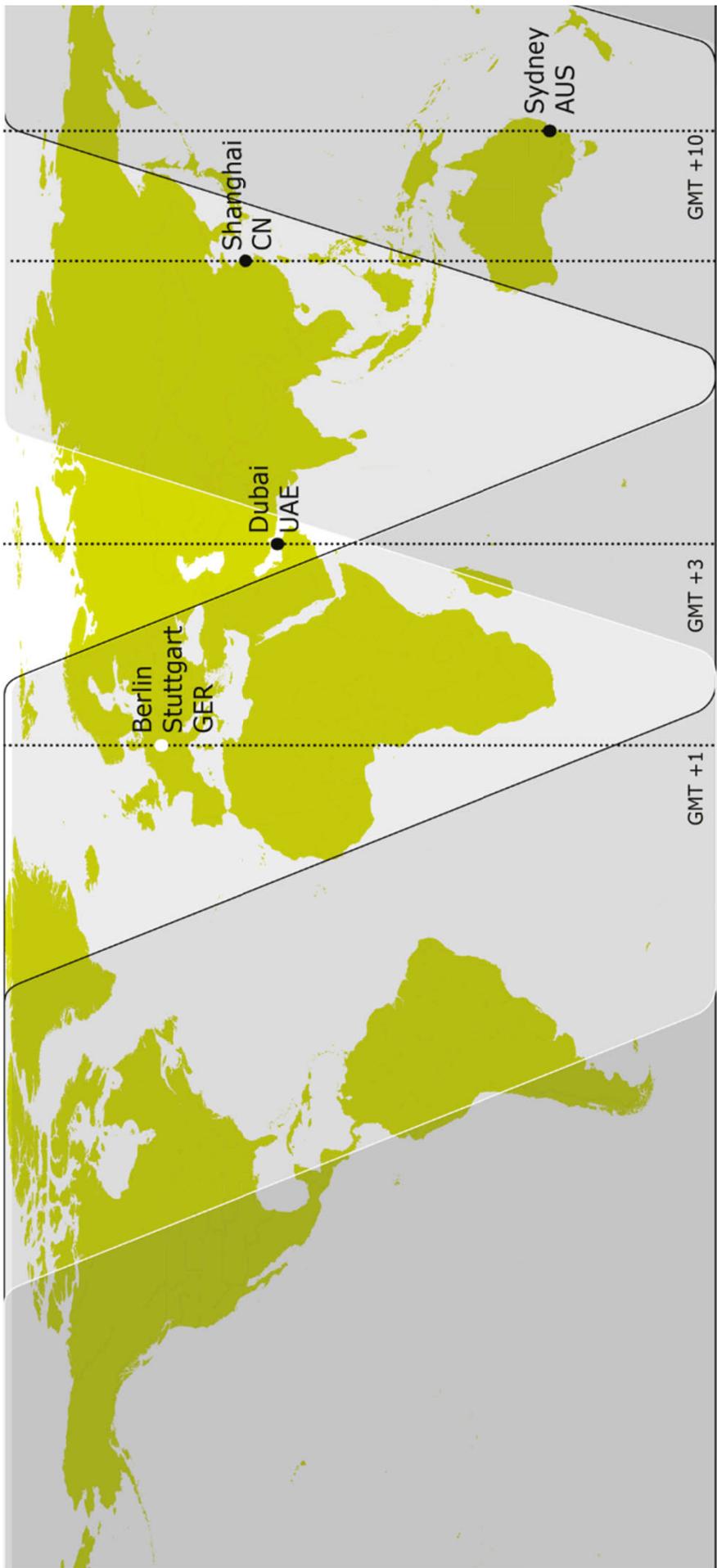


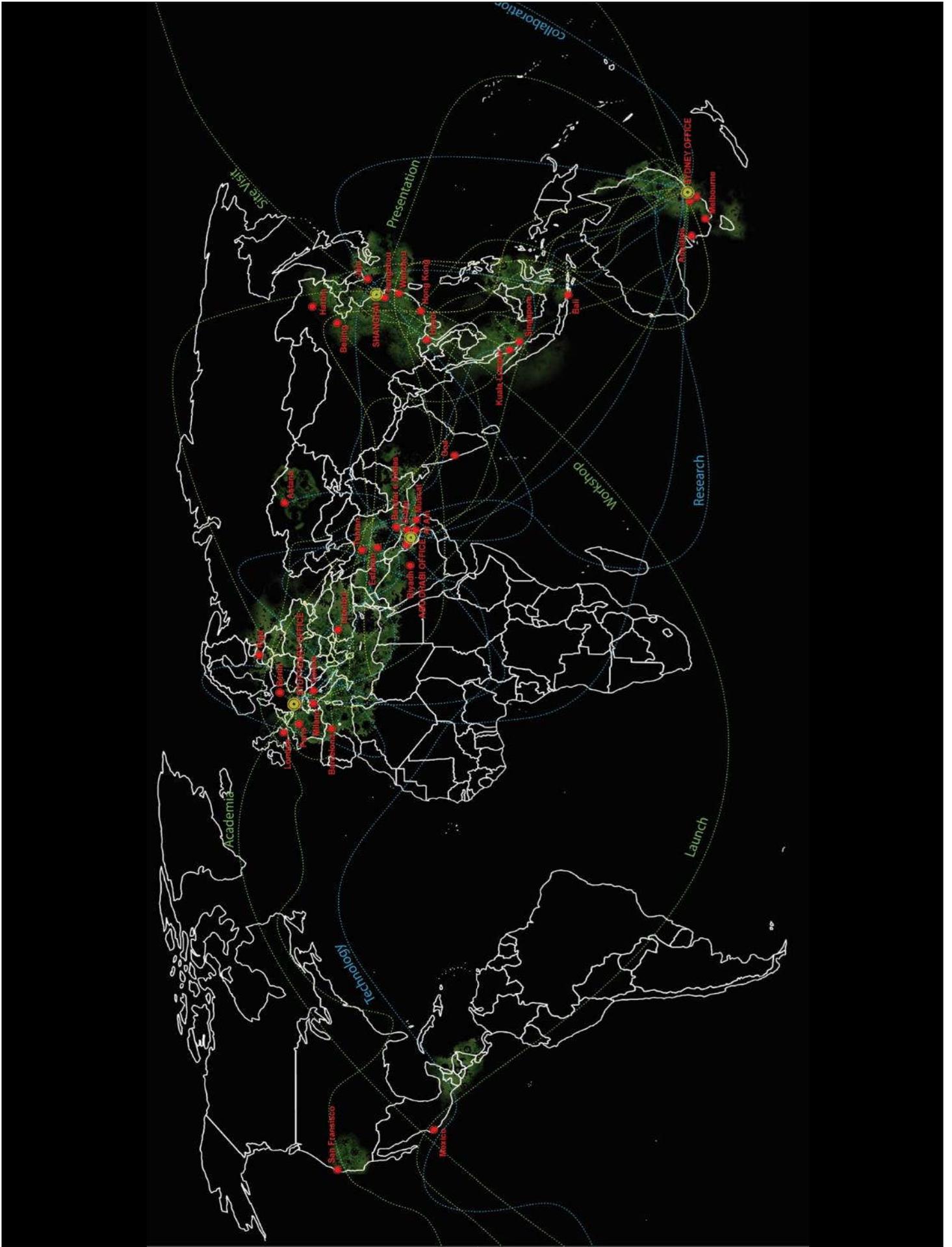
LAVA
LABORATORY FOR
VISIONARY
ARCHITECTURE

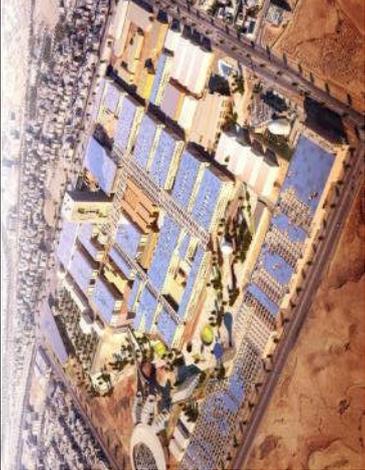
674. Schleswig-Holsteinisches Baugespräch
Die Digitale Zukunft des Bauens

DIGITAL DESIGN CHAIN

Dipl. Ing. Arch. Christian Tschersich
Senior Architect LAVA



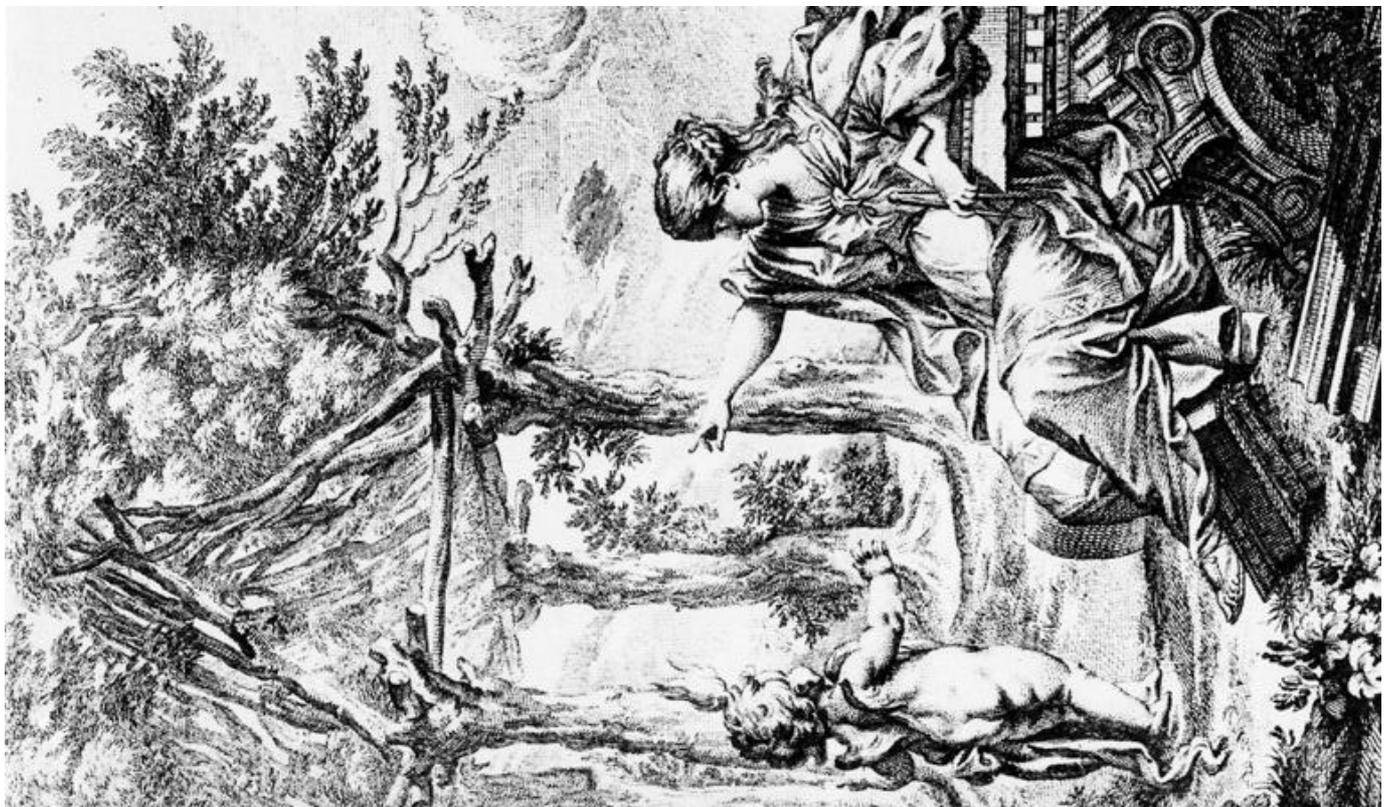
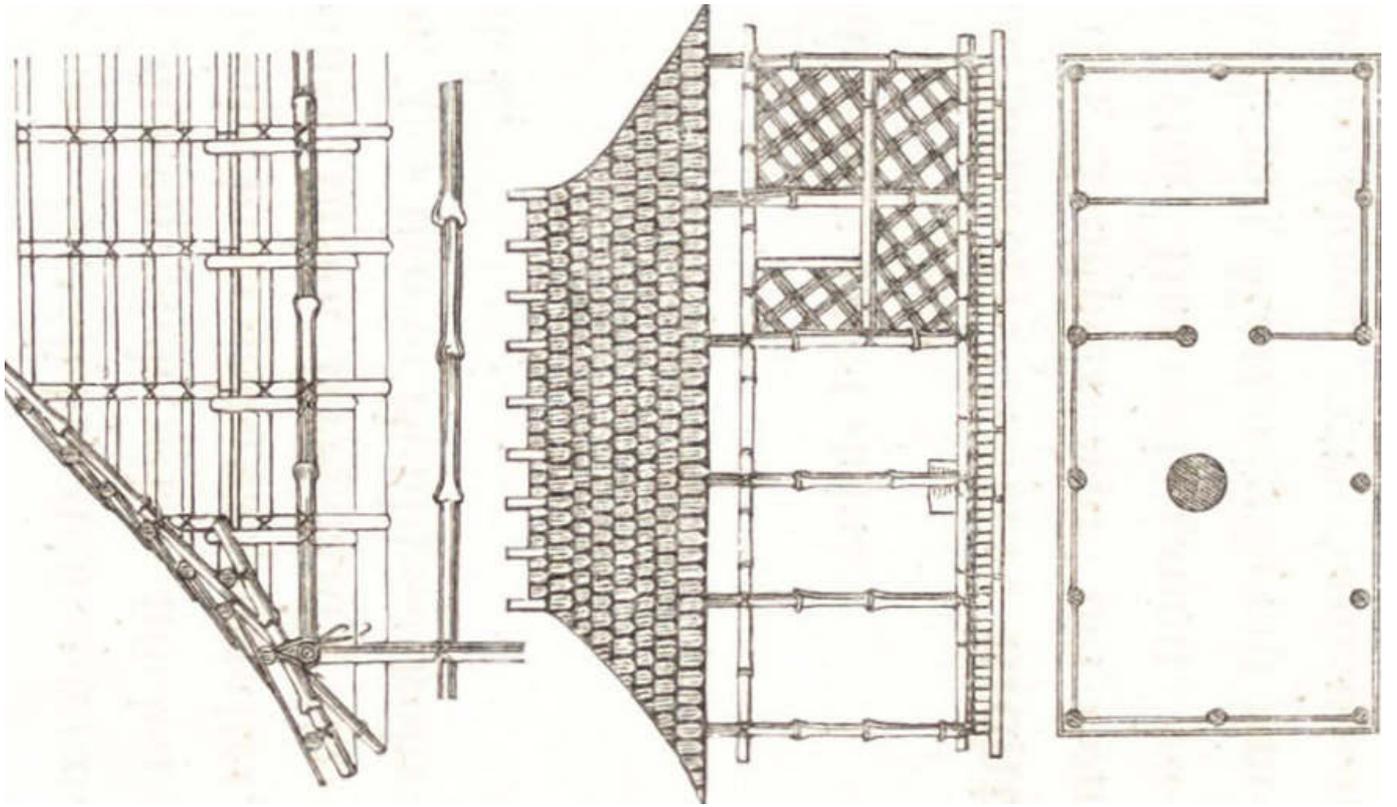


