



The Industry that Time Forgot:  
Pioneering the Digital Future in Architecture

S9457

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Benchmark Innovation Lab  
Media, PA





Flotsam + Jetsam Pavilion  
Miami, FL





Carousel House  
Long Island, NY





East River Esplanade  
New York, NY





SITE Santa Fe Art Museum  
Santa Fe, NM





Pier 15  
New York, NY





Hangil Book House  
Seoul, South Korea





Pier 17  
New York, NY





Uber Headquarters Mission Bay  
San Francisco, CA





Barclays Center Arena  
Brooklyn, NY





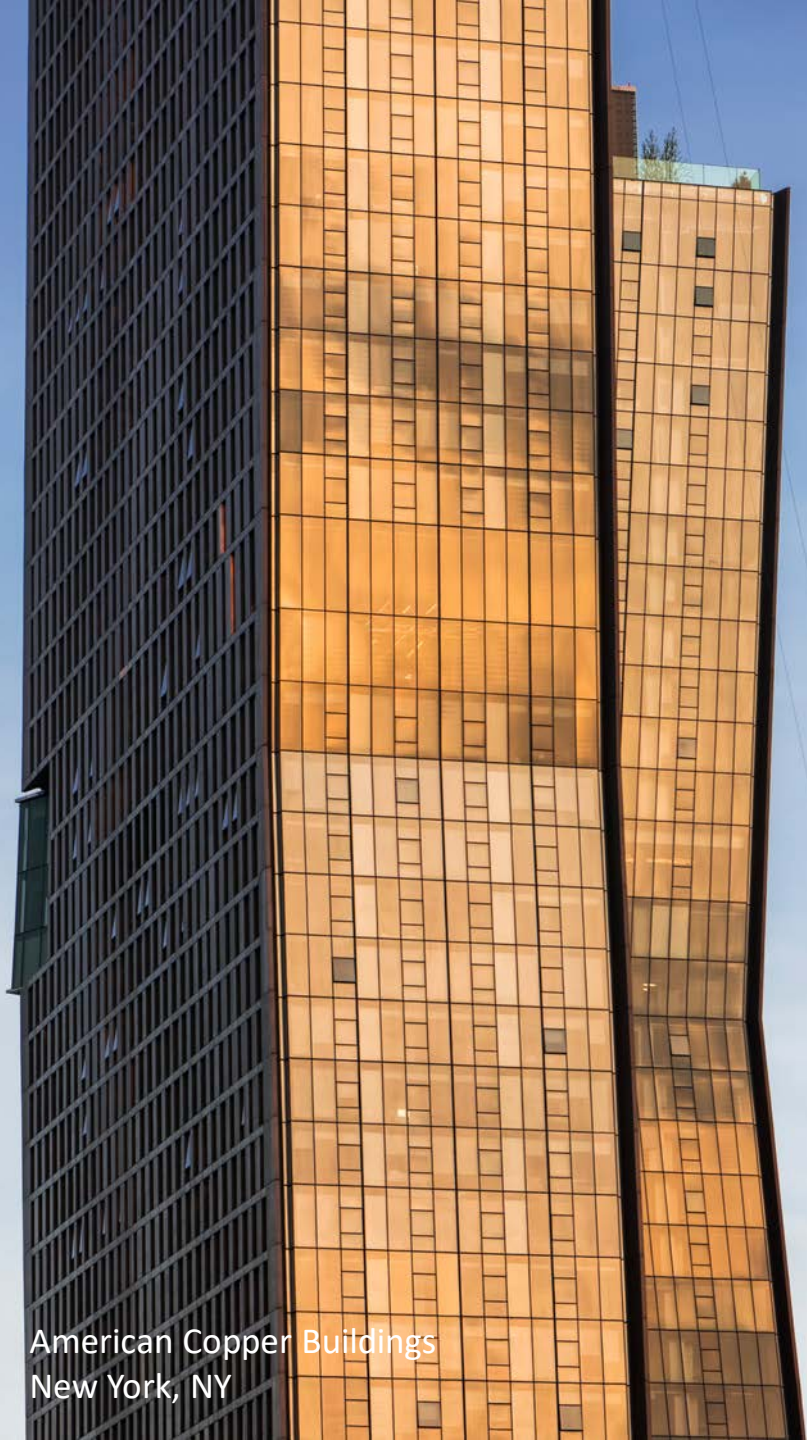
Nassau Coliseum  
Long Island, NY



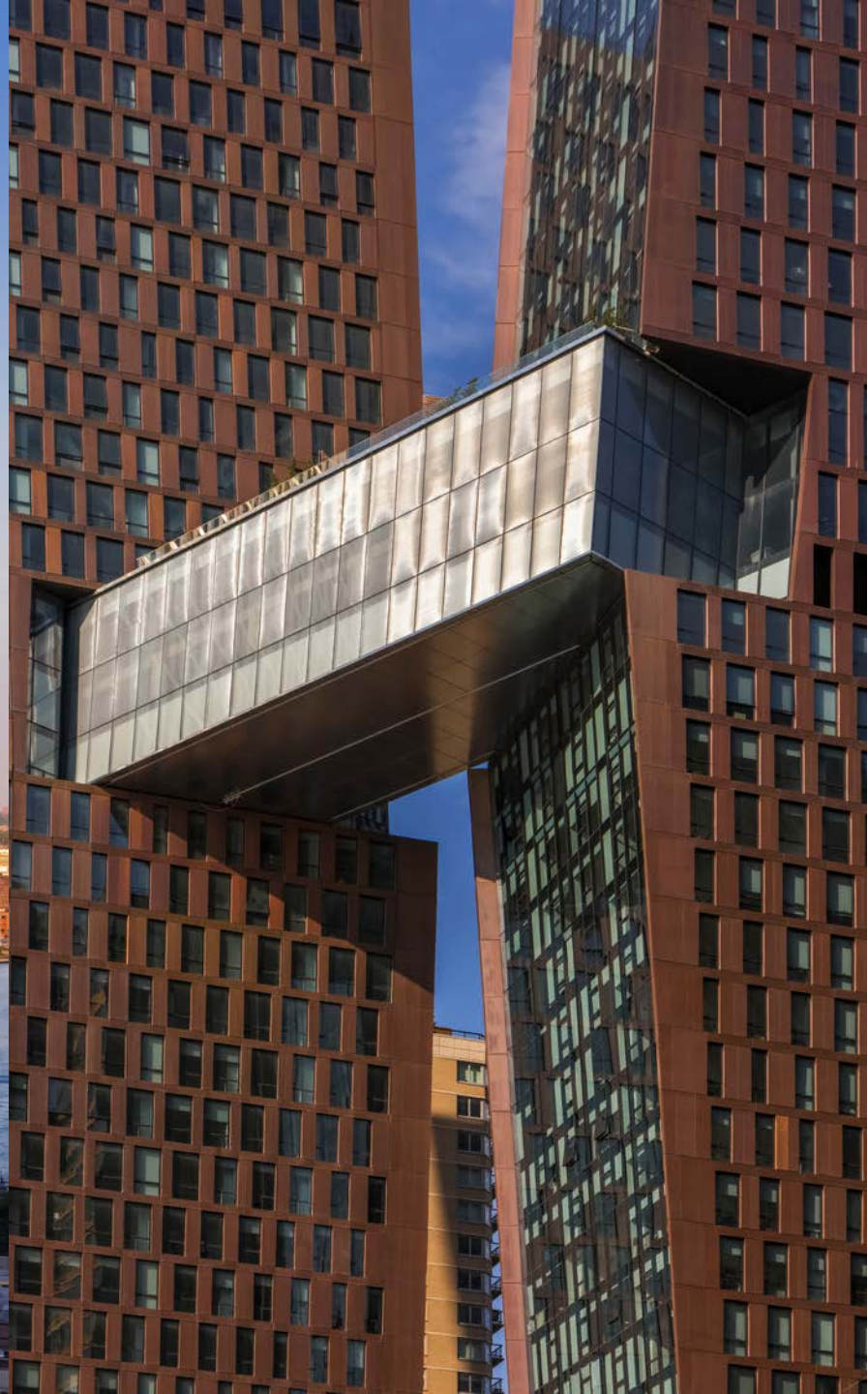


Botswana Innovation Hub  
Gaborone, Botswana





American Copper Buildings  
New York, NY







111 West 57<sup>th</sup> St Tower  
New York, NY



## ACADEMIA

GUARDIANS OF  
CULTURE



**sh p**  
**BOTH/AND**

## SERVICE FIRMS

SERVICERS OF  
CLIENTS

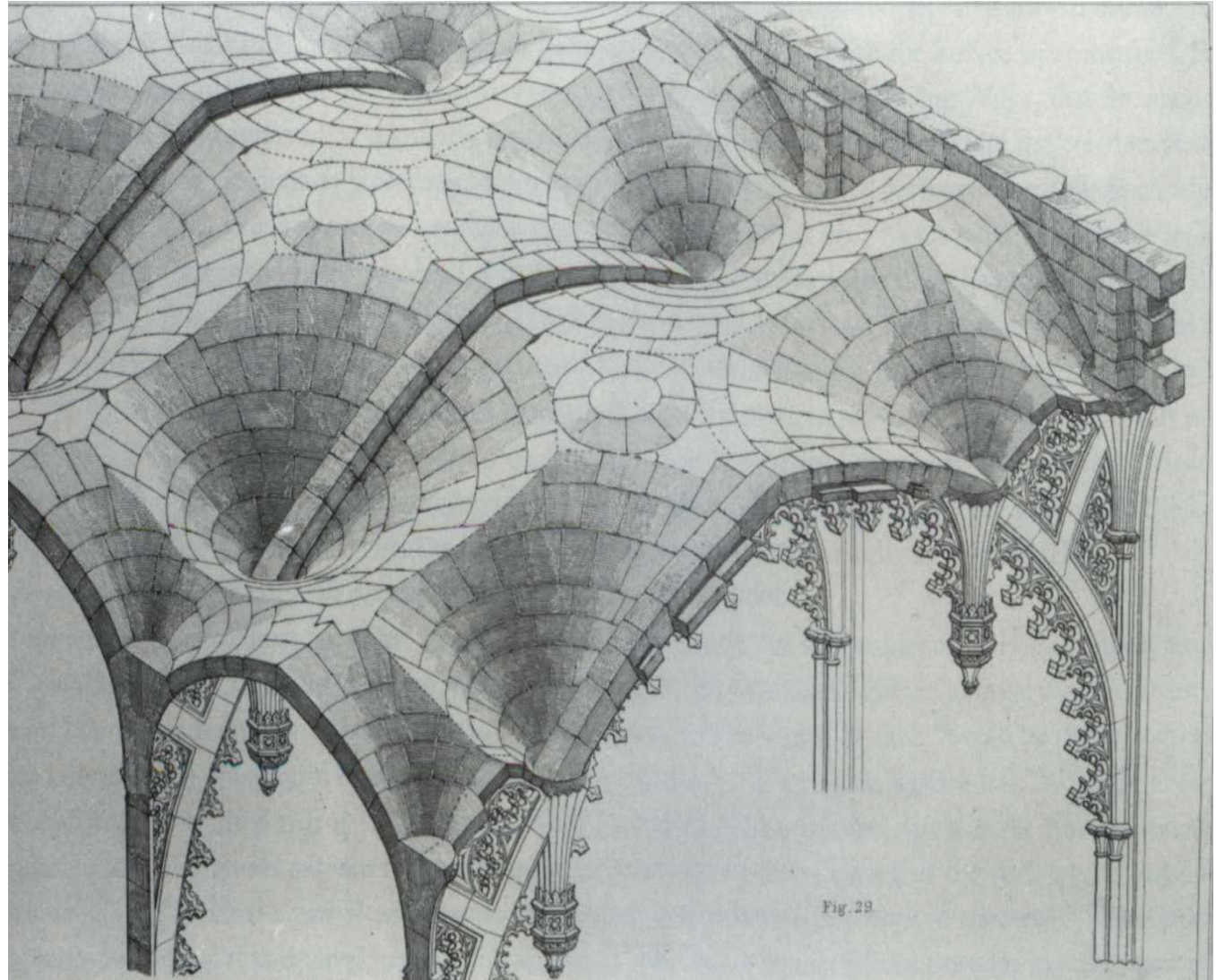
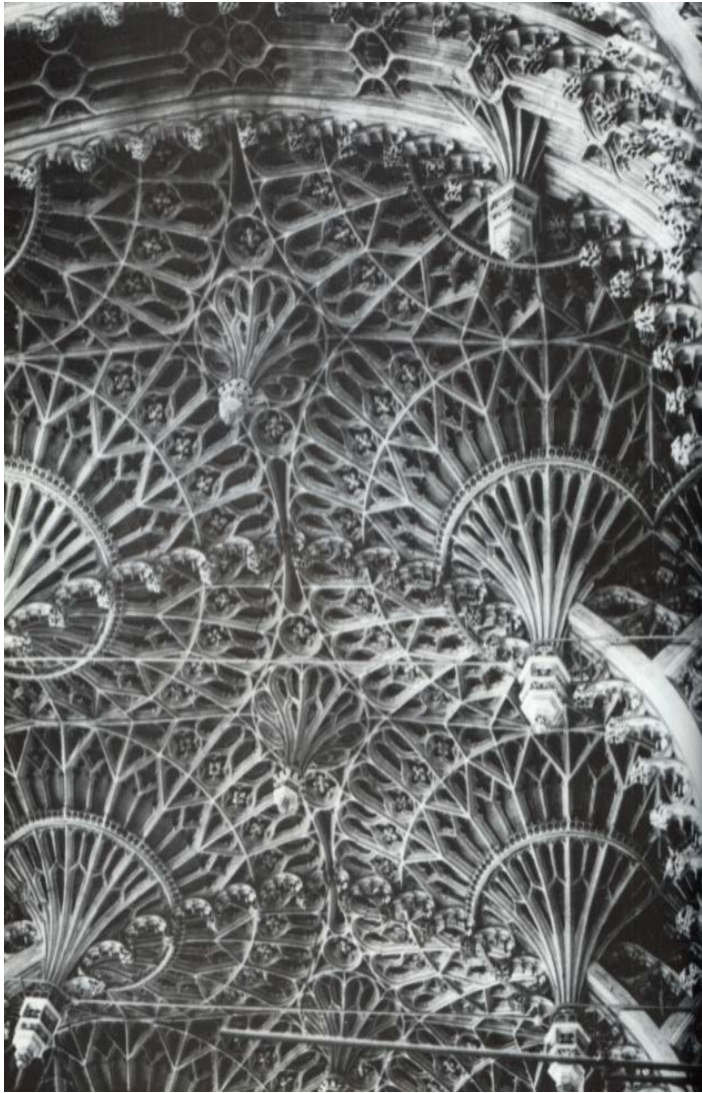


DESIGN  
CONCEPT  
PROCESS  
ENVIRONMENT  
HISTORY/THEORY  
CULTURE

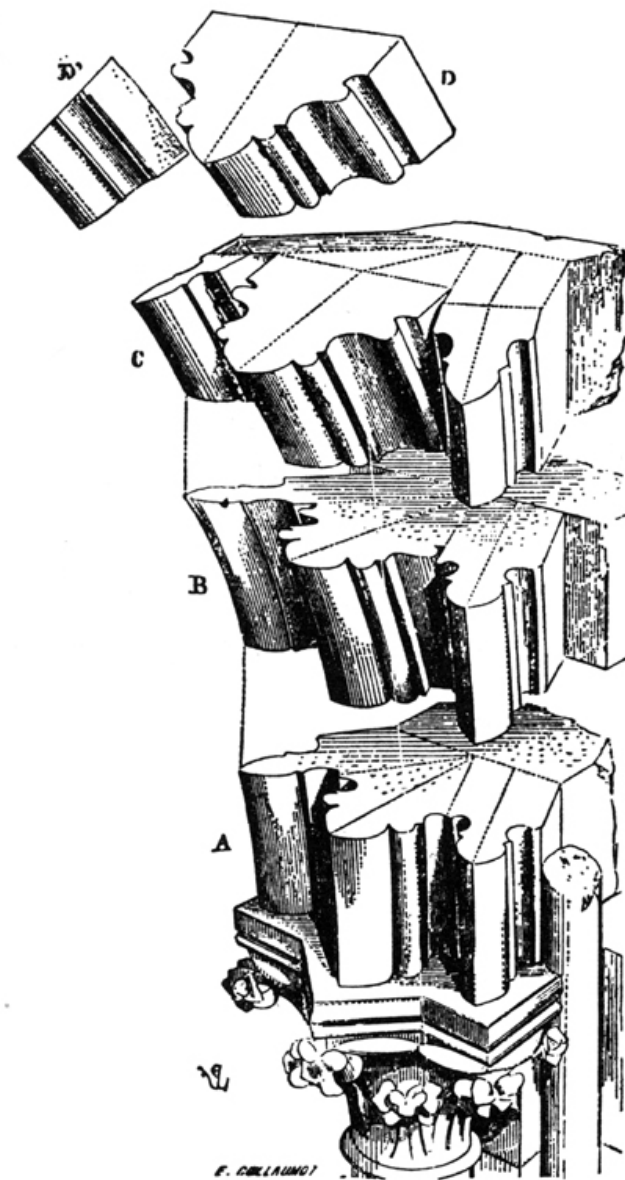
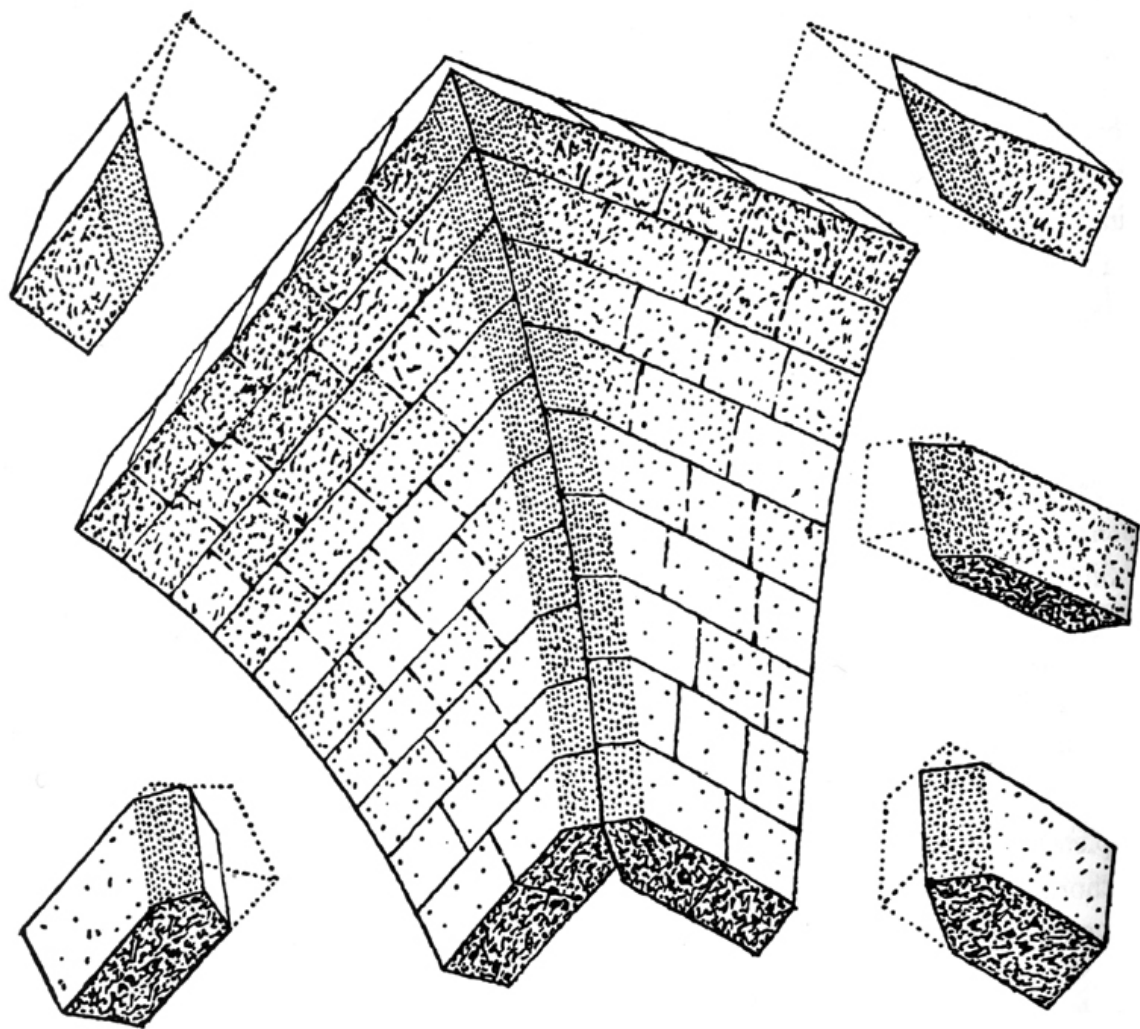
Expertise  
Negotiating the Market  
Construction Technology  
Value  
Enterprise  
Branding

