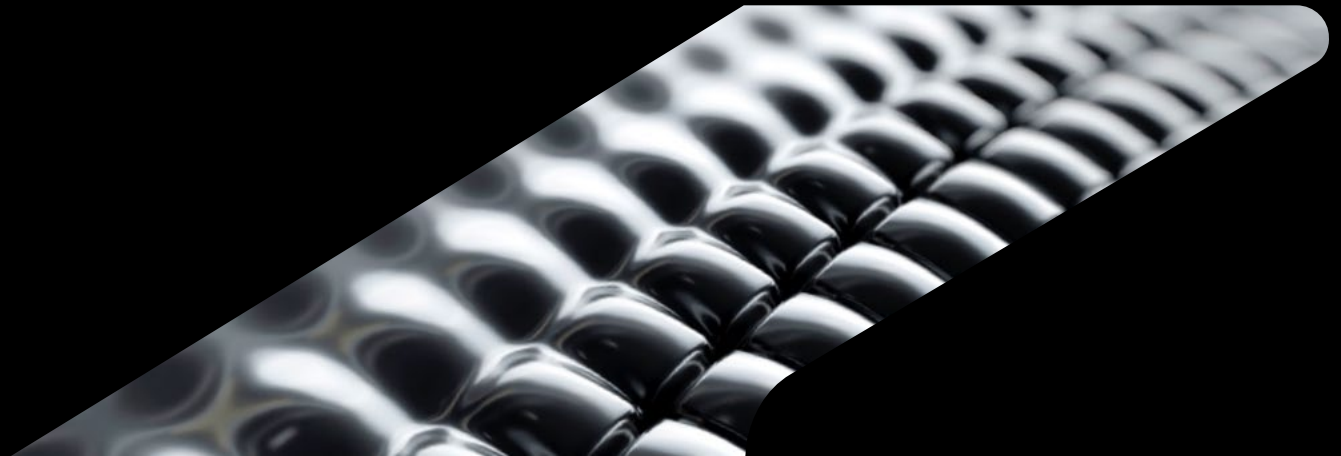
AUTODESK UNIVERSITY

Build a Digital Value Chain with Revit+BiM360+SpaceIQ+Forge & its results

CS502392



Takuma Ogawa
Construction DX Dept.
Daiwa House Industry Co.,Ltd.

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Construction DX Dept.
Daiwa House Industry Co.,Ltd.

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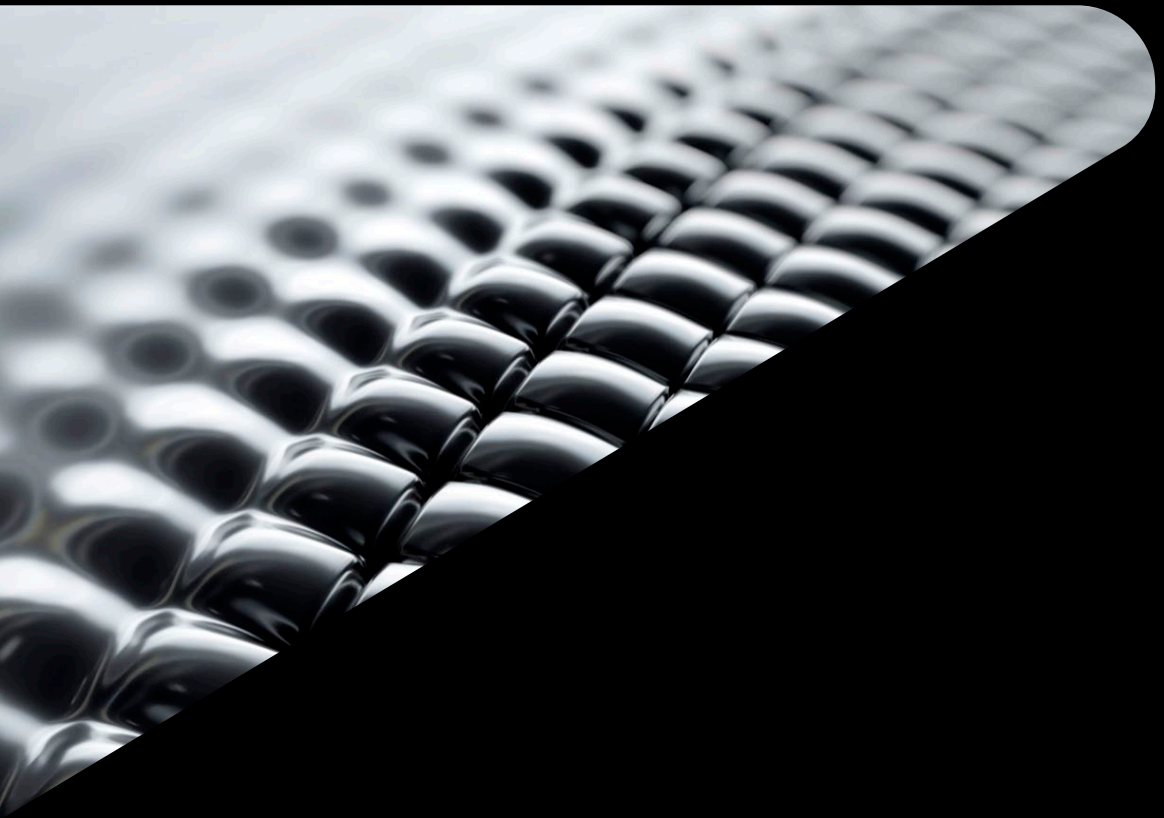


Introduction

About Speakers

- Takuma Ogawa
  - Joined Daiwa House in 2019
  - Specialized in BIM, establishing CDE
  - Hobby: Cooking

- Tomohiro Mikami
  - Joined Daiwa House in 2019
  - Specialized in classification, Information system
  - Hobby: Driving, Traveling