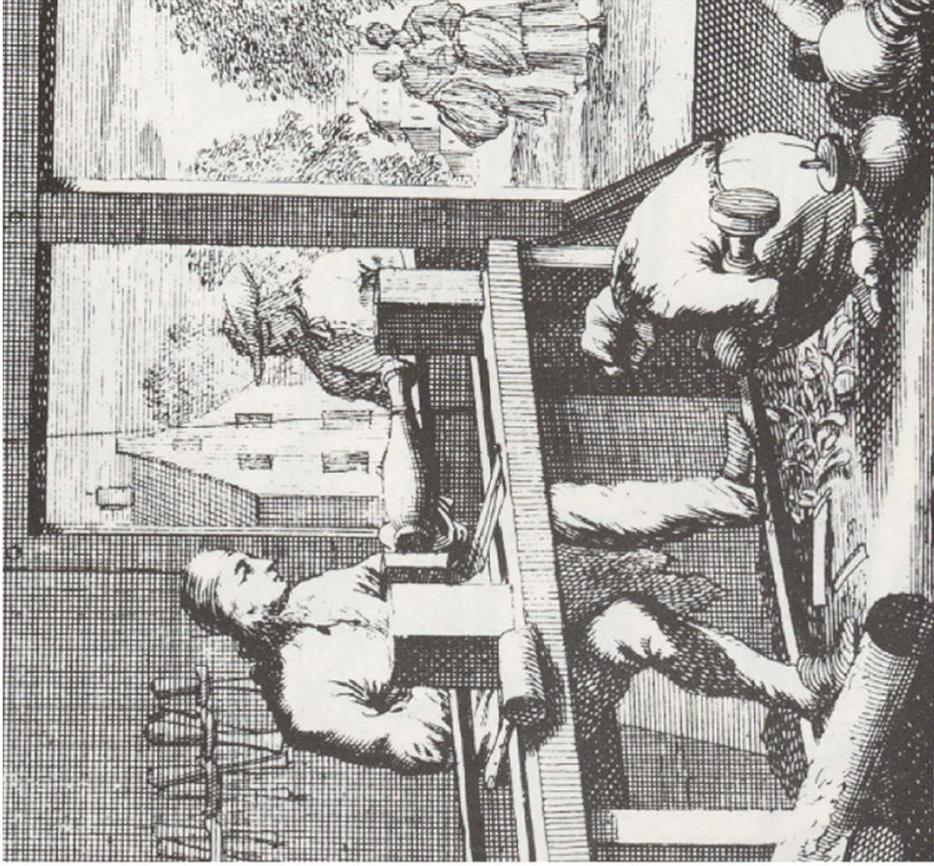


LAVA
LABORATORY FOR
VISIONARY
ARCHITECTURE

MAN – NATURE - TECHNOLOGY



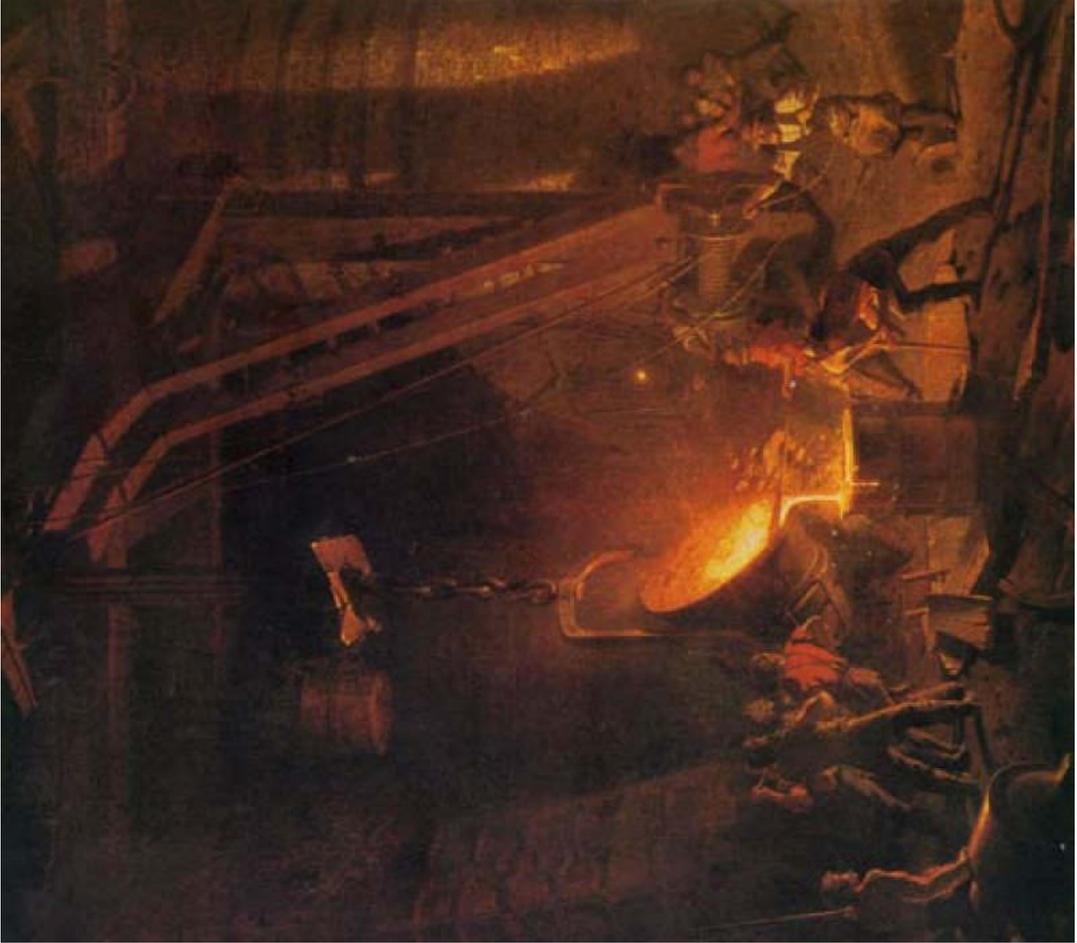
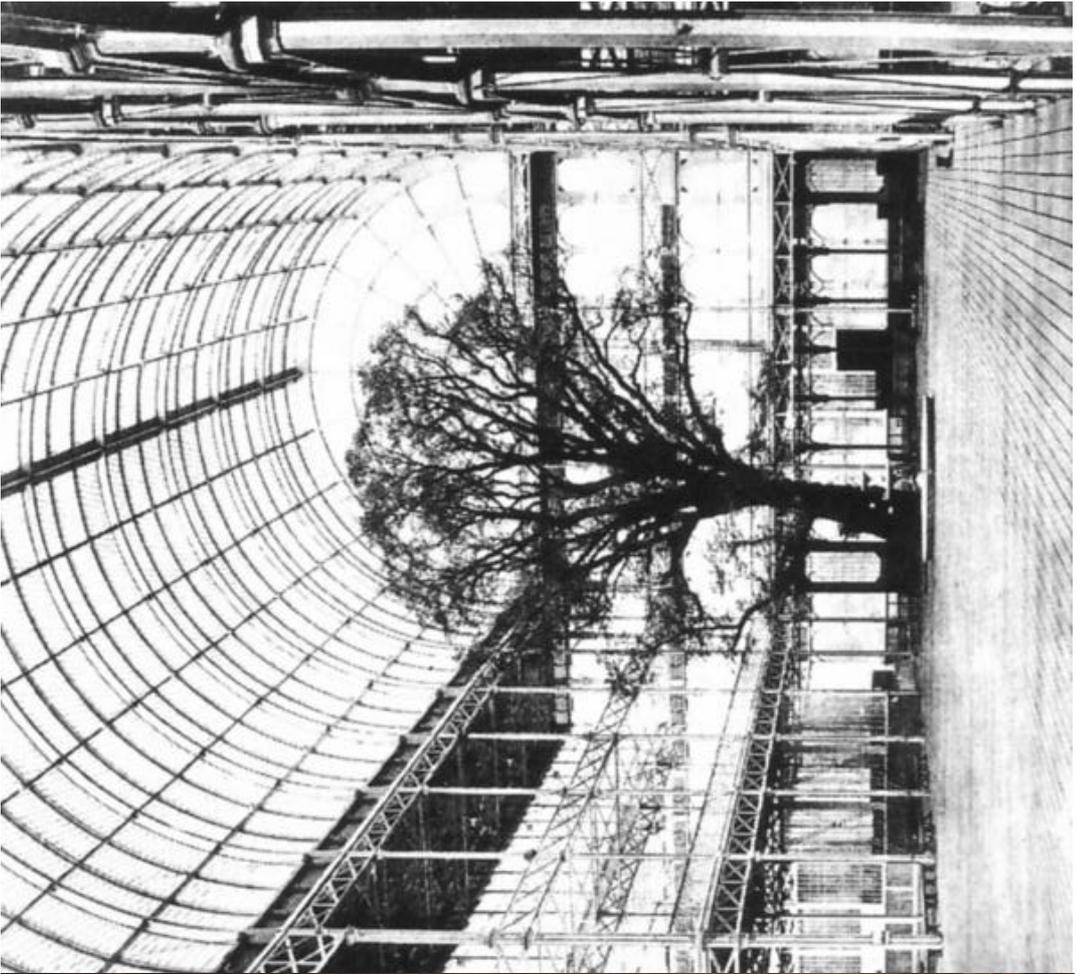




Drechsler / Christoff Weigel . Abbild und Beschreibung der Gemein-Nützlichen Haupt-Stände / 1698



Francesco Borromini / Sant'Ivo alla Sapienza . Rom / 1642





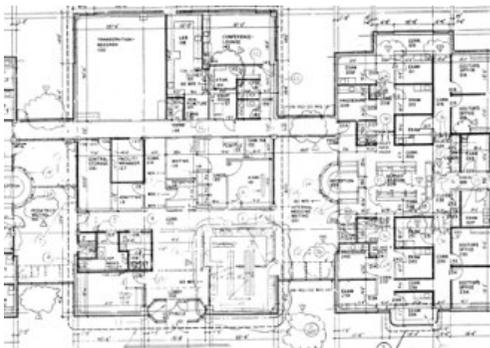
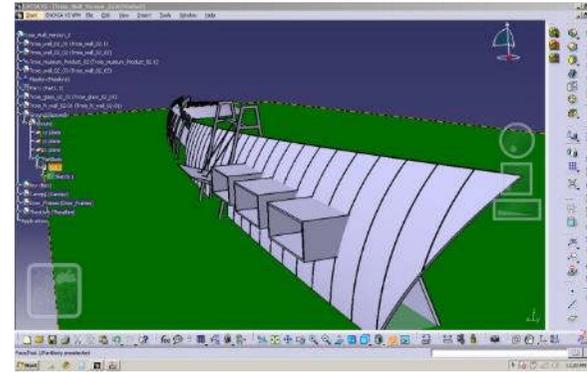
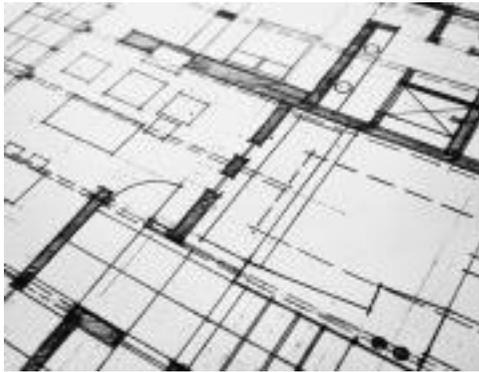


