

# Do We Design Our Cities?

Eugenio Fontan

**WSBE 2017**

Hong Kong.

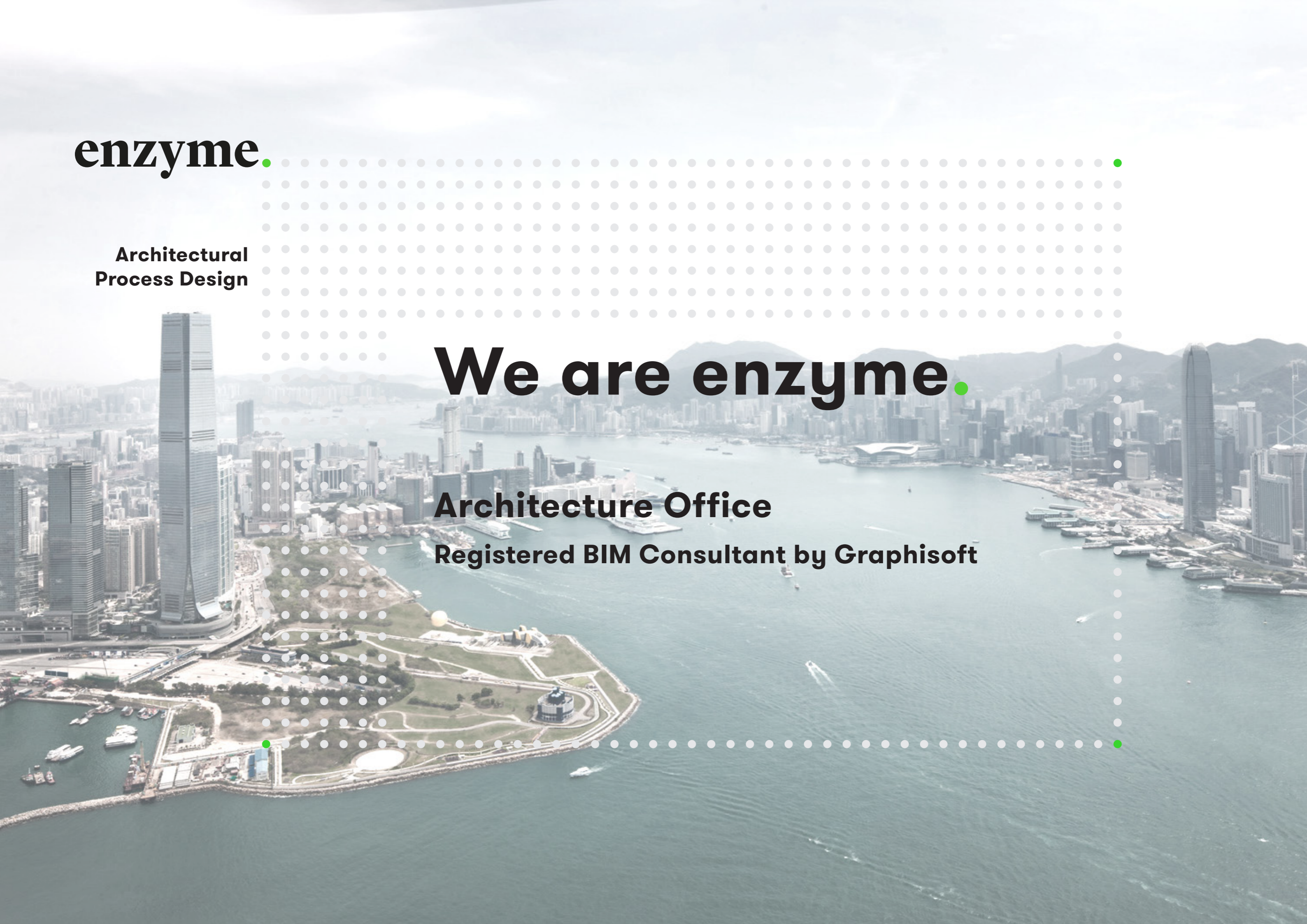
**enzyme.**

**Architectural  
Process Design**

**We are enzyme.**

**Architecture Office**

**Registered BIM Consultant by Graphisoft**



## Enzyme:

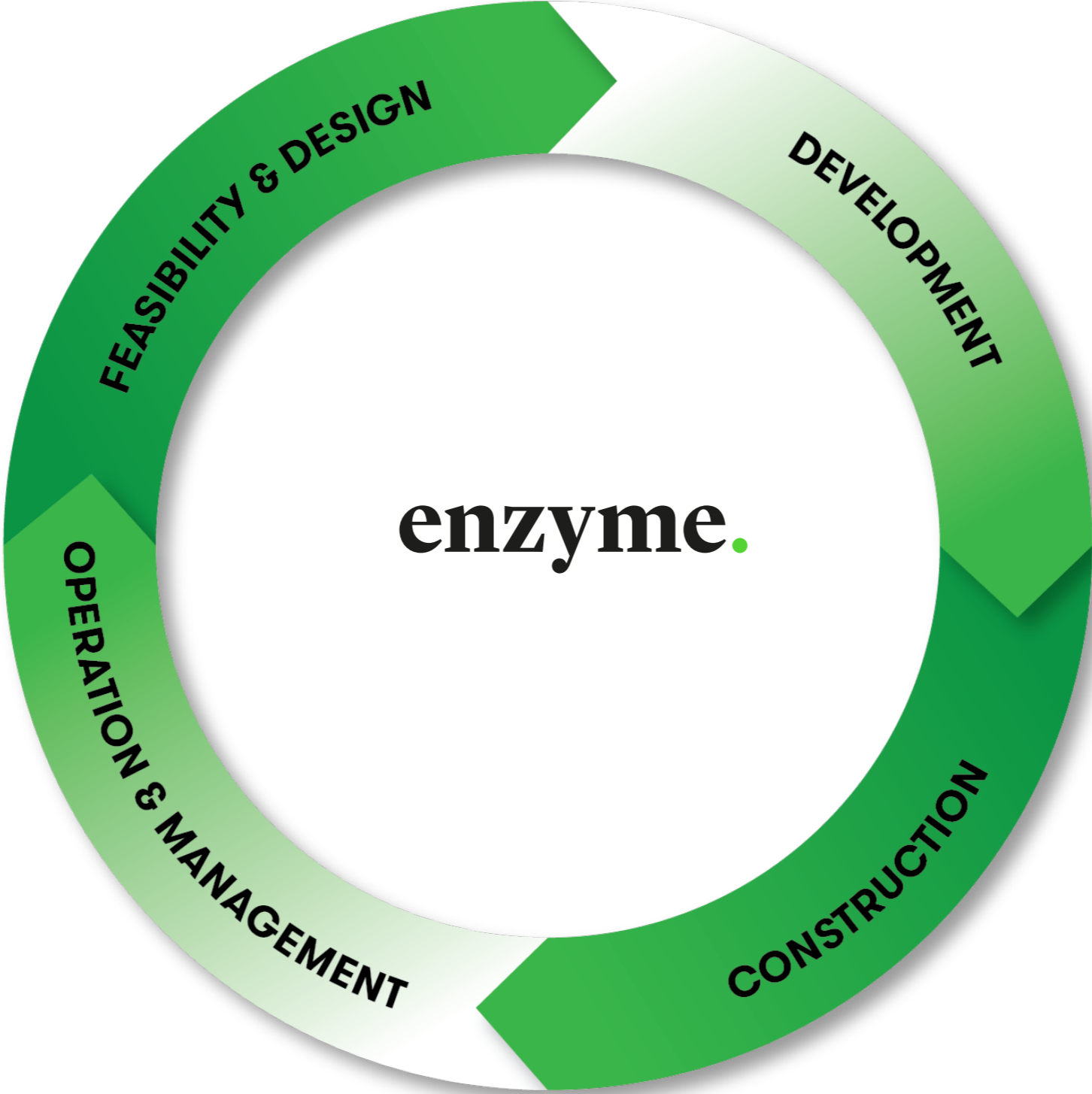
### def.

1. A substance produced by a living organism which **acts as a catalyst** to bring about a specific biochemical reaction.

2. Proteins that **speeds up the rate of a chemical reaction** in a living organism. Without enzymes, life as we know it would not exist.



Our approach.

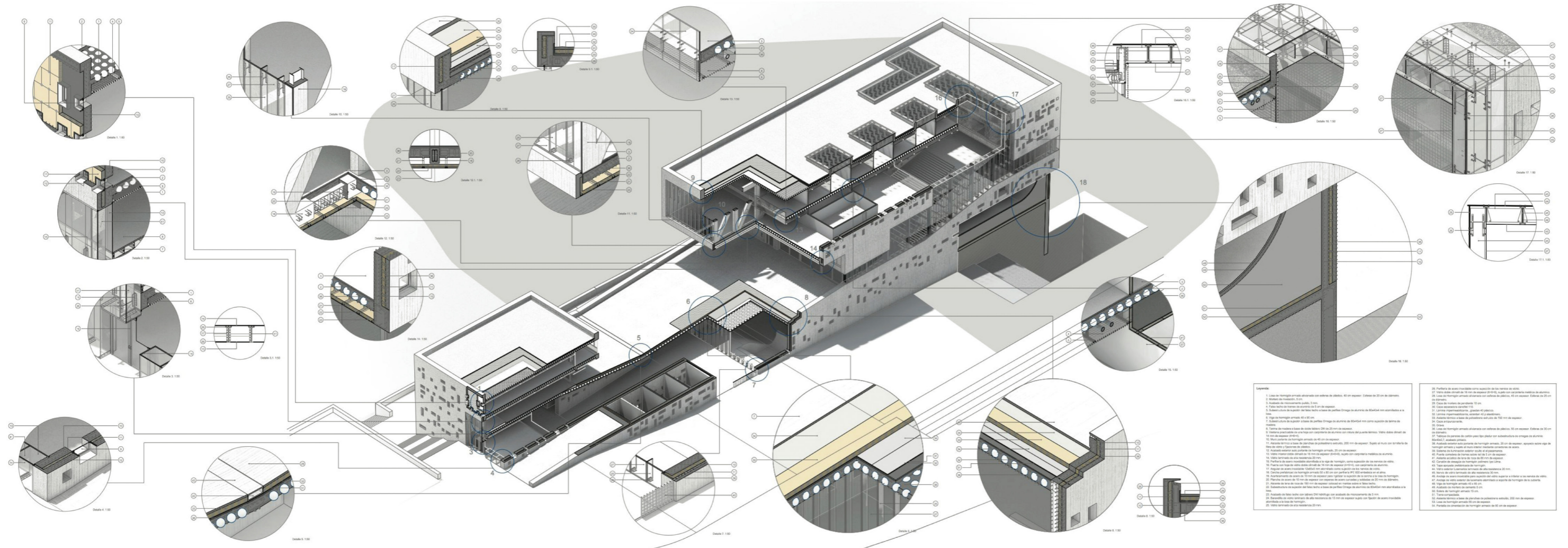
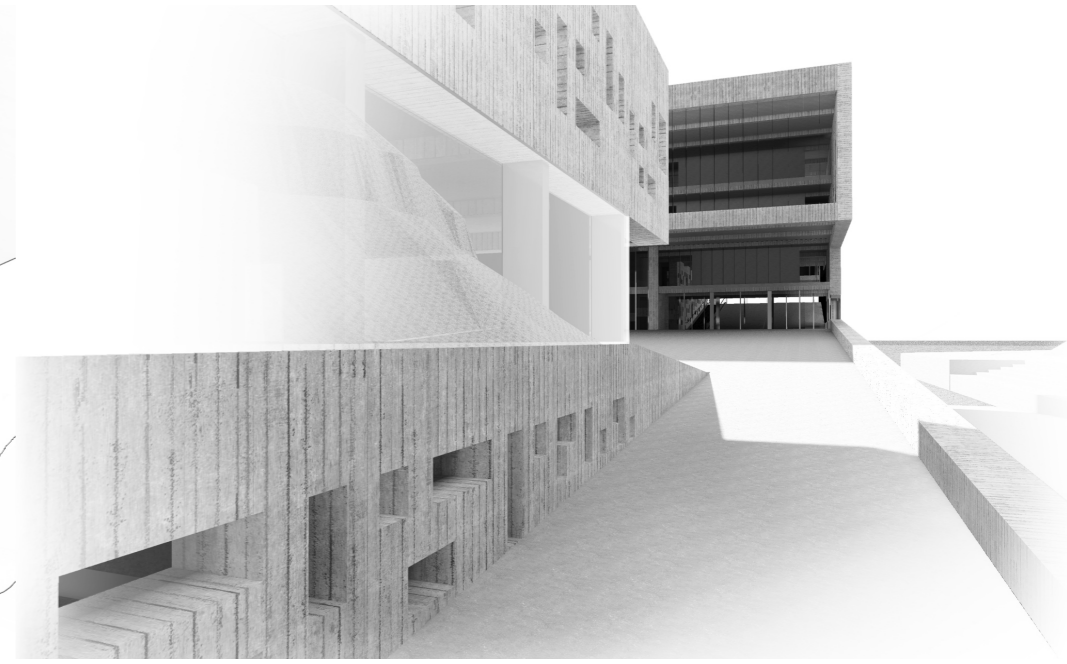
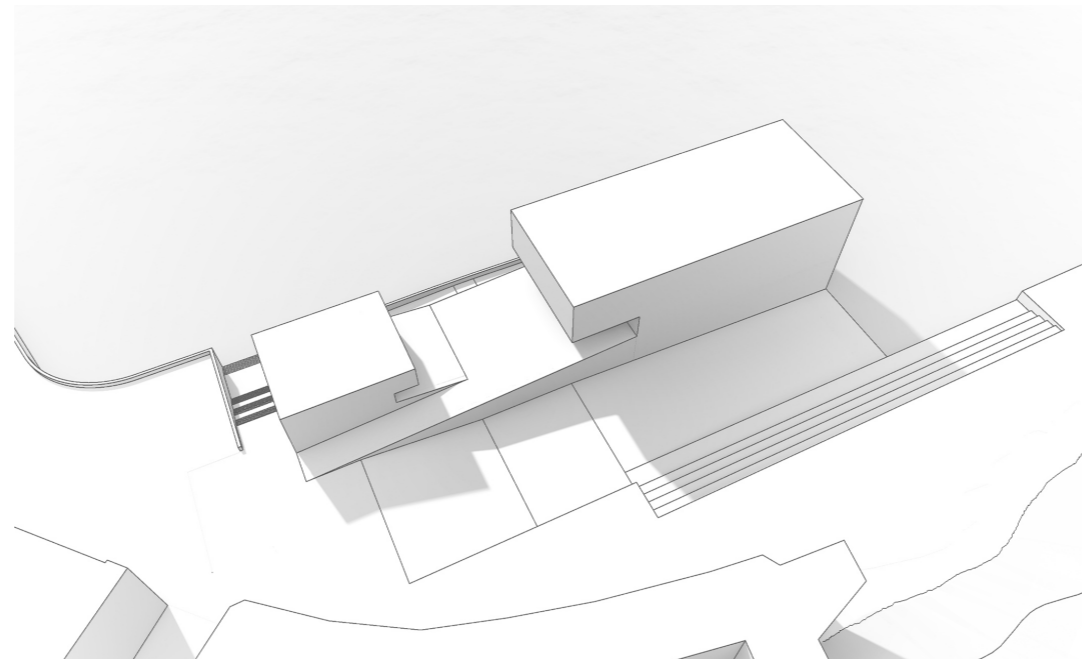