About Daiwa House

Origin; Prefabrication

NAS

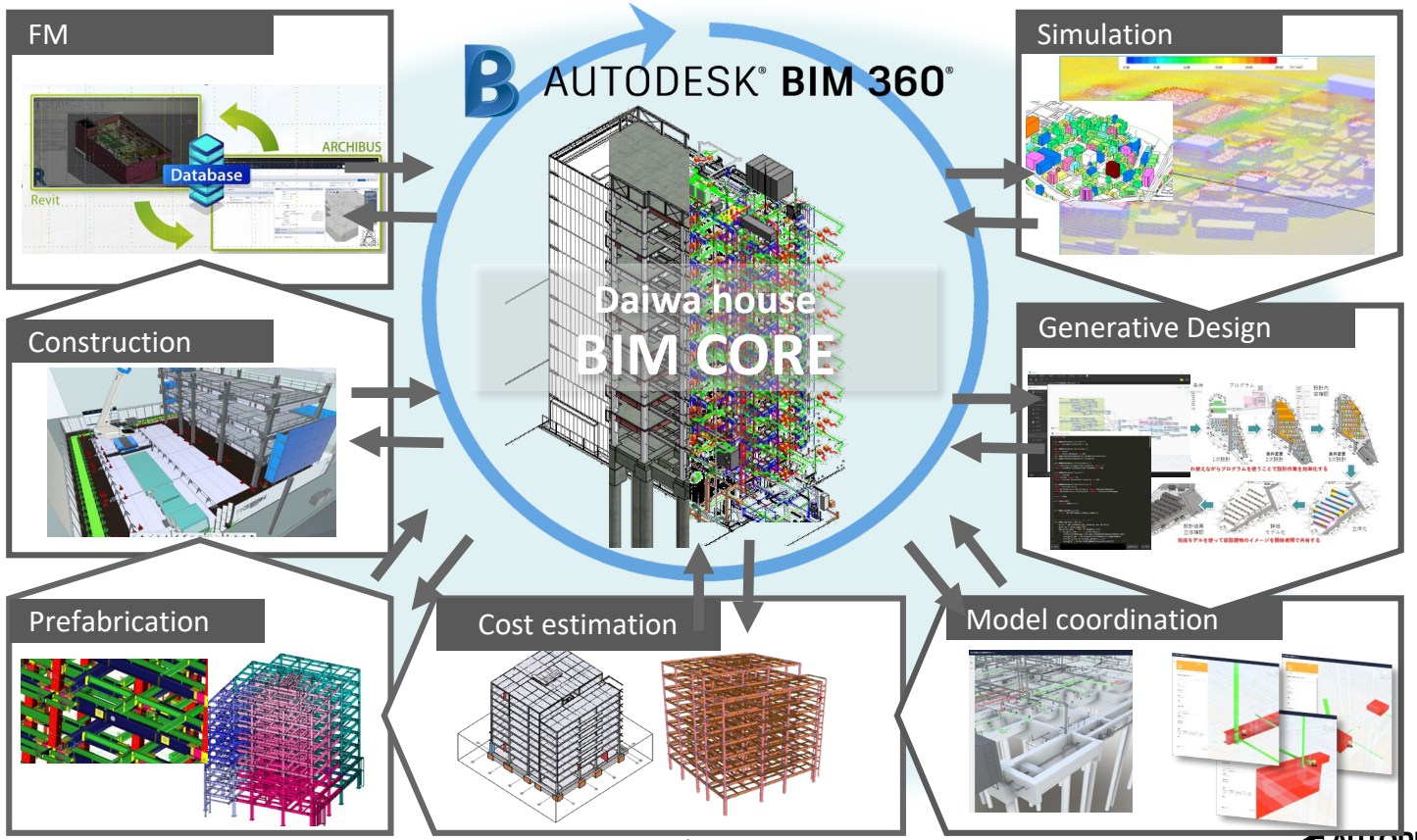
+

Products

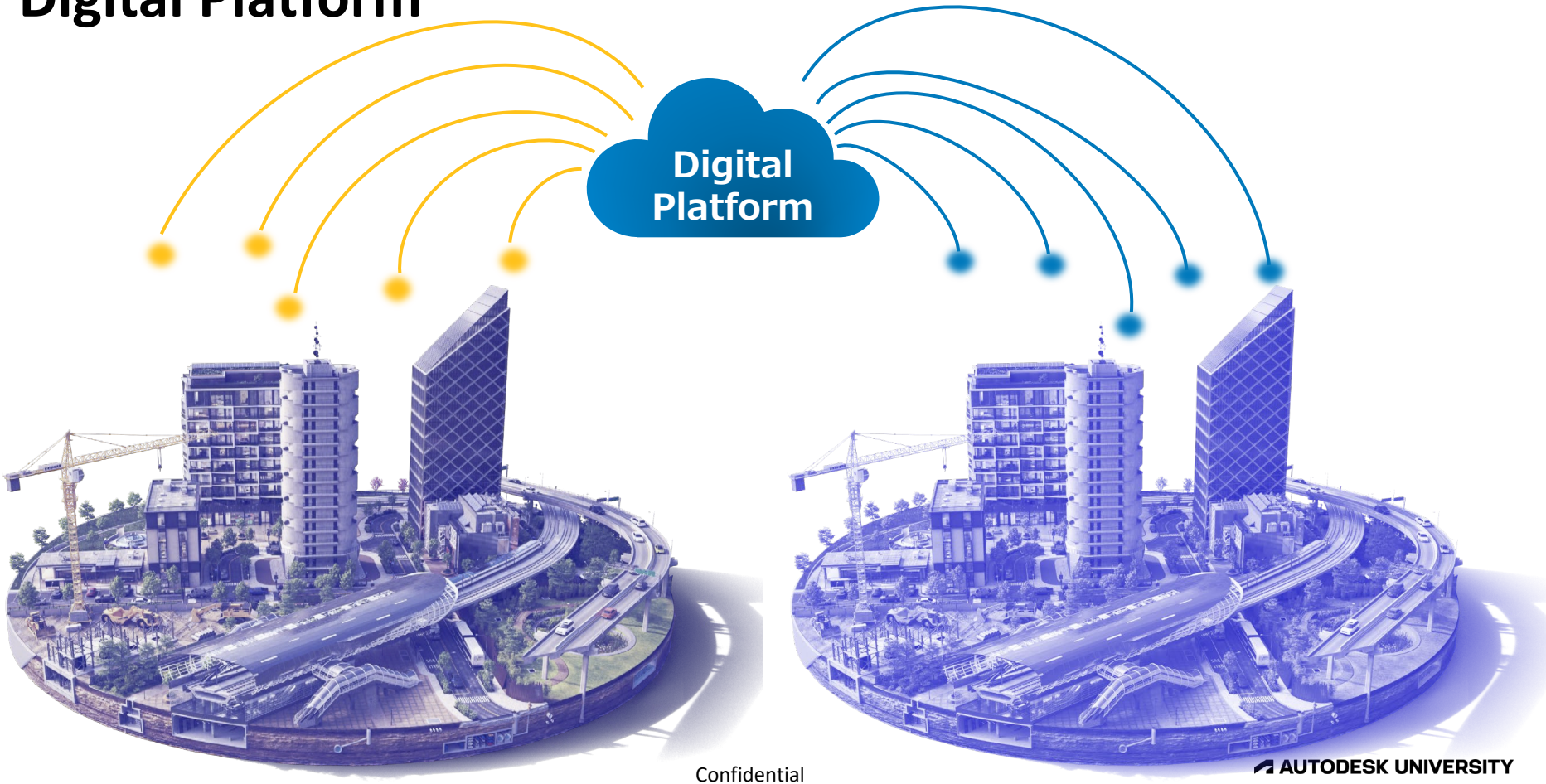
Information

What is Digital Value chain for Construction

Concept of Digital Value chain for Construction



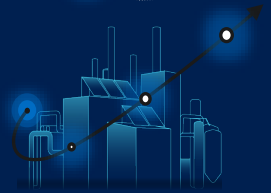
Digital Platform



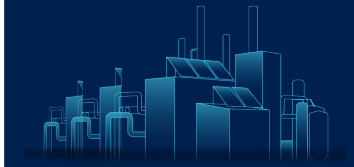
Concept of Digital Value chain for Construction

Physical Environment

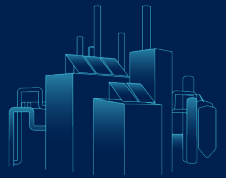
Autonomous control by AI



Predicting & preventing disasters

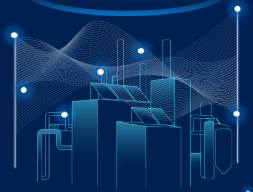


Preserve/track back history



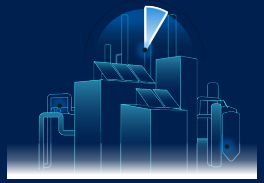
Synchronize real & virtual, grasp situation by data

