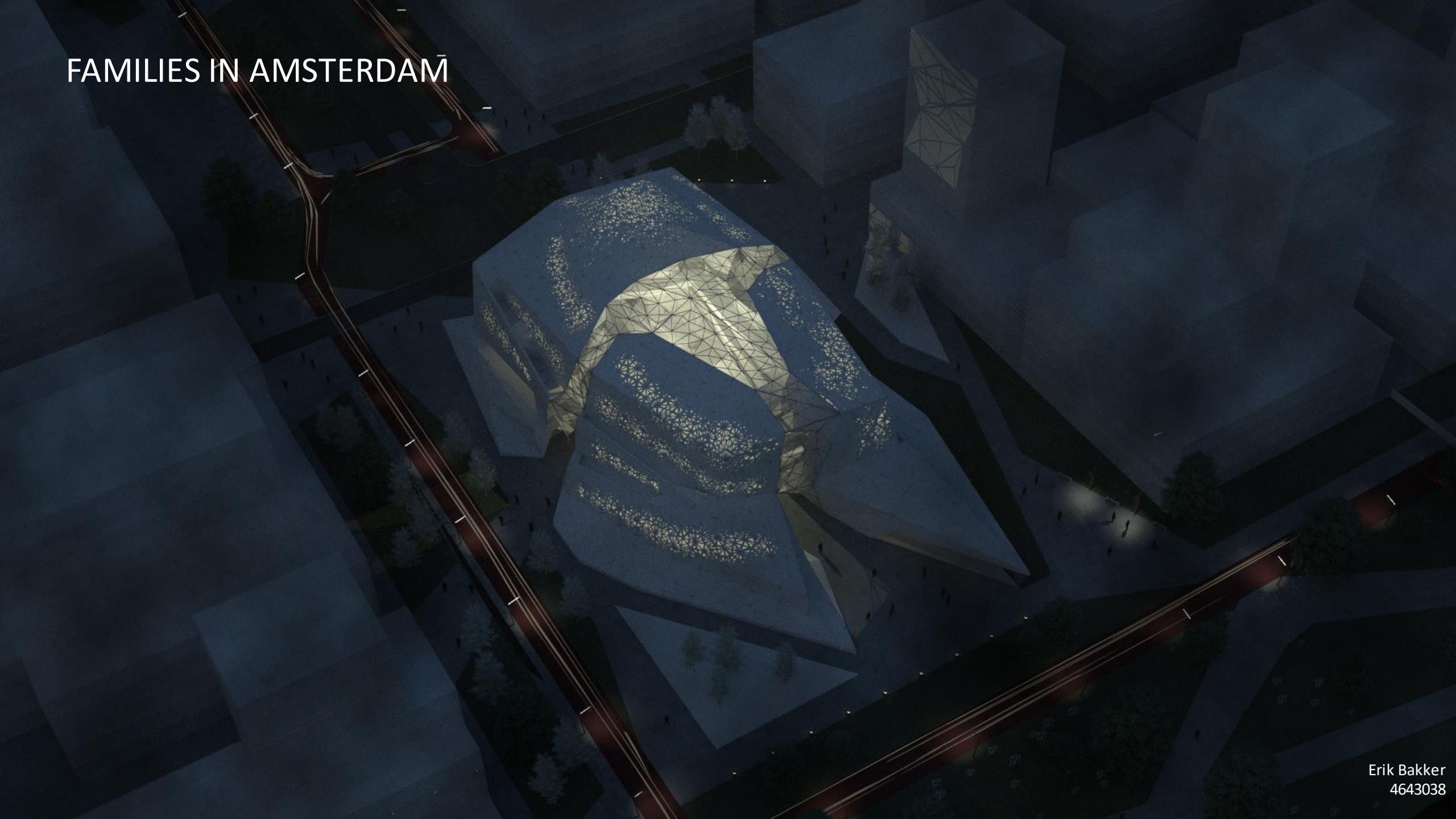
FAMILIES IN AMSTERDAM

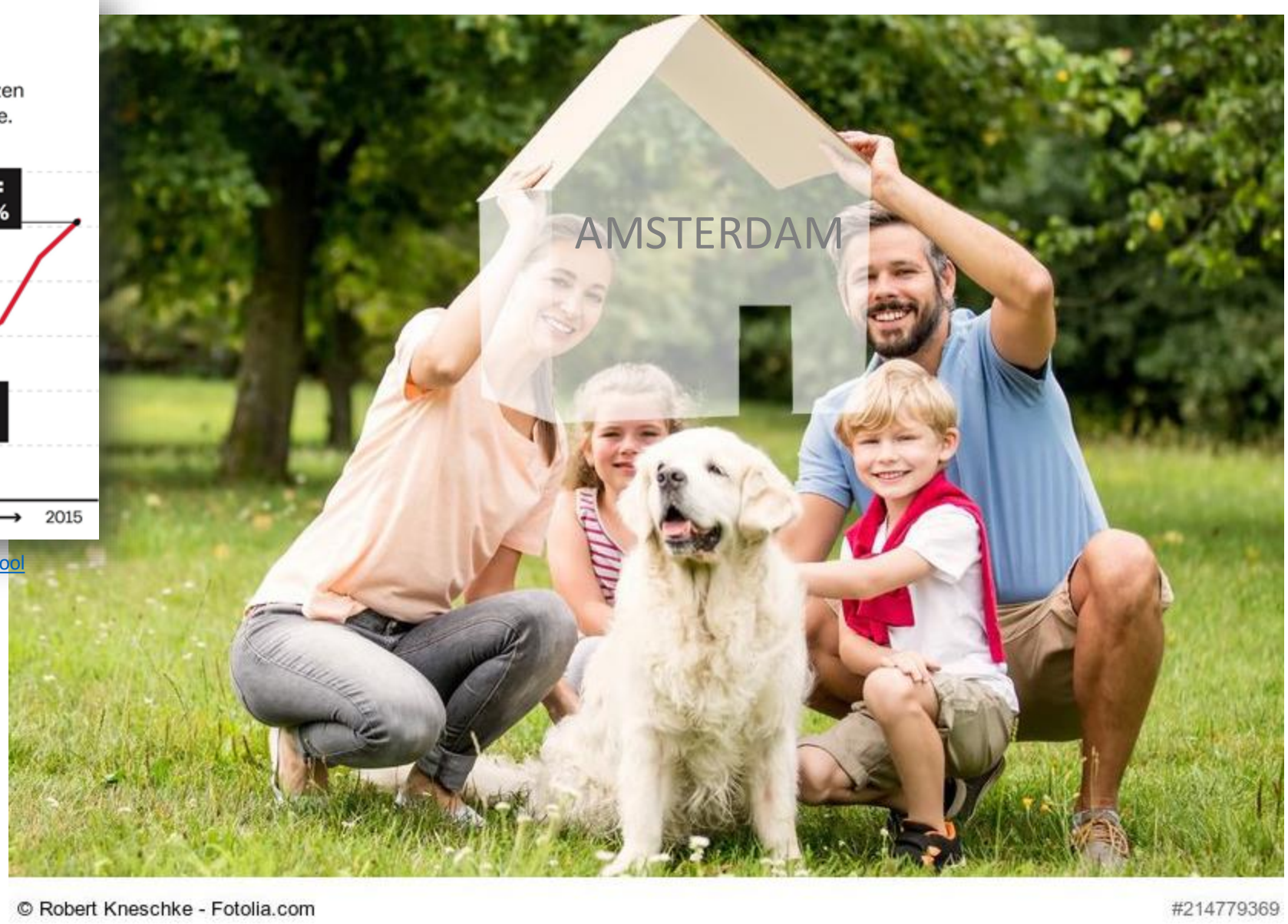


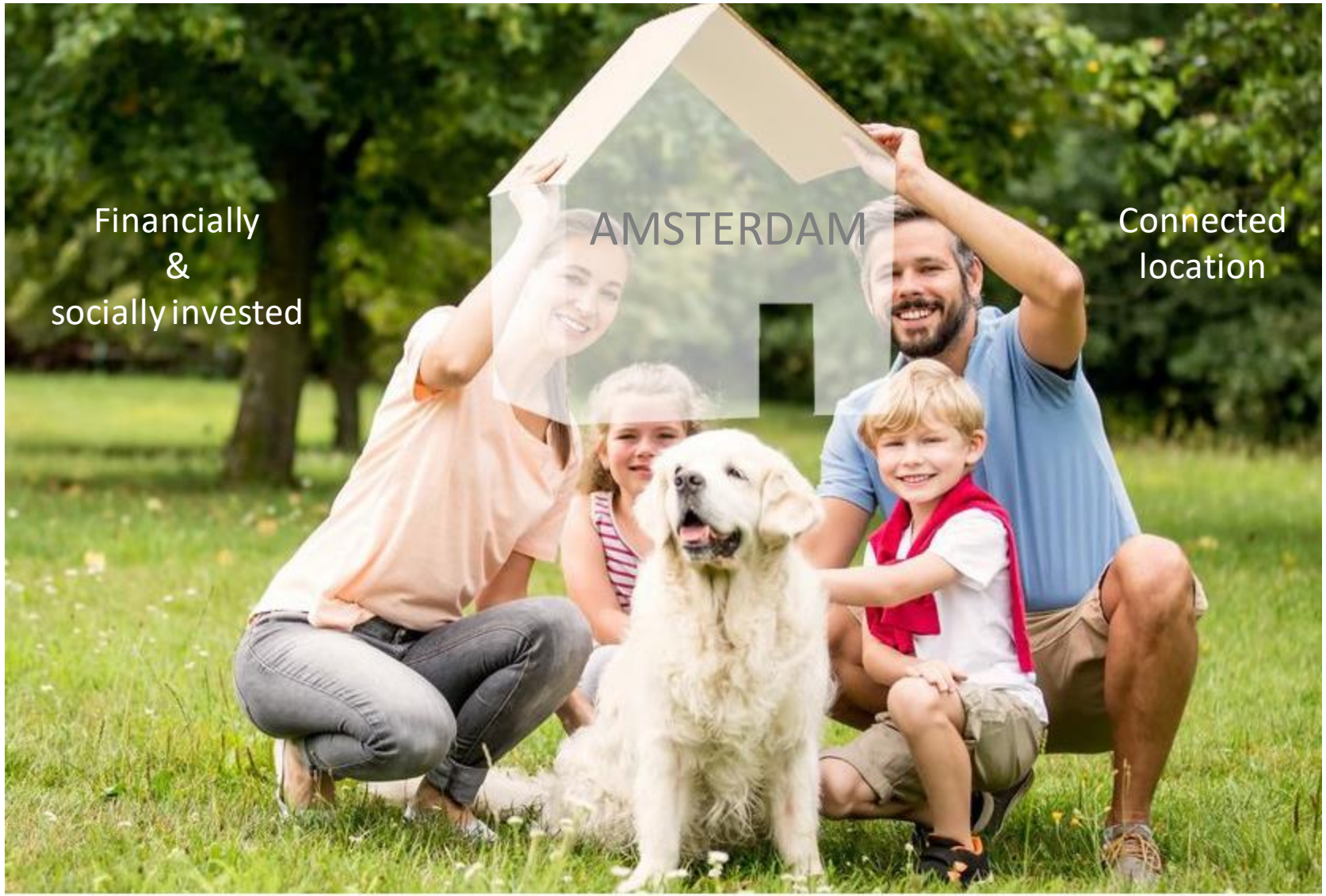
Erik Bakker
4643038

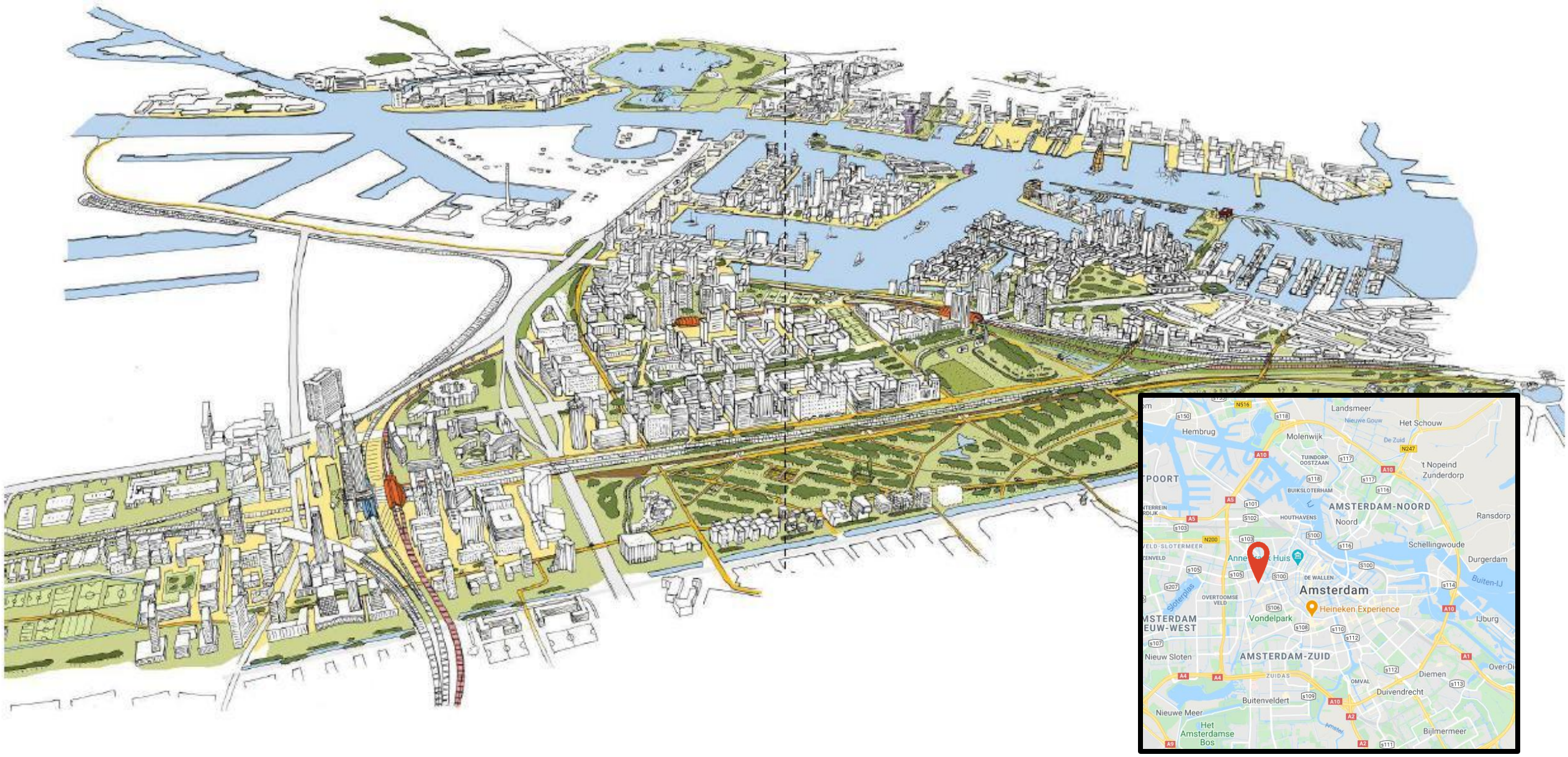
OVERVIEW

CONTEXT	DESIGN MACRO	DESIGN MESO	BUILDING TECHNOLOGY
Families	Urban design	Dwellings	Structure
Amsterdam Haven-stad	Envelope building	Facade	Ventilation
Challenge	Distribution volumes	Interior	Fragment
	Circulation	Acoustic optimization	Robotic assembly
			Details

Bron: CBS. © LvdB/Het Parool







Artist impression of Haven-Stad

(Concept Ontwikkelstrategie Gemeente Amsterdam 20 Juni 2017)

Artist impression of Haven-Stad
(Concept Ontwikkelstrategie Gemeente Amsterdam 20 Juni 2017)

Source: Google Maps

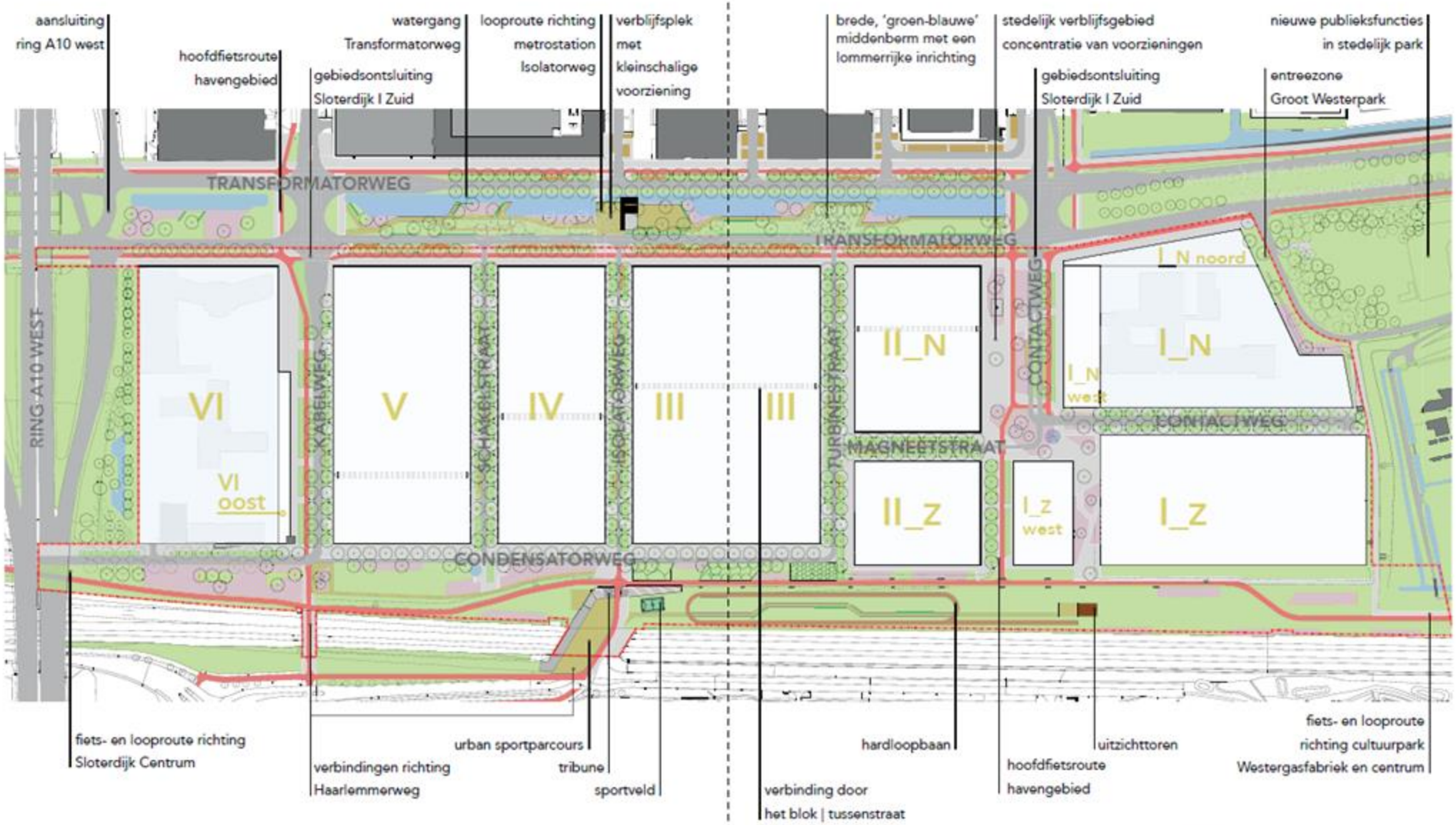


Image from Stedenbouwkundig kader ruimtelijke kwaliteit Sloterdijk I Zuid by Gemeente Amsterdam

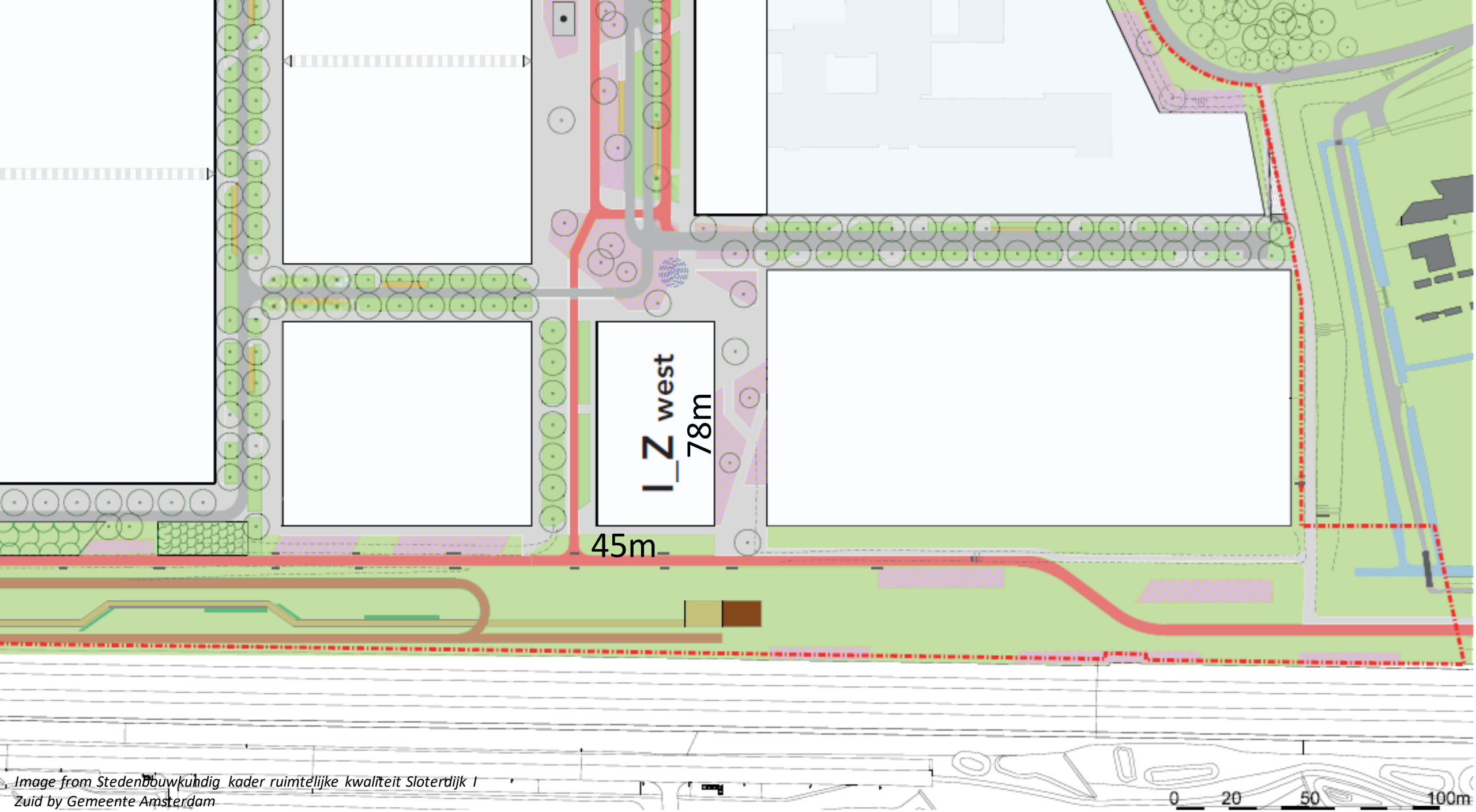


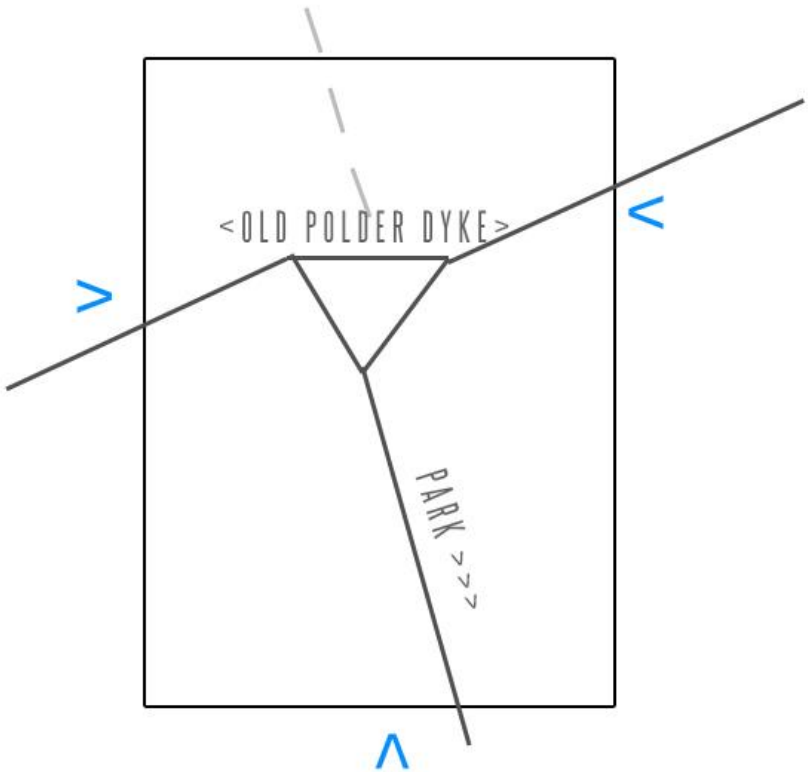
Image from Stedenbouwkundig kader ruimtelijke kwaliteit Sloterdijk I Zuid by Gemeente Amsterdam

Challenge

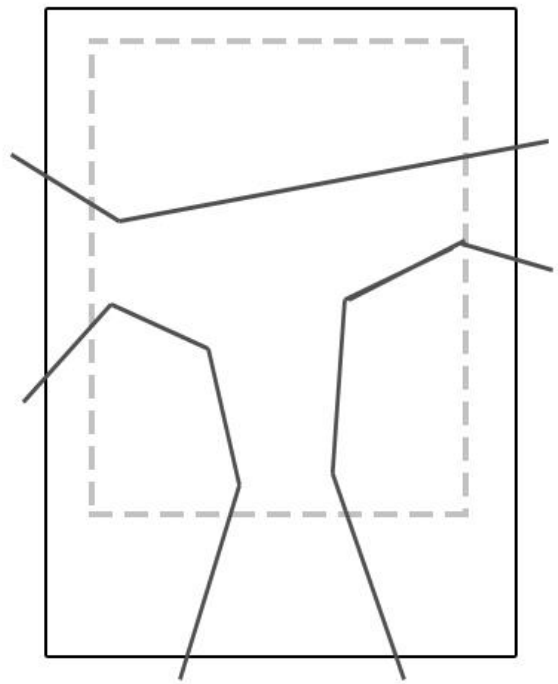
- How to create relatively small dwellings that feel spacious and fit the families needs now and in their development?

DESIGN

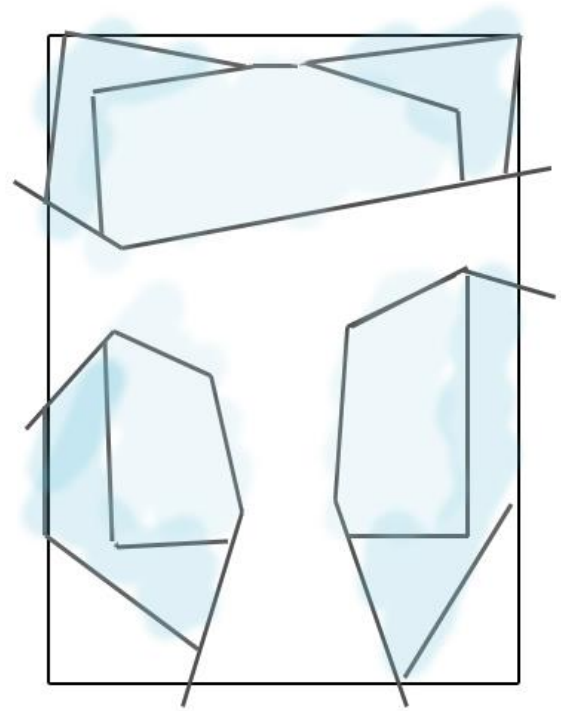
MACRO SCALE



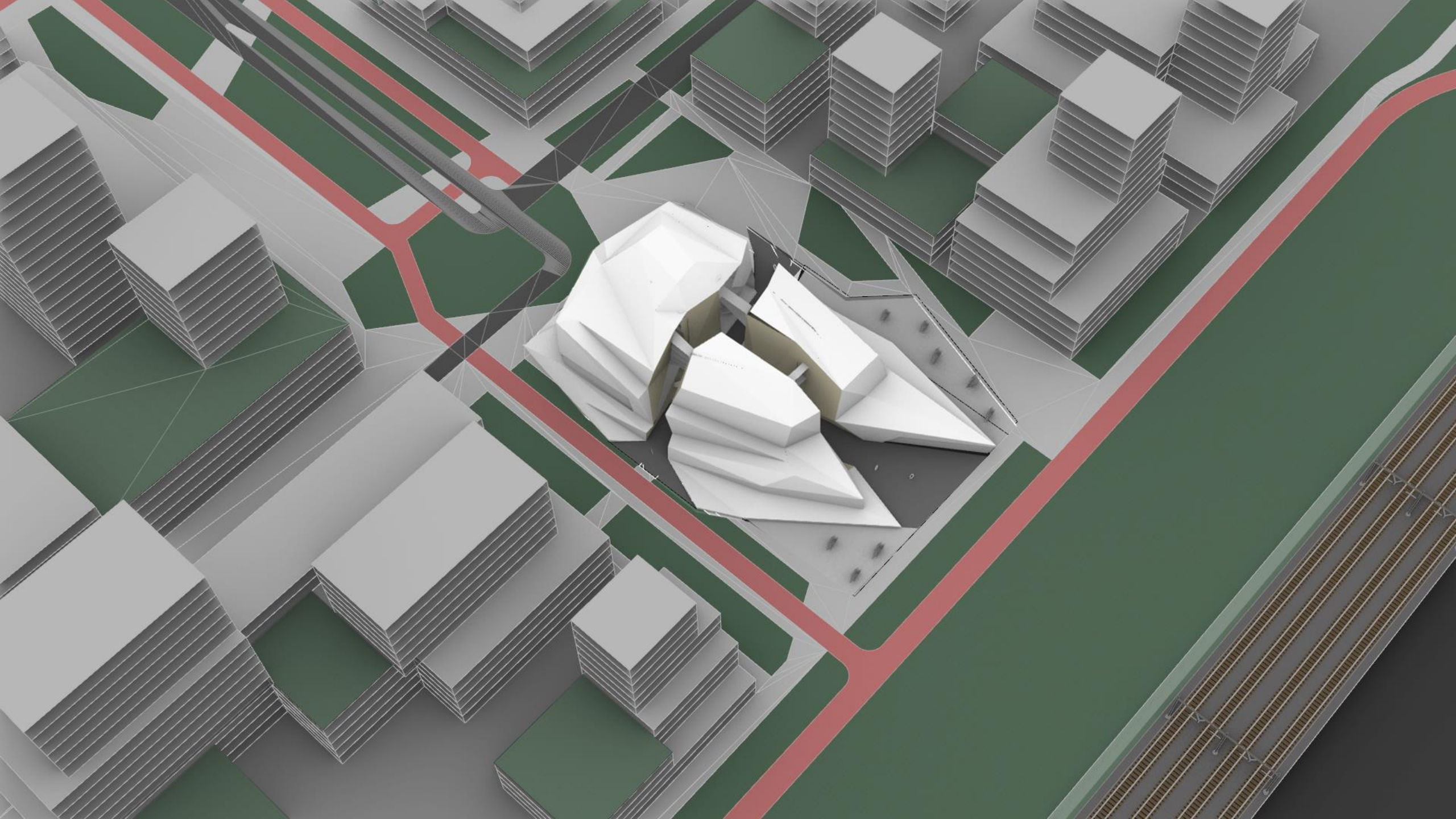
ROUTE

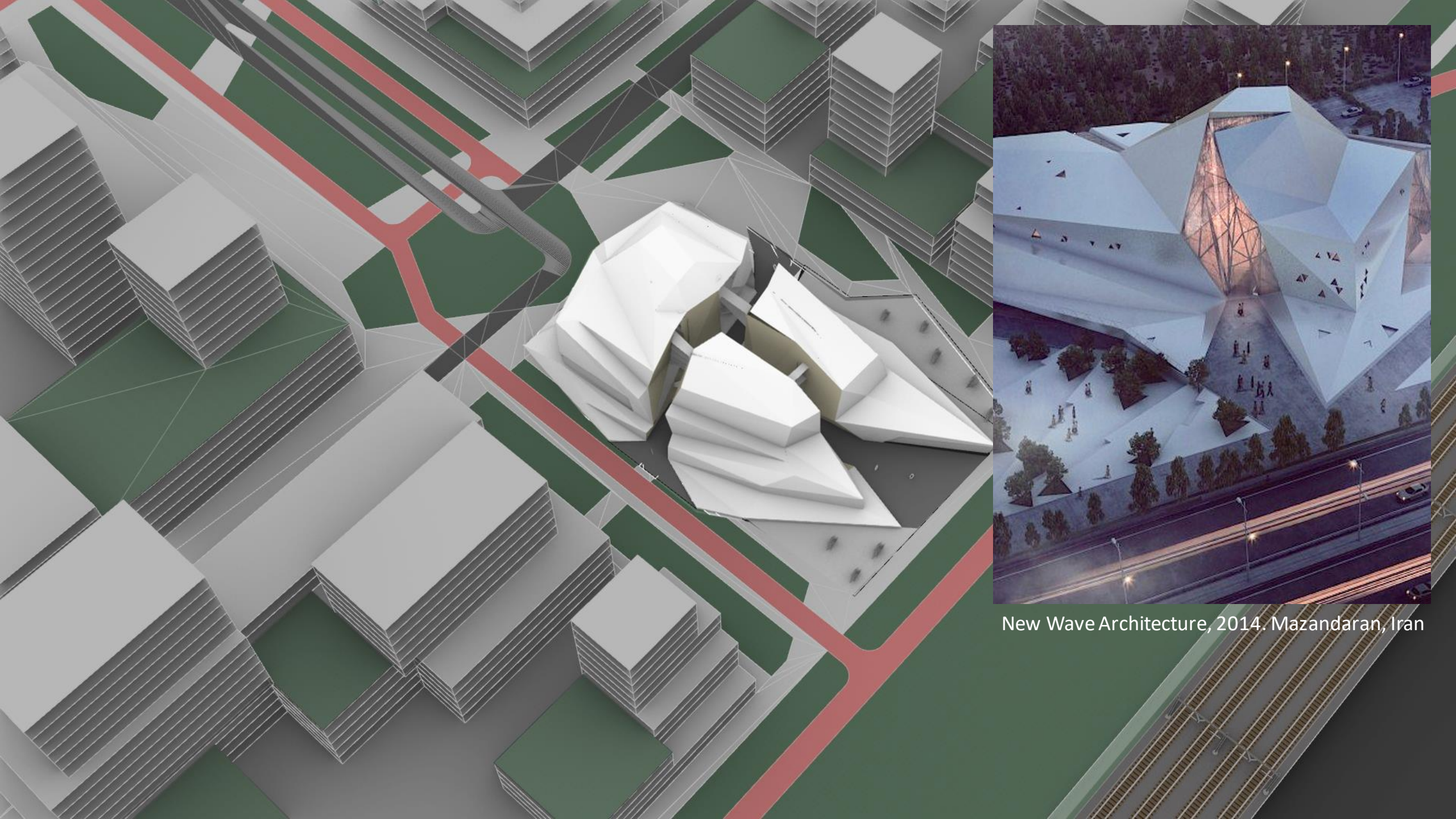


LAYERS

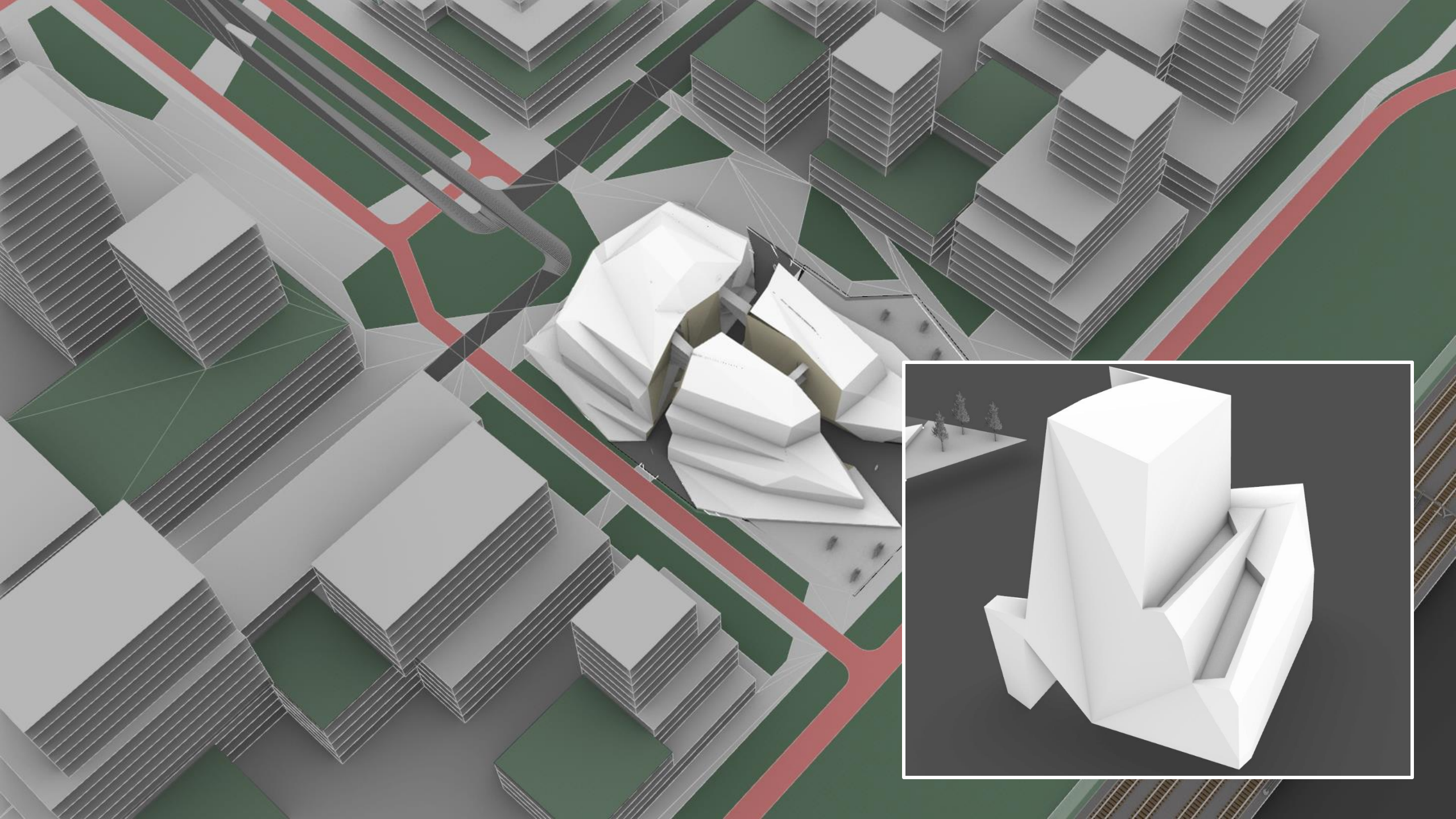


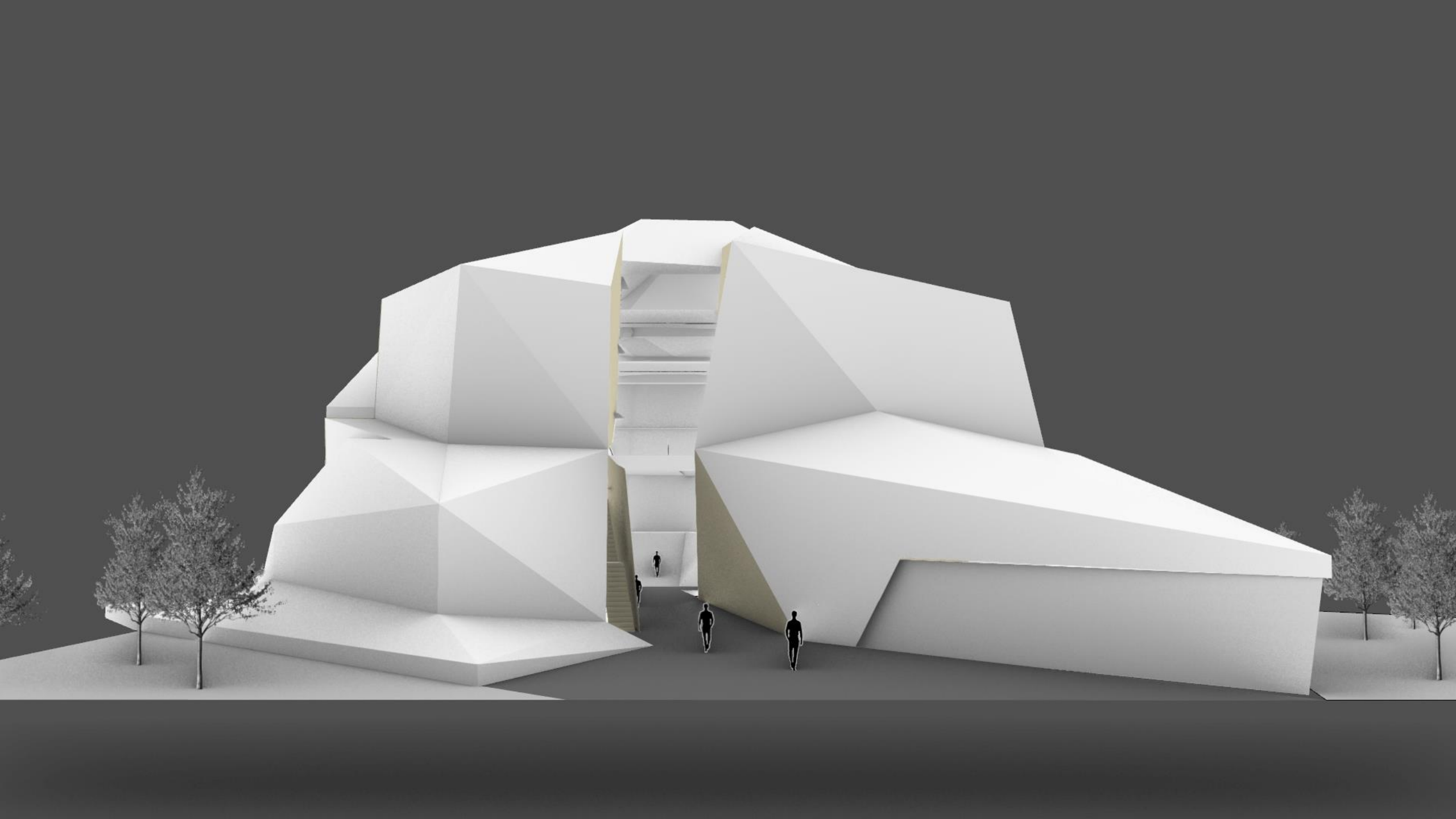
MASS

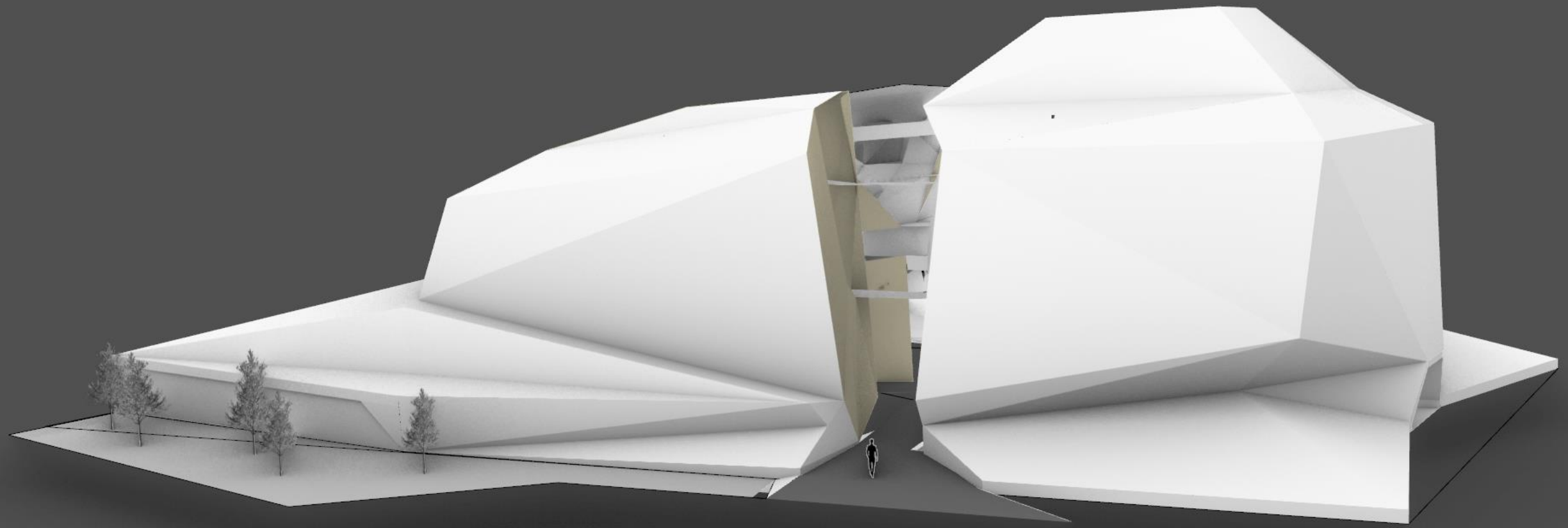


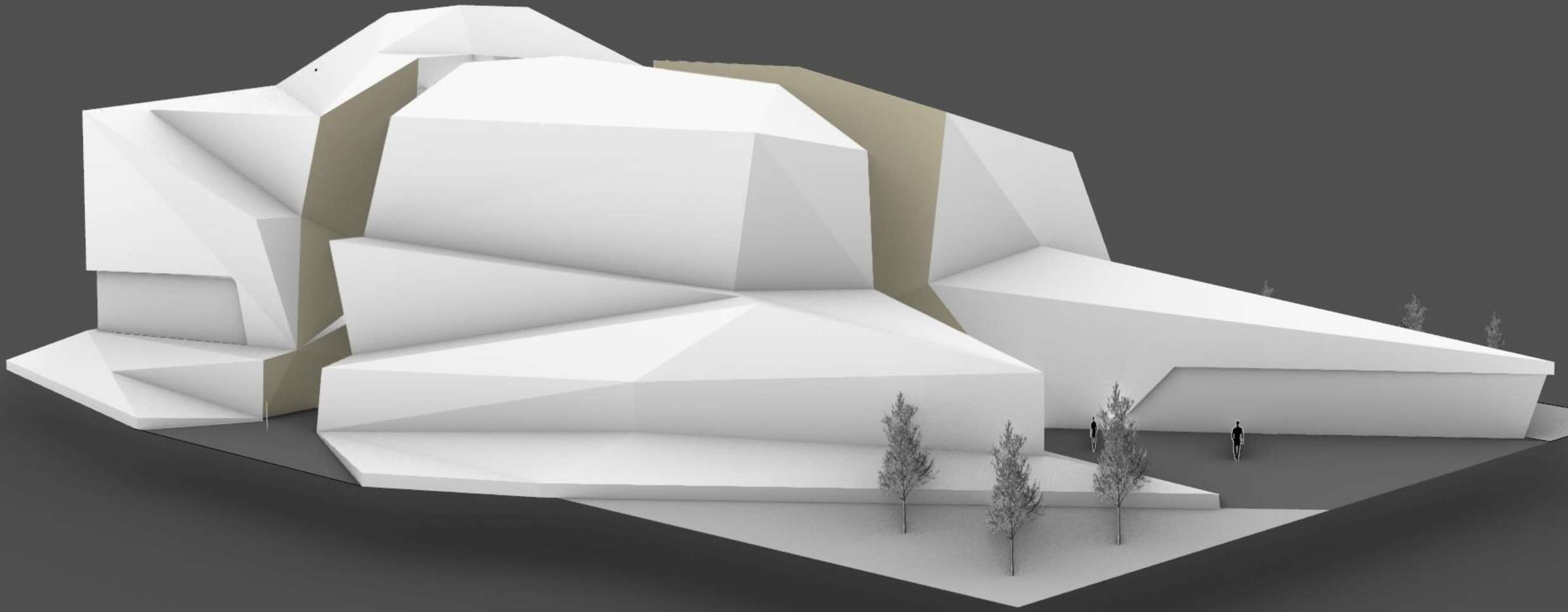


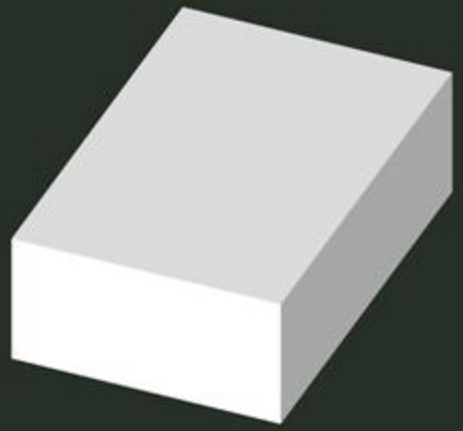
New Wave Architecture, 2014. Mazandaran, Iran