Through the building life process.

# Our approach.

From the earliest stage of design up to construction..

..and the whole life cycle of a built project.



# Do We Design Our Cities?

**WSBE 2017**

Hong Kong.

# **How Do We Design Our Cities?**

**WSBE 2017**

Hong Kong.













# What is a City?

# What is a City?

**A city is a large and permanent human settlement**

*Wikipedia*

**Cities are composed by a combination of buildings  
infrastructures, historical heritage, landscape..**

## **PROJECTS**

**Cities are composed by a combination of buildings  
infrastructures, historical heritage, landscape..**

**PROJECTS**

**+**

**USERS**



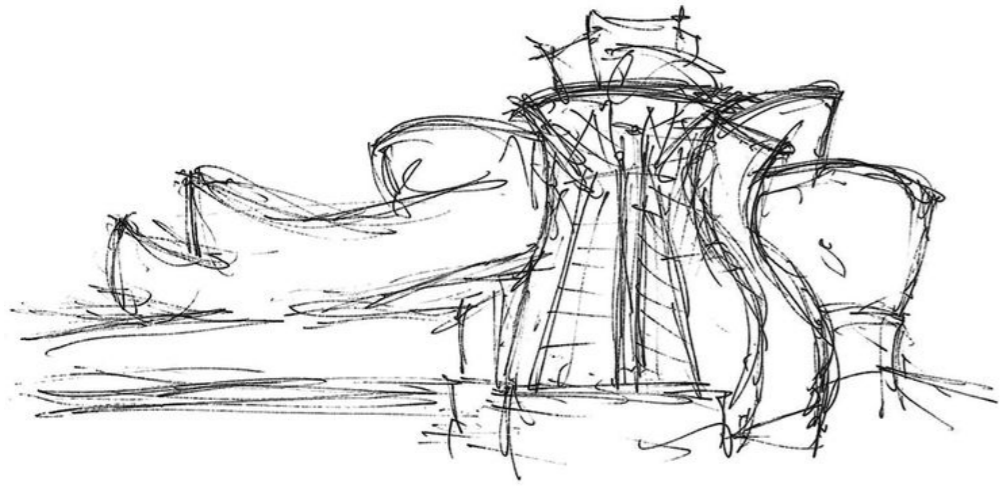
# How Do We Design Our Projects?

# **How Do We Design Our Projects For Users?**

**Project**



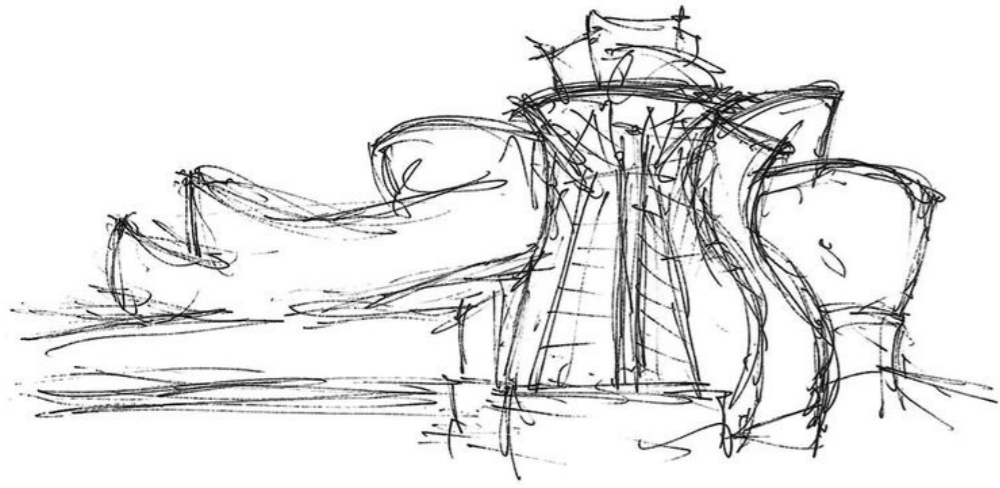
**Reality**



**Project**



**Reality**



**Project**



**Process**



**Reality**

**Project**



**Reality**

**1. Best Design (Project)**

**2. Effective Design Process**

# 1. Best **Design** - Project

# 1. Best **Design** - Project

## We Set Up Goals:

**Sustainable Strategies.**

**Quality of the Project.**

**User and citizen experience.**

**Construction Techniques.**

**Integrated Design.**

**Constructibility.**

**Budget considerations.**

...



## 2. Effective Design **Process**

## 2. Effective Design **Process**

### How To Achieve Goals:

**Integrate Disciplines**

**Good Coordination**

**Collaboration**

**Documentation Production**

**Deliverables**

...

## **2. Effective Design **Process****

### **Use of Time and Resources**

## 2. Effective Design **Process**

**Use of Time and Resources**

**Project = Reality**

# Current Design **Process**

**Project**



**Reality**

**C.D**

**S.D**

**D.D**

**T.D**

**Cons.D**

**On Site**

**Architects  
(Designer)**

**C.D**

**S.D**

**D.D**

**T.D**

**Cons.D**

**On Site**

**Project 1**



**Architects  
(Designer)**

- Architect (Designer)**
- Structure Eng.**
- MEP Eng.**
- Fire Consultant**
- Acoustic Consultant**
- Facade Consultant**
- Landscape Consultant**
- Light Consultant**
- Interior Designer**
- Signage Consultant**
- Local Architect\***

**C.D**

**S.D**

**D.D**

**T.D**

**Cons.D**

**On Site**

**Project 1**

**Project 2**



**Architects  
(Designer)**

**Architect (Designer)**  
**Structure Eng.**  
**MEP Eng.**  
**Fire Consultant**  
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**Interior Designer**  
**Signage Consultant**  
**Local Architect\***

**Architect (Designer)**  
**Contractor**  
**Local Architect\***  
**Lead Consultant..**  
**(...)**

**C.D**

**S.D**

**D.D**

**T.D**

**Cons.D**

**On Site**

**Project 1**

**Project 2**

**Project 3**

**Project 1**  $\neq$  **Project 2**  $\neq$  **Project 3**  $\neq$  **Reality**

## Current Design **Process**

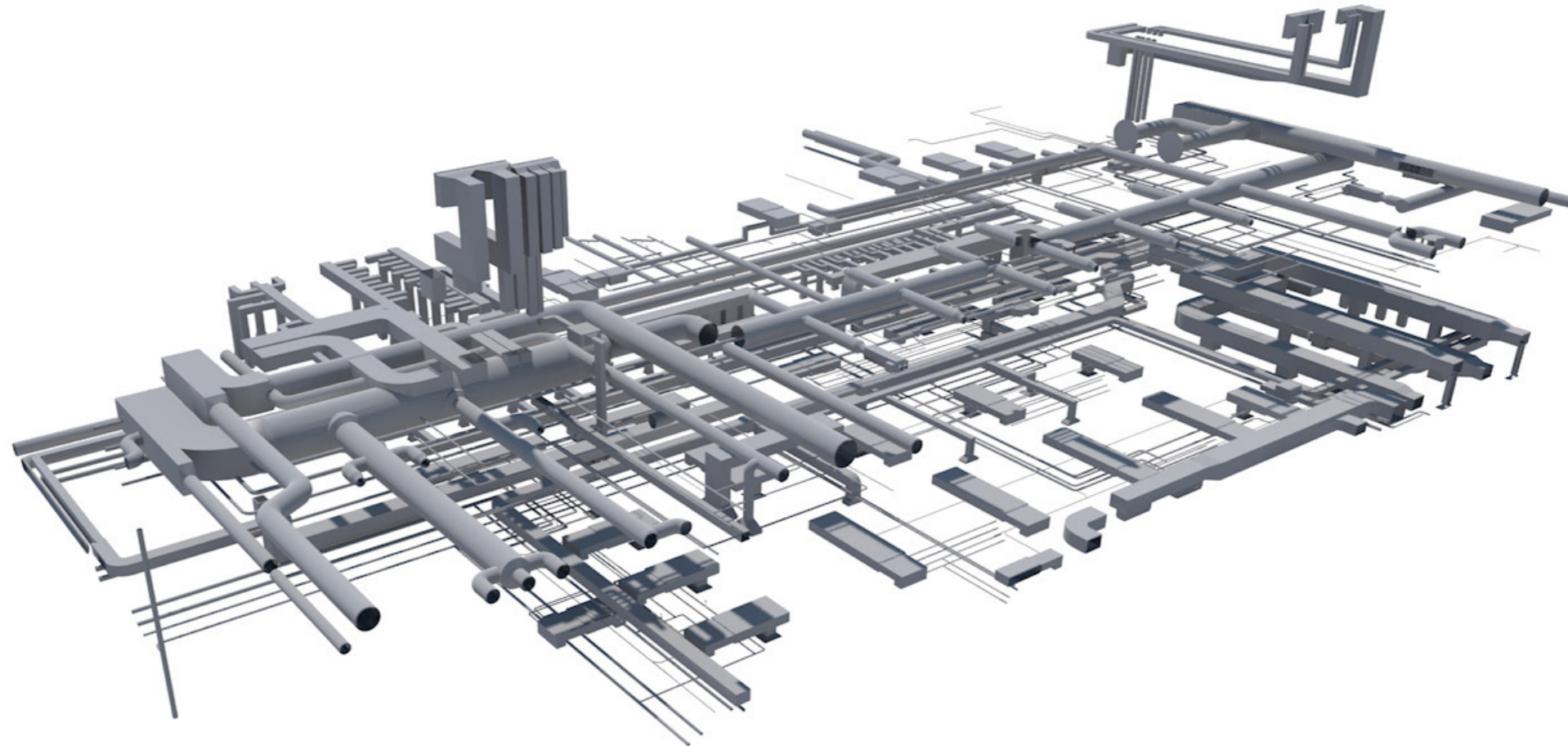
- . **2D Drawings based Coordination.**
- . **Unclear Collaboration in between Consultants**
- . **Inaccurate Documentation**
- . **Errors**
- . **Abortive work, Schedule Delays & Overtime**
- . **Over Costs**

