility's lifecycle at which the BIM Use will be implemented.
Discipline	The party by whom the BIM Use will be implemented.
Level of Development	The degree of granularity to which the BIM Use will be implemented.

*Ref: Kreider, Ralph G. and Messner, John I. (2013). "The Uses of BIM: Classifying and Selecting BIM Uses". Version 0.9, September, The Pennsylvania State University, University Park, PA, USA. <http://bim.psu.edu>.*



# The Execution of ISO19650 by Plannerly



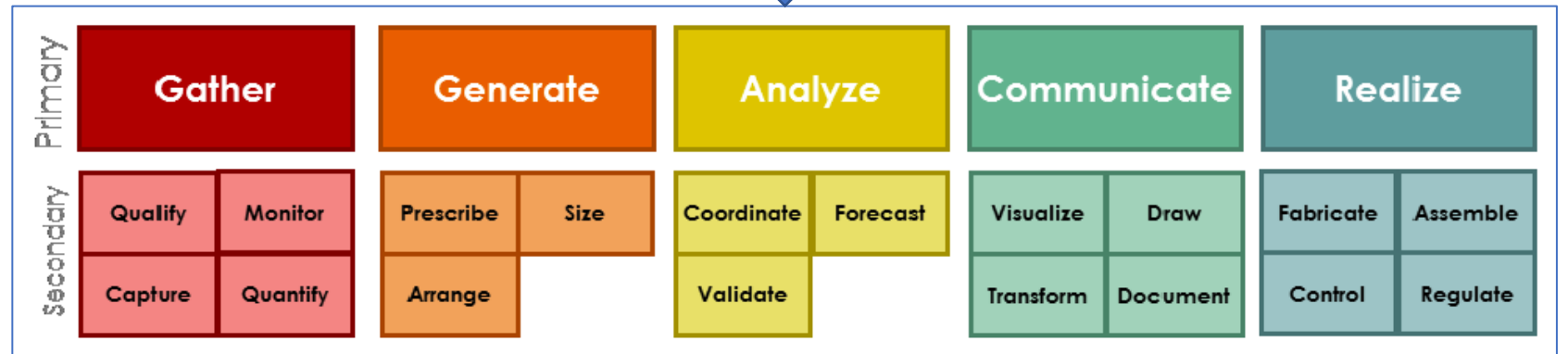
PLAN

SCOPE

TRACK

SCHEDULE

VERIFY



Ref: Kreider, Ralph G. and Messner, John I. (2013). "The Uses of BIM: Classifying and Selecting BIM Uses". Version 0.9, September, The Pennsylvania State University, University Park, PA, USA. <http://bim.psu.edu>.