DESIGN  
MARKET CONDITIONS  
PROGRAM  
SITE  
SCHEDULE  
CODES

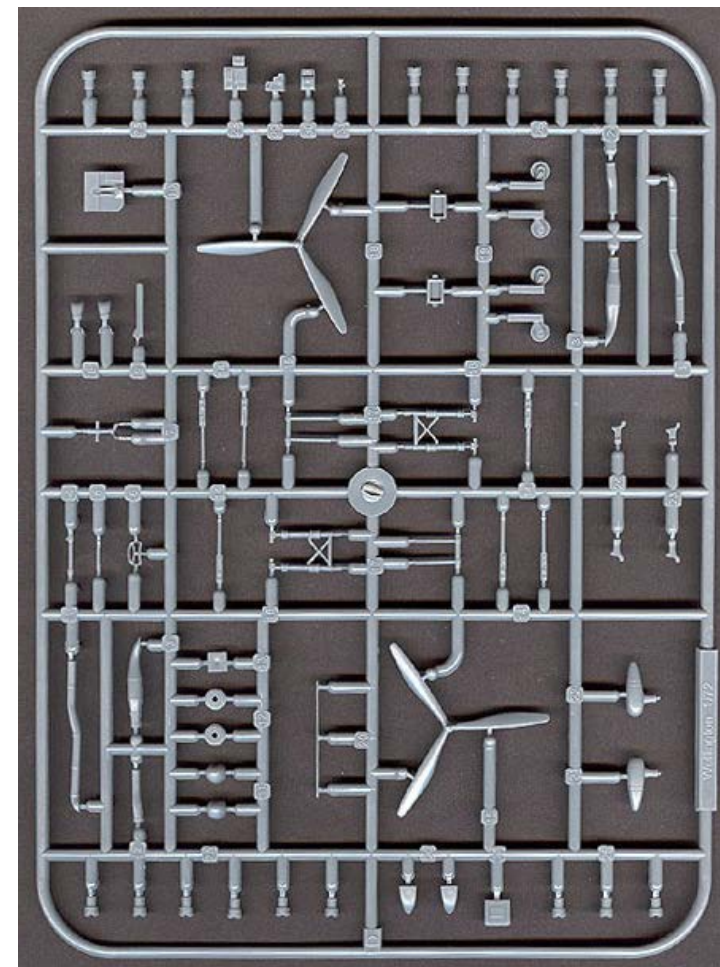
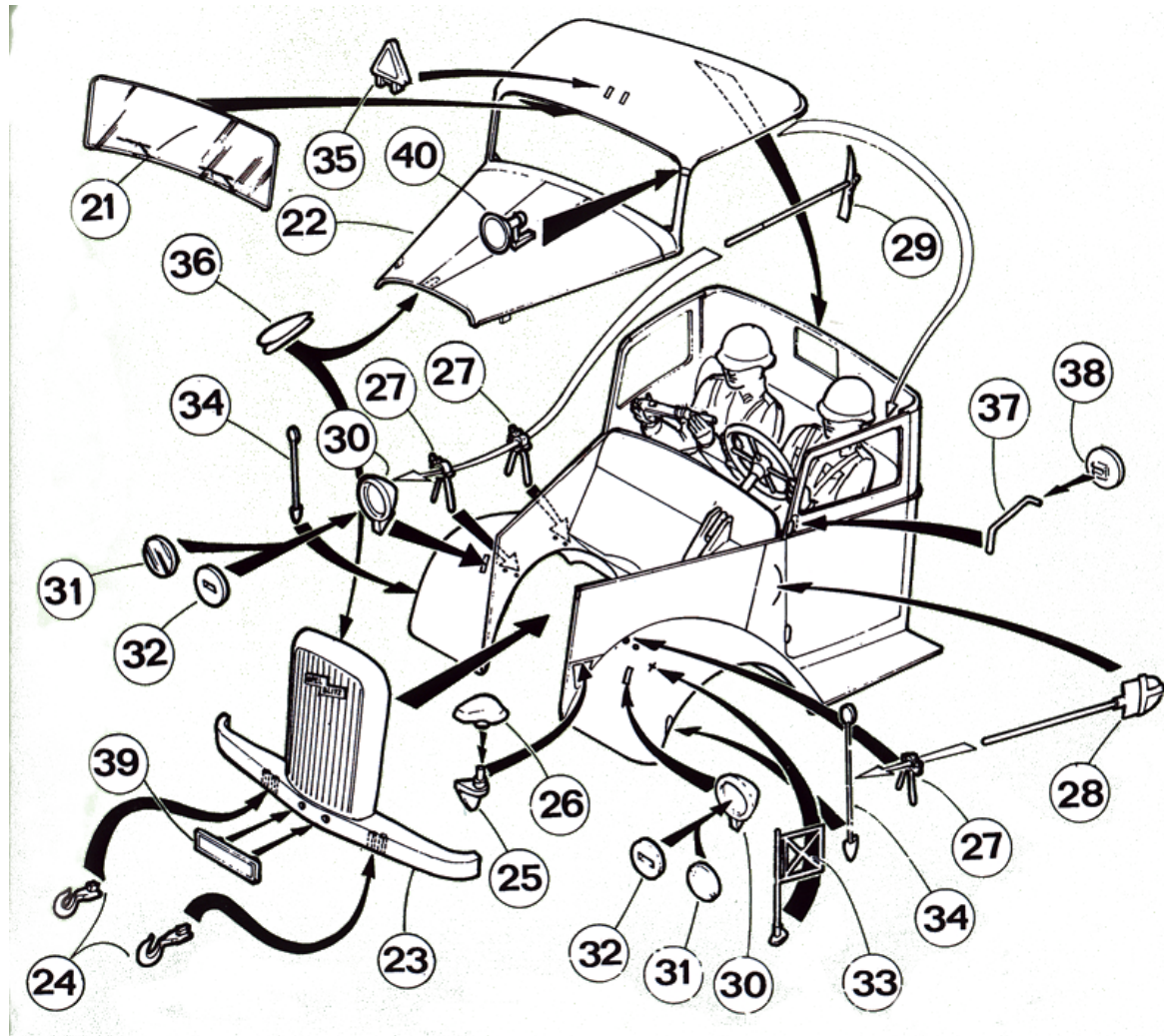








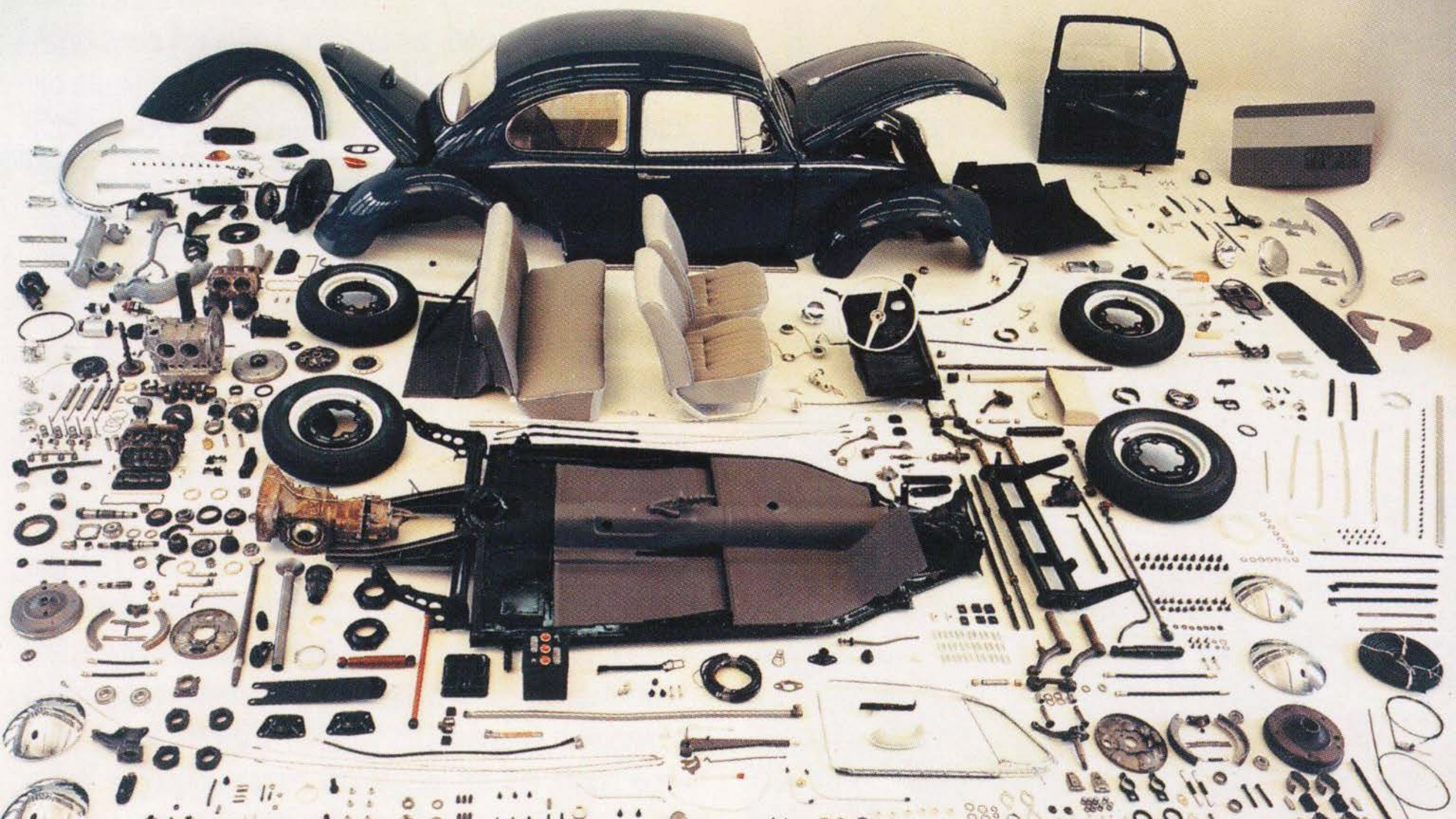




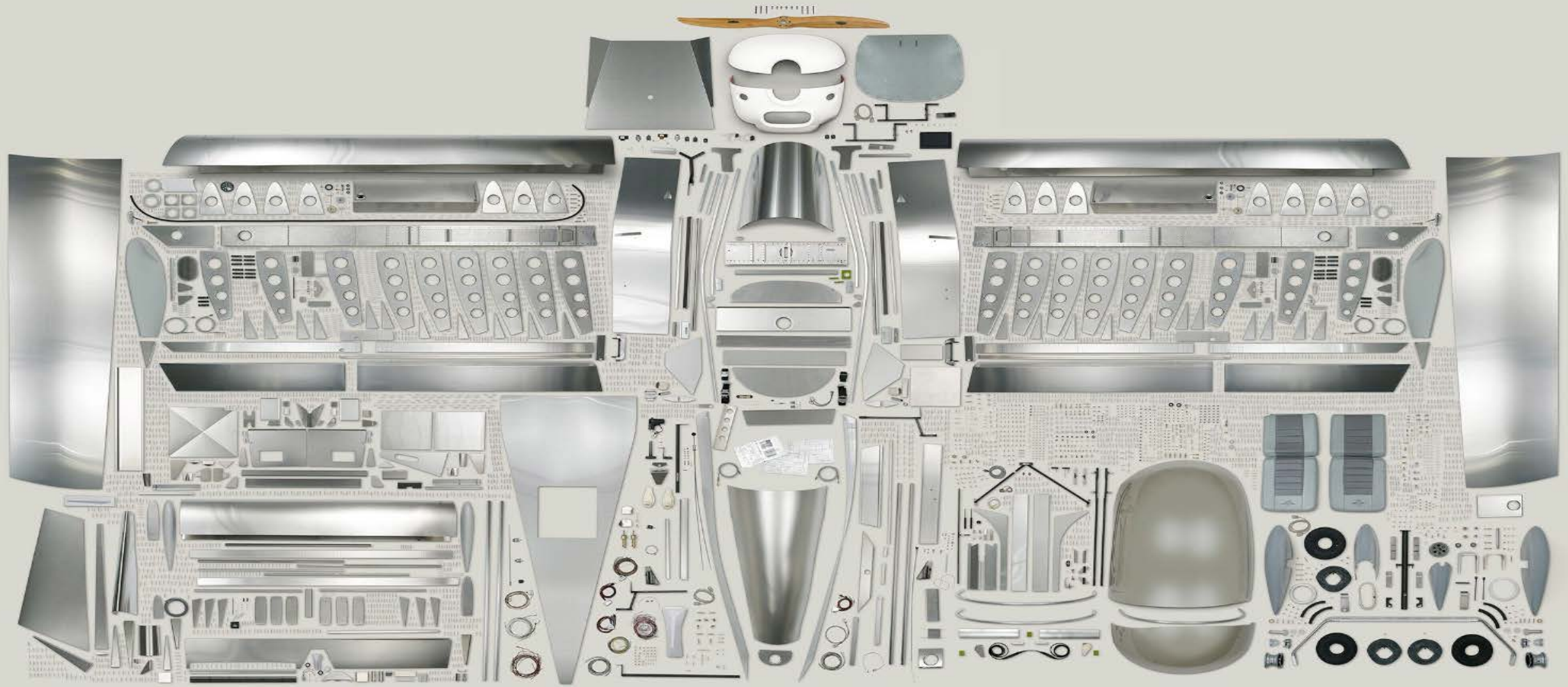




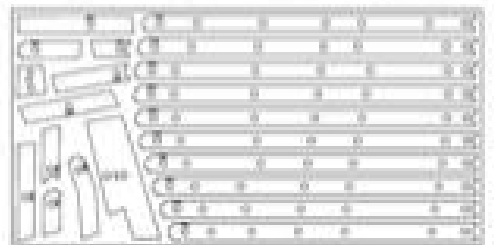
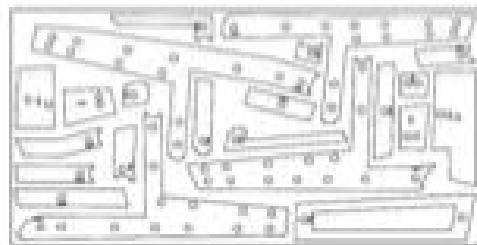
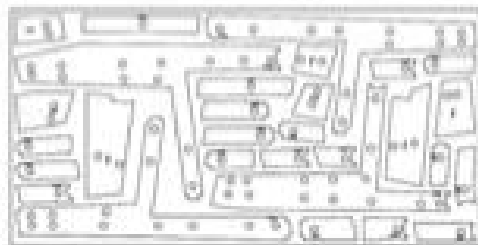
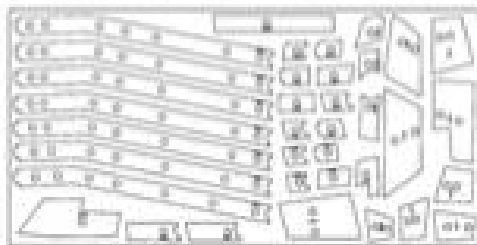
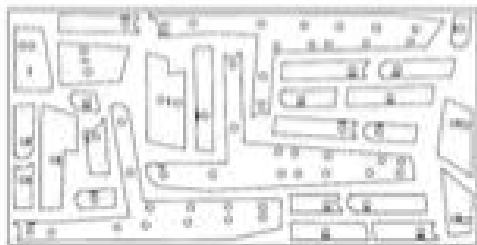
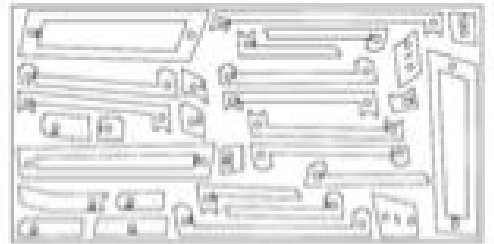
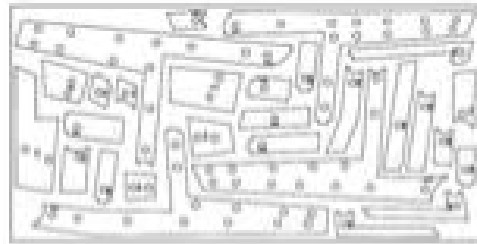
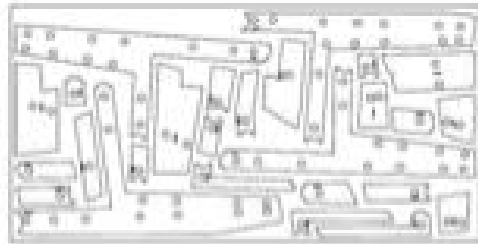
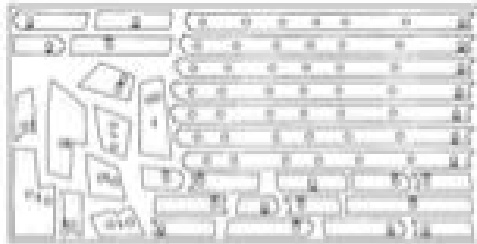
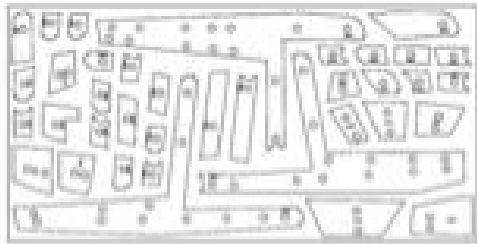
















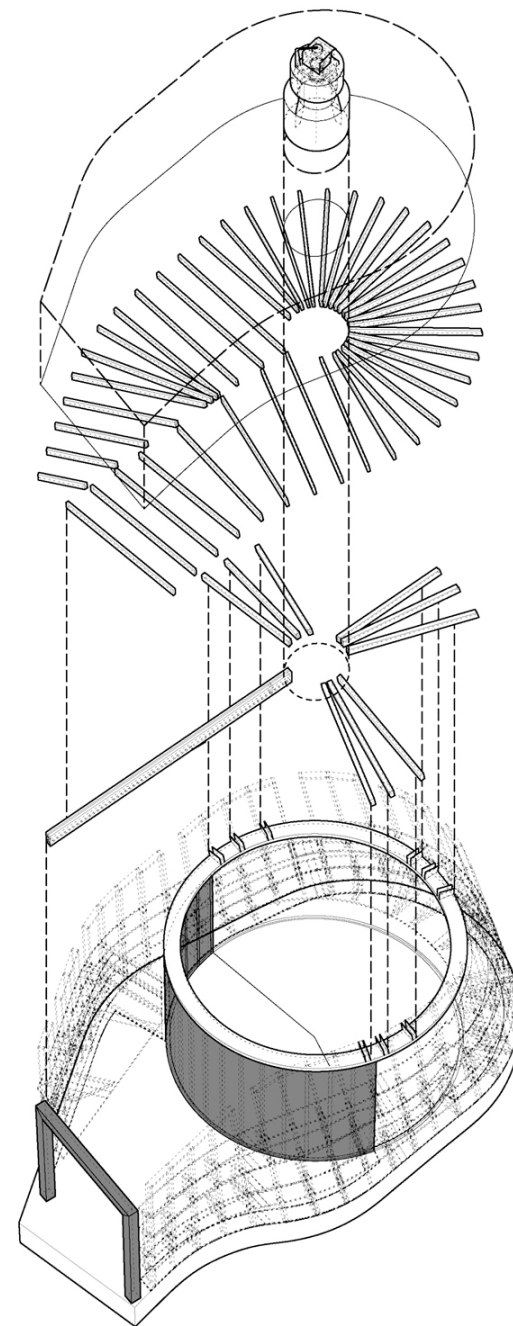
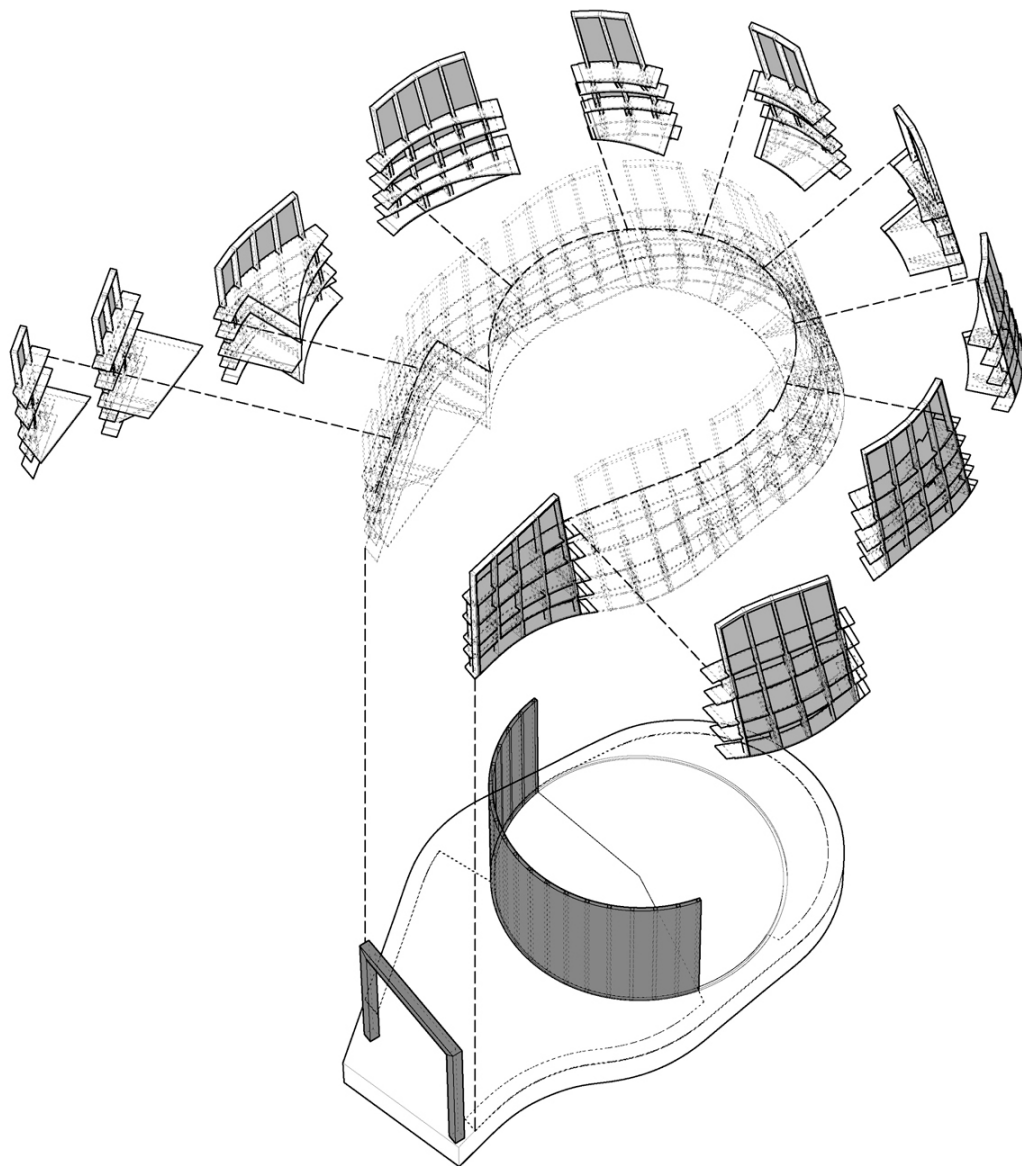




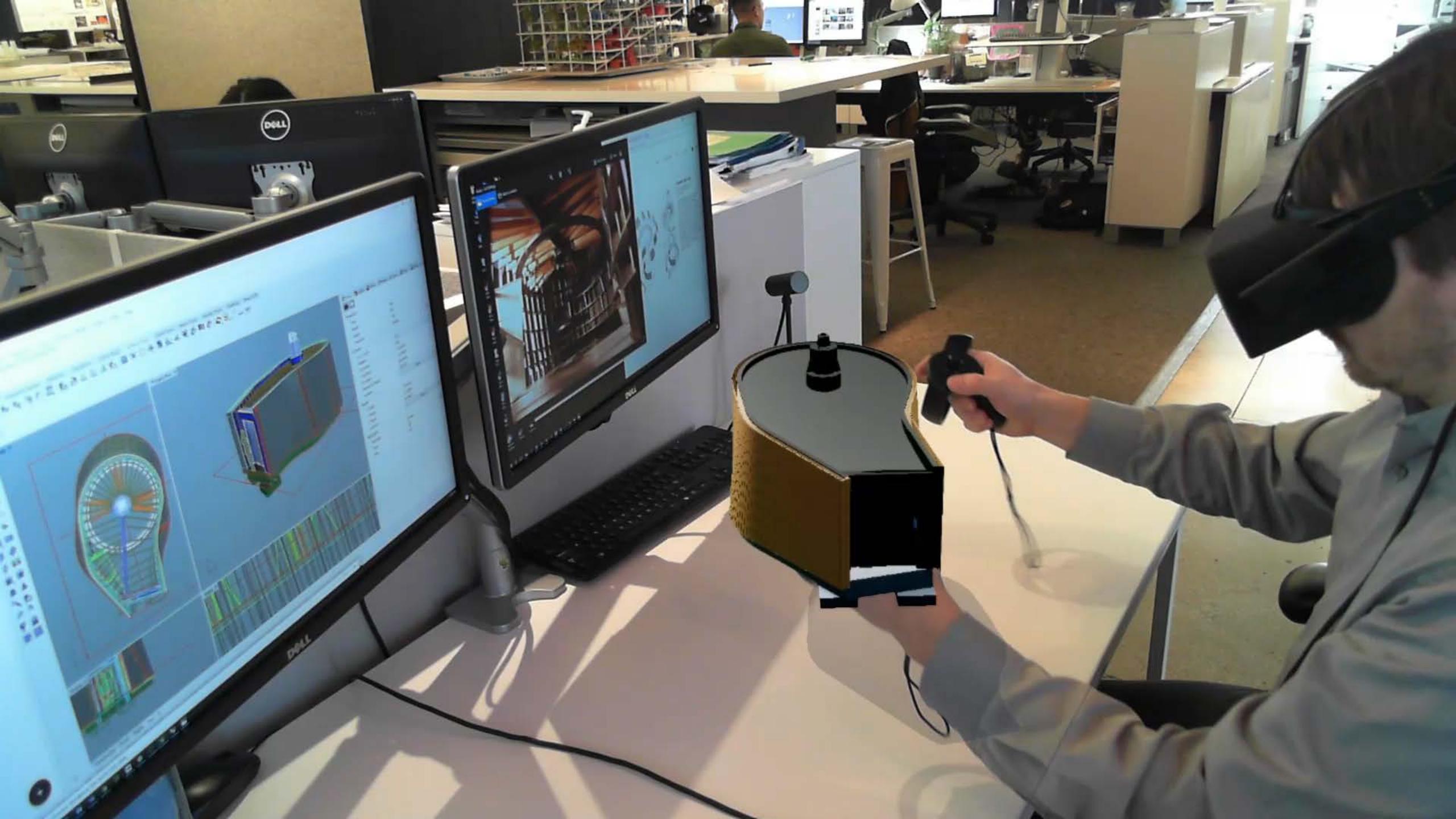












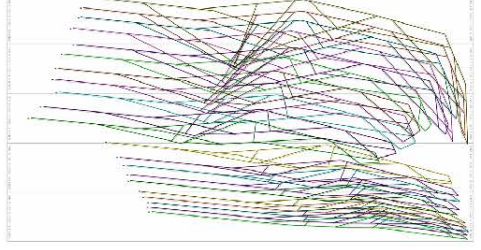
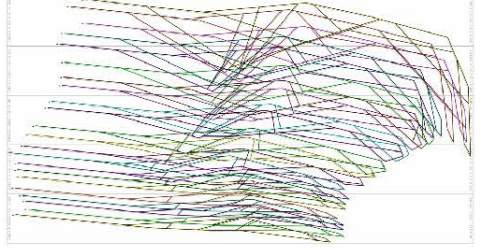
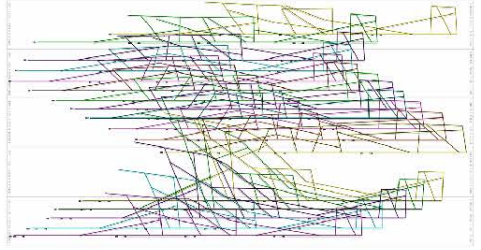
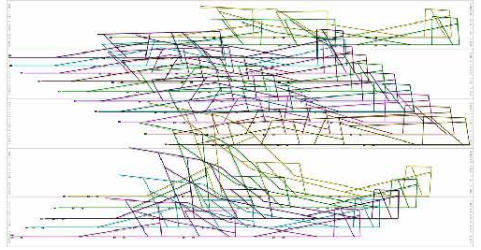
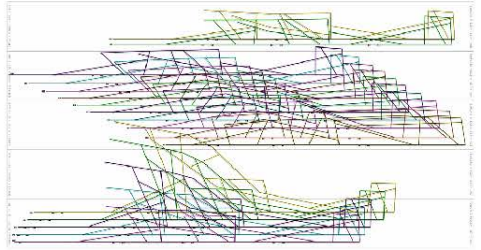