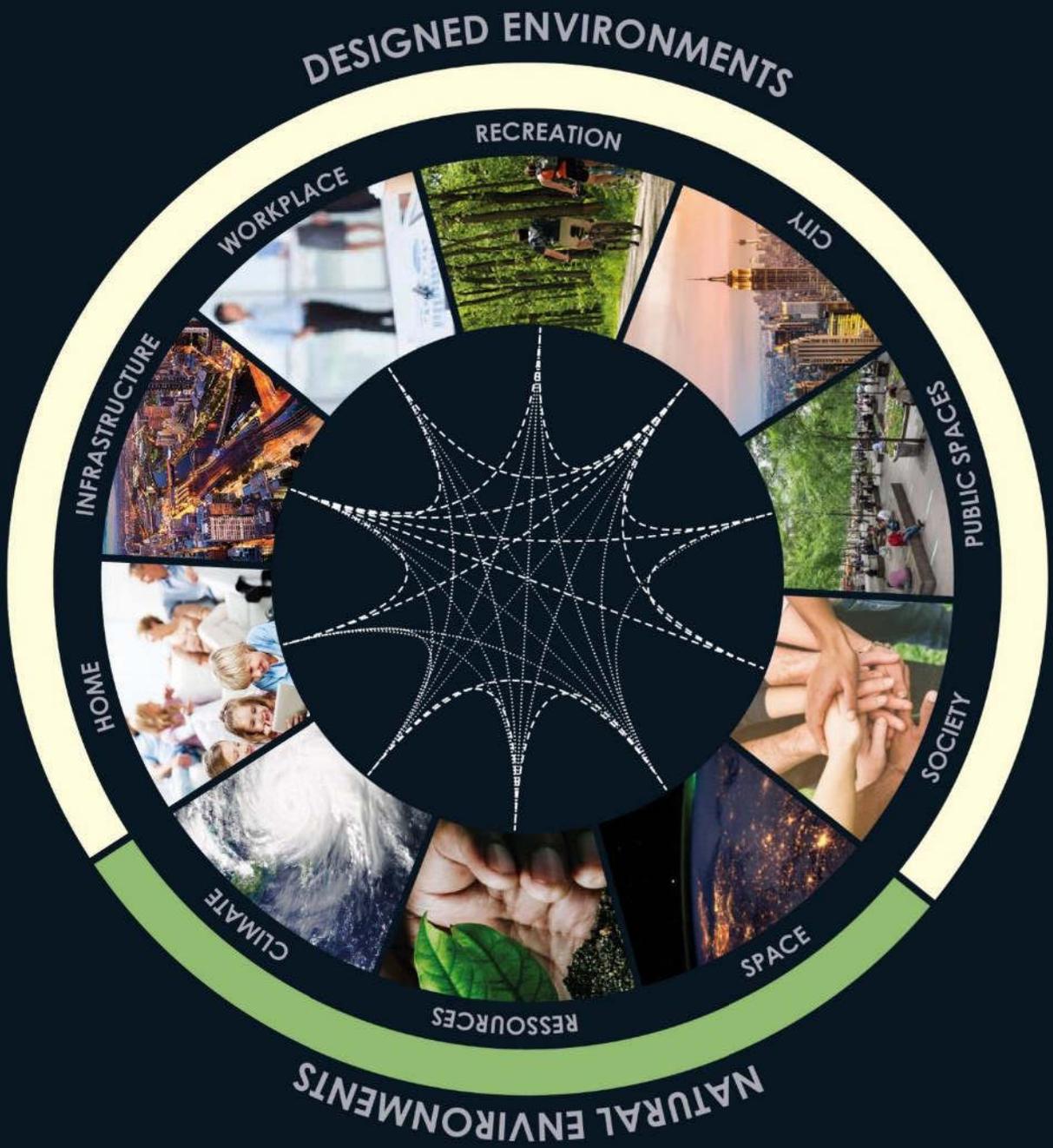
ALEXANDER MC QUEEN, 1999

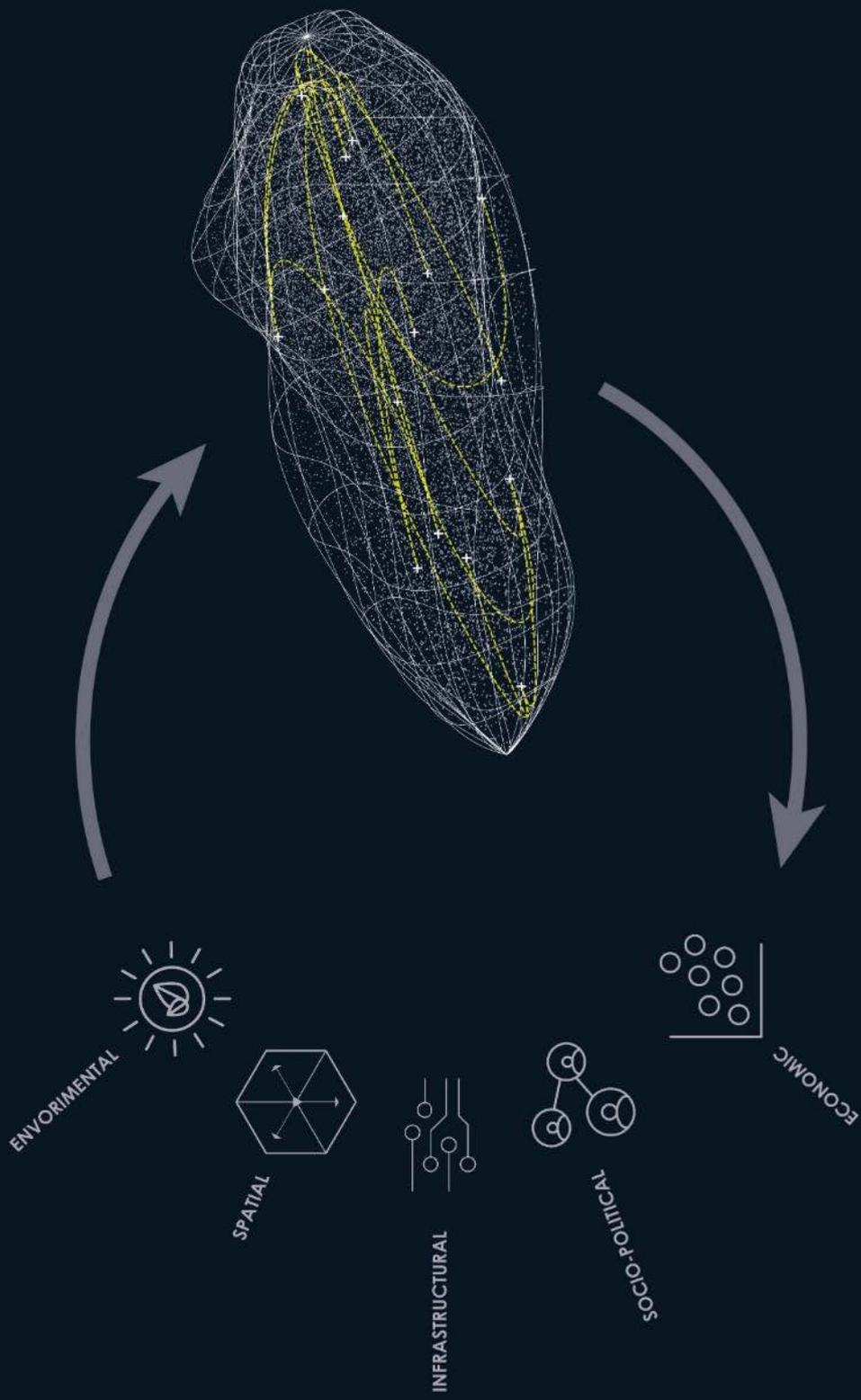
computerisation

vs

computation





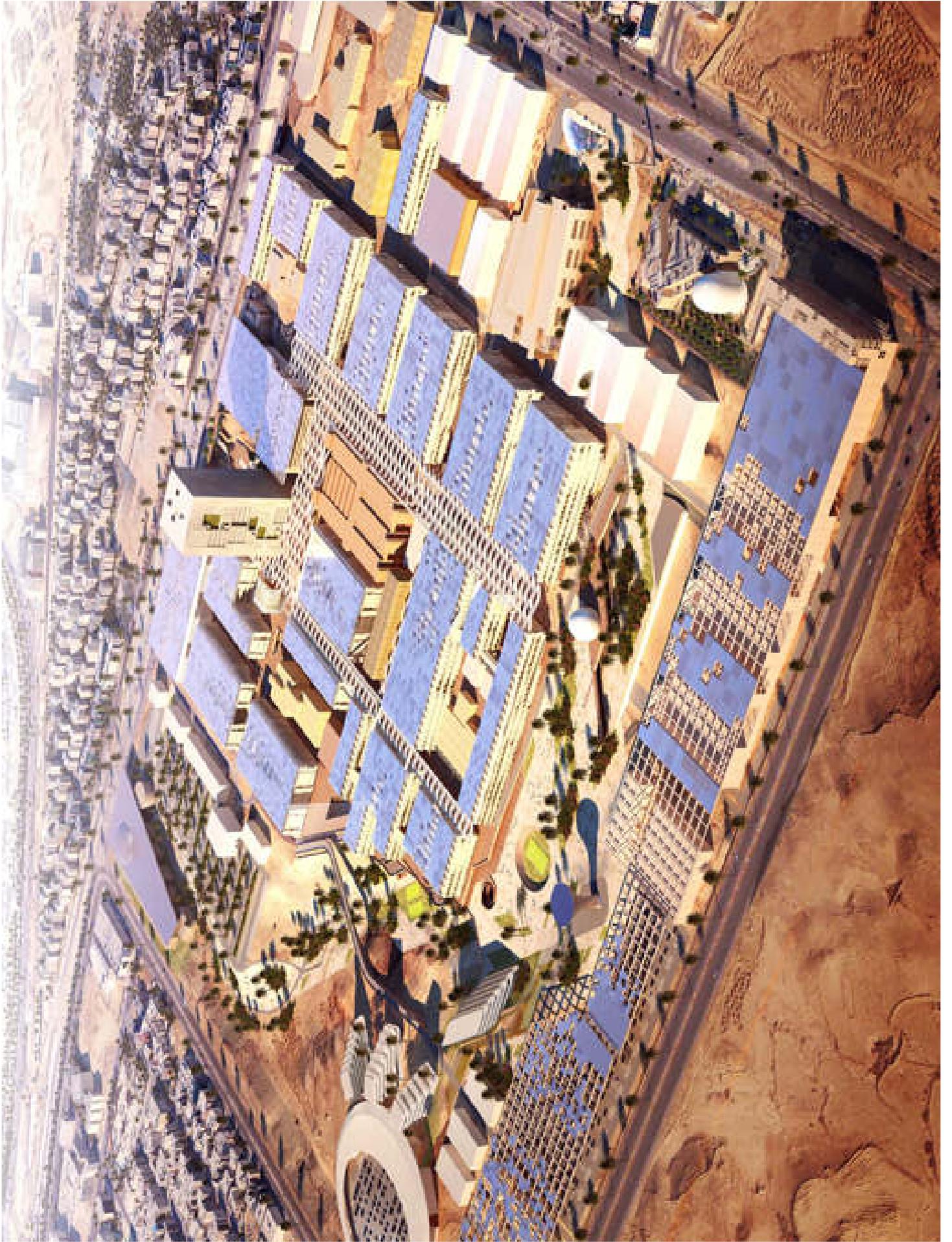


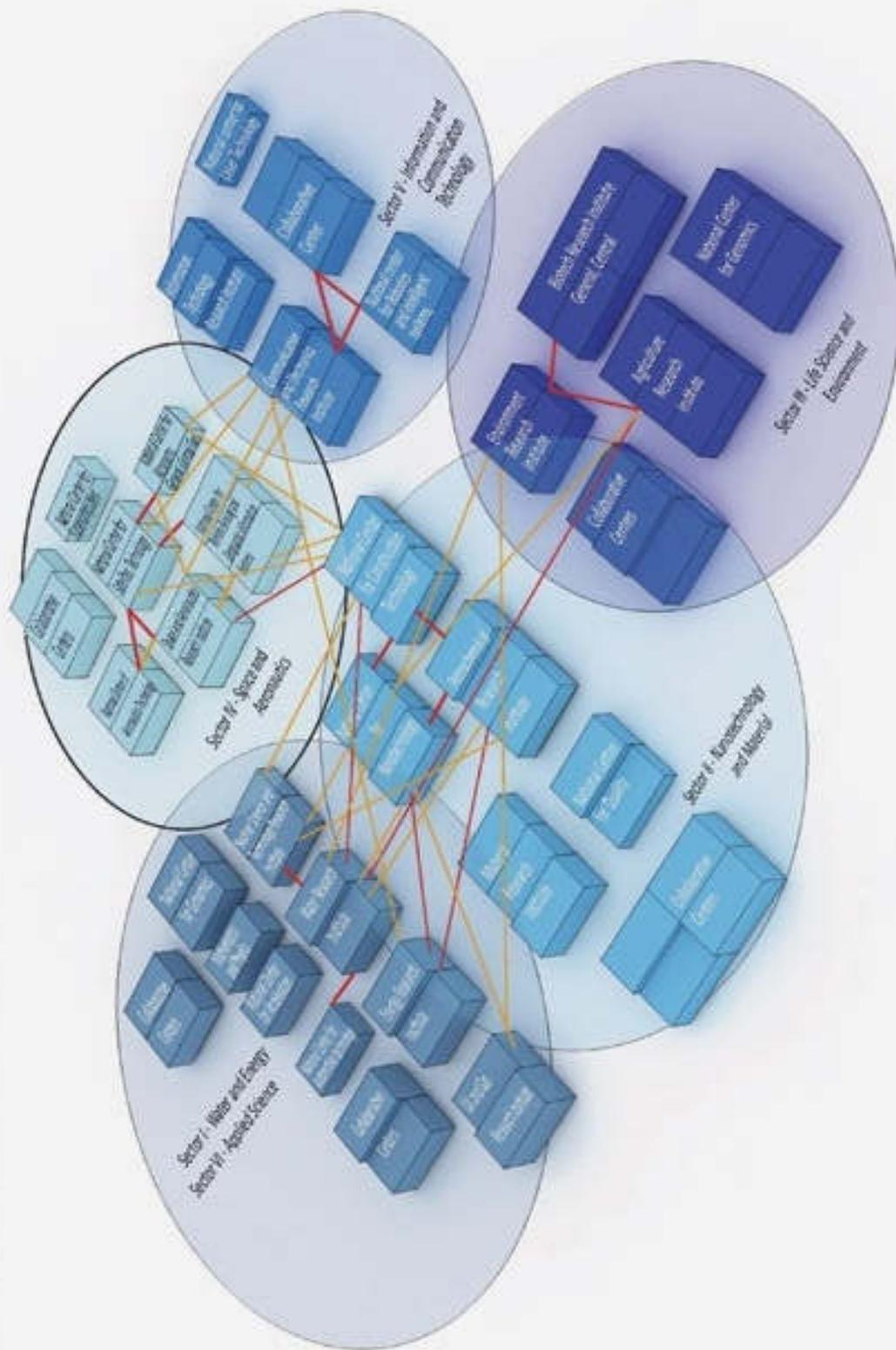


Riyadh, KSA

KACST







•CAR PARK ACCESS



Arrival NW



Inner Circuit Patio



Wadi Connector



Spiral Connector /Leisure Club



Arrival NE



Sunken Garden



Sunken Plaza

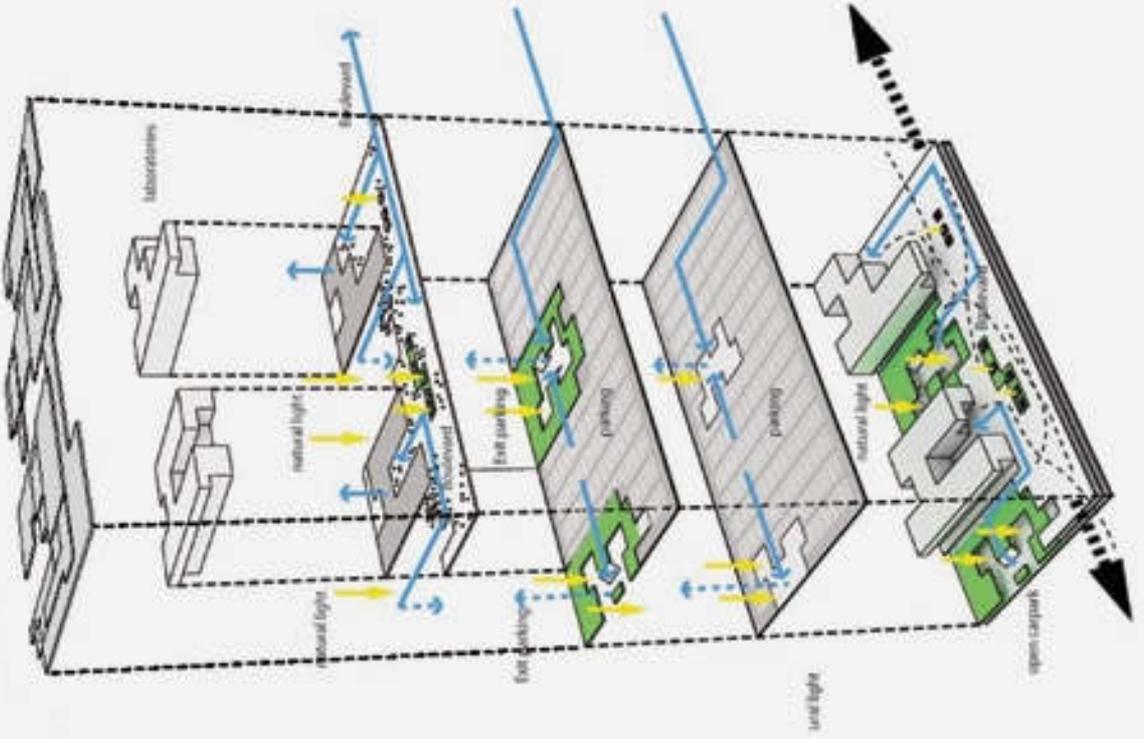


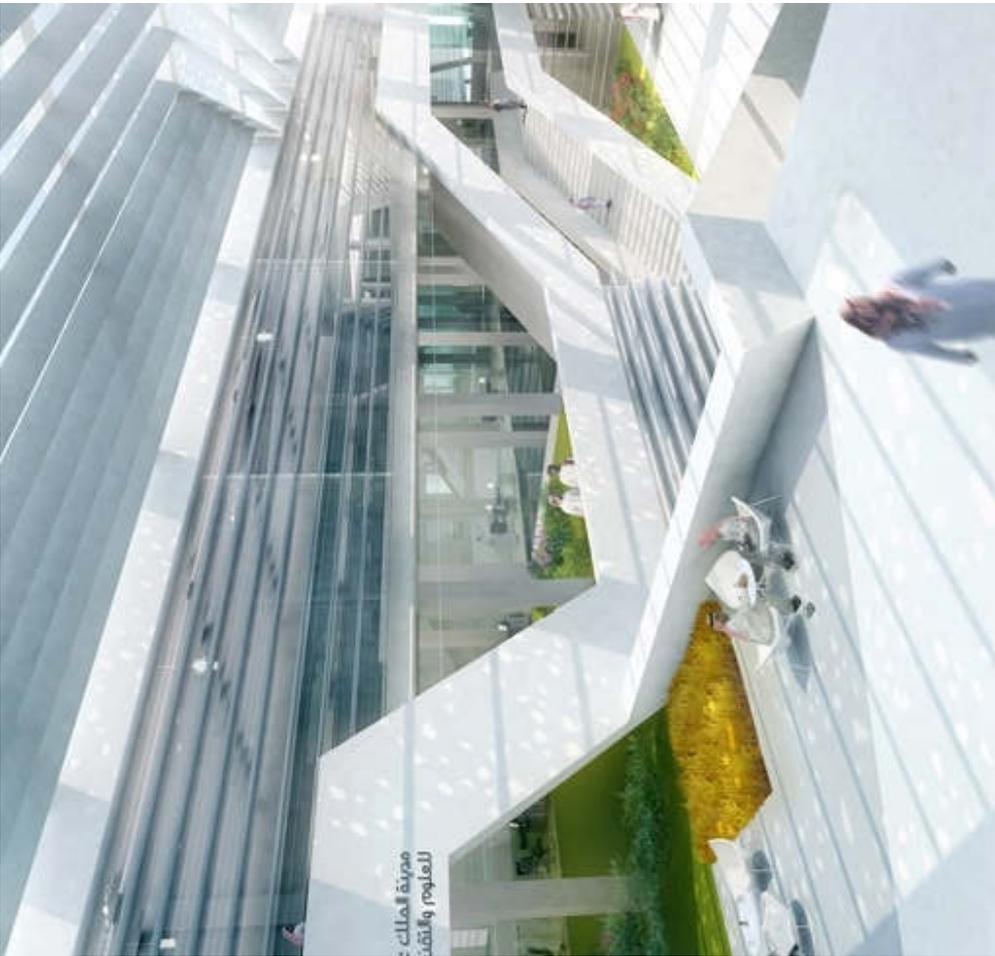
Amphitheater Connector



Sunken Sport Field



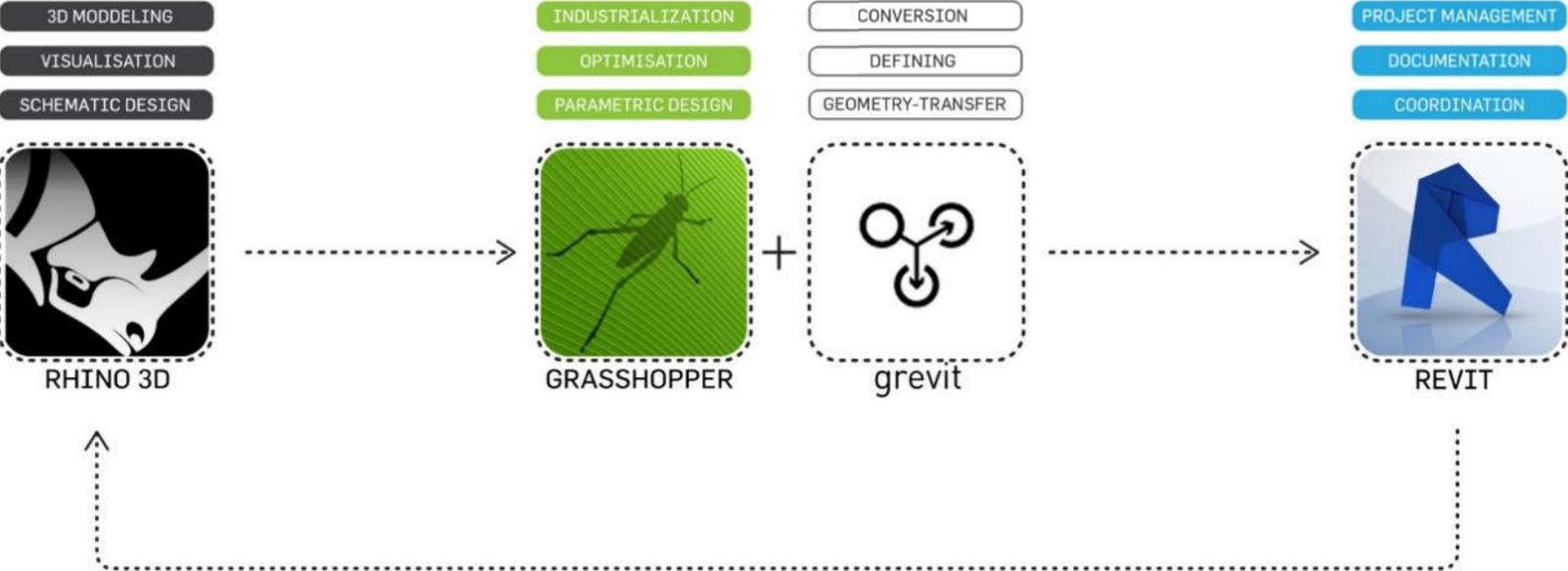