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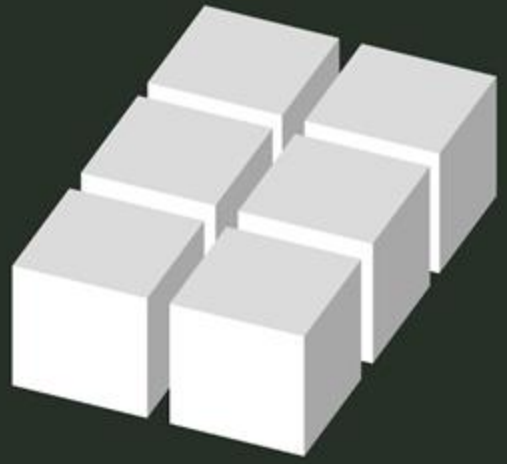
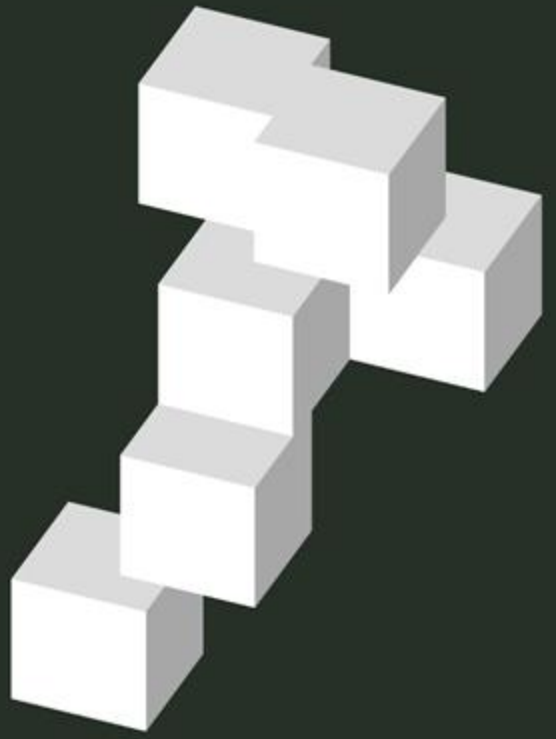


DECONSTRUCTION



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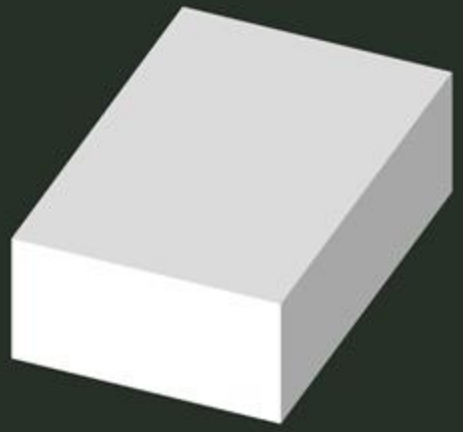
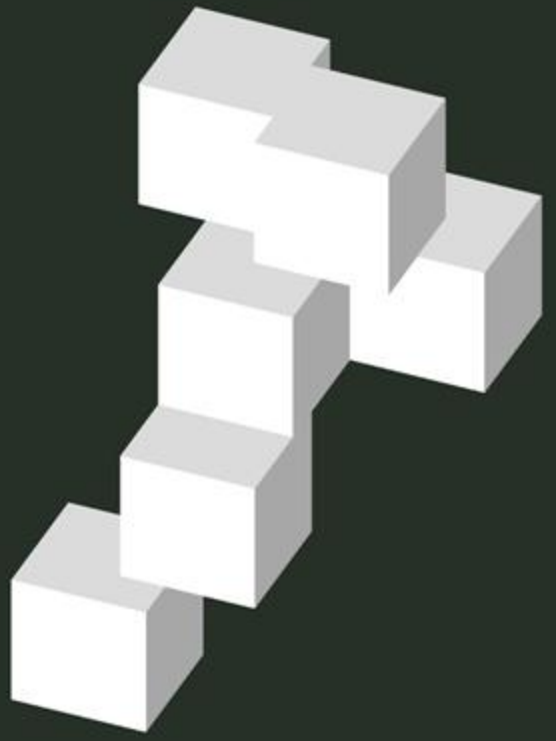
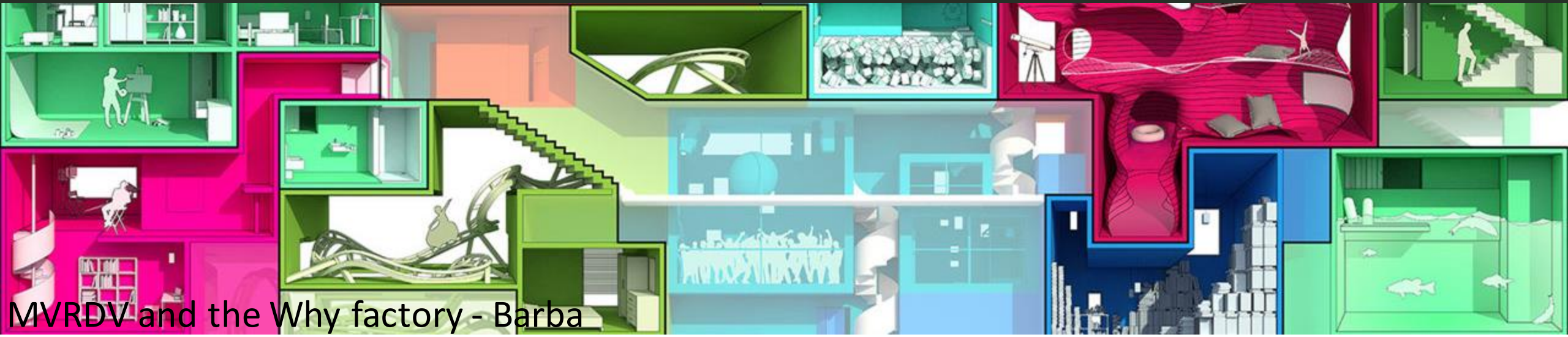


ORIGINAL

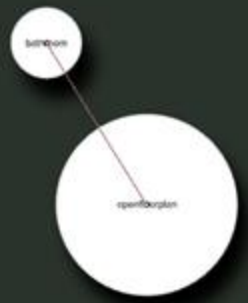
DECONSTRUCTION

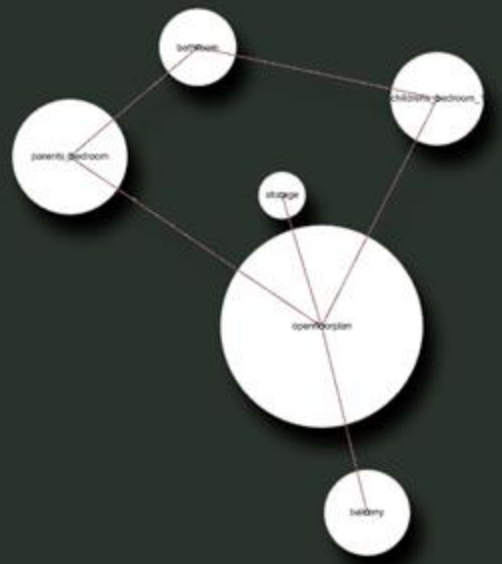


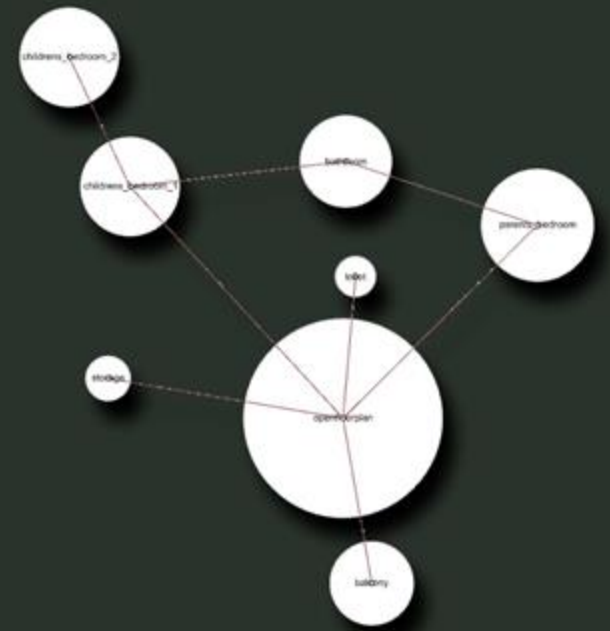
RECONSTRUCTION

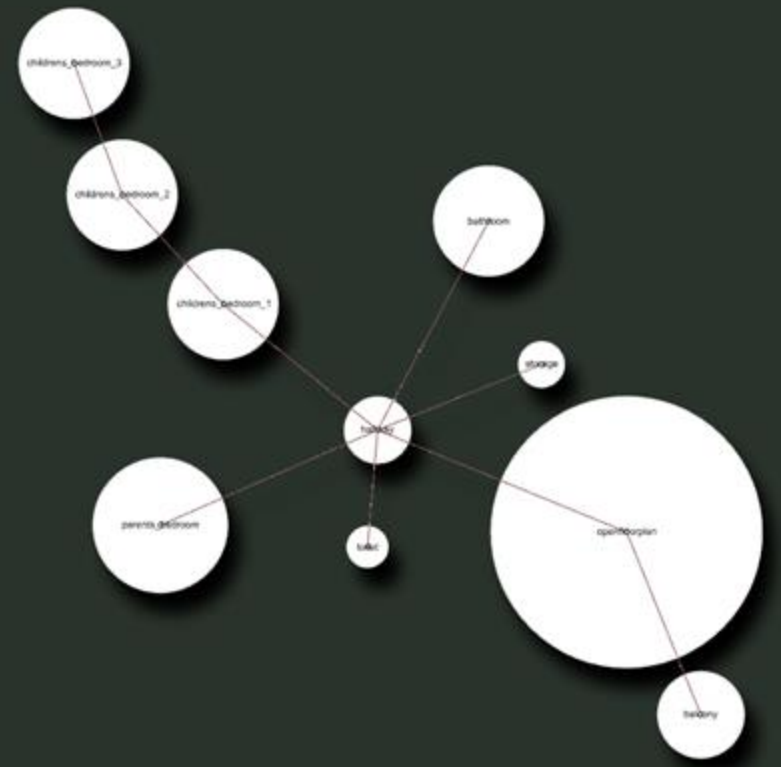


MVRDV and the Why factory - Barba









STUDIO

27 - 33 m2

30% shared

27 units

1-BEDROOM

48 - 58 m2

20% shared

132 units

2-BEDROOM

58 - 71 m2

20% shared

74 units

3-BEDROOM

92 - 112 m2

33 units

Sleeping

Children's bedroom

Parents bedroom

Bathroom

Living

Living room

Kitchen

Balcony

Sleeping

Children's bedroom

Parents bedroom

Bathroom

Living

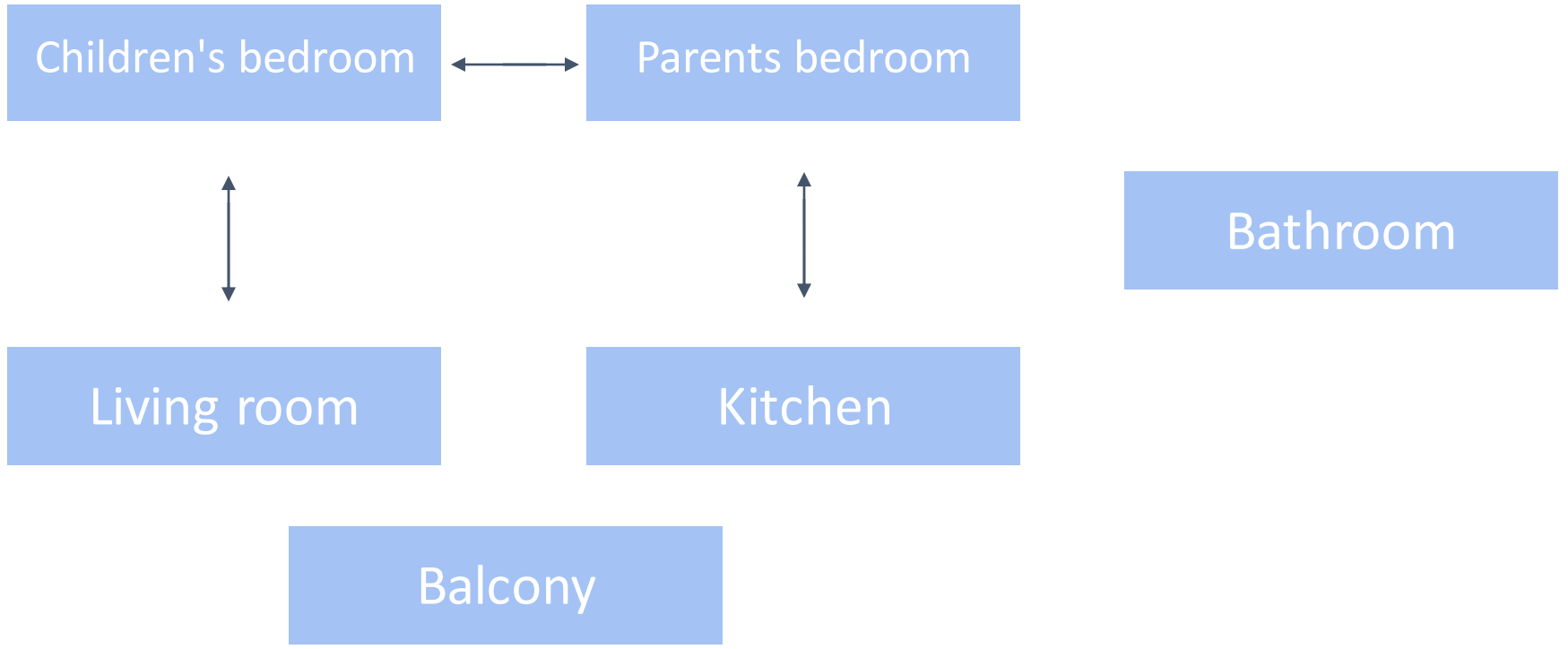
Living room

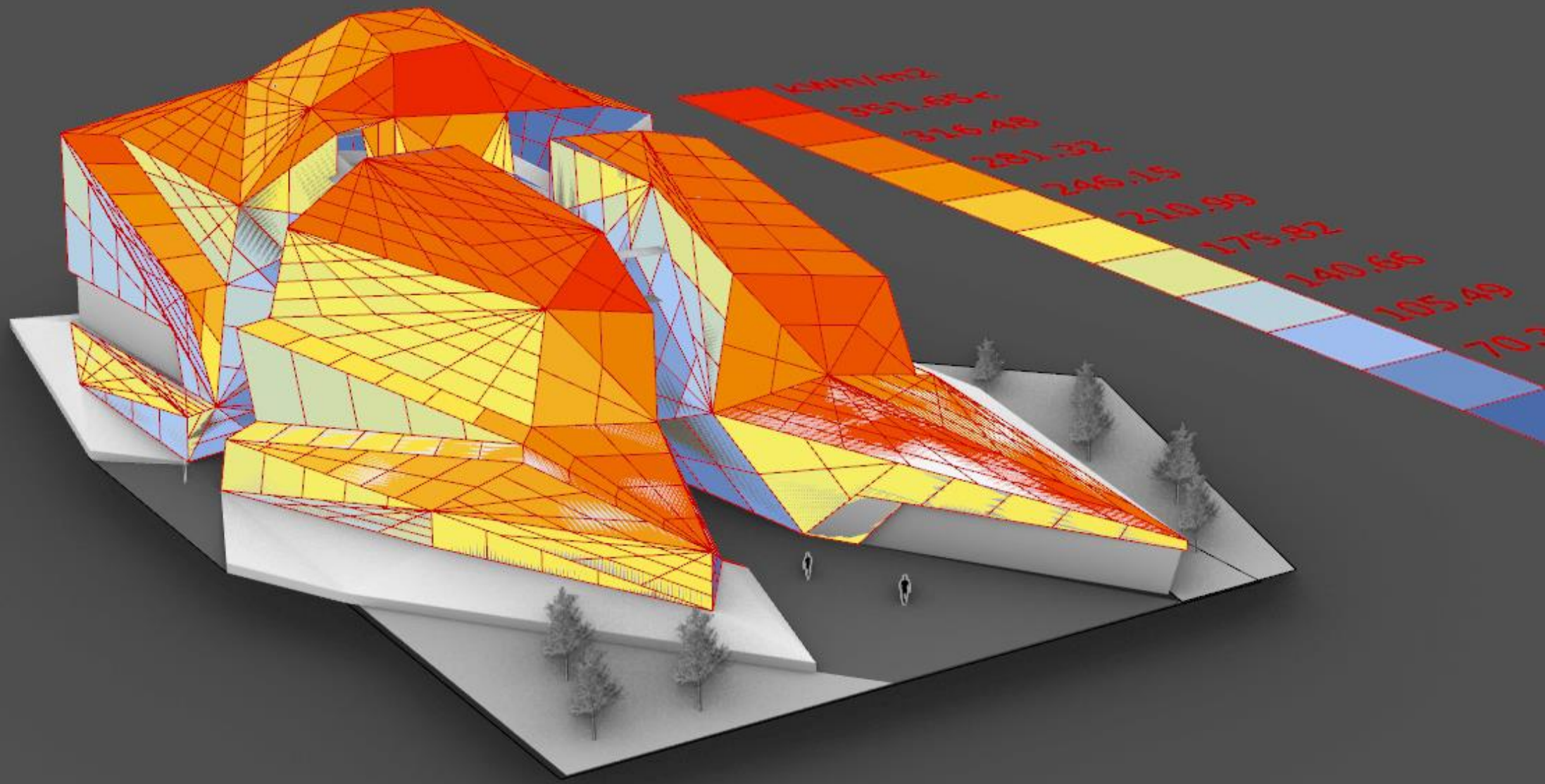
Kitchen

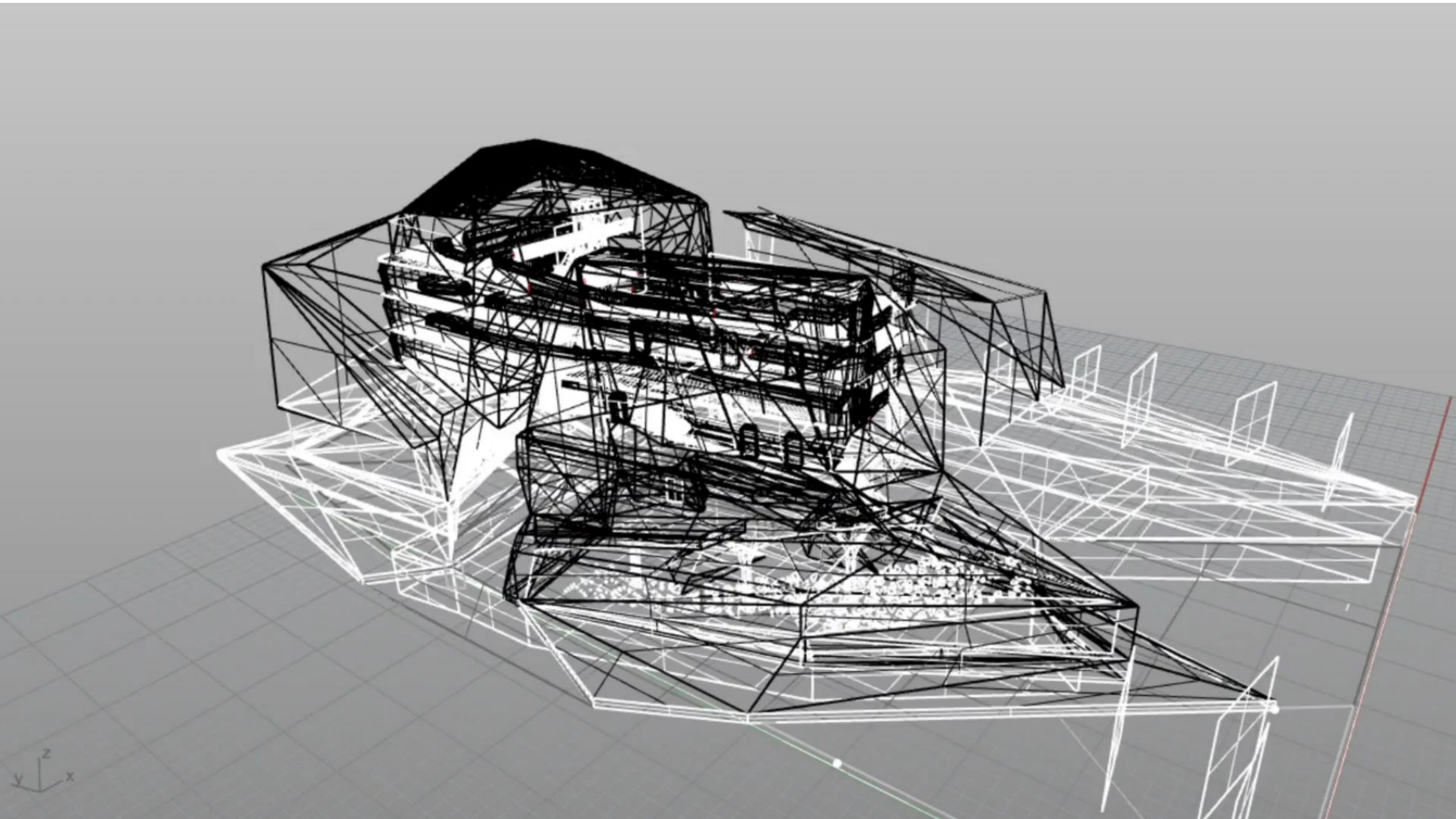
Balcony

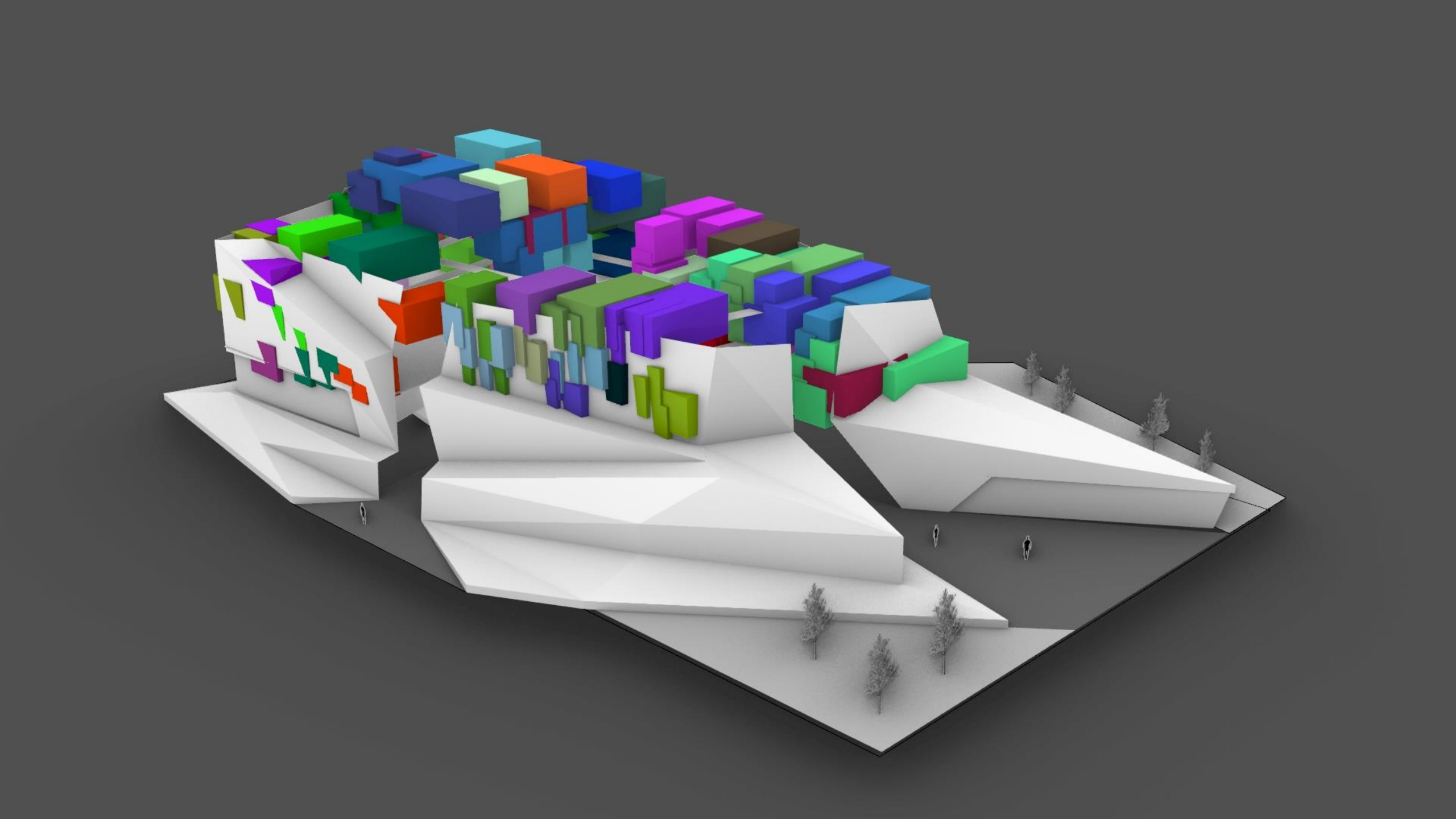
Sleeping

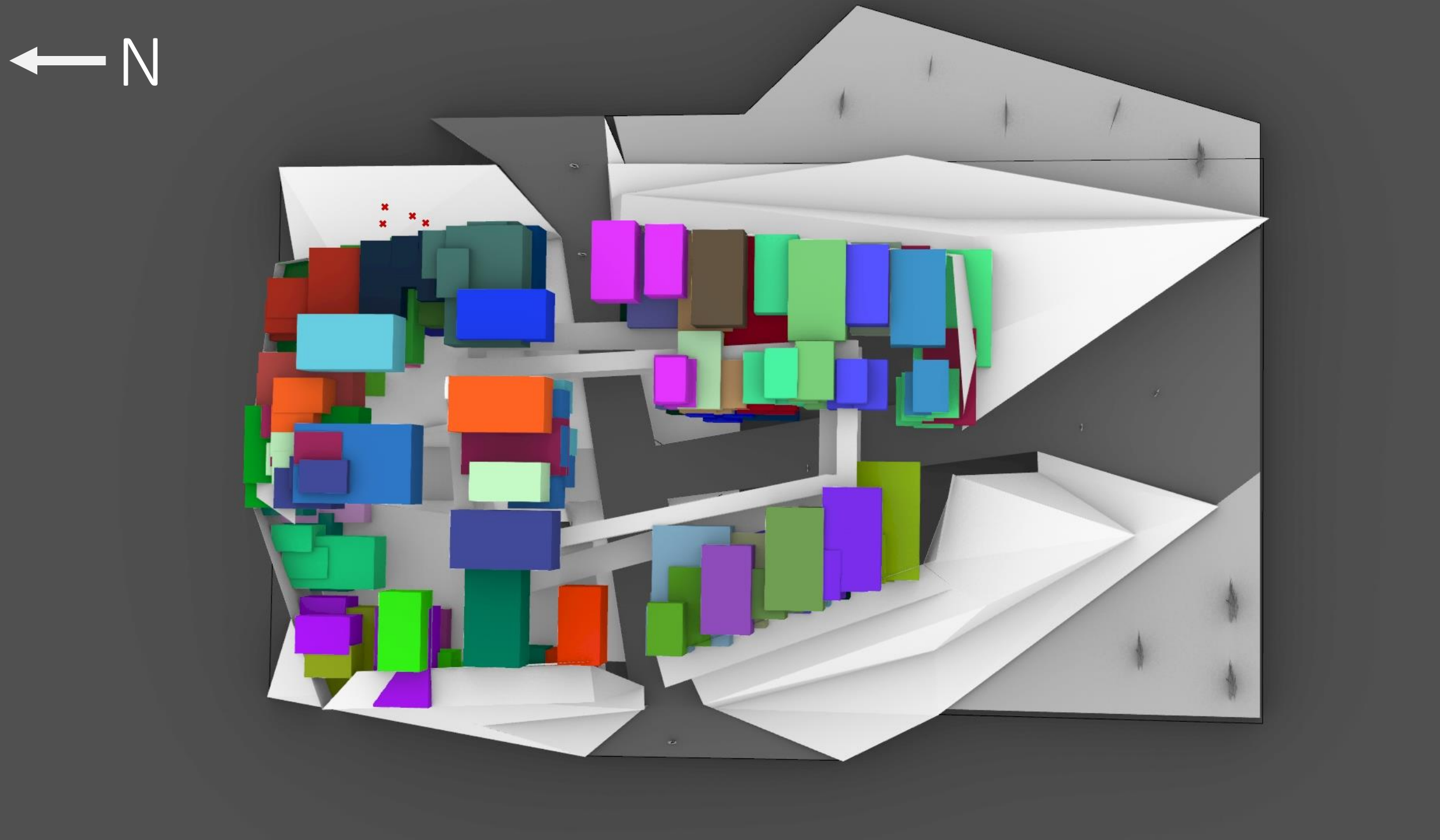
Living




kWh/m2
351.68
316.48
281.32
246.15
210.99
175.82
140.66
105.49



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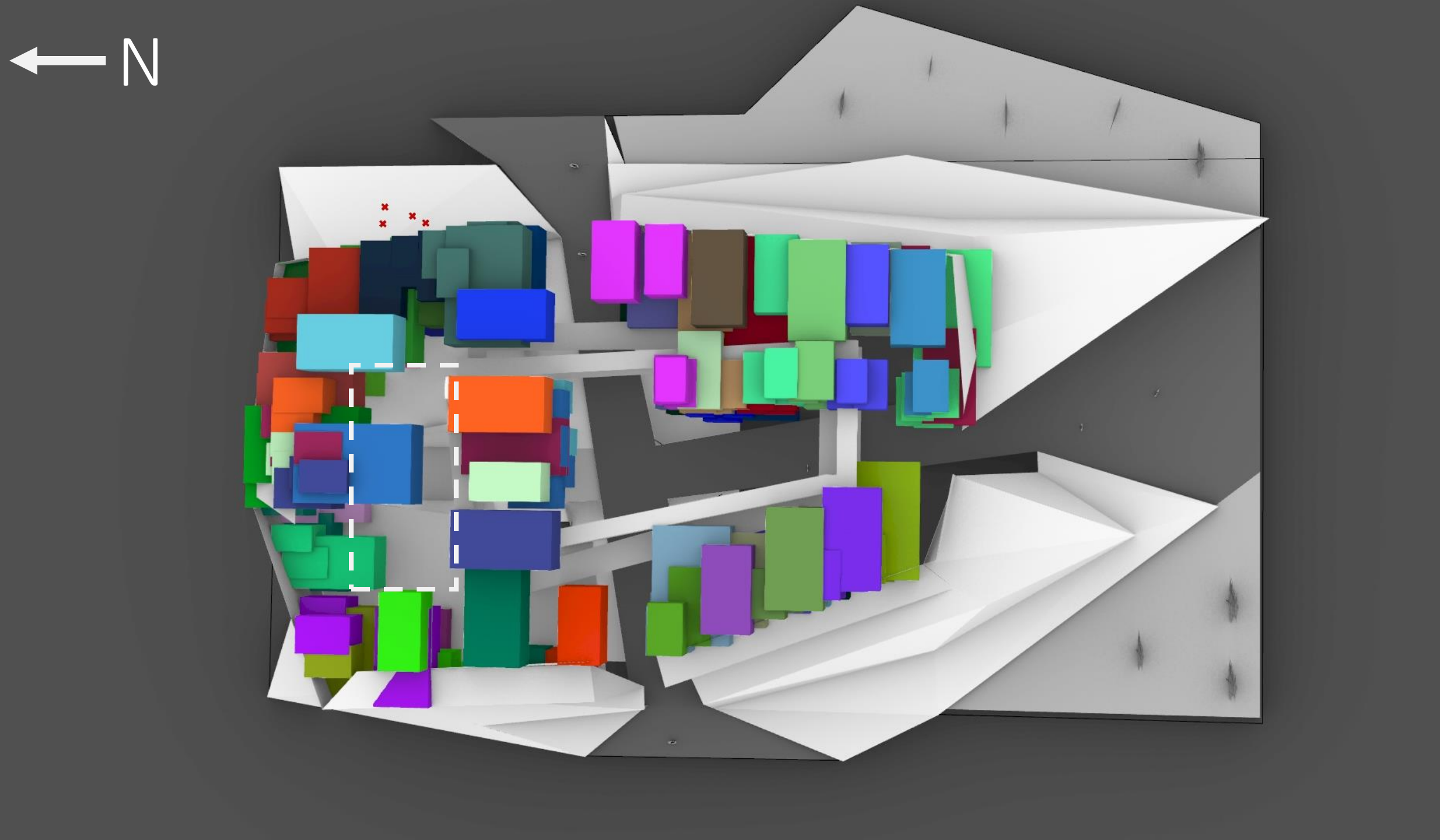
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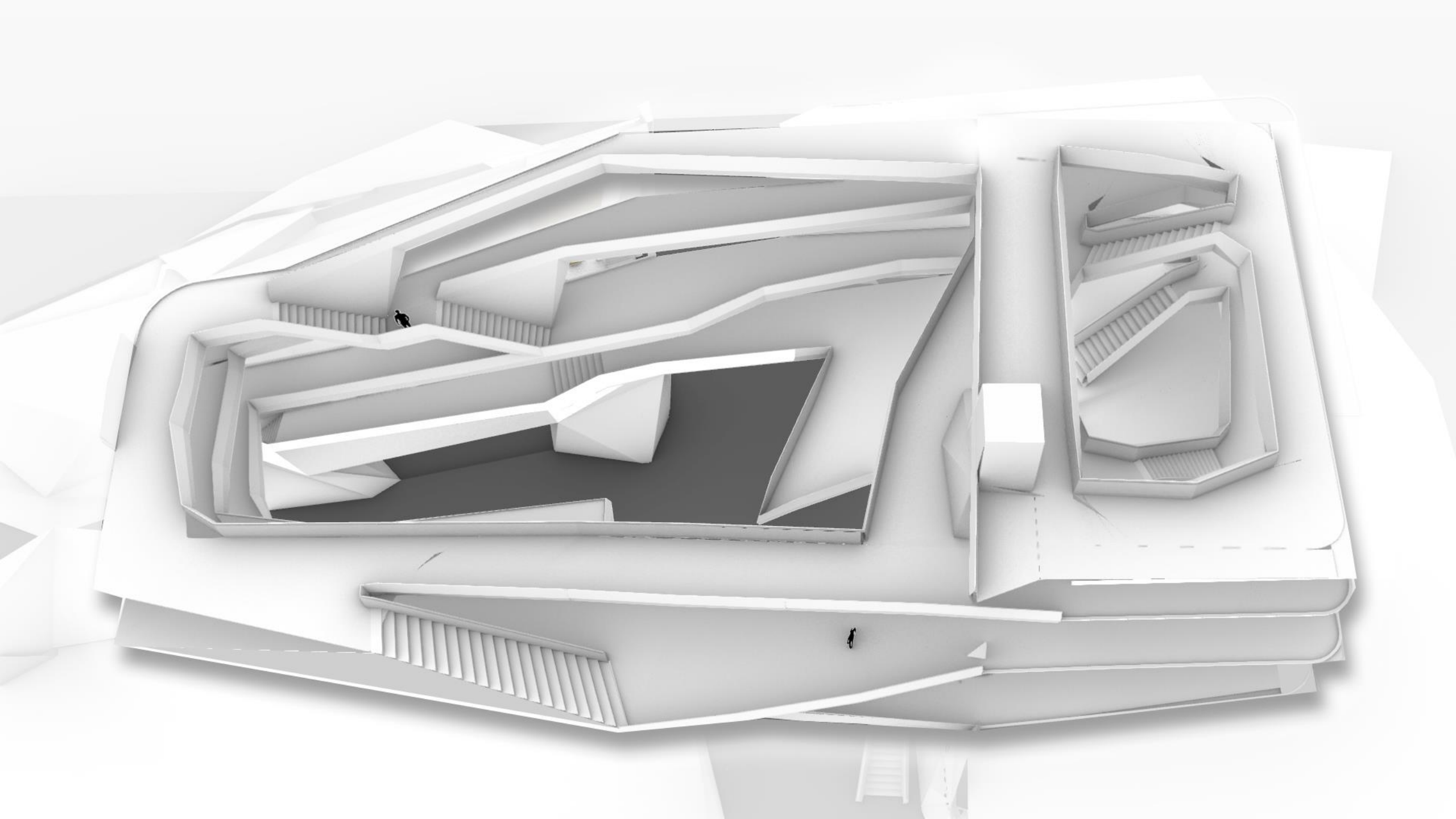
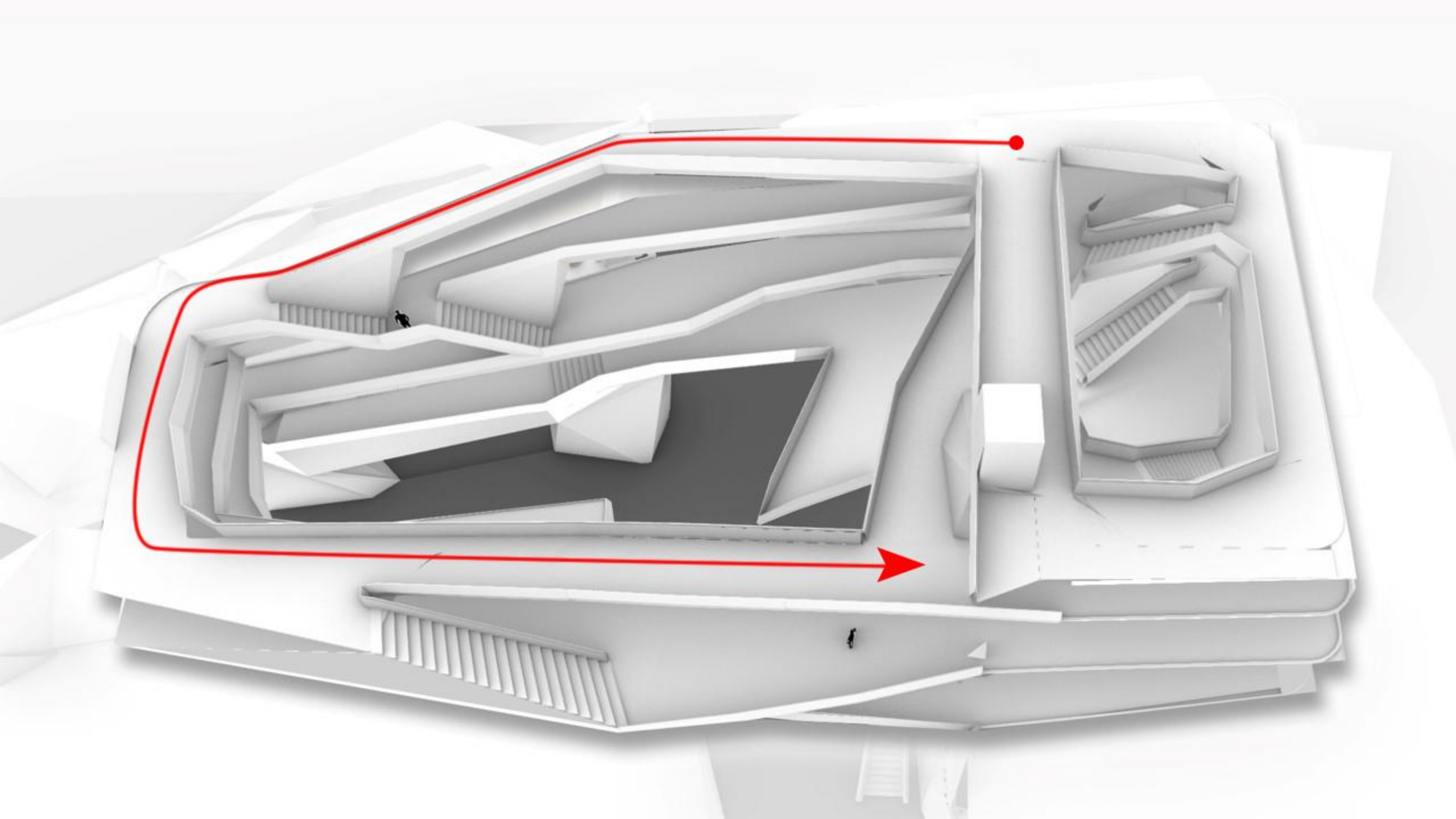
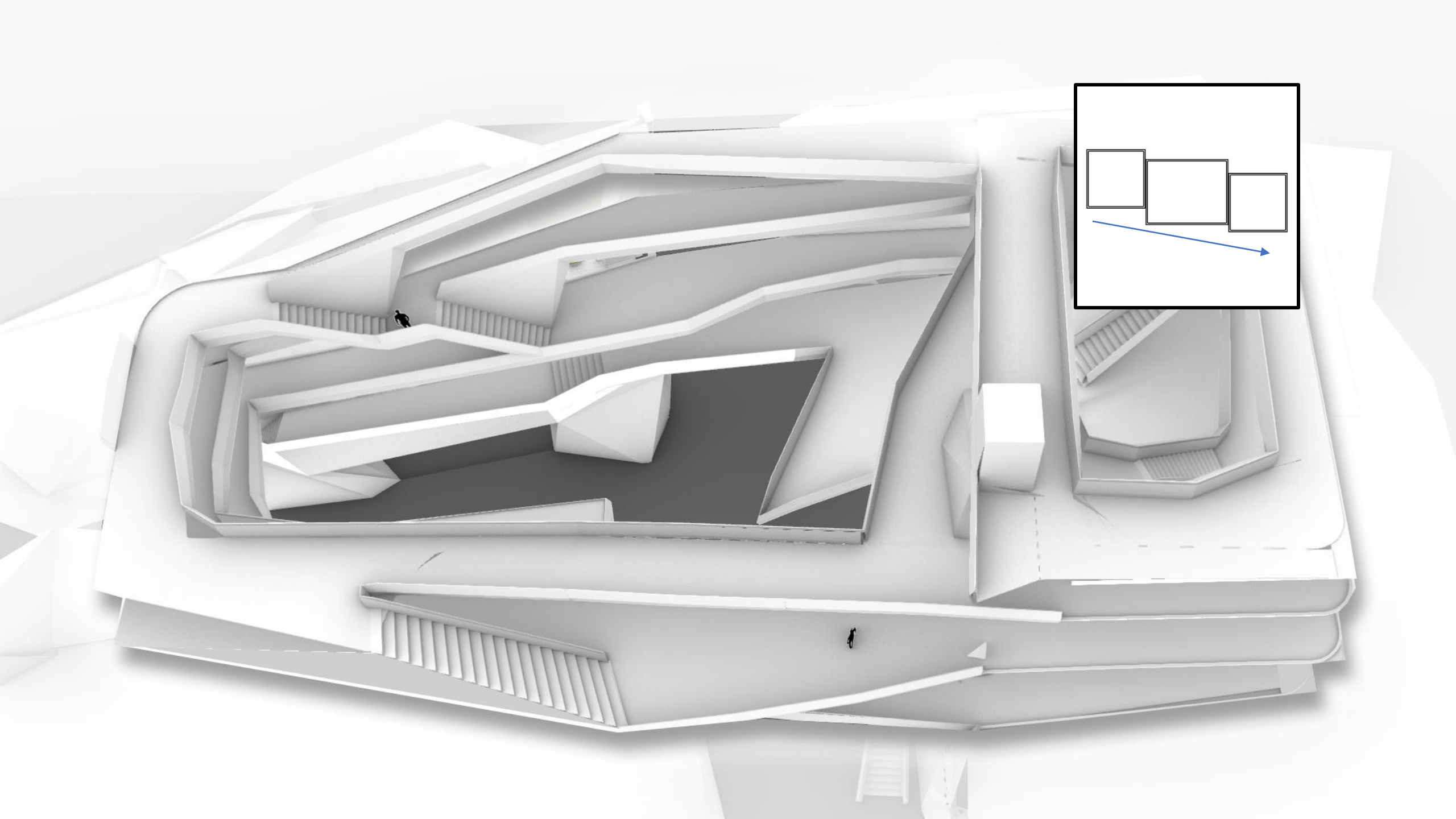
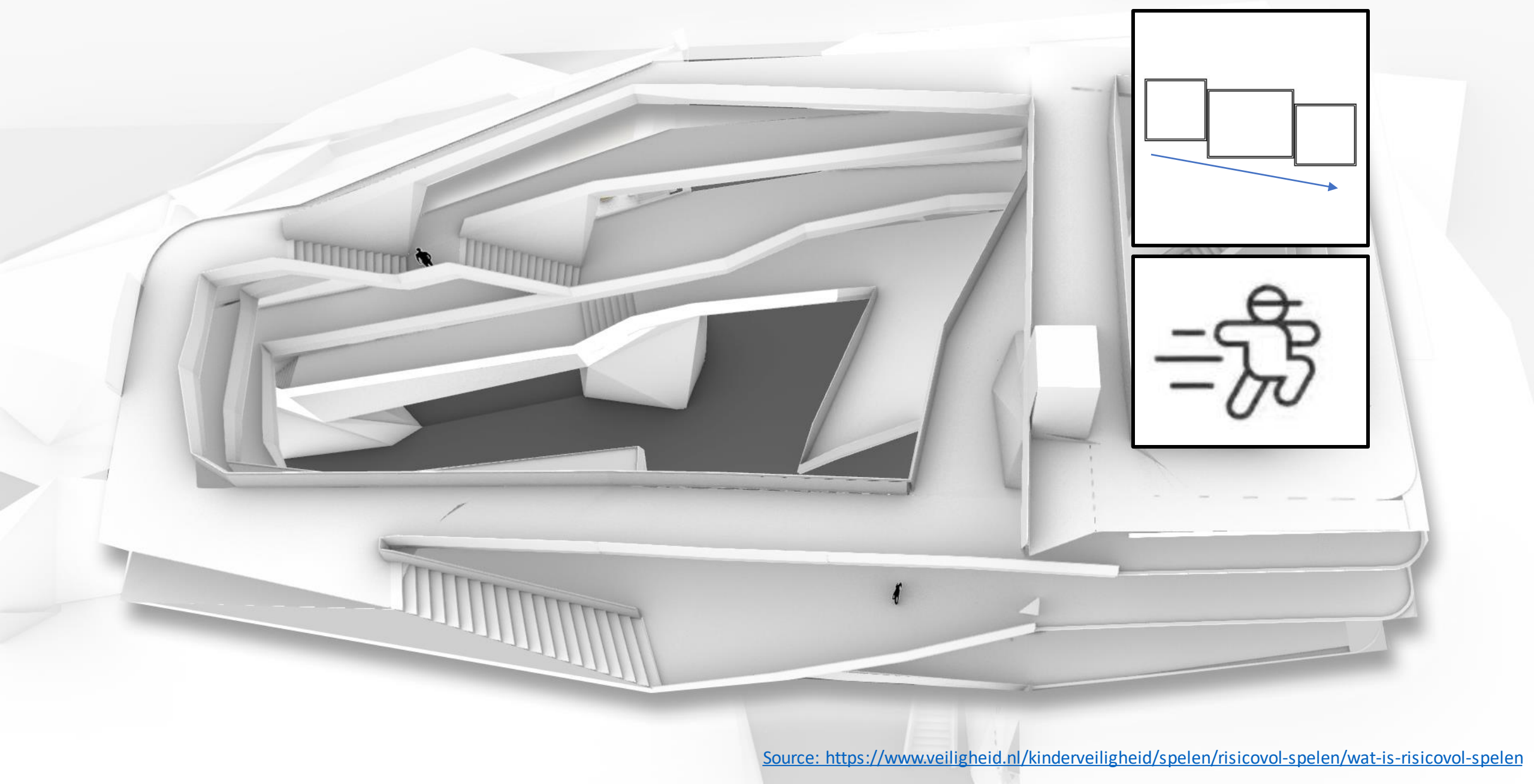
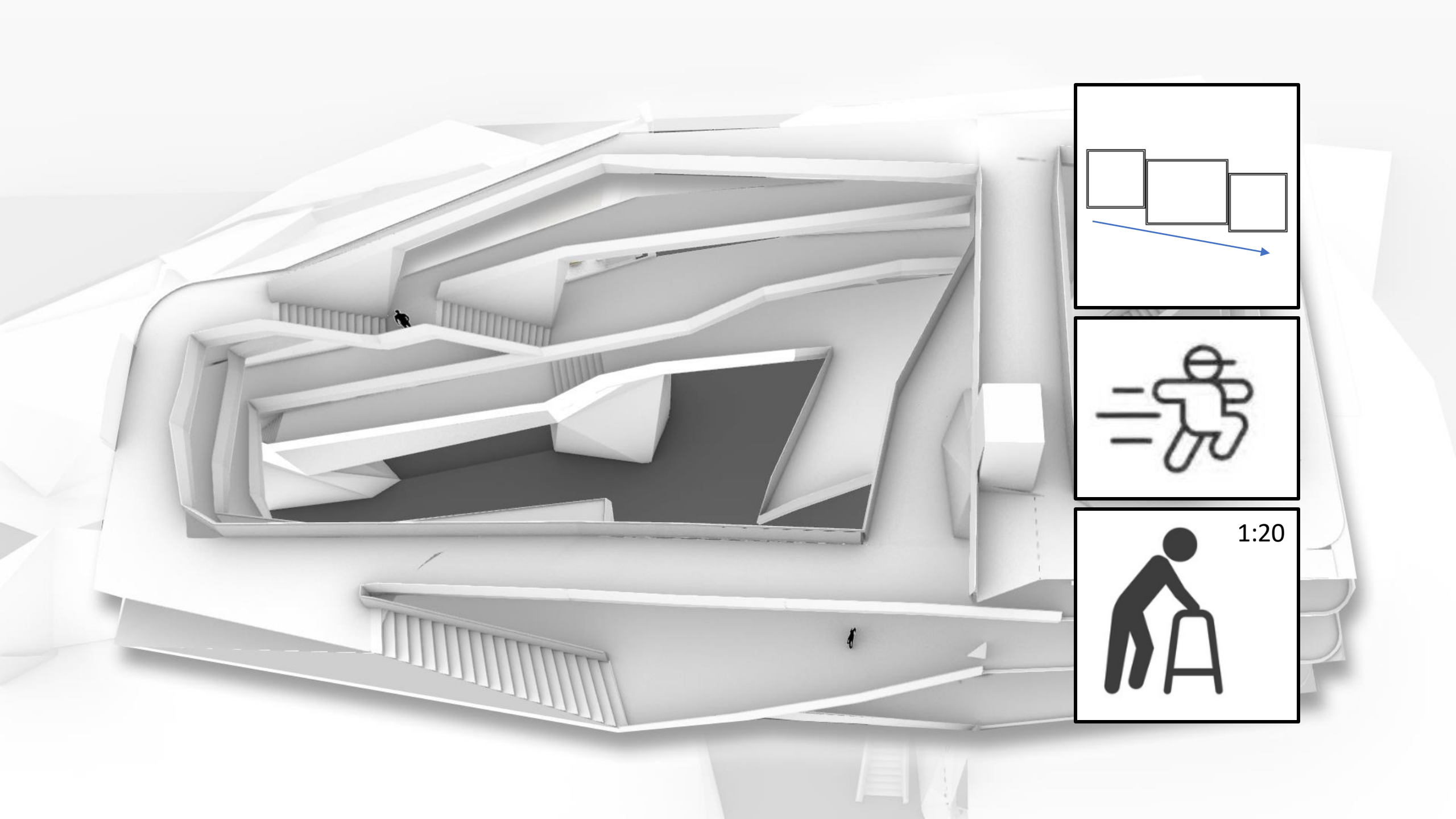