# plannerly

The BIM Management Platform



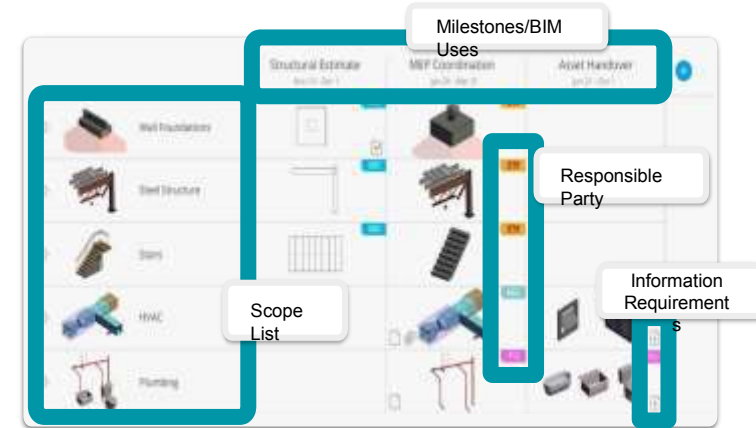
# Online Dynamic BXP



Project Information



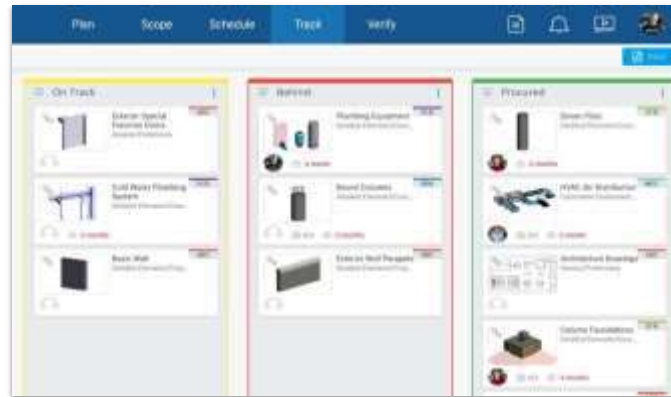