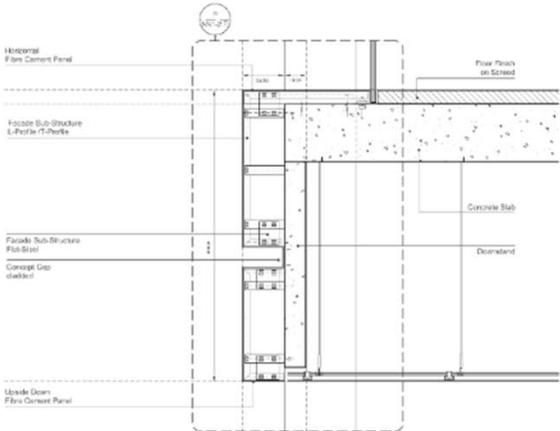




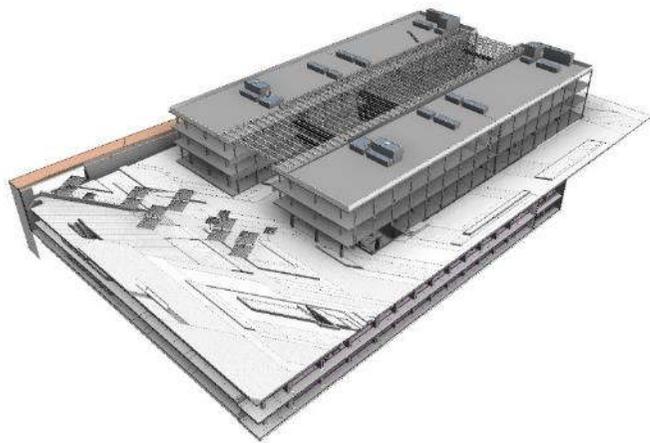




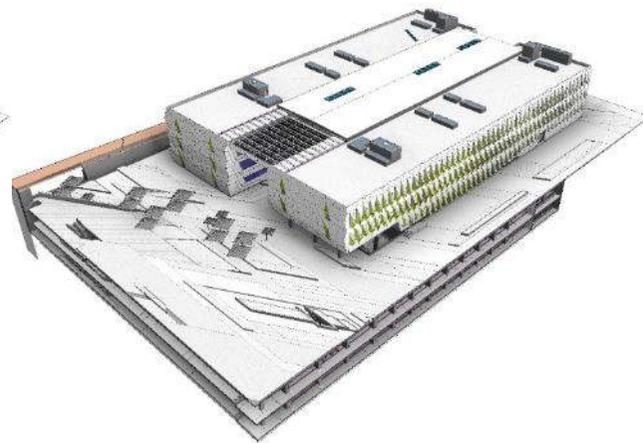
BIM workflow diagram



Structural

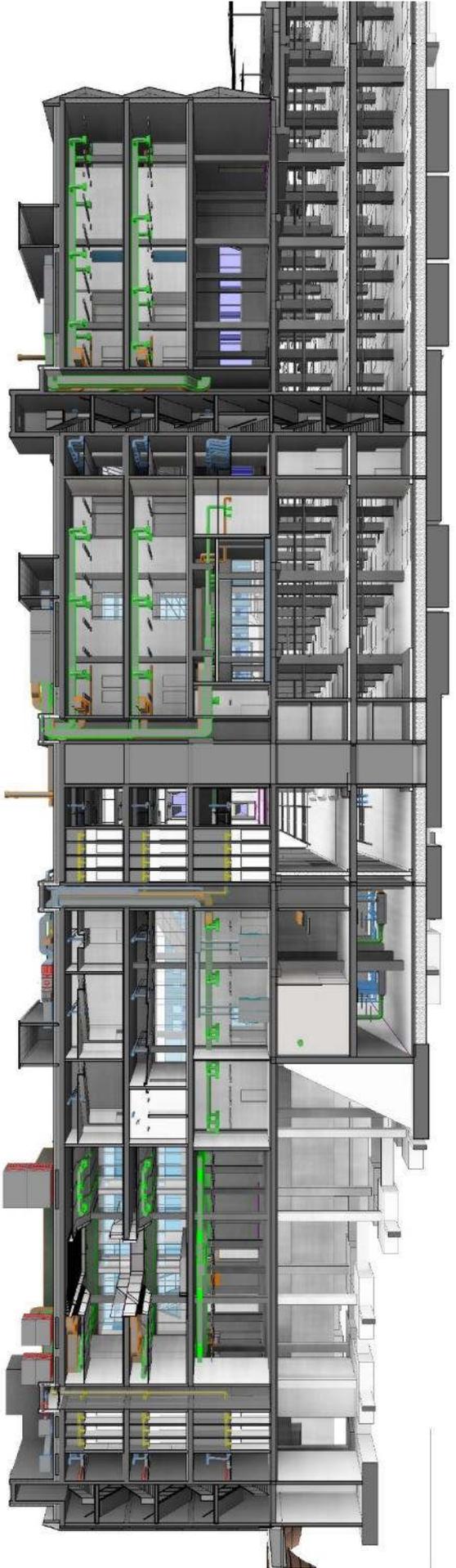


Architecture

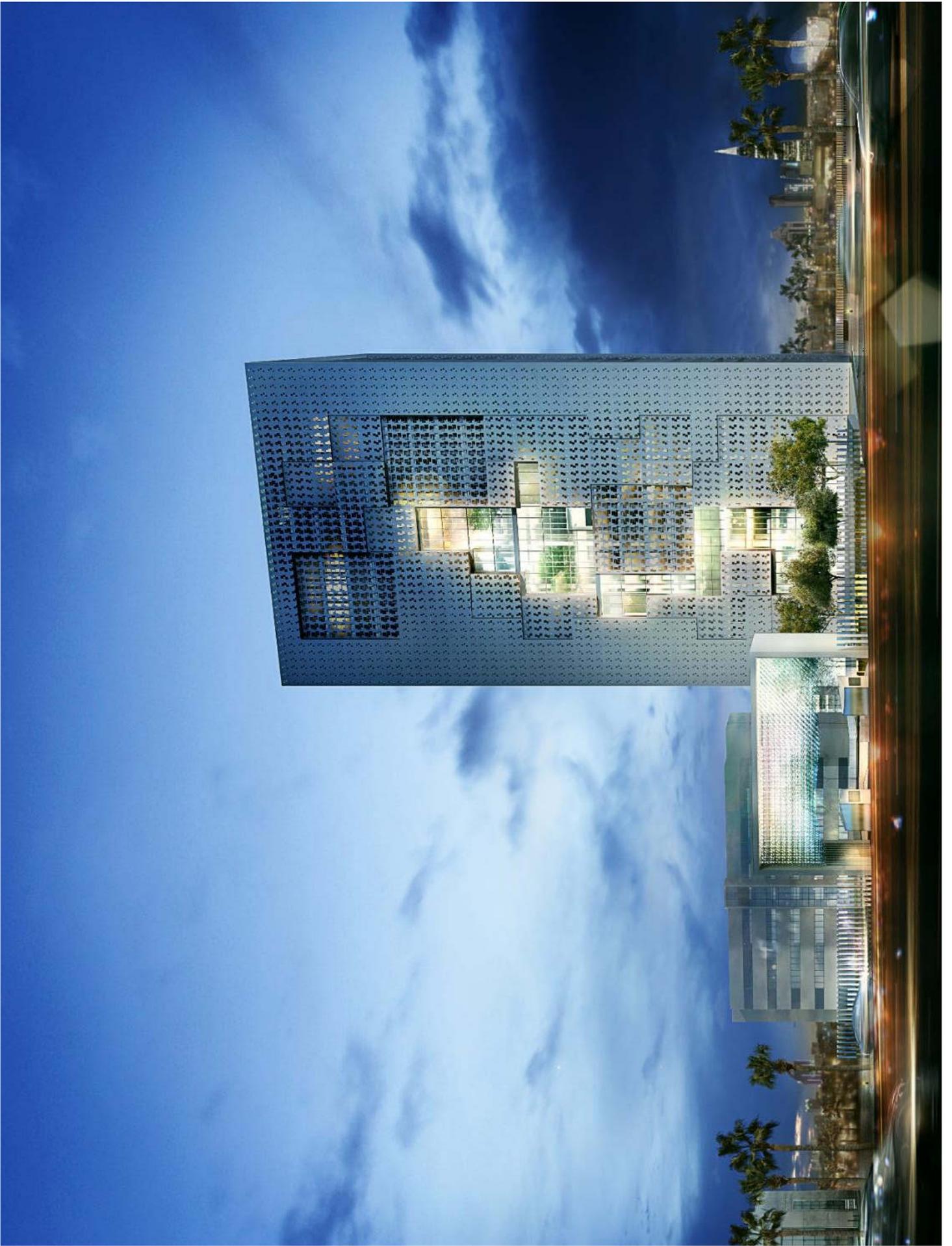


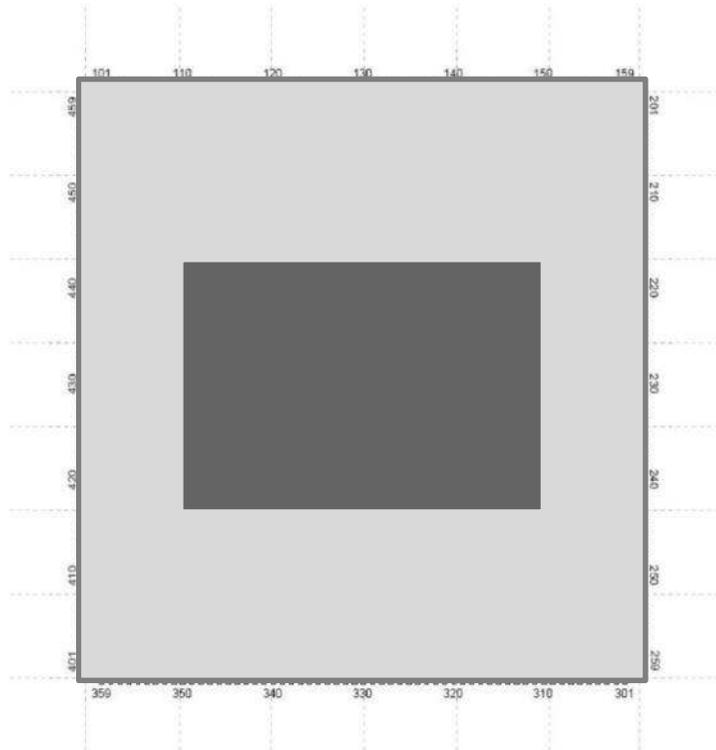
Mechanical







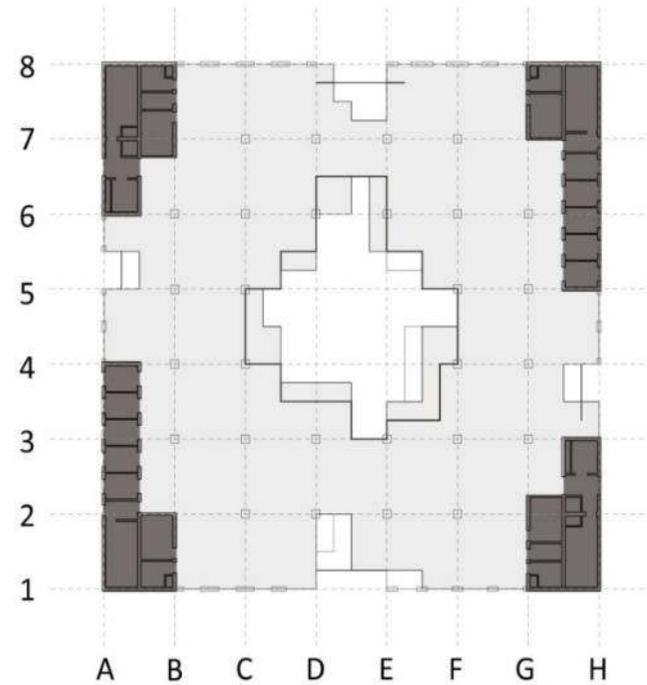




- **GENERIC PLAN**
- *WTC, New York City,*
- *Typical Central Core Highrise*

floorplan WTC
12 5

- only horizontal communication
- Core as obstacle
- strictly divided by floorplates