Bidirectional interactions between real and virtual



Simulate in Virtual space

Analyze



Monitor events

Digital Environment

AUTODESK

iffice
+
SpaceIQ

Our attempt
FM-BIM

Evaluate Digital-Twin by Owners viewpoint

Koto-kurie

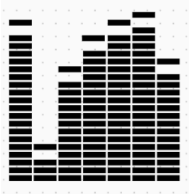
About ARCHIBUS

Utilize BIM in O/M phase

Case-1

Collaborate with
Central Supervisory
Control System

Case-2



Visualize
Space usage

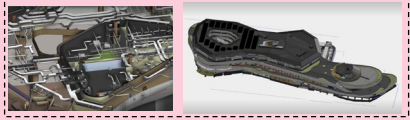
①Archibus Display Layer

Dashboard

MS Azure Cloud

Asset management

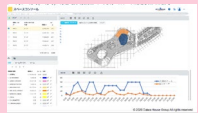
BIM Display



Building management

LCC management

Facility usage management



②Data Storage Layer

BIM360

Archibus DB

Asset registers

Facility management work

Unexpected repair work

Inspection & Repair schedule management

Mobile app features

Repair cost estimate

Space management

Mobile app features

③Data Acquisition Layer

Space info

Equipment info

Inspection & Repair info

Cost & Durable period

Equipment alart

The number of people

Energy utilization

④Actual Building Layer

Building on site

Inspection records

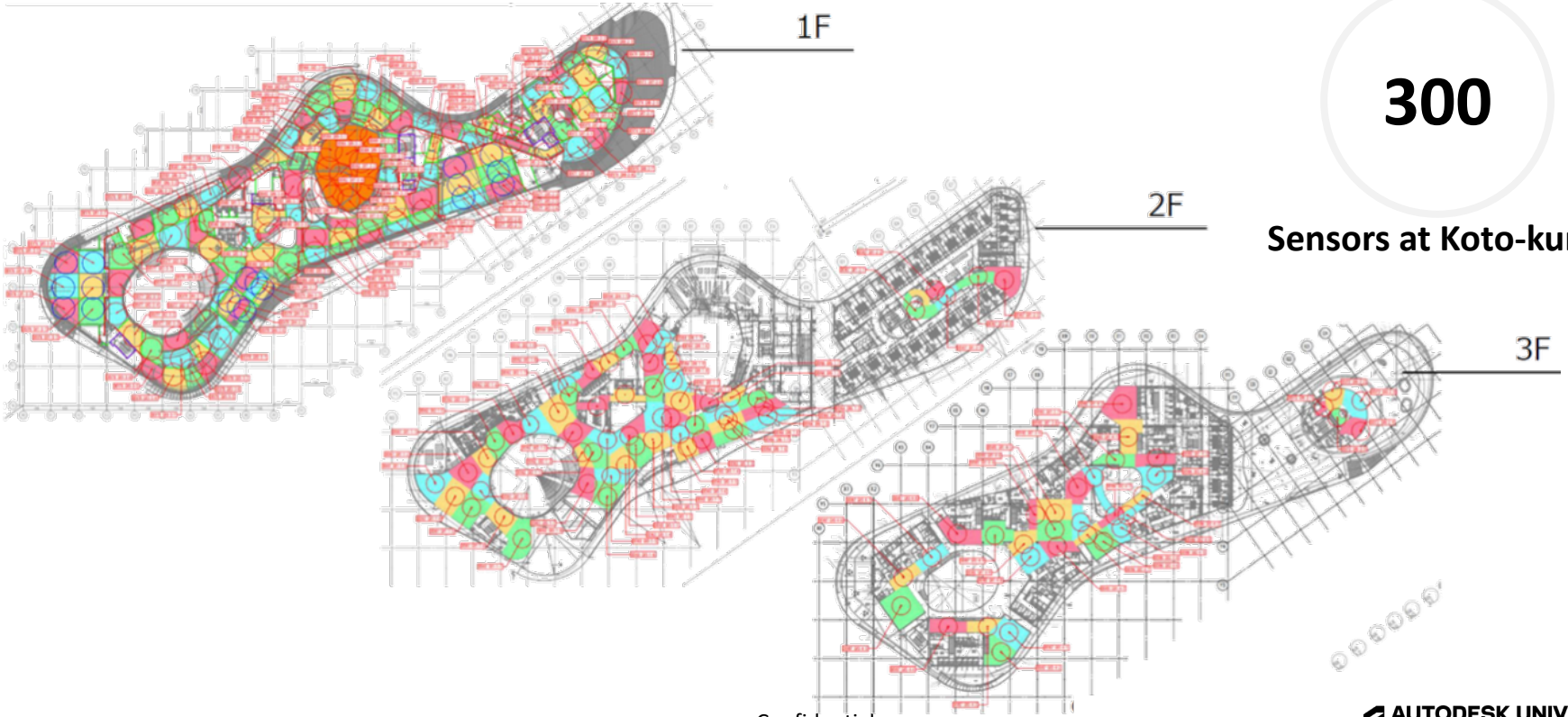
Long-term Repair plans

Central Supervisory Control System

Gateway

BEMS

Collaborate with Central Supervisory Control System



300

Sensors at Koto-kurie

Collaborate with Central Supervisory Control System

Defect & Inform

Take actions

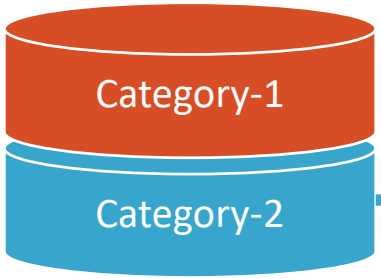
Record to DB

Collaborate with Central Supervisory Control System

Problems reported

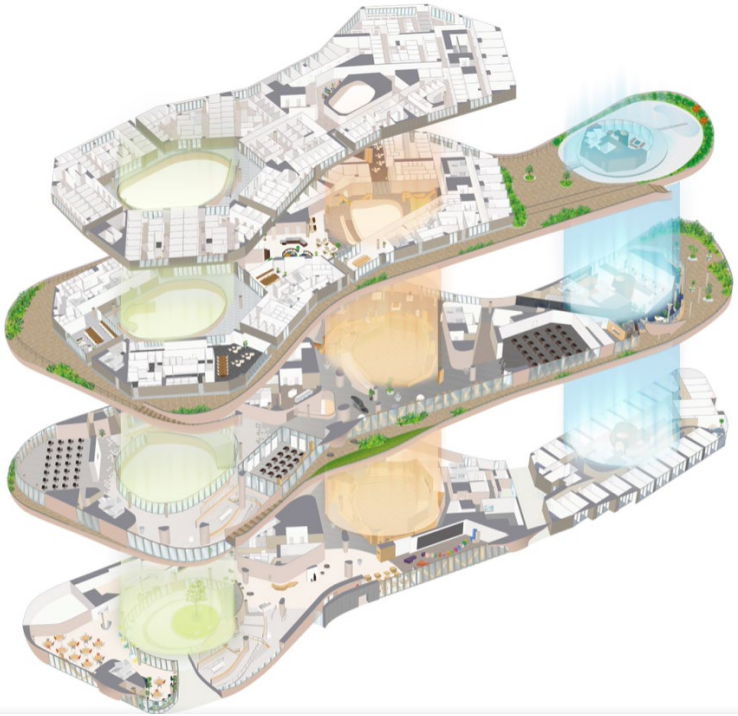
Category-1
Problem in individual piece

Category-2
Potential problem in design/install

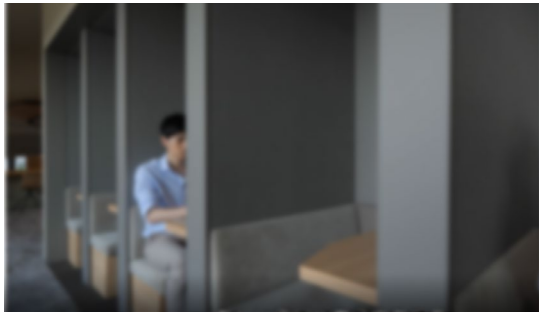


Check & Take actions!