Source: https://www.veiligheid.nl/kinderveiligheid/spelen/risicovol-spelen/wat-is-risicovol-spelen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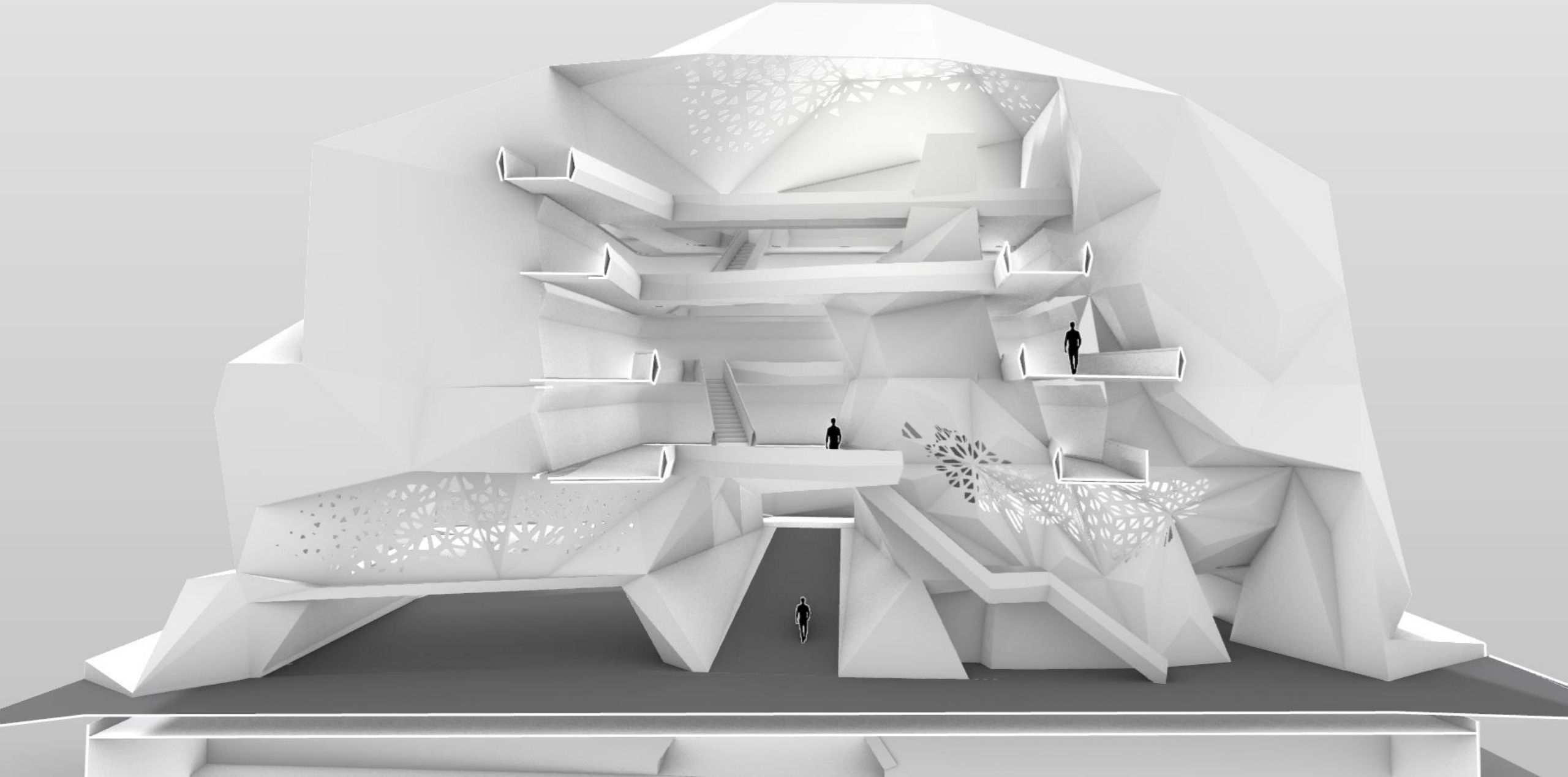
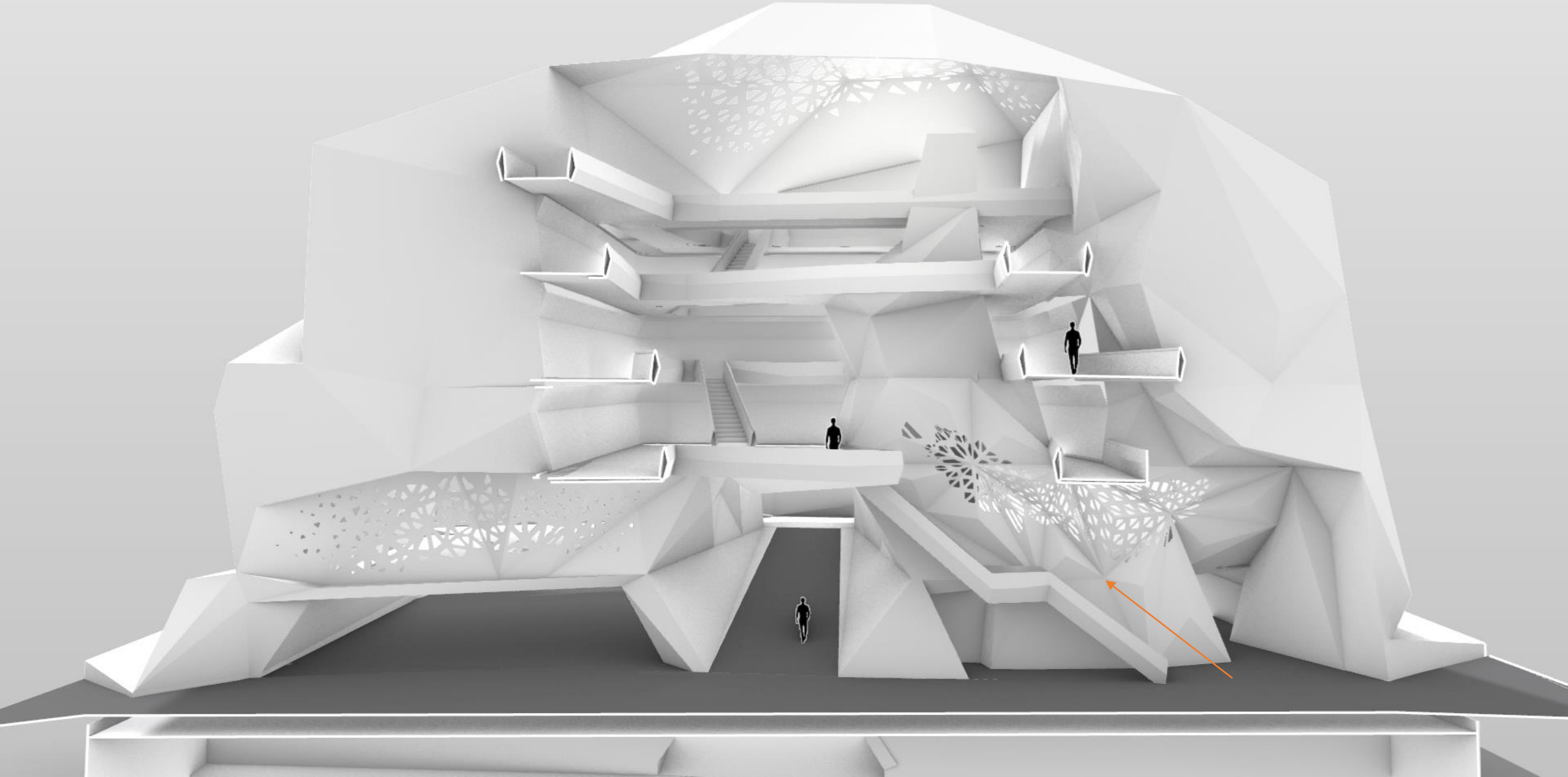
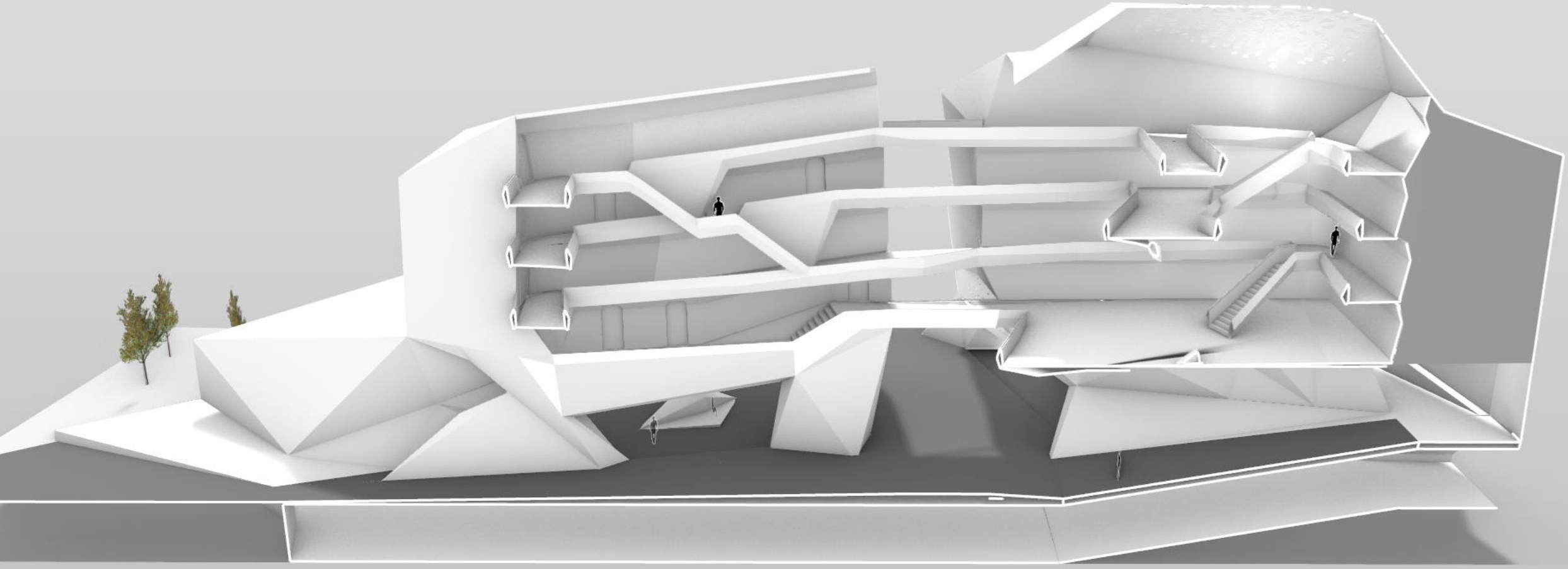
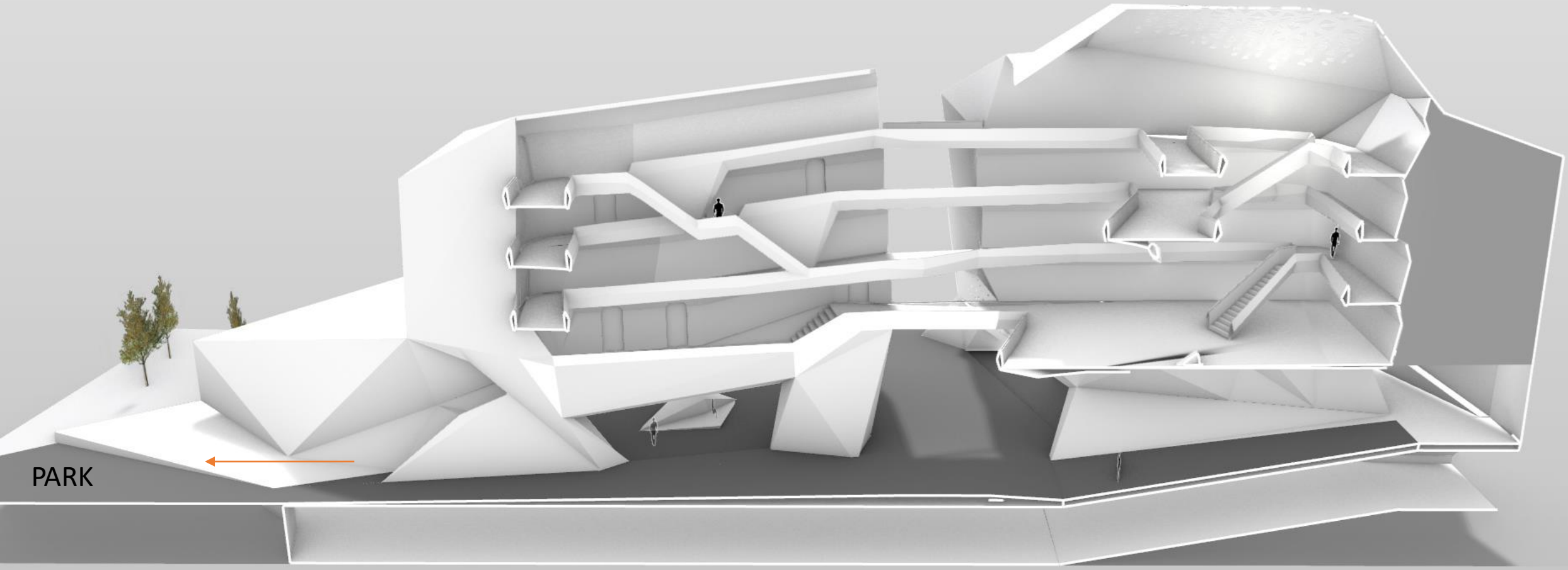
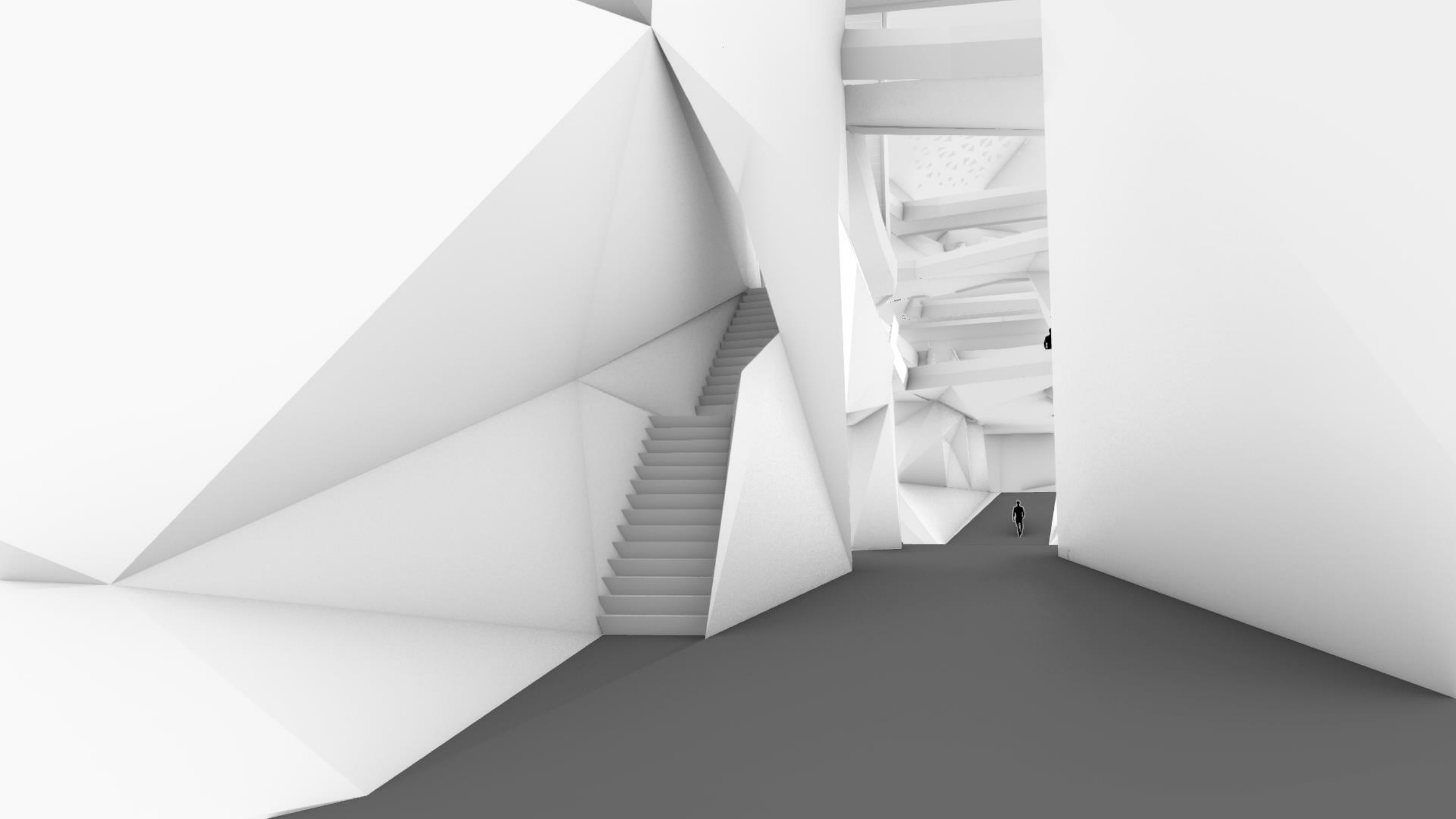
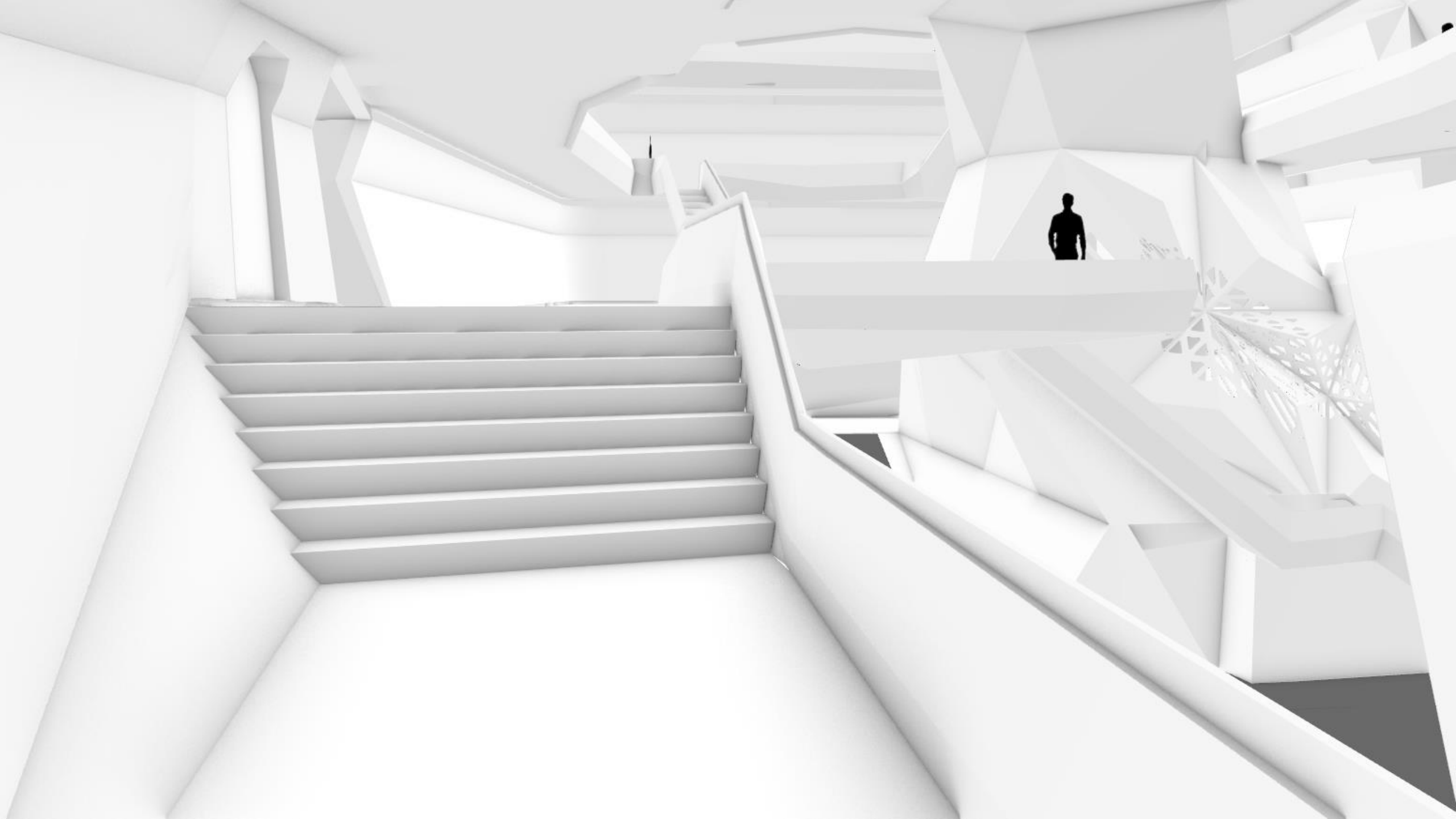


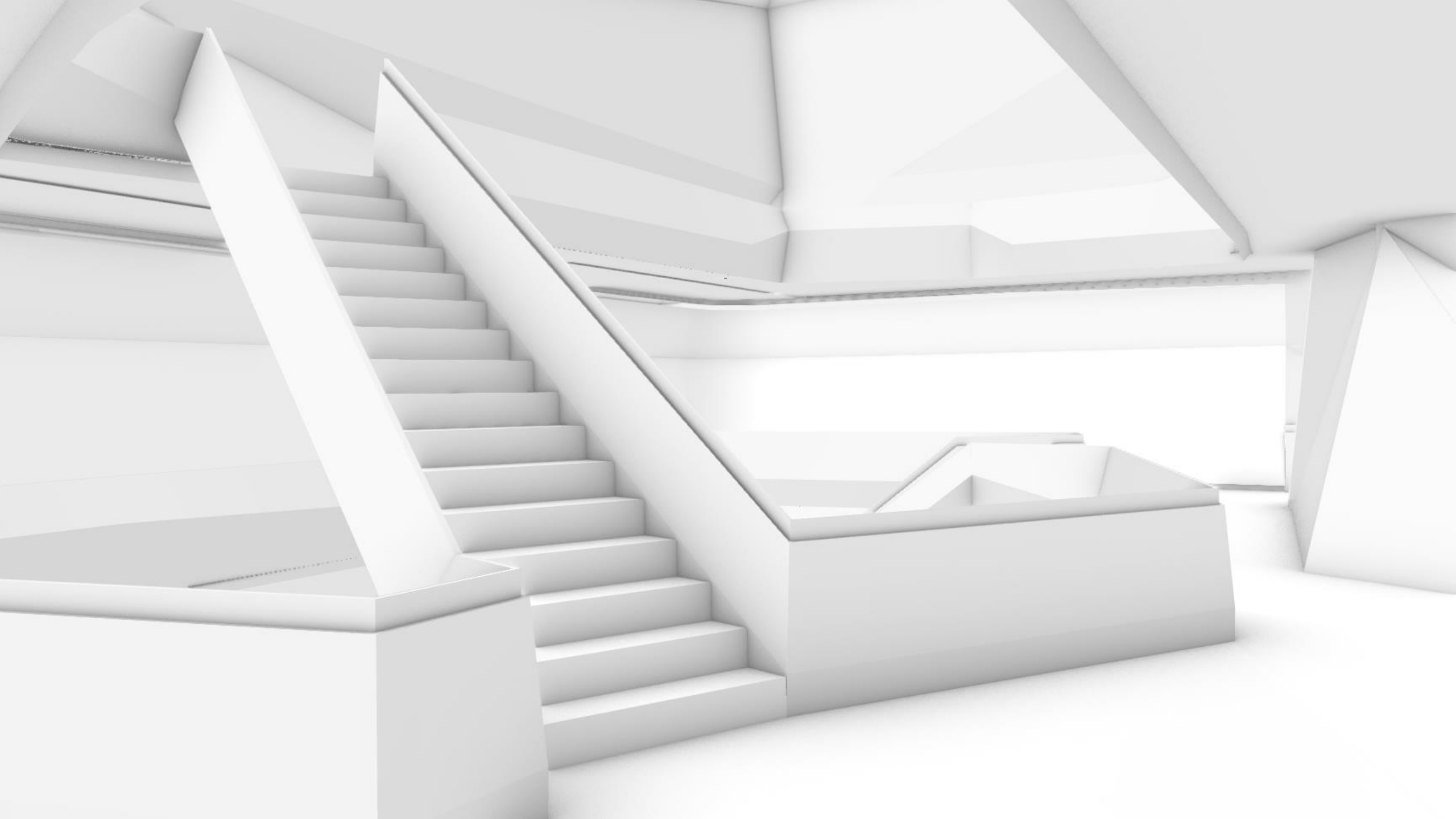


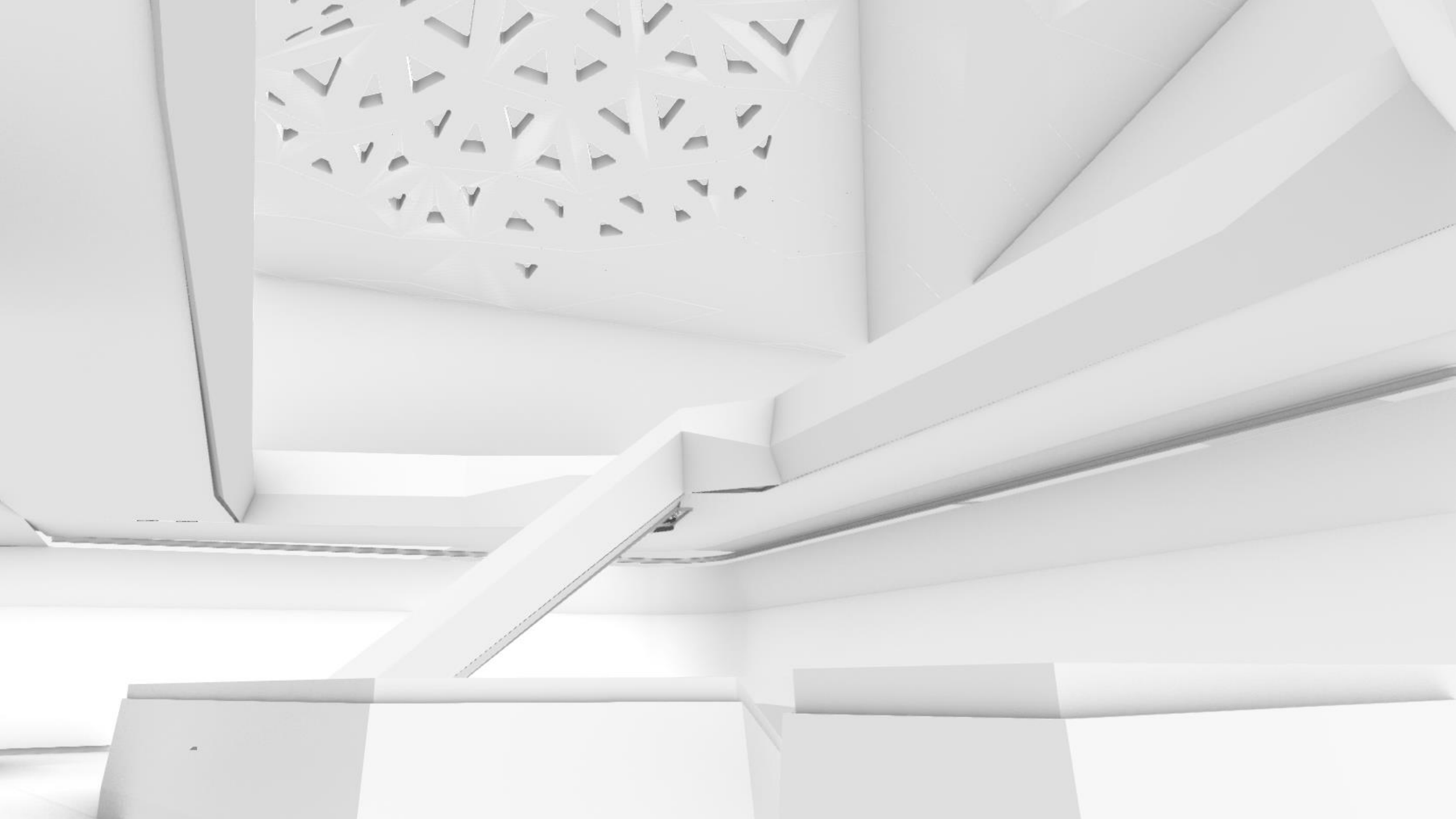


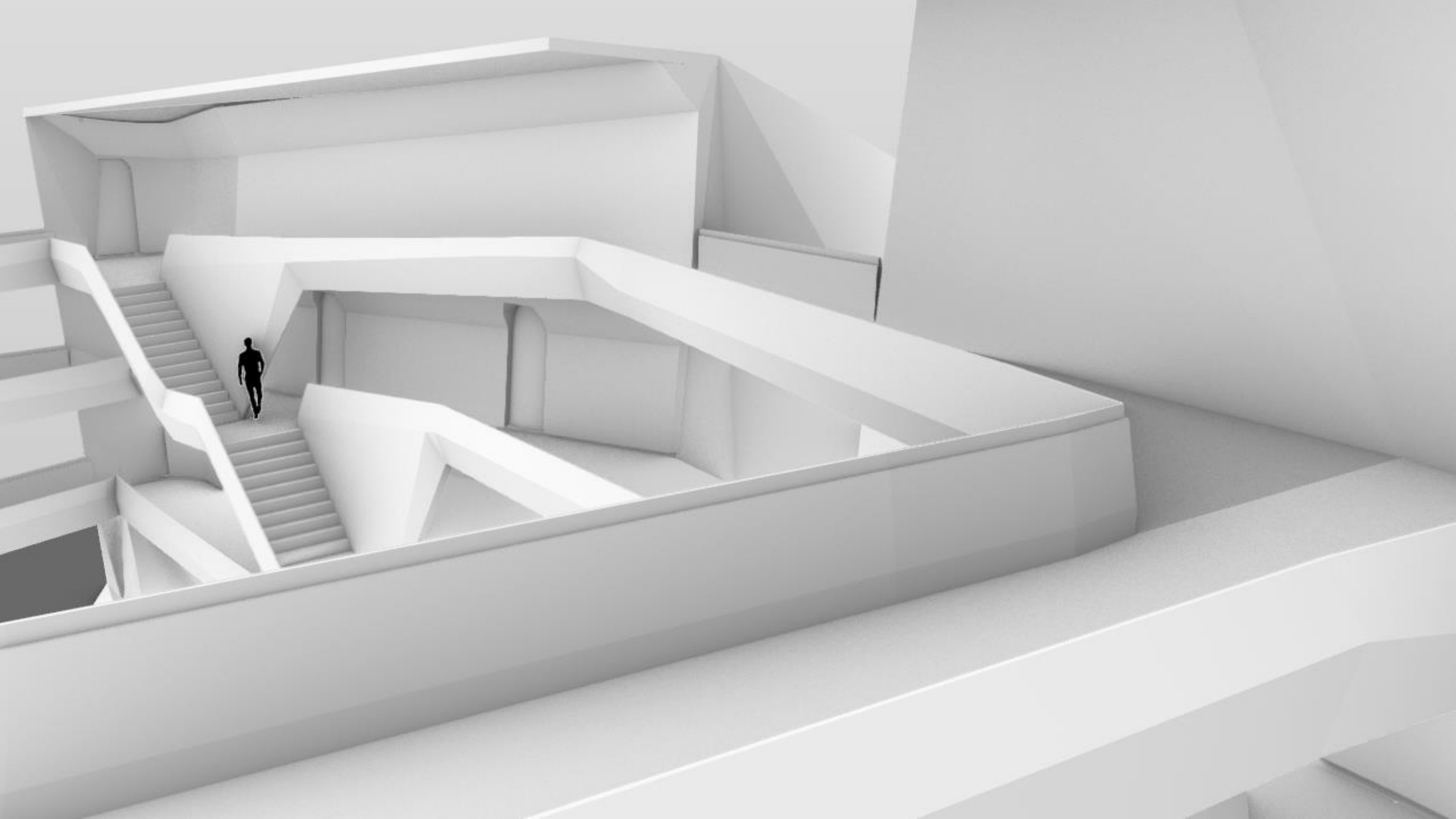

PARK

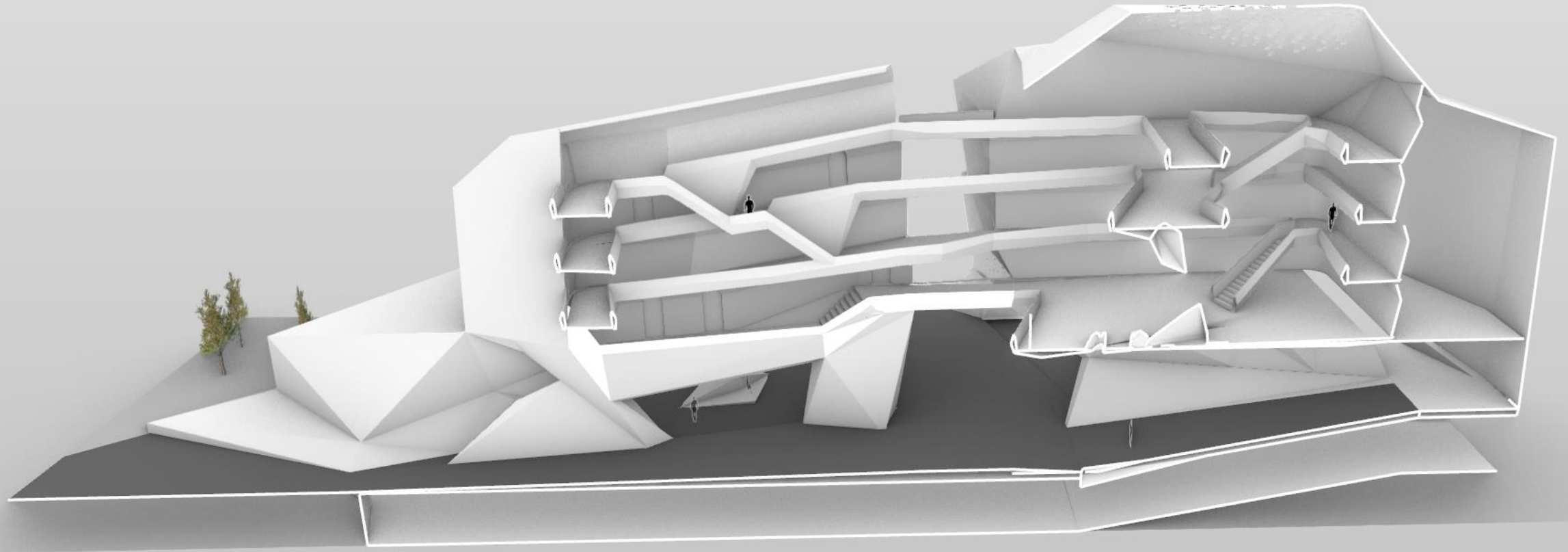


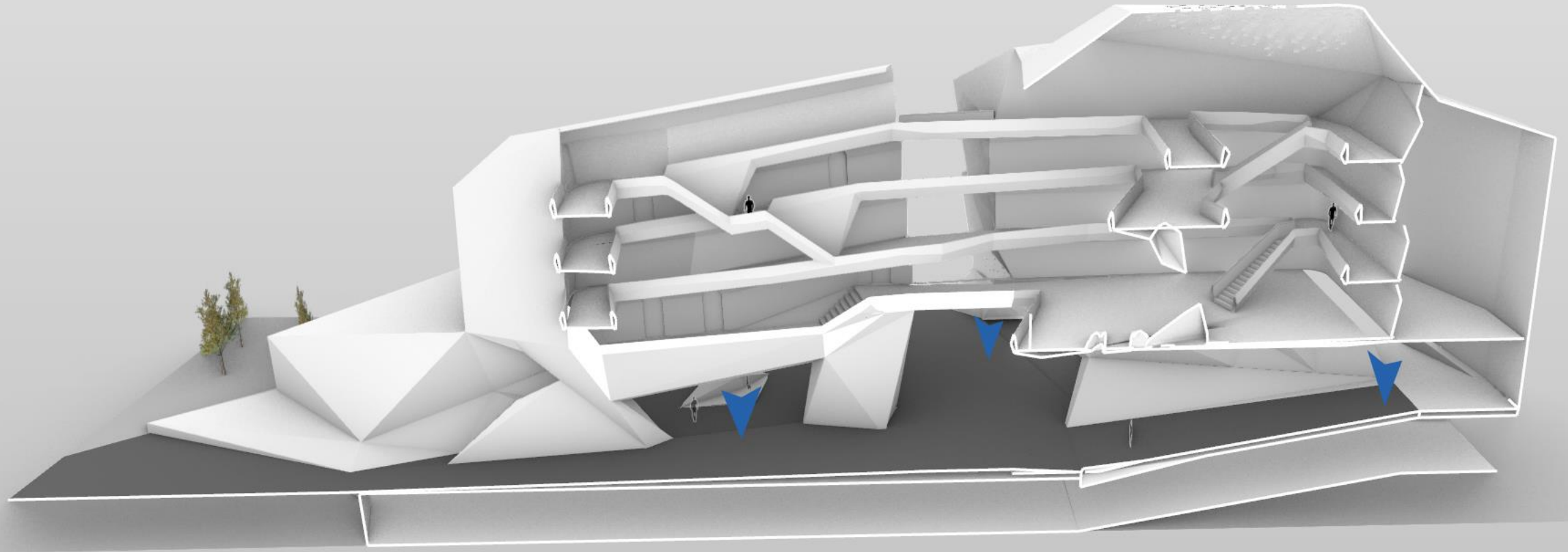


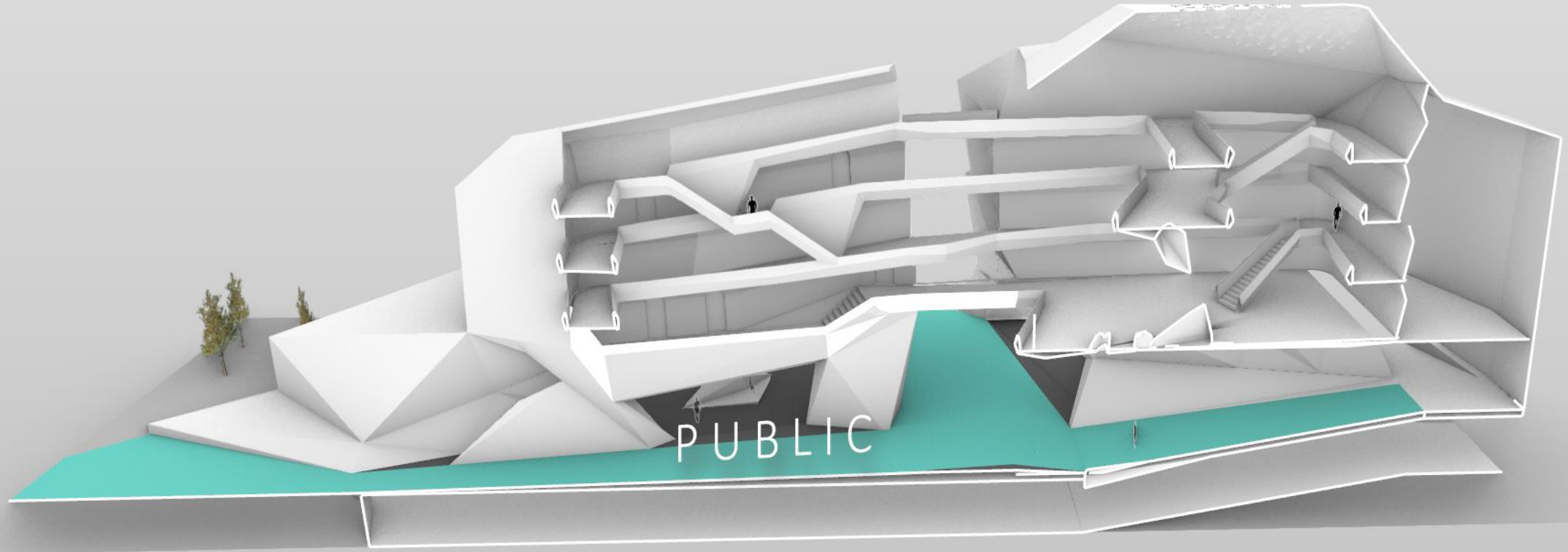








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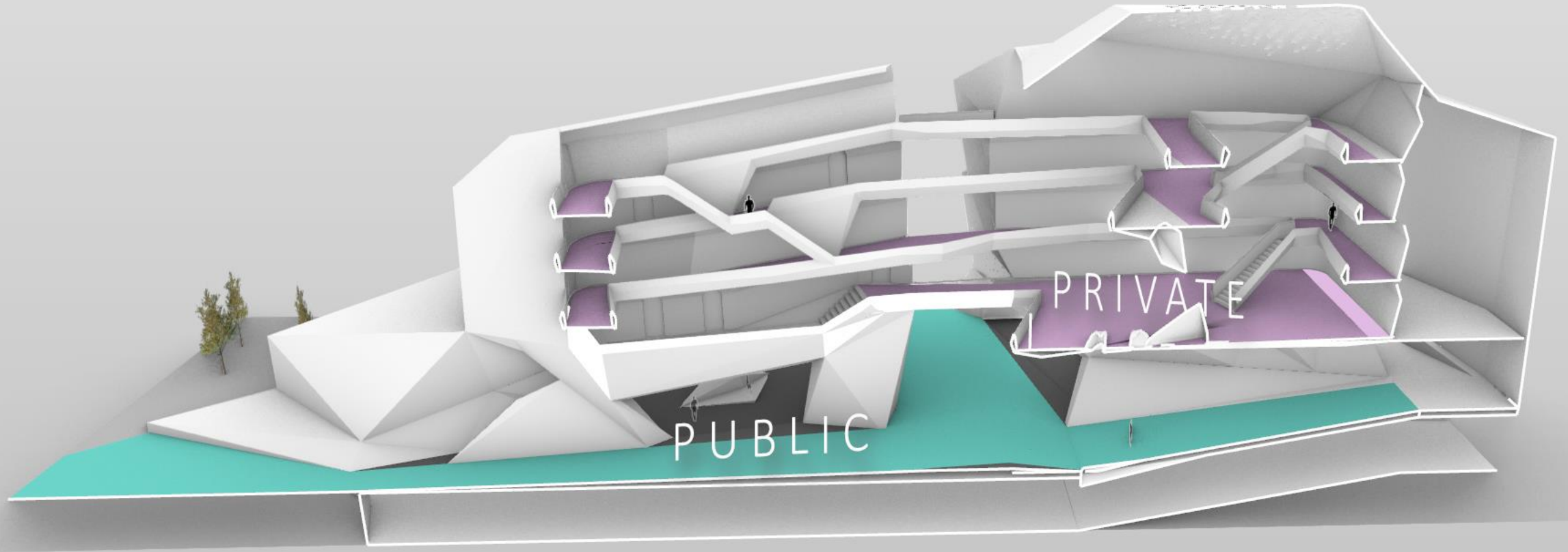
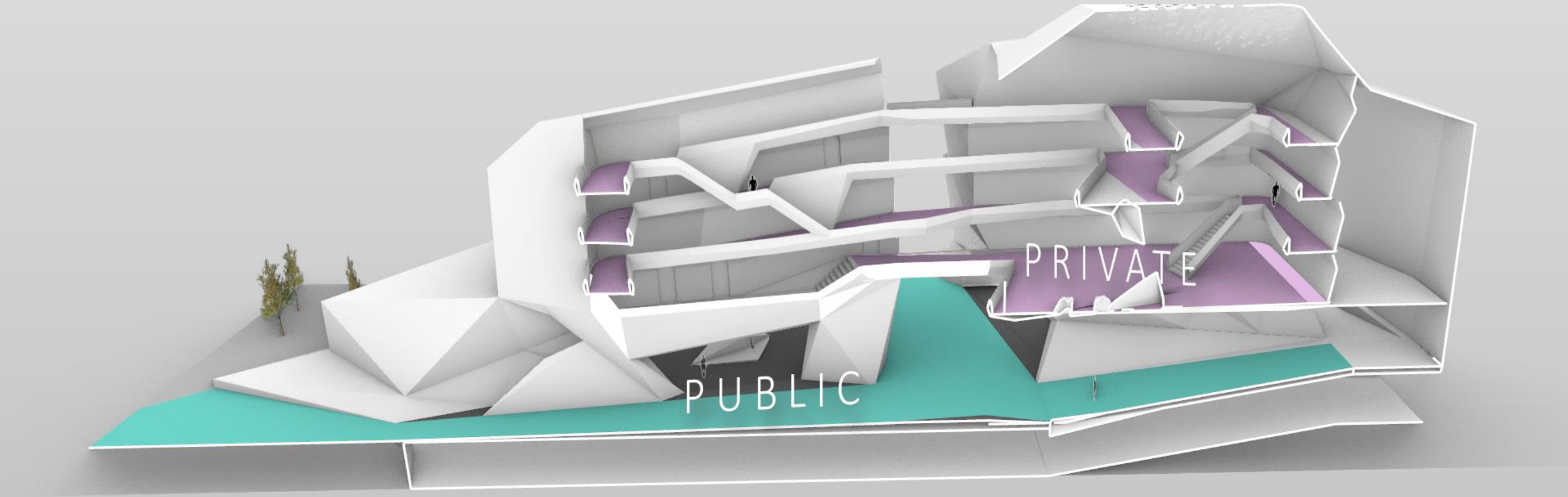