- **DEEP PLAN**
- *KACST HQ, Riyadh,*
- *Deep Plan*

floorplan KACST
12 5

Atrium enables directors to see that everyone does their work

Accessibility of directors
communication inside; views to outside

DESIGN PARAMETERS

EXTERNAL

CONTEXTUAL

ORIENTATION

INFRASTRUCTURE

VISUAL AXES

SPATIAL AXES

SPOTS

ENVIRONMENTAL

DAYLIGHT

SOLAR EXPOSURE

WIND

INTERNAL

PROGRAMMATIC

OFFICE CONFIGURATIONS

SEMI PUBLIC SPACES

PRESIDENTIAL

TECHNICAL

STRUCTURAL

STRUCTURAL RELATIONS
(e.g. VIERENDEEL)

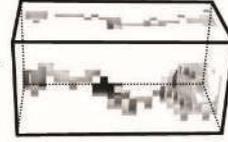
SPATIAL

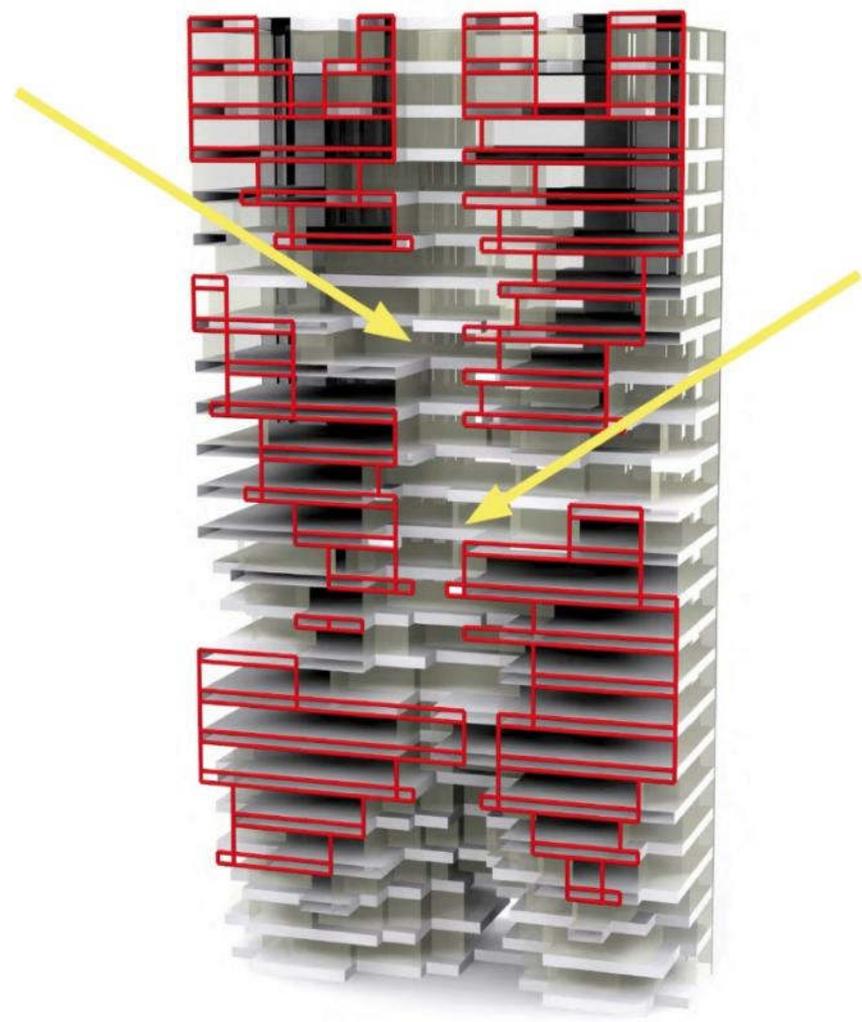
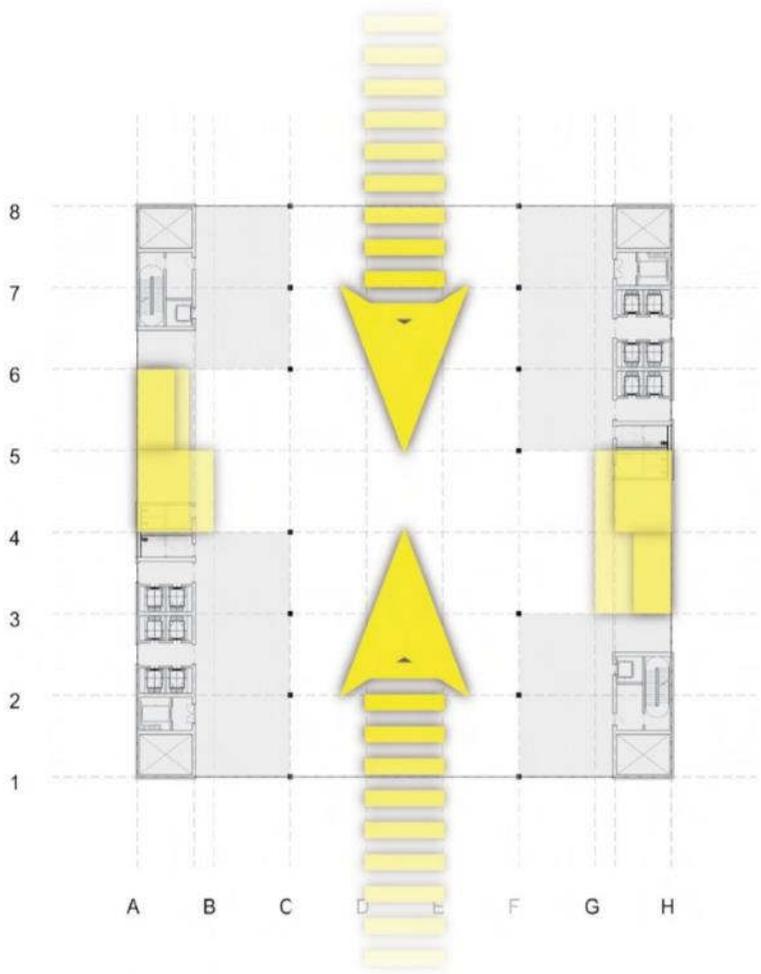
VOIDS

SPINE

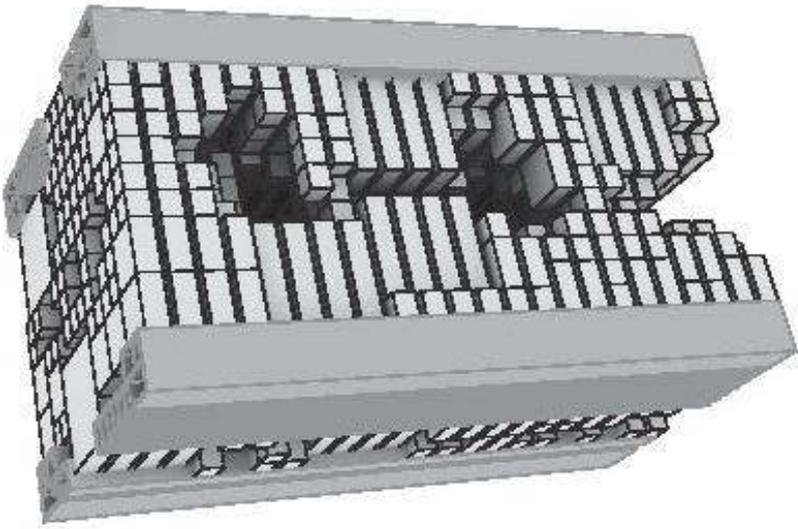
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GOLDEN RATIO

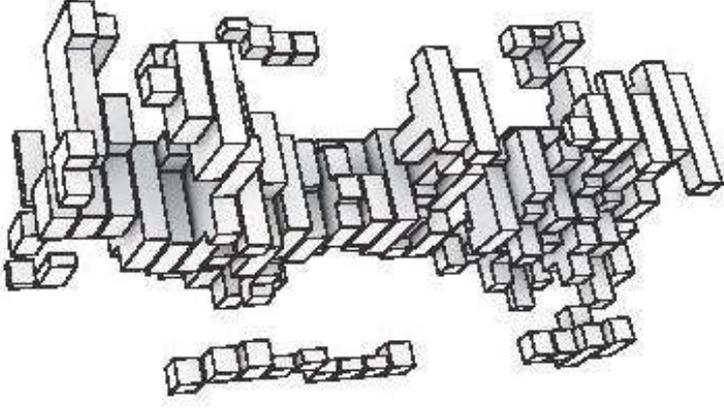




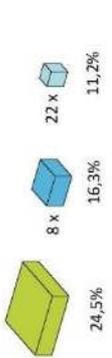
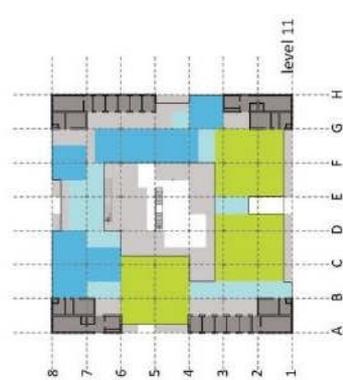
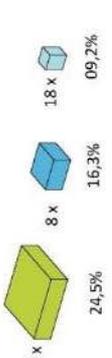
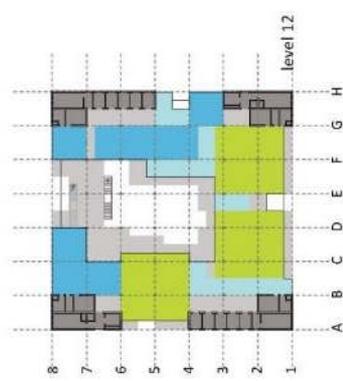
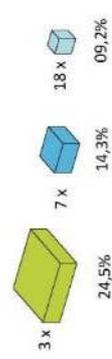
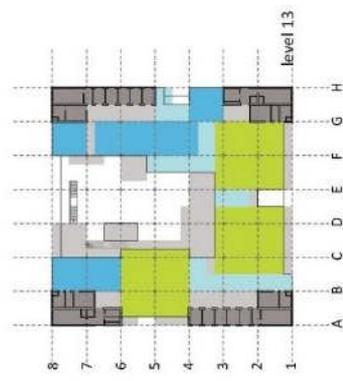
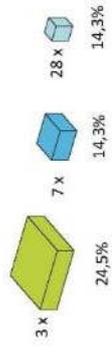
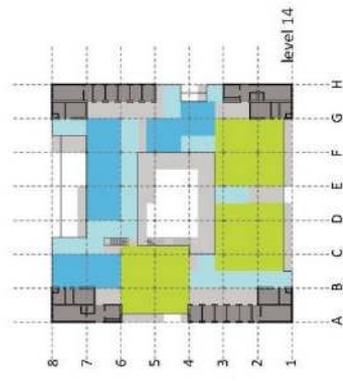
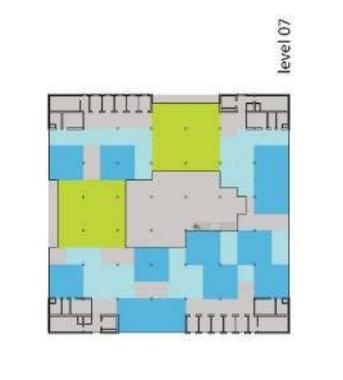
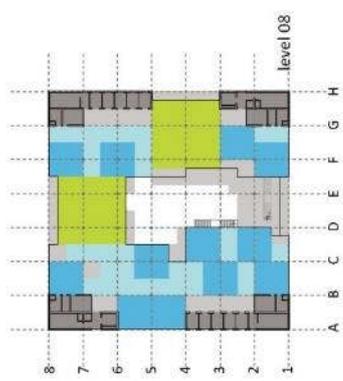
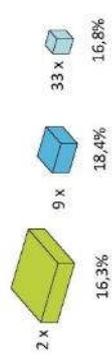
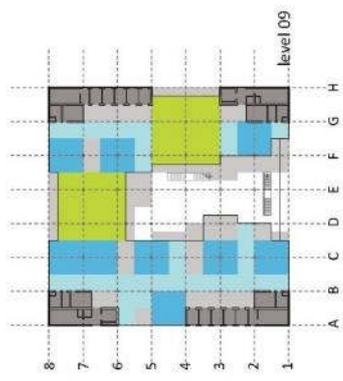
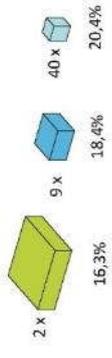
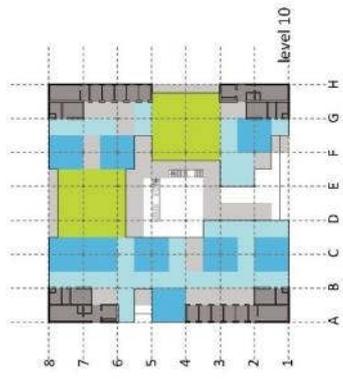
- **Orientation**
- according to the solar studies the voids will be situated in north-south orientation
- in east-west orientation smaller cutouts will structure the facade