Visualization of Space usage

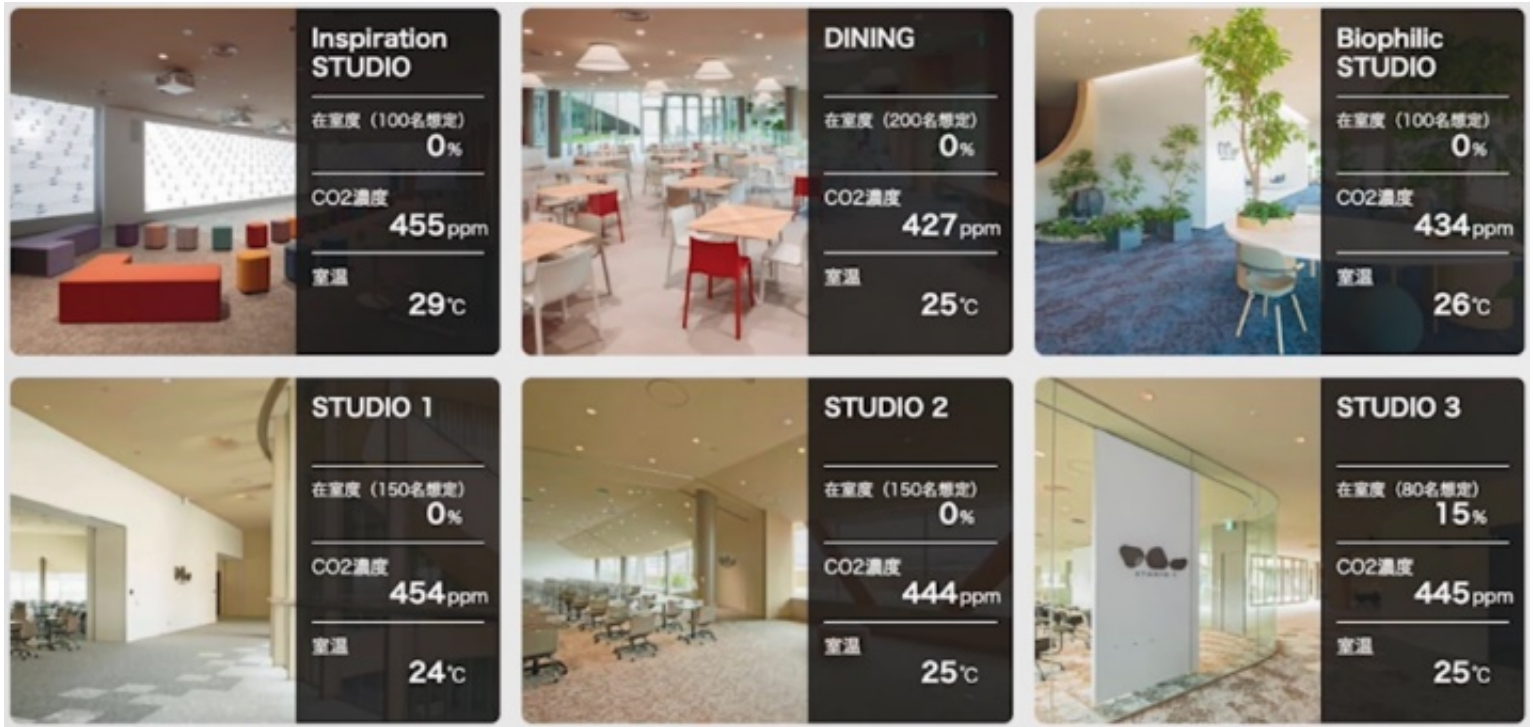


Highly utilized



Not much utilized…

Visualization of Space usage



Summary of Koto-kurie project

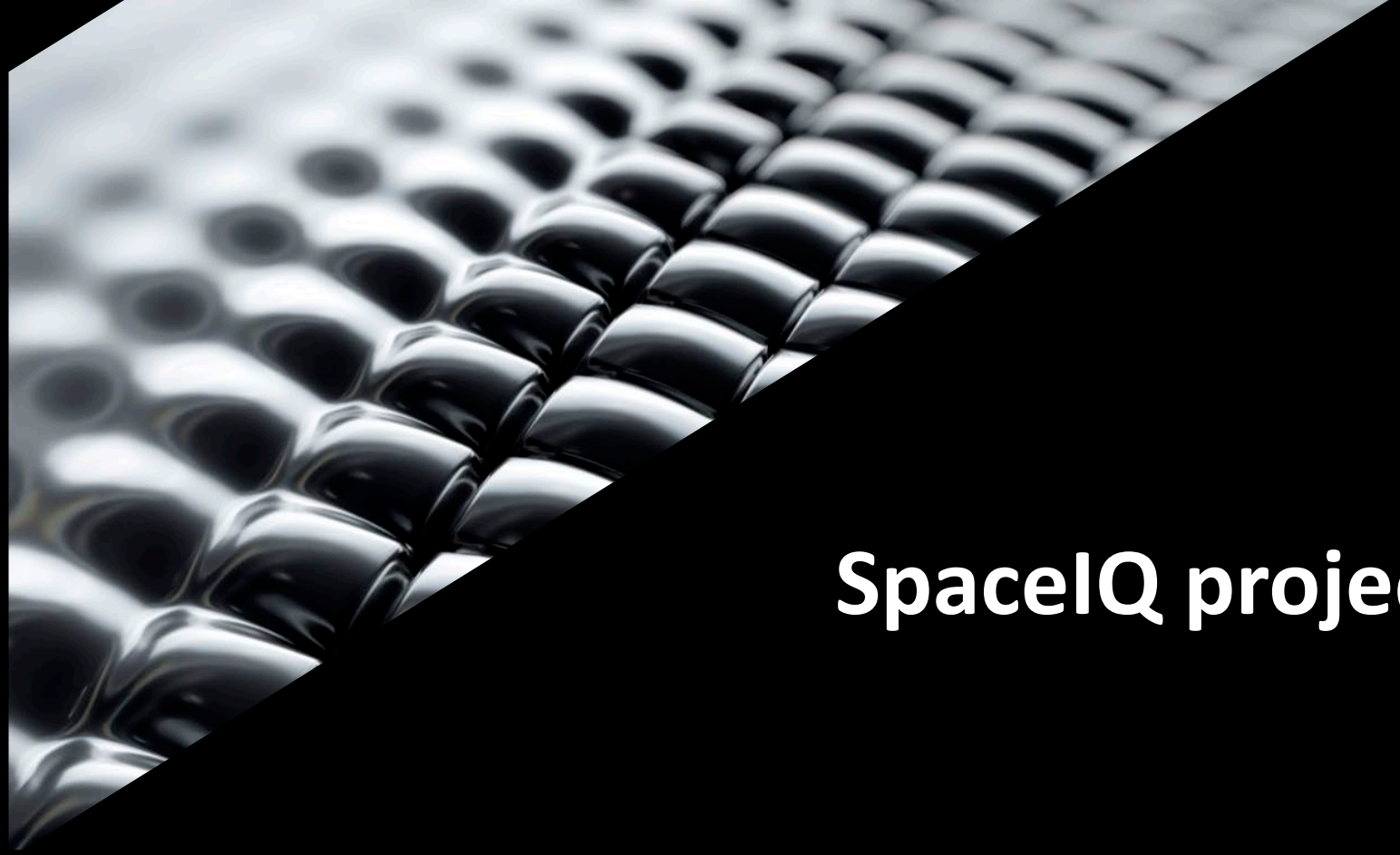
Achievements

- Tangible outcome from Digital Twin
  - Visualize facility operation data
- Effective for multiple building management
  - Improve traceability of facilities

Challenges

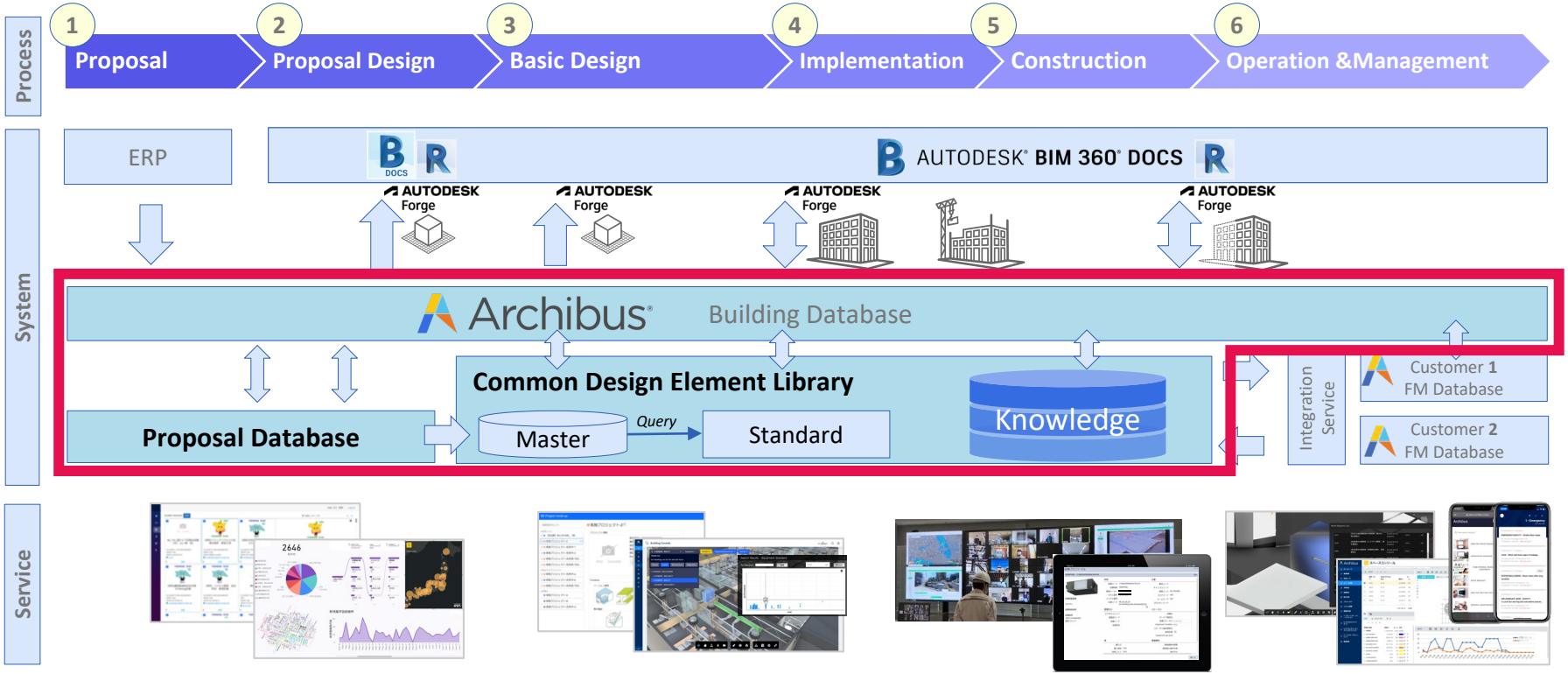
- Data update in PIM & collaborate with AIM
  - Reduce time to prepare AIM