BIM Execution Plan



Scope of Elements & Works



Working Schedule



Track

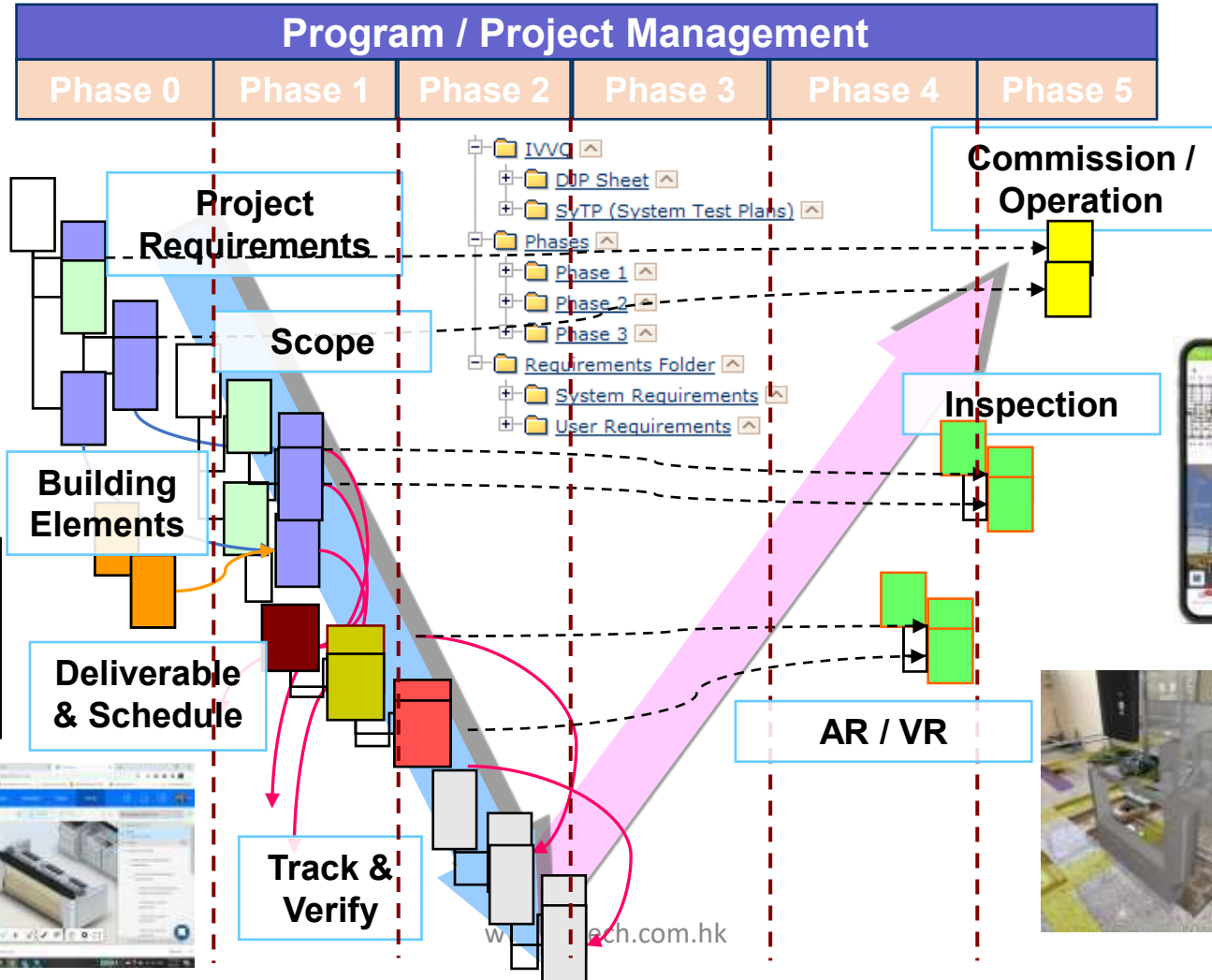
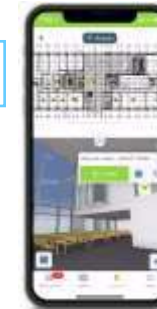