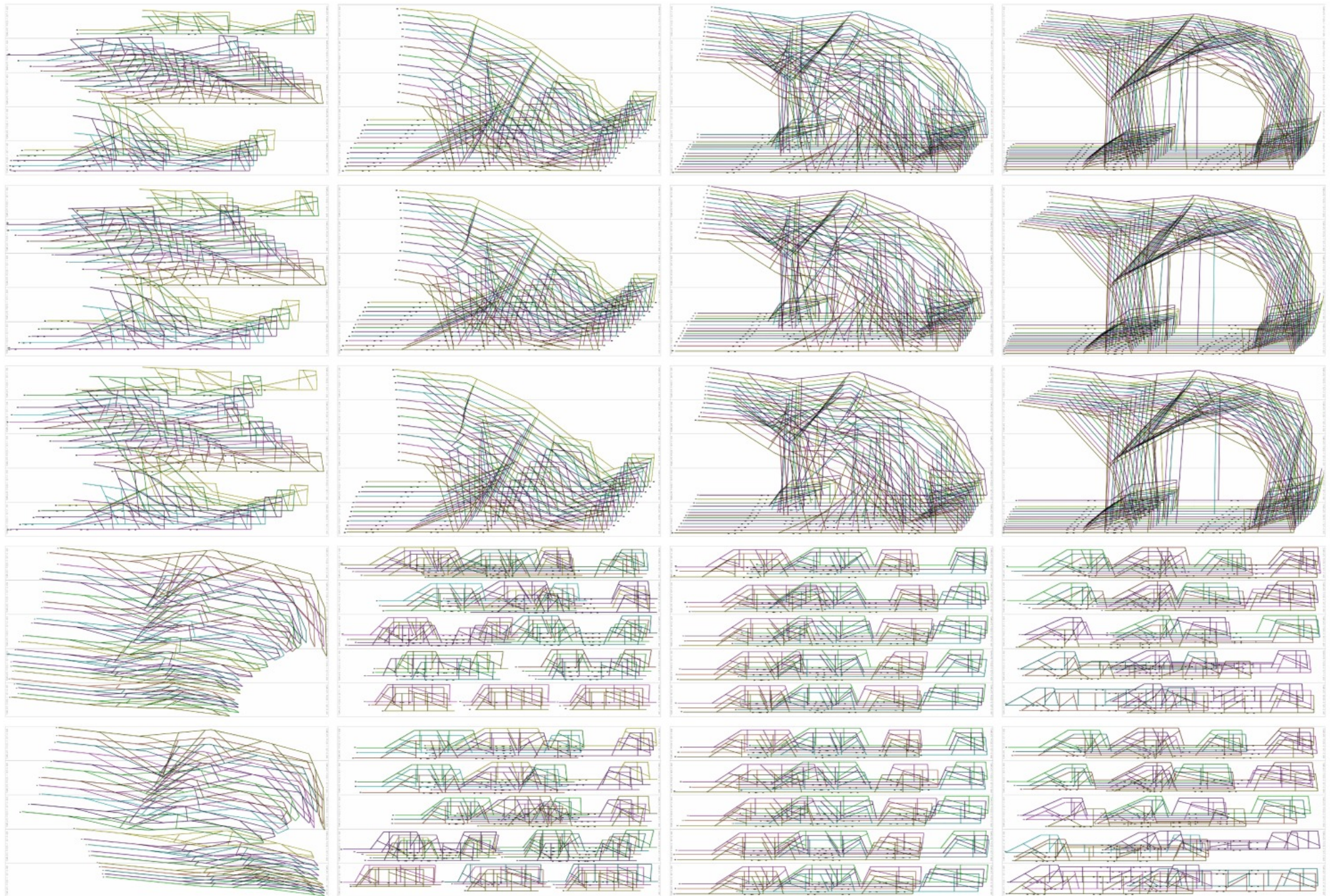










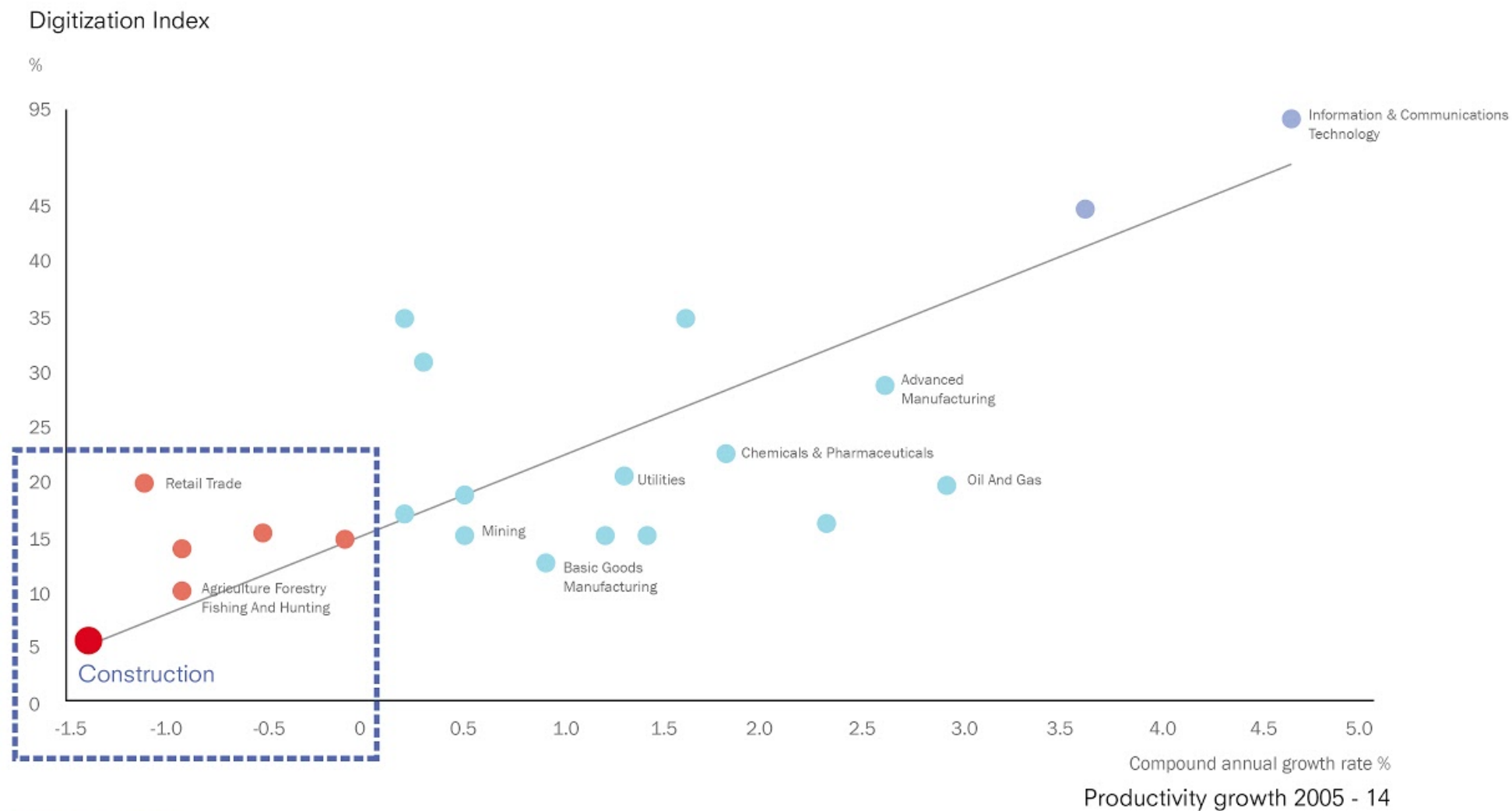




What is the problem?