Confidential

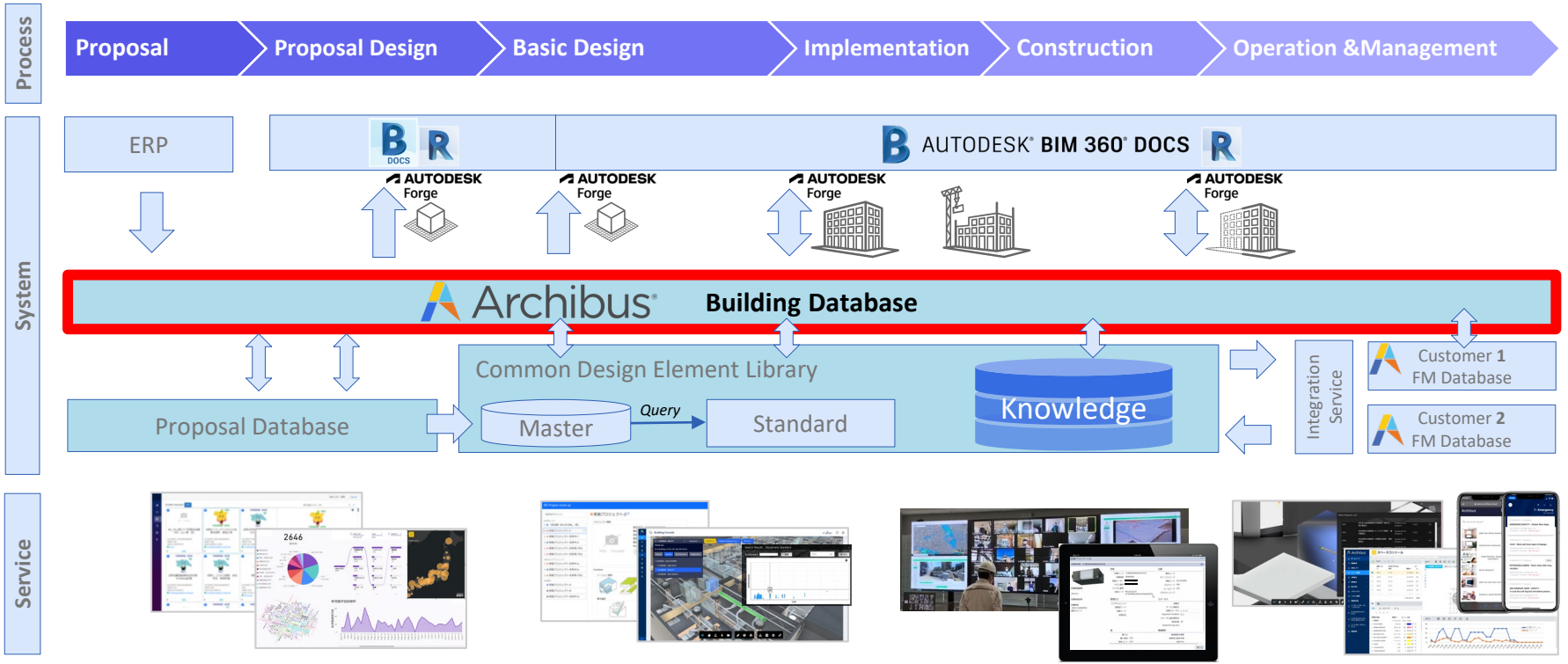


SpaceIQ project

Overview of SpaceIQ project



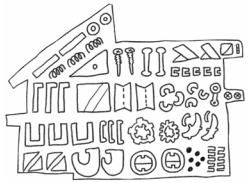
Establish Building database



Build Common Design Element Library(DEL)

Master data

Master databases beyond the framework of each manufacturer



Standard data

Standard data packaged with multiple master data combinations

Knowledge data

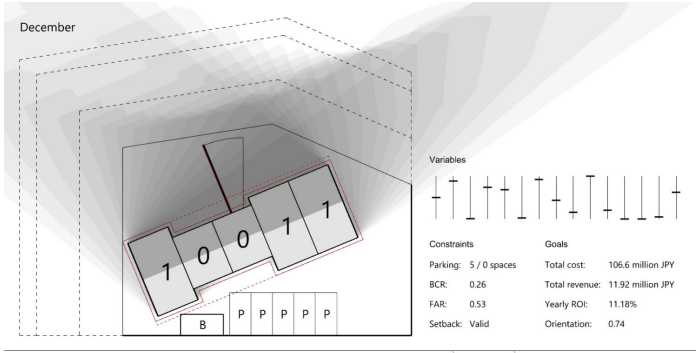
Project Knowledge data containing product spec info defined in design/construction/ maintenance processes

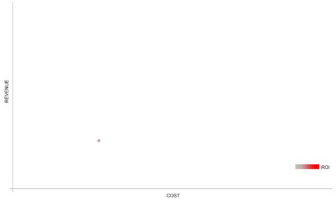
Physical data

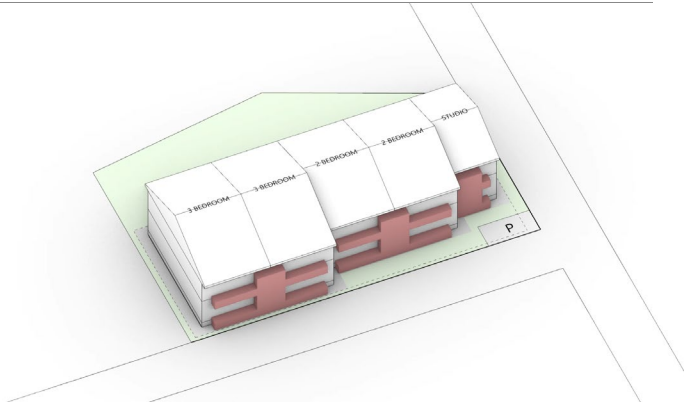
operational data, including building materials and equipment

Create Proposal database

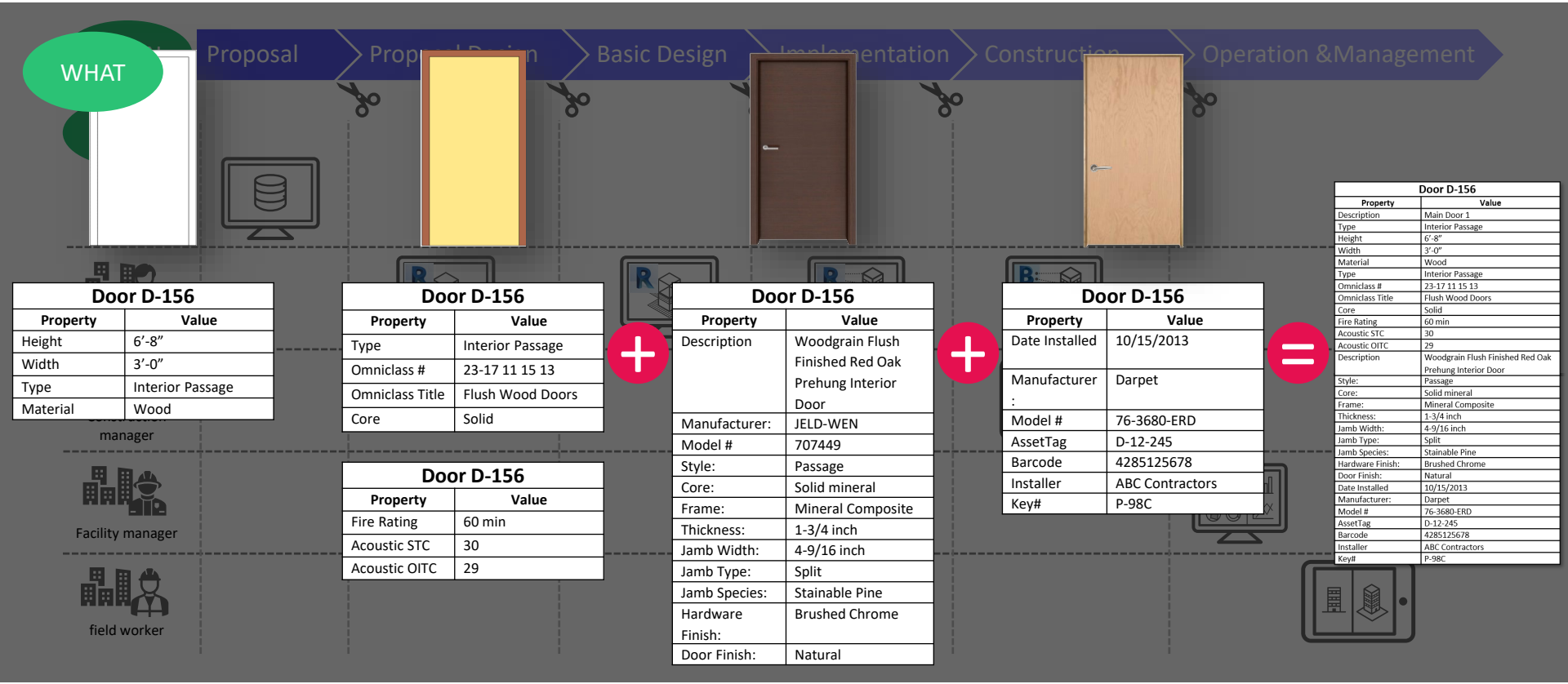
Proposal DB







Challenges we are working on



Door D-156	
Property	**Value**
Height	6’-8”
Width	3’-0”
Type	Interior Passage
Material	Wood

Door D-156	
Property	**Value**
Type	Interior Passage
Omniclass #	23-17 11 15 13
Omniclass Title	Flush Wood Doors
Core	Solid

Door D-156	
Property	**Value**
Fire Rating	60 min
Acoustic STC	30
Acoustic OITC	29

Door D-156	
Property	**Value**
Description	Woodgrain Flush Finished Red Oak Prehung Interior Door
Manufacturer:	JELD-WEN
Model #	707449
Style:	Passage
Core:	Solid mineral
Frame:	Mineral Composite
Thickness:	1-3/4 inch
Jamb Width:	4-9/16 inch
Jamb Type:	Split
Jamb Species:	Stainable Pine
Hardware Finish:	Brushed Chrome
Door Finish:	Natural