PRIVATE
PUBLIC

Familiar faces improve the social safety

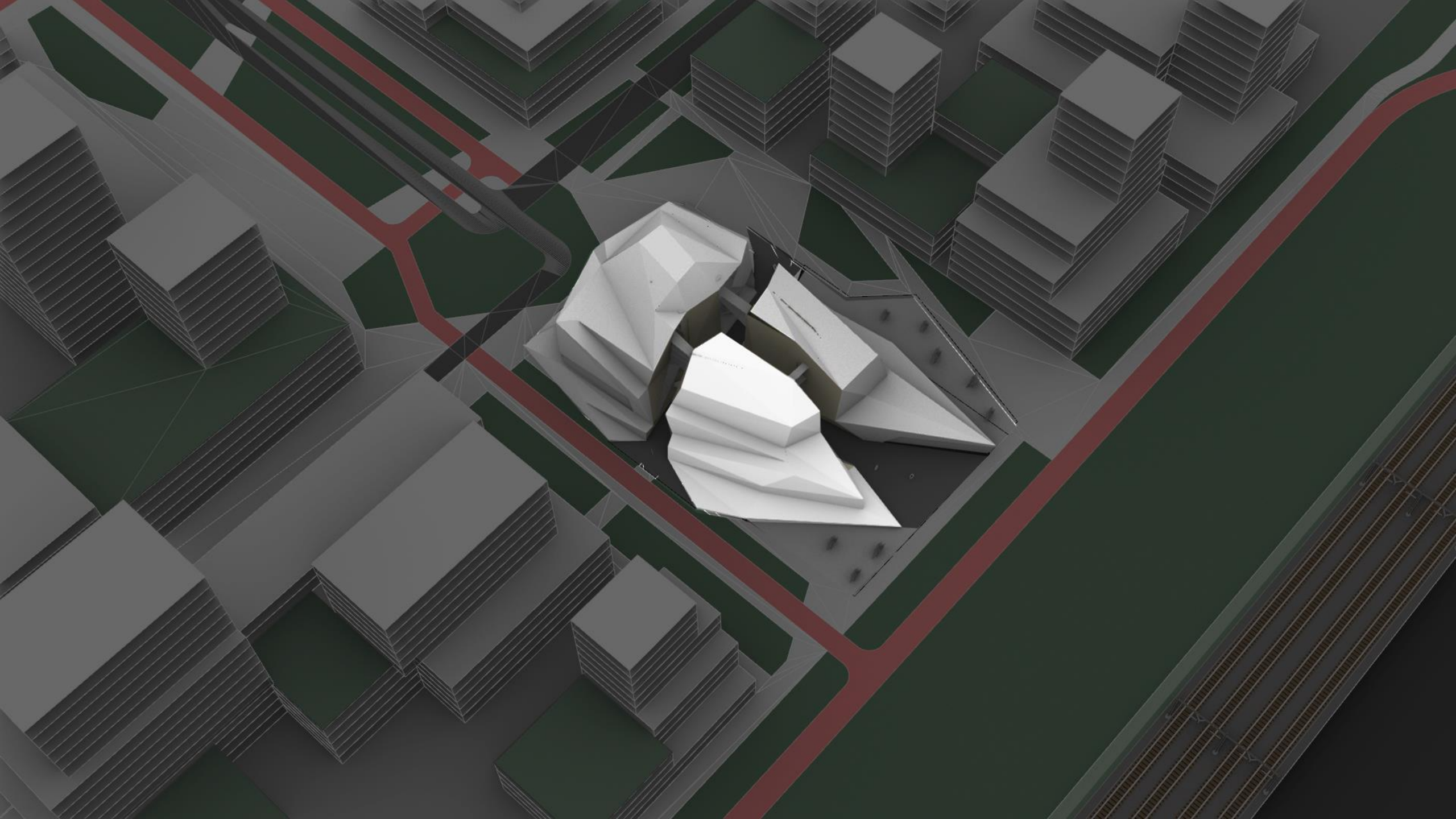
Sources:

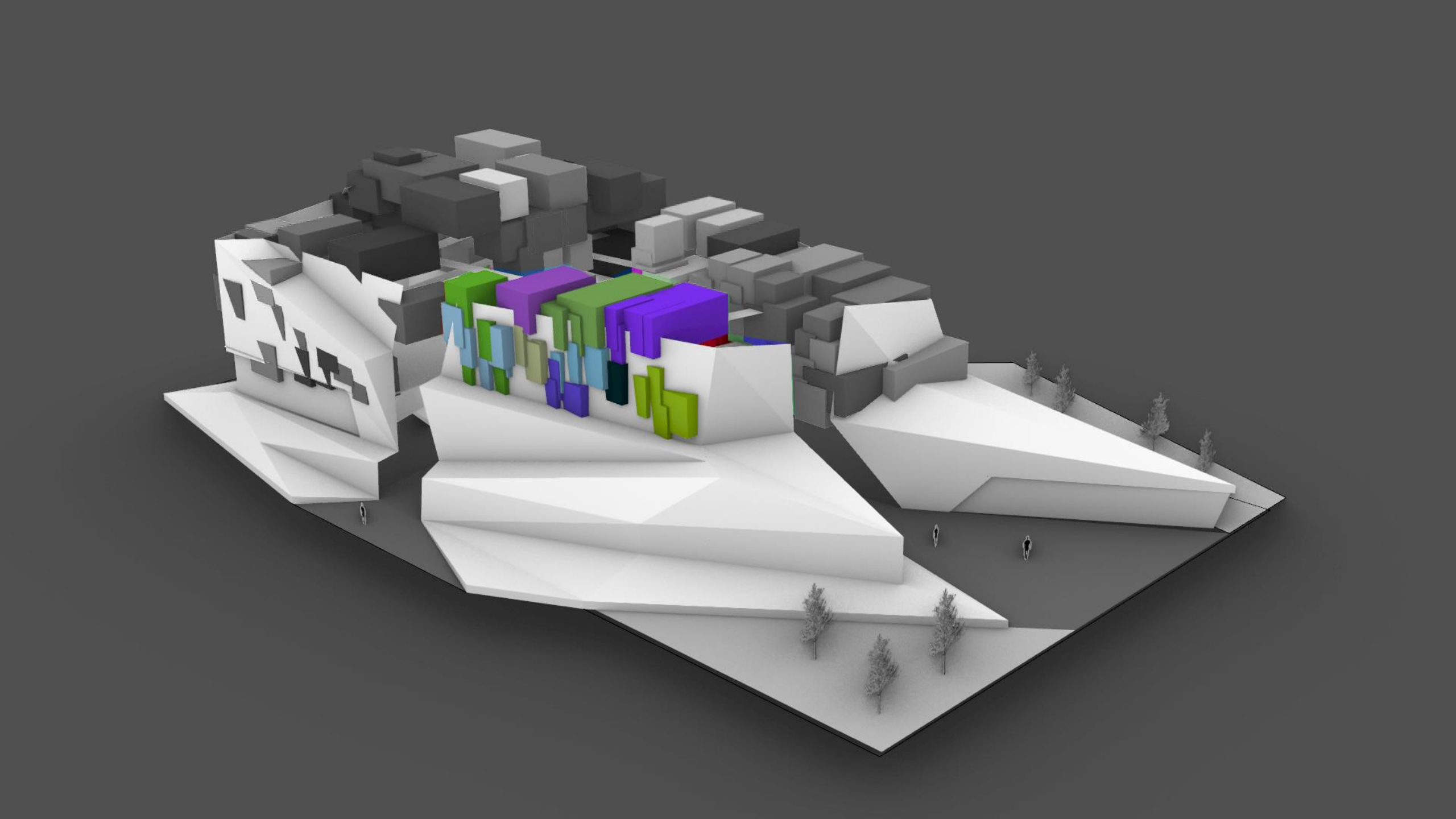
- Leefbaarheid, op het snijvlak van sociaal en Fysiek. Arjen Verweij, Ministerie voor Wonen, Wijken en Integratie, Directie Kennis en Verkenningen.
- *Erika van Gemerden en Henk Staats (2006), Ontwerp en Sociale Veiligheid, Den Haag: VROM.*
- *Karin Wittebrood en Tom van Dijk (2007), Aandacht voor de wijk, Effecten van herstructurering op de leefbaarheid en veiligheid, Den Haag: SCP.*
- *Talja Blokland (2009), Oog voor elkaar, Veiligheidsbeleving en sociale controle in de grote stad, Amsterdam: Amsterdam University Press.*
- *K. Leijdelmeijer, J. van Iersel en I. Giesbers, Kwaliteit van buurt en straat, Tussen feit en fictie, Den Haag: VROM.*

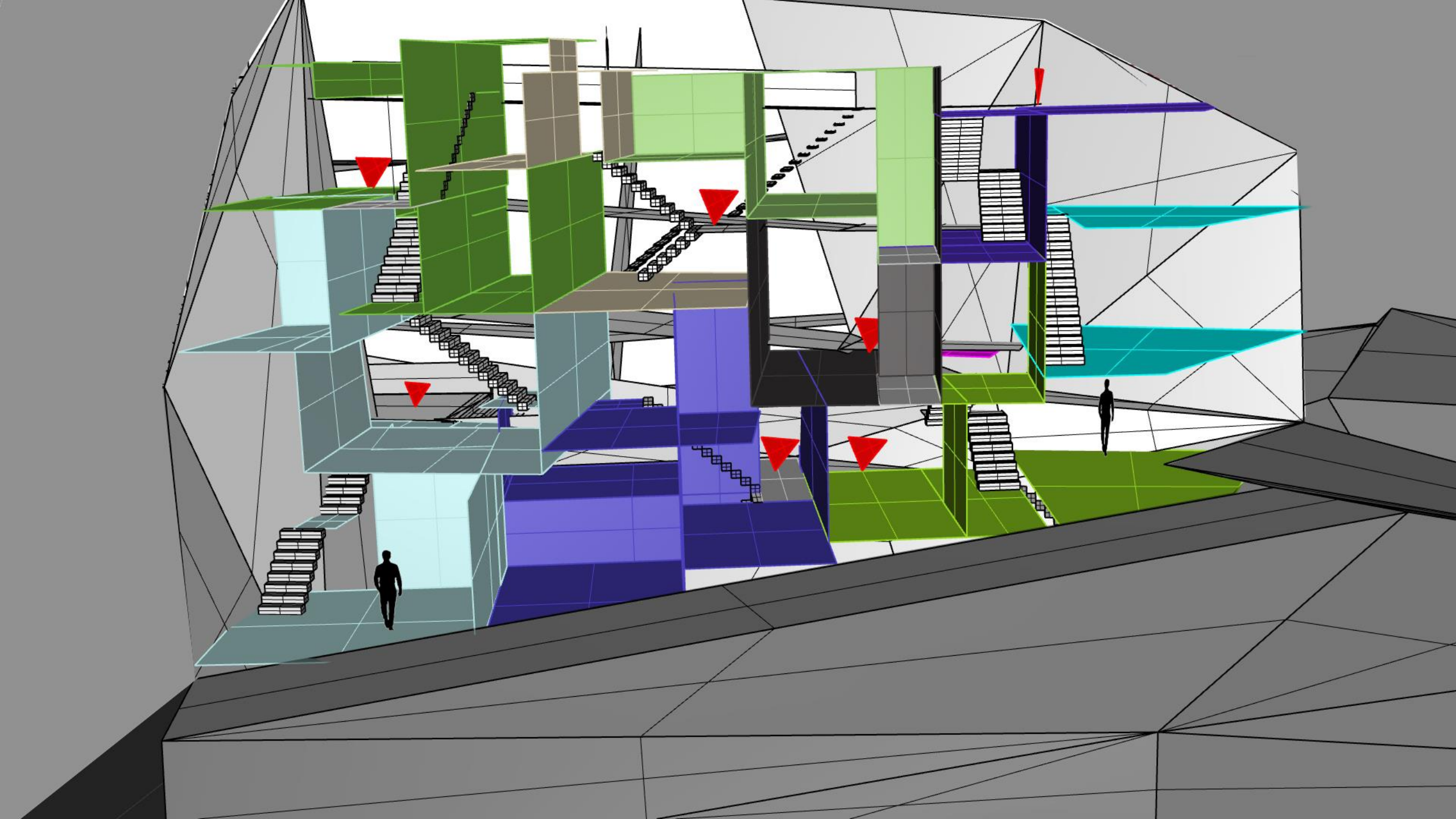


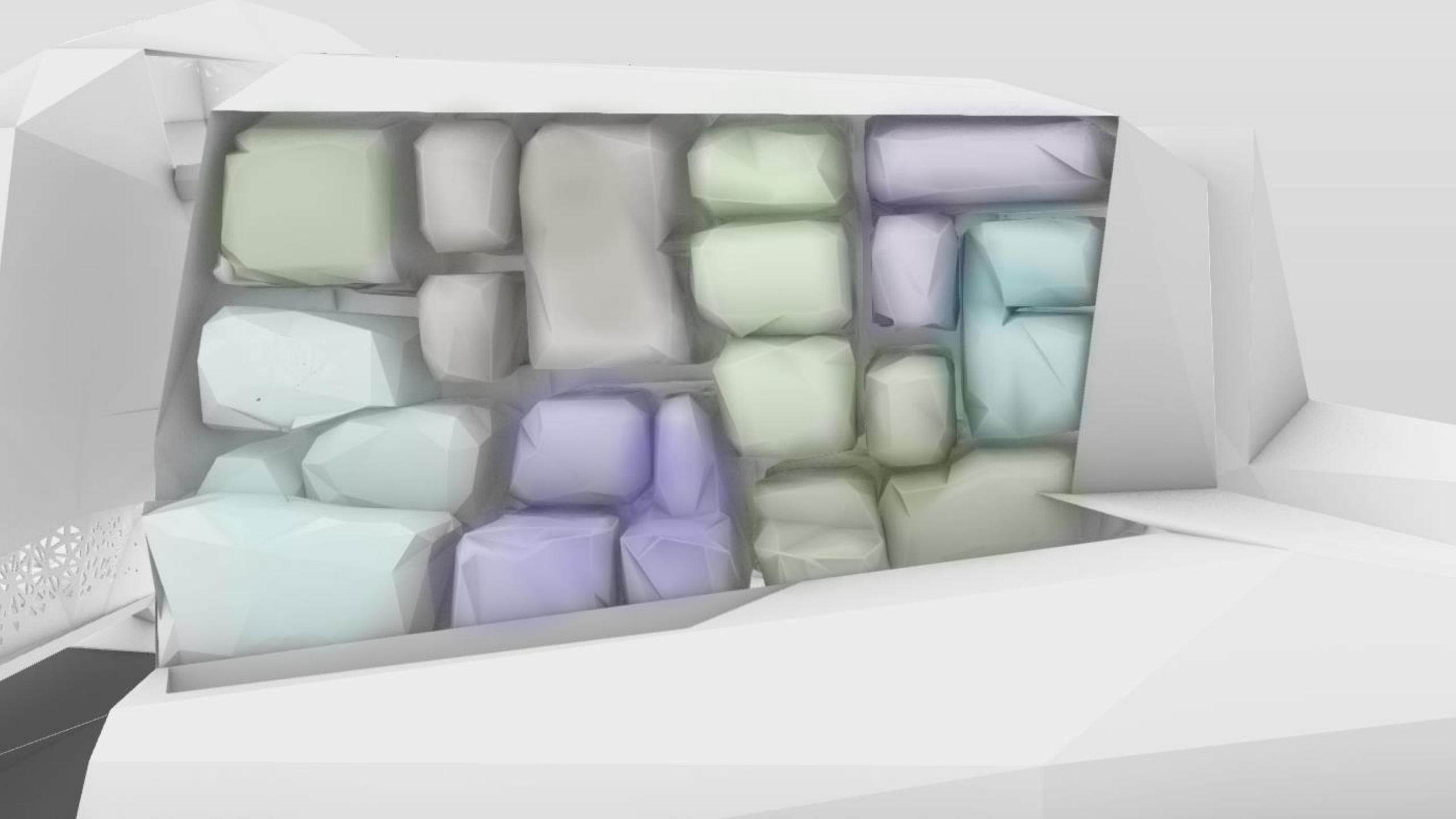
DESIGN

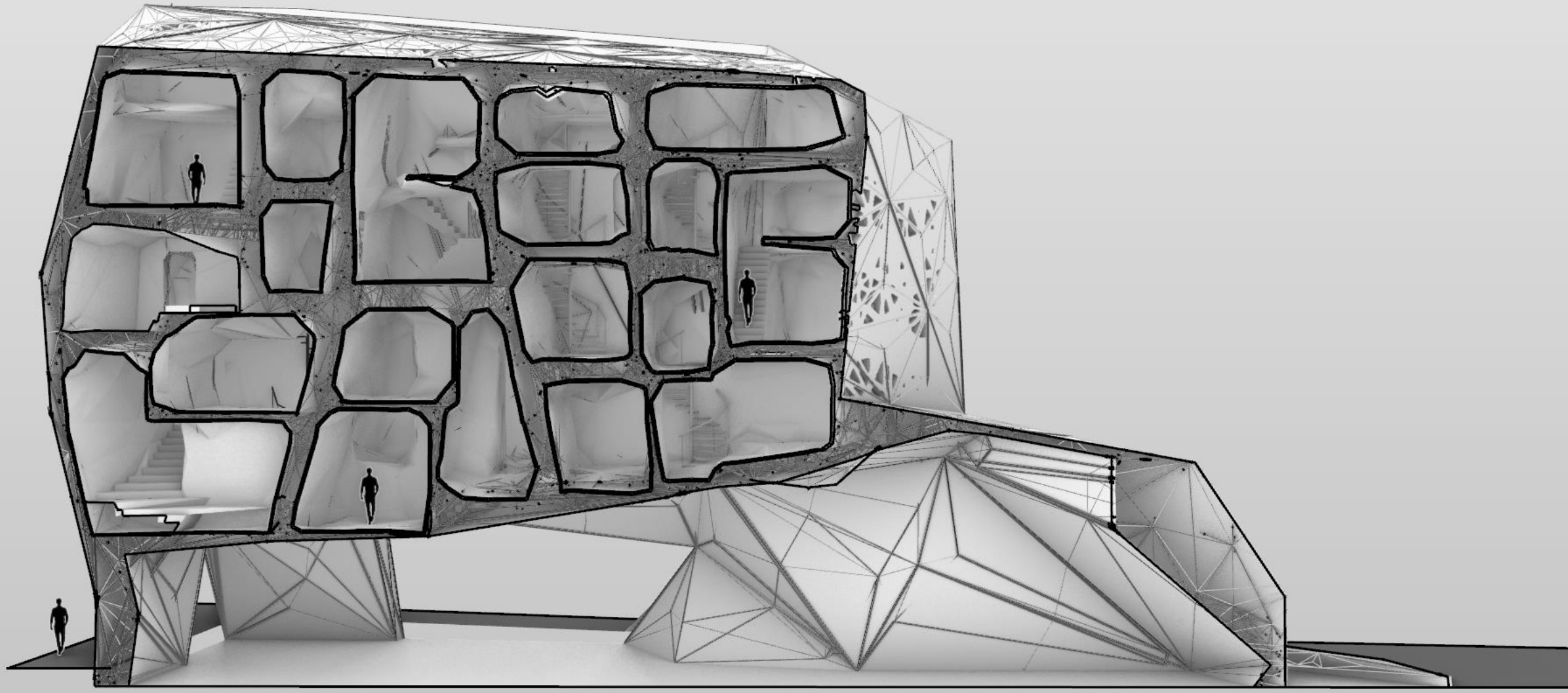
MESO SCALE

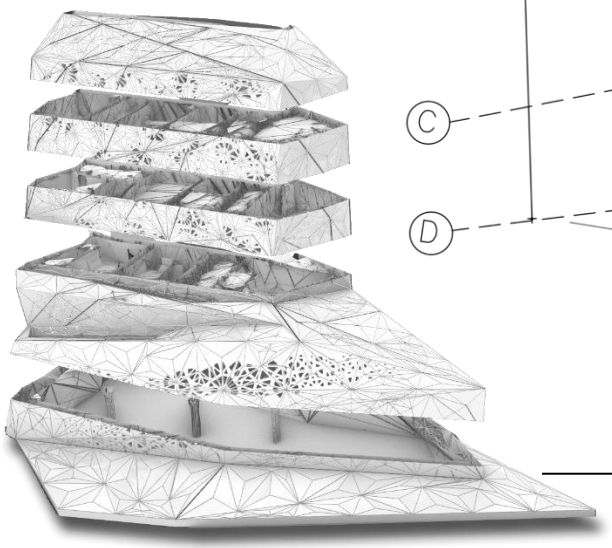


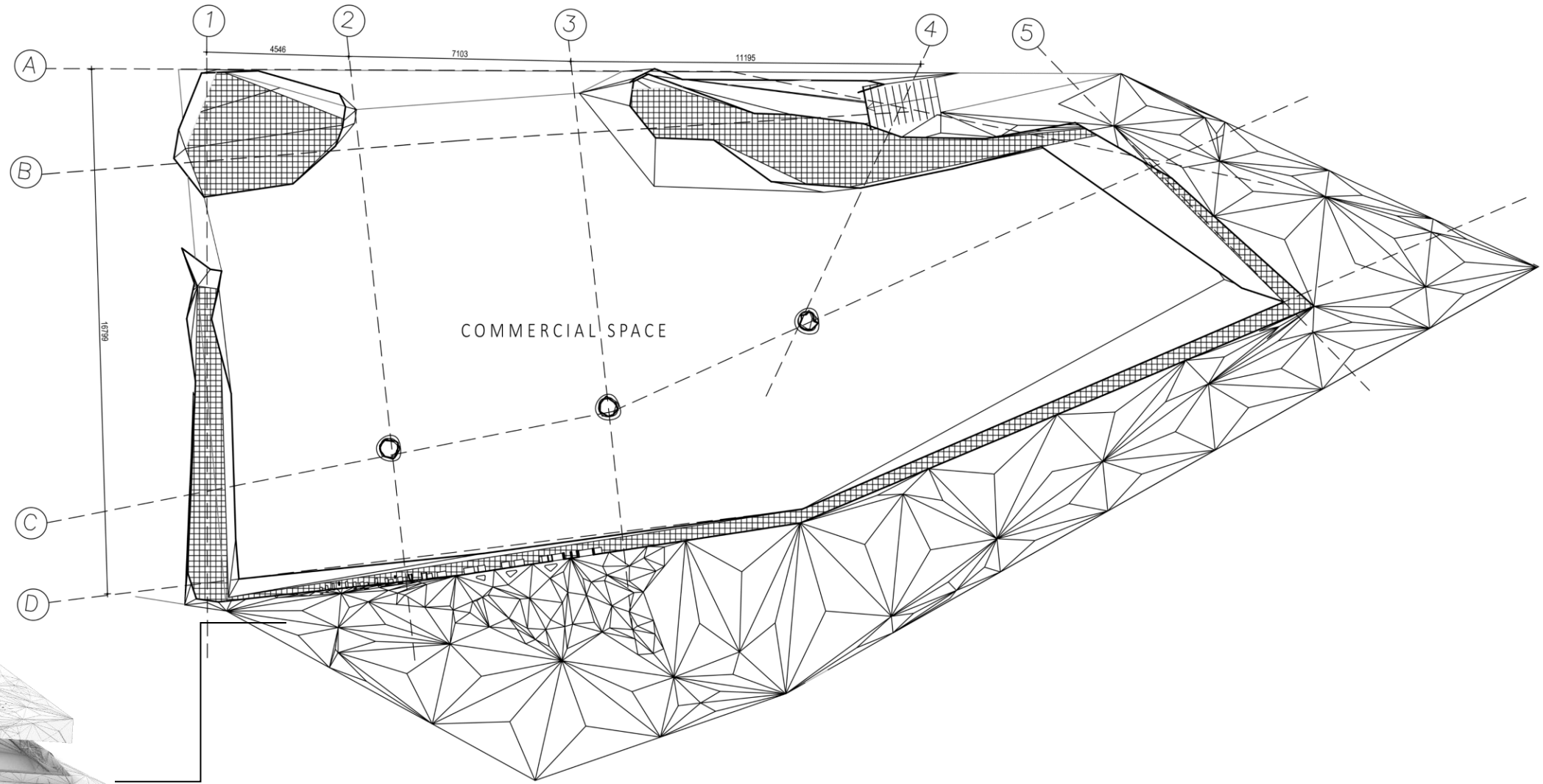








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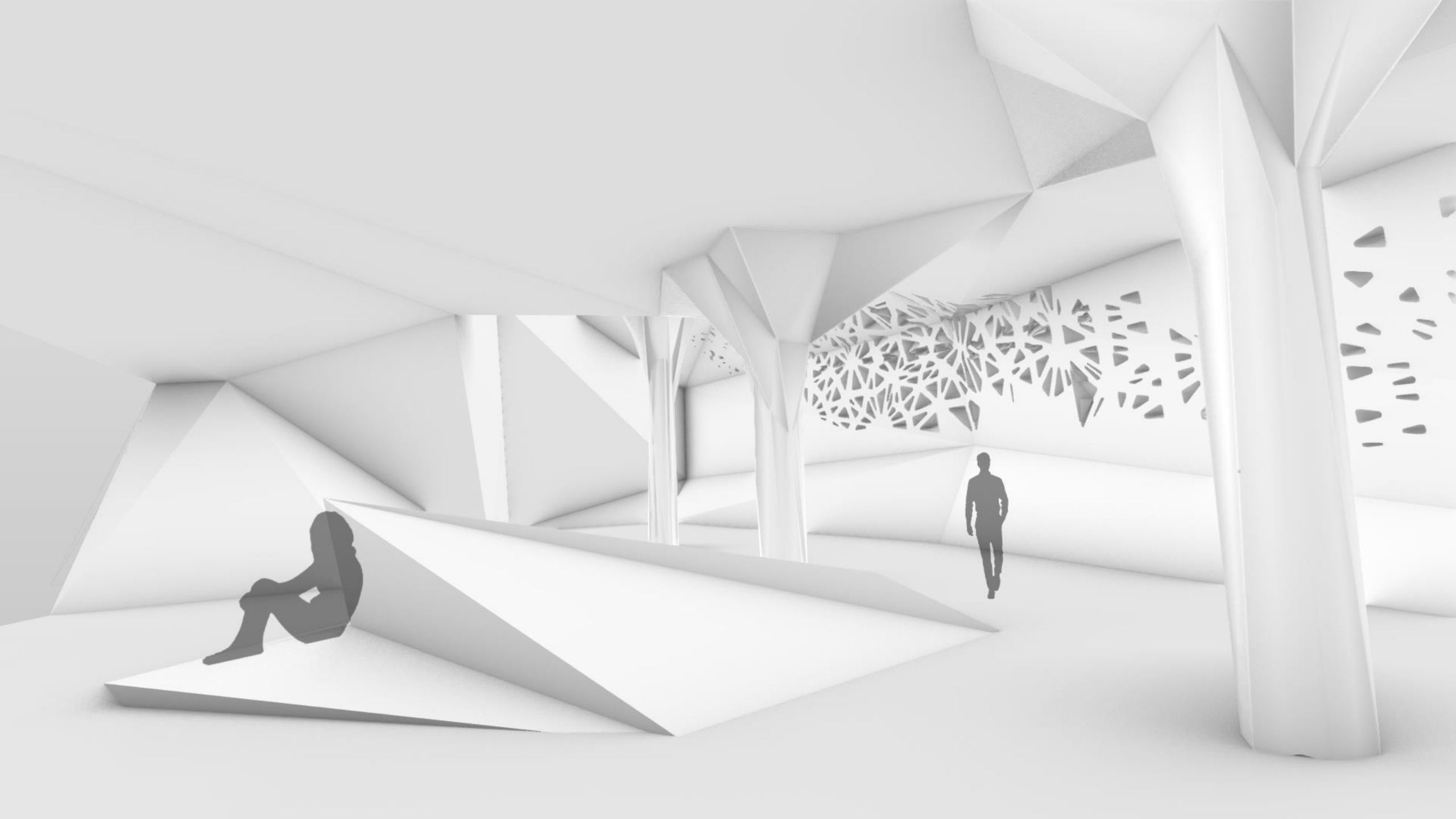
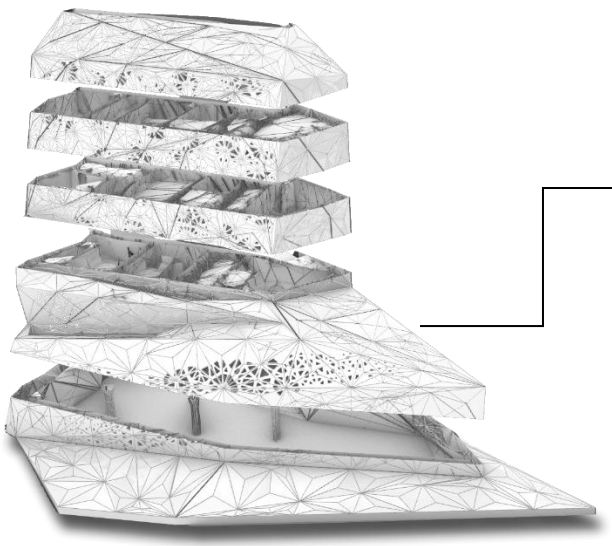
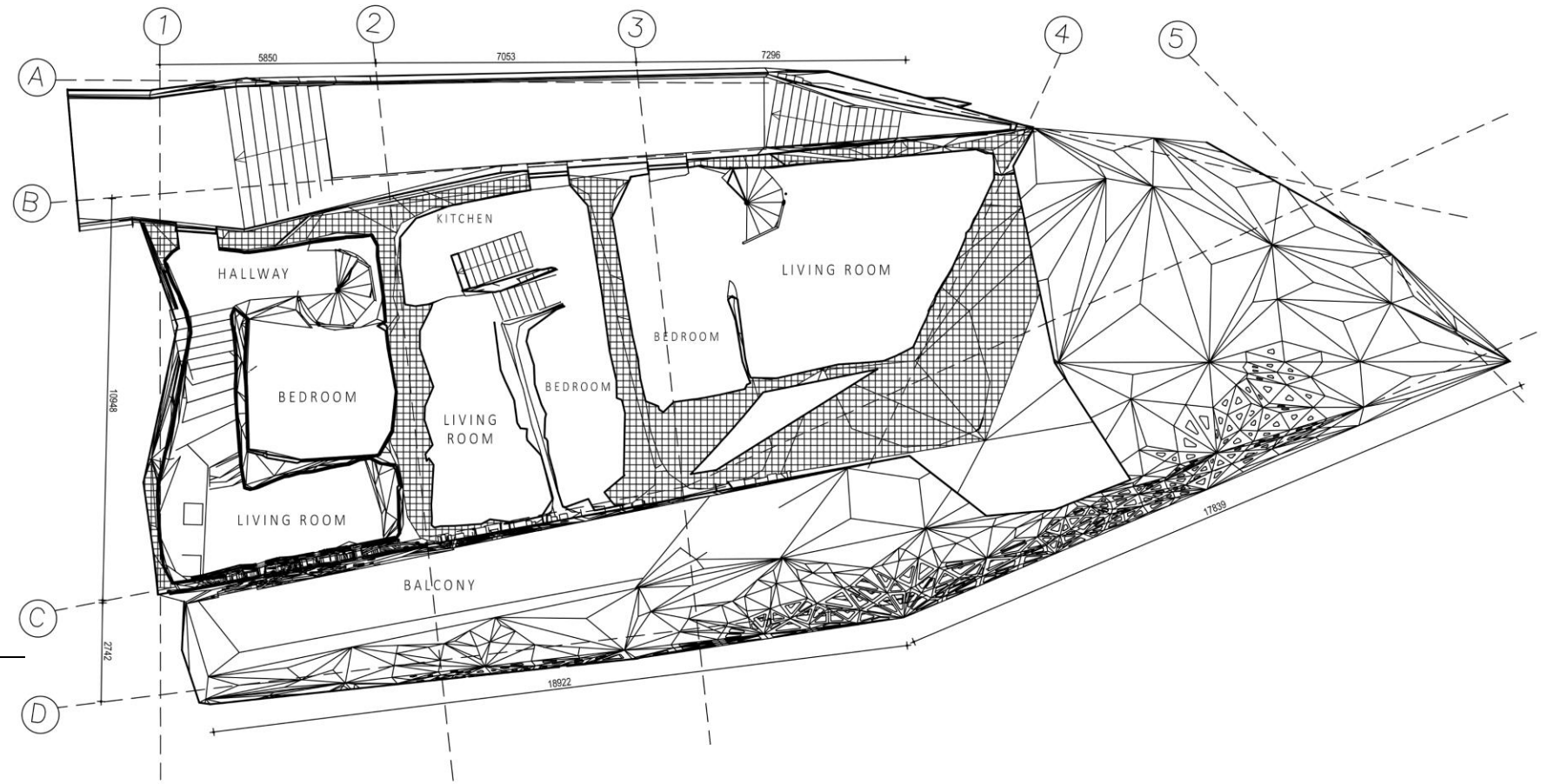
3
4
5
A
B
C
D
4546
7103
11195
16799
COMMERCIAL SPACE



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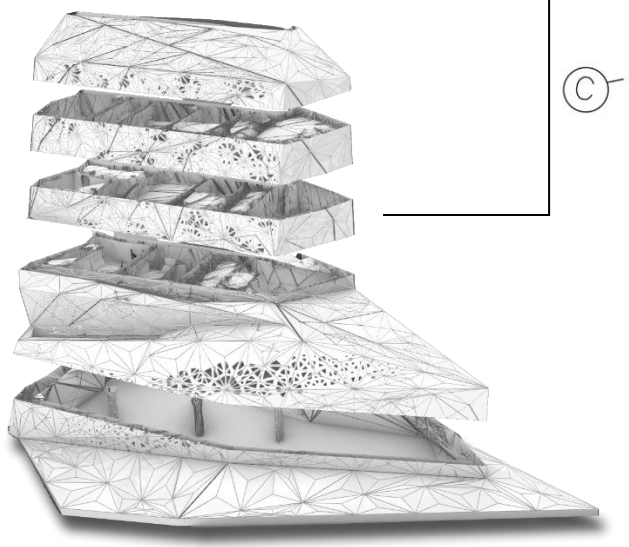
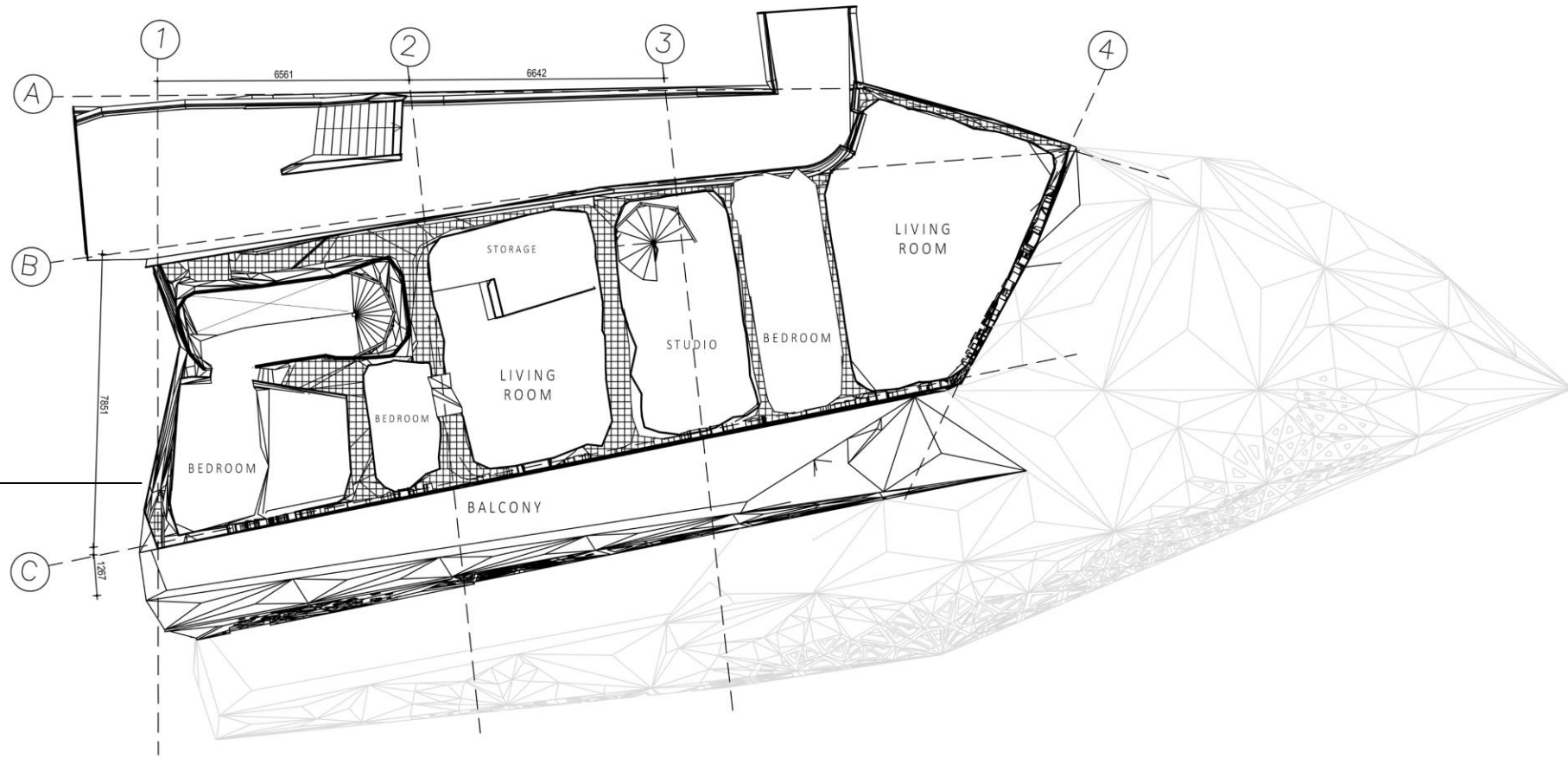
KITCHEN
BEDROOM
LIVING ROOM
BEDROOM
LIVING ROOM
BEDROOM
LIVING ROOM
BALCONY




1
2
3
4
A
B
C
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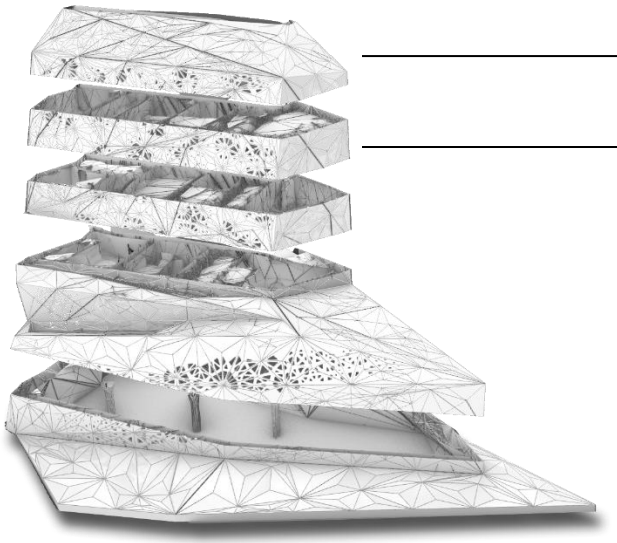
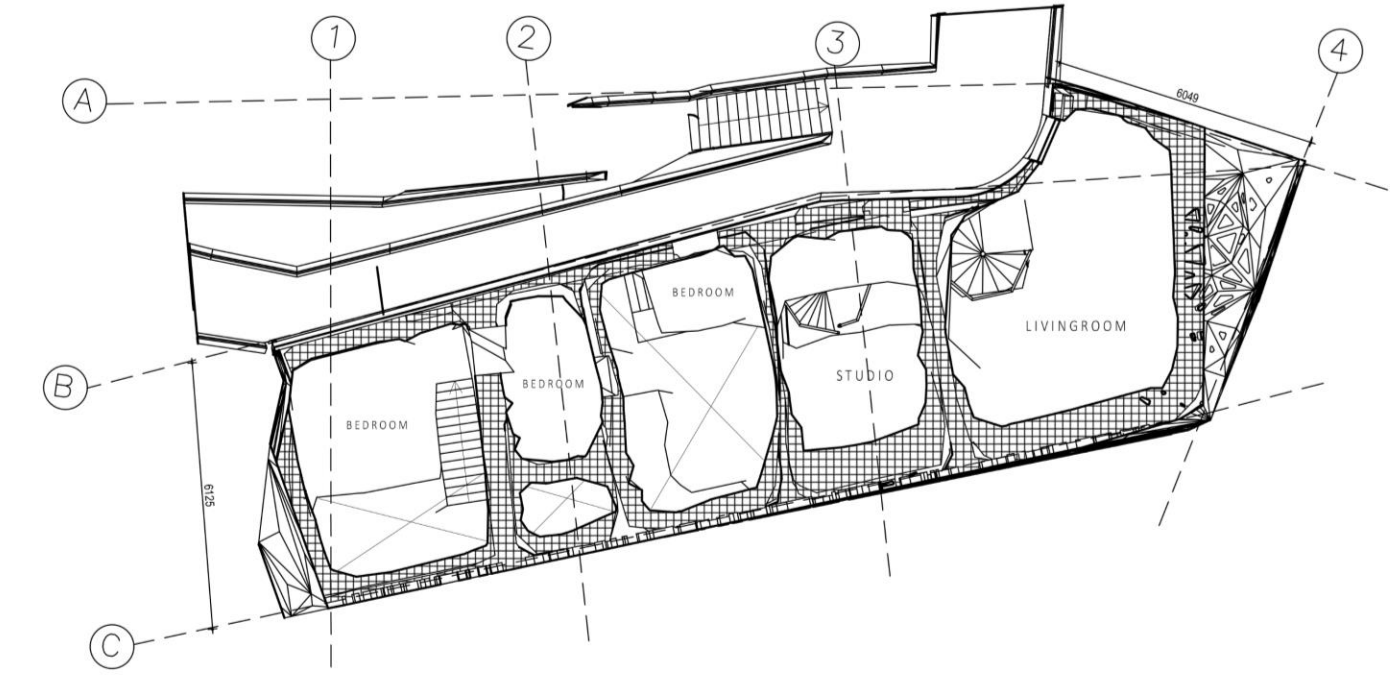
1267
STORAGE
LIVING ROOM
STUDIO
BEDROOM
LIVING ROOM
BEDROOM
BEDROOM
BALCONY