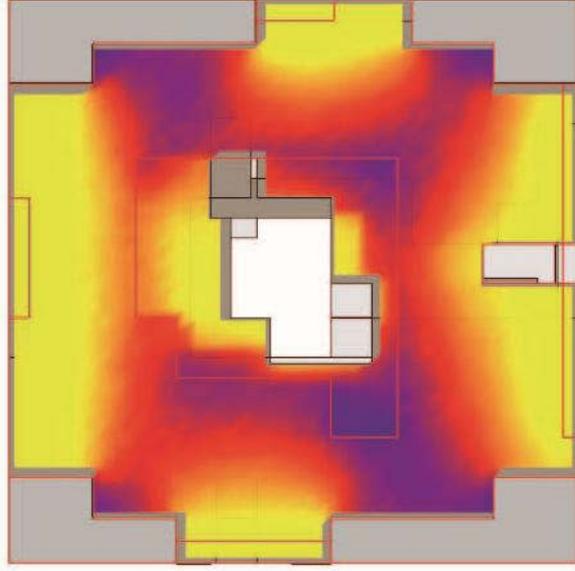
massing



inverted void



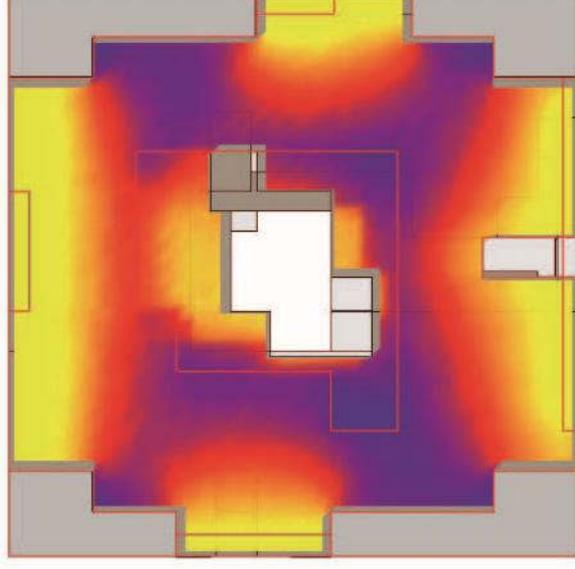
Analysis Grid
0.45 External CDA 500
© 2013 RADIANCE 3.5



CDA 500

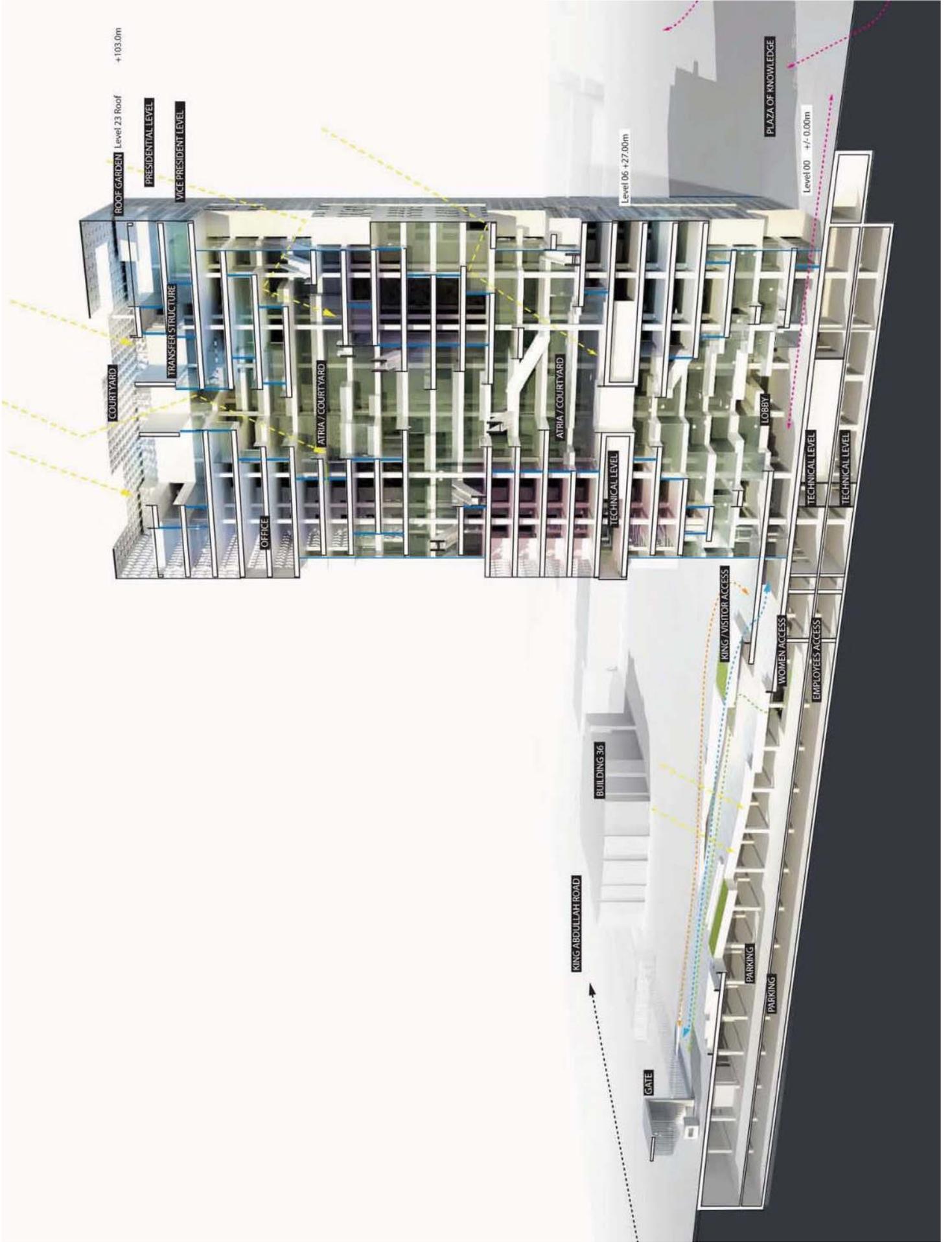
This results shows the percentage of time during the year (between 9AM-6PM) the various areas on the eleventh floor receive light above 500lux without the requirement of artificial luminaires with the solar transmittance of external windows at 0.45.

Analysis Grid
0.45 External CDA 700
© 2013 RADIANCE 3.5



CDA 700

This results shows the percentage of time during the year (between 9AM-6PM) the various areas on the eleventh floor receive light above 700lux without the requirement of artificial luminaires with the solar transmittance of external windows at 0.45.





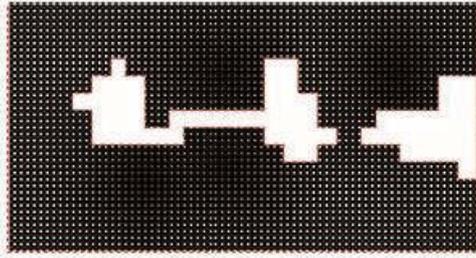
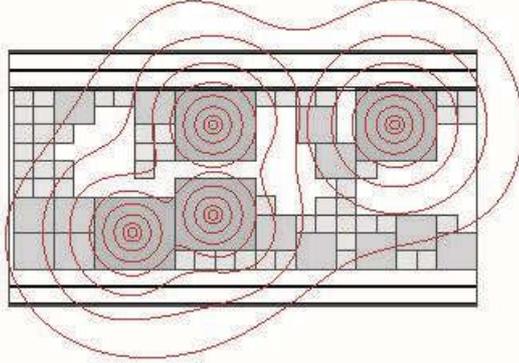
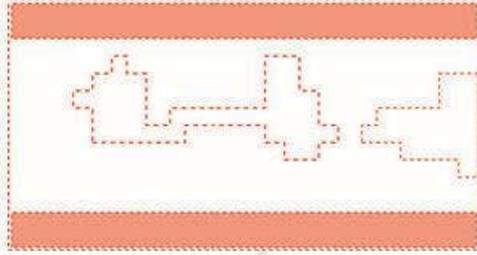
NORTH ORIENTATION



EAST, WEST ORIENTATION



SOUTH ORIENTATION



Solar Exposure (macro)

OPENING RATIO OF FACADE
PATTERN ACCORDING TO SAUDI
ARABIAN BUILDING CODE

Opening of canyons (Design Space Facade)

FACADE AREA AFTER CUT OUT
OF FULLY GLAZED VOID SPACES

Voxel Arrangement (micro)

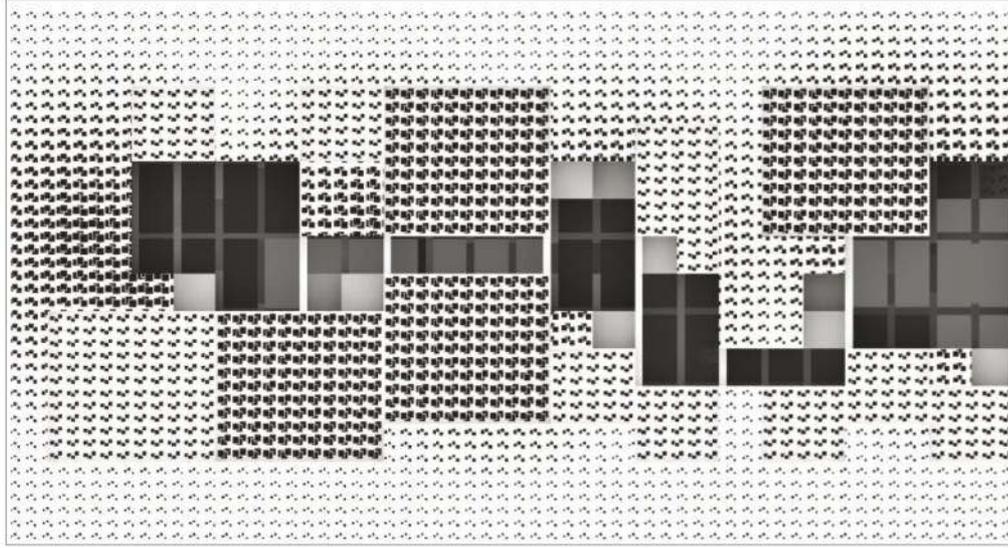
GRADUAL DIFFERENTIATION IN
OPENING SIZES ACCORDING TO
INTERNAL SPATIAL CONFIGURA-
TION AND RESPECTIVE LIGHT-
ING REQUIREMENTS

Facade Pattern

GEOMETRY OF THE RESULTING
FACADE PATTERN

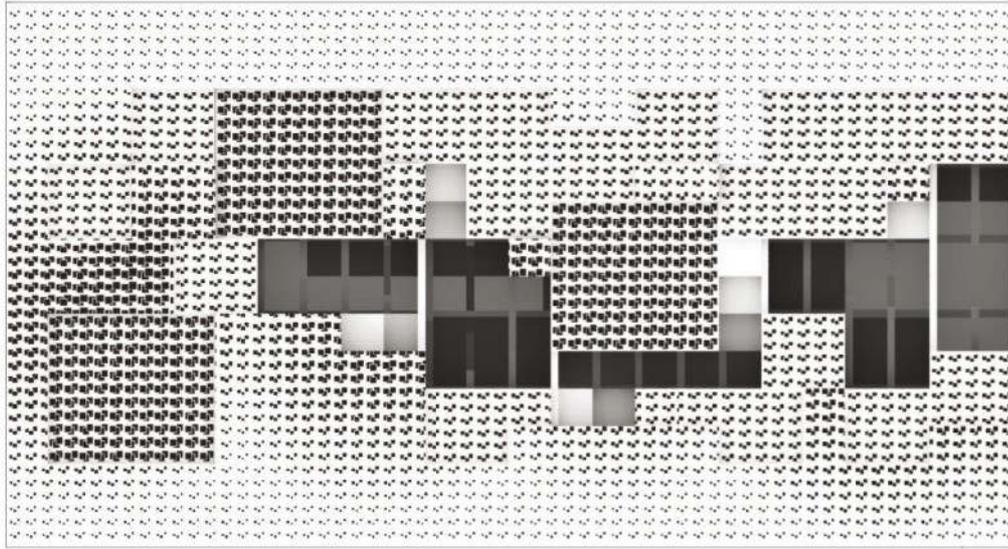
A B C D E F G H

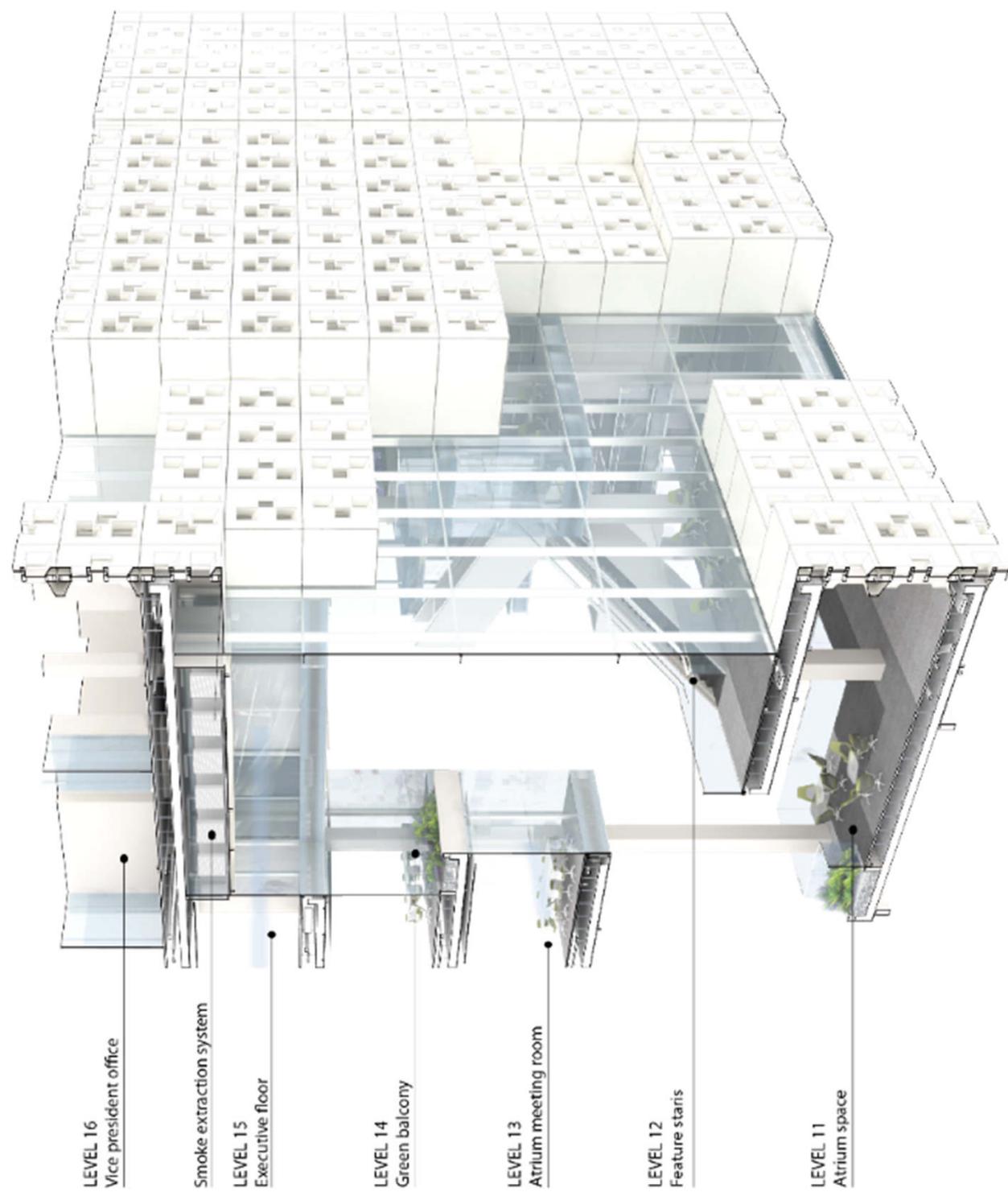
Roof +108.00
 Level 23
 Roof Garden +103.50
 Level 22
 Office +99.00
 Level 21
 Office +94.50
 Level 20
 Office +90.00
 Level 19
 Office +85.50
 Level 18
 Office +81.00
 Level 17
 Office +76.50
 Level 16
 Office +72.00
 Level 15
 Office +67.50
 Level 14
 Office +63.00
 Level 13
 Office +58.50
 Level 12
 Office +54.00
 Level 11
 Office +49.50
 Level 10
 Office +45.00
 Level 09
 Office +40.50
 Level 08
 Office +36.00
 Level 07
 Office +31.50
 Level 06
 Technical Level +27.00
 Level 05
 Office +22.50
 Level 04
 Office +18.00
 Level 03
 Office +13.50
 Level 02
 Office +9.00
 Level 01
 Office +4.50
 Level 00
 Lobby +/- 0.00 = +635.00