Door D-156	
Property	**Value**
Date Installed	10/15/2013
Manufacturer:	Darpet
Model #	76-3680-ERD
AssetTag	D-12-245
Barcode	4285125678
Installer	ABC Contractors
Key#	P-98C

Door D-156	
Property	**Value**
Description	Main Door 1
Type	Interior Passage
Height	6’-8”
Width	3’-0”
Material	Wood
Type	Interior Passage
Omniclass #	23-17 11 15 13
Omniclass Title	Flush Wood Doors
Core	Solid
Fire Rating	60 min
Acoustic STC	30
Acoustic OITC	29
Description	Woodgrain Flush Finished Red Oak Prehung Interior Door
Style:	Passage
Core:	Solid mineral
Frame:	Mineral Composite
Thickness:	1-3/4 inch
Jamb Width:	4-9/16 inch
Jamb Type:	Split
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Date Installed	10/15/2013
Manufacturer:	Darpet
Model #	76-3680-ERD
AssetTag	D-12-245
Barcode	4285125678
Installer	ABC Contractors
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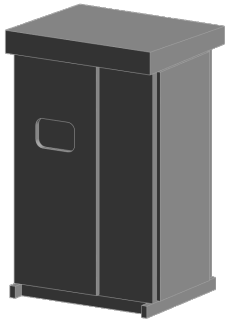
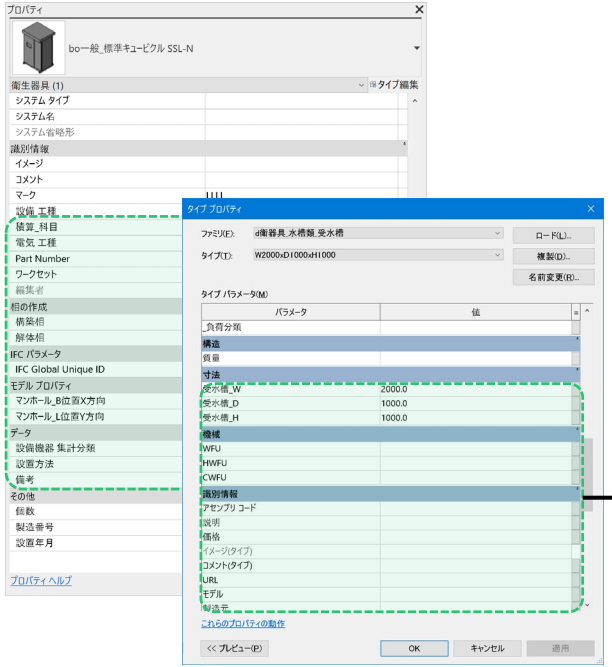
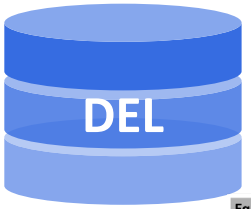
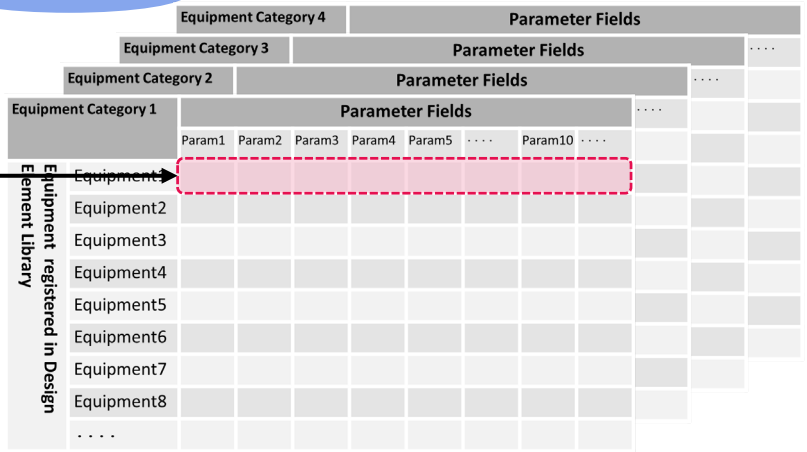
Challenges we are working on









AUTODESK Revit

AUTODESK Forge

AUTODESK Construction Cloud

AUTODESK Docs

AUTODESK Build

Archibus®
A SpaceIQ Product

AUTODESK BIM Collaborate

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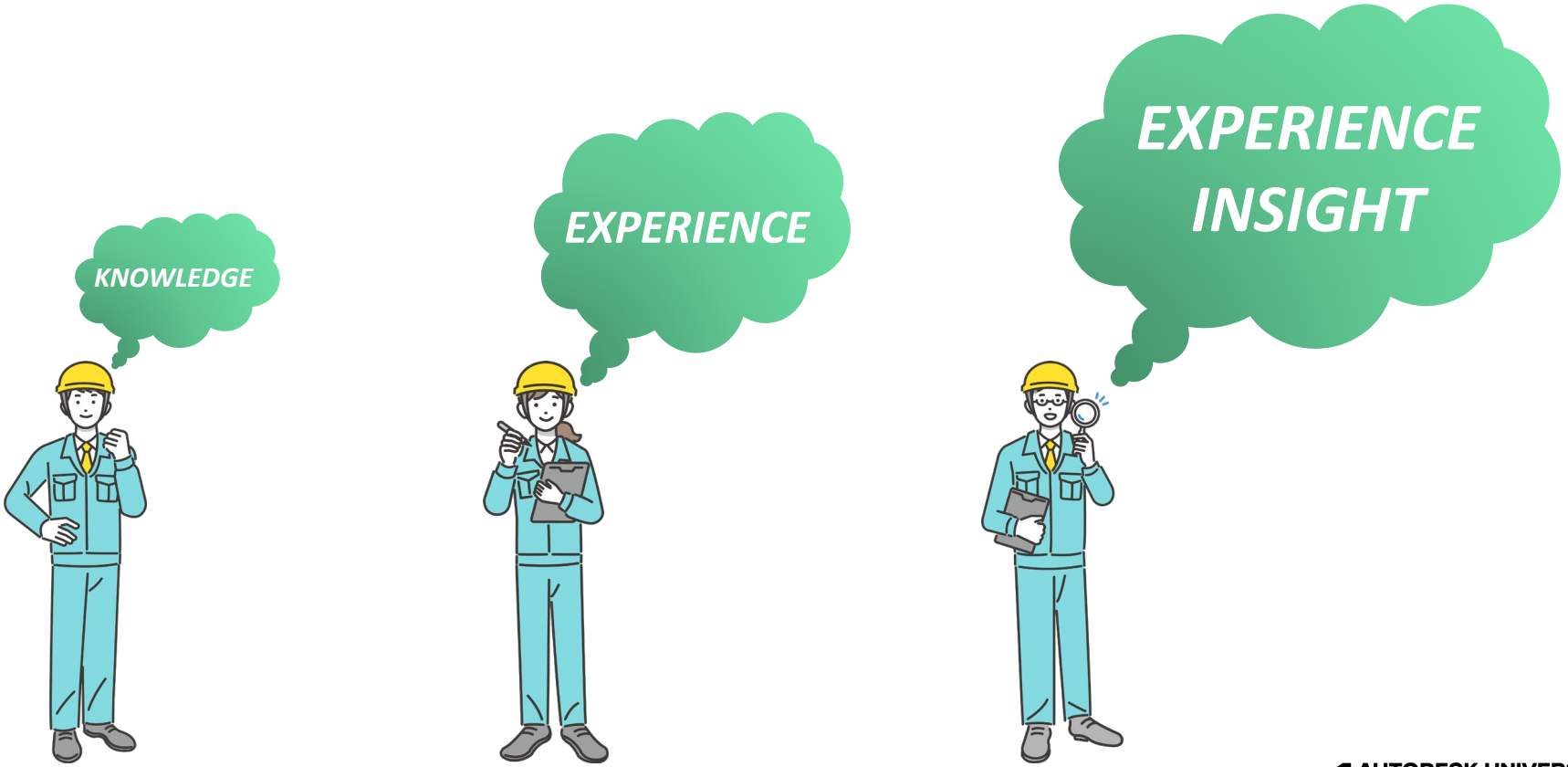
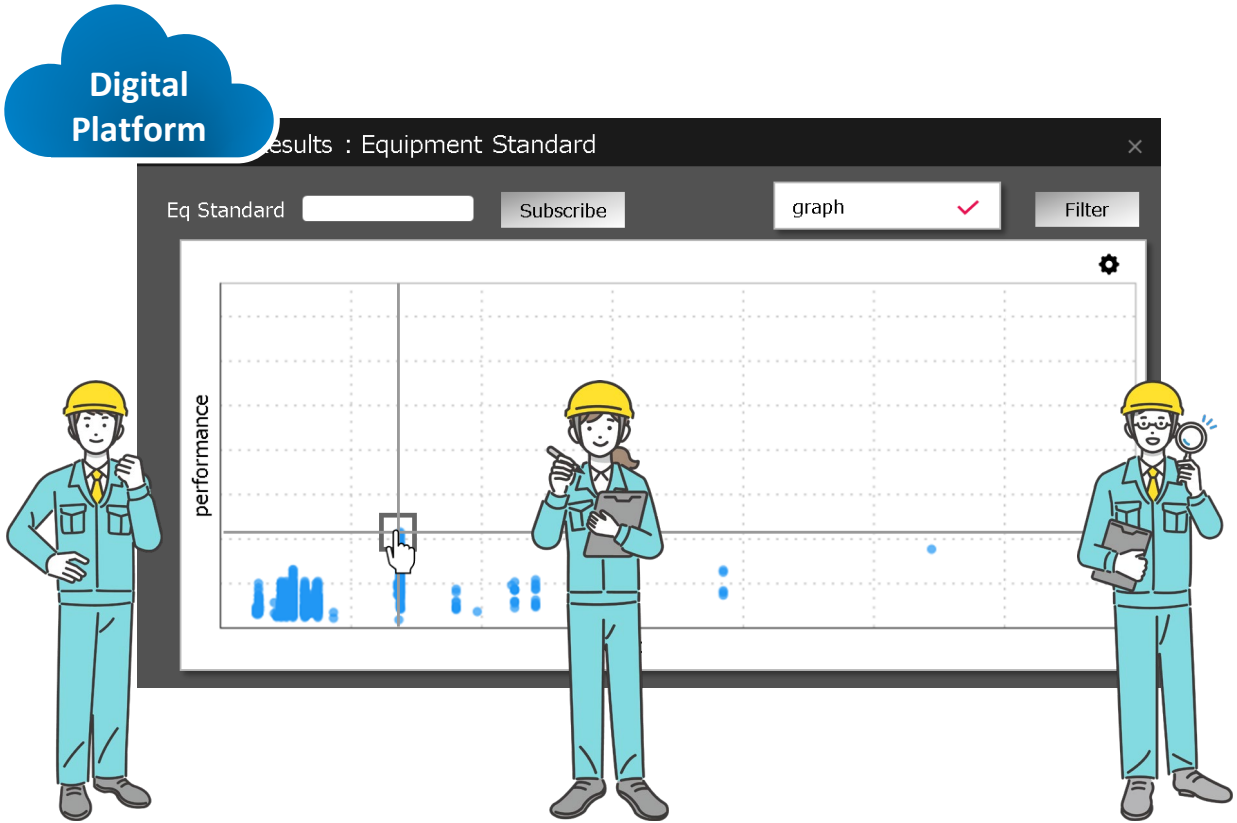
Design Phase