1
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A
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C
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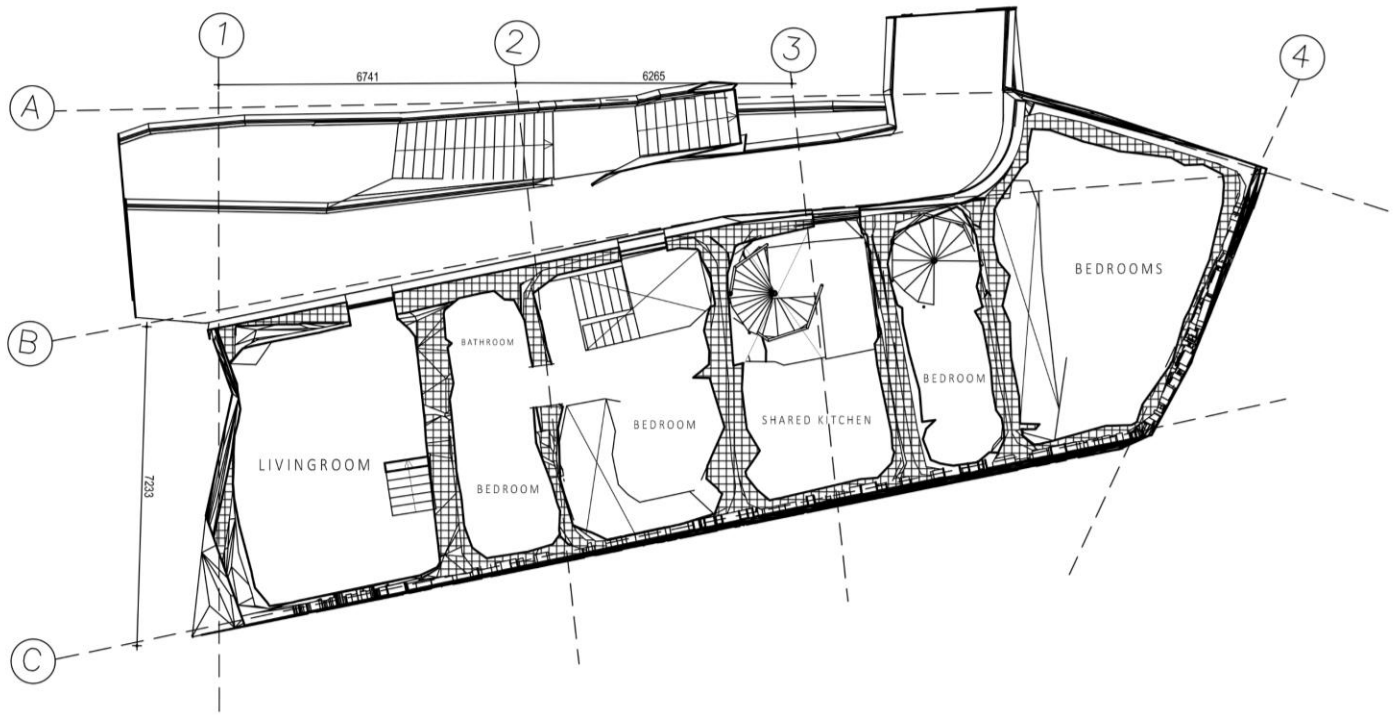
BEDROOM
BEDROOM
STUDIO
LIVINGROOM
KITCHEN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C
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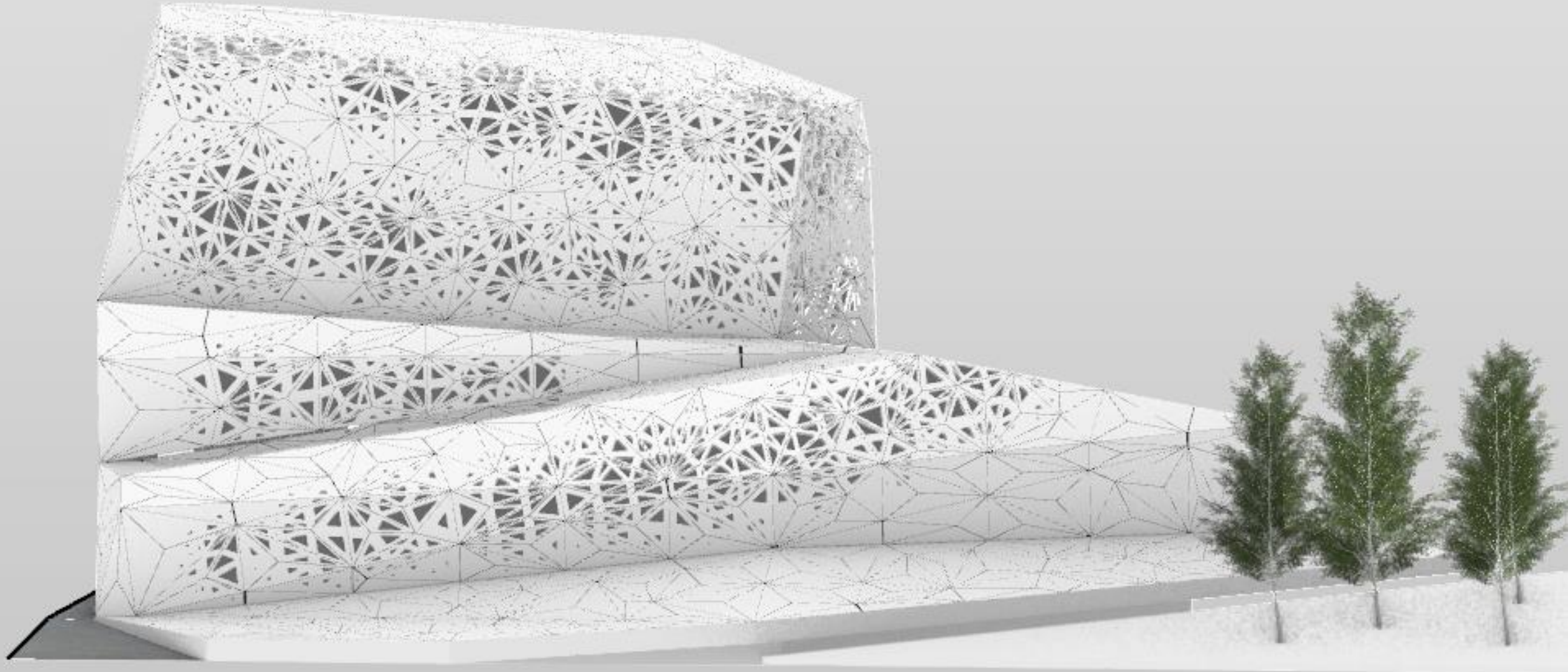
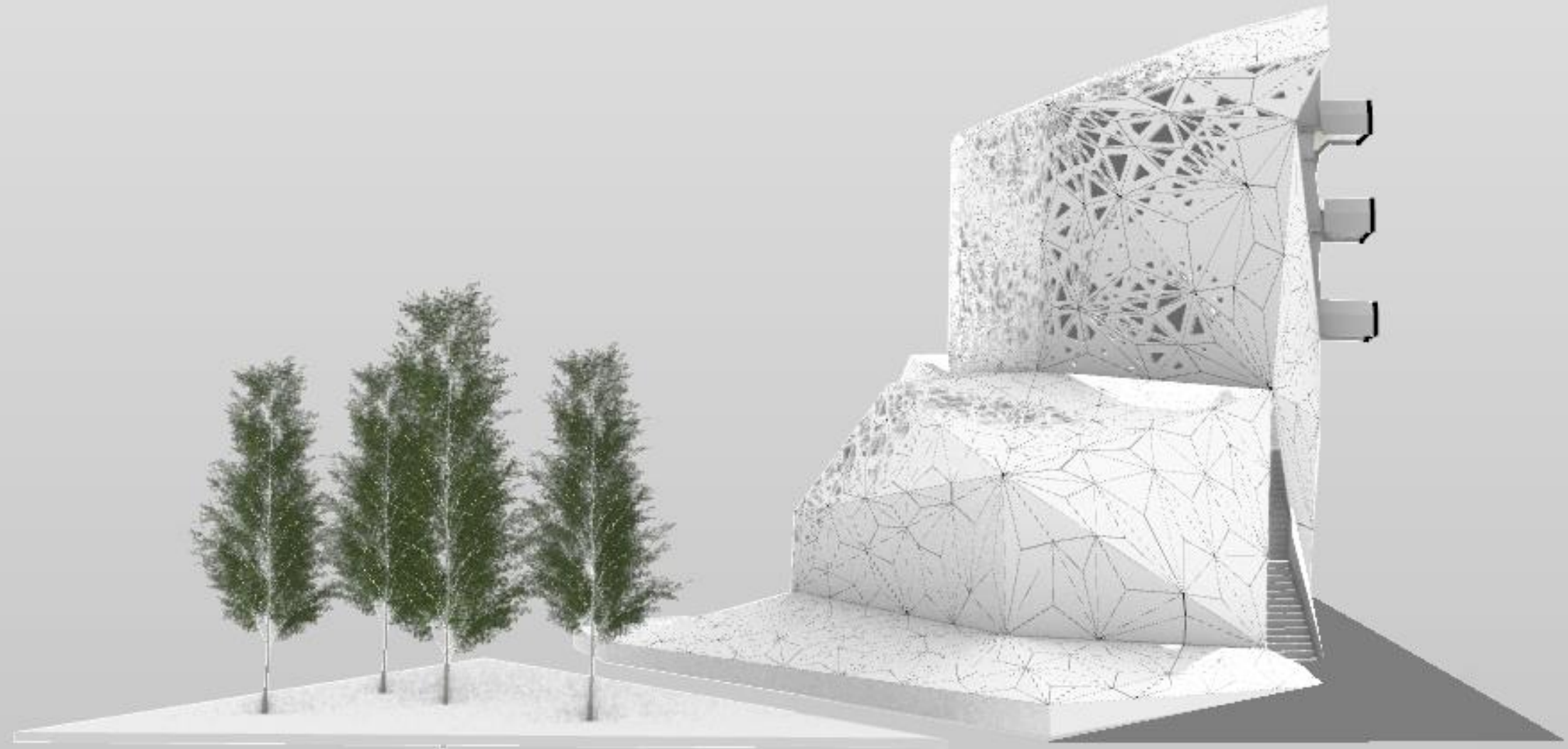
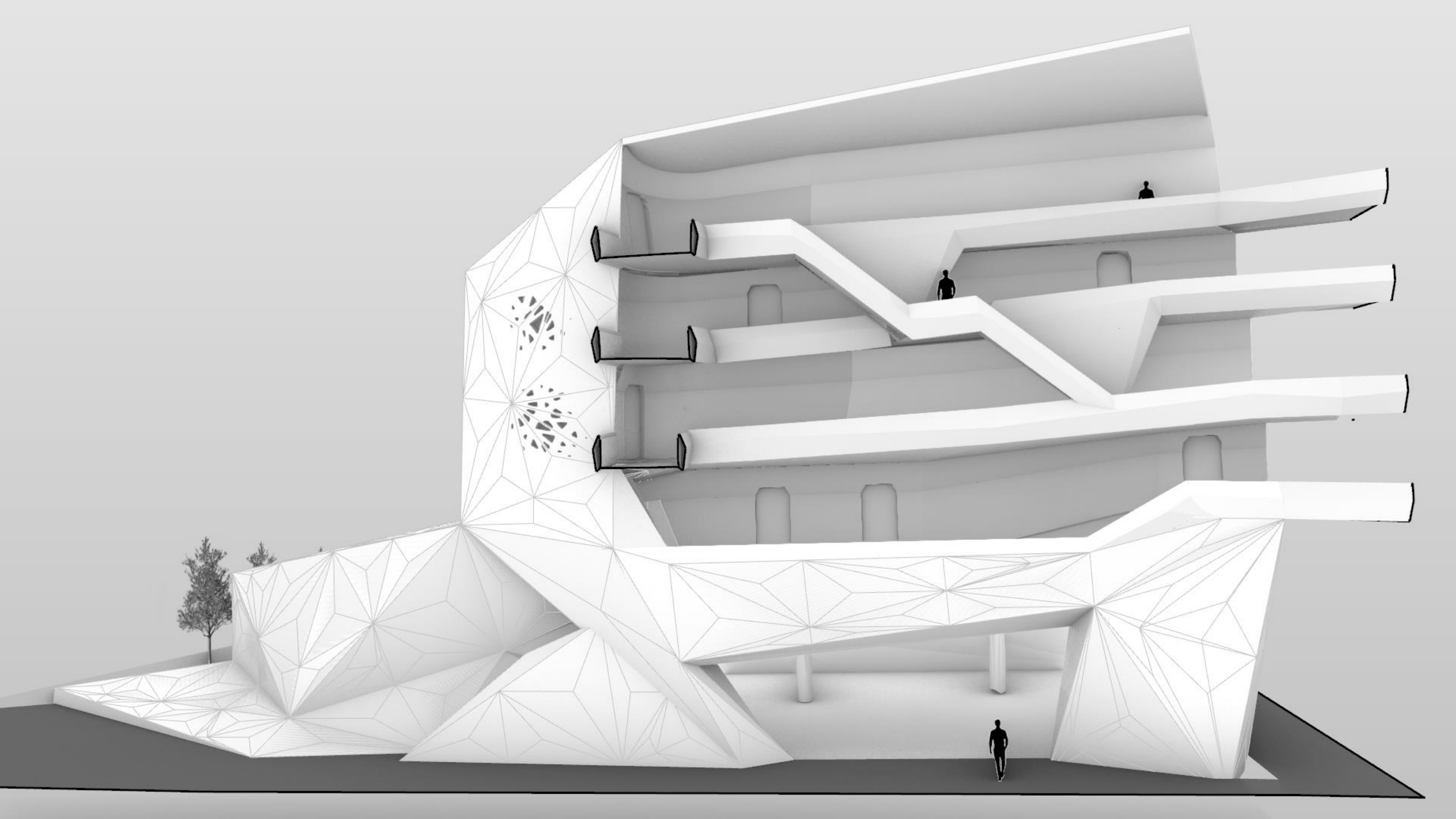
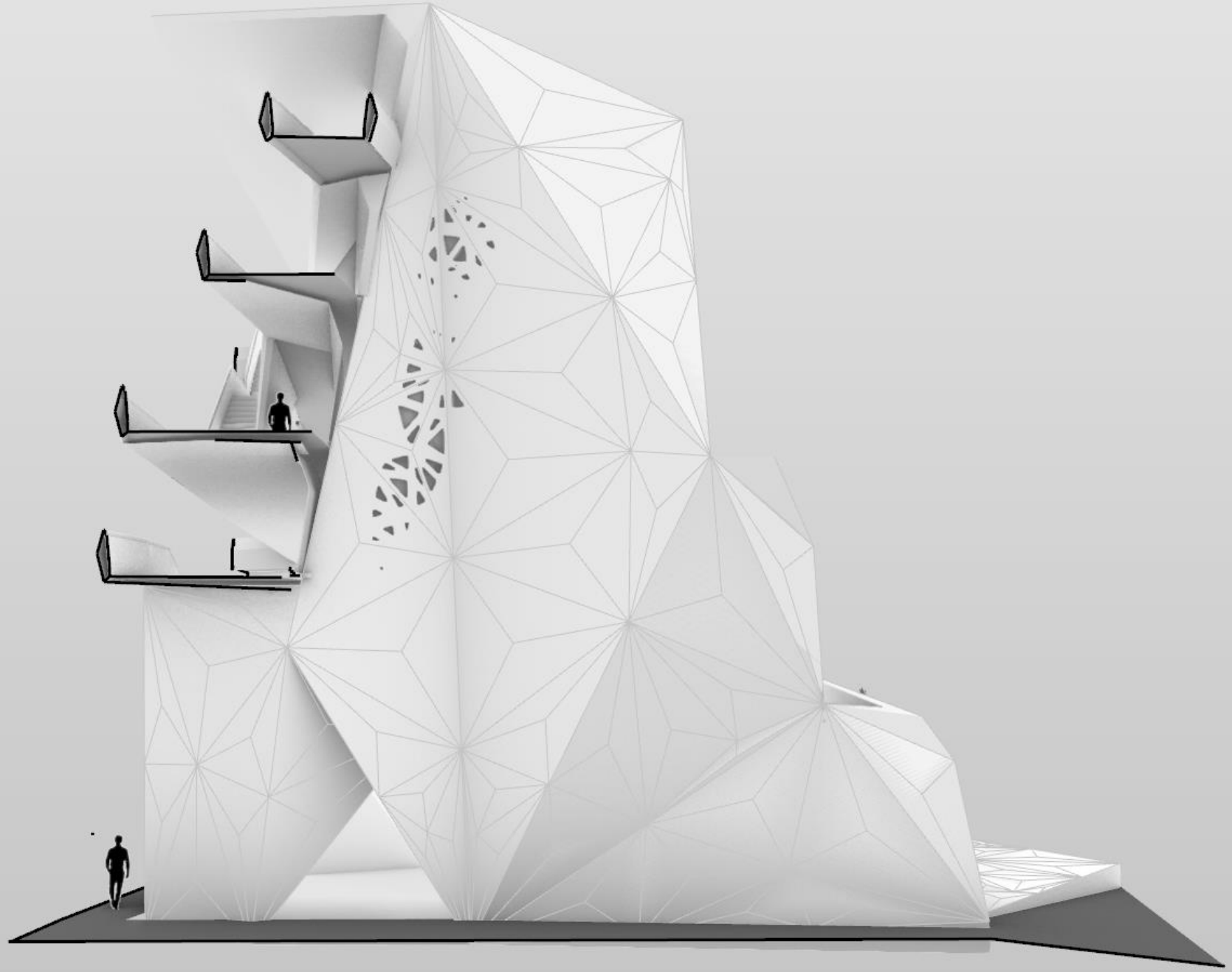
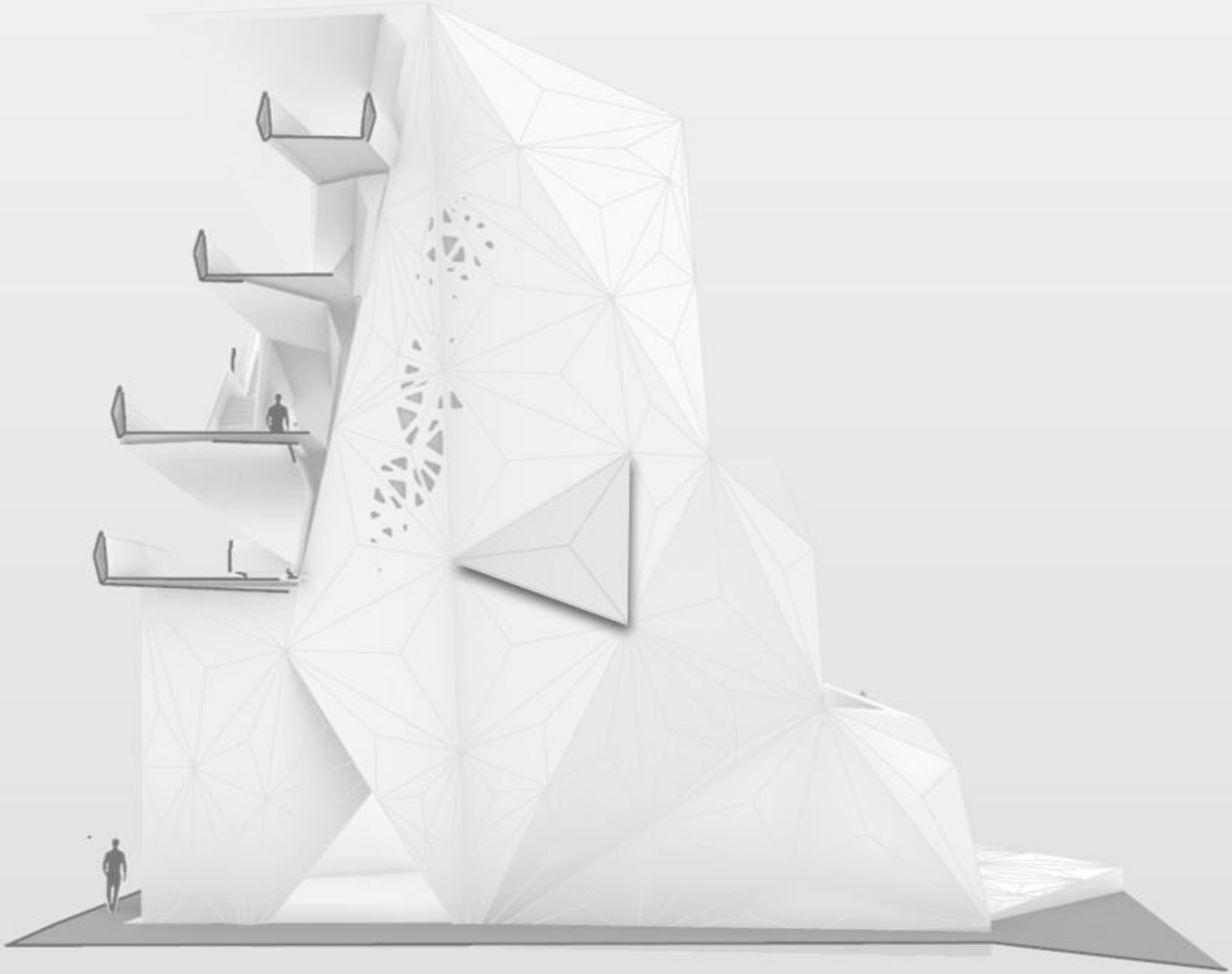
BEDROOM
BEDROOMS

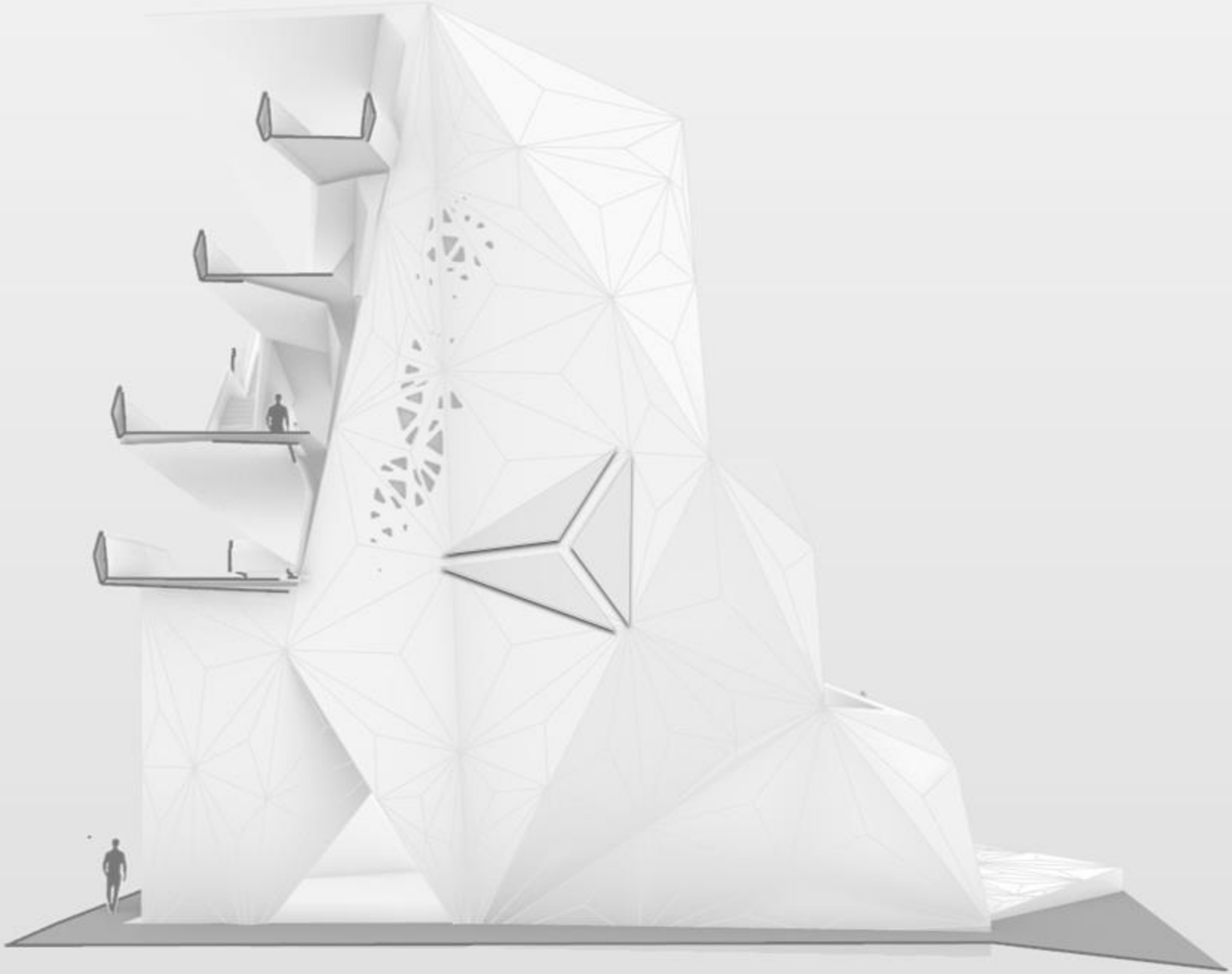


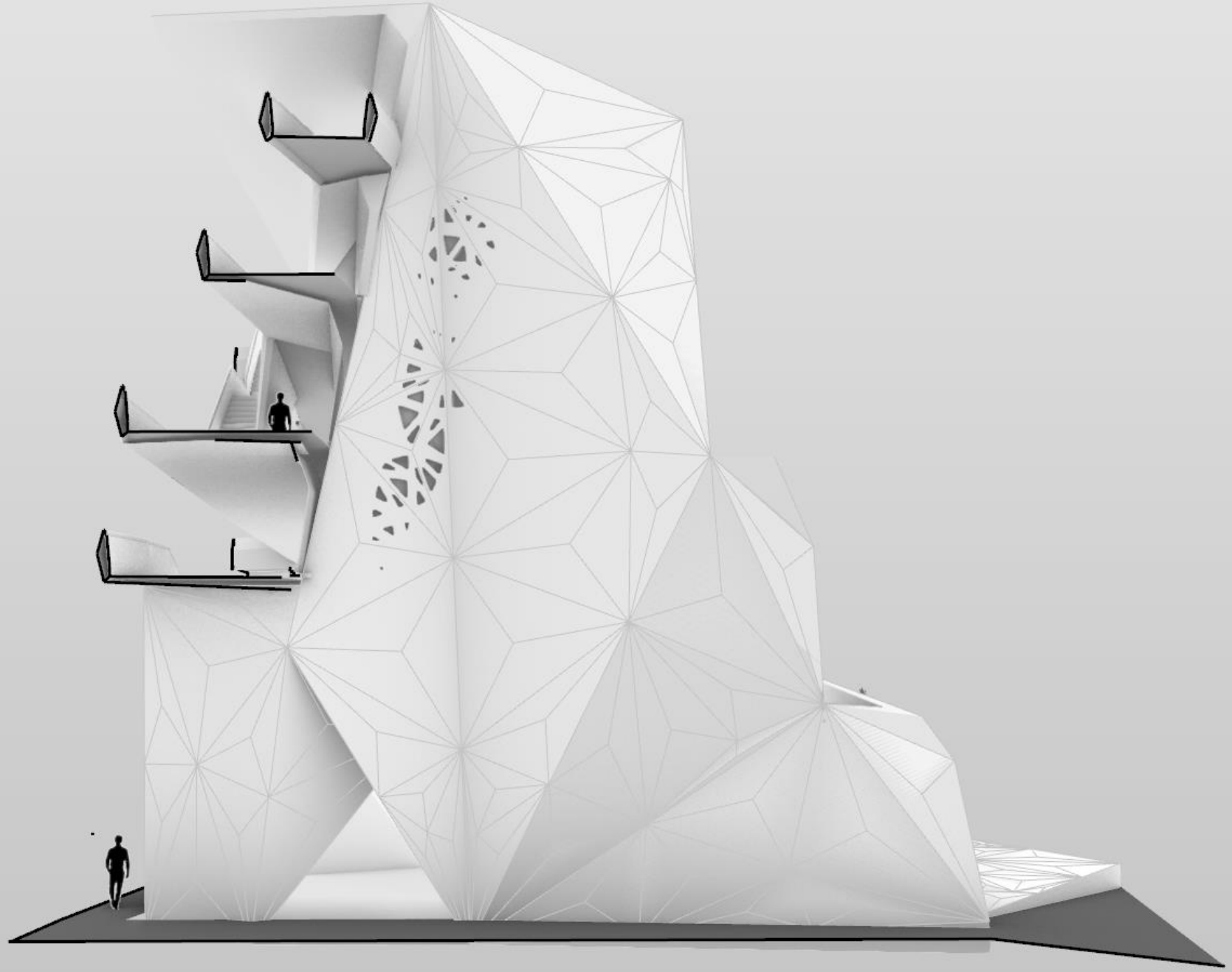


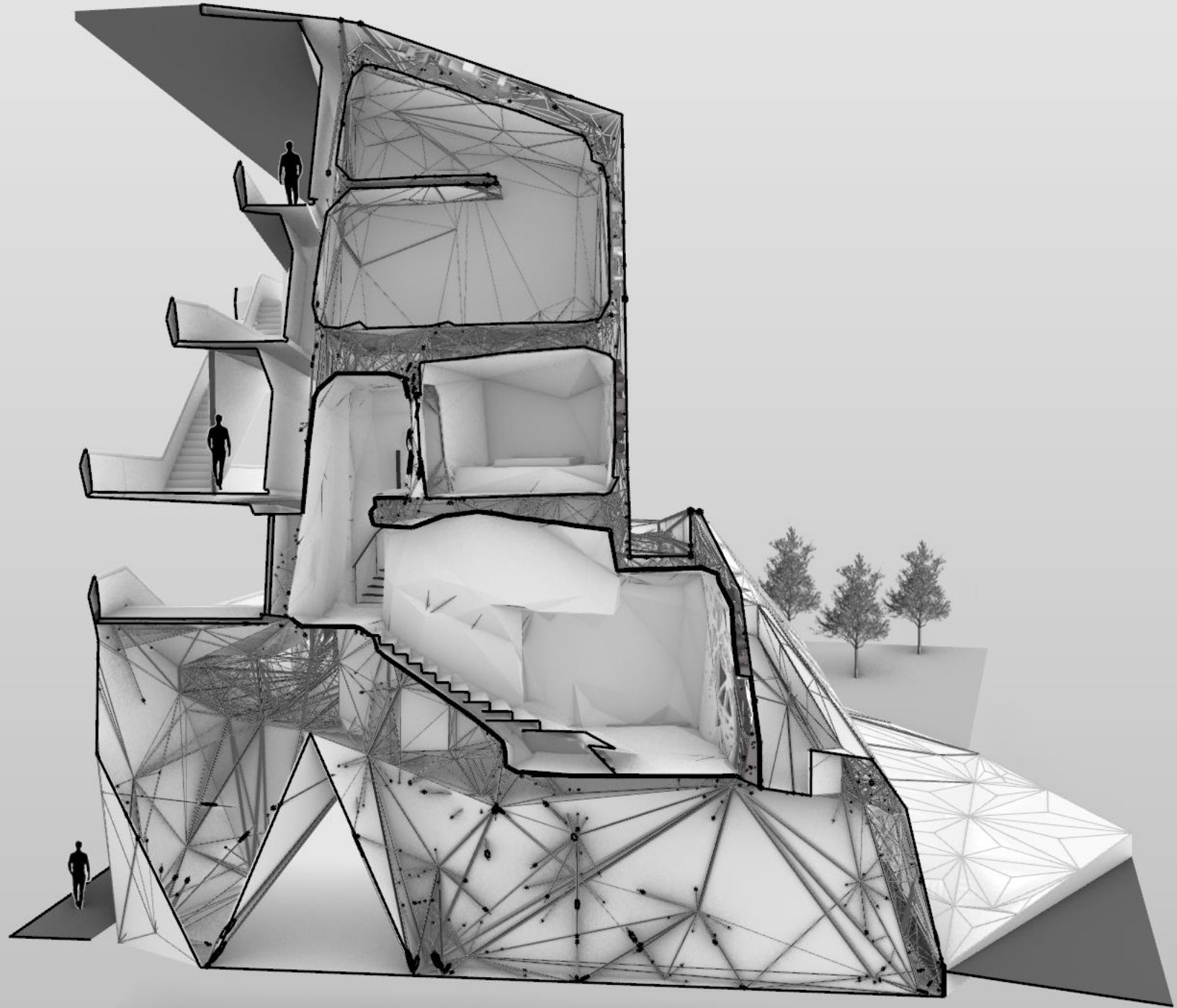


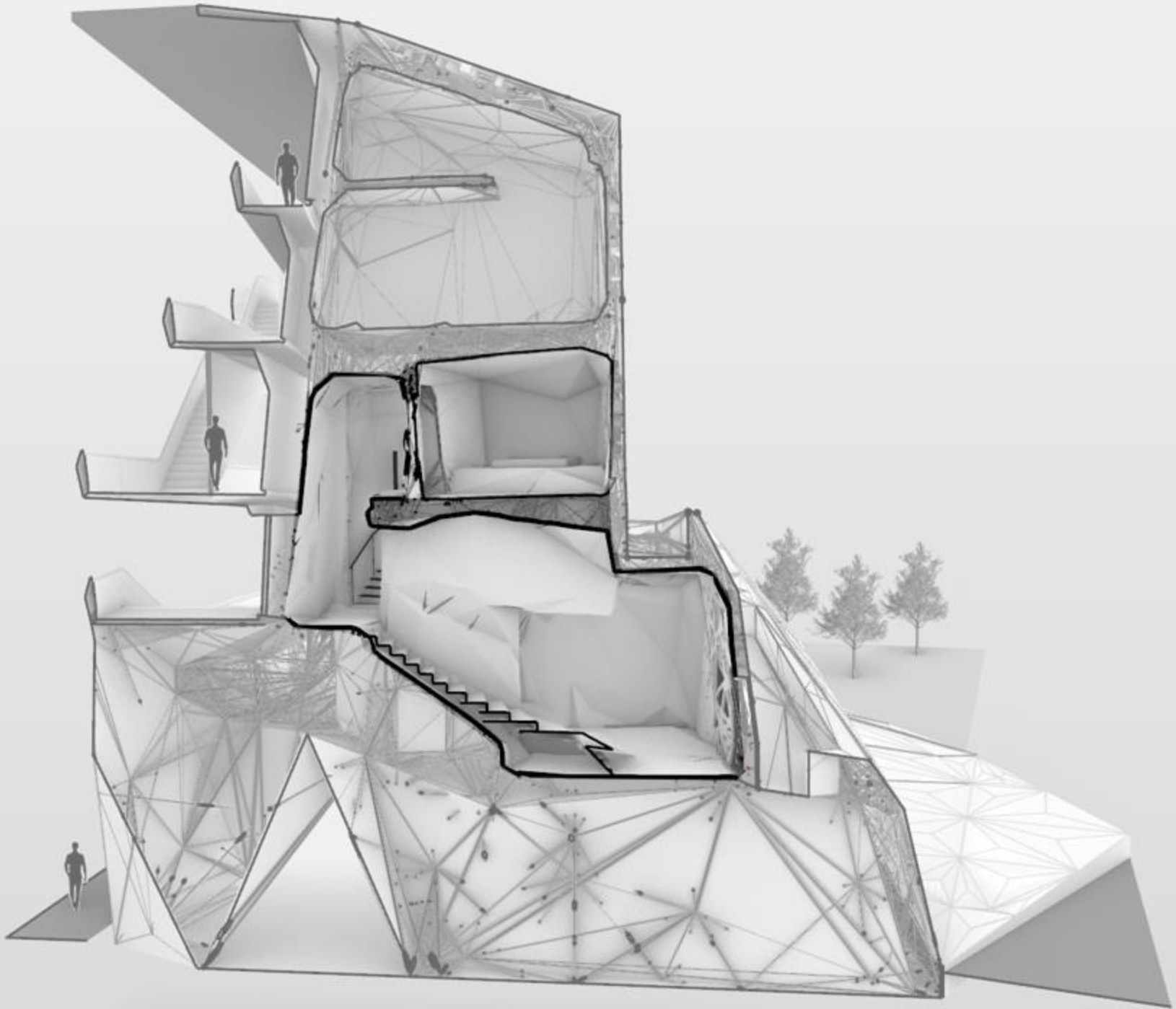


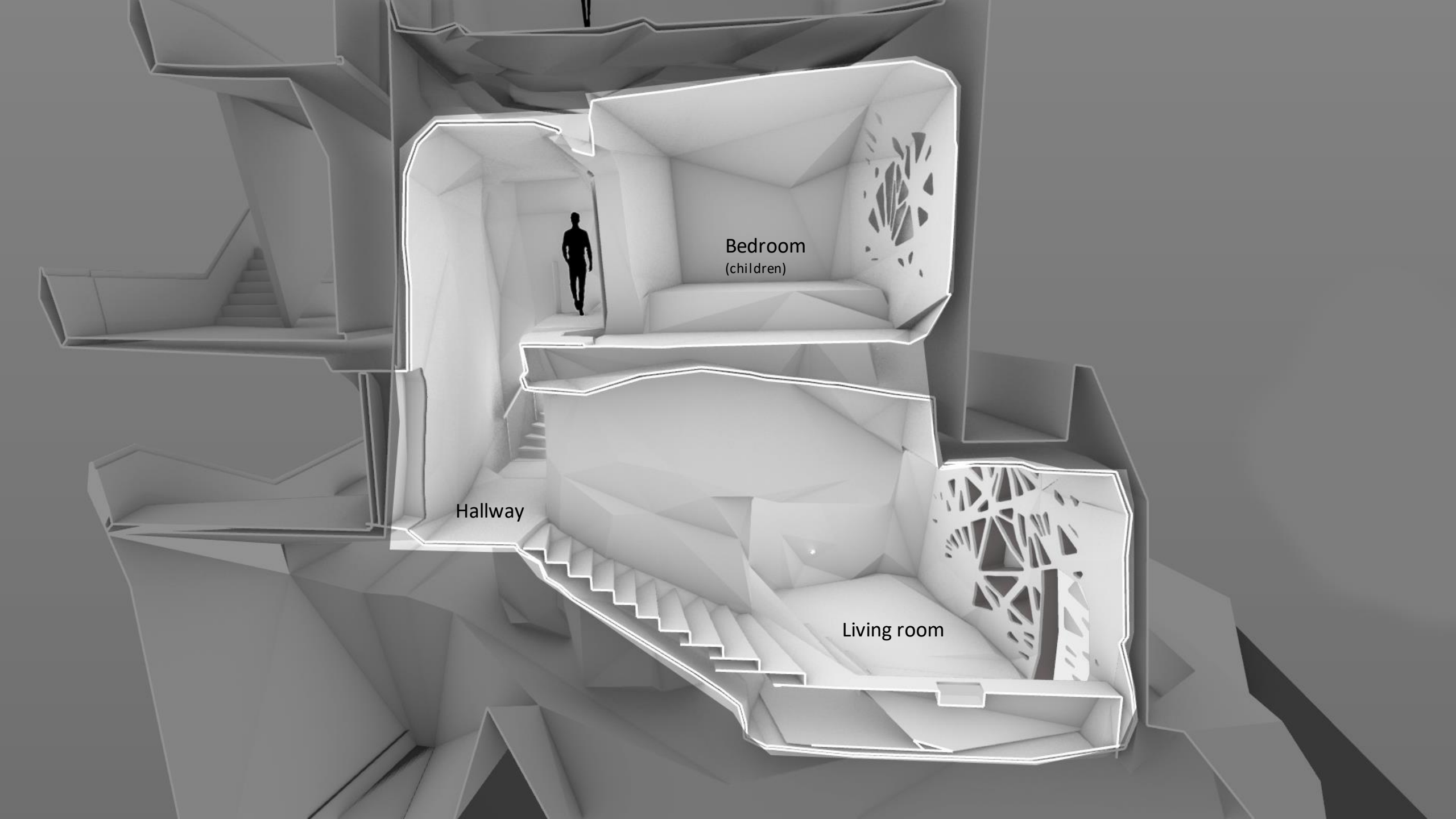










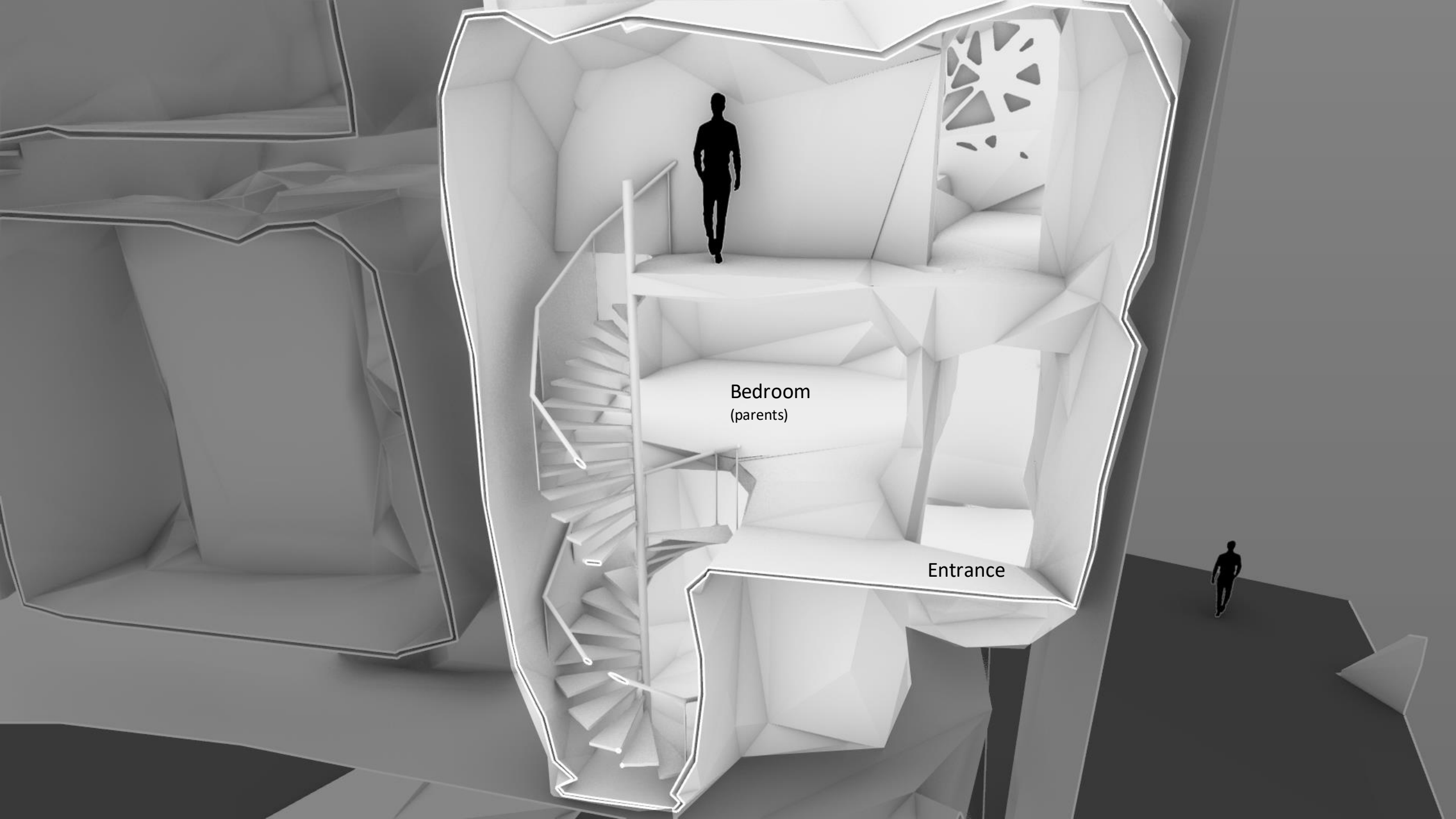

Bedroom
(children)
Hallway
Living room

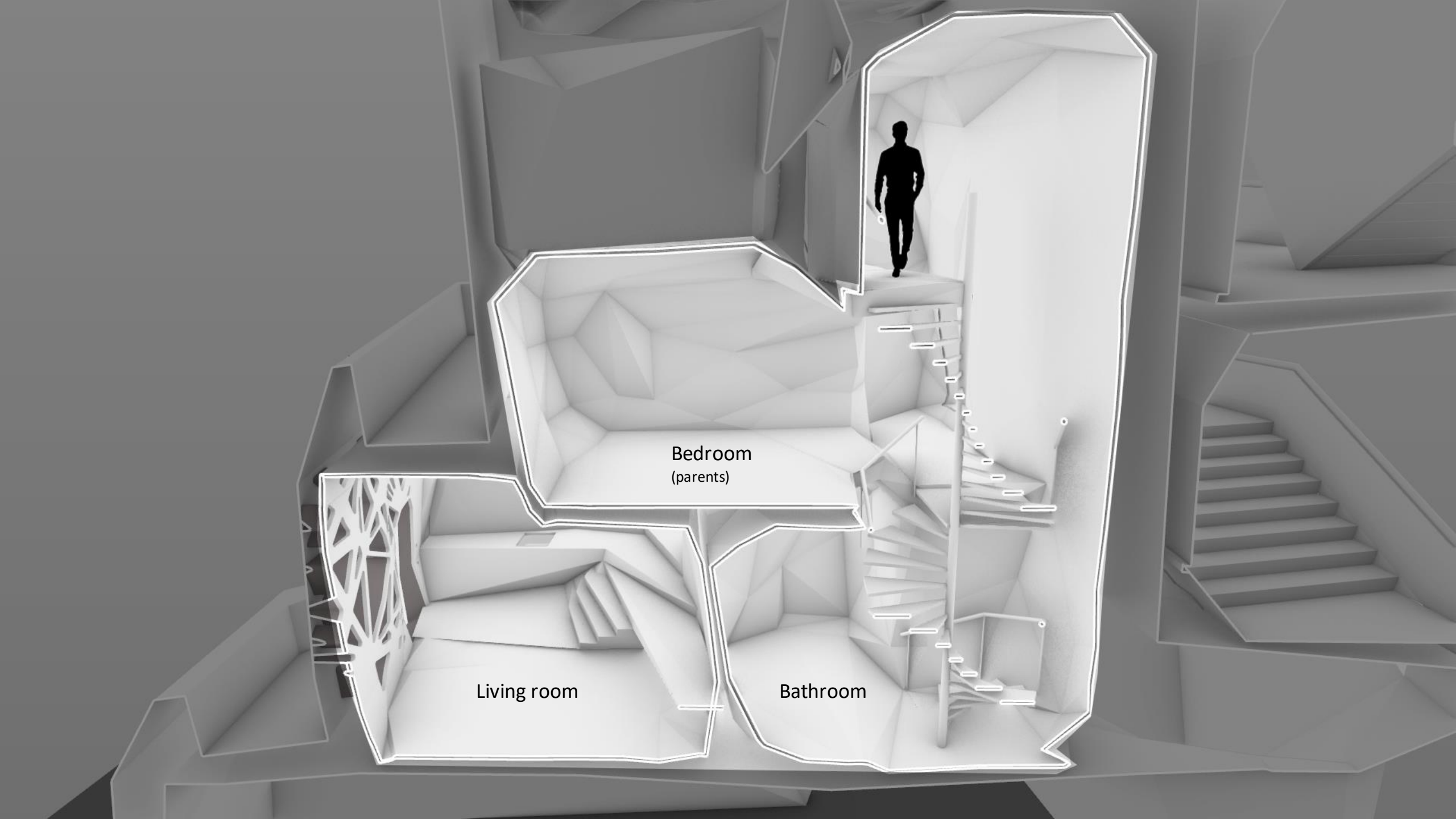
Bedroom
(children)

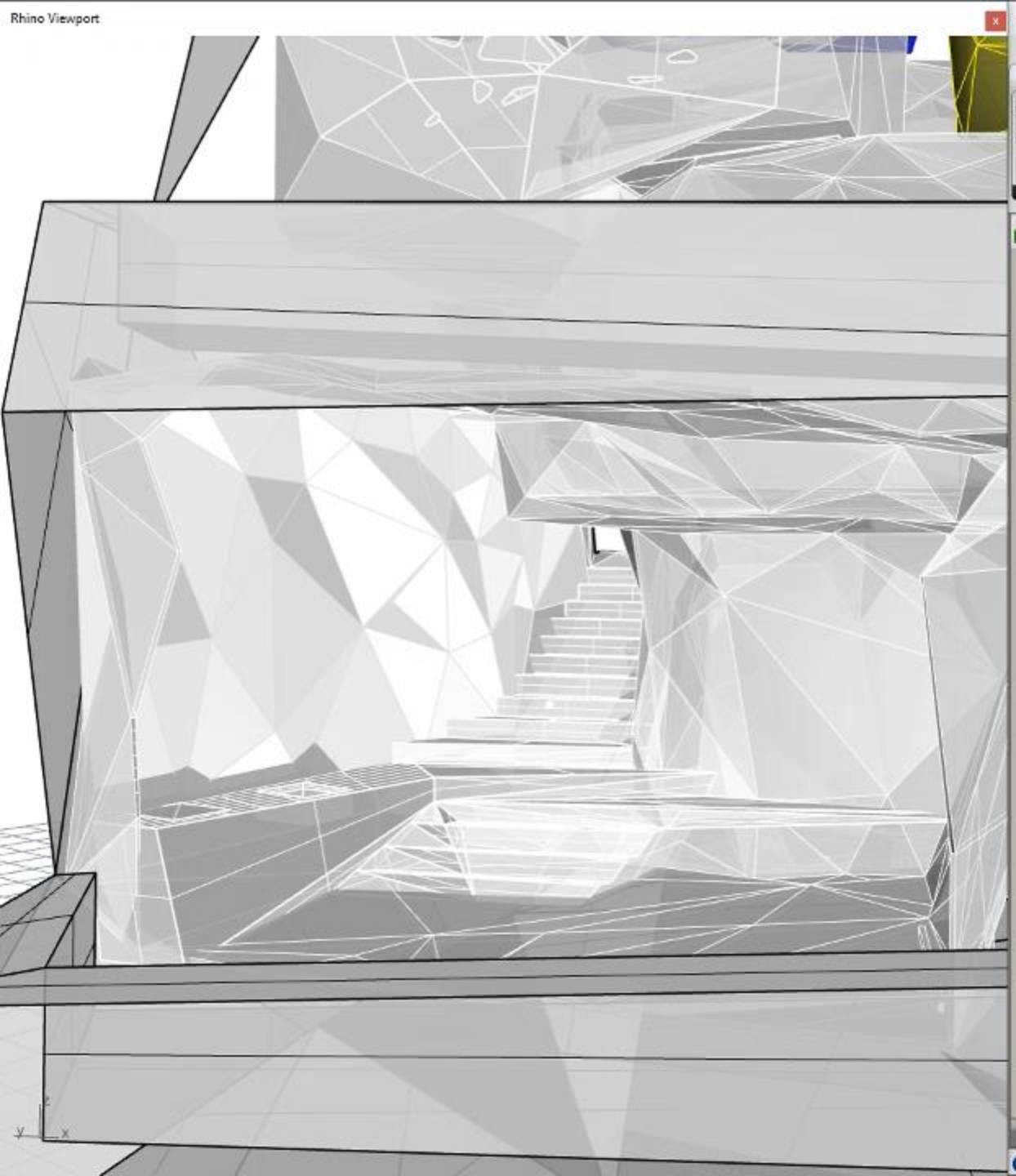
Hallway

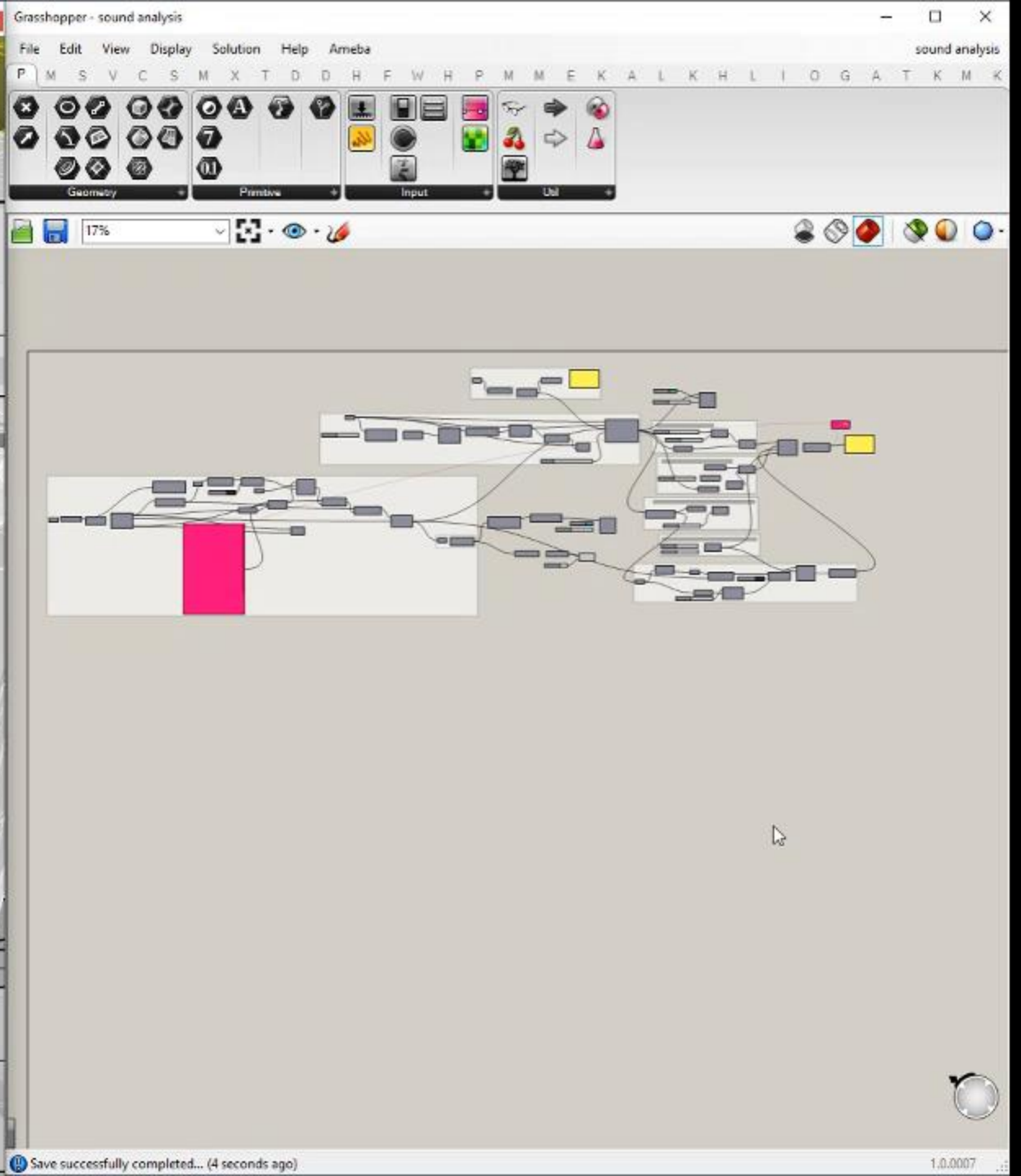
Living room

Bunk Hotel – Utrecht 2019


Bedroom
(parents)
Entrance


Bedroom
(parents)
Living room
Bathroom


Rhino Viewport


Grasshopper - sound analysis
File
Edit
View
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Solution
Help
Ameba
sound analysis
Geometry
Primitive
Input
Util
17%
Save successfully completed... (4 seconds ago)
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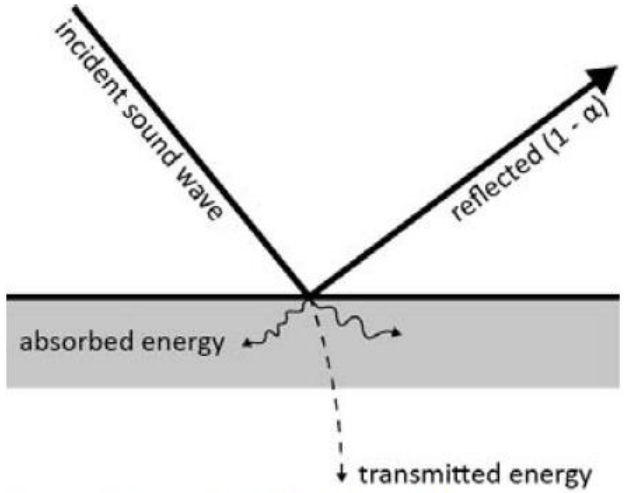