## Current Design **Process**

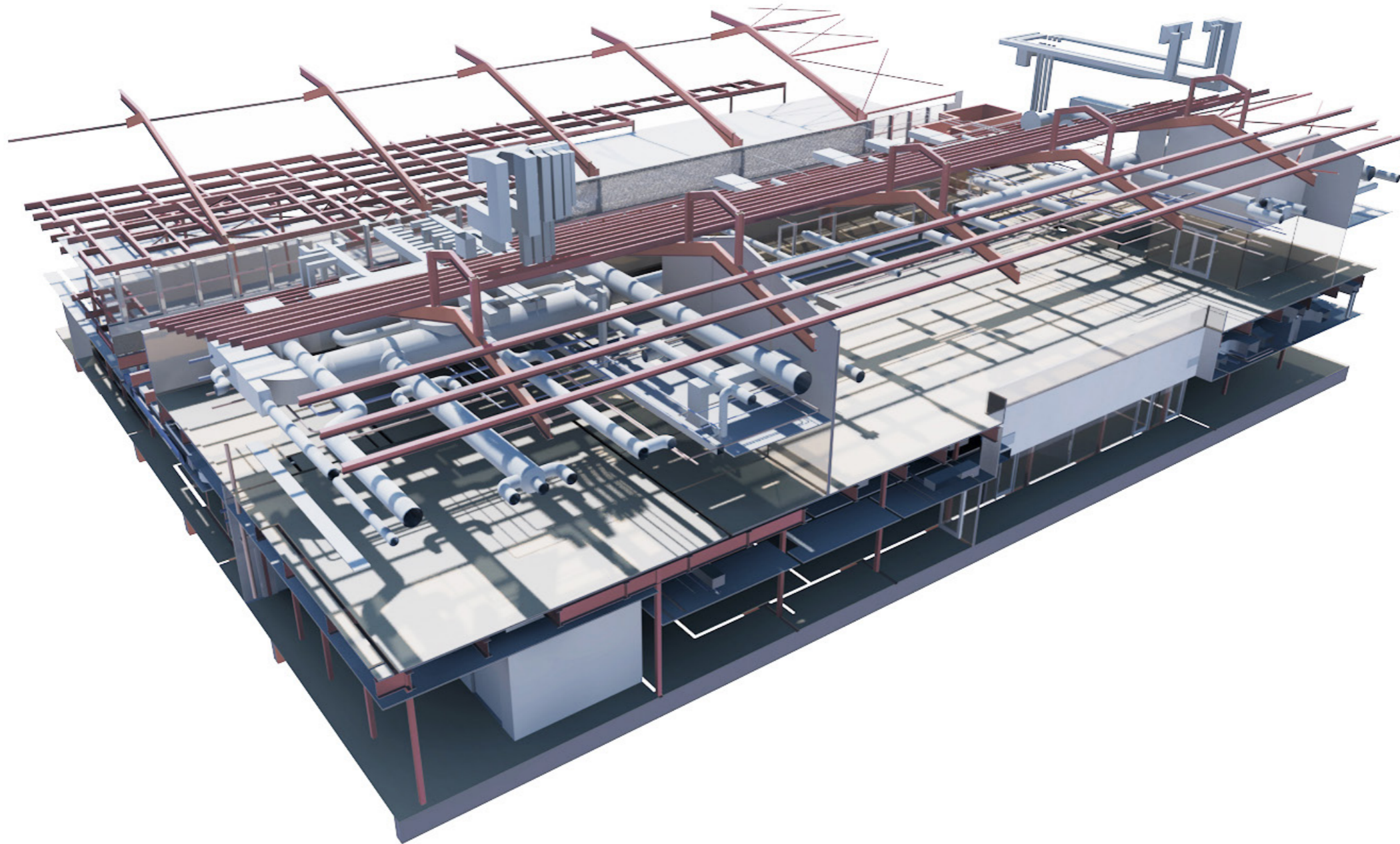
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### **Waste of Resources and Time**

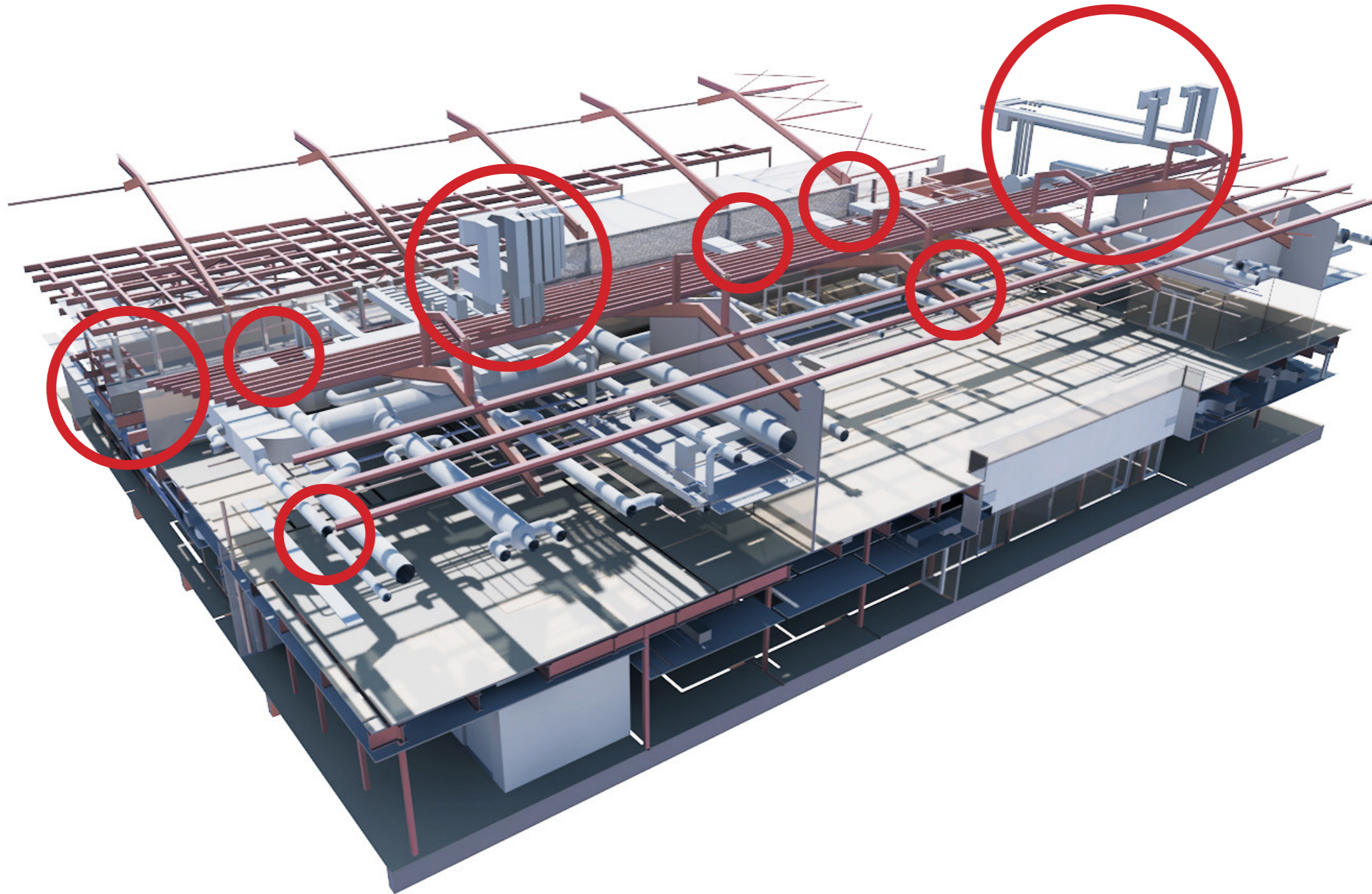
# Isolated Disciplines



# Combined Disciplines

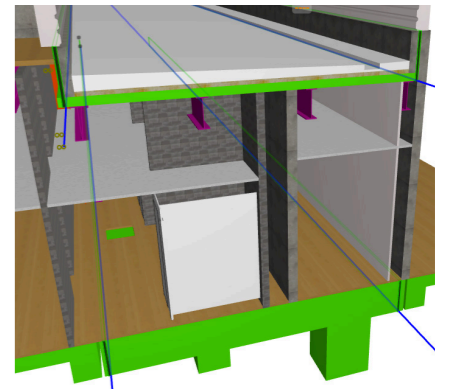
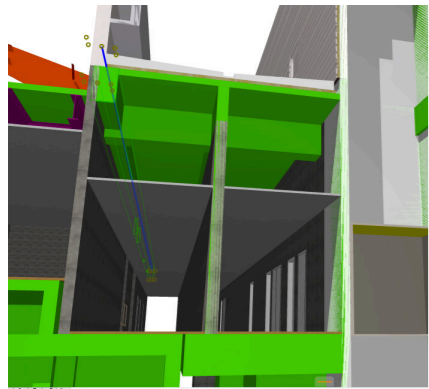
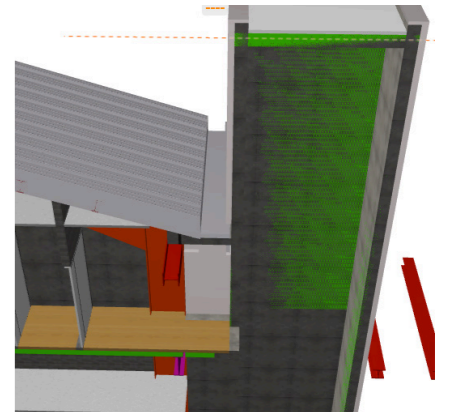
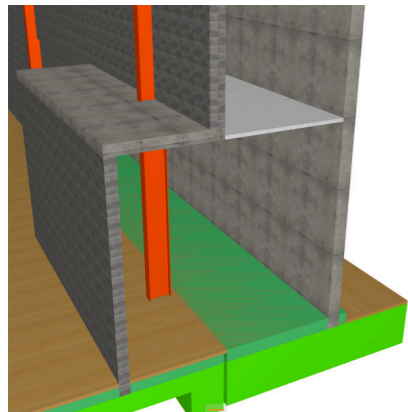
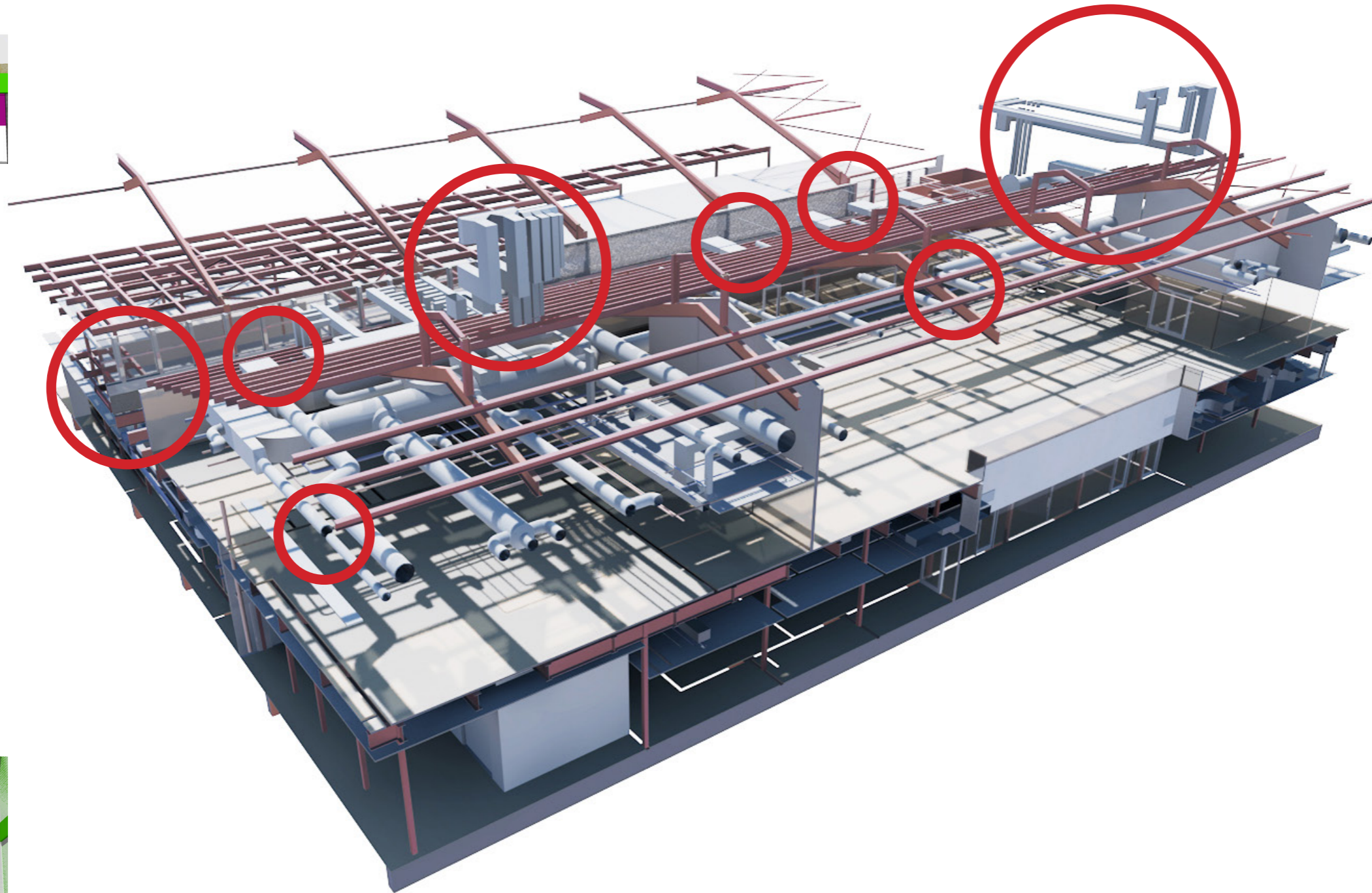
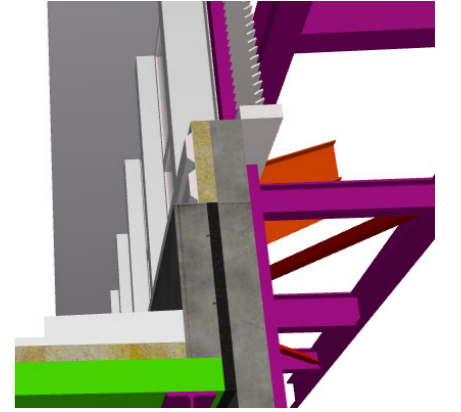
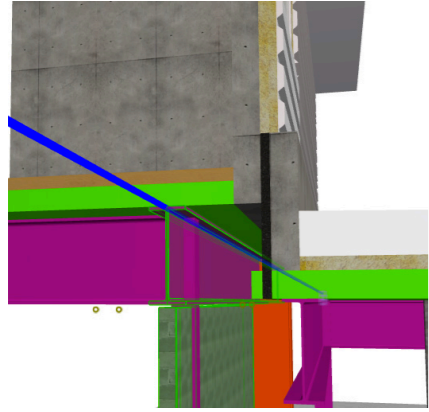