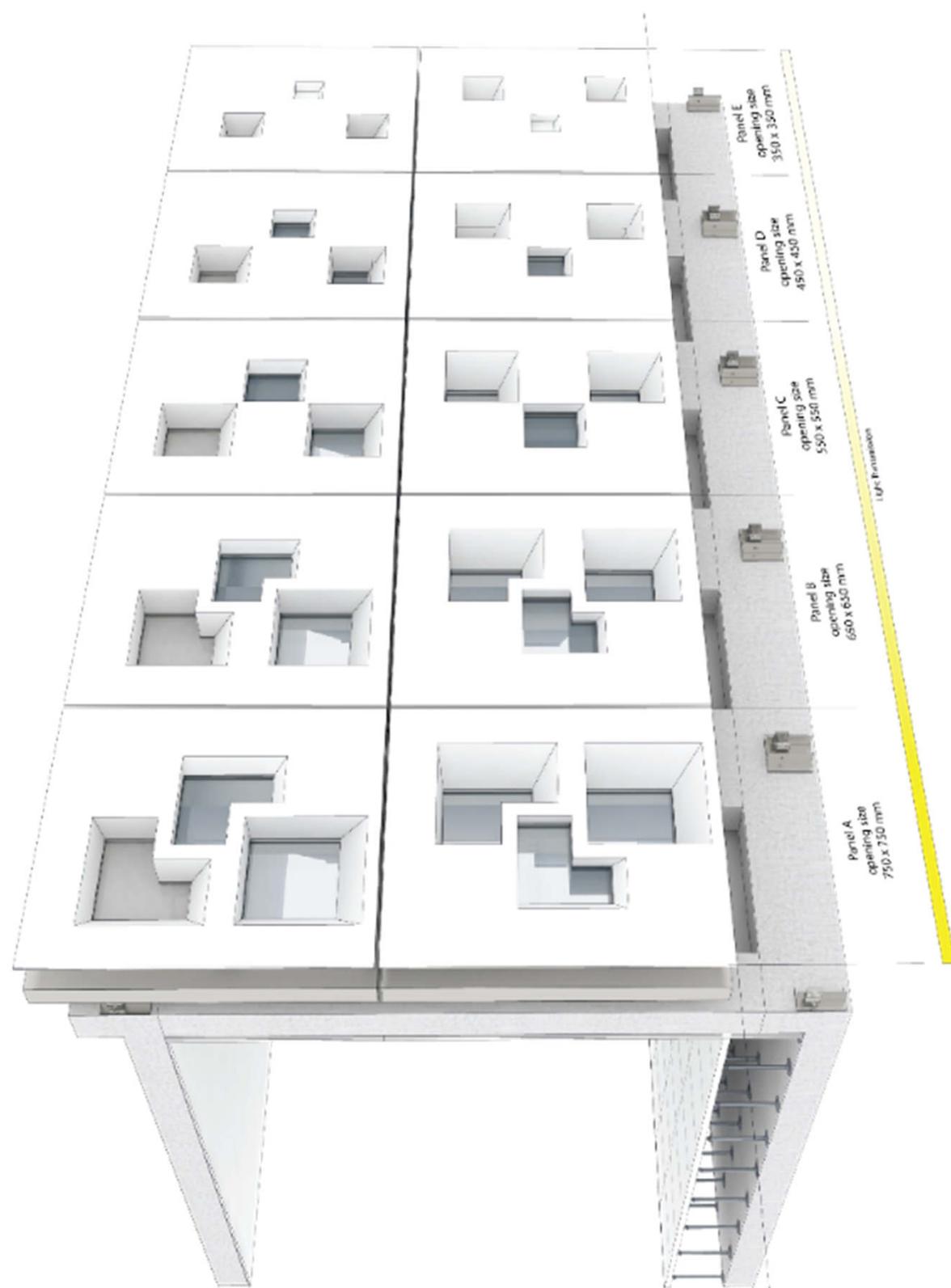


H G F E D C B A

Roof +108.00
 Level 23
 Roof Garden +103.50
 Level 22
 Office +99.00
 Level 21
 Office +94.50
 Level 20
 Office +90.00
 Level 19
 Office +85.50
 Level 18
 Office +81.00
 Level 17
 Office +76.50
 Level 16
 Office +72.00
 Level 15
 Office +67.50
 Level 14
 Office +63.00
 Level 13
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 Level 10
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 Level 08
 Office +36.00
 Level 07
 Office +31.50
 Level 06
 Technical Level +27.00
 Level 05
 Office +22.50
 Level 04
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 Level 03
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 Office +9.00
 Level 01
 Office +4.50
 Level 00
 Lobby +/- 0.00 = +635.00



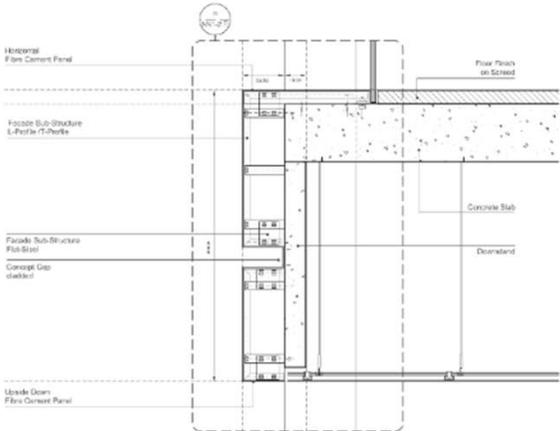






10/12/2015 10:11 AM

BIM workflow diagram



- 3D MODELING
- VISUALISATION
- SCHEMATIC DESIGN



RHINO 3D

- INDUSTRIALIZATION
- OPTIMISATION
- PARAMETRIC DESIGN



GRASSHOPPER

- CONVERSION
- DEFINING
- GEOMETRY-TRANSFER



grevit

- PROJECT MANAGEMENT
- DOCUMENTATION
- COORDINATION

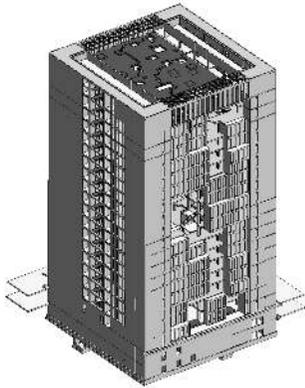


REVIT

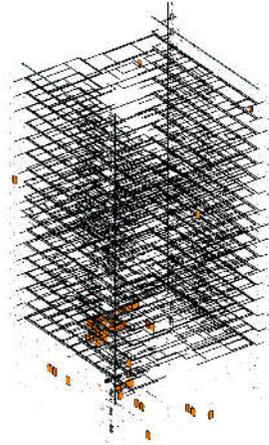


BIM models

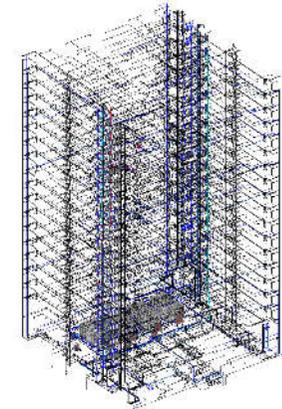
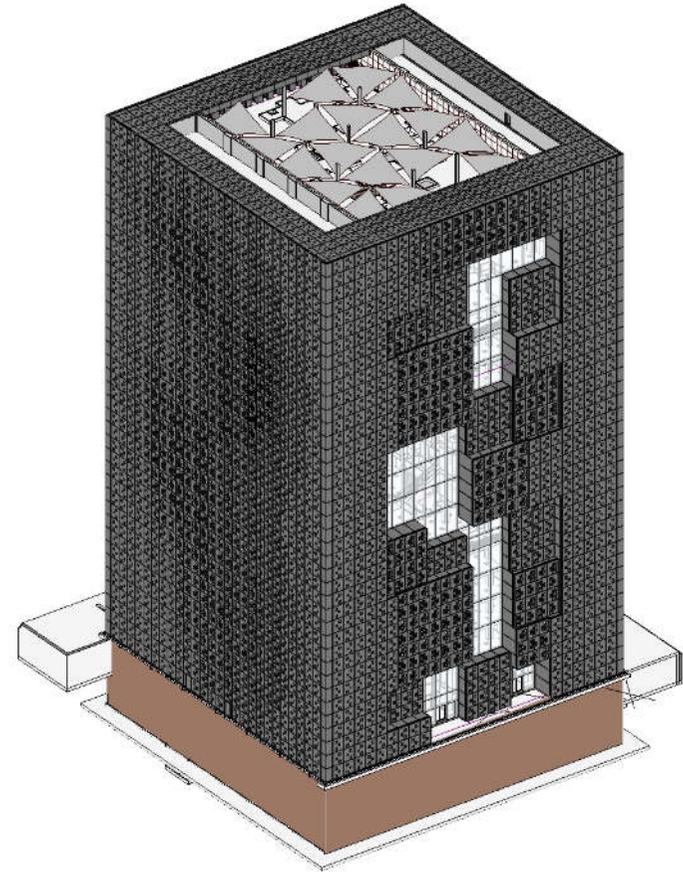
Structural