# Productivity Decline in the Construction Industry



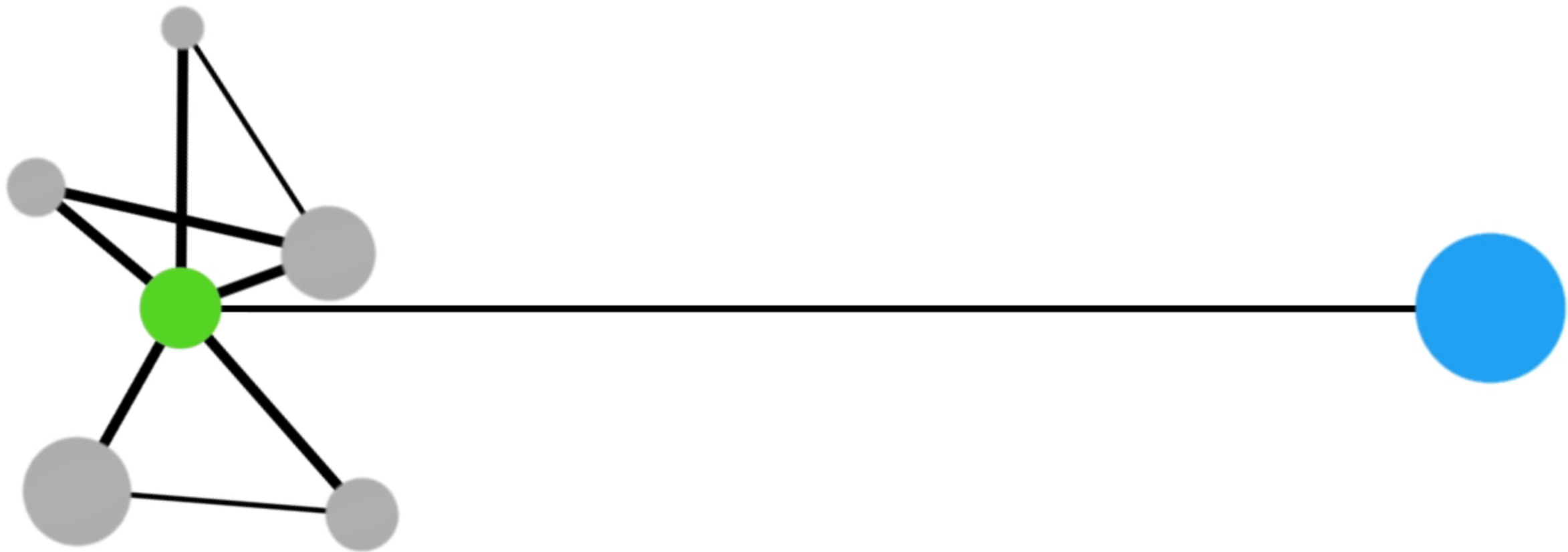




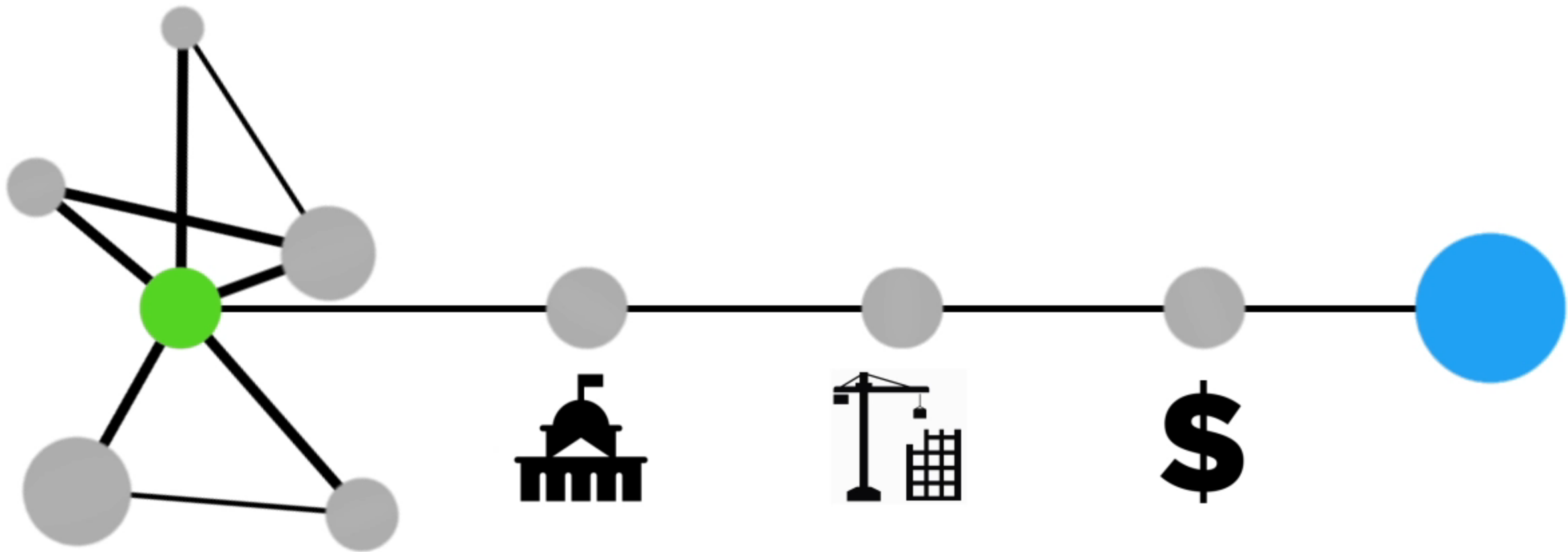




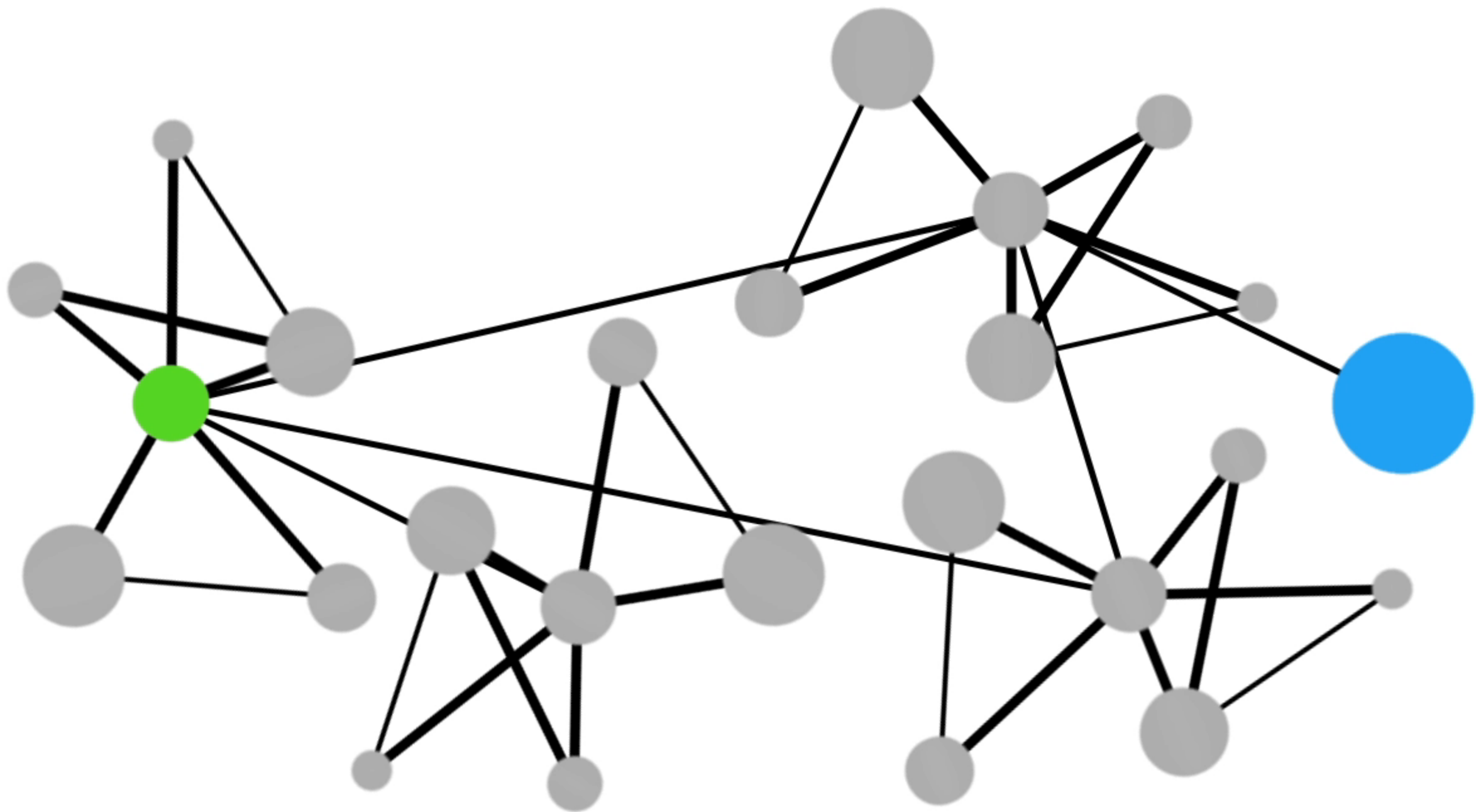




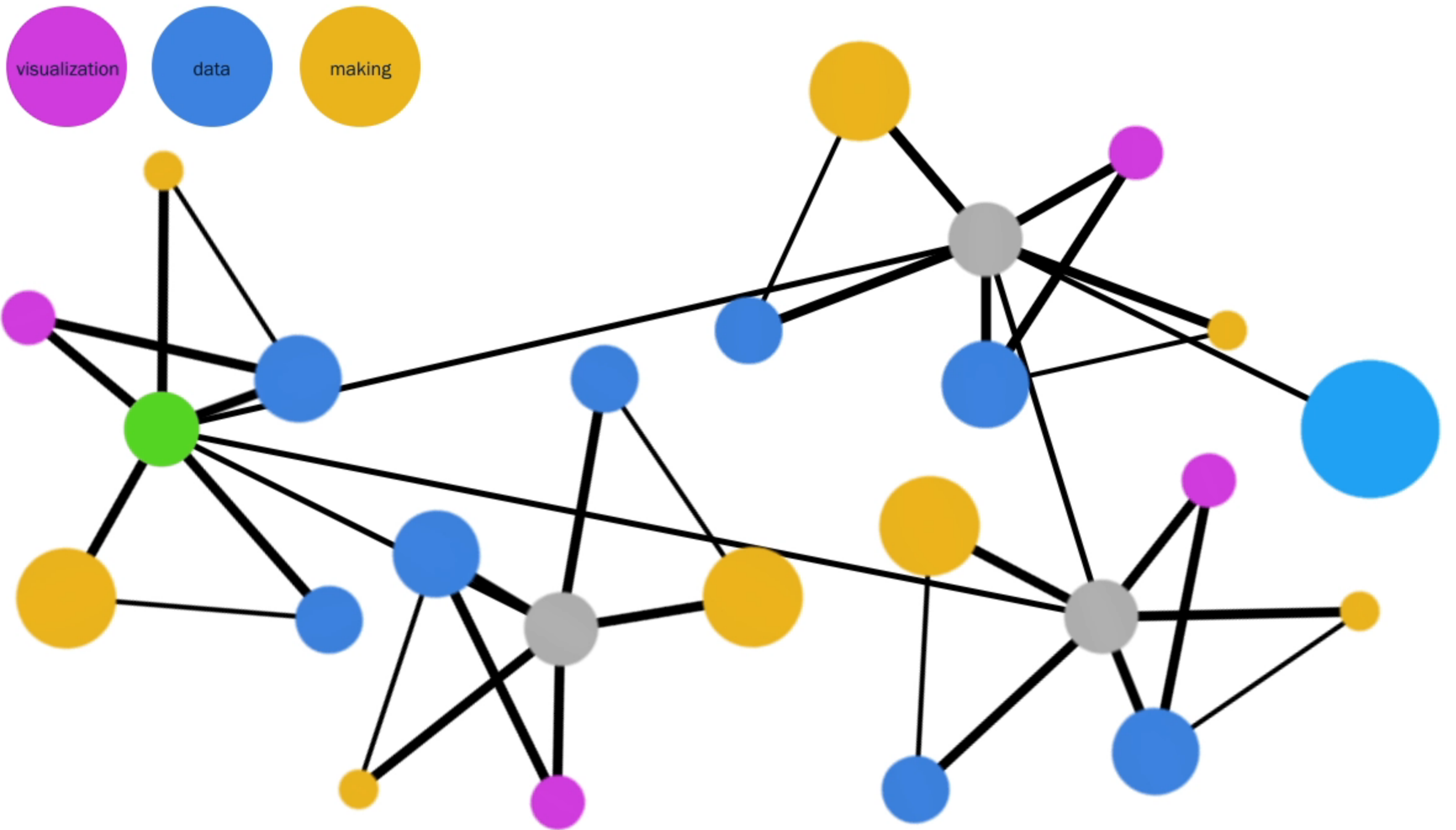




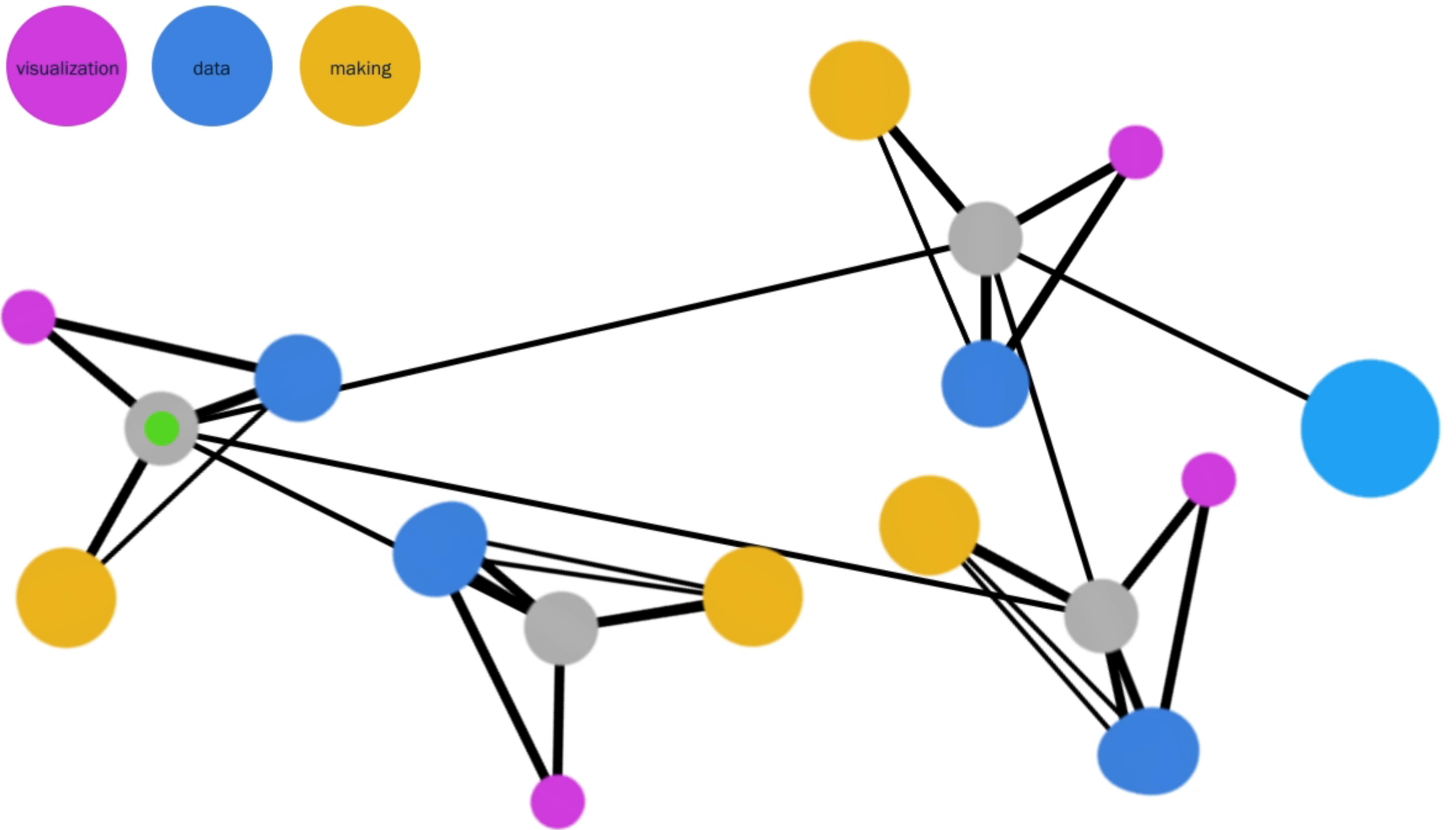




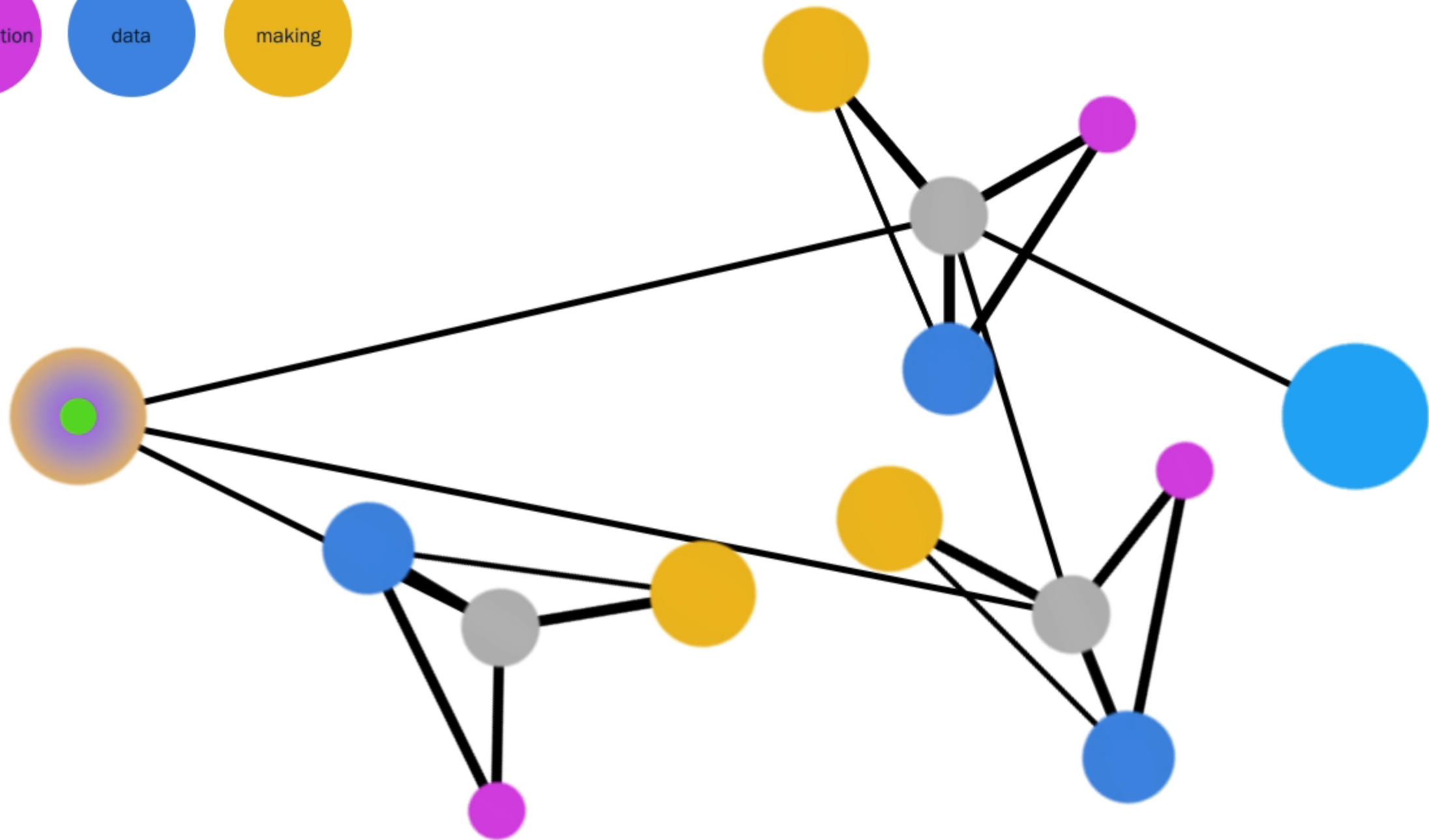












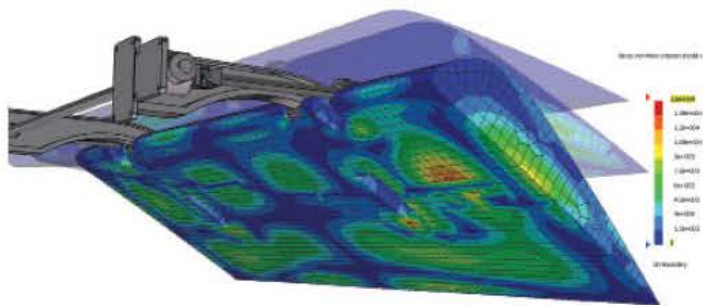


How do we do this?



We need the right tools.

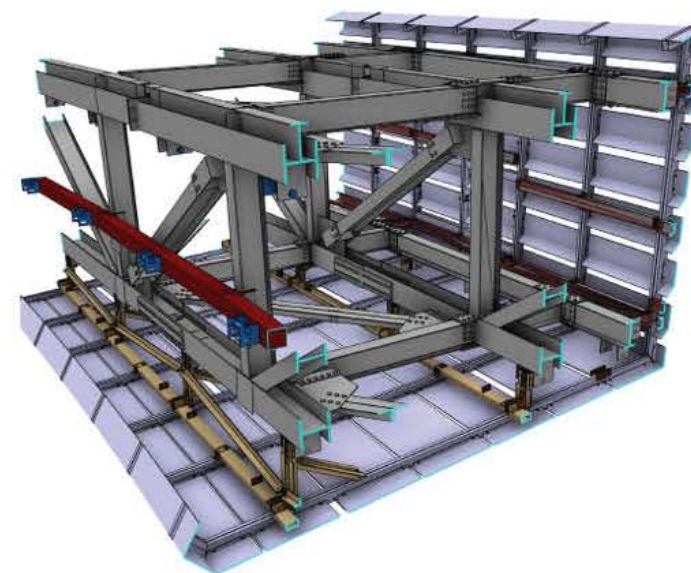




**BOEING**



**TESLA**



**sh p**





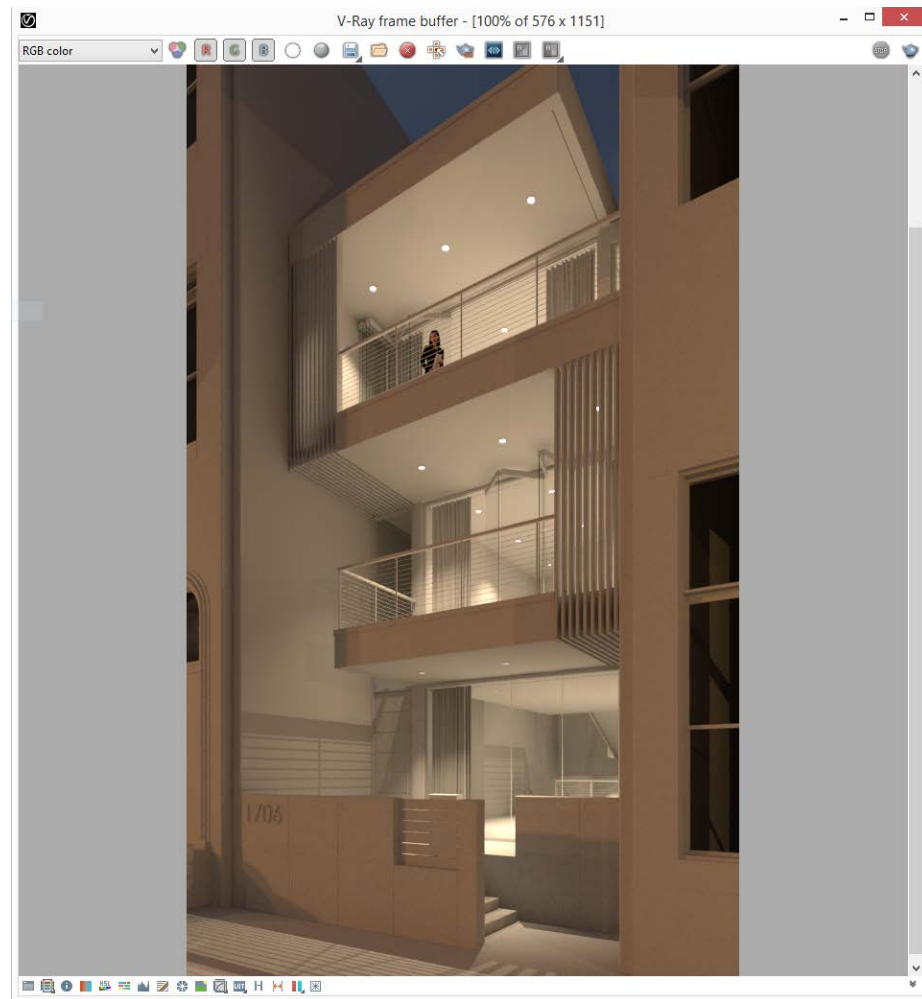
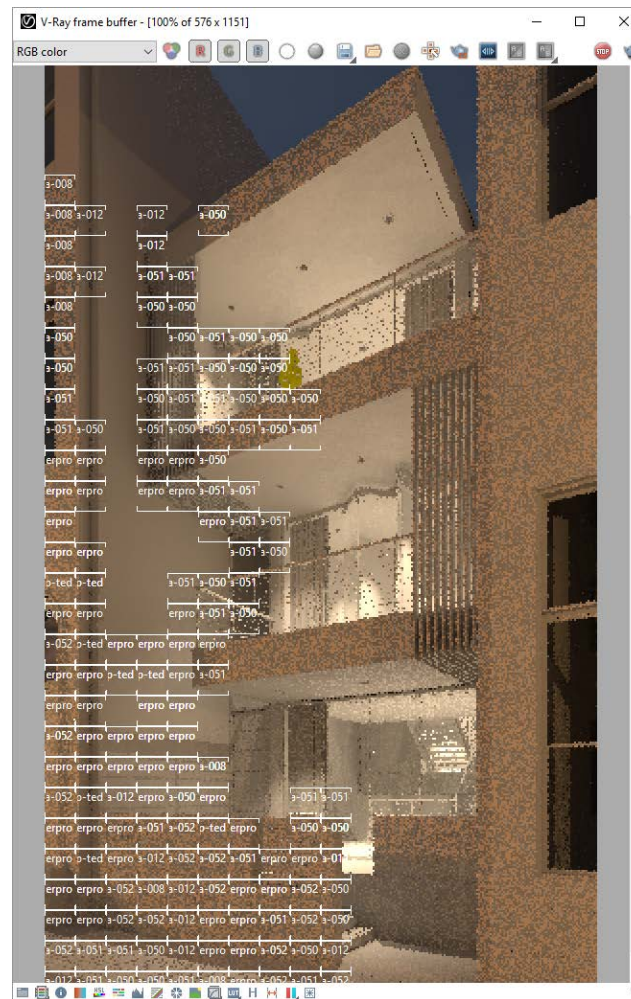
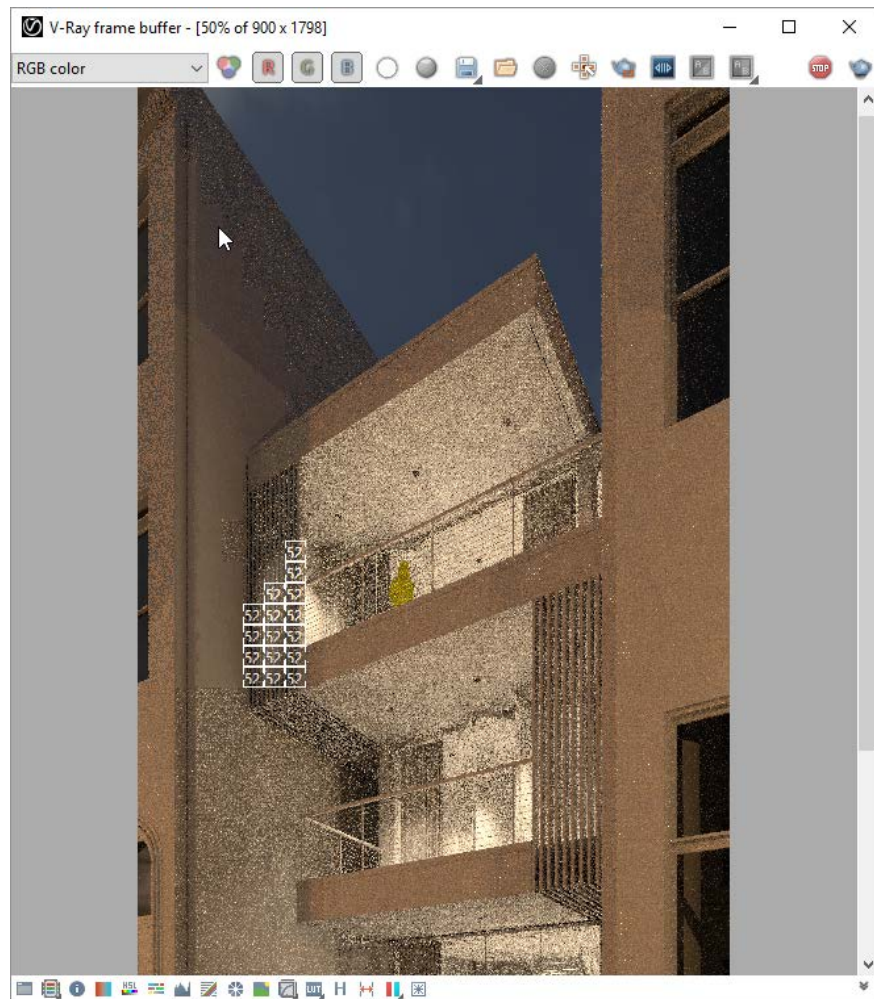
*3S* CATIA





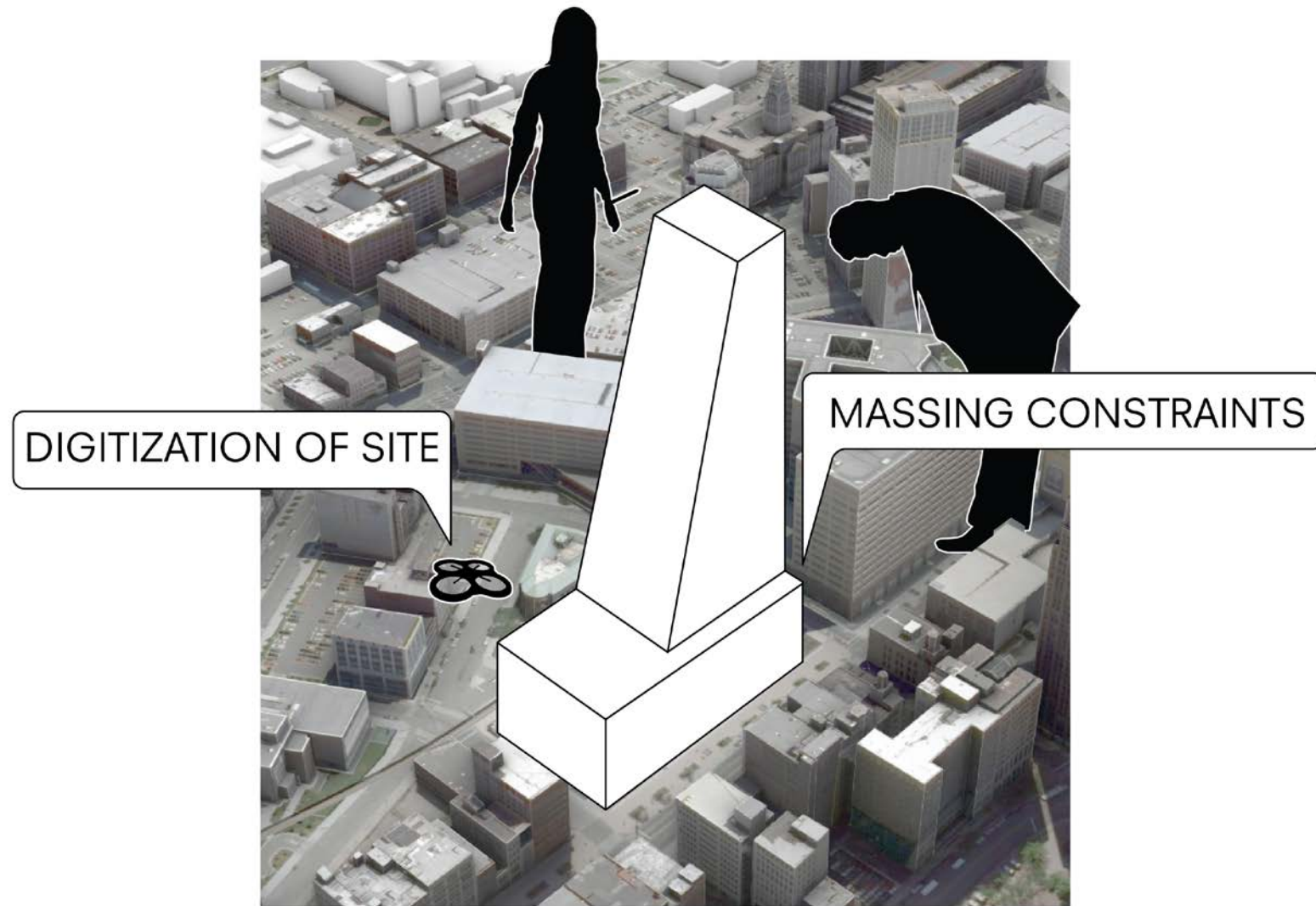
We need the right process.





**DESIGN** DELIVERY OCCUPANCY

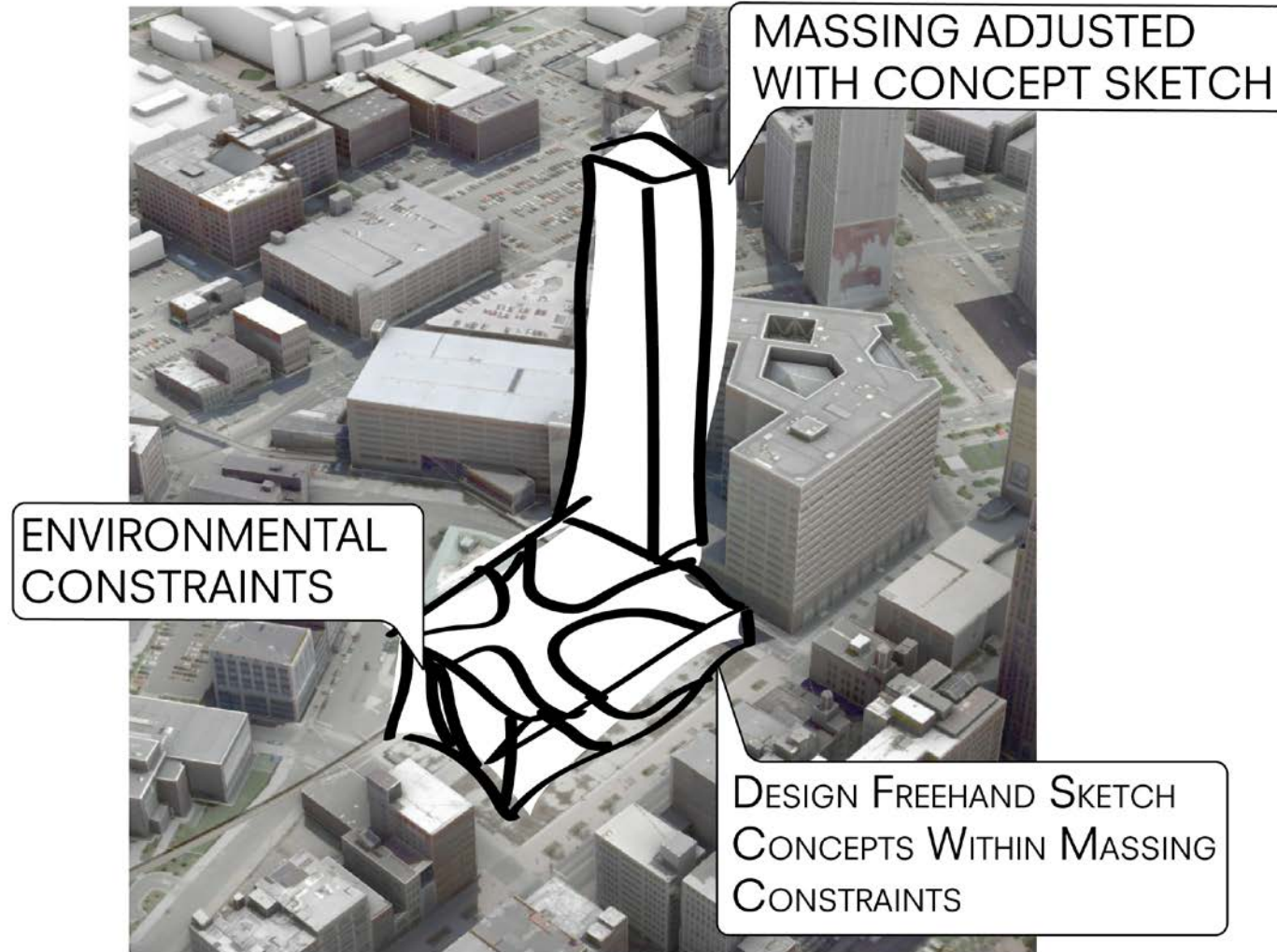
## 1a. Concept/Massing: What can you build?