# Combined Disciplines



**Clashes!**

# Combined Disciplines

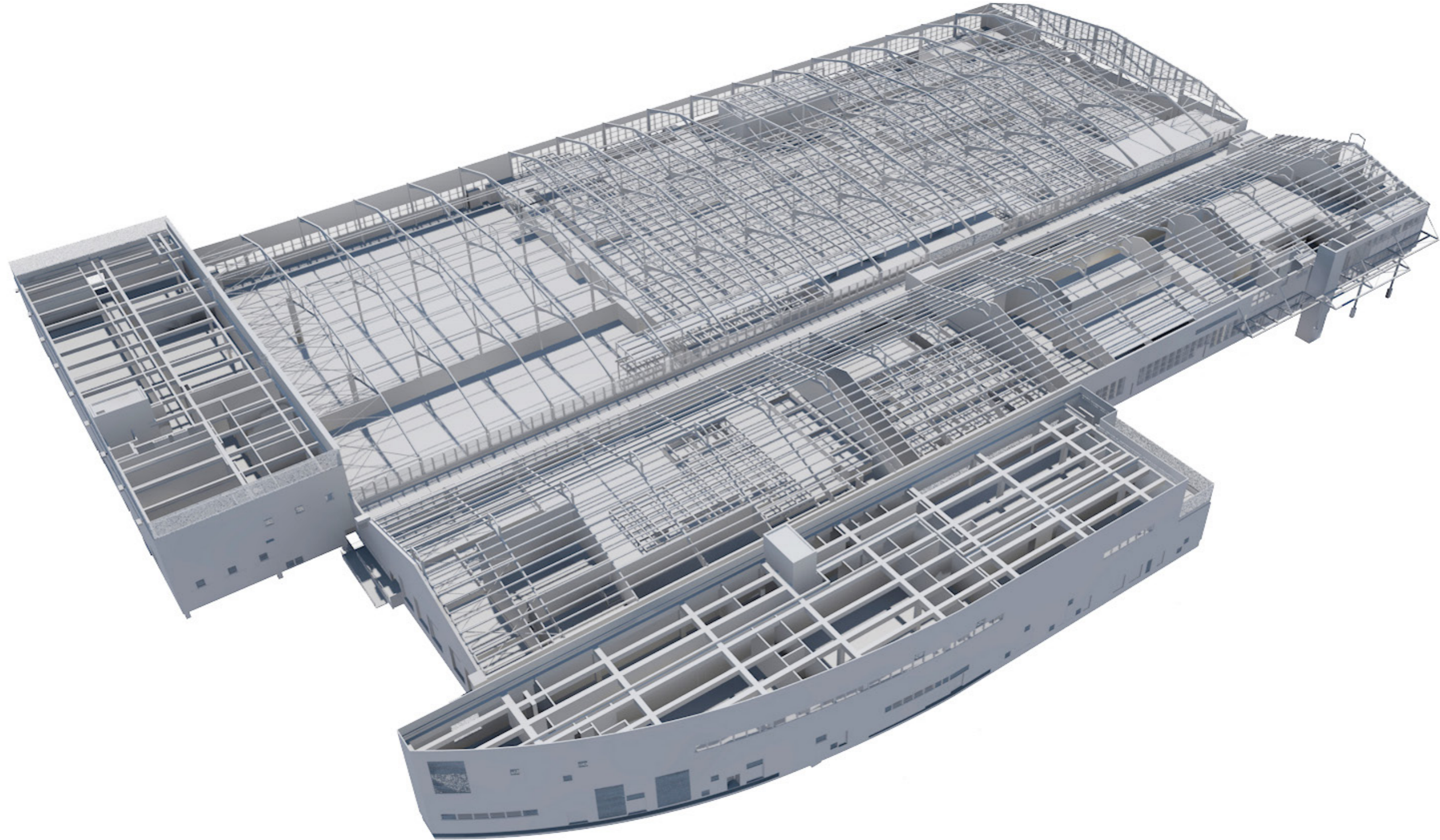


**Clashes!**



**Project 1**  $\neq$  **Project 2**  $\neq$  **Project 3**  $\neq$  **Reality**

**Project 1 = Project 2 = Project 3 = Reality**



**Solve The Problem**

**Current Design Process**

**Solve The Problem**

**Current Design Process**



**2. Effective Design Process**

**Architects  
(Designer)**

**Architect (Designer)**  
**Structure Eng.**  
**MEP Eng.**  
**Fire Consultant**  
**Acoustic Consultant**  
**Facade Consultant**  
**Landscape Consultant**  
**Light Consultant**  
**Interior Designer**  
**Signage Consultant**  
**Local Architect\***