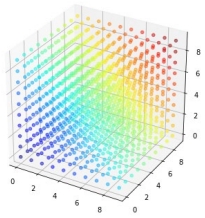
Design Phase (As-Is)

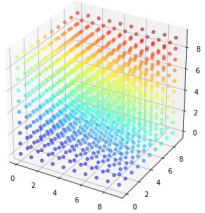


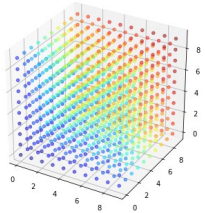
Design Phase (To-Be)



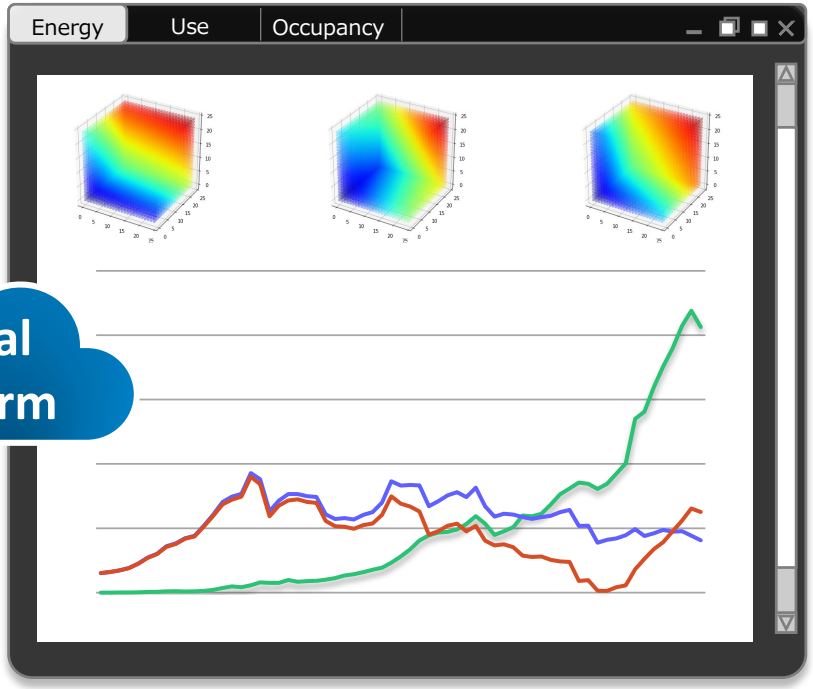
Design Phase (To-Be)







Digital Platform



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Construction-to-Handover Phase

Construction-to-Handover Phase (As-Is)

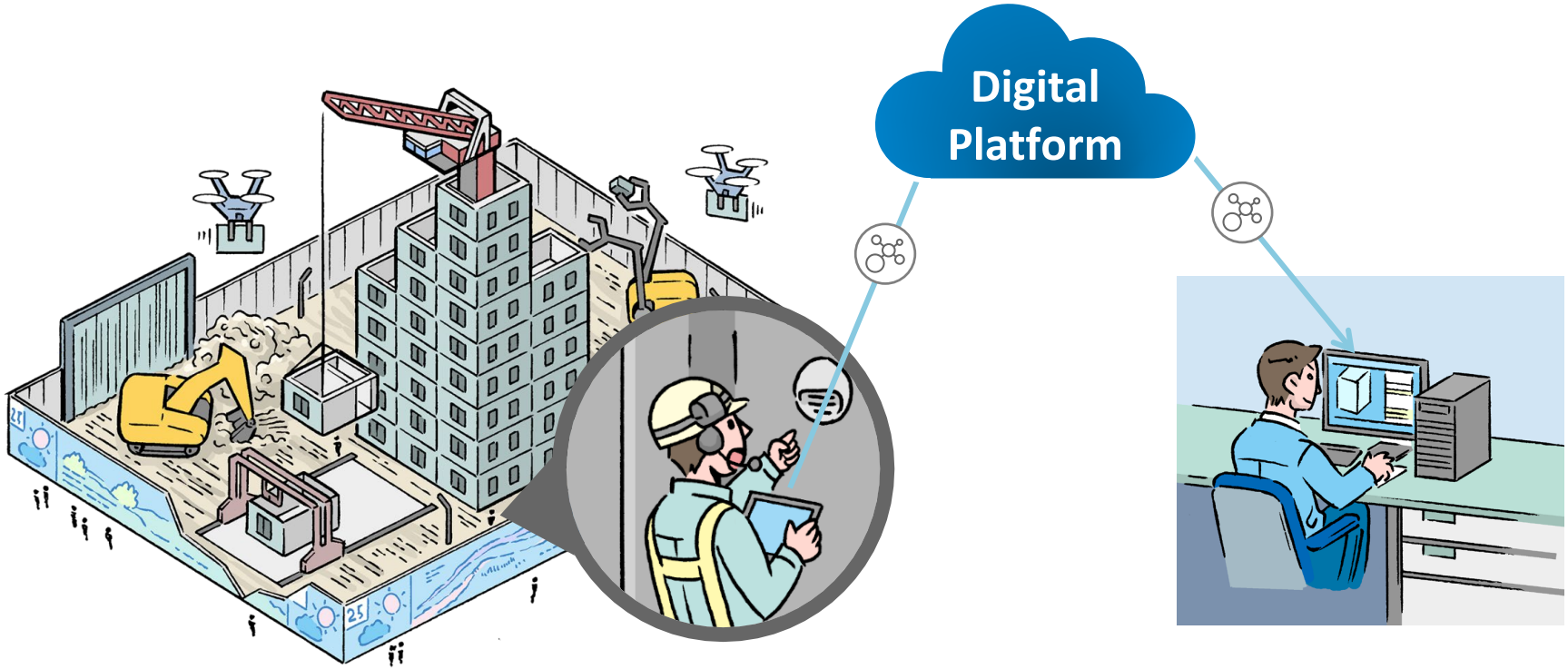
Construction-to-Handover Phase (As-Is)

1 week later …

2 week later …

3 week later …

Construction-to-Handover Phase (To-Be)