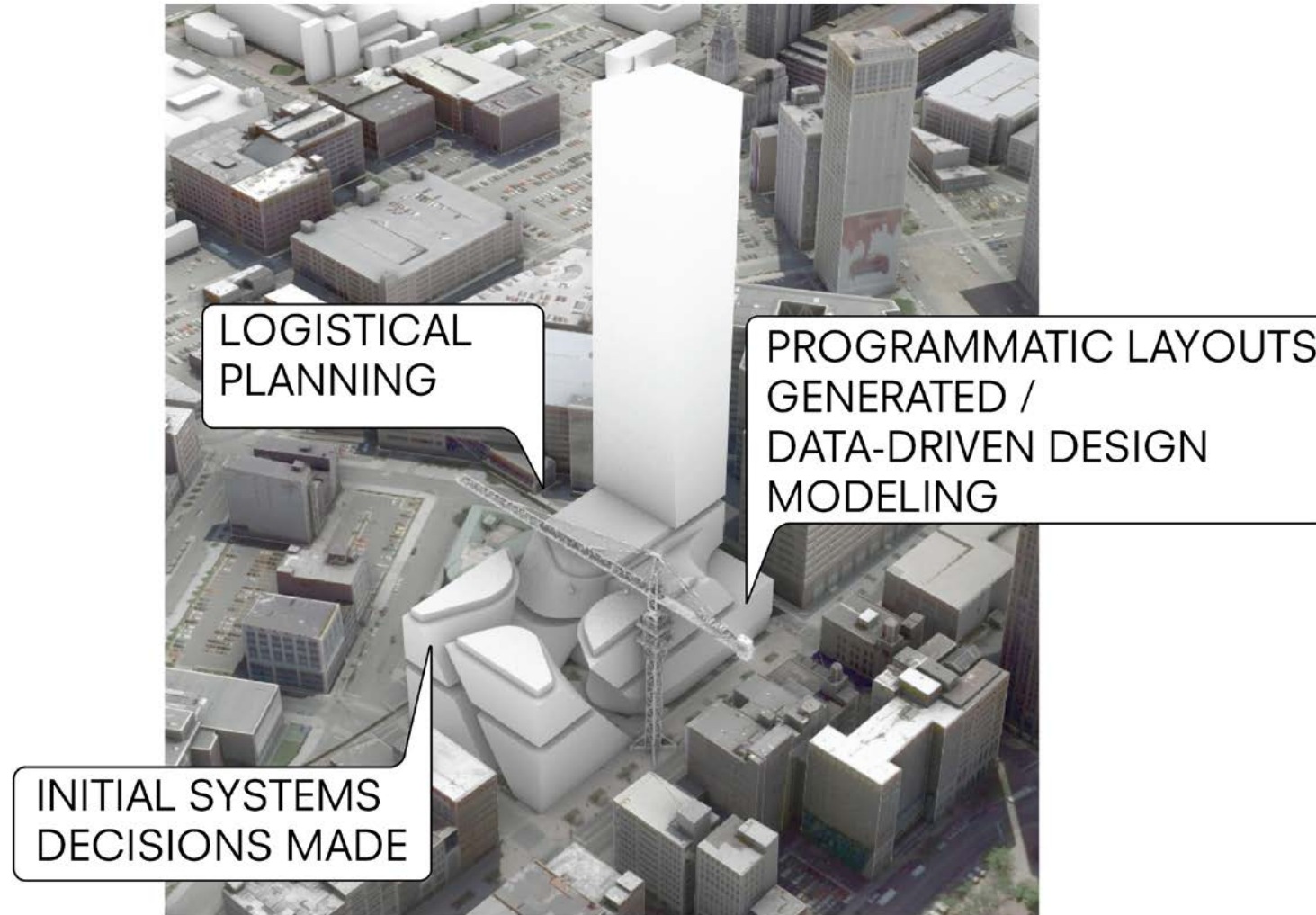
**DESIGN** DELIVERY OCCUPANCY

## 1b. Concept/Massing: What should you build?



**DESIGN** DELIVERY OCCUPANCY

1c. Systems/Layout





**DESIGN**

DELIVERY

OCCUPANCY

## 1d. Structure/Systems



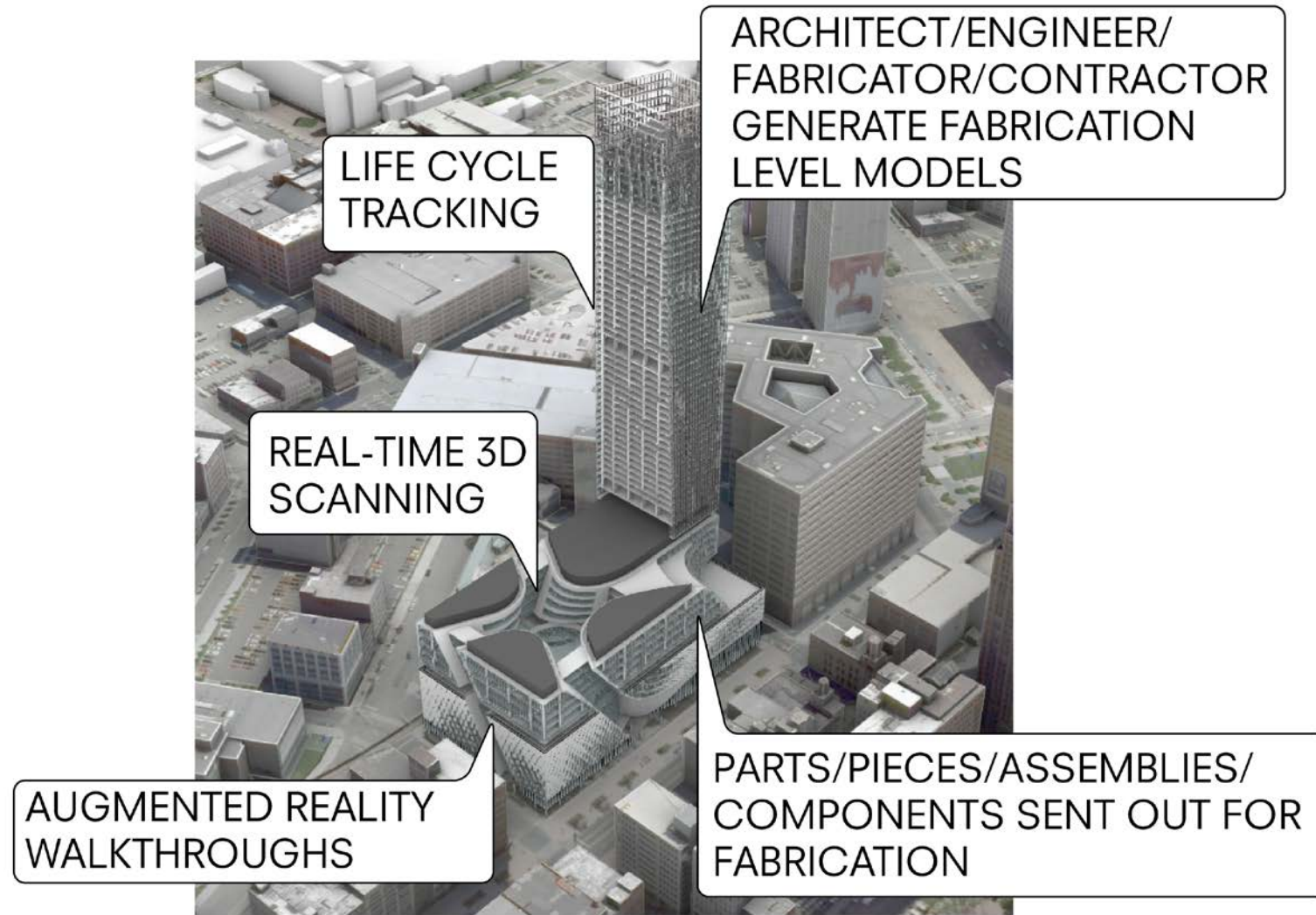
STRUCTURAL ANALYSIS  
PULLED FROM MODEL  
TO VERIFY DESIGN

MODEL ACTS AS DELIVERABLE  
FOR PRICING, CODE REVIEW,  
PLANNING

MECHANICAL SYSTEMS  
DEVELOPED IN MODEL

DESIGN **DELIVERY** OCCUPANCY

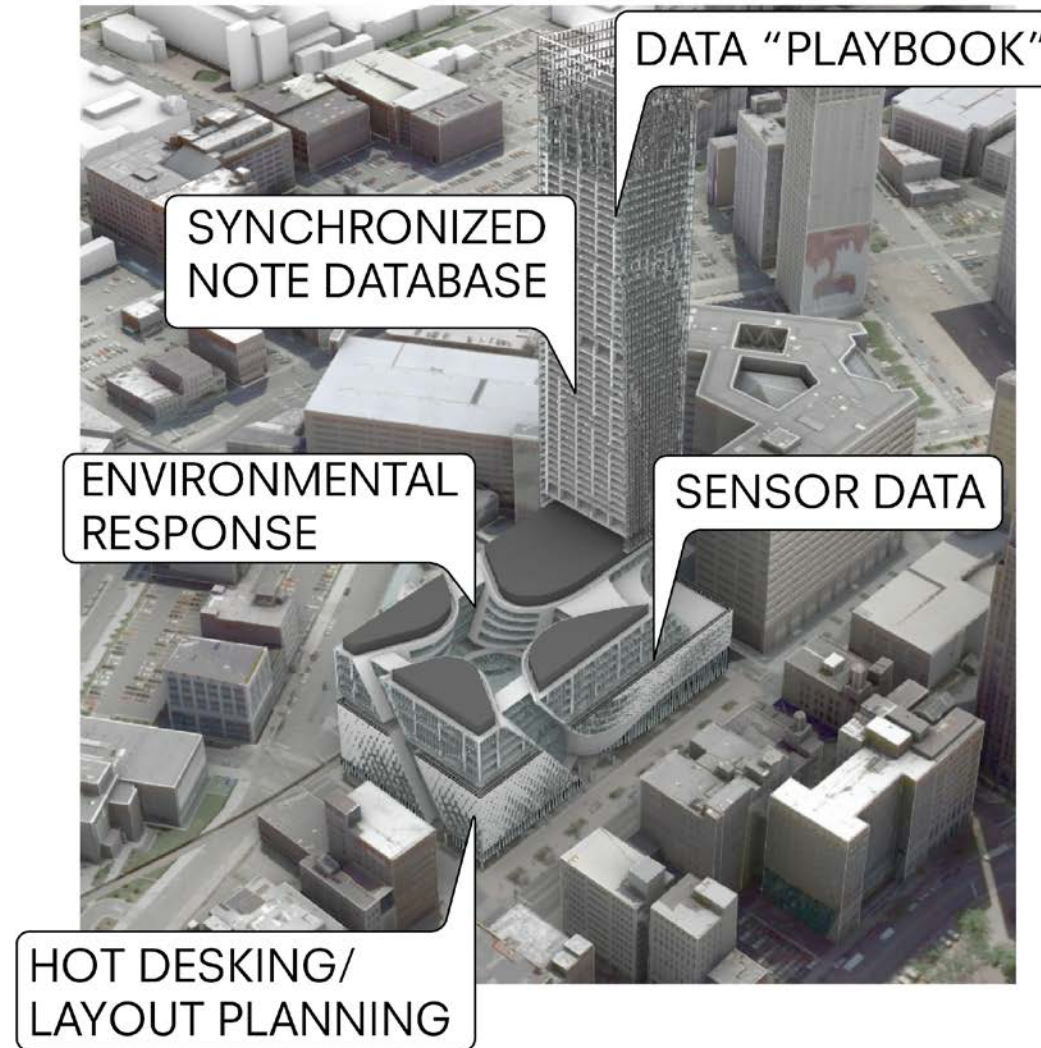
## 2a. Digital Twin





DESIGN DELIVERY **OCCUPANCY**

## 3a. Data Collection and Distribution

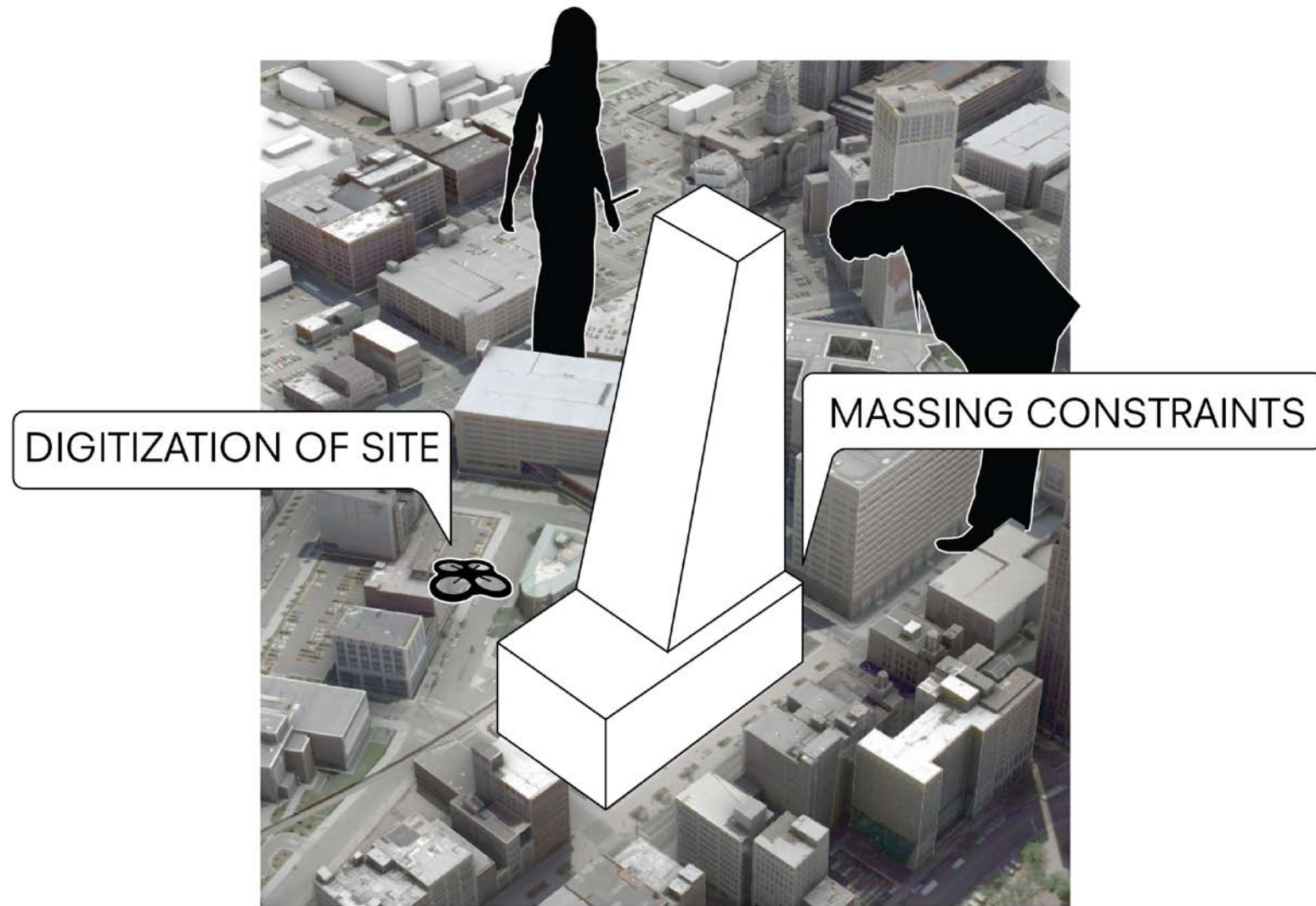


We need to manage data.



**DESIGN** DELIVERY OCCUPANCY

## 1a. Concept/Massing: What can you build?



**Envelope**  
Code + Massing





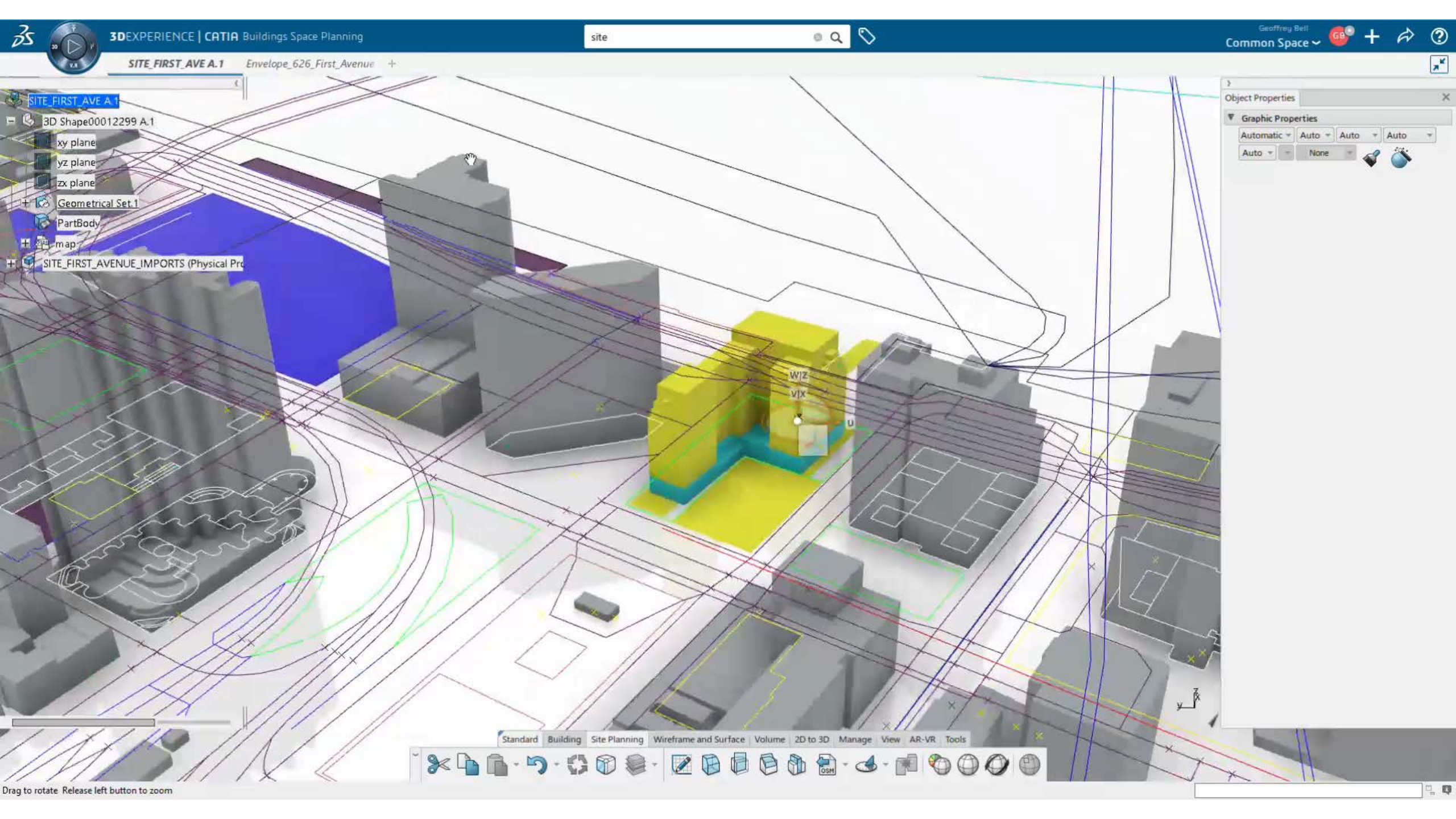
Launch ENVELOPE

JC

# Size up any site — instantly.

Unlock real estate development potential with Envelope.  
Verify opportunities. Accelerate deal flow.  
Gain your competitive advantage.