**Architect (Designer)**  
**Contractor**  
**Local Architect\***  
**Lead Consultant..**  
**(...)**

**C.D**

**S.D**

**D.D**

**T.D**

**Cons.D**

**On Site**

**Project 1**

**Project 2**

**Project 3**

**Architects  
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**On Site**

**Project 1**

**Project 3**

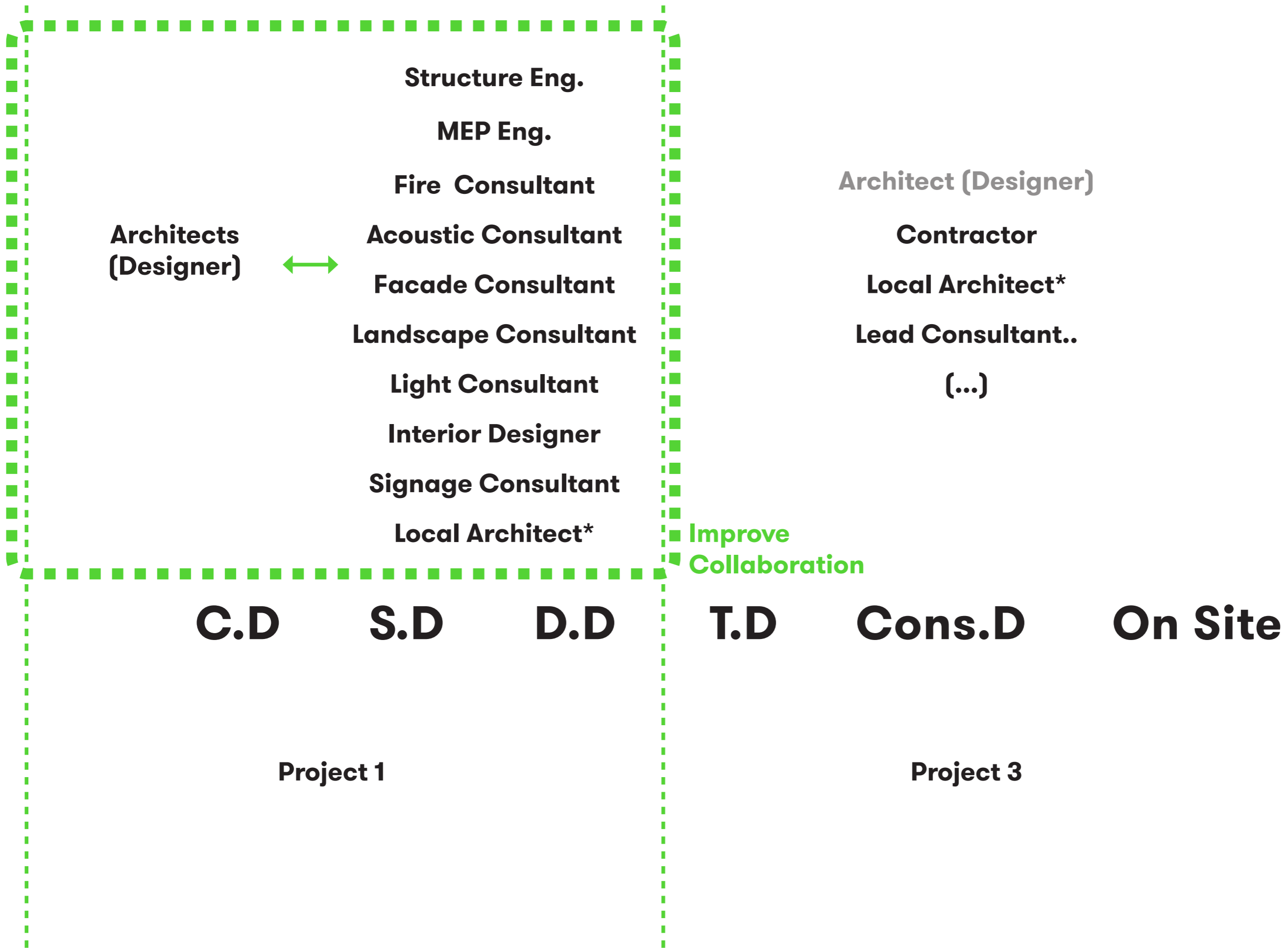
**Architect (Designer)**

**Contractor**

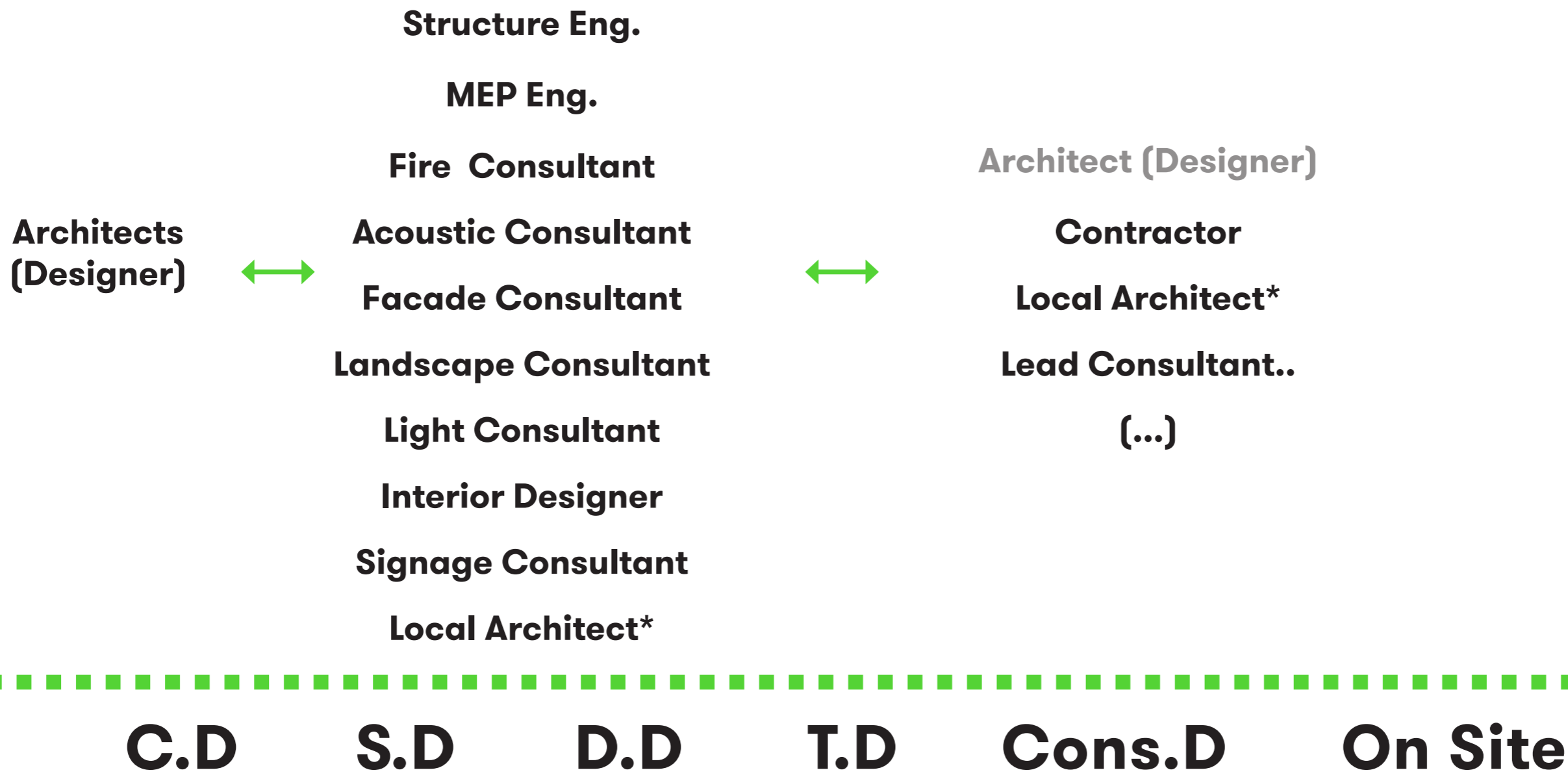
**Local Architect\***

**Lead Consultant..**

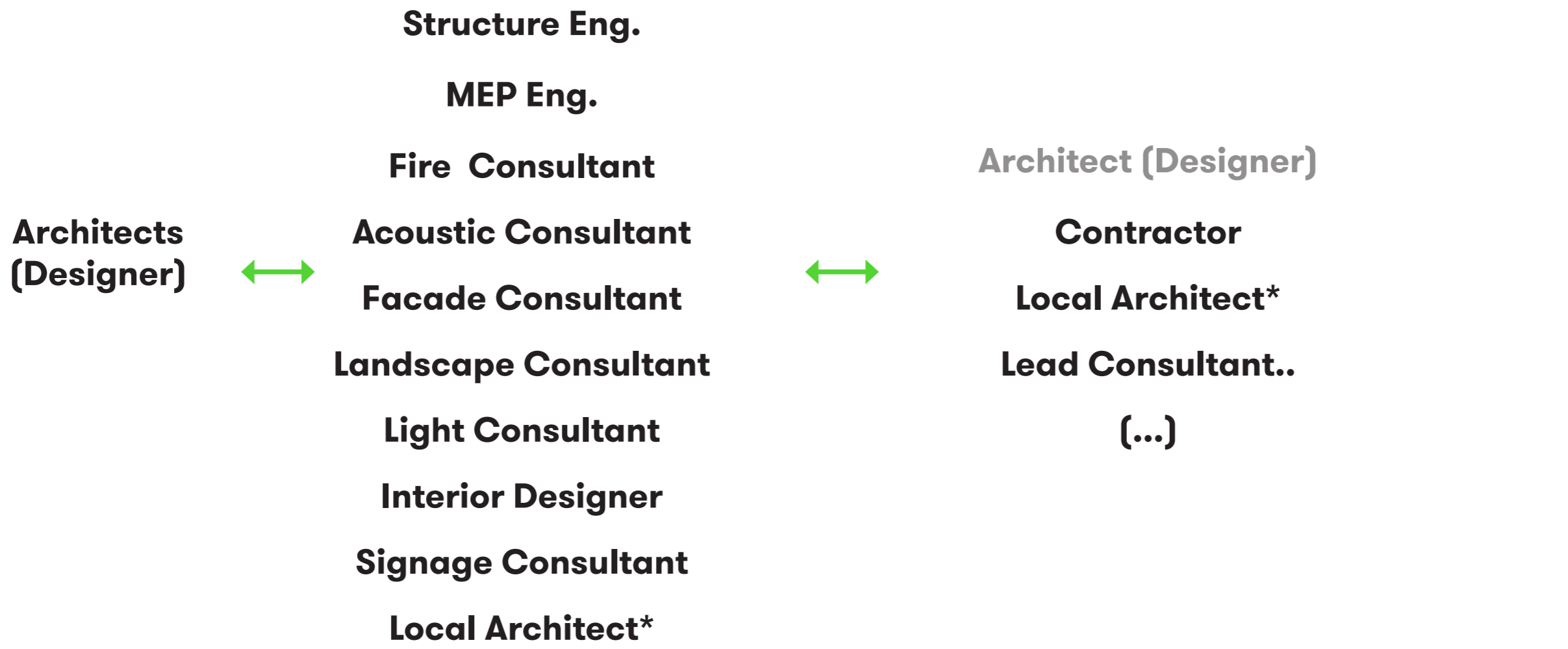
**(...)**







**Project**



**How Do we Achieve this?**  
**If All Consultants cannot be  
involved from the beginning?**

# BIM Work-flow

**BIM Work-flow**

**=**

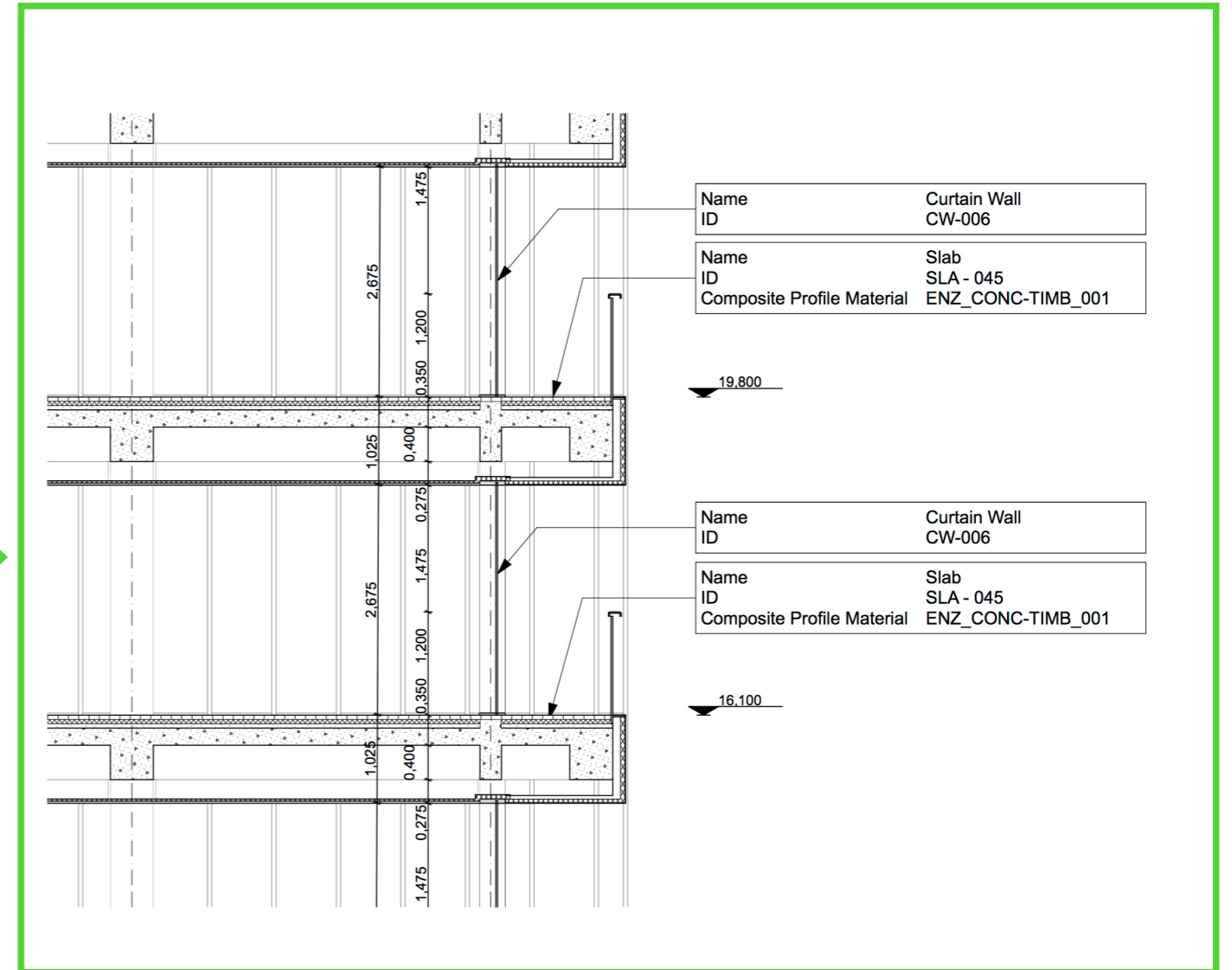
**Efficient Platform of Collaboration**

# Efficient Platform



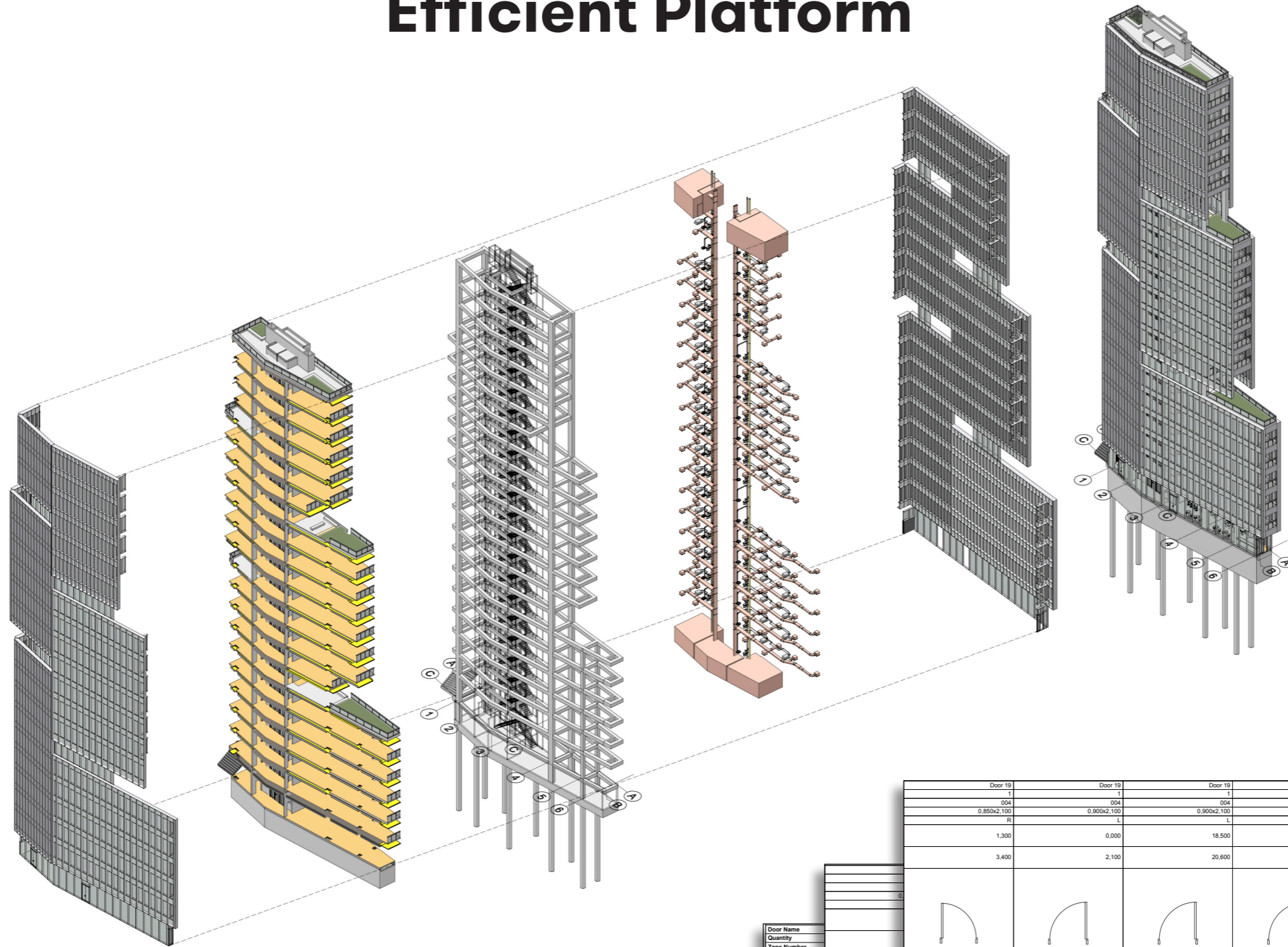
**Concept Design**  
1:200

**Errors?**



**Schematic Design**  
1:50

# Efficient Platform



Wall Type	Volume [m³]	Thickness [m]	Height [m]	Area [m²]	Perimeter [m]	Length on Ref Side [m]	Surface on Ref Side [m²]
Cap Top 01	0.00	0.150	0.028	0.3	4.648	2.174	0.1
Cap Top 01	0.01	0.150	0.028	0.5	6.800	3.250	0.1
Cap Top 01	0.01	0.150	0.028	0.6	8.381	4.040	0.1
ENZ_CEILING 01	0.09	0.050	0.275	0.0	17.037	8.064	1.8
ENZ_CEILING 01	0.01	0.050	0.325	0.0	1.911	0.906	0.2
ENZ_CEILING 01	0.04	0.050	0.275	0.0	8.040	3.820	0.8
ENZ_CEILING 01	0.03	0.050	0.275	0.0	6.036	2.958	0.6
ENZ_CEILING 01	0.01	0.050	0.275	0.0	2.012	0.956	0.2
ENZ_CEILING 01	0.02	0.050	0.275	0.1	4.193	2.046	0.5