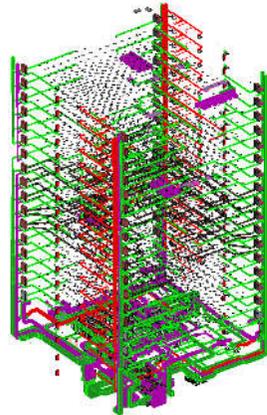
Electrical



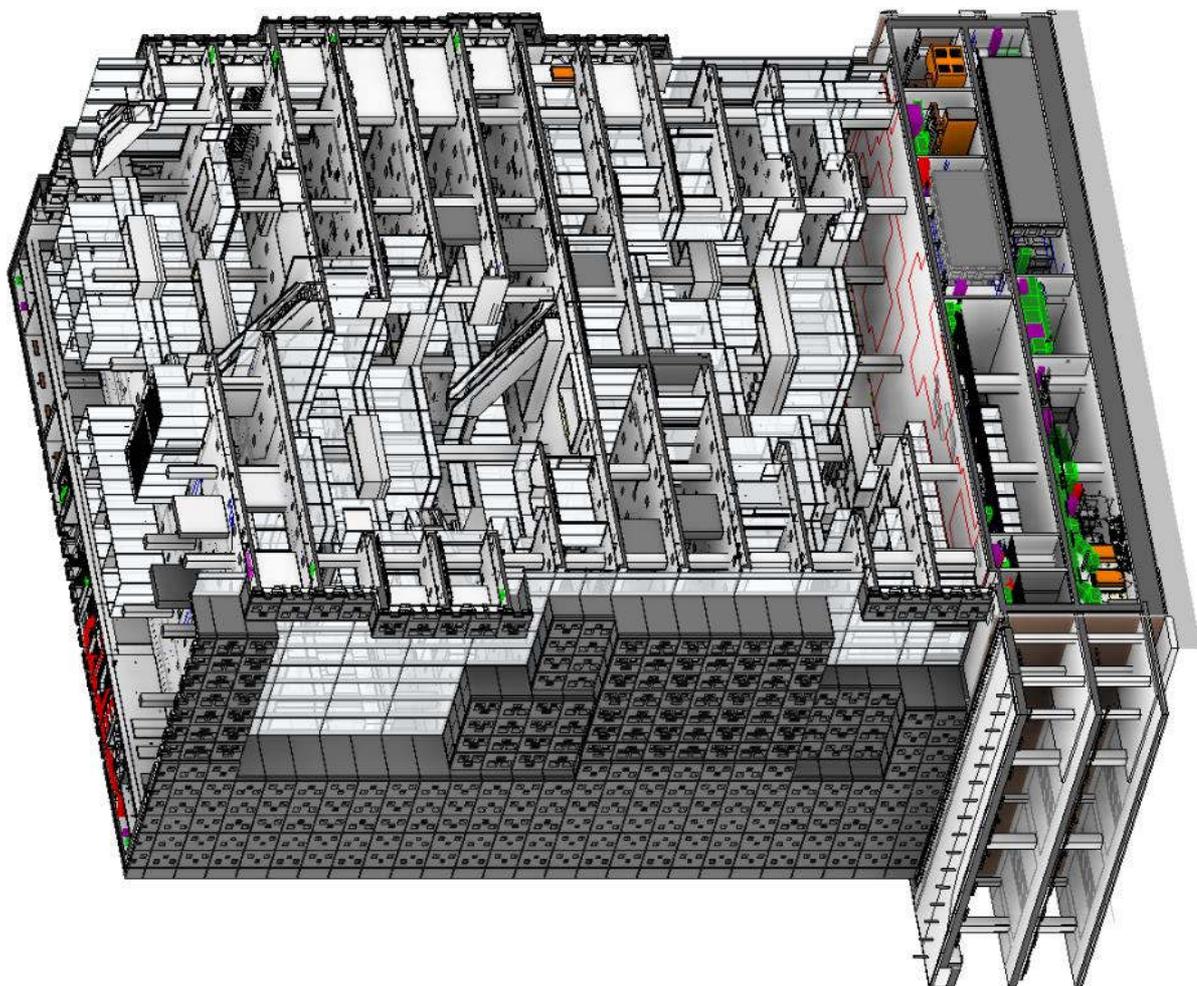
Architectural

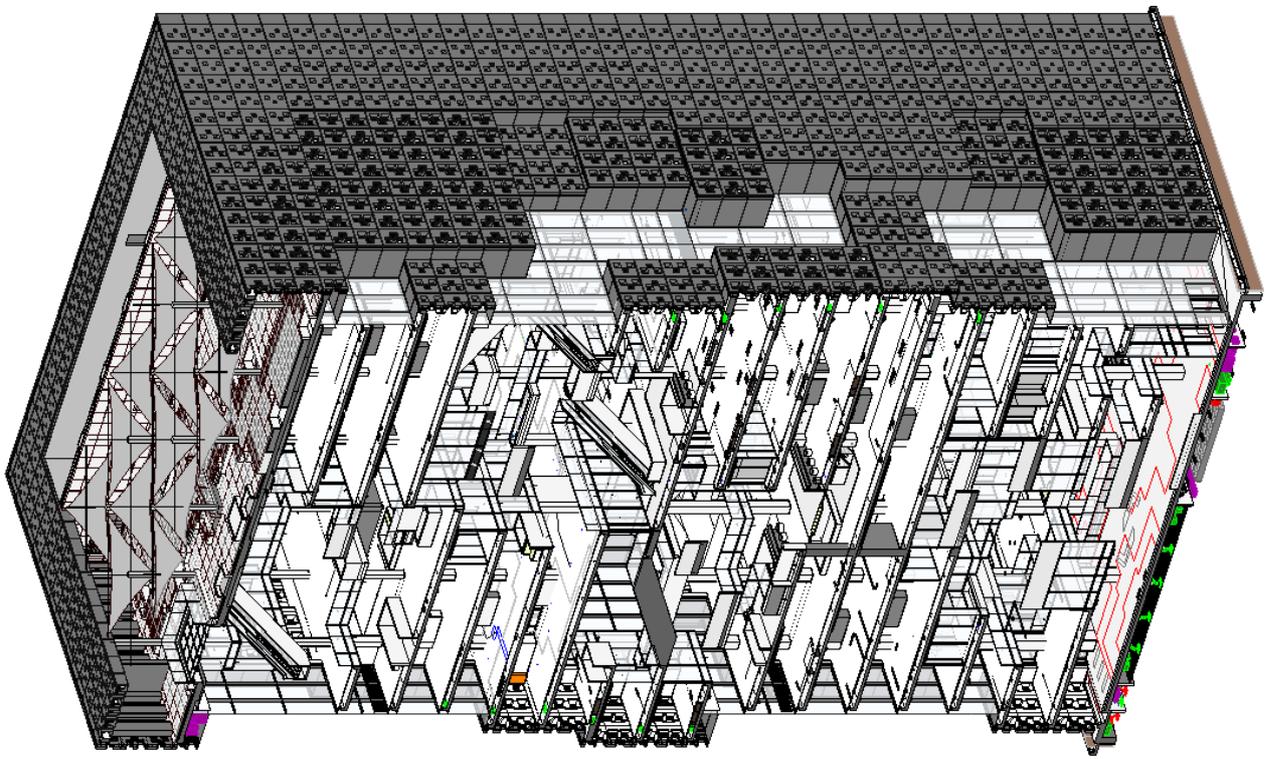


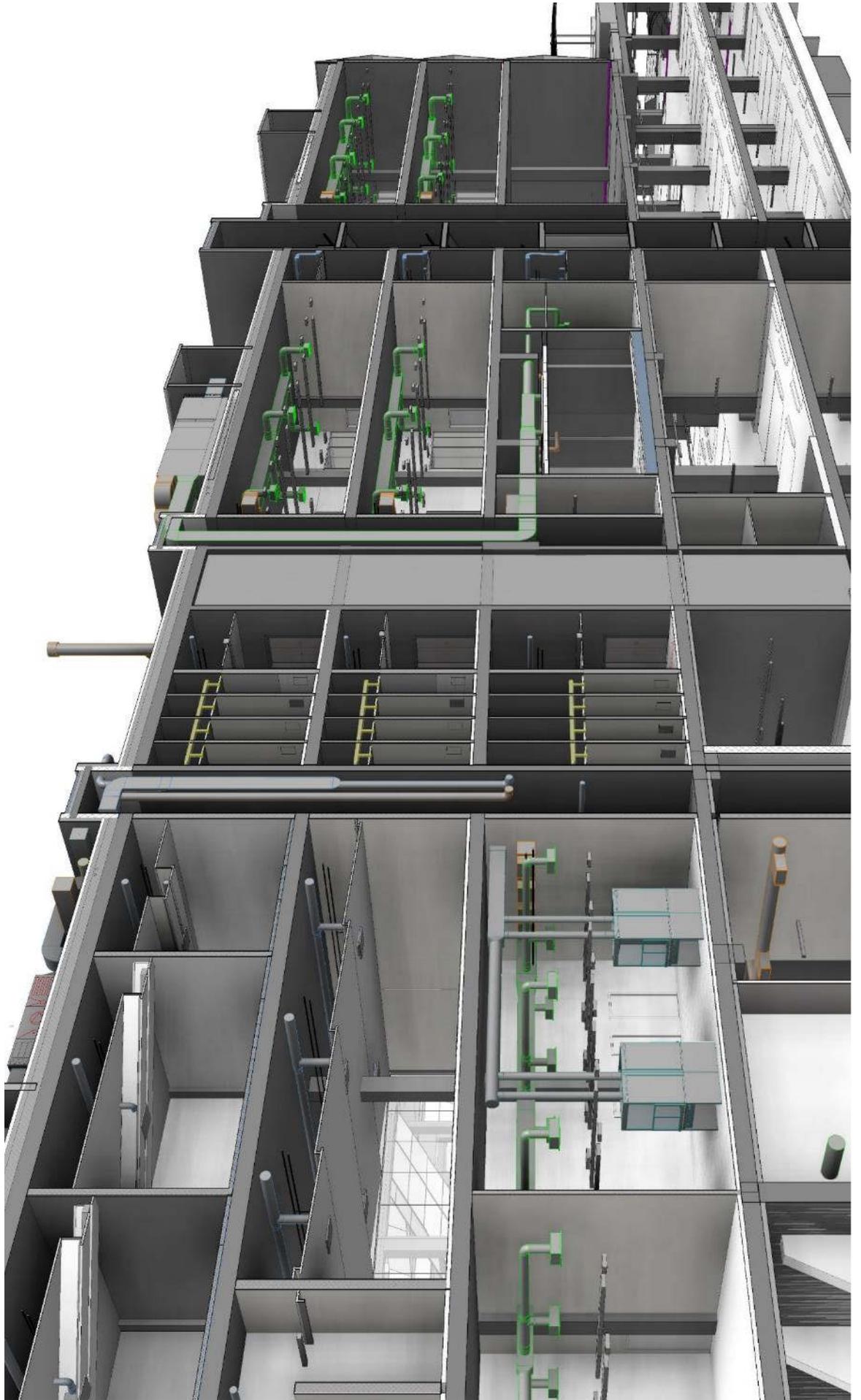
Plumbing



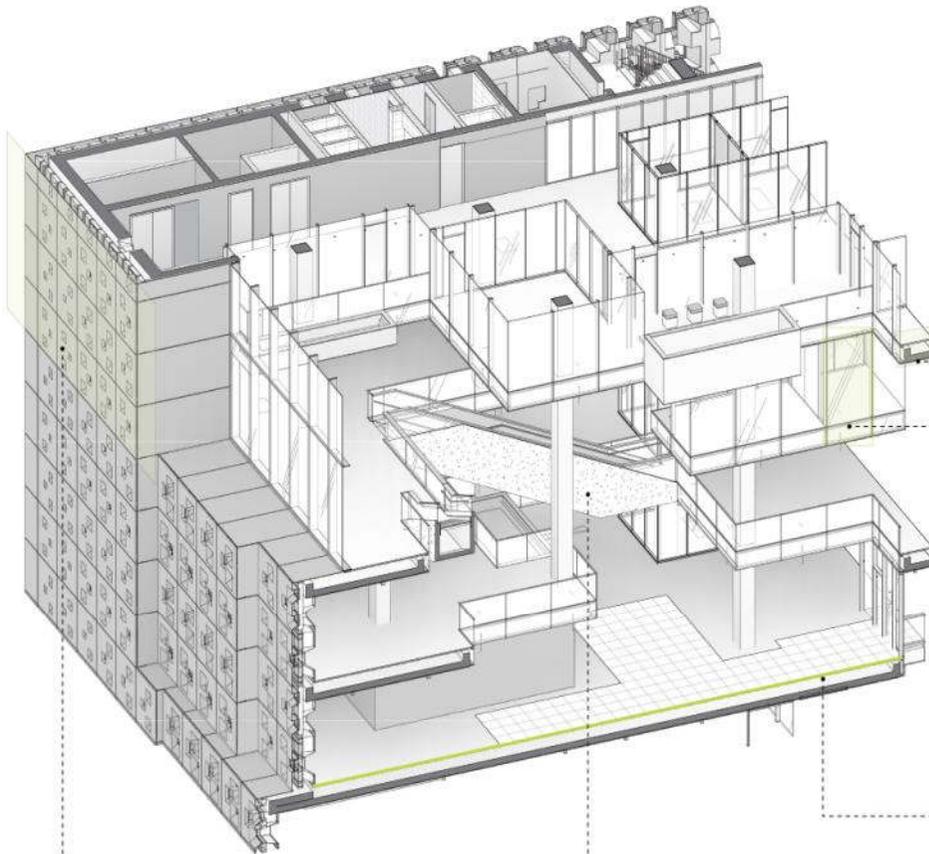
Mechanical



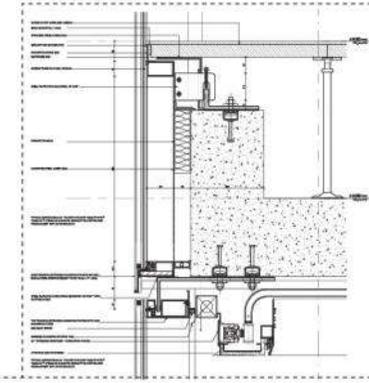




BIM - Modell



Detail Atrium



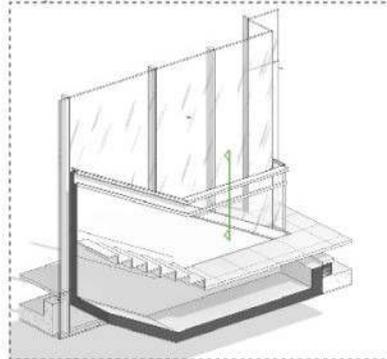
Tür-Fensterlisten

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4	Fenster	Fenster	401	401	401
5	Tür	Tür	501	501	501
6	Fenster	Fenster	601	601	601
7	Tür	Tür	701	701	701
8	Fenster	Fenster	801	801	801
9	Tür	Tür	901	901	901
10	Fenster	Fenster	1001	1001	1001
11	Tür	Tür	1101	1101	1101
12	Fenster	Fenster	1201	1201	1201
13	Tür	Tür	1301	1301	1301
14	Fenster	Fenster	1401	1401	1401
15	Tür	Tür	1501	1501	1501
16	Fenster	Fenster	1601	1601	1601
17	Tür	Tür	1701	1701	1701
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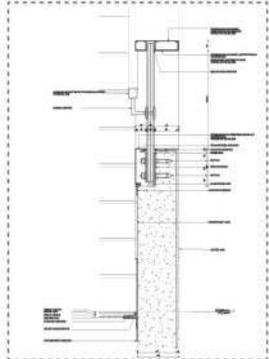
Detailansichten

Objekt	Objektname	Objekttyp	Objekt-ID	Objekt-Code	Objekt-Status
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3	Tür	Tür	301	301	301
4	Fenster	Fenster	401	401	401
5	Tür	Tür	501	501	501
6	Fenster	Fenster	601	601	601
7	Tür	Tür	701	701	701
8	Fenster	Fenster	801	801	801
9	Tür	Tür	901	901	901
10	Fenster	Fenster	1001	1001	1001
11	Tür	Tür	1101	1101	1101
12	Fenster	Fenster	1201	1201	1201
13	Tür	Tür	1301	1301	1301
14	Fenster	Fenster	1401	1401	1401
15	Tür	Tür	1501	1501	1501
16	Fenster	Fenster	1601	1601	1601
17	Tür	Tür	1701	1701	1701
18	Fenster	Fenster	1801	1801	1801
19	Tür	Tür	1901	1901	1901
20	Fenster	Fenster	2001	2001	2001

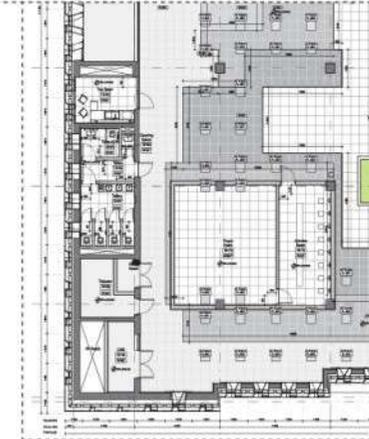
Treppenschnitte



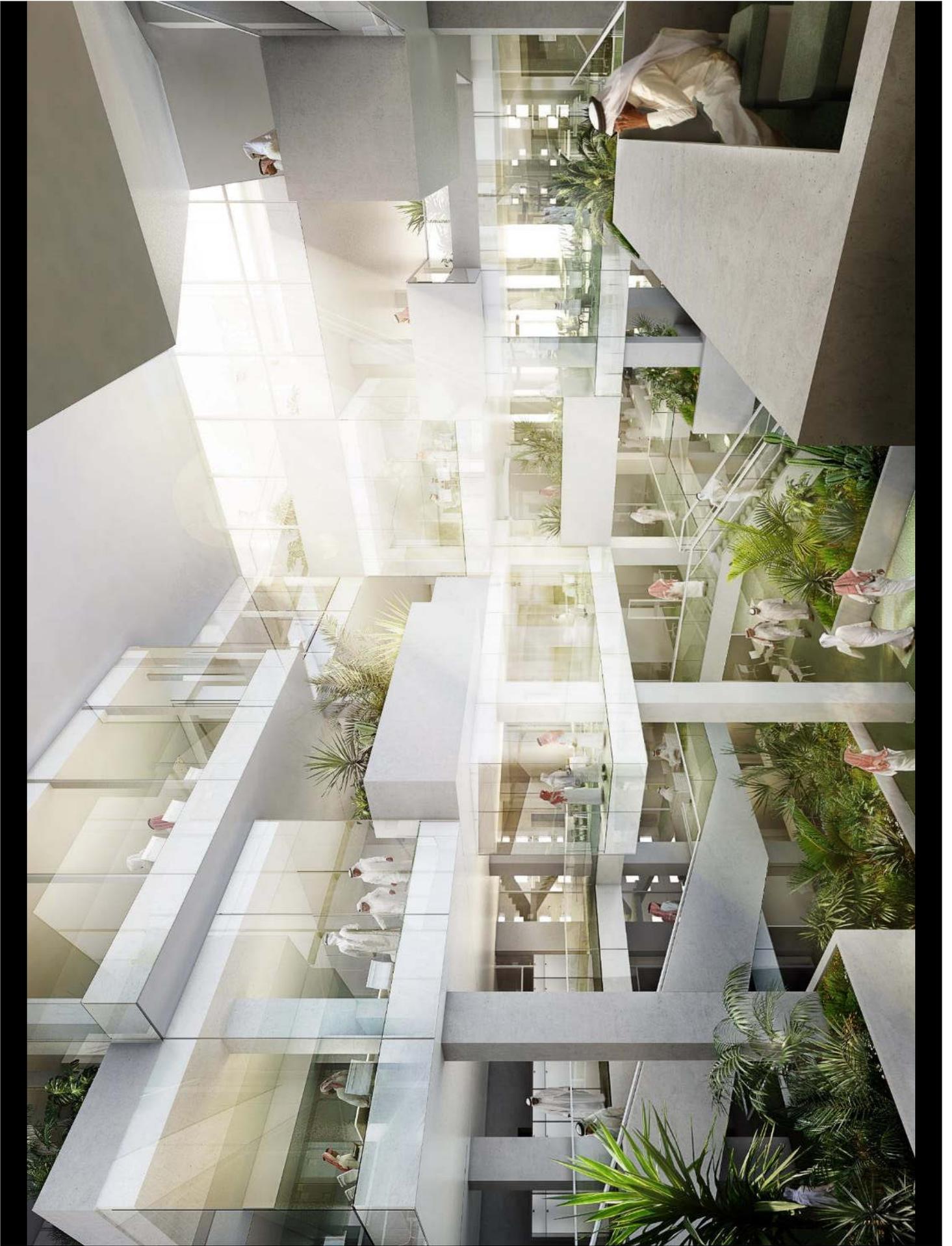
Detail Handlauf