Validate the deliverables



# Adoption of System Engineering

*How can project team manage activities, share and collaborate of building artifacts during development?*

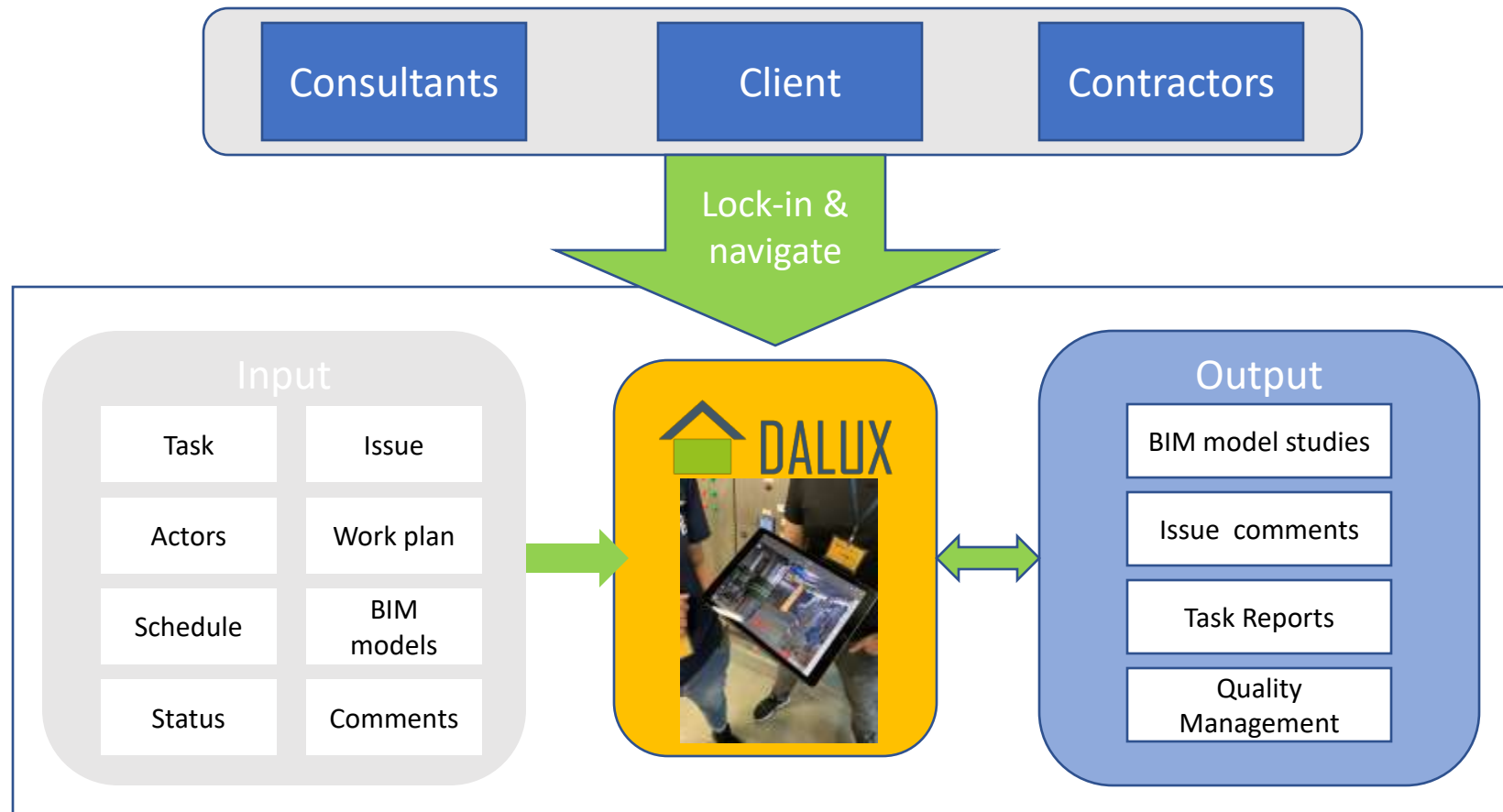


# Dalux – BIM Orientated ALM



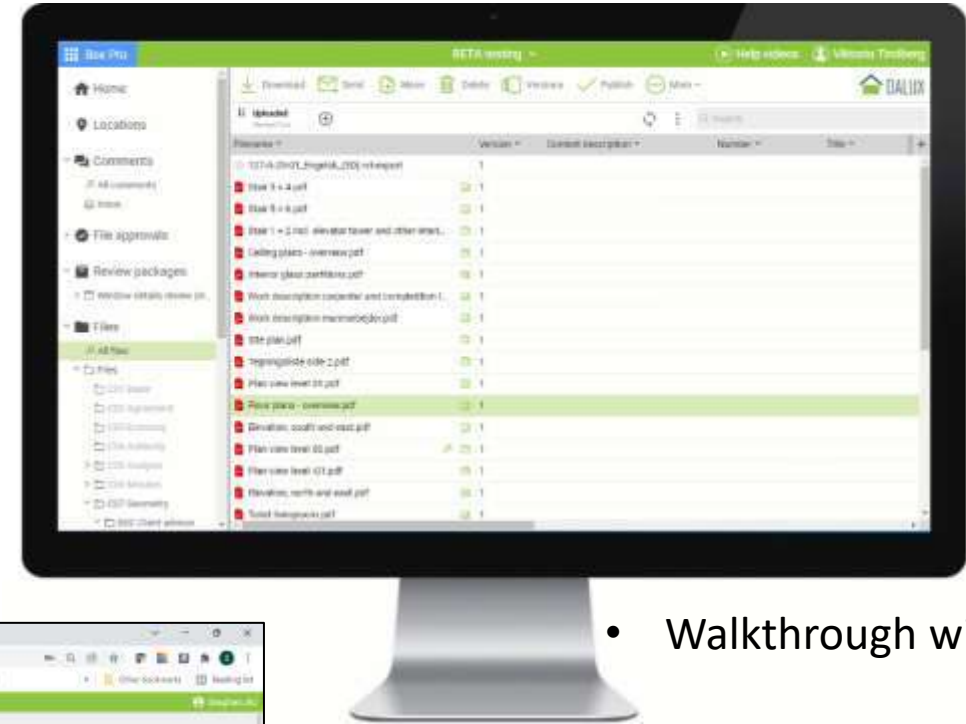