ENZ_CEILING 01	0.13	0.050	0.275	0.6	25.164	12.282	3.0
ENZ_CEILING 01	0.03	0.050	0.275	0.1	4.233	2.112	0.5
ENZ_CEILING 01	0.03	0.050	0.275	0.1	4.228	2.066	0.5
ENZ_CEILING 01	0.12	0.050	0.275	0.4	16.920	8.288	2.0
ENZ_CEILING 01	0.03	0.050	0.275	0.1	4.230	2.067	0.5
ENZ_CEILING 01	0.60	0.050	0.275	2.0	116.000	56.500	12.0
ENZ_CEILING 01	0.04	0.050	0.275	0.1	5.867	2.893	0.7
ENZ_CEILING 01	0.20	0.050	0.250	1.0	36.785	18.140	3.5
ENZ_CEILING 01	0.24	0.050	0.275	1.2	43.458	21.432	4.8
ENZ_CEILING 01	0.04	0.050	0.300	0.2	7.307	3.628	0.8
ENZ_CEILING 01	0.20	0.050	0.275	1.0	38.000	18.750	4.0
ENZ_CEILING 01	0.25	0.050	0.275	1.0	38.580	19.040	4.5
ENZ_CEILING 01	0.10	0.050	0.275	0.4	16.380	8.090	1.8
ENZ_CEILING 01	0.90	0.050	0.275	3.0	147.438	72.828	16.2
ENZ_GLADMETL 01	1.00	0.150	1.000	1.0	29.612	15.366	12.6
ENZ_GLADMETL 01	2.76	0.150	1.000	3.0	41.088	19.644	18.0
ENZ_GLADMETL 01	0.46	0.150	1.000	0.5	6.848	3.274	3.0
ENZ_GLADMETL 01	3.43	0.150	1.000	3.6	50.814	24.510	22.3

Errors?

Door Name	Quantity	Zone Number	W x H Size	Orientation
Door 19	1	004	0.850x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L

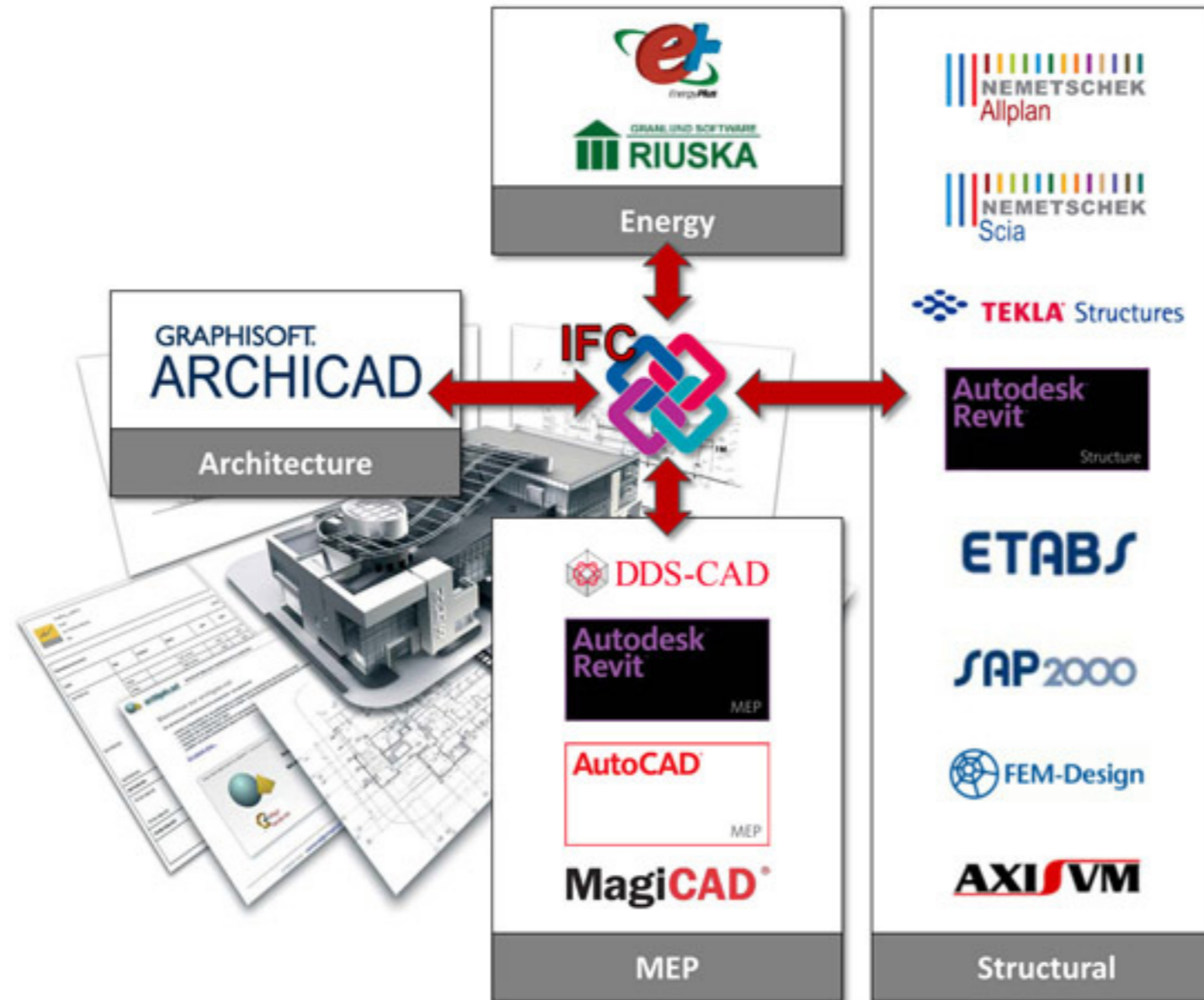
  

Door Name	Quantity	Zone Number	W x H Size	Orientation
Door 19	1	004	0.850x2.100	L
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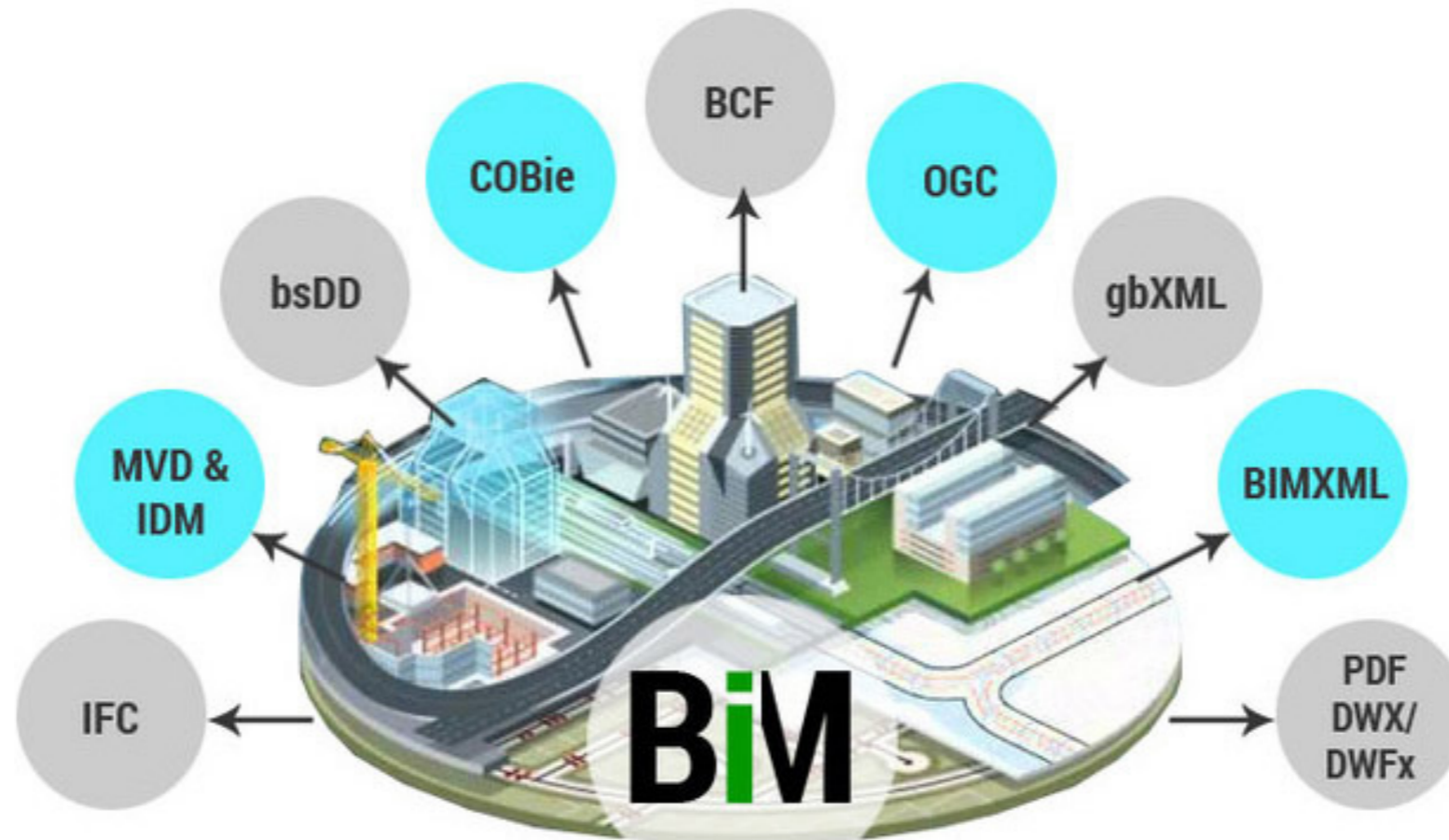
Door Name	Quantity	Zone Number	W x H Size	Orientation
Door 19	1	004	0.850x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L
Door 19	1	004	0.900x2.100	L