Reaction of a sound wave to interaction with a structure (Cowan, 2000, p. 24)

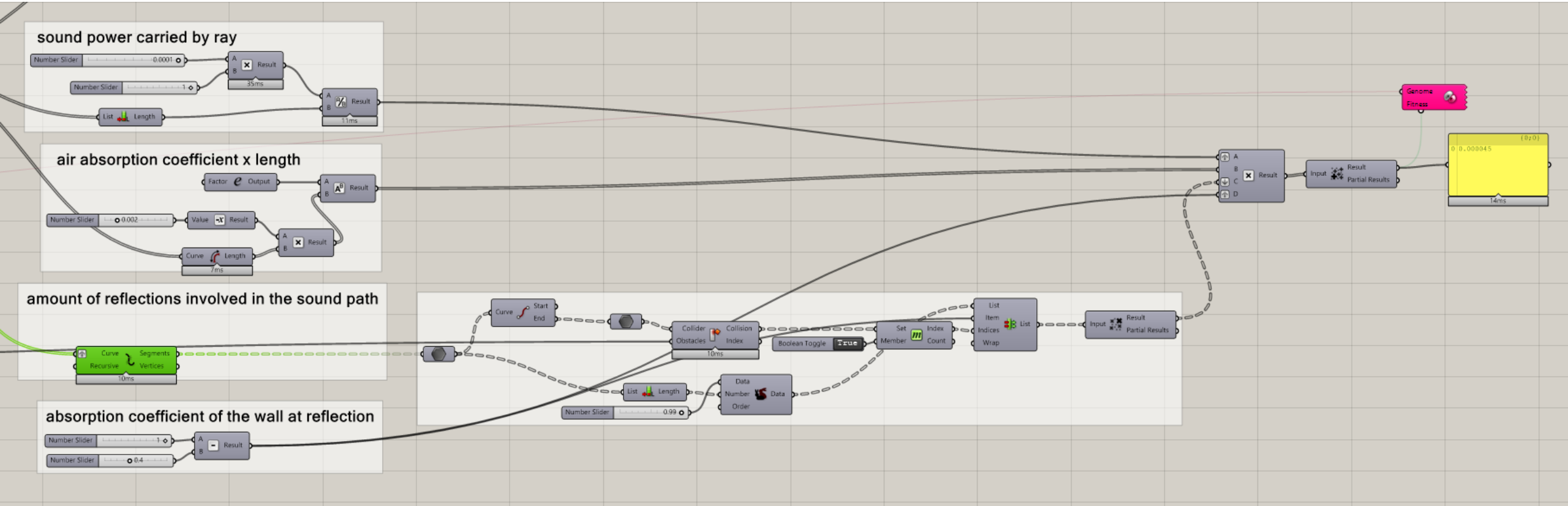
$$W_i = \frac{W_s\, Q}{N}\, e^{-mL} \prod_{j=1}^{J}(1 - \alpha_j)$$

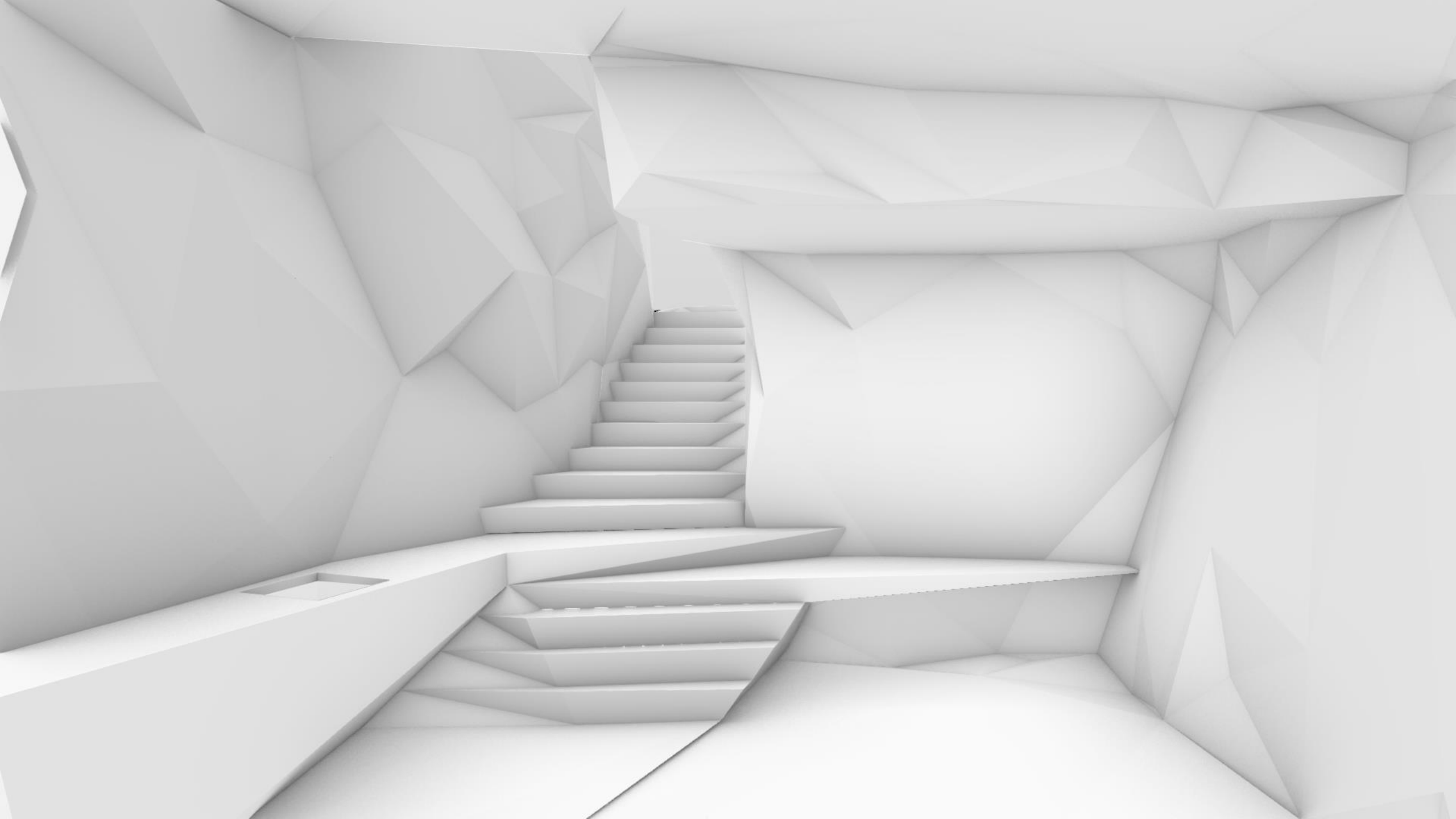
with:

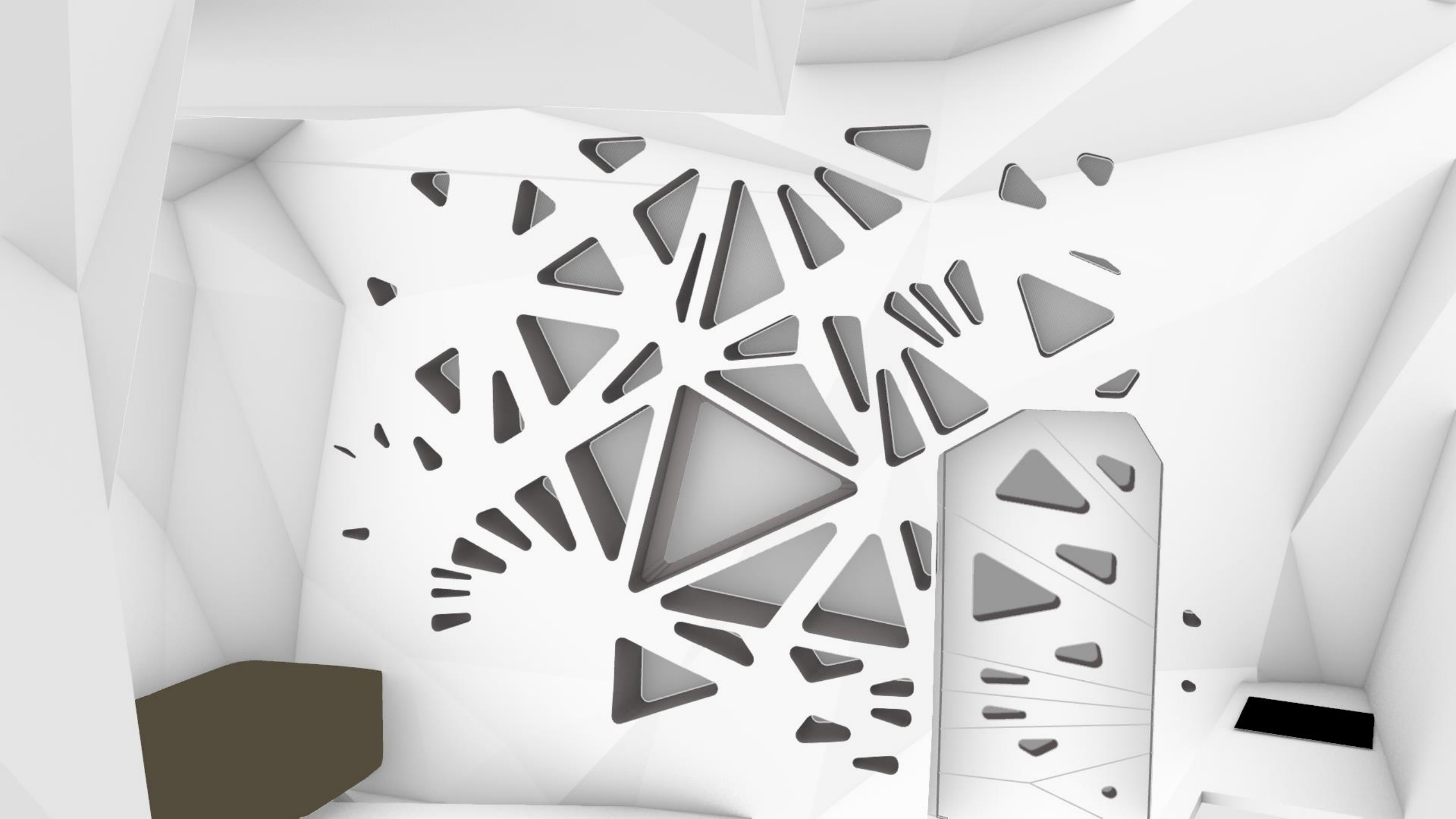
$$L_w = 10 \log\left(\frac{W_s}{W_0}\right) \Rightarrow W_s = W_0 \cdot 10^{0{,}1\, L_w}$$

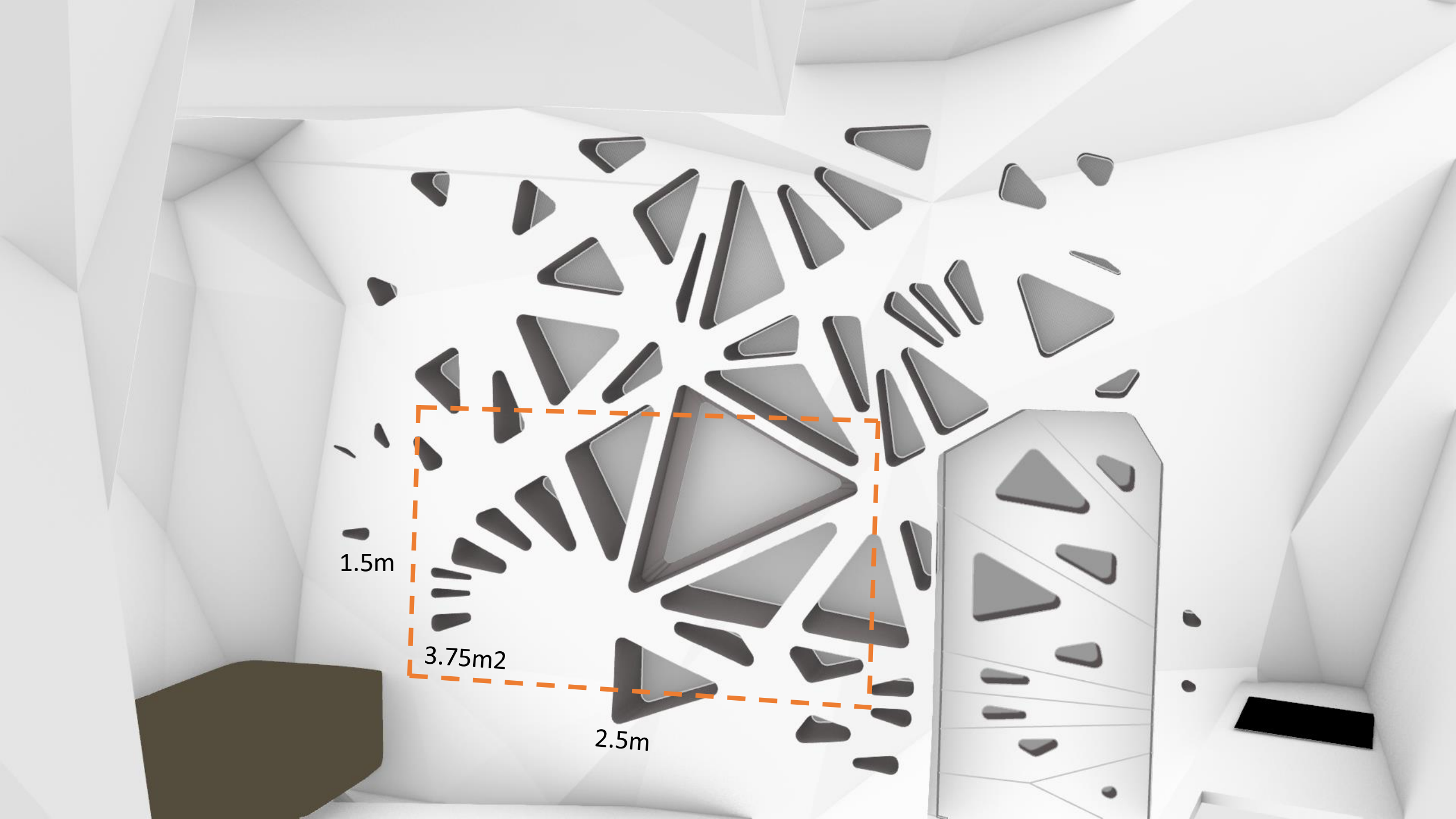
W_i =	sound power carried by ray 'i' [W]
W_s =	sound power of source [W]
W_0 =	reference sound power = 10^{-12} W
Q =	source direction factor = 1 (omnidirectional) [-]
N =	total number of rays [-]
m =	air absorption coefficient [-]
L =	travel distance of ray 'i' from source to receiver [m]
J =	amount of reflections involved in the sound path [-]
α_j =	absorption coefficient of the wall at reflection 'j' [-]

Source: Optimizing the acoustic properties of open plan workspaces using parametric models (p.58)
NICK JEDEDIA VERNON VLAUN #1360795 | MENTORS: DR.IR. M.J. TENPIERIK, DR. M. TURRIN, PROF.DR.IR A.A.J.F. VAN DEN DOBBELSTEEN|