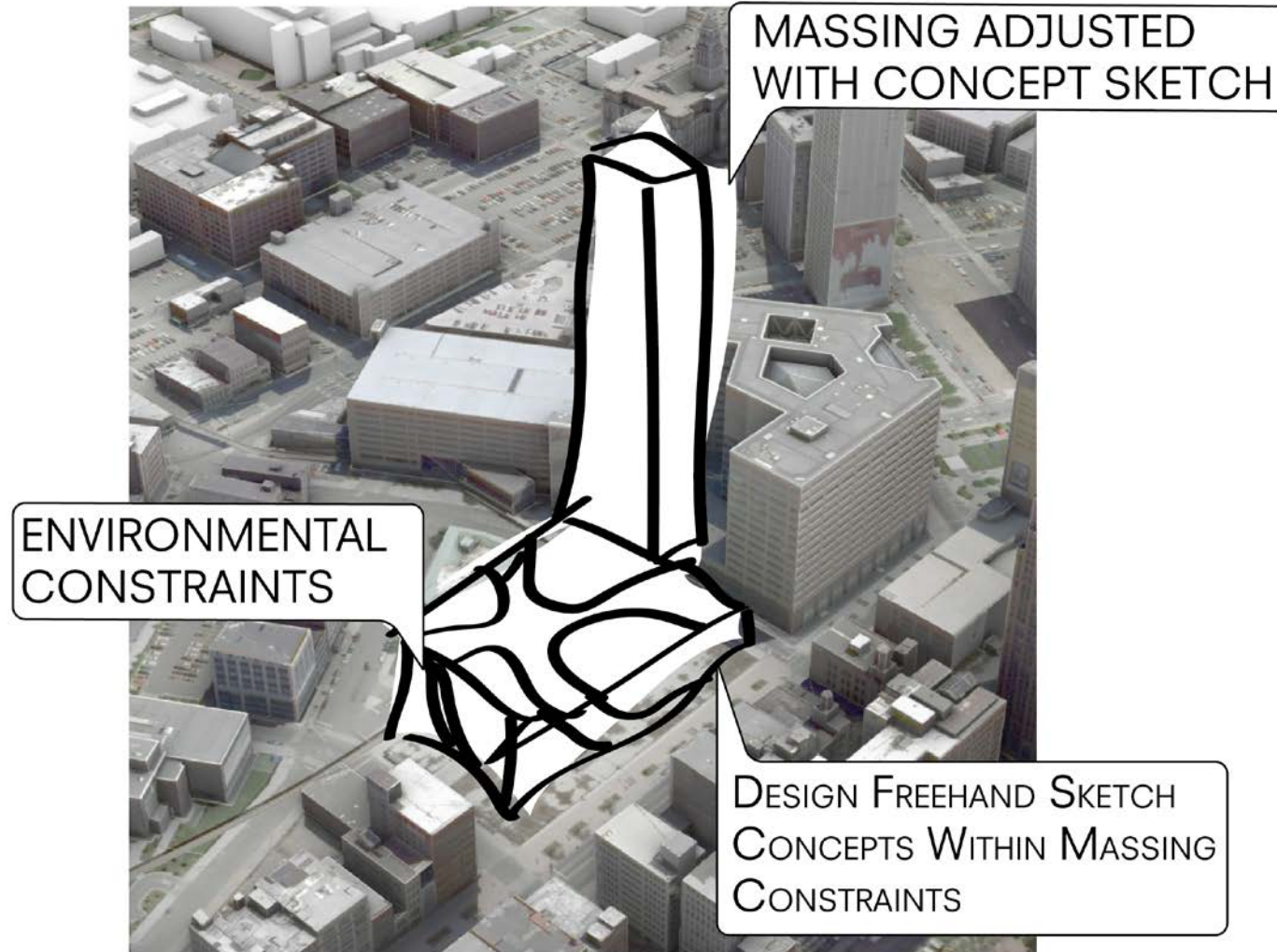






**DESIGN** DELIVERY OCCUPANCY

## 1b. Concept/Massing: What should you build?



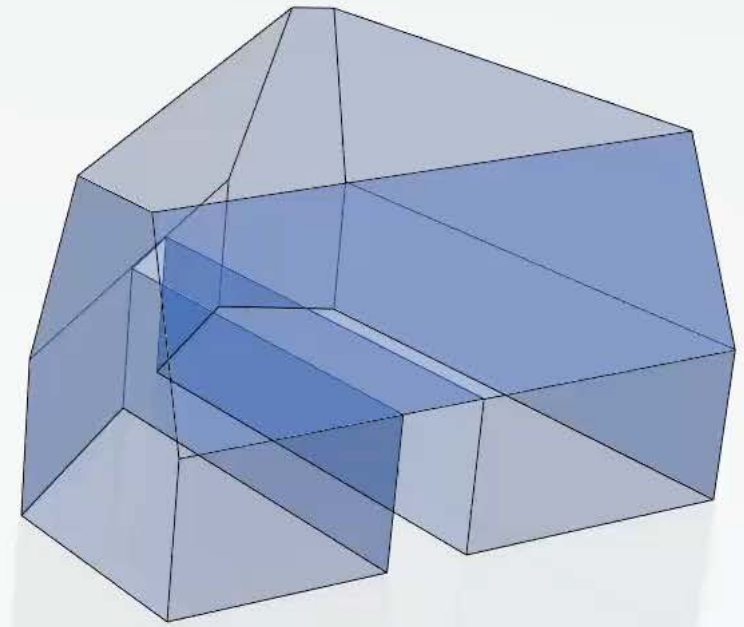
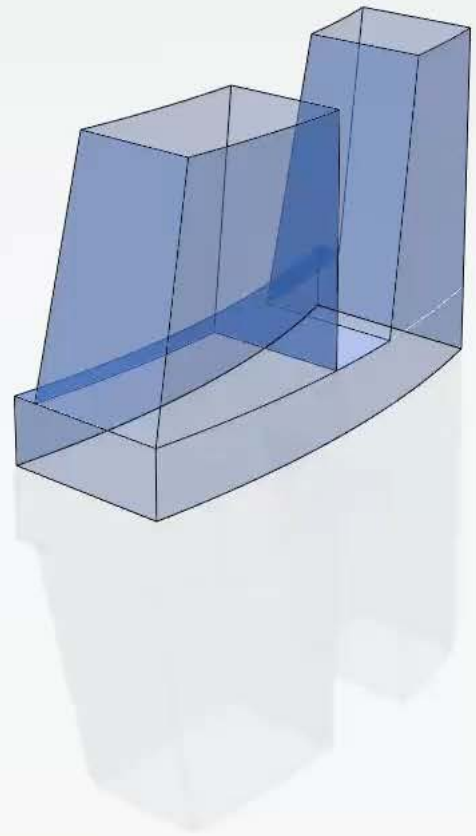
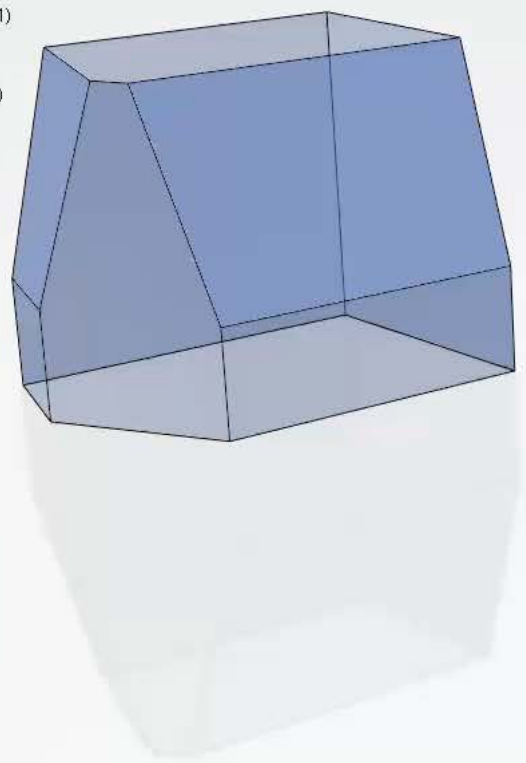


# **Design Templates**

Automating Baseline Data to Inform Design



- OVG\_MassingSetup A.1
  - OVG\_GridSetup A.1 (Physical Product00350981.1)
  - OVG\_MassingWF A.1 (OVG\_MassingWF.1)
  - Walls A.1 (Walls.1)
  - OVG\_MassingPC A.1 (OVG\_MassingPC.1)
    - 3D Shape00265311 A.1
      - xy plane
      - yz plane
      - zx plane
      - Parameters
      - Relations
      - PowerCopy
      - PC\_Massing
        - LineDef
      - PartBody
      - RefGeo
      - PCSetup
      - PCOutput
      - ProgramSetup

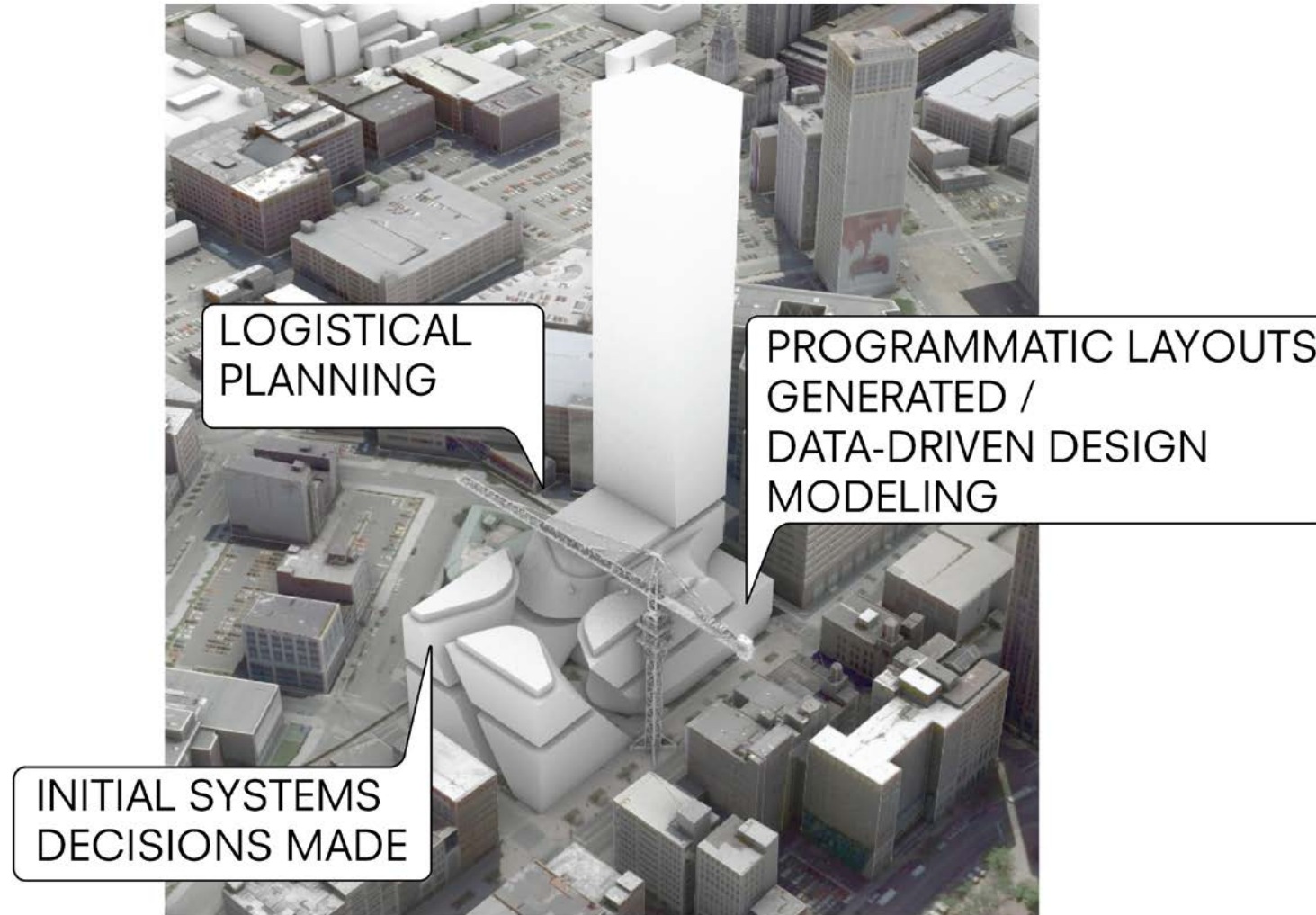






**DESIGN** DELIVERY OCCUPANCY

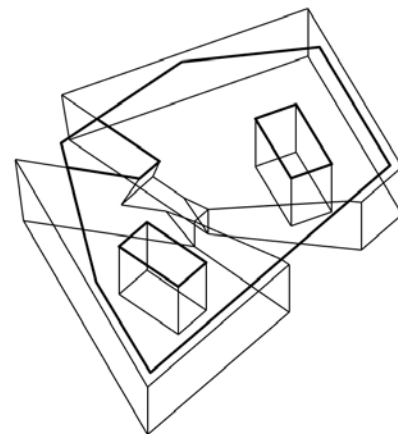
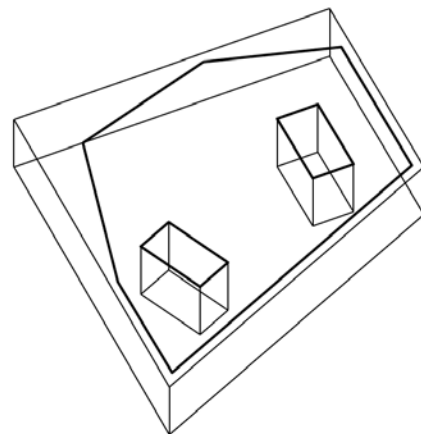
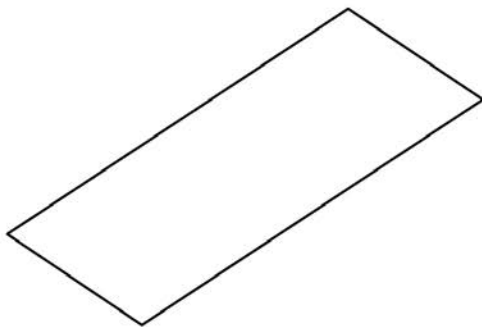
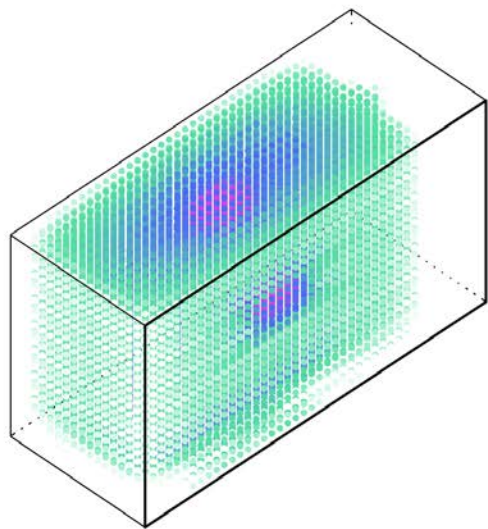
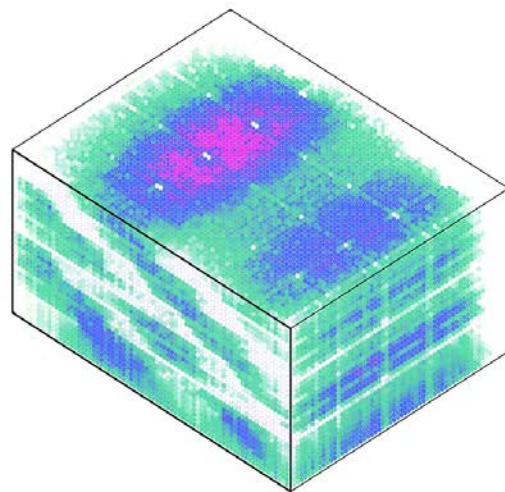
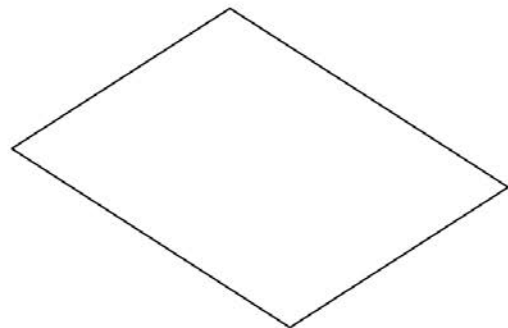
## 1c. Systems/Layout





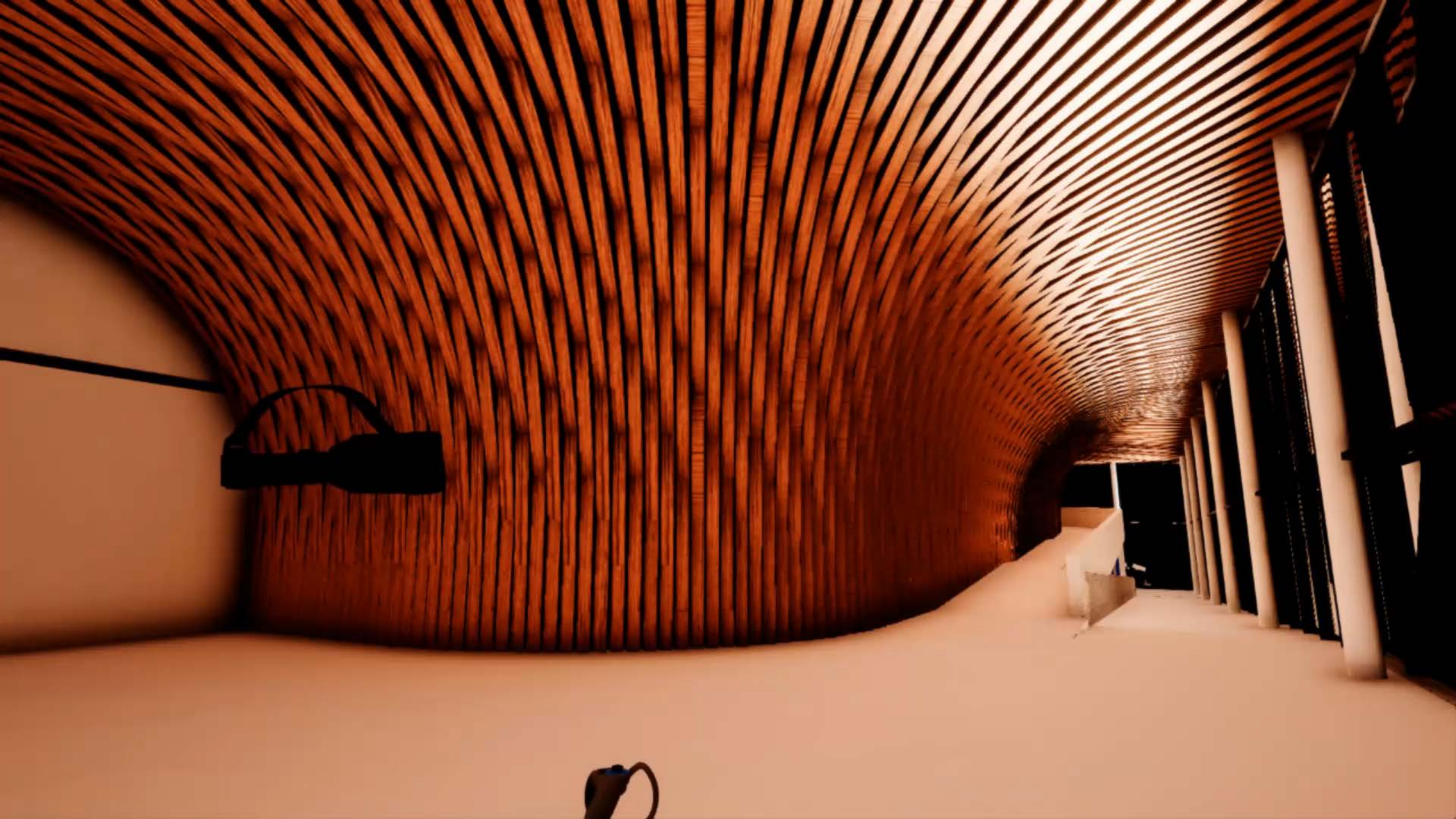
# **Real-Time 3D Analysis**

## Connectivity and View Studies





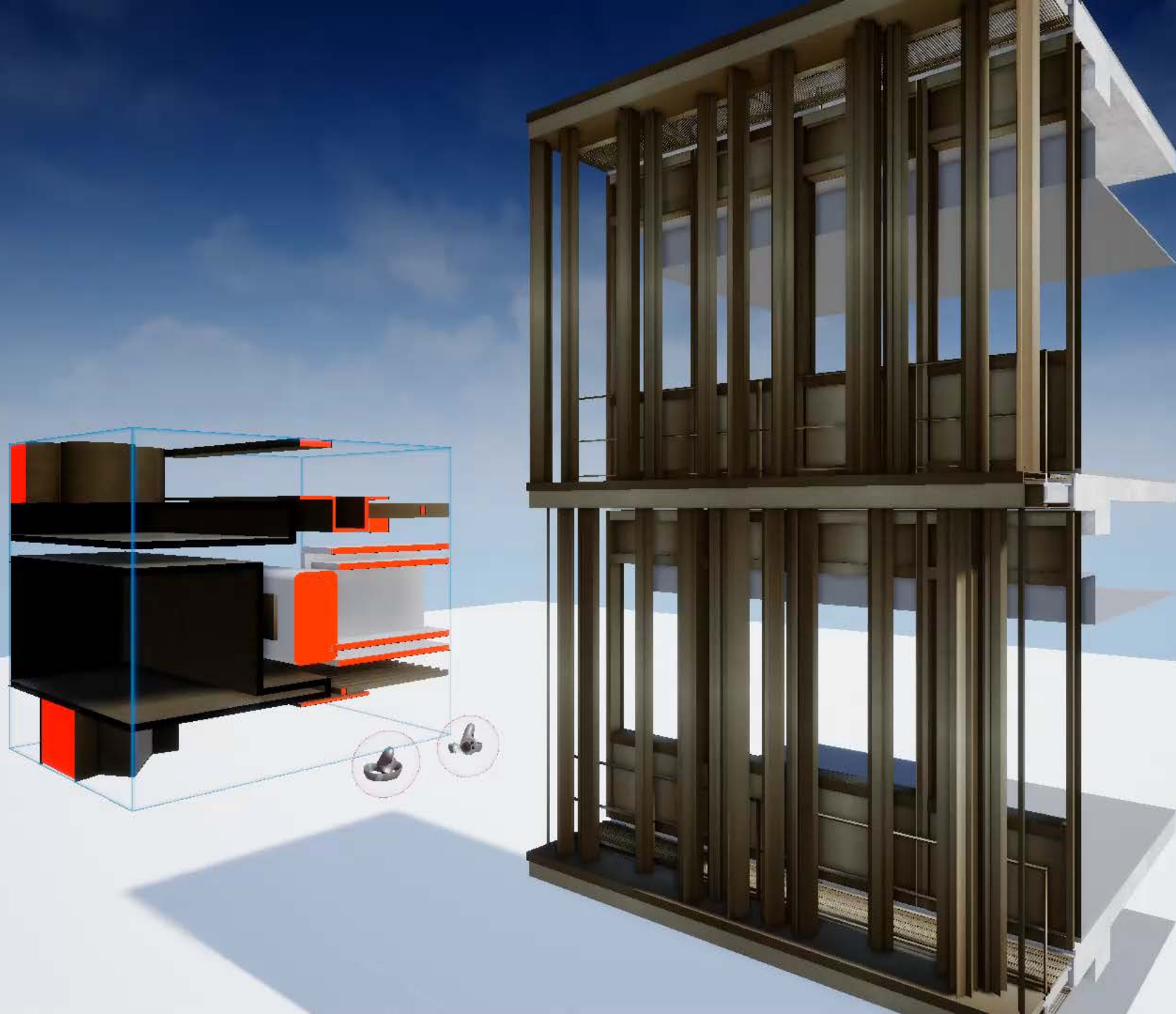
**Syracuse NVRC**  
Environmental Analysis + Data Driven Design





# **Façade Systems**

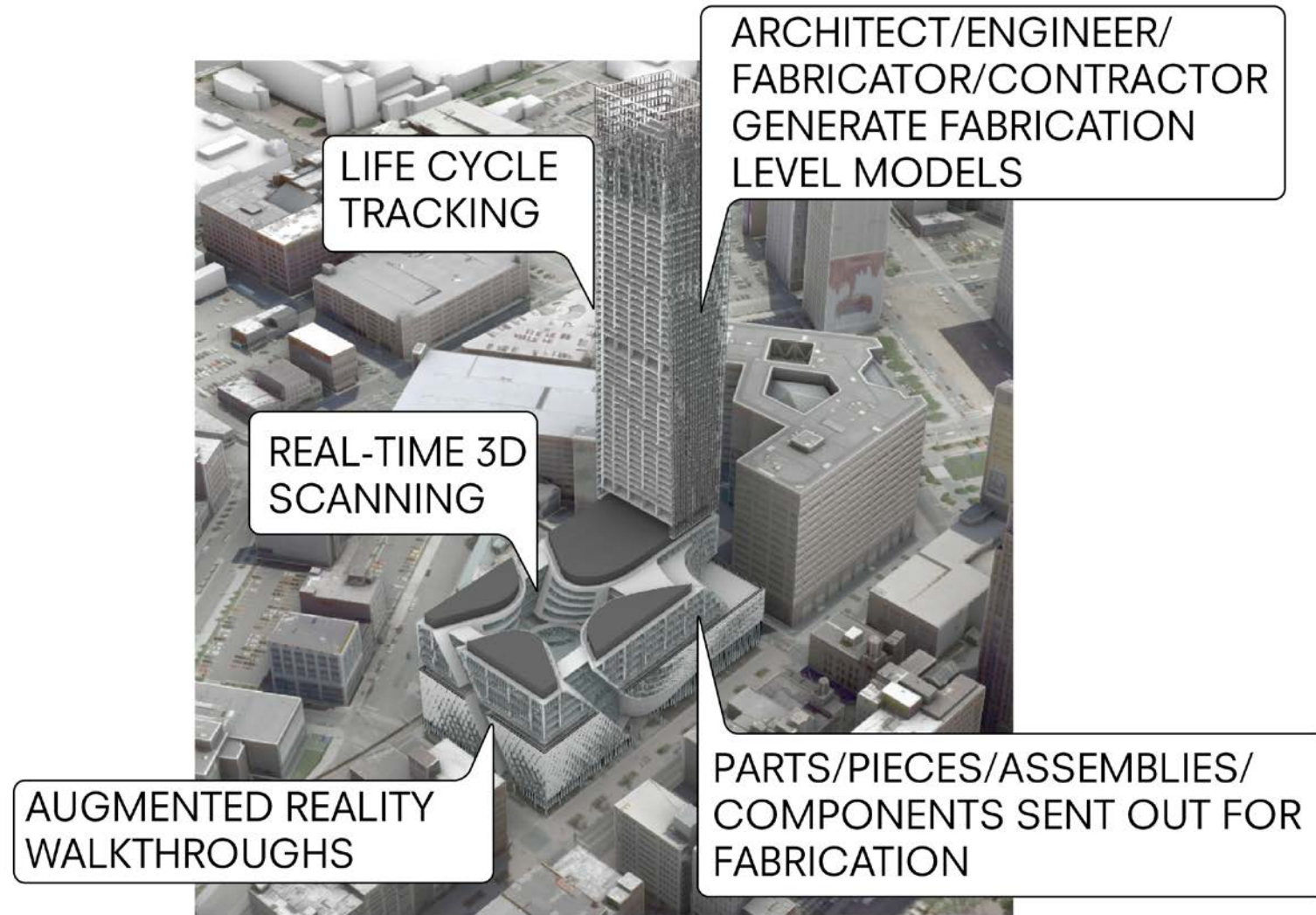
## Interactive Visualization





DESIGN **DELIVERY** OCCUPANCY

## 2a. Digital Twin



**87 Dikeman St**  
Lidar Scanning + Point Clouds











**Barclays Center**  
Life Cycle Tracking + AR



BARCLAYS CENTER

BARCLAYS CENTER BARCLAYS

Subway





# BARCLAYS CENTER

## PROJECT TEAM

### OWNER /

FOREST CITY RATNER COMPANIES

### DESIGN BUILDER /

HUNT CONSTRUCTION GROUP, INC.