# Collaboration



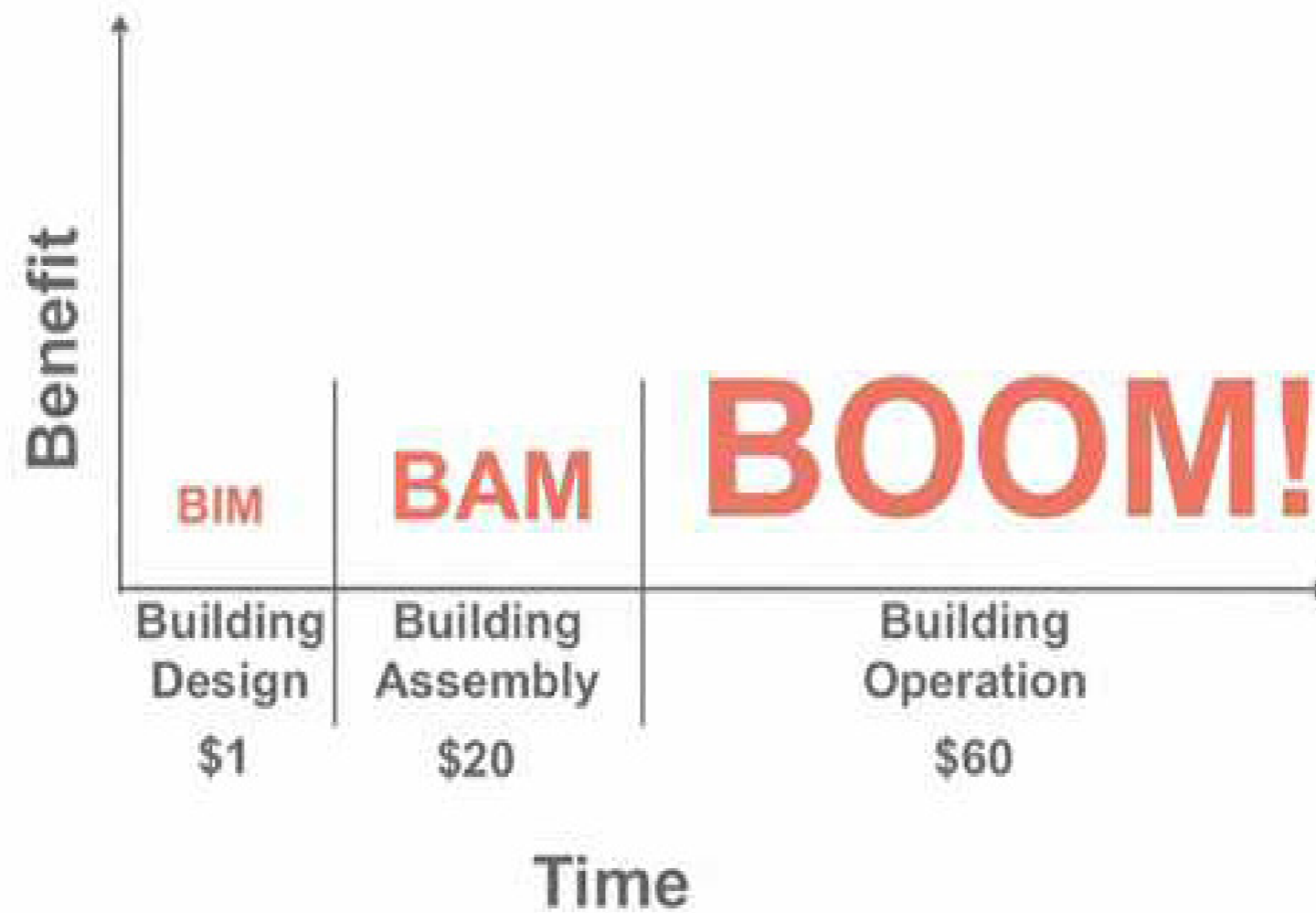


# Collaboration



# BIM BAM BOOM

# BIM BAM BOOM



**The real promise of “BIM-BAM-BOOM!” is “better design, better construction, better operation”.**

**HOK Chief Executive Officer Patrick MacLeamy**

# Effective Design **Process**

# Effective Design **Process**

- . Efficient Collaboration in between  
**Consultants & Disciplines**

# Effective Design **Process**

- . **Efficient Collaboration in between  
Consultants & Disciplines**
- . **Accurate Exchange of Information & Documentation**

## Effective Design **Process**

- . **Efficient Collaboration in between Consultants & Disciplines**
- . **Accurate Exchange of Information & Documentation**
- . **Avoid Errors and Clashes**

## Effective Design **Process**

- . **Efficient Collaboration in between Consultants & Disciplines**
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- . **Keep Schedules and Avoid Over Time**



## Effective Design **Process**

- . **Efficient Collaboration in between Consultants & Disciplines**
- . **Accurate Exchange of Information & Documentation**
- . **Avoid Errors and Clashes**
- . **Keep Schedules and Avoid Over Time**
- . **Avoid Over Costs**

# Effective Design **Process**

## For What?

# Effective Design **Process**

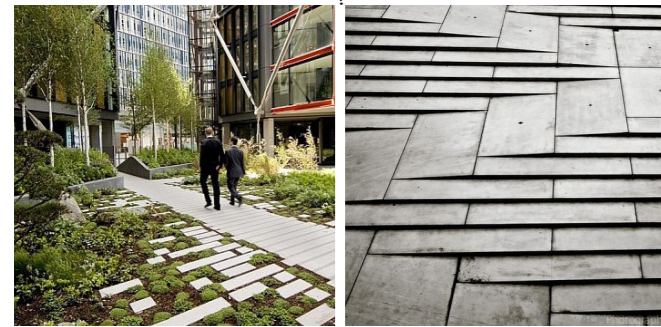
**For What?**



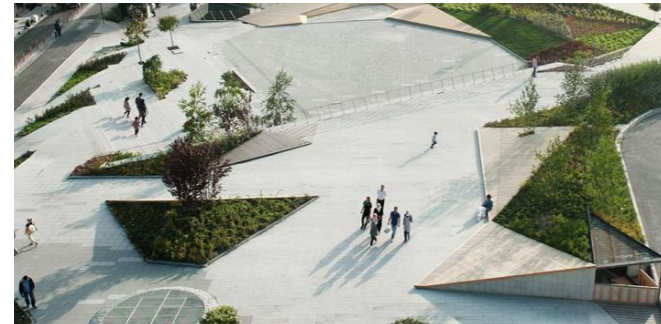




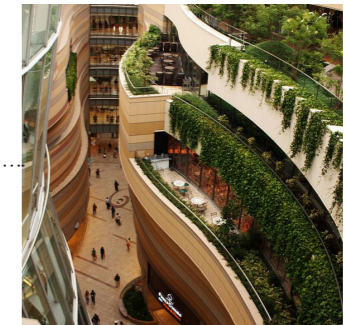
Podium Gardens and roof treatments.



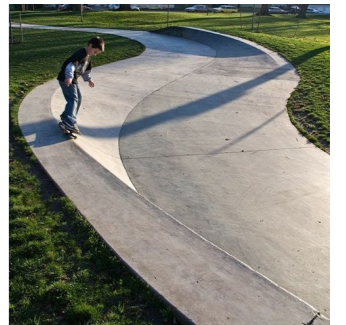
Stairs, access and street landscaping.



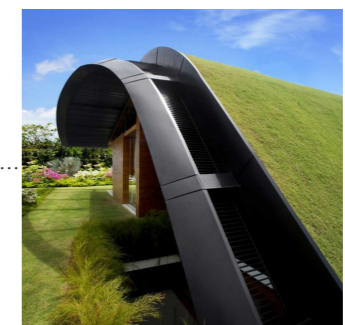
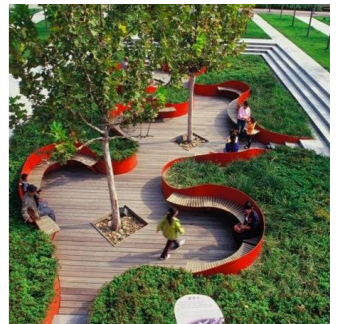
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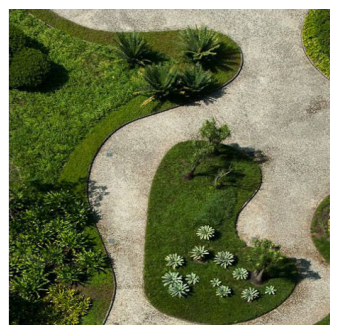
Sinuous curves and green edges on terraces at the shopping mall



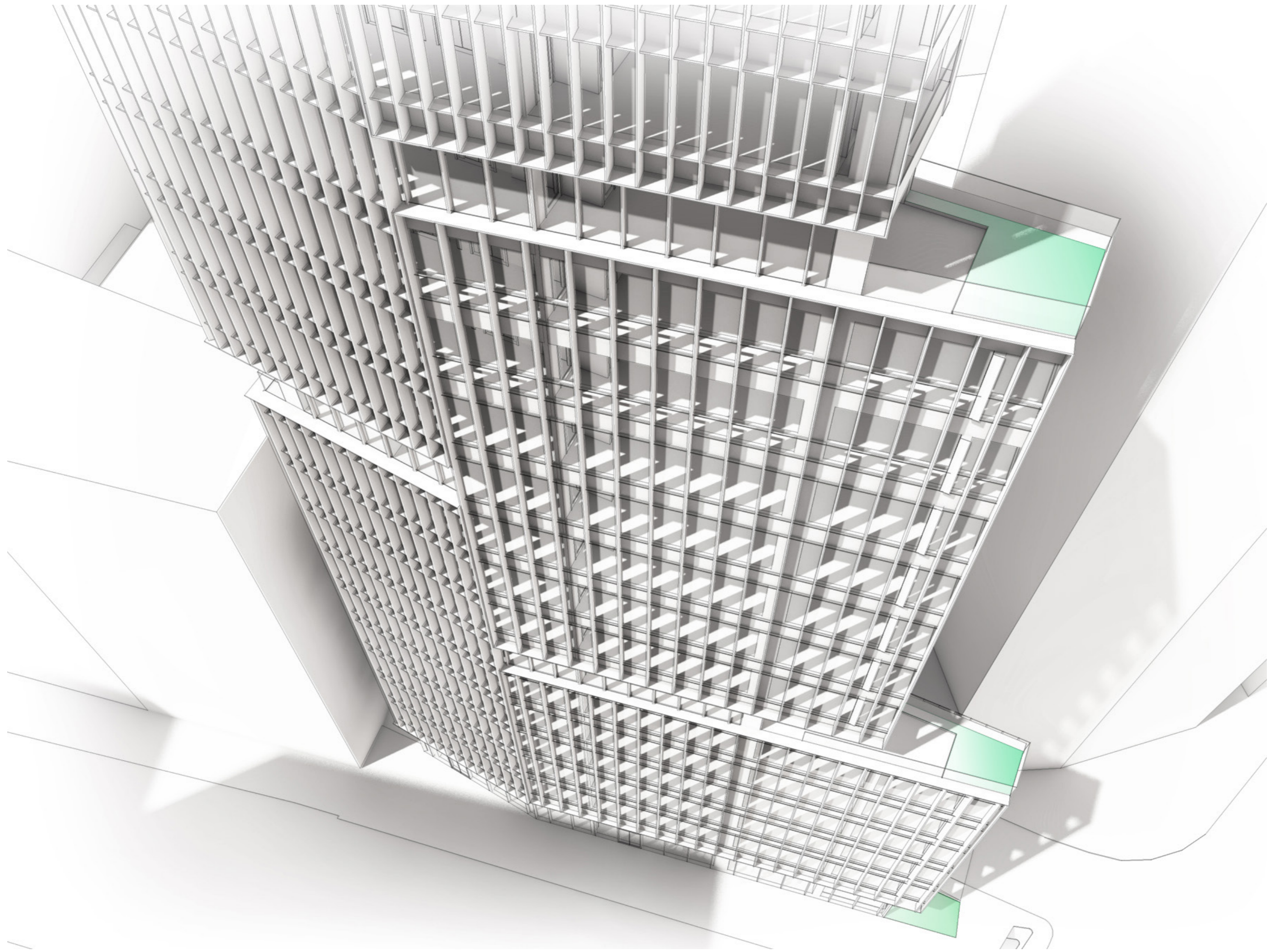
Patios and green areas of the main Plaza.

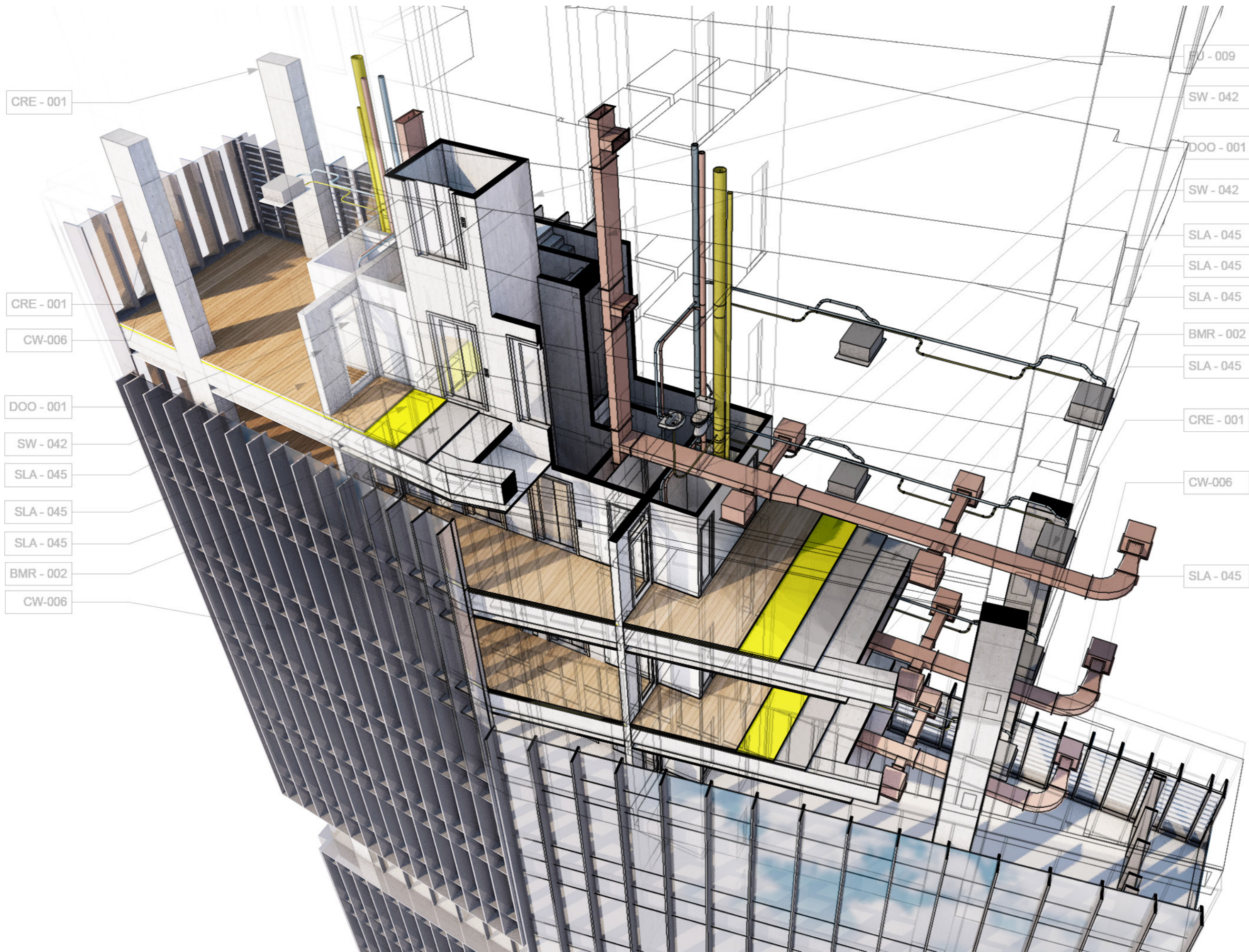


Organic landscape and treatment of the green roofs.