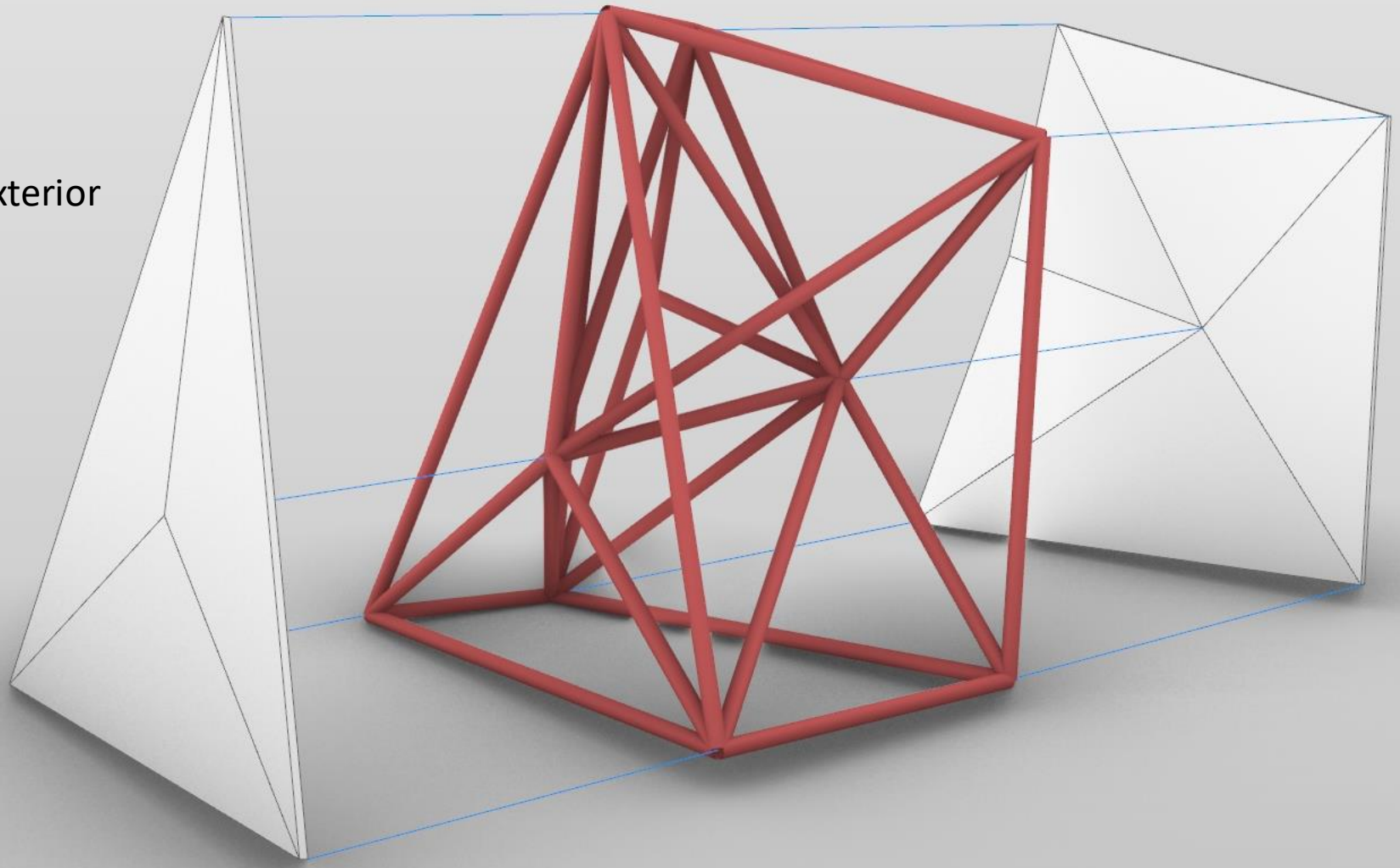




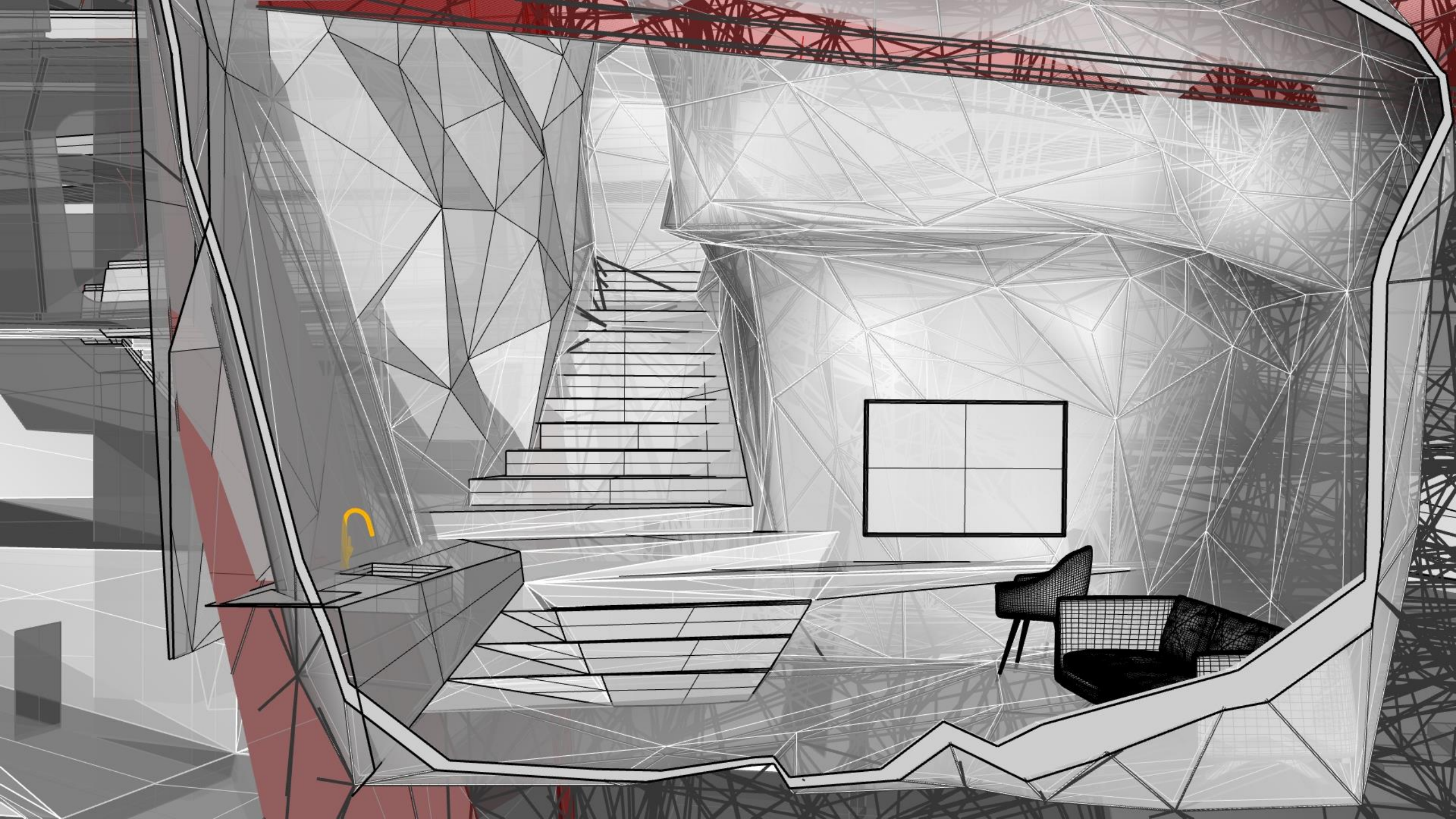

1.5m
3.75m2
2.5m

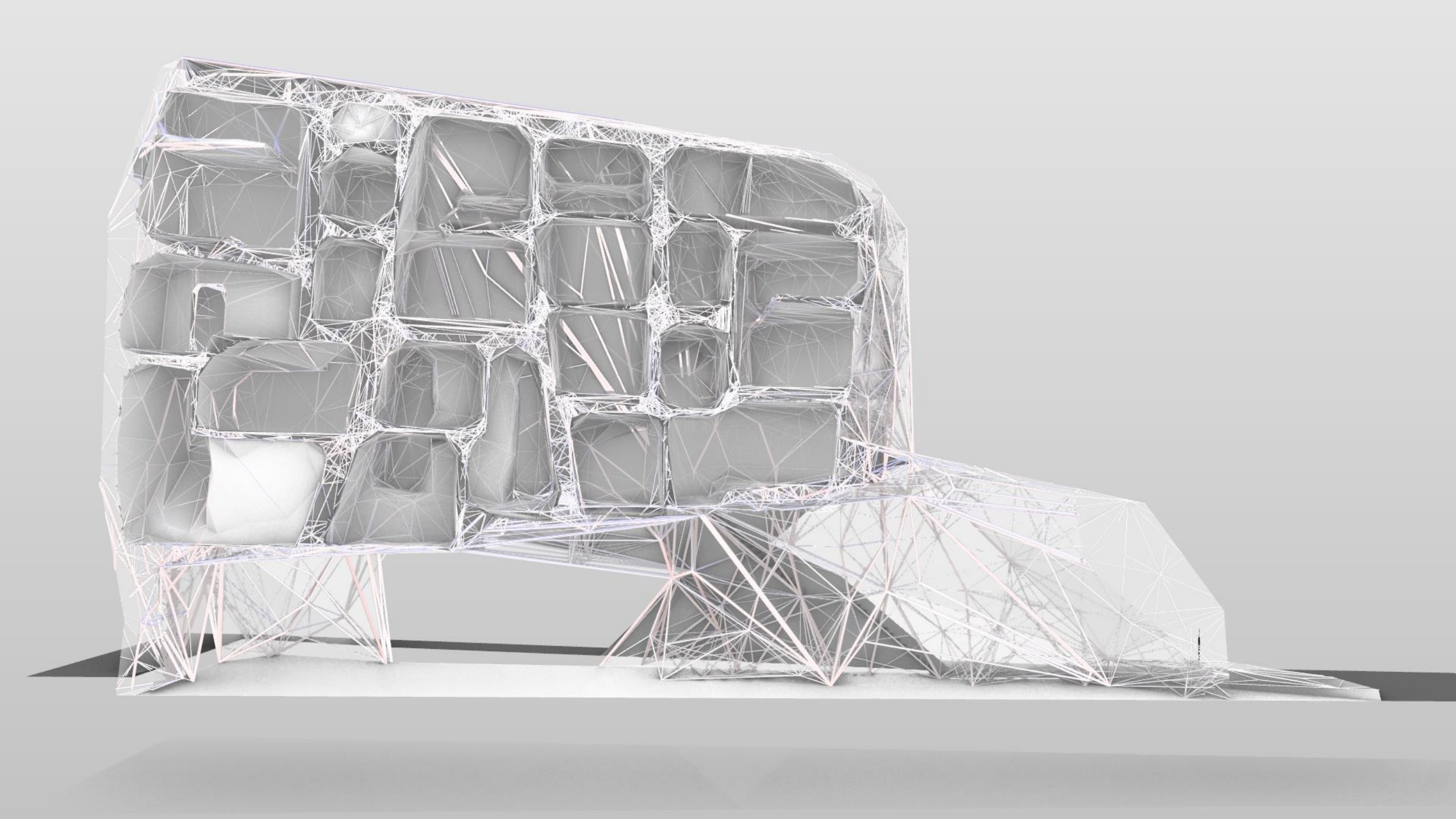
BUILDING TECHNOLOGY

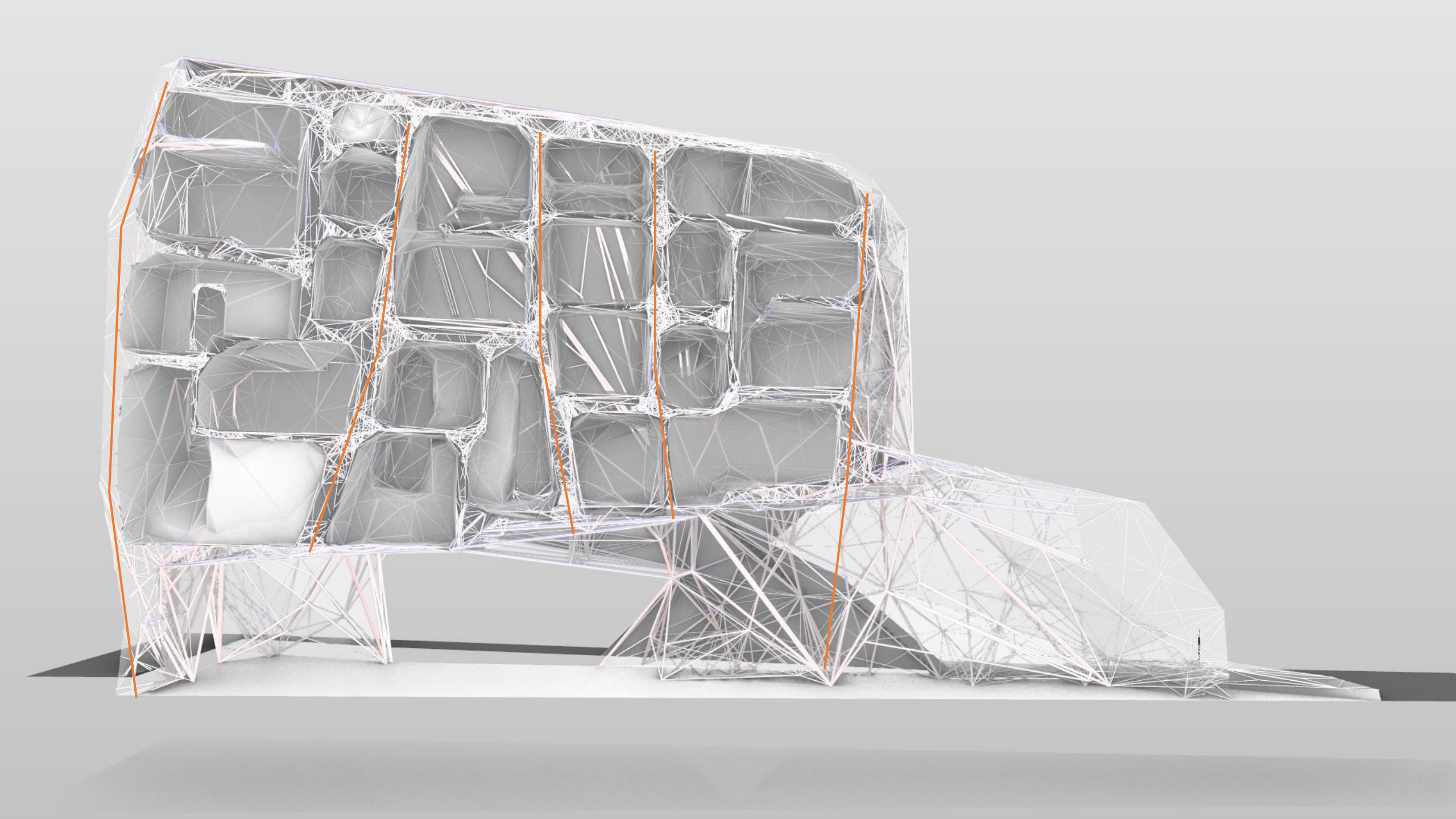
Exterior

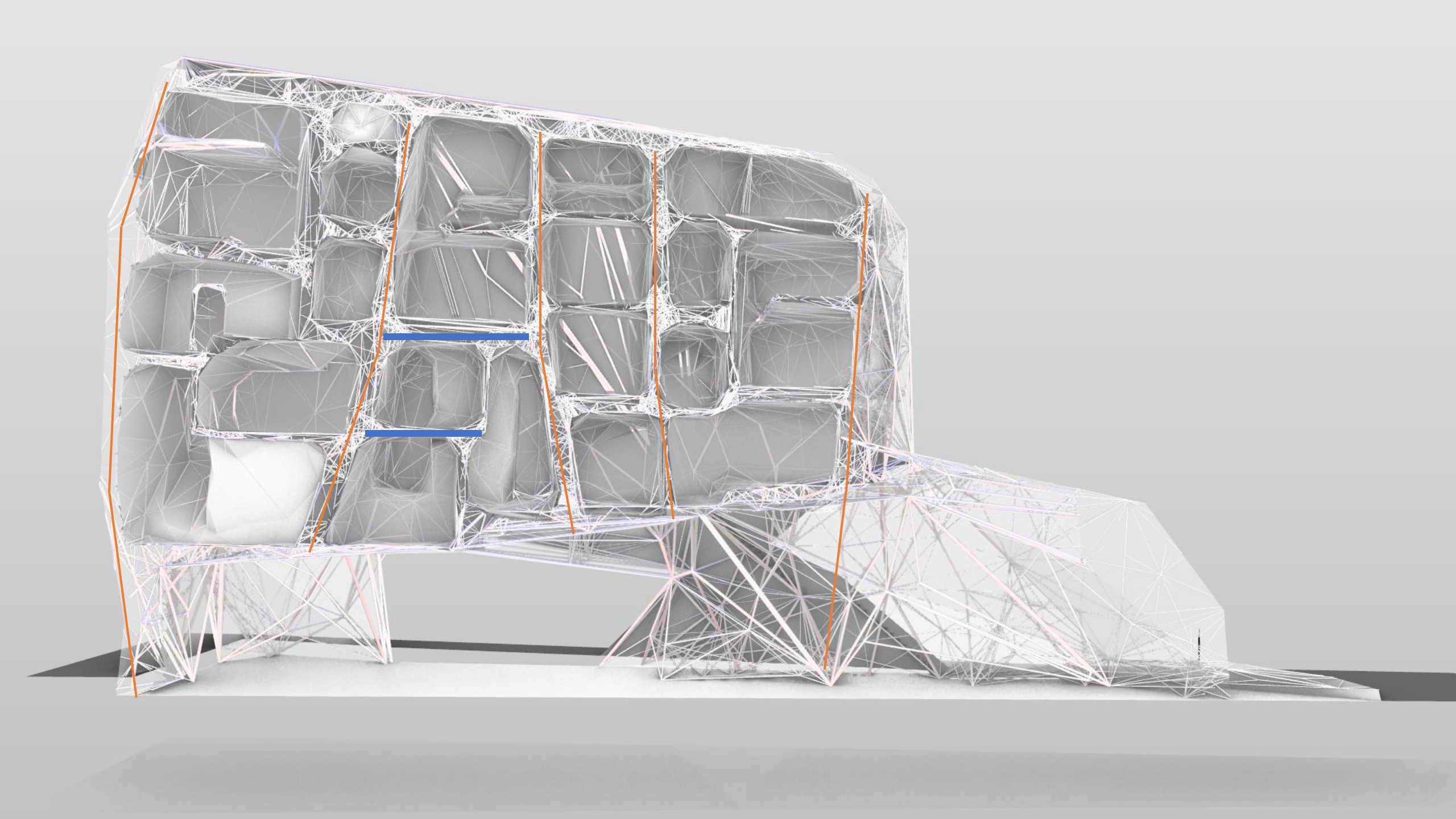


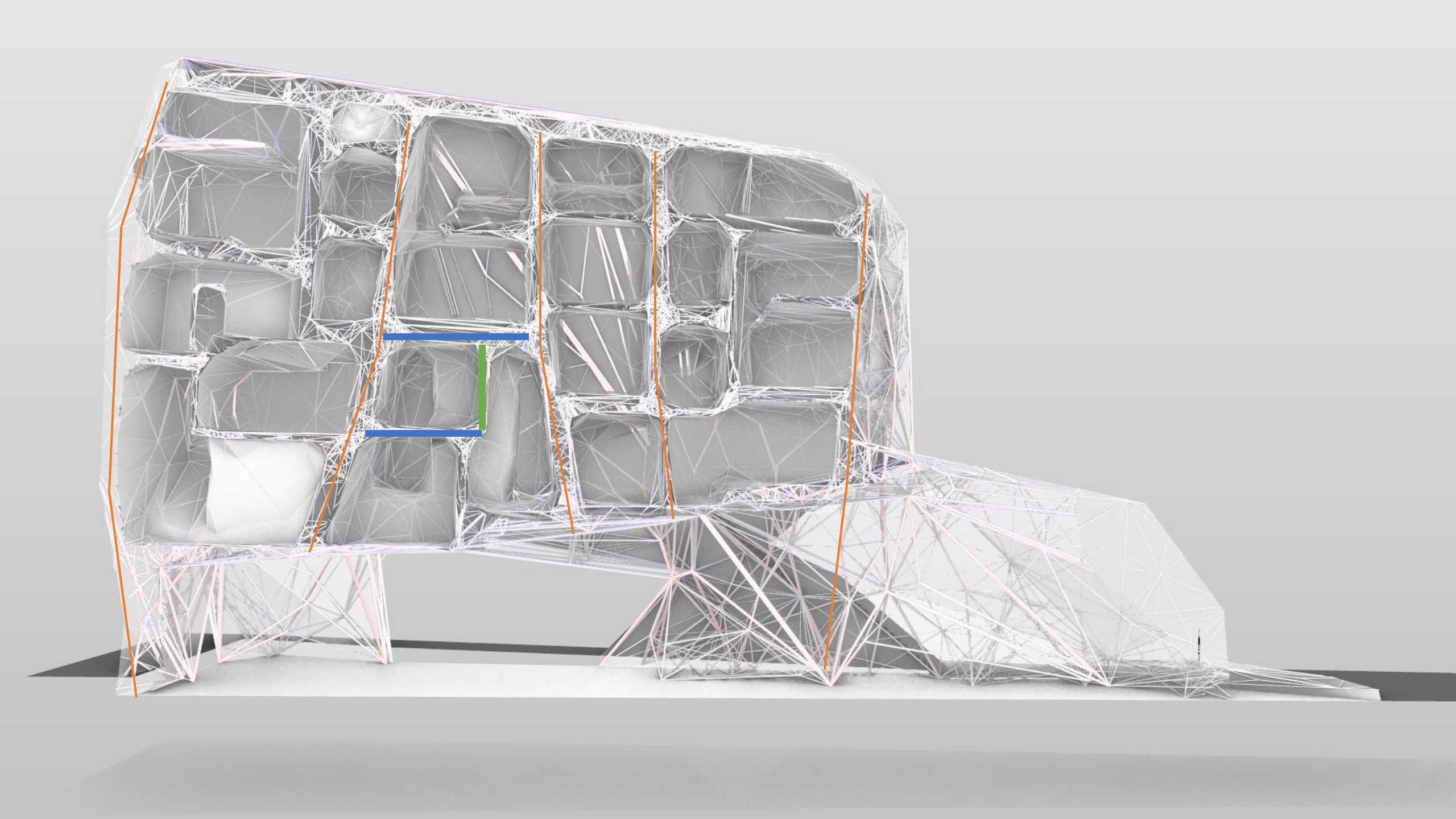
Interior

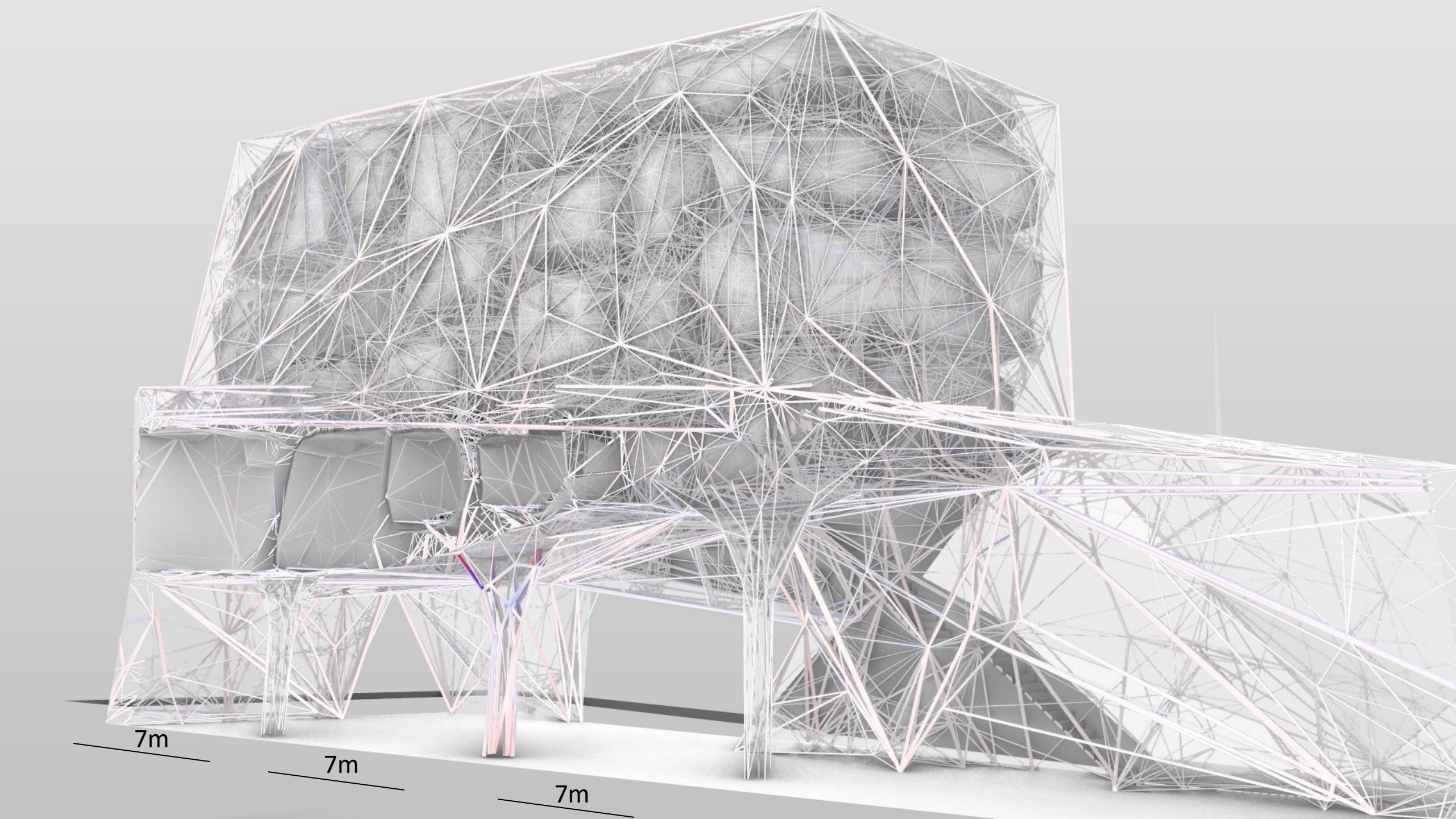


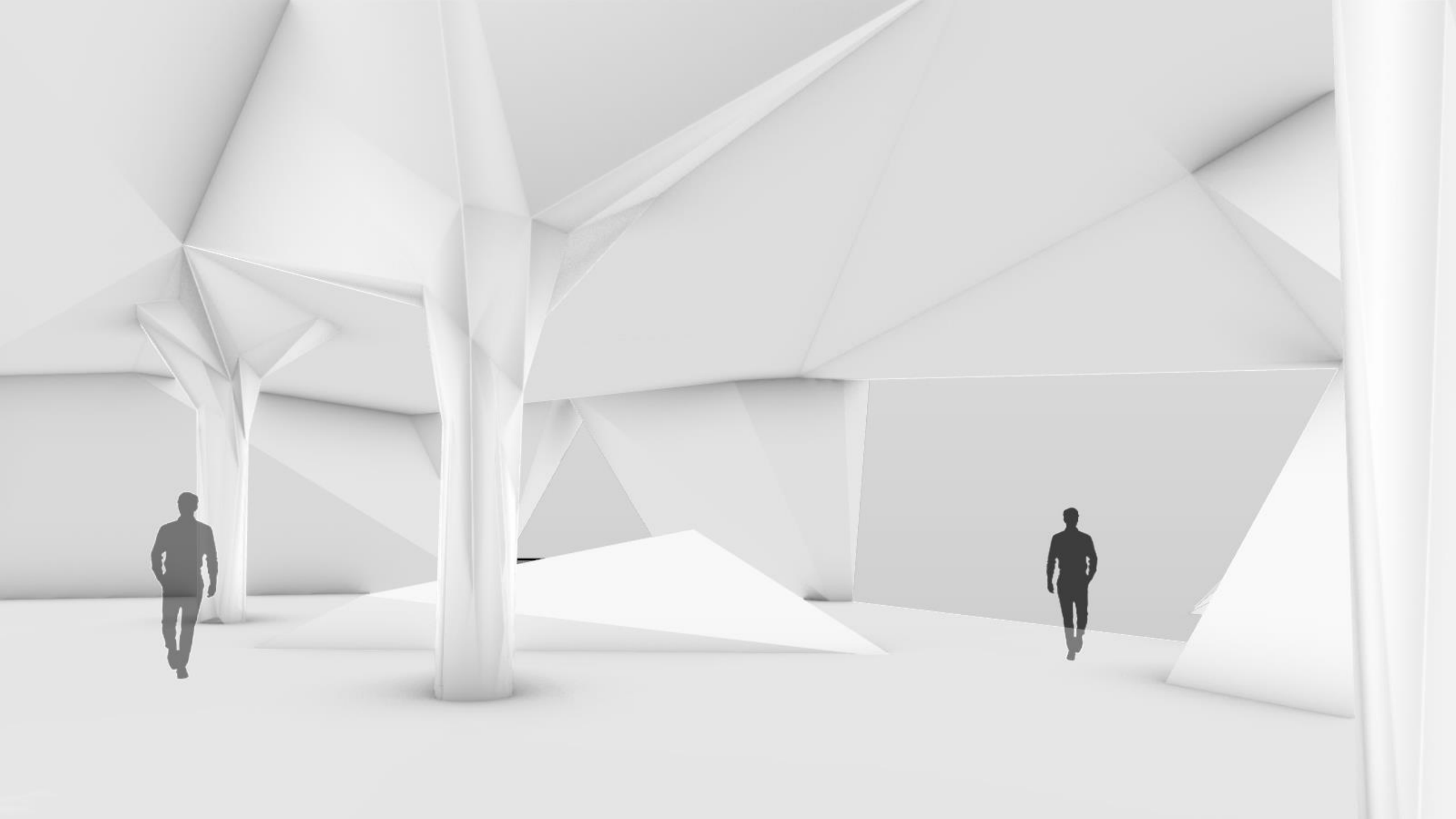


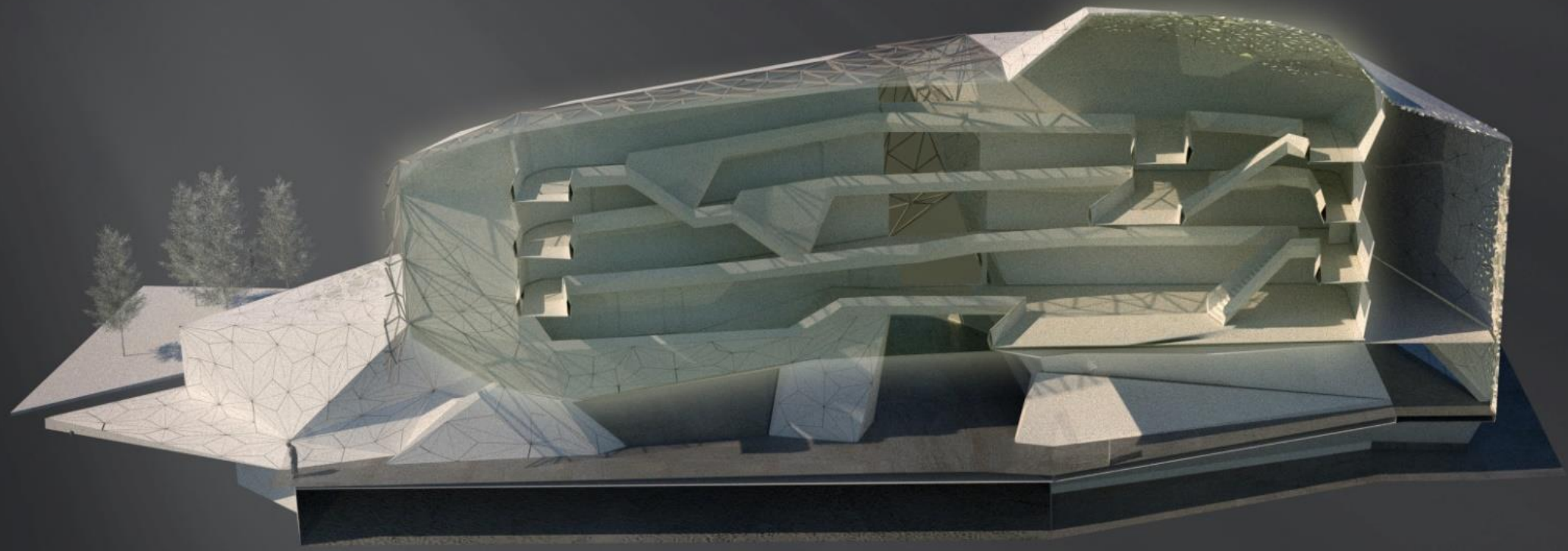


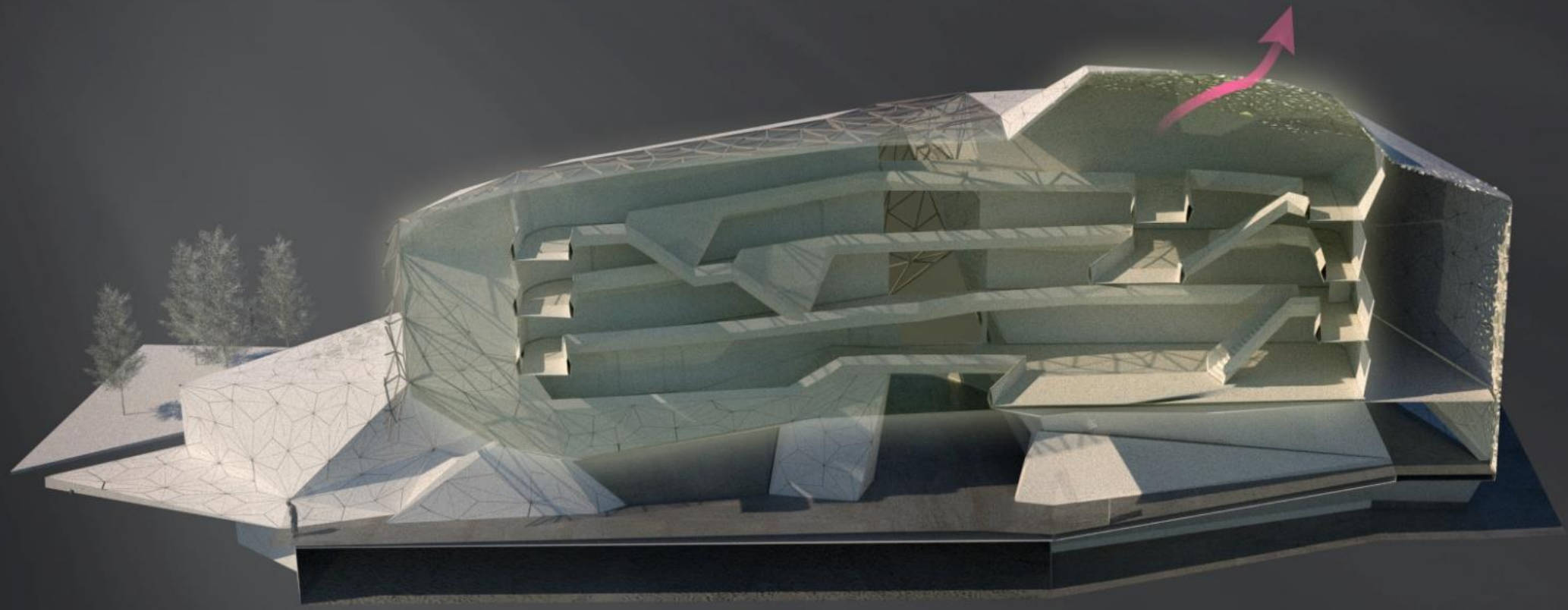


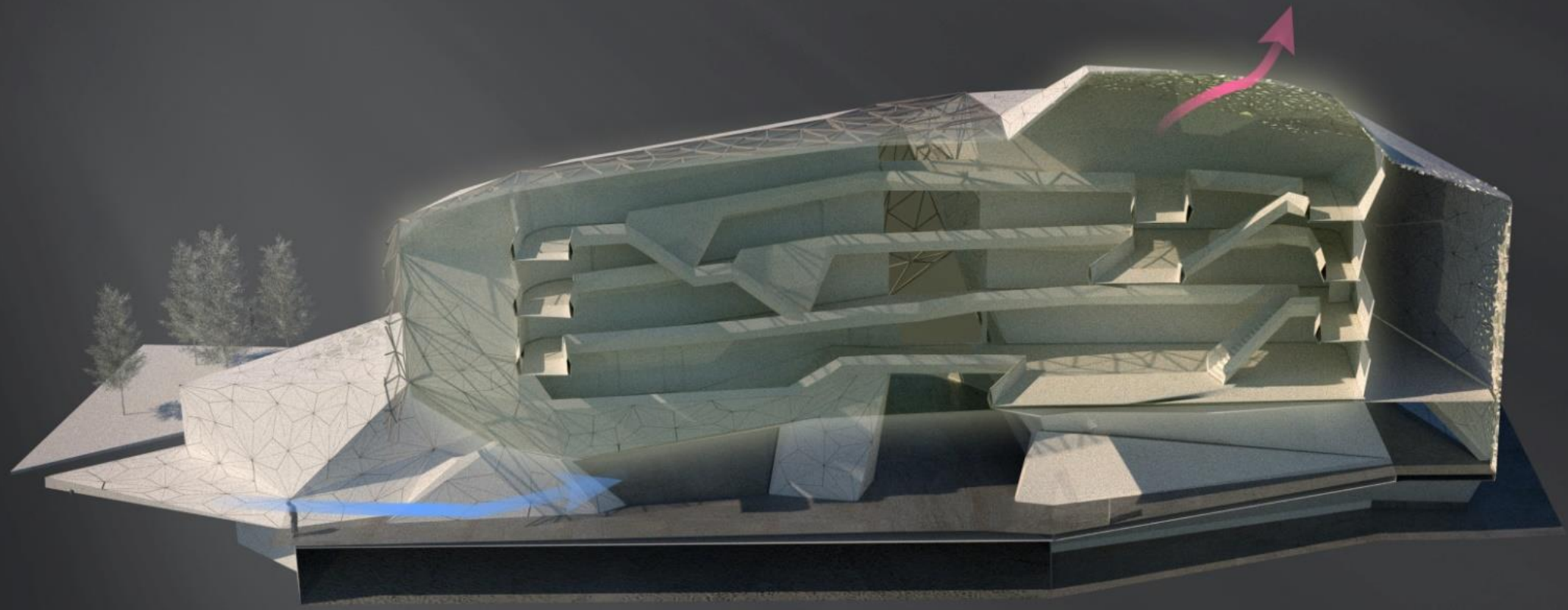


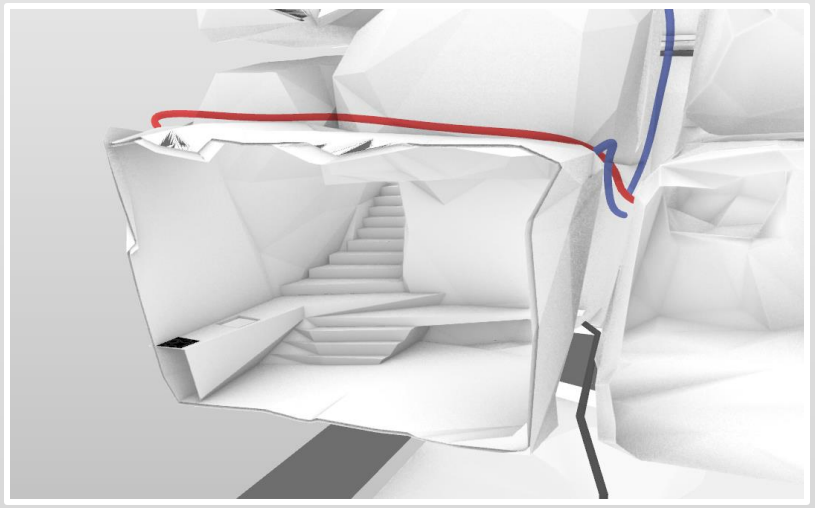

7m
7m
7m

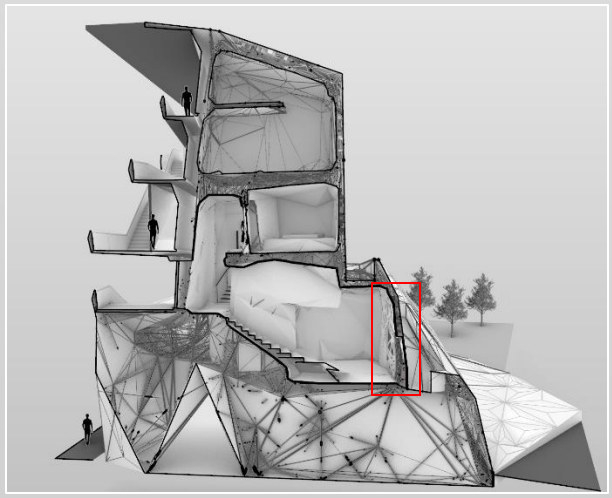


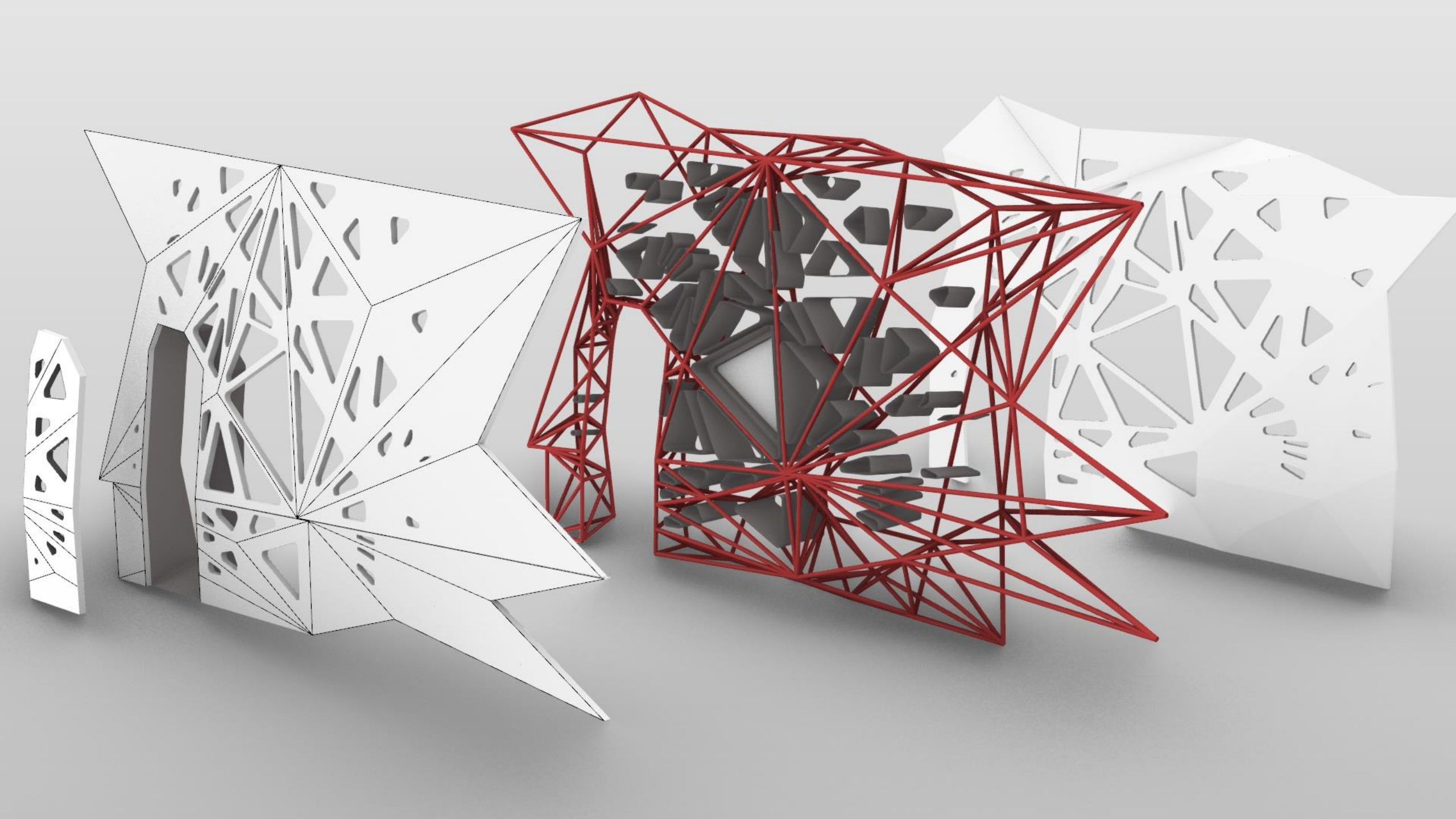


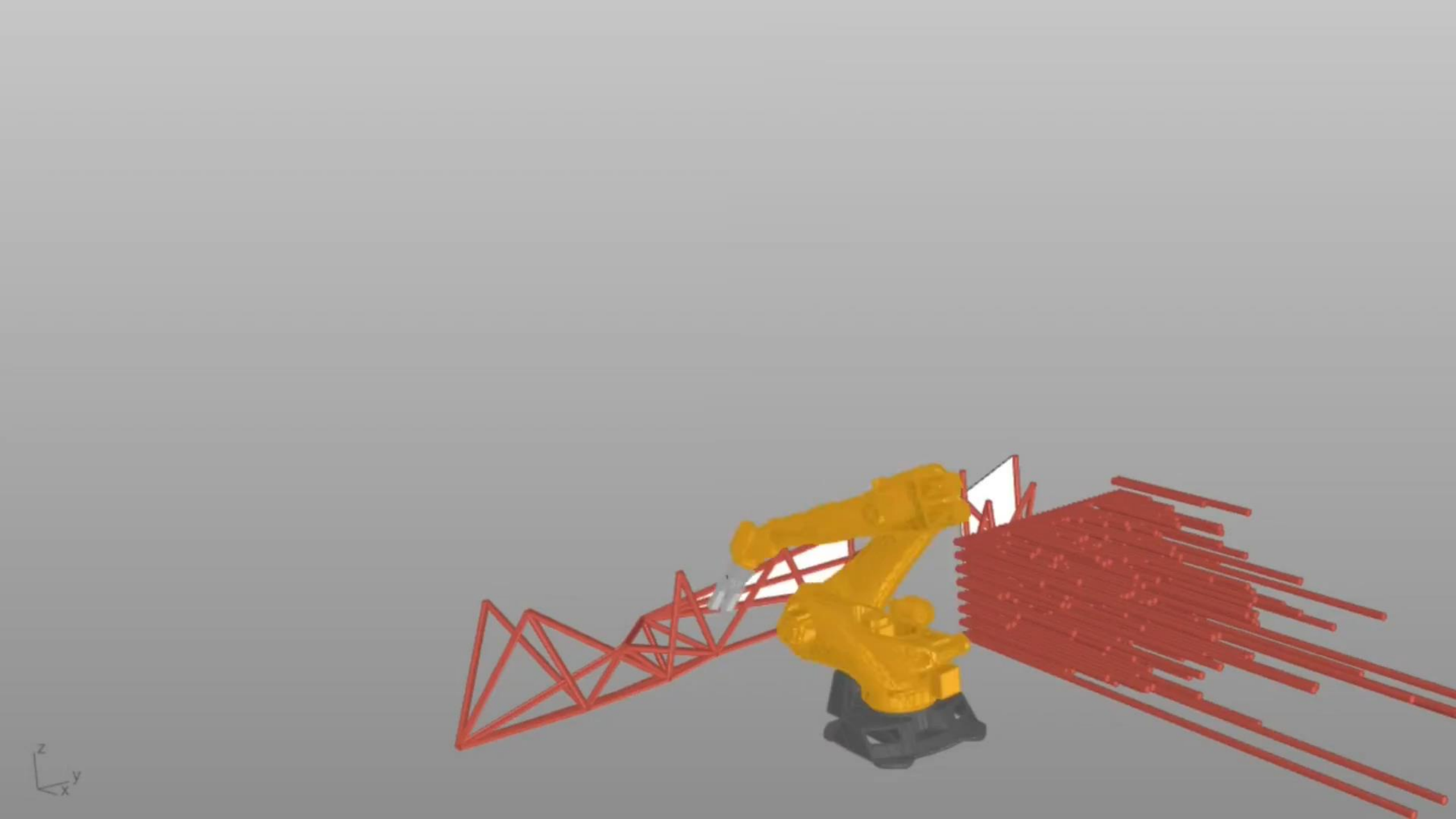








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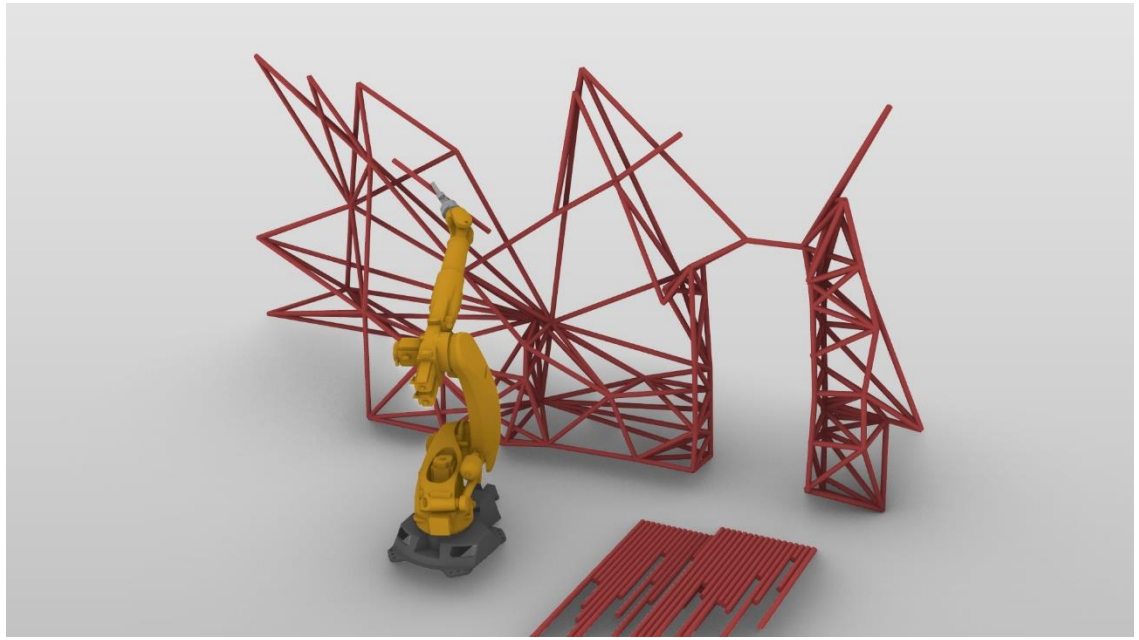

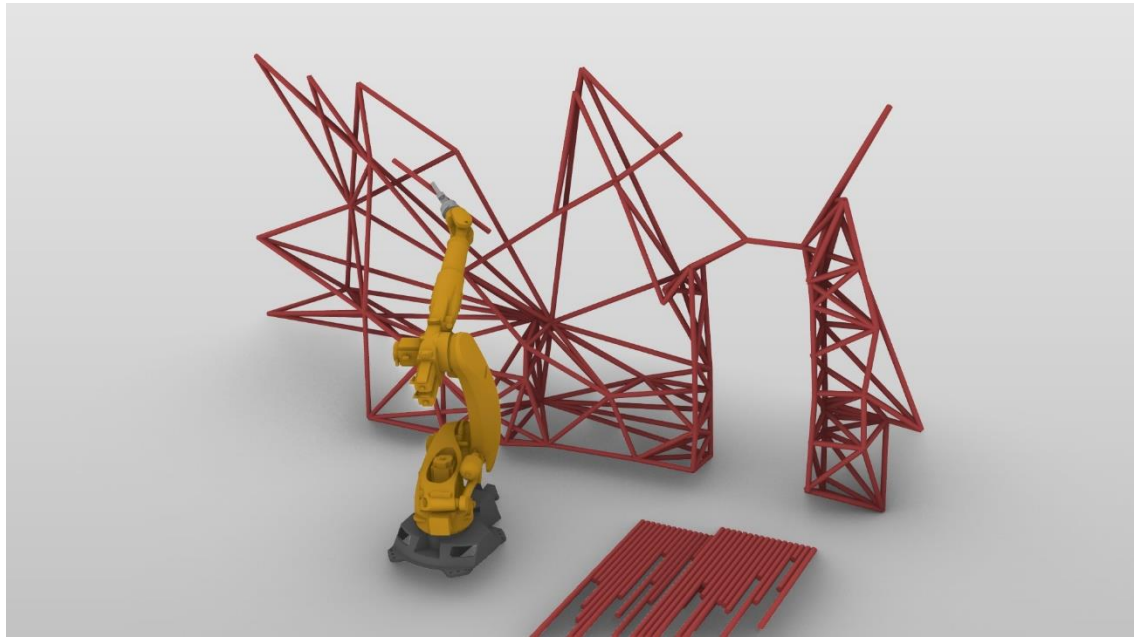

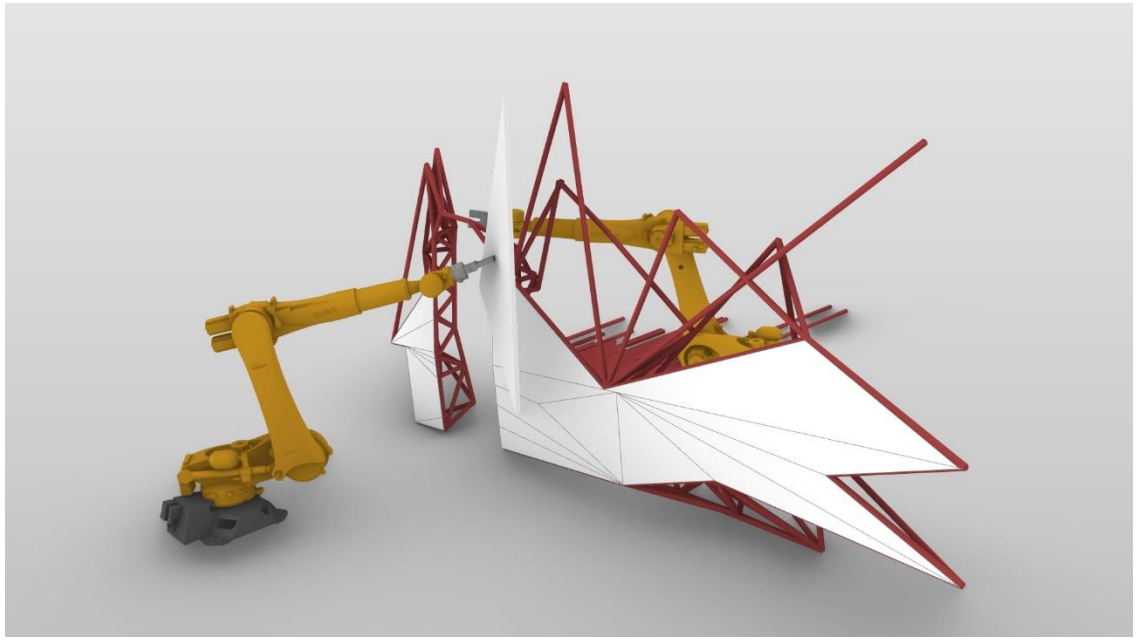

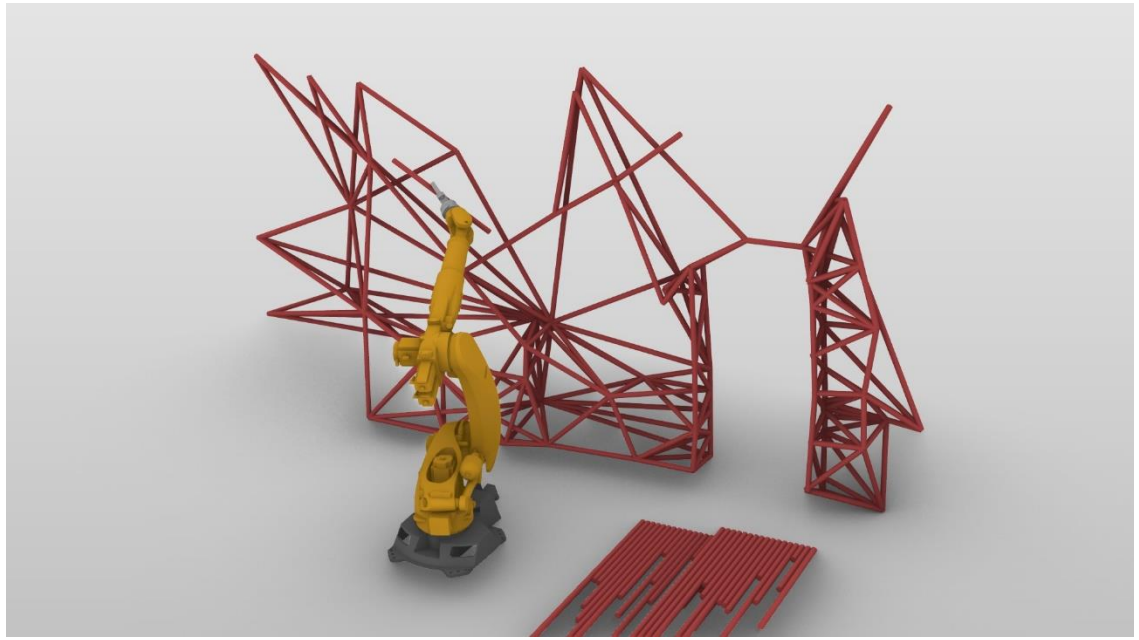

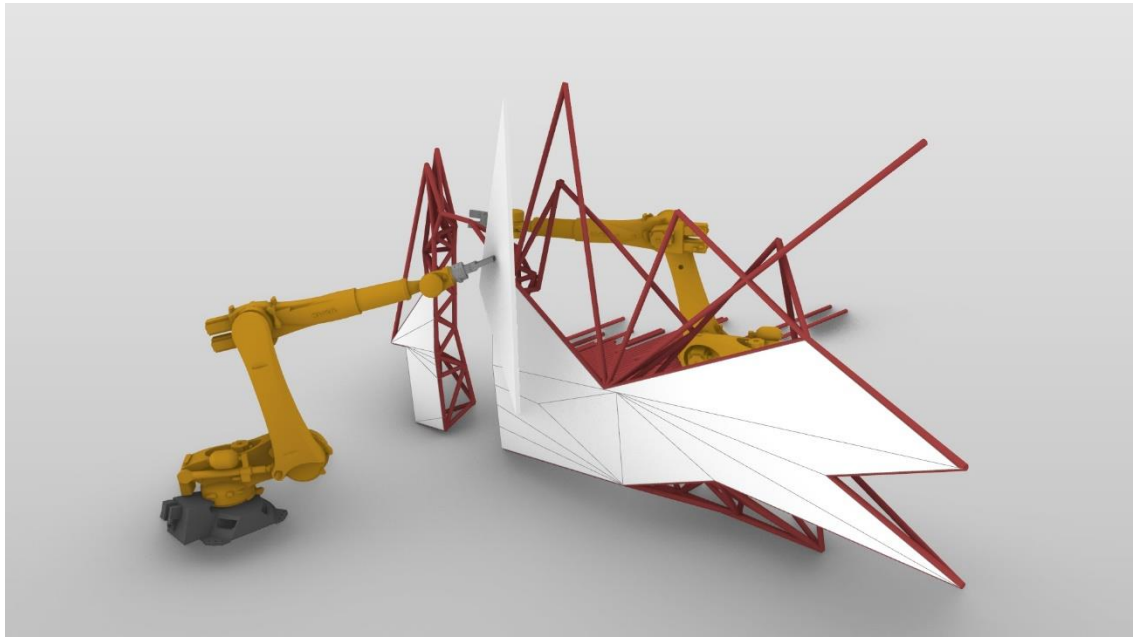

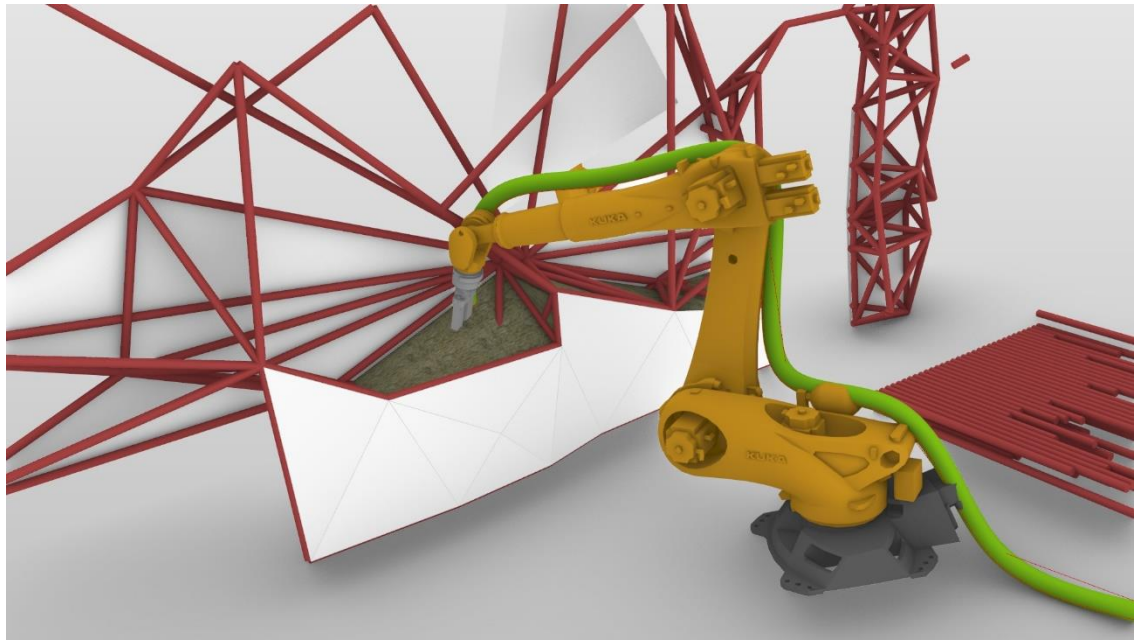

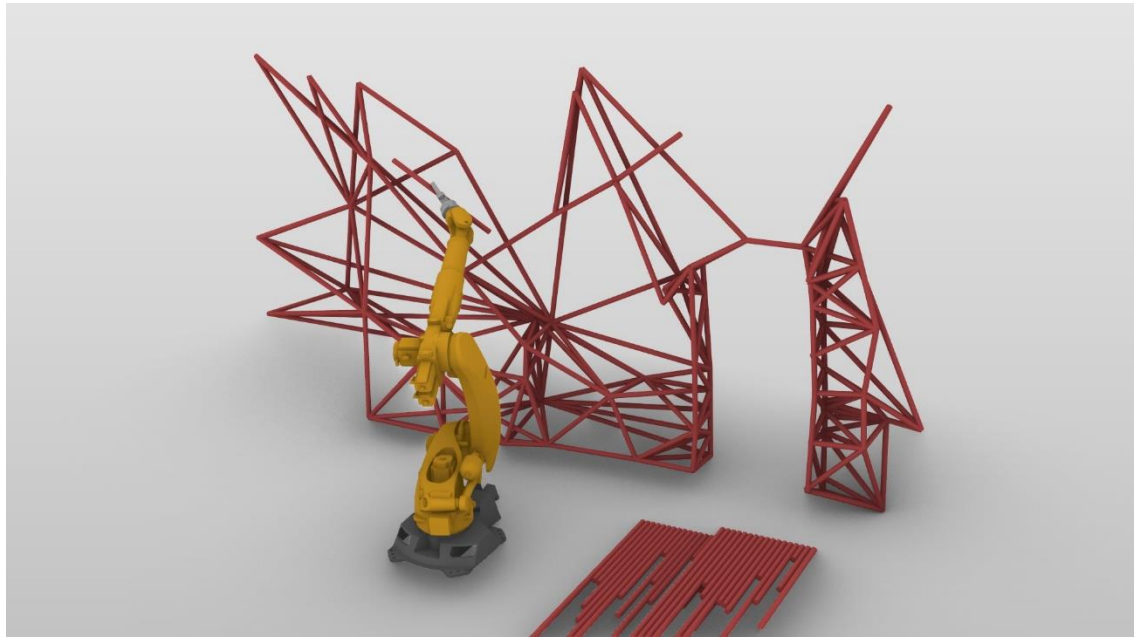

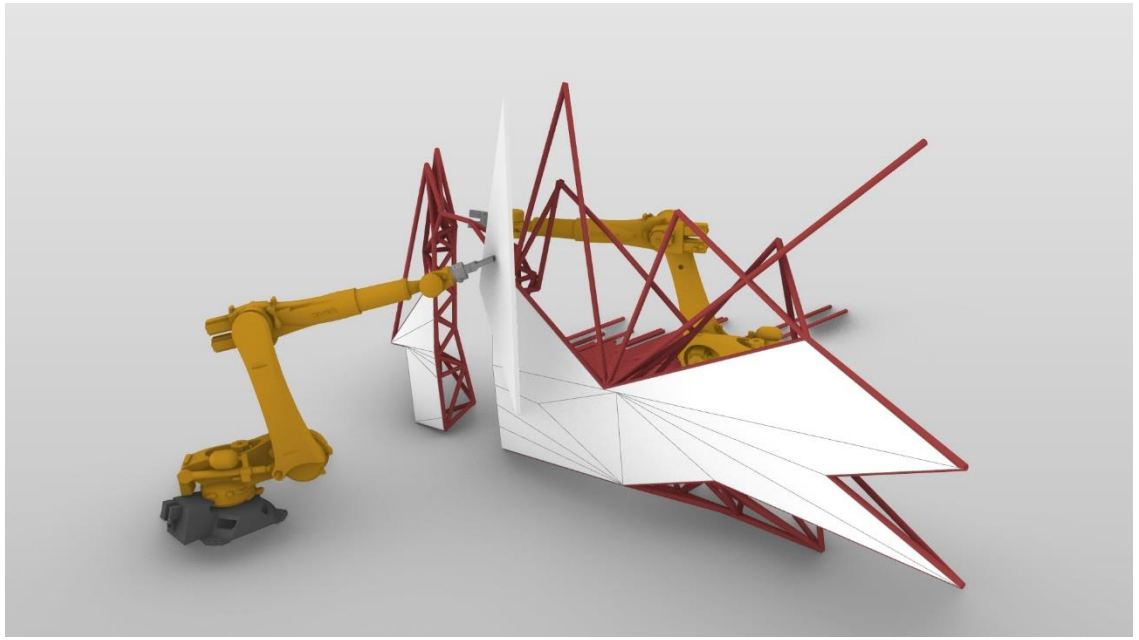

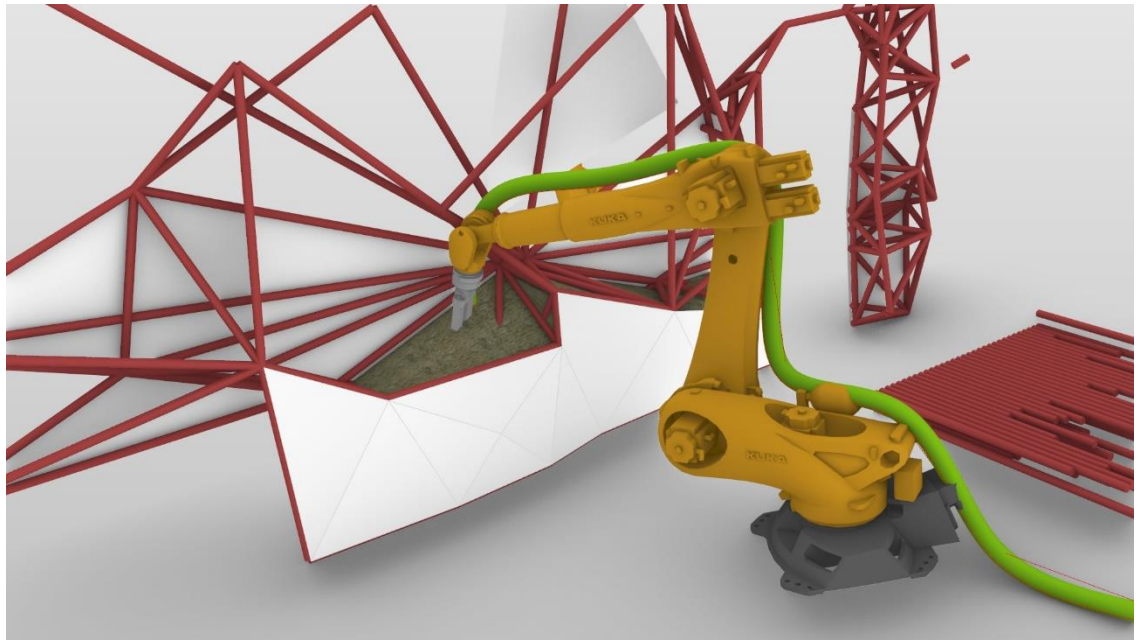

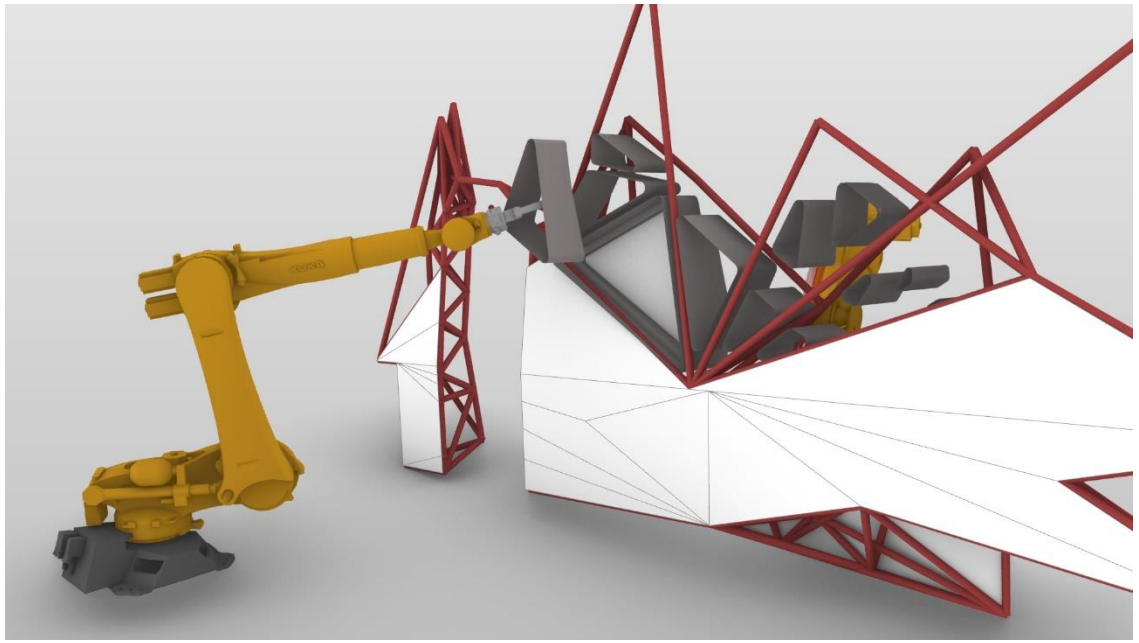

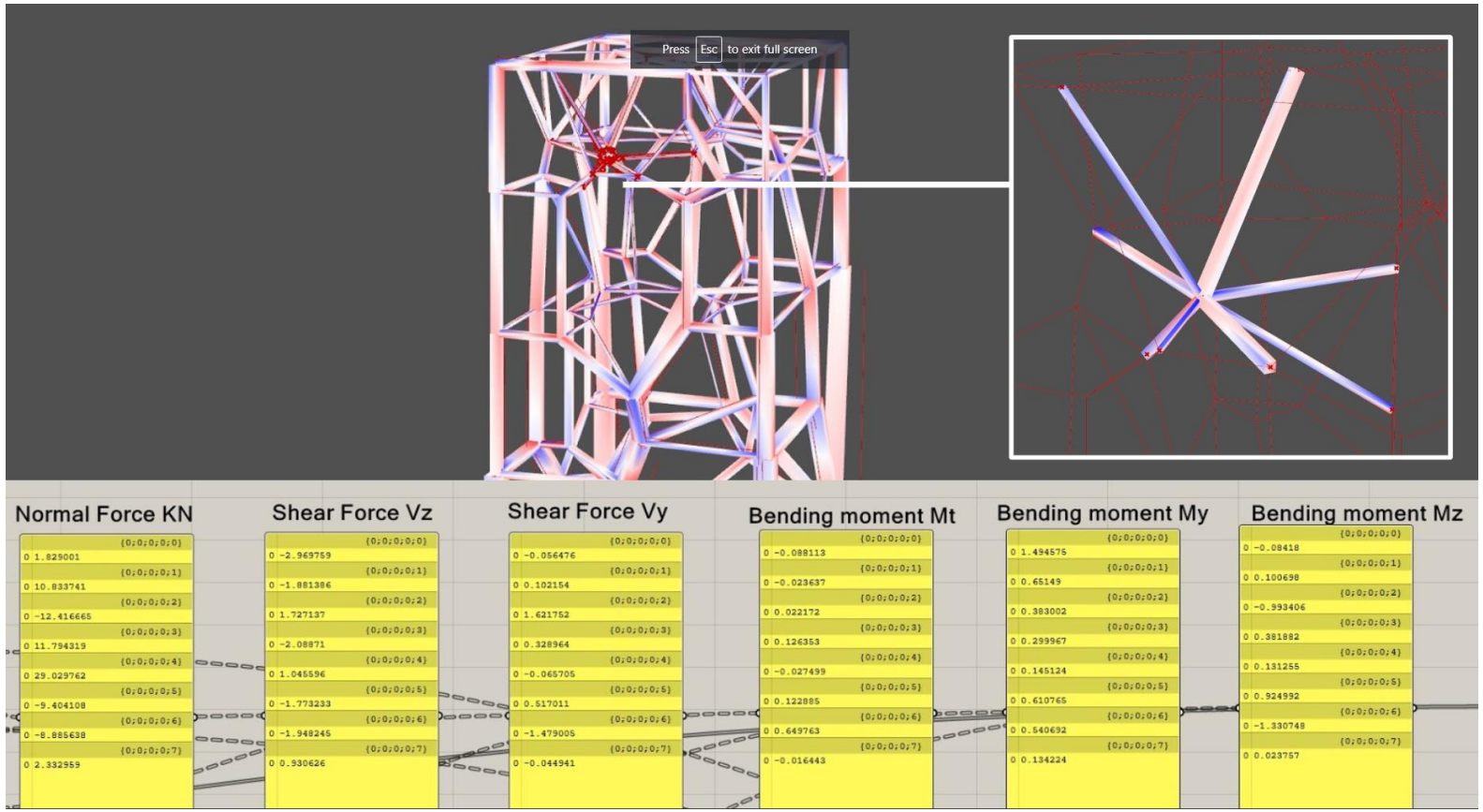
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Normal Force KN
Shear Force Vz
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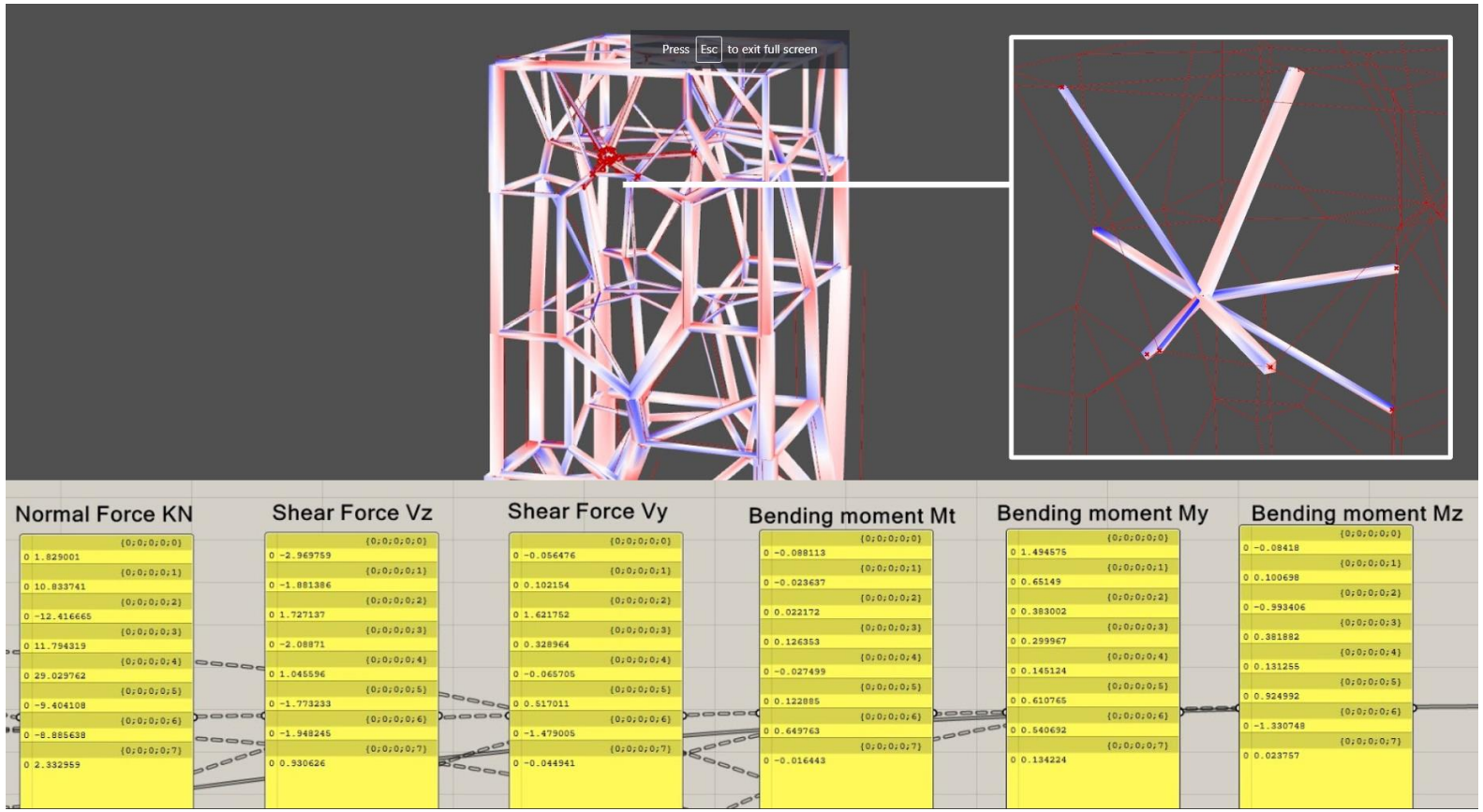
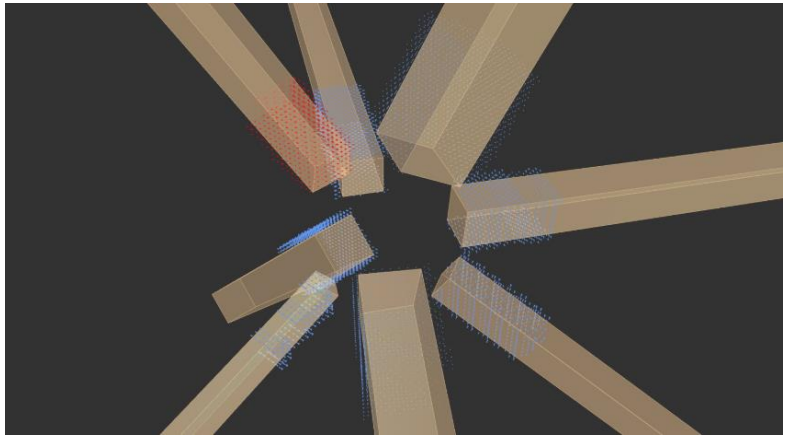
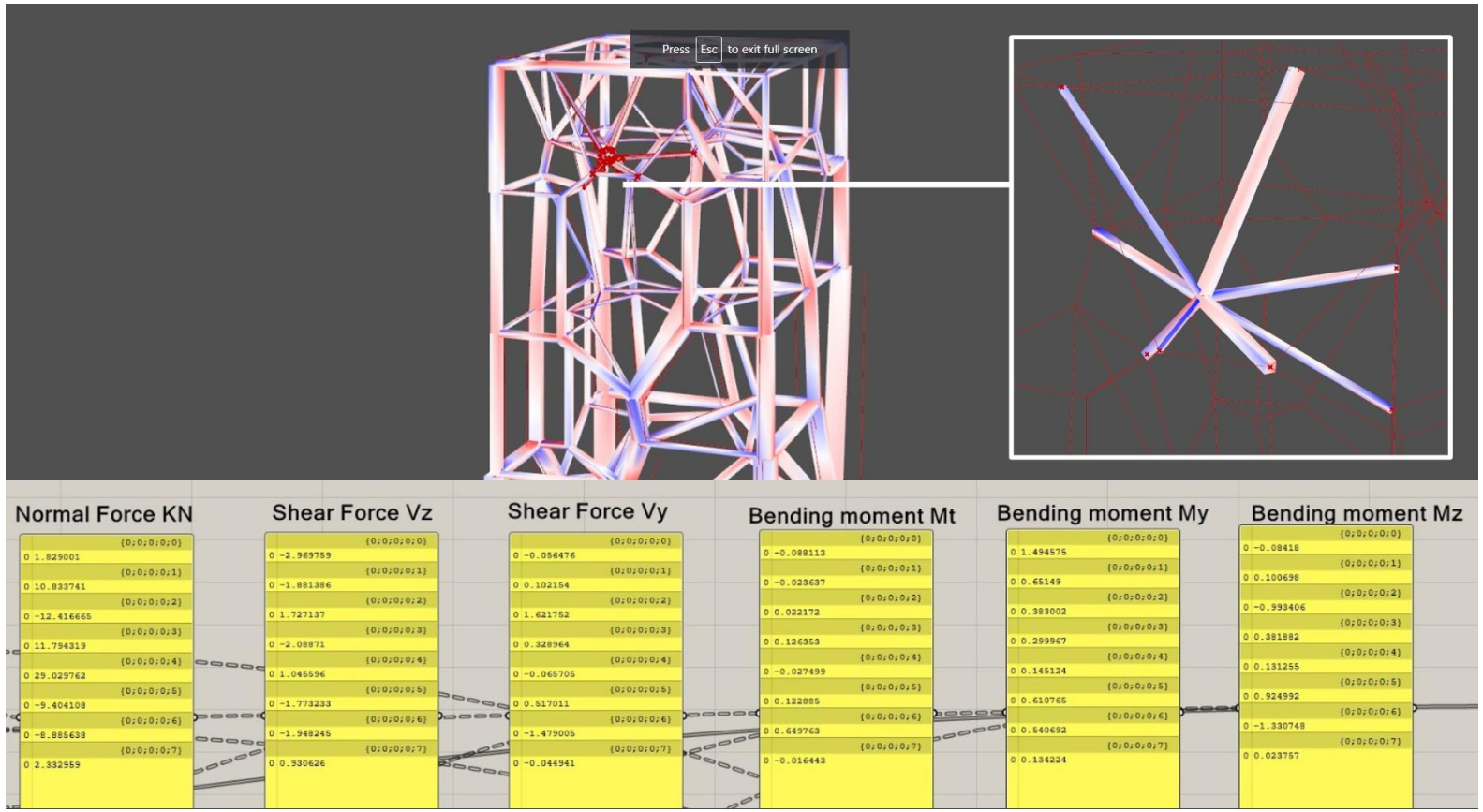
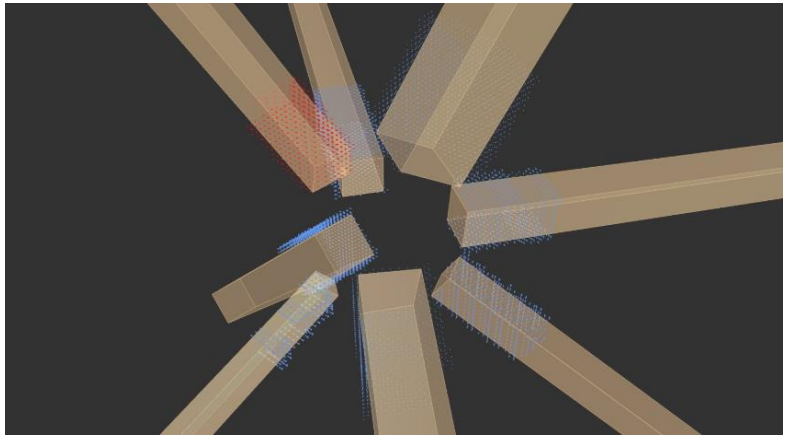
Bending moment Mt
Bending moment My
Bending moment Mz