### ARCHITECT OF RECORD /

AECOM - ELLERBE BECKET, P.C.

### DESIGN ARCHITECT /

SHoP ARCHITECTS PC

### STRUCTURAL ENGINEERS /

THORNTON TOMASETTI, INC.

### MEP ENGINEERS /

WSP FLACK + KURTZ, INC.

### FACADE CONTRACTOR /

ASI LIMITED, INC.

[Log Out](#)

View All

View Fabrication

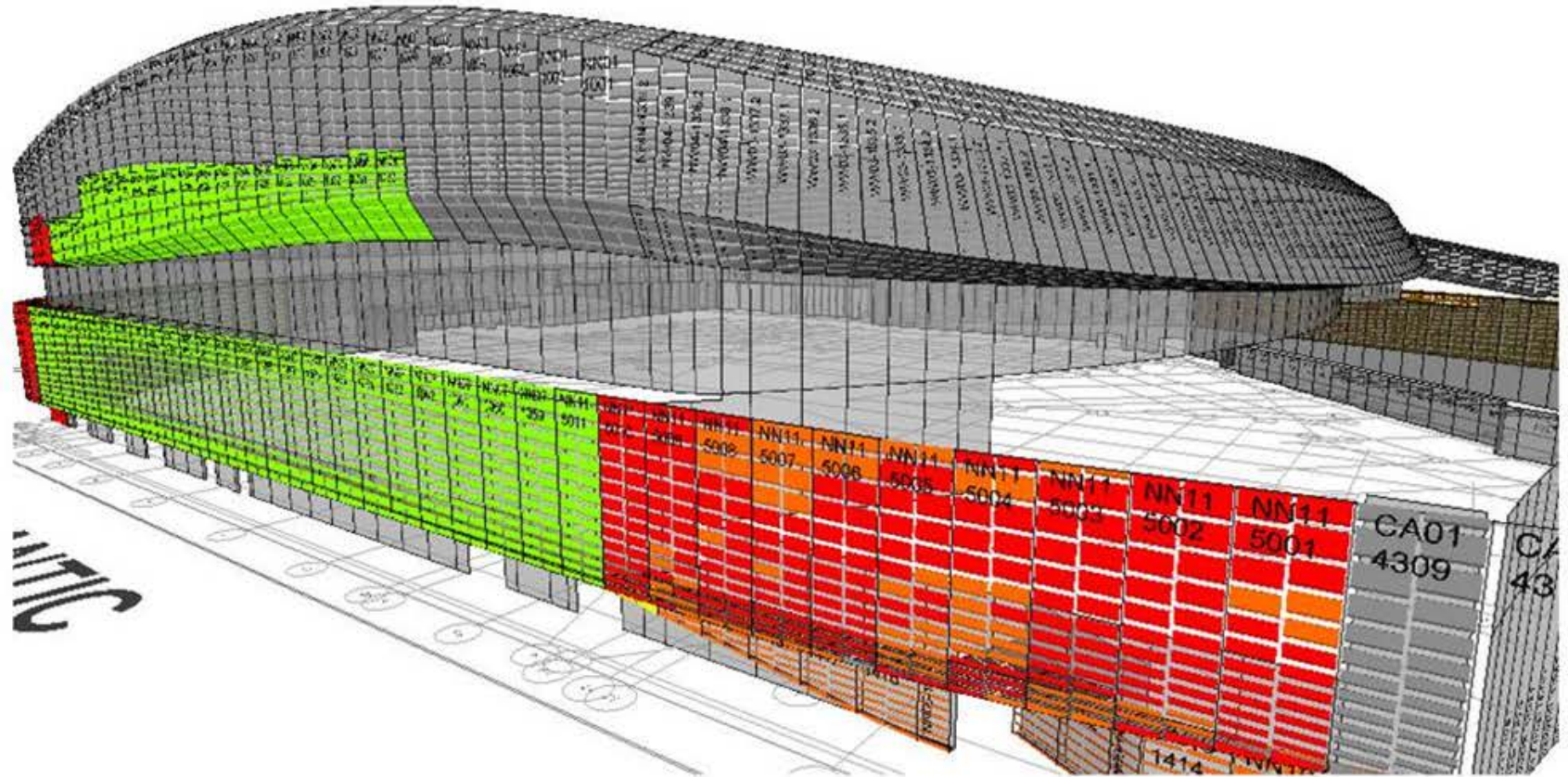
Panel View

/ Atlantic

Flatbush

Dean

Sixth



Walk

Look Around

Zoom

Zoom Box

Pan

Orbit

Examine

Turntable

Fly

Zoom All





# **Automated Assembly**

## Factory Planning



Modus\_Factory\_Sim A.1

Behavior00000358 A.1

Controller - KR100P-1.1

IO

Constants

Variables

Timers

Tasks

PickupAndReturn

PlaceAndReturn

Behavior00000360 A.1

KL1500 A.1 (KL1500.1)

Mechanism Representation0000

Behavior00000703 A.1

Controller - KL1500 A.1

IO

Constants

Variables

Tasks

DeviceTask

KL1500:KL1500.00 A.1 (KL1500

KL1500:KL1500.01b A.1 (KL150

KL1500:KL1500.01c A.1 (KL150

KL1500:KL1500.01d\_1 A.1 (KL1

KL1500:KL1500.01a A.1 (KL150

KL1500:KL1500.01 A.1 (KL1500

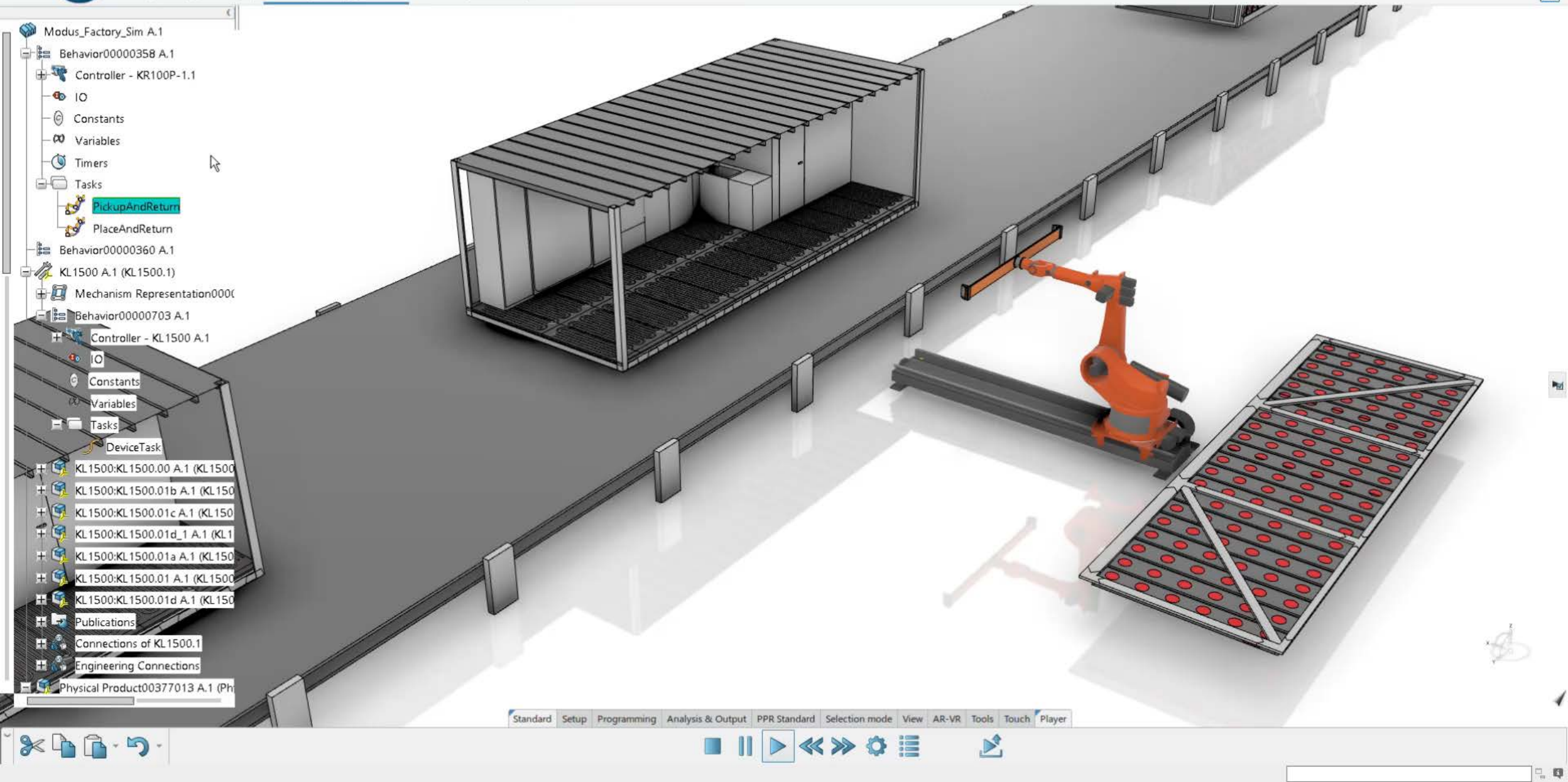
KL1500:KL1500.01d A.1 (KL150

Publications

Connections of KL1500.1


Engineering Connections

Physical Product00377013 A.1 (Ph



The 3D simulation shows a factory floor environment. A red robotic arm is positioned on a mobile base, reaching towards a conveyor system. The conveyor system consists of a long, narrow platform with a grid of red circular markers. A large, rectangular, open-sided structure is visible in the background. The floor is a light gray, and there are various railings and barriers throughout the scene.

Standard Setup Programming Analysis & Output PPR Standard Selection mode View AR-VR Tools Touch Player



## **Feature Wall**

AR Walkthrough + Assembly Testing









Selection Data:  
Plane



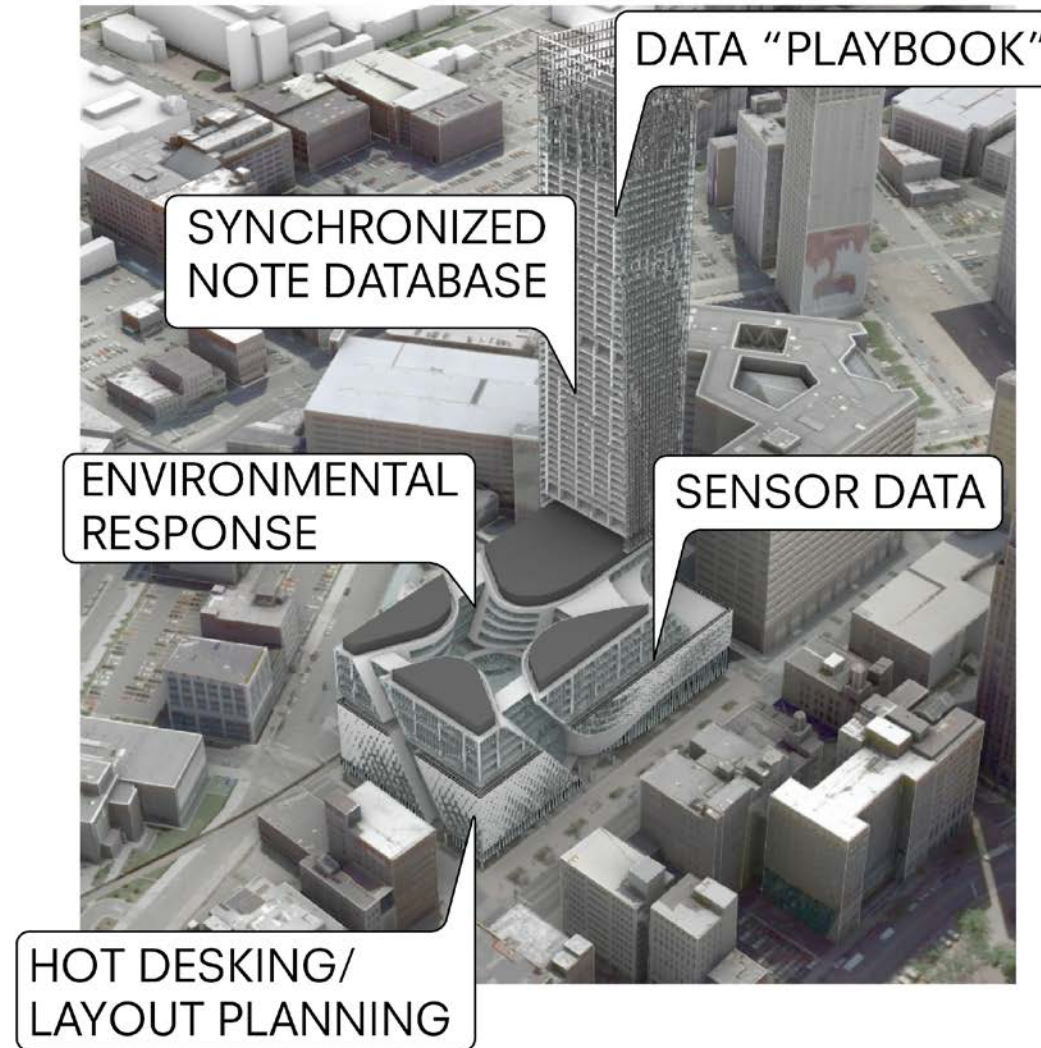






DESIGN DELIVERY **OCCUPANCY**

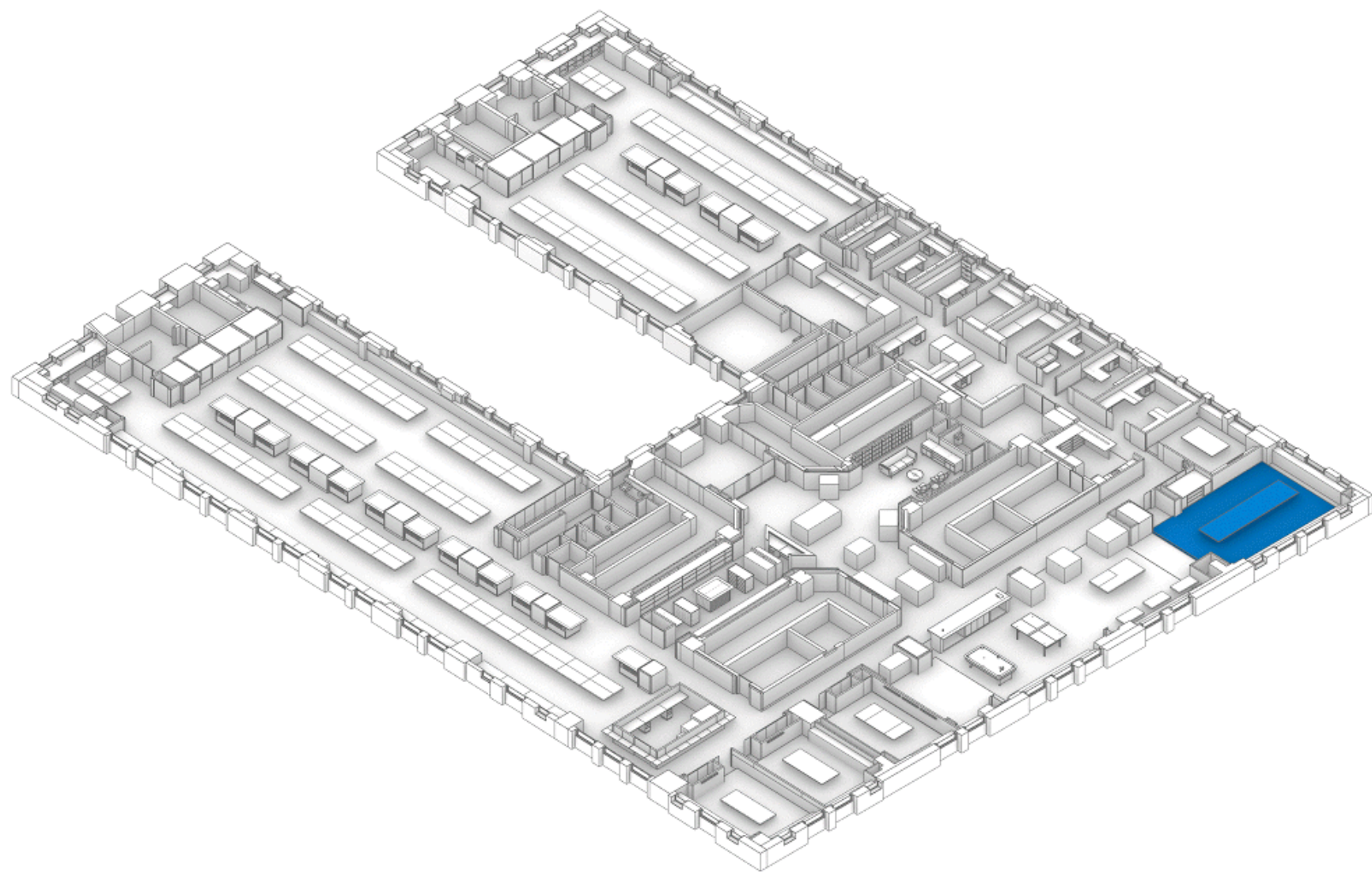
## 3a. Data Collection and Distribution

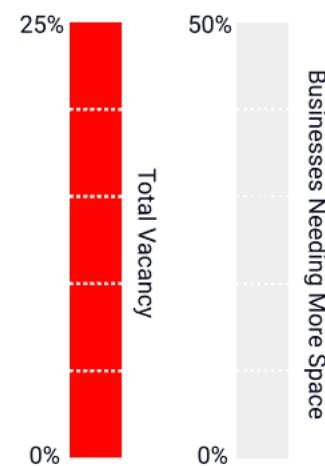
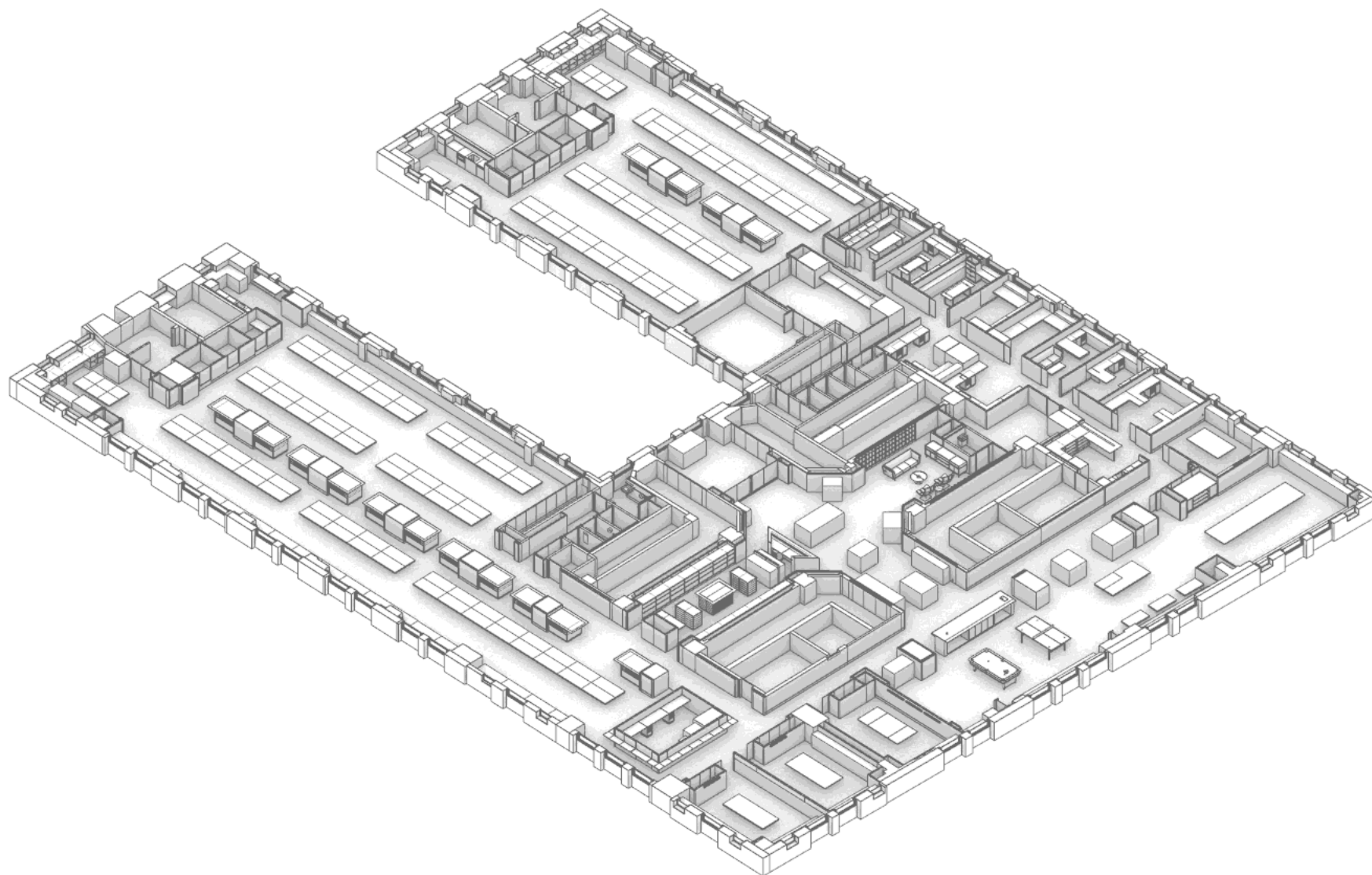