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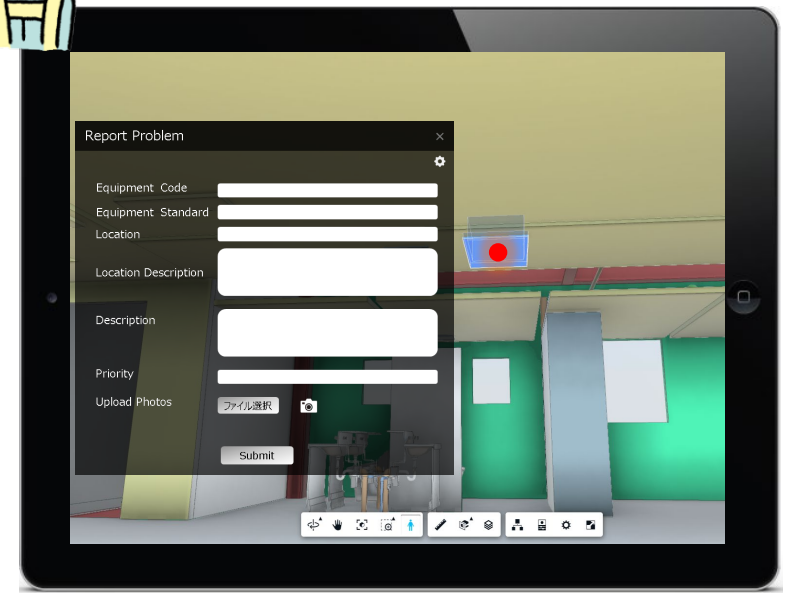
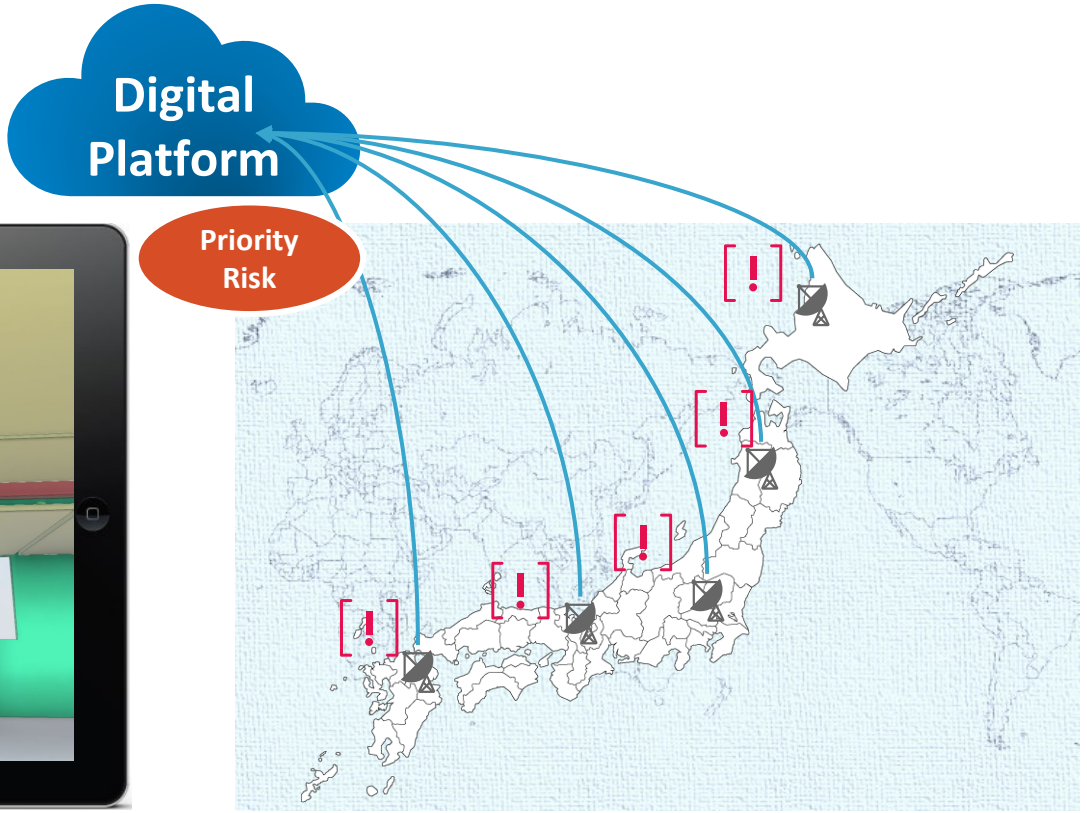
Operation & Management Phase

Operation & Management Phase (To-Be)





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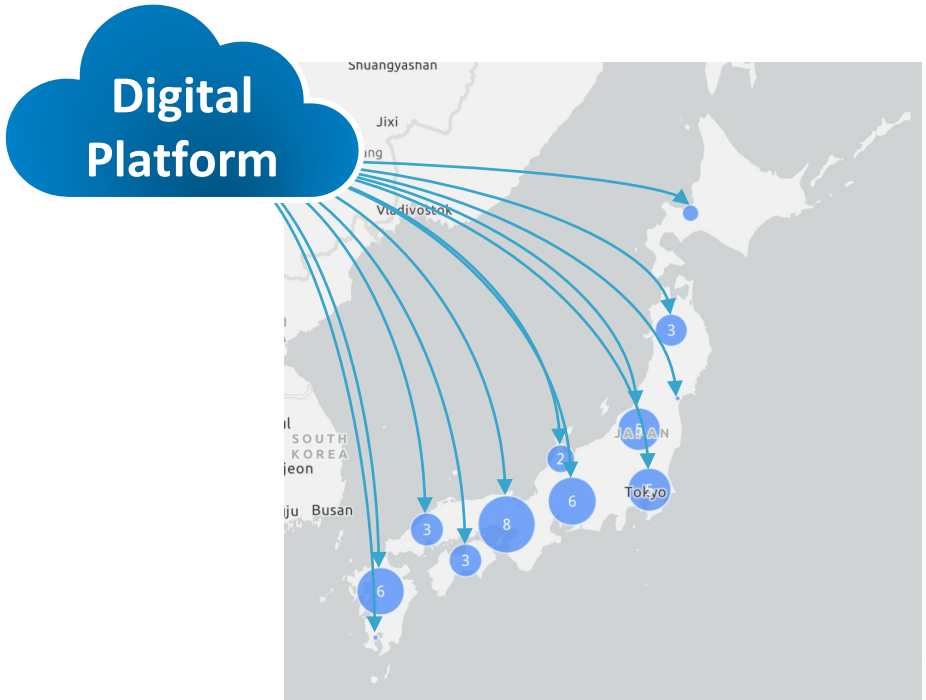
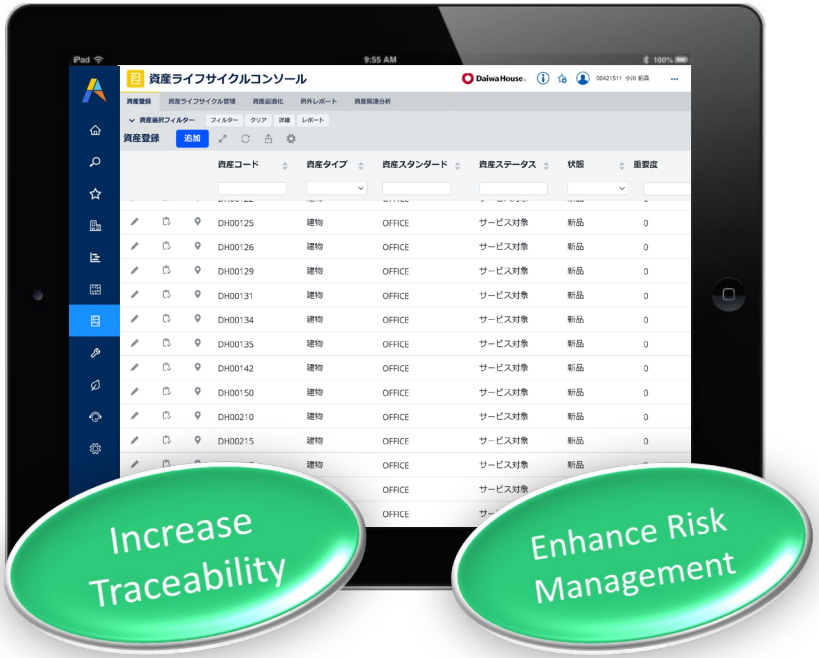
Operation & Management Phase (To-Be)





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Daiwa House®
We aim to create, use and bolster new values, hope to realize a society in which people can live fulfilled lives.

Next Step

Today’s summary

- What is Digital Value Chain
  - Value chain in digital society = Product + Information
  - Build the Digital Platform
- Key for Digital Platform
  - CDE to cover the entire process
  - Database to manage across all projects
  - Technology to connect each solution
- Daiwa House vision
  - Build the Digital Platform & achieve the Digital Value Chain by 2025
  - Next step = realize DX across industries!

Confidential

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