# Conclusion..

**A **Smart** use of Resources and Time**

# Conclusion..

**A **Smart** use of Resources and Time**  
**From the Beginning**

# Conclusion..

**A **Smart** use of Resources and Time**

**From the Beginning**

**Using BIM**

# Conclusion..

**The Excess of Resources & Time we use to Solve  
Errors, bad communication and coordination  
in the current process..**

# Conclusion..

**The Excess of Resources & Time we use to Solve Errors, bad communication and coordination in the current process..**

**Should be use for producing a Better and Sustainable Design!**

# Conclusion..

**1. Best Design (Project)**

**2. Effective Design Process**

# Conclusion..

**We want**

**1. Best Design (Project)**

**2. Effective Design Process**

# Conclusion..

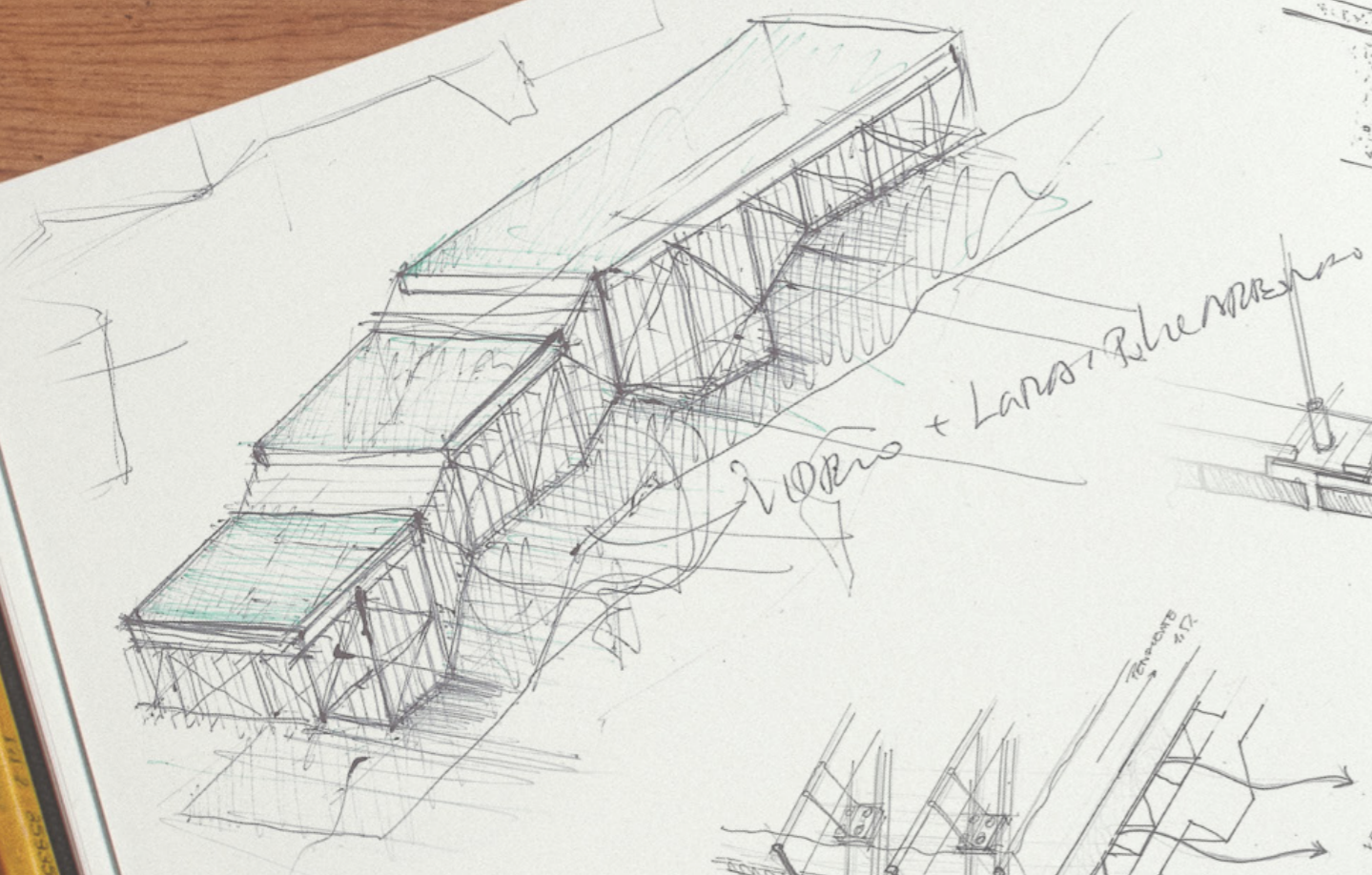
**We want**

**1. Best Design (Project)**

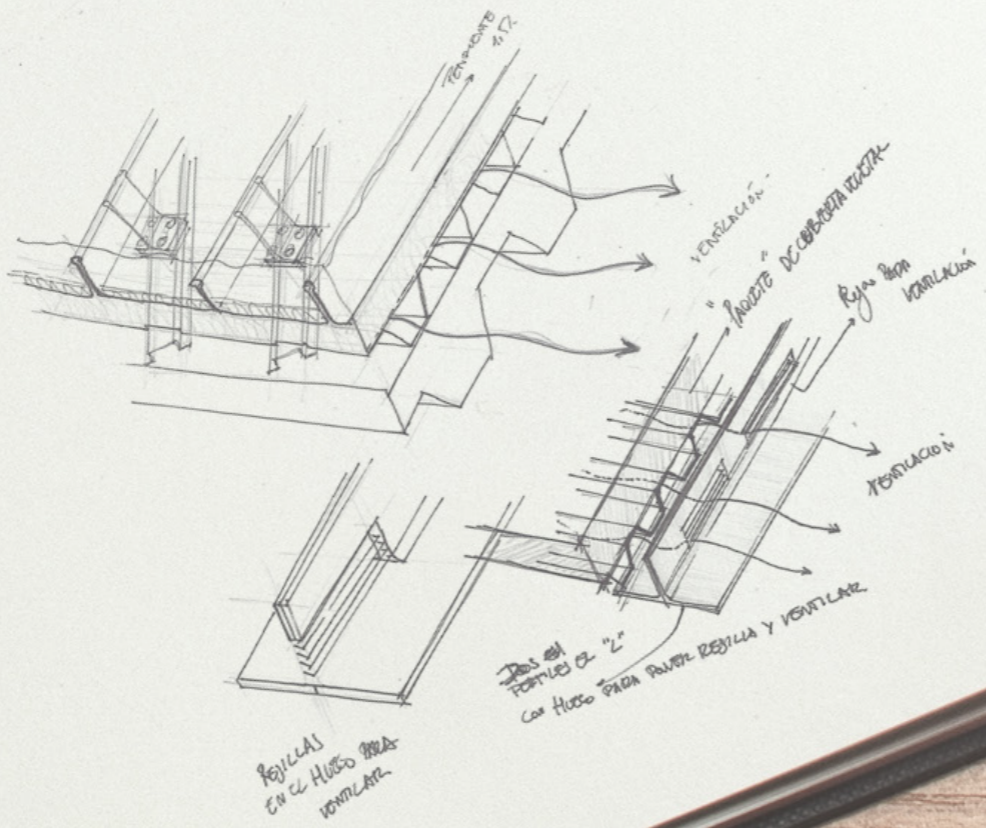
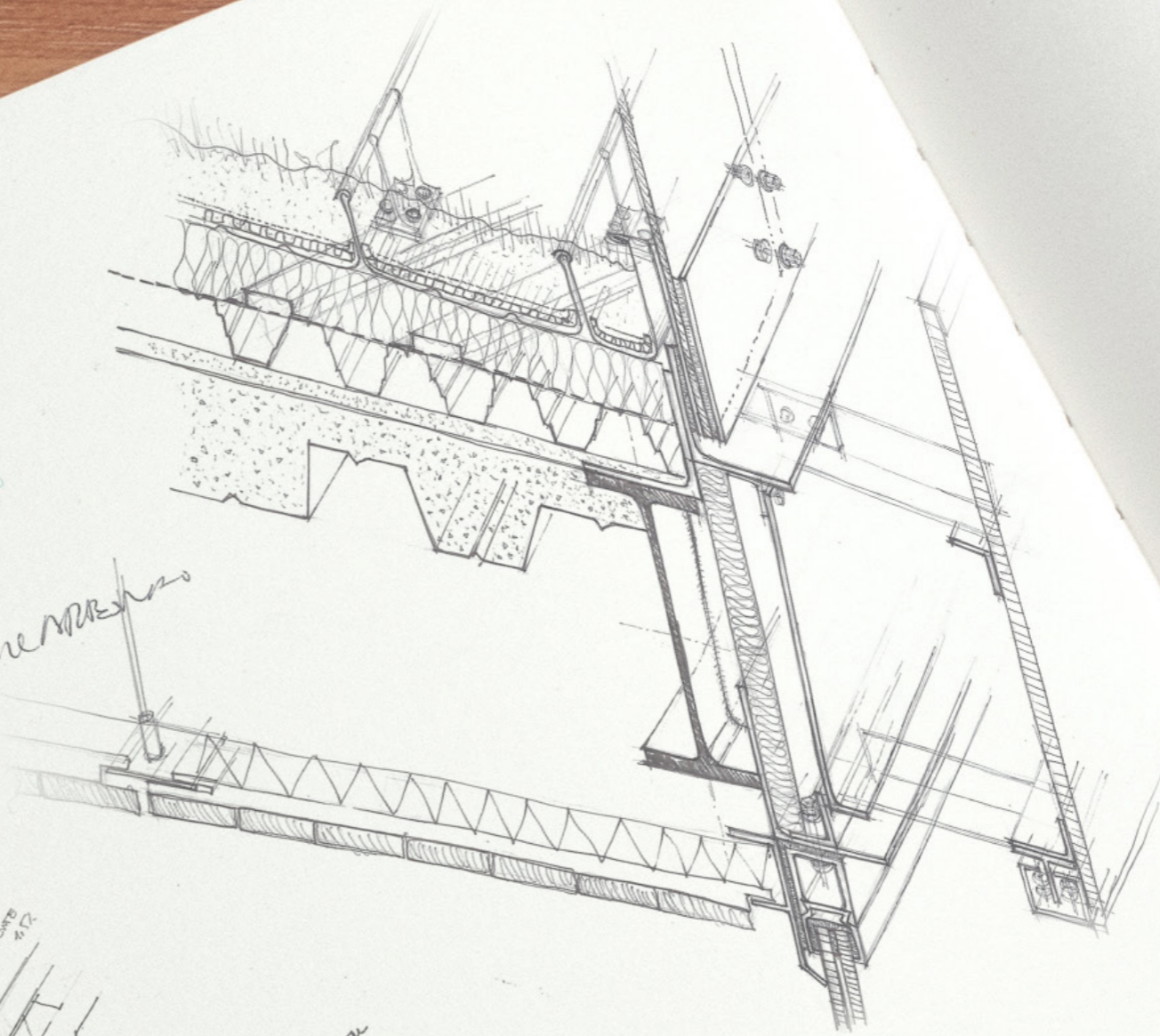
**We need**

**2. Effective Design Process**





2.00m + Lana + Plenum



**We would do better Projects and  
Design Better Cities!**

enzyme

Thank you.

Unit 806  
Arion Commercial Center  
2-12 Queen's Road West  
Sheung Wan  
Hong Kong

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[www.weareenzyme.com](http://www.weareenzyme.com)