# Construction Task Management

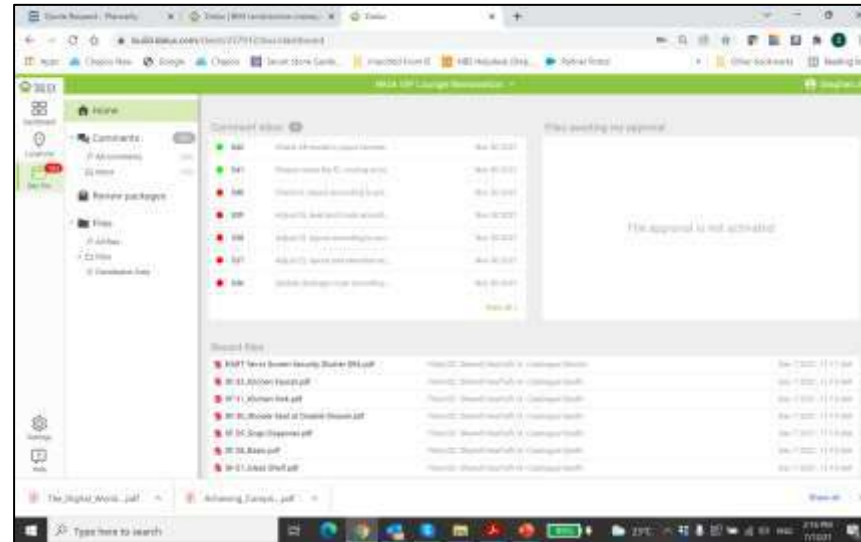




# Collaboration with Online Model Viewer



- 3D Box Cut with 2D drawing underlay



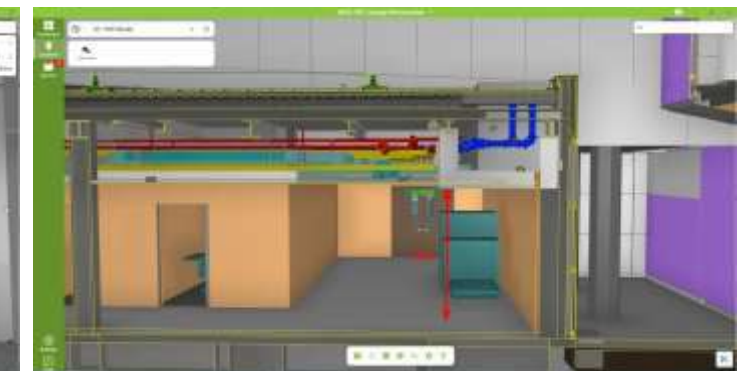
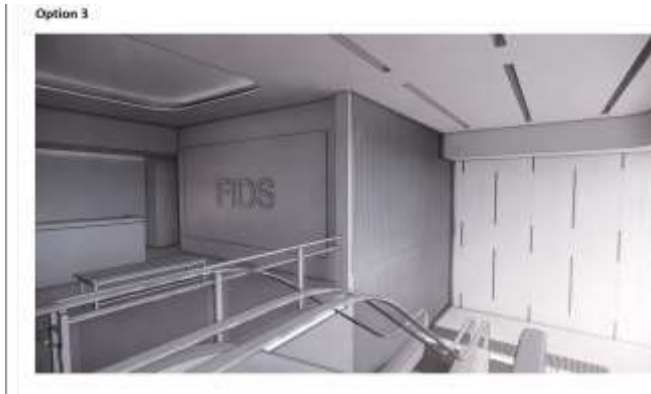
- Walkthrough with 2D & 3D