# **233 Broadway**

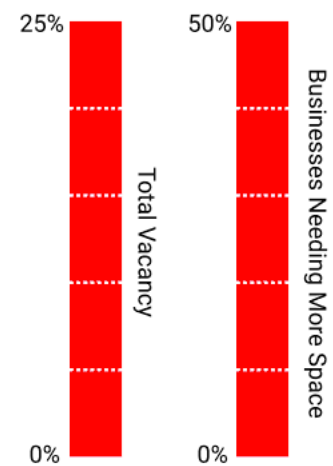
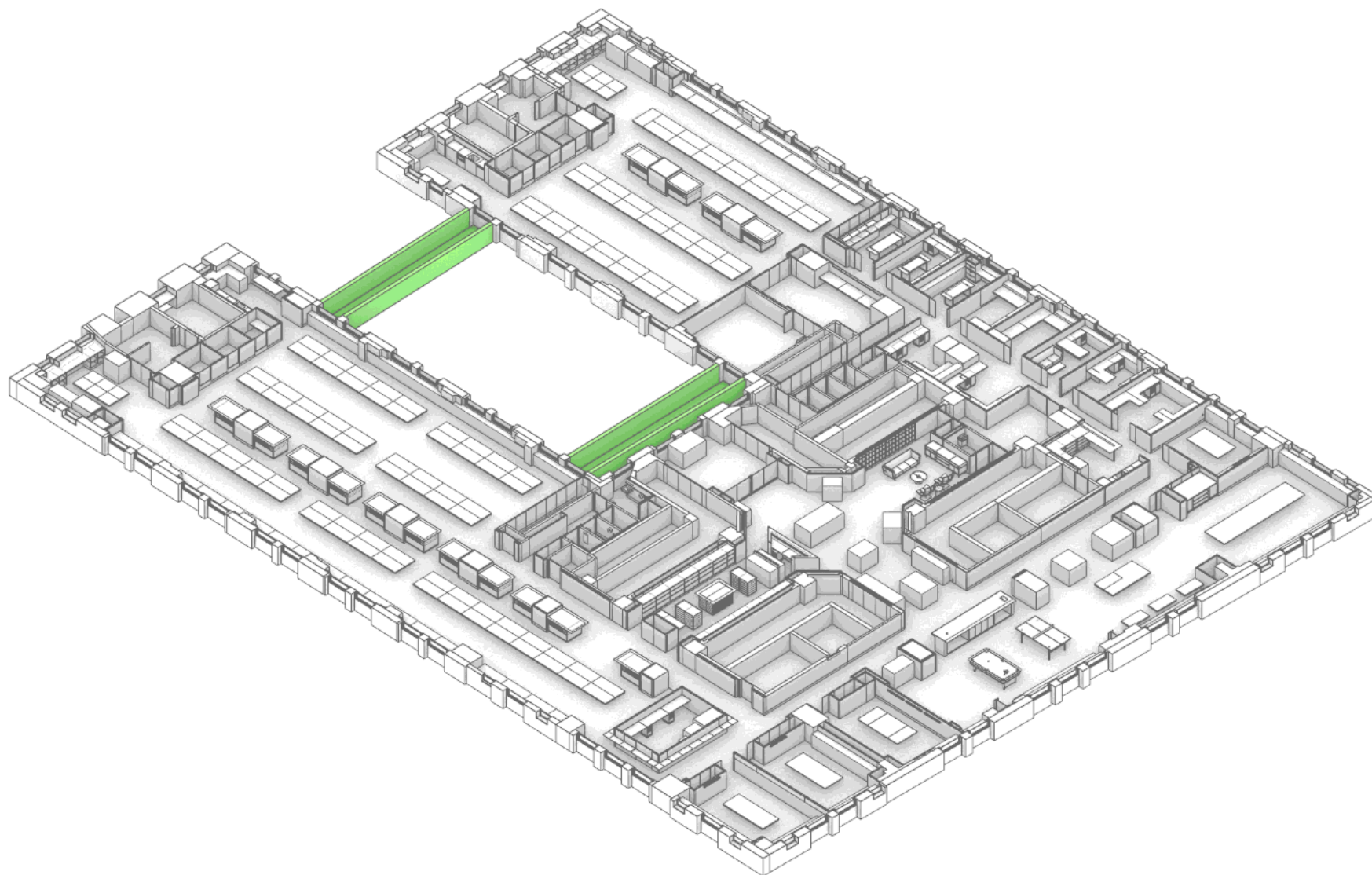
## Layout Planning











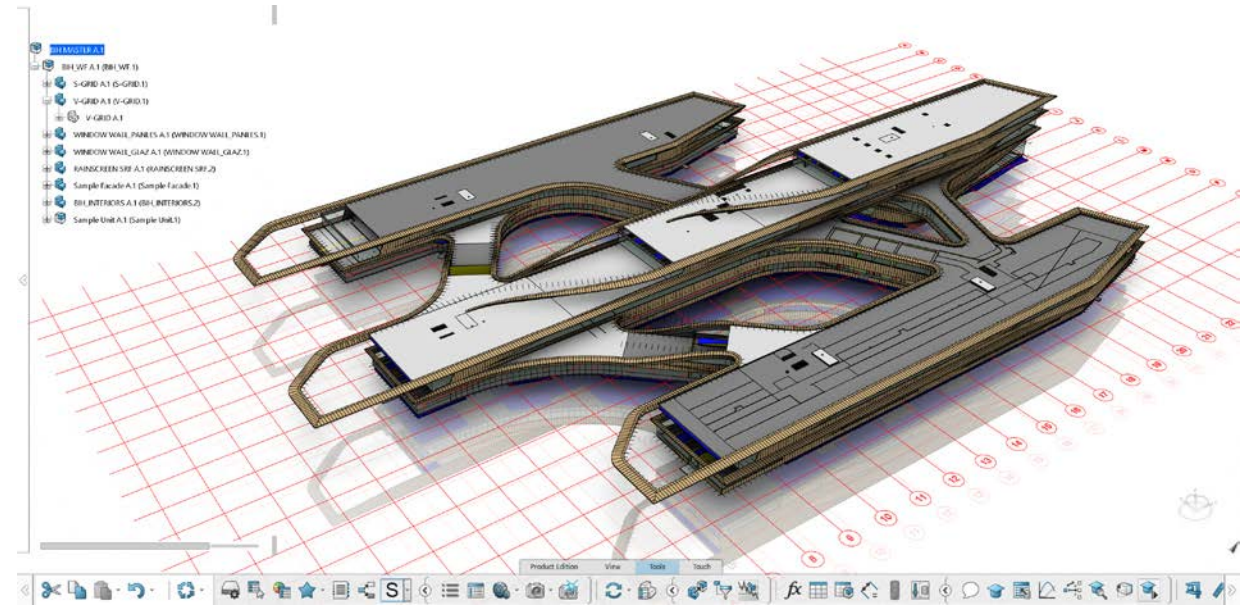
# **Botswana Innovation Hub**

## Case Study







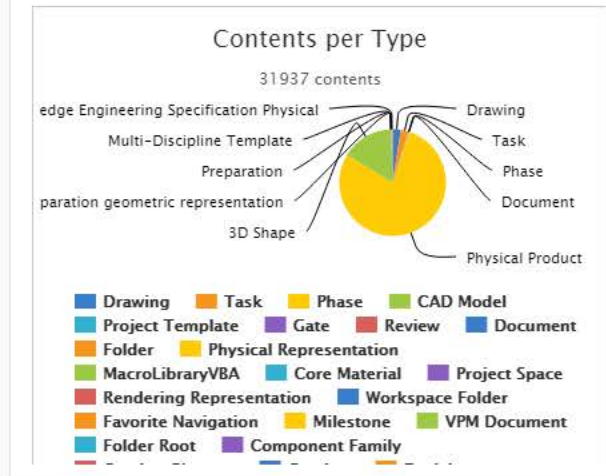
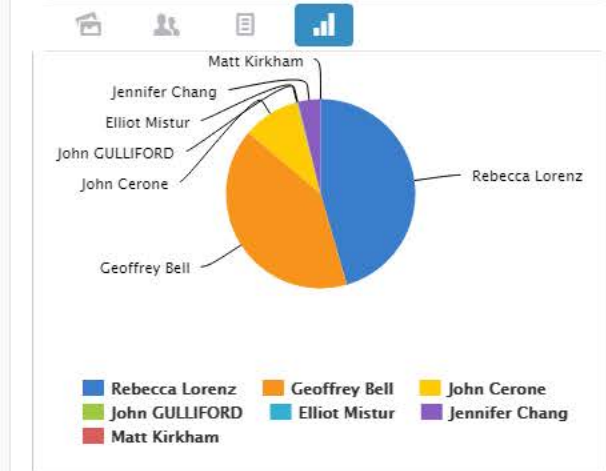




Collaborative Spaces Reader - BOTSWANA ...

← BOTSWANA VDC

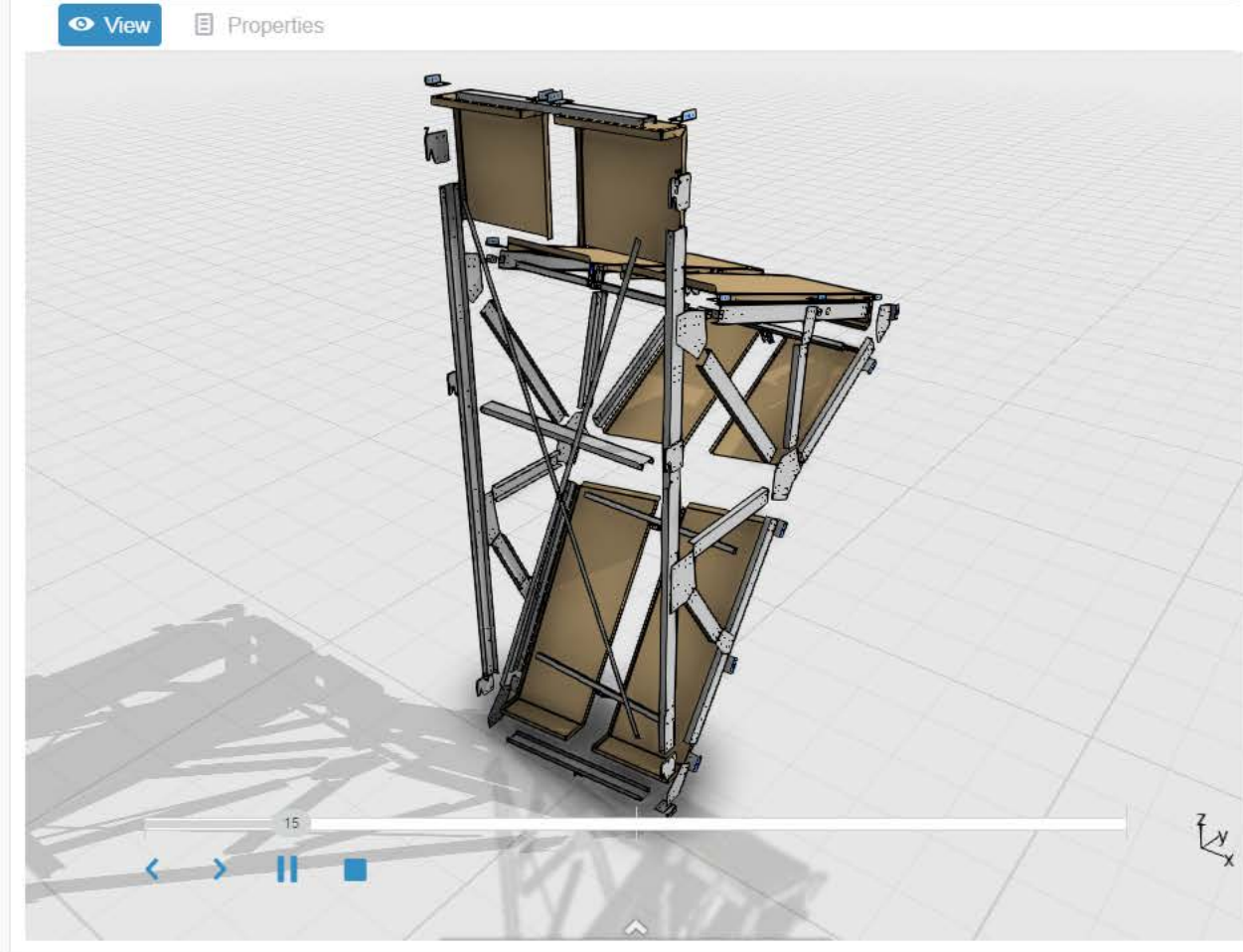
John Cerone : 937 days ago



Collaborative Spaces Reader - RS2052

≡ RS2052

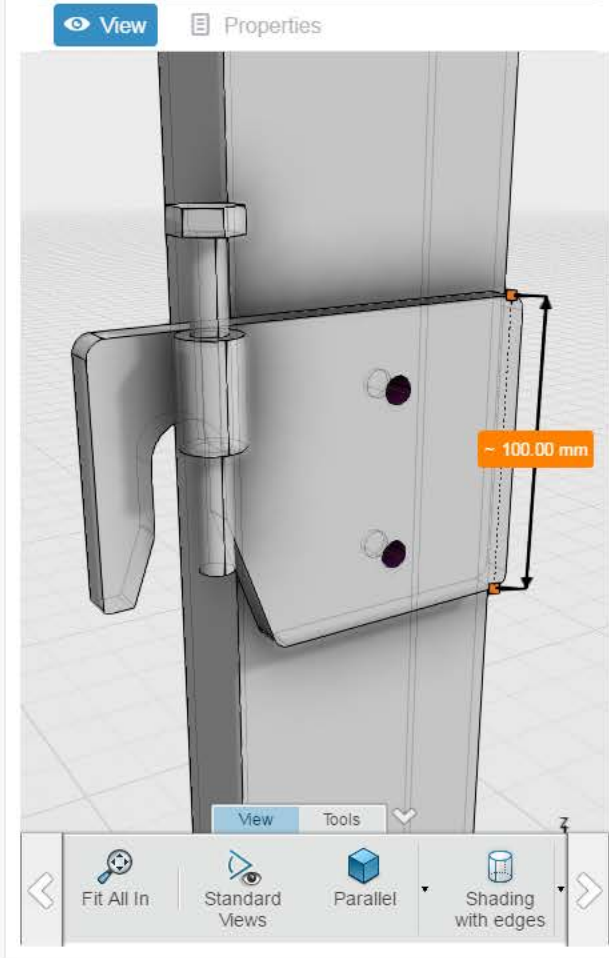
John Cerone : 19 days ago



Collaborative Spaces Reader - AA0000-01

← AA0000-01

John Cerone : about 3 hours ago













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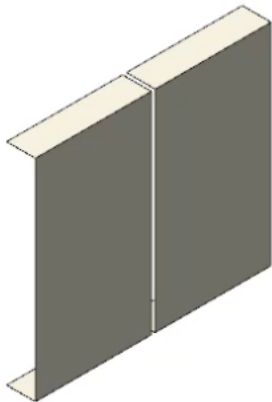
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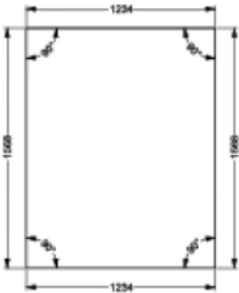
English



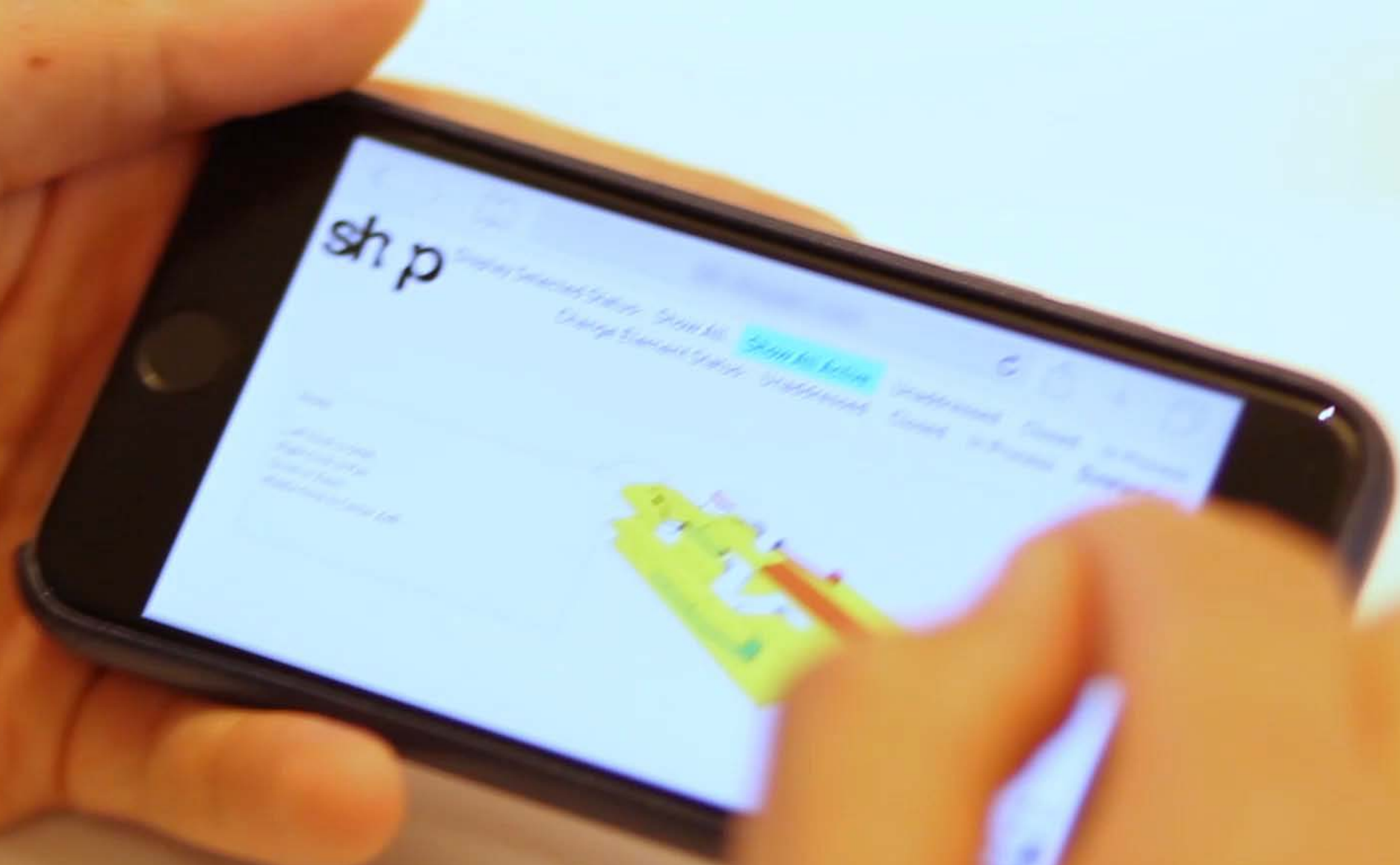
Unique Rainscreen Units



Unique Window Wall Units



0001





Radius:1.4

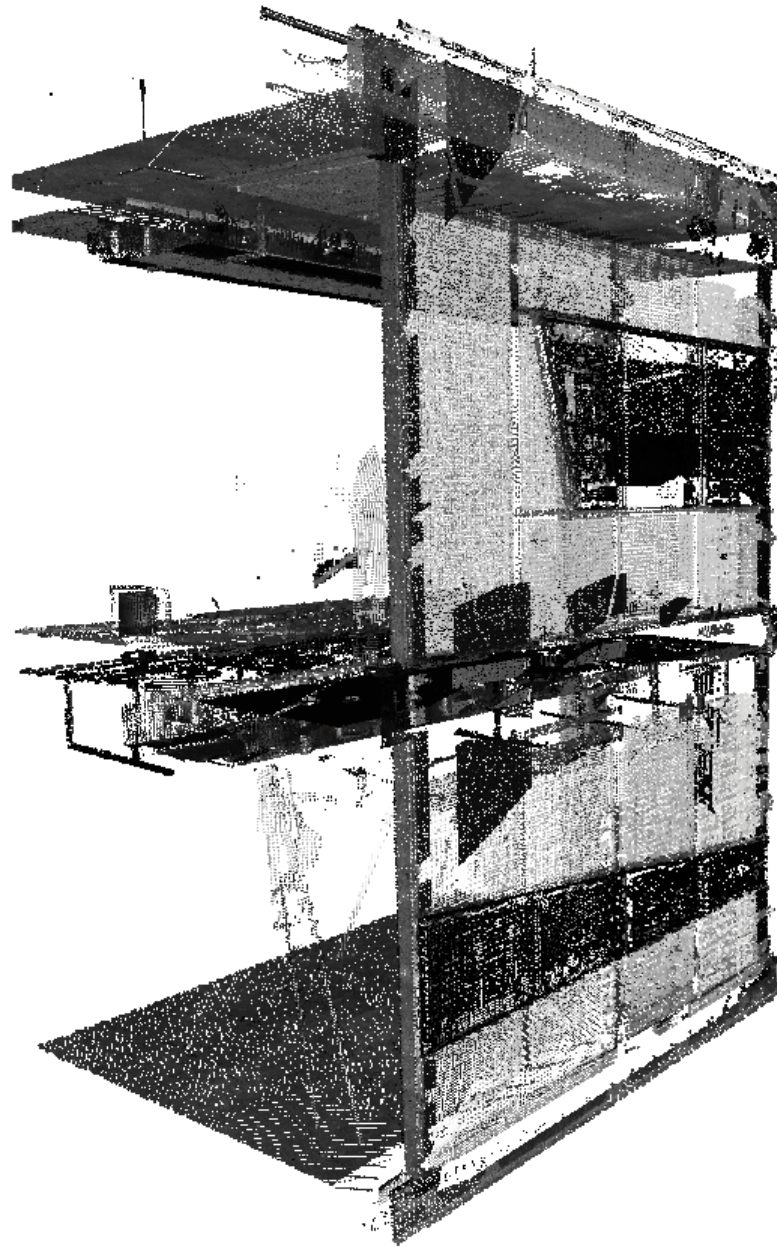
Strength:0.4

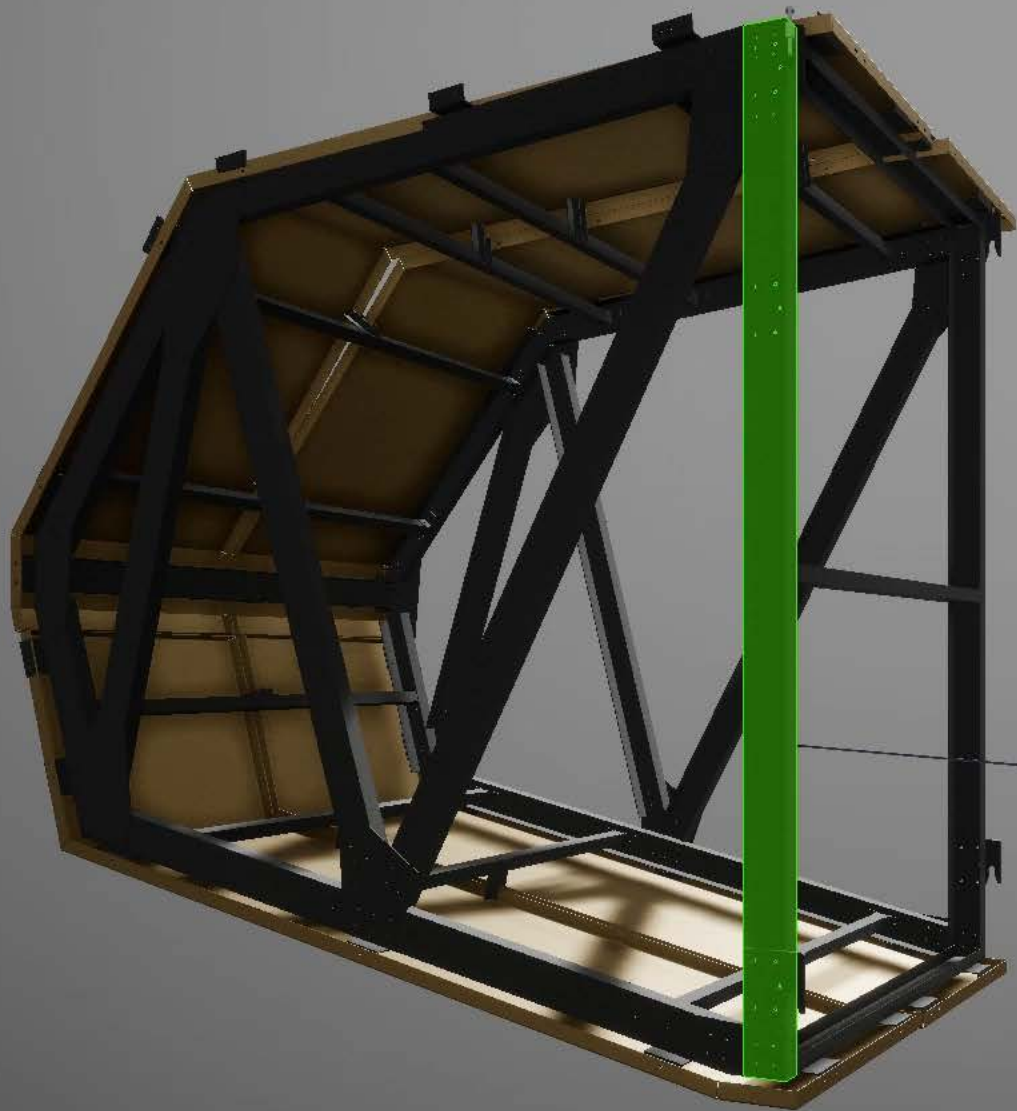
- ☐ Skybox
- ☐ Gradient
- ☐ Black
- ☒ White

Speed: 4.4



 Volume

☒ clip ☐ show volume







# THANK YOU

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