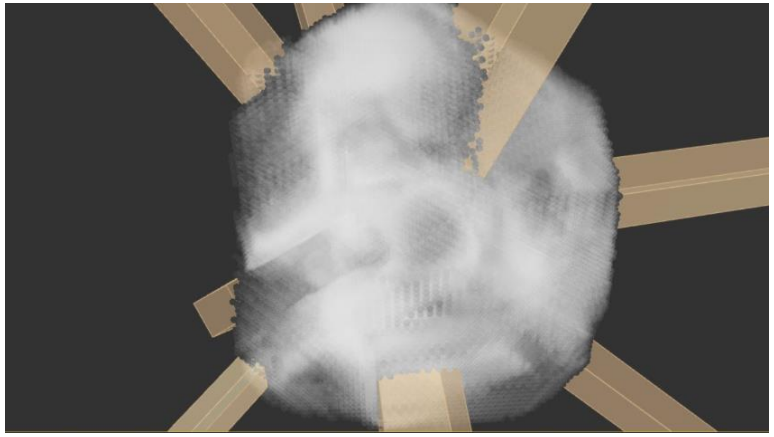




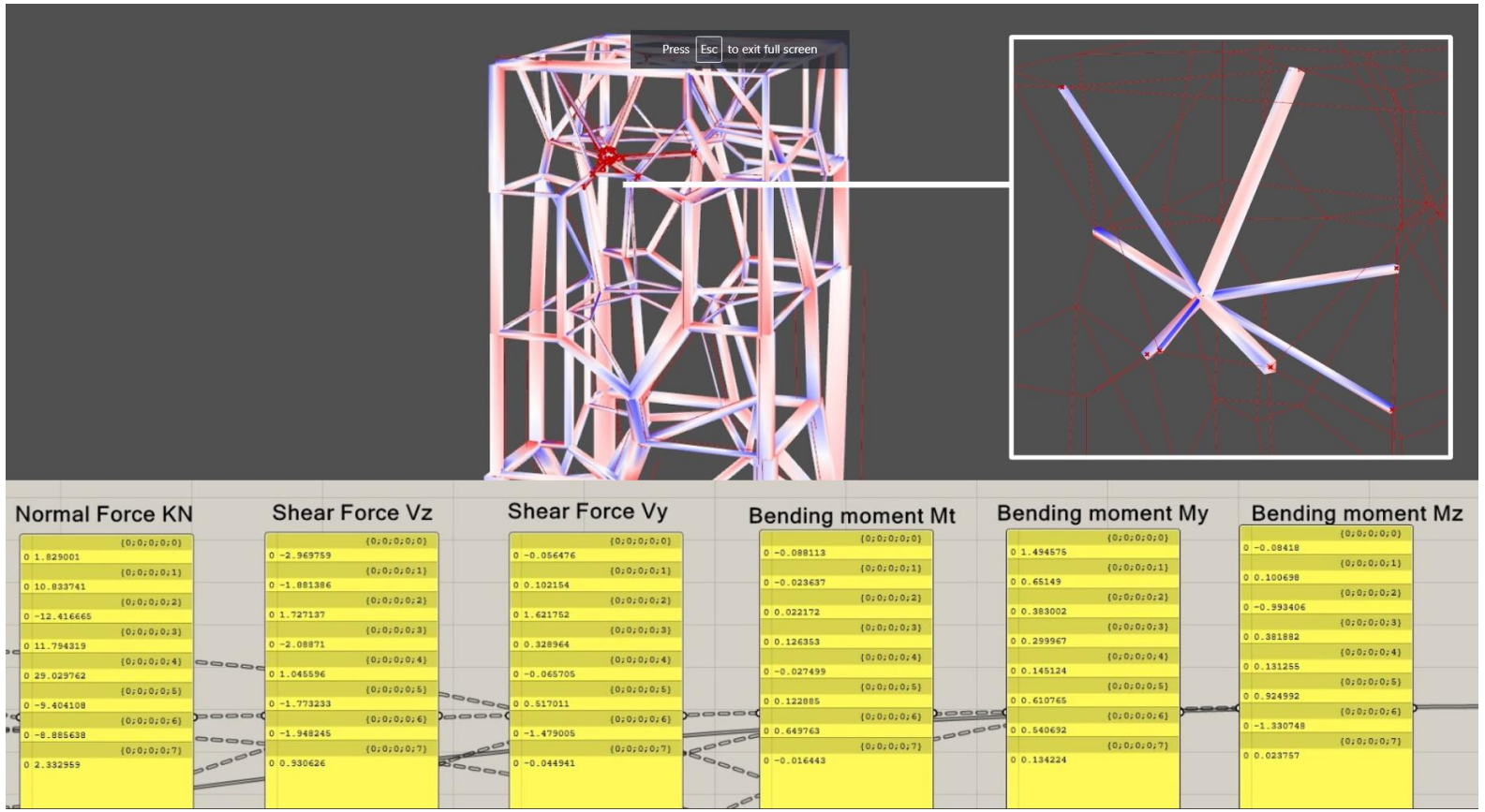
Credits: Ir. M. Latour

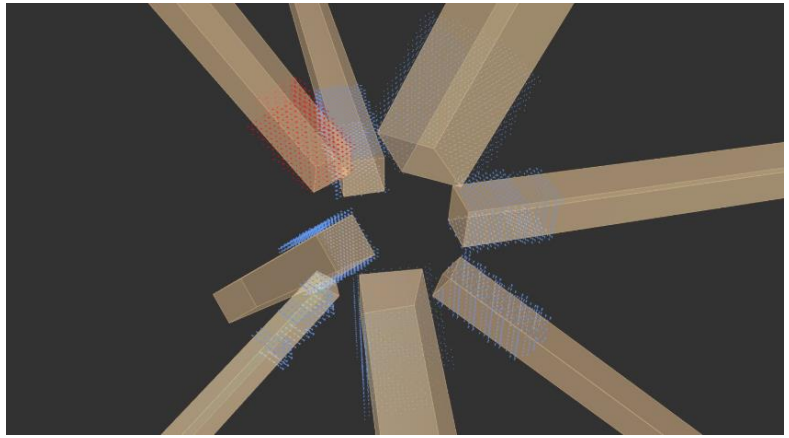


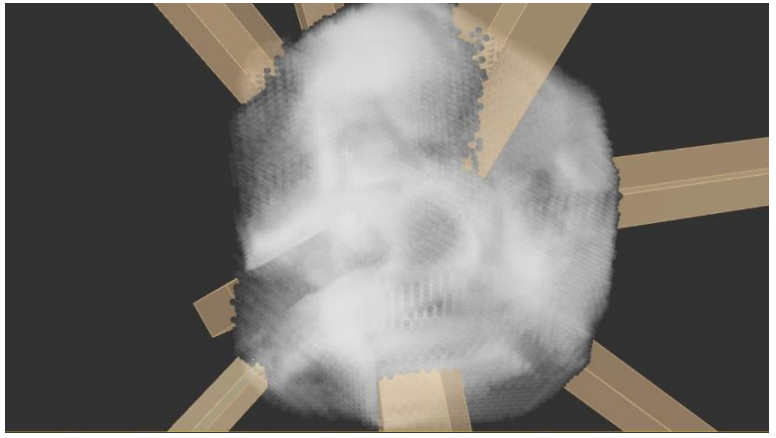


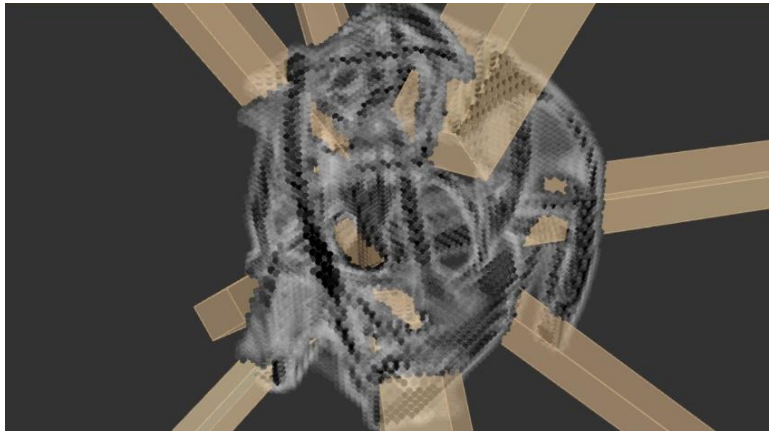


Credits: Ir. M. Latour

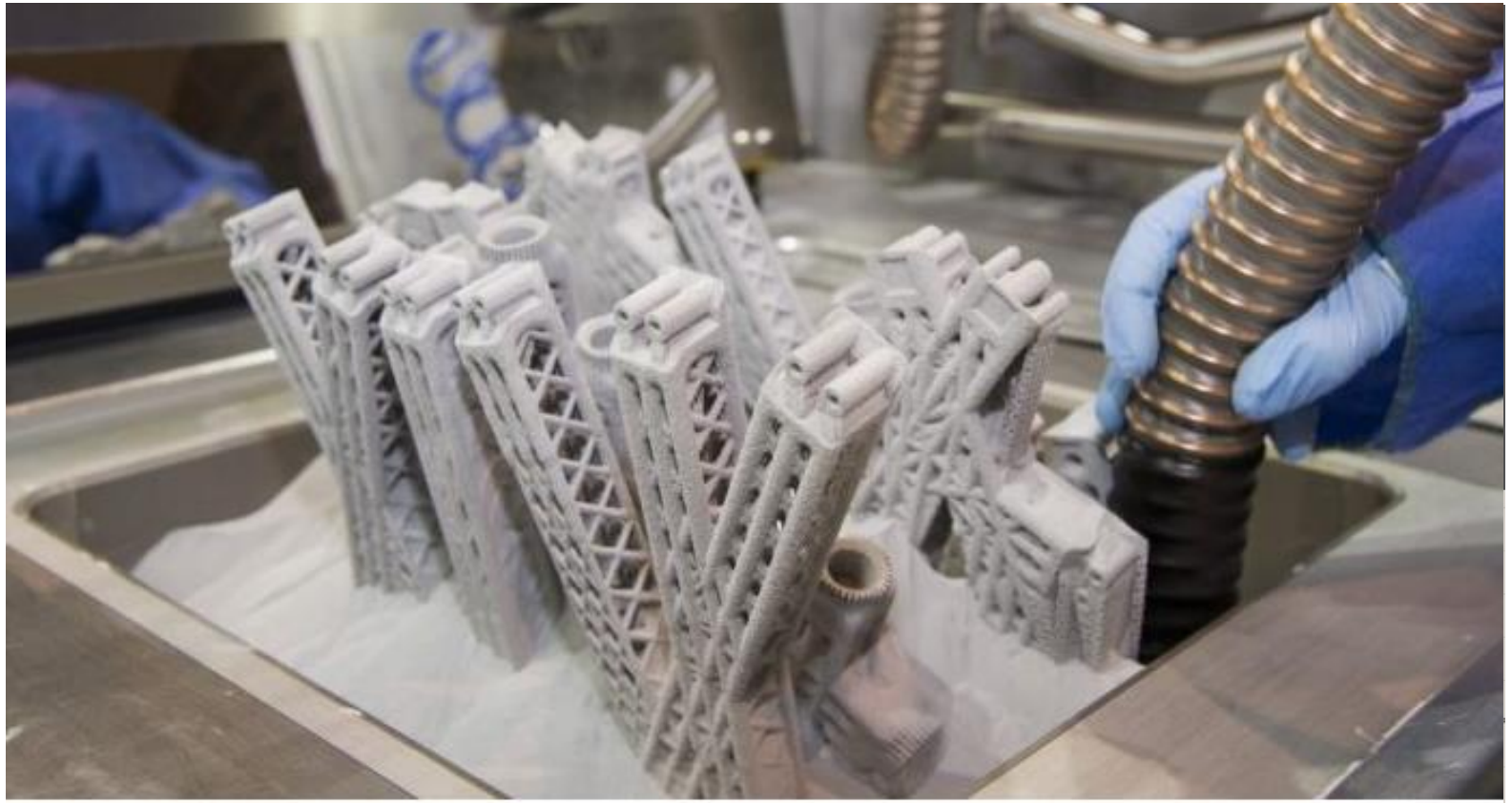




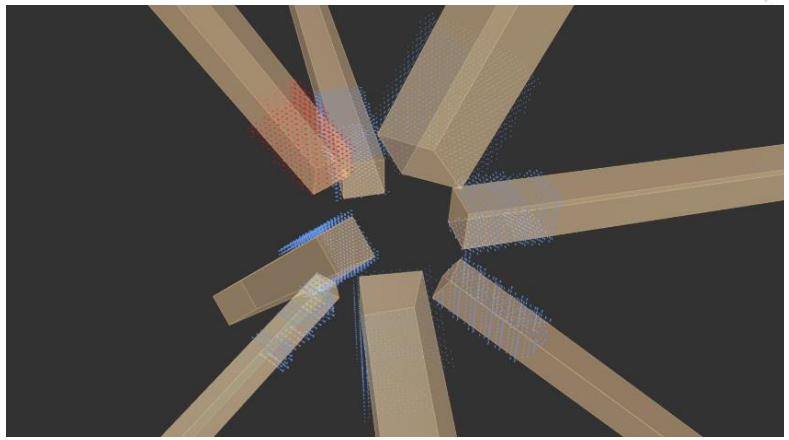


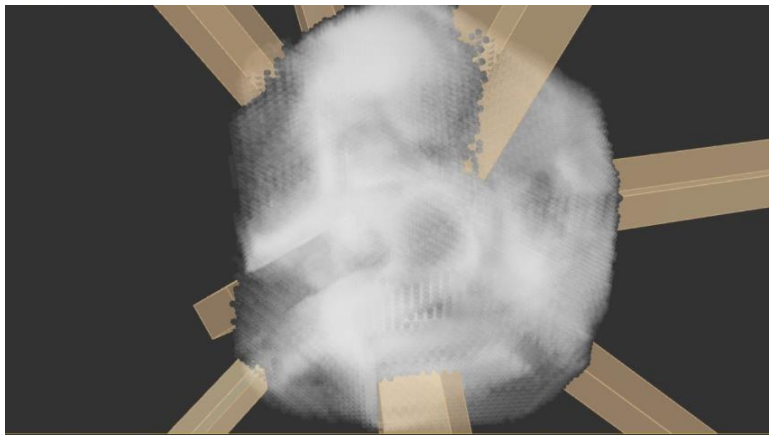


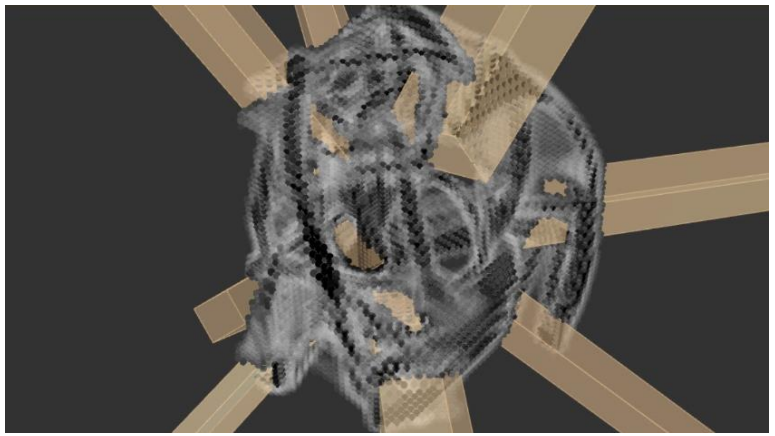
Credits: Ir. M. Latour



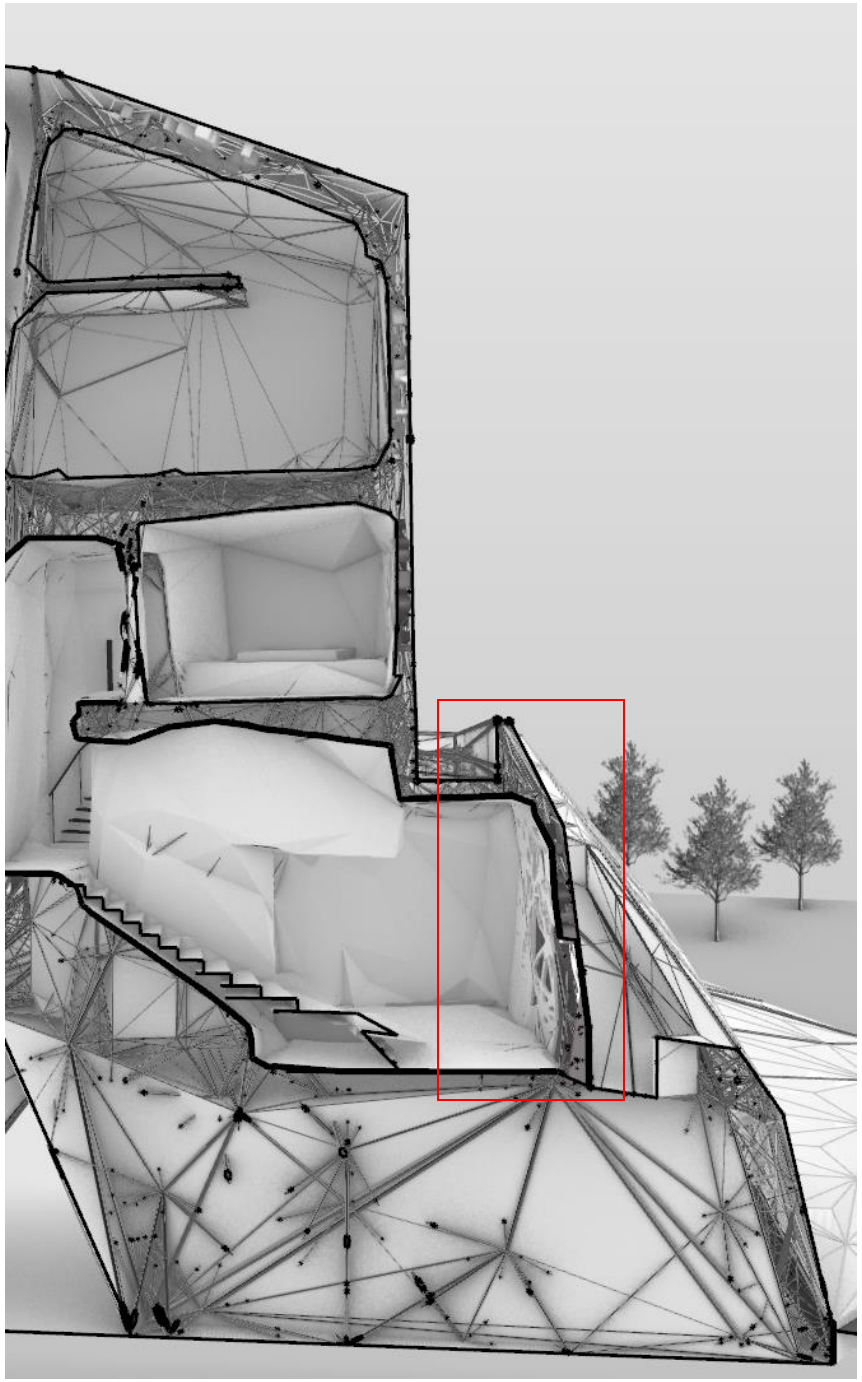
Metal 3D printed at Airbus

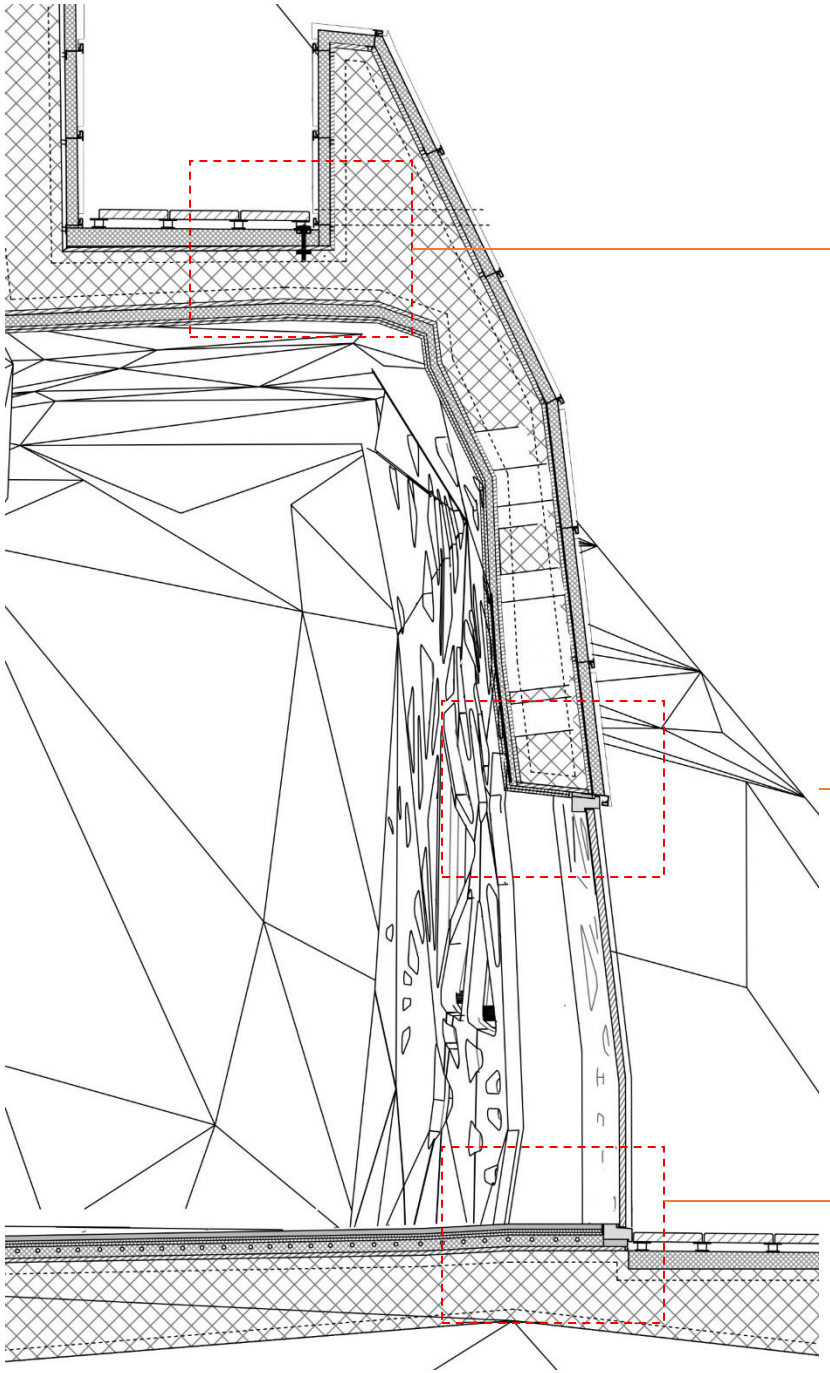


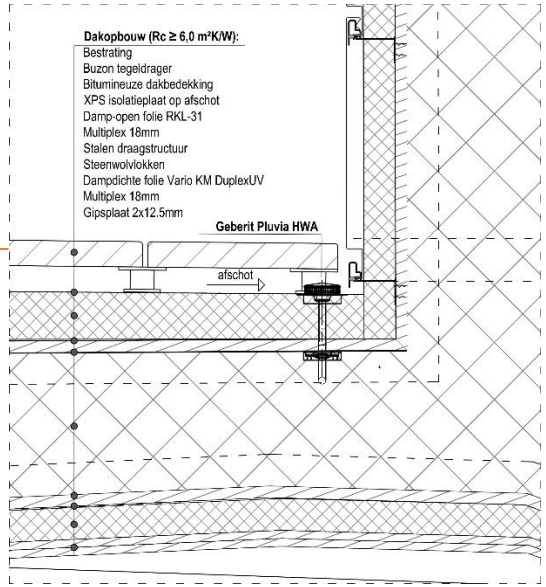


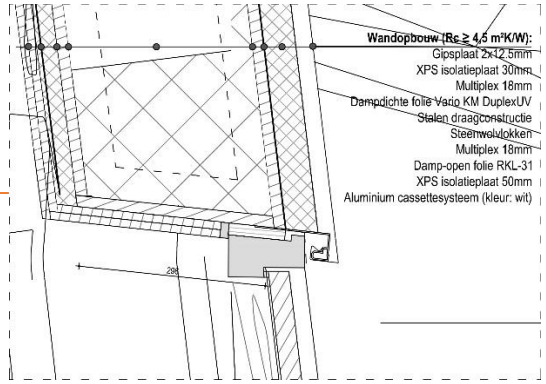


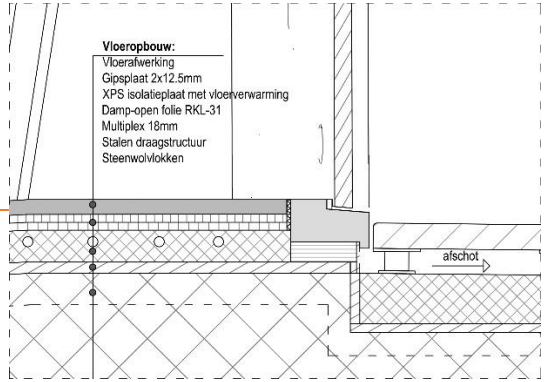
Credits: Ir. M. Latour

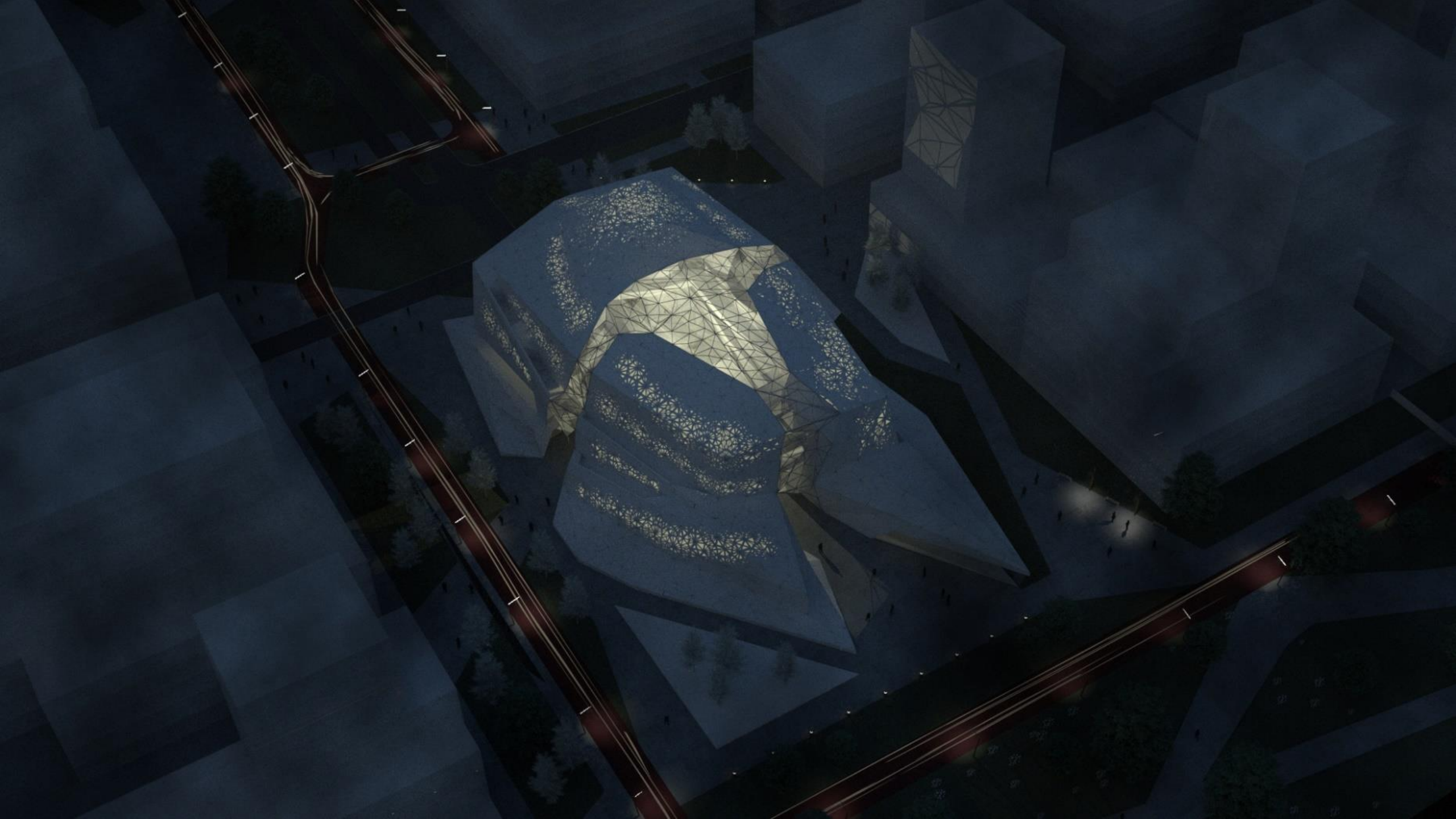


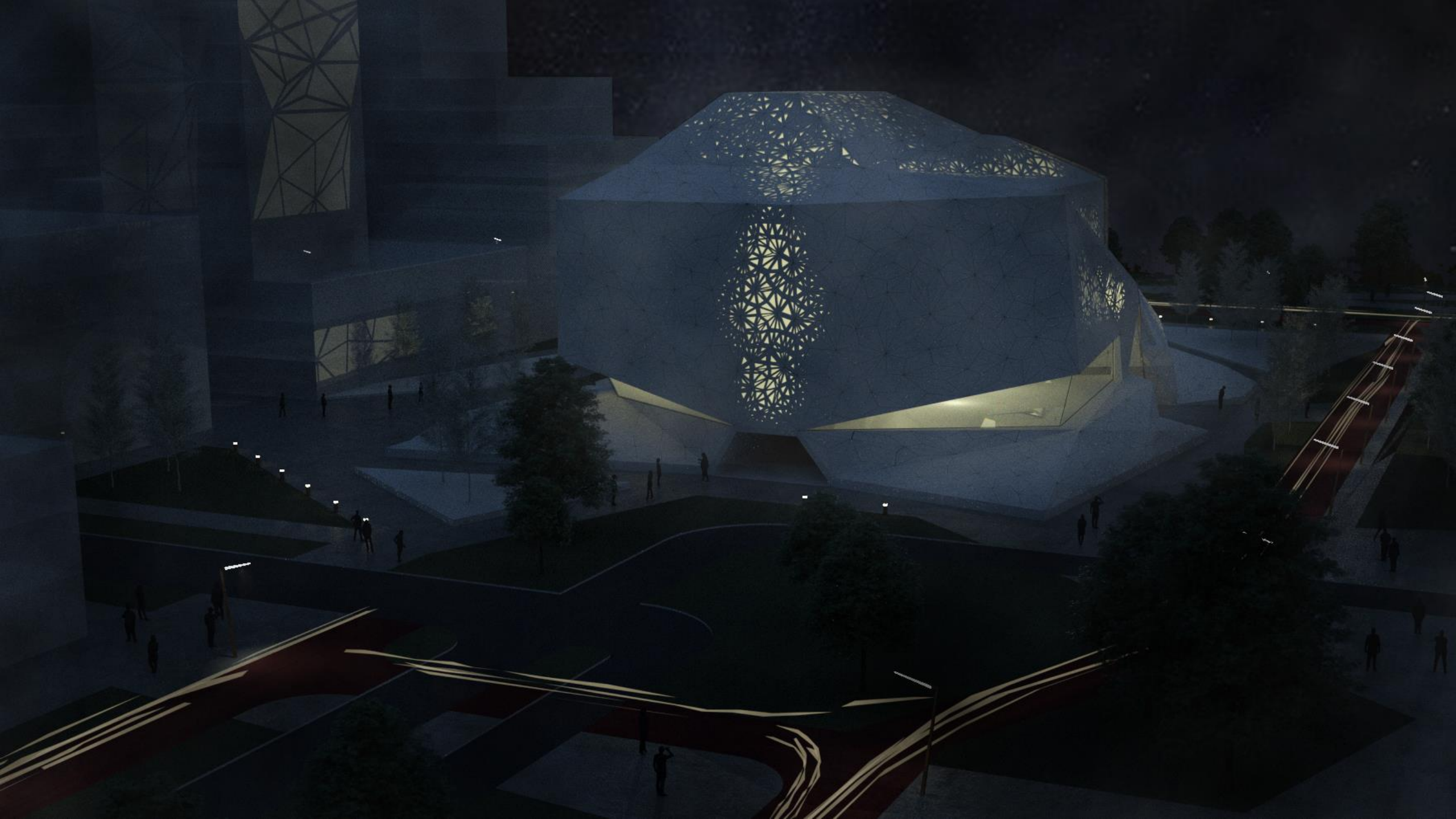


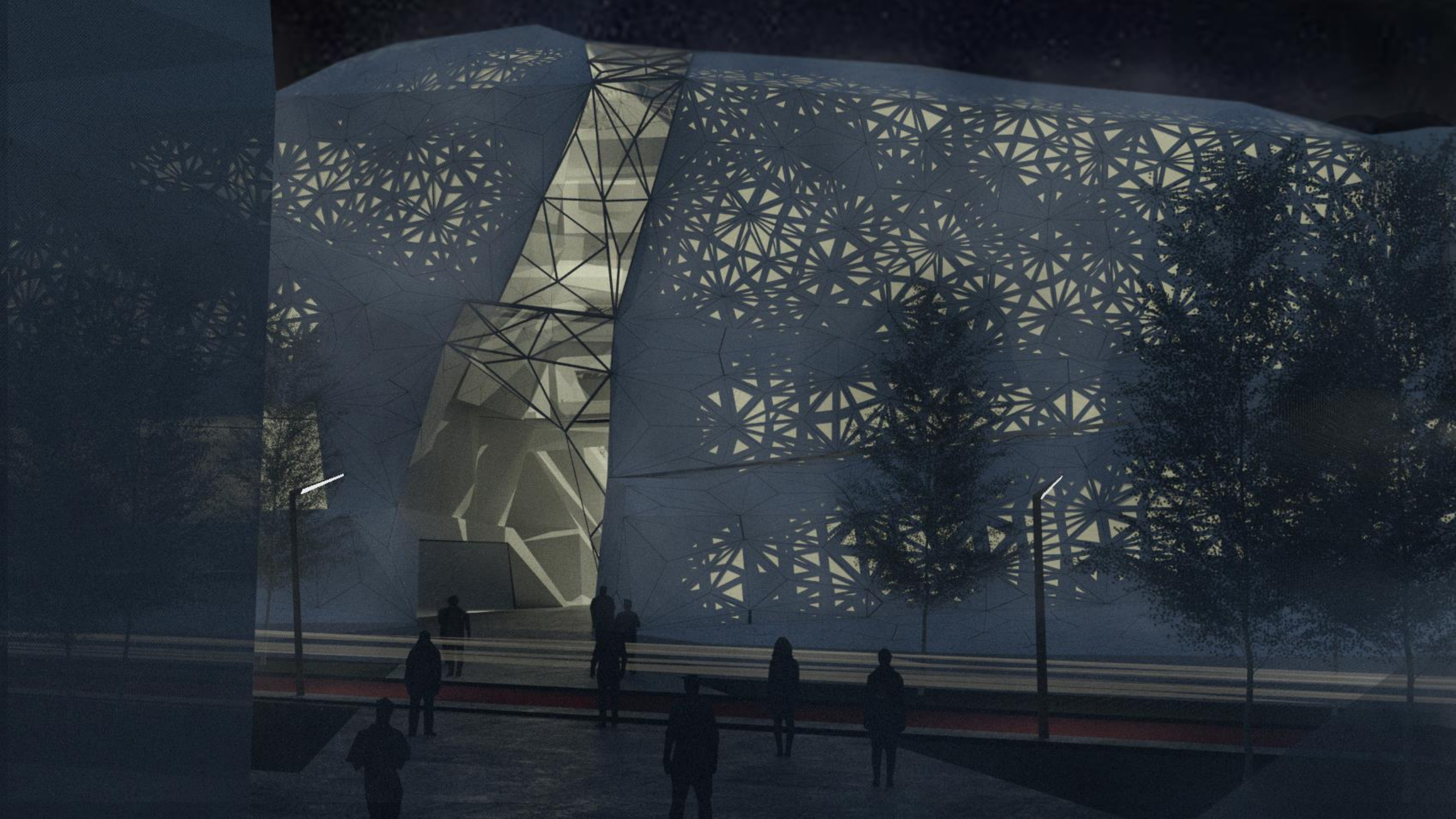

Dakopbouw (Rc ≥ 6,0 m²K/W):
Bestrating
Buzon tegeldrager
Bitumineuze dakbedekking
XPS isolatieplaat op afschot
Damp-open folie RKL-31
Multiplex 18mm
Stalen draagstructuur
Steenwolvlokken
Dampdichte folie Vario KM DuplexUV
Multiplex 18mm
Gipsplaat 2x12.5mm
Geberit Pluvia HWA
afschot

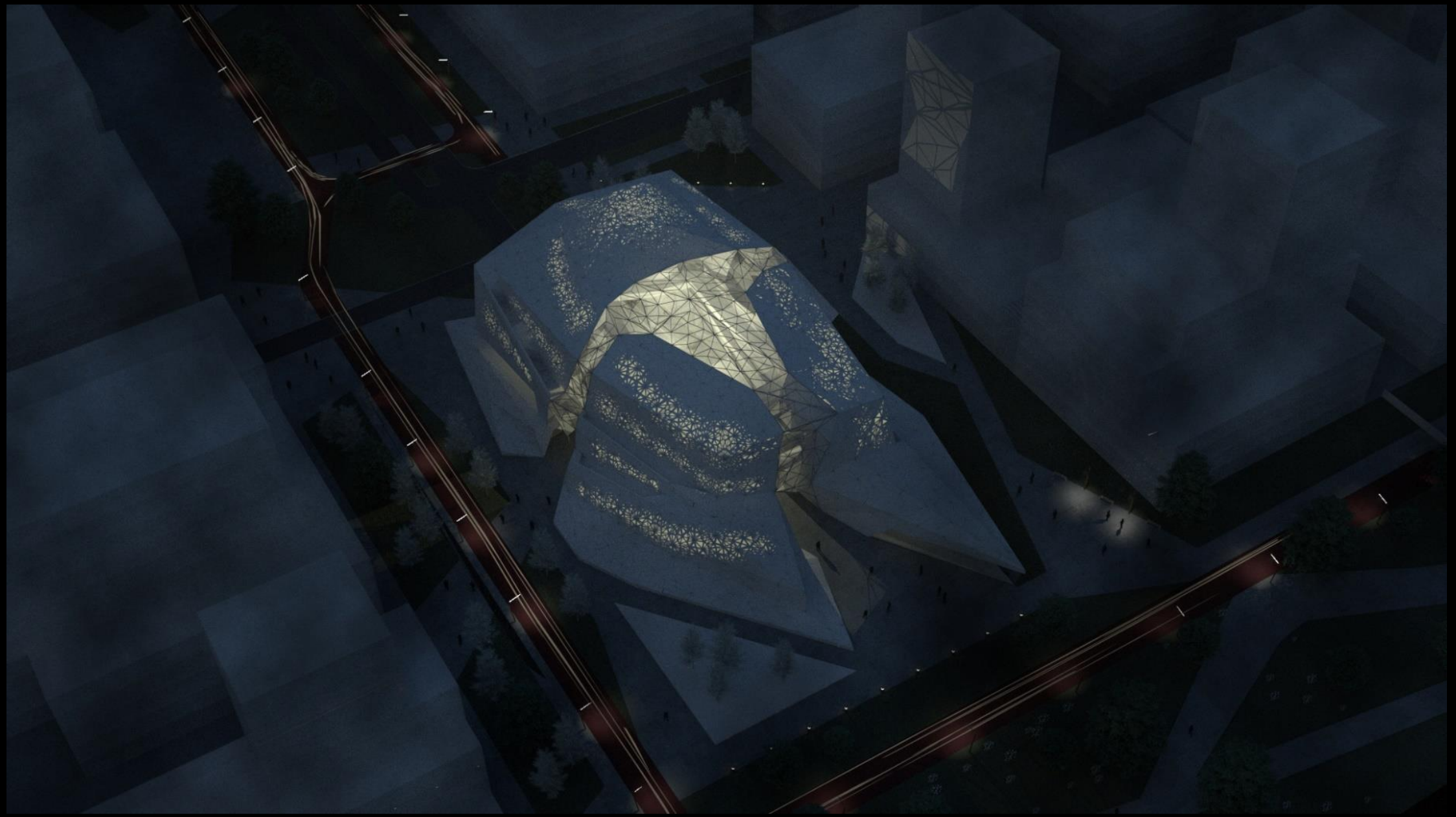

Wandopbouw (Rc ≥ 4,5 m²K/W):
Gipsplaat 2x12.5mm
XPS isolatieplaat 30mm
Multiplex 18mm
Dampdichte folie Vario KM DuplexUV
Stalen draagconstructie
Steenwolvlokken
Multiplex 18mm
Damp-open folie RKL-31
XPS isolatieplaat 50mm
Aluminium cassettesysteem (kleur: wit)


Vloeropbouw:
Vloerafwerking
Gipsplaat 2x12.5mm
XPS isolatieplaat met vloerverwarming
Damp-open folie RKL-31
Multiplex 18mm
Stalen draagstructuur
Steenwolvlokken
afschot









FIN