- Dalux Box Pro - CDE



# The X-Ray Diagnostics





Calendar 2:21 PM Fri 10 Jul

Leave

Zoom

Unmute Start Video Share Content Participants More

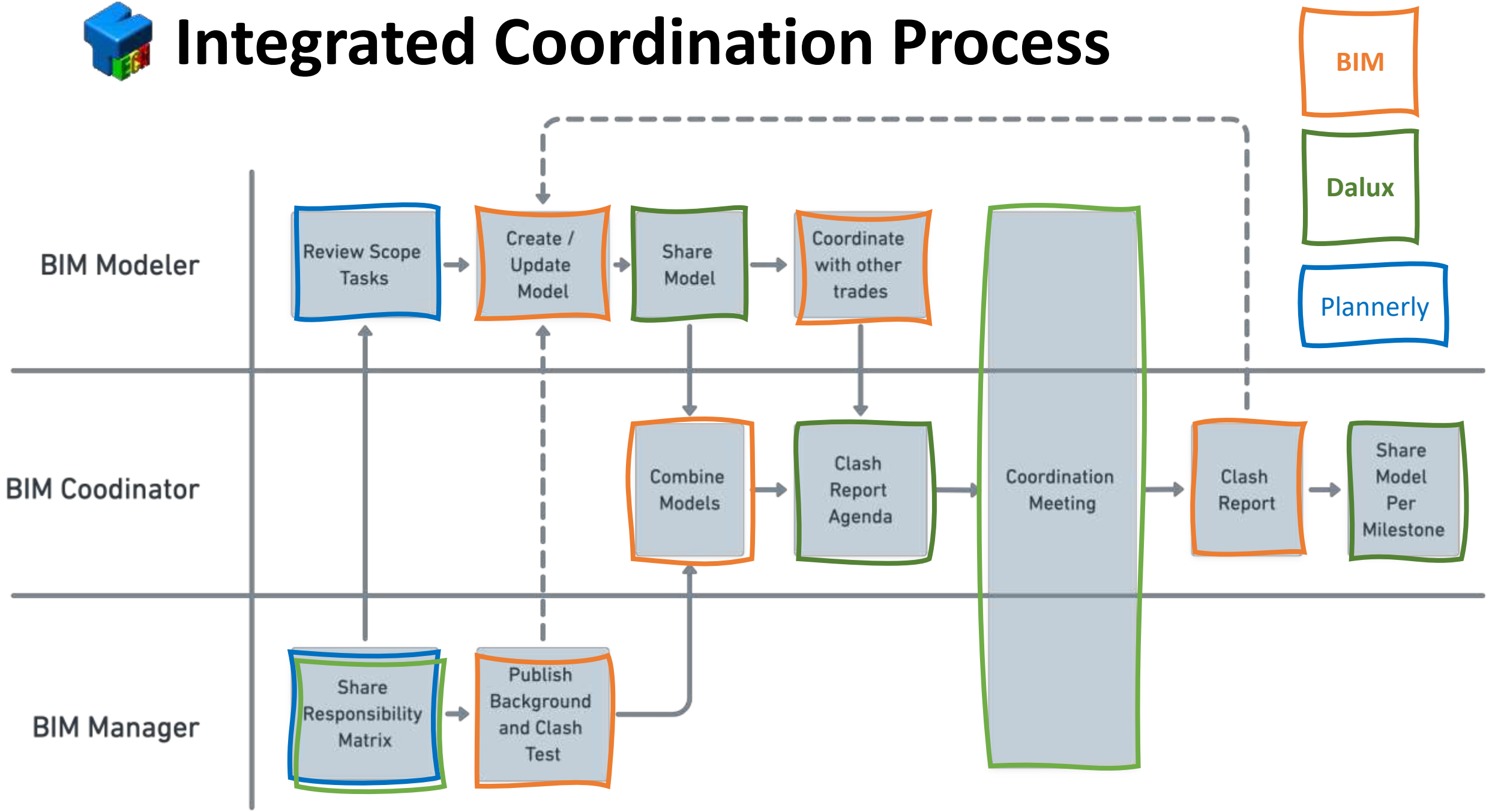
The screenshot shows a web browser window with the following details:

- Address bar: <https://beta.dalux.com/...>
- Page Title: BIM Viewer
- Page URL: KMHL
- Page Content: A 3D architectural model of a tall building is centered on a light blue background.
- Browser Interface: Includes navigation buttons (back, forward, home), a search bar, and a taskbar at the bottom with various application icons.





# Integrated Coordination Process





# The Return On Investment

- **Single Version of Truth**
- **Effective Coordination & Collaboration**
- **Right At The First Time**
- **Effective and Efficiency**
- **Customer Excellence**



# Framework for Getting Simple

**Complete on Clarity**

- Change how time is used
- **3D** for ALL
- Engaging everyone

**Smart Design Work**

- See What You Mean
- Build What We Agree

**Lead Through Navigation**

- Structure the project operation according to the questions people ask – Working Dashboard





**QUESTION & ANSWER**  
[stephenua@mtech.com.hk](mailto:stephenua@mtech.com.hk)

[www.mtech.com.hk](http://www.mtech.com.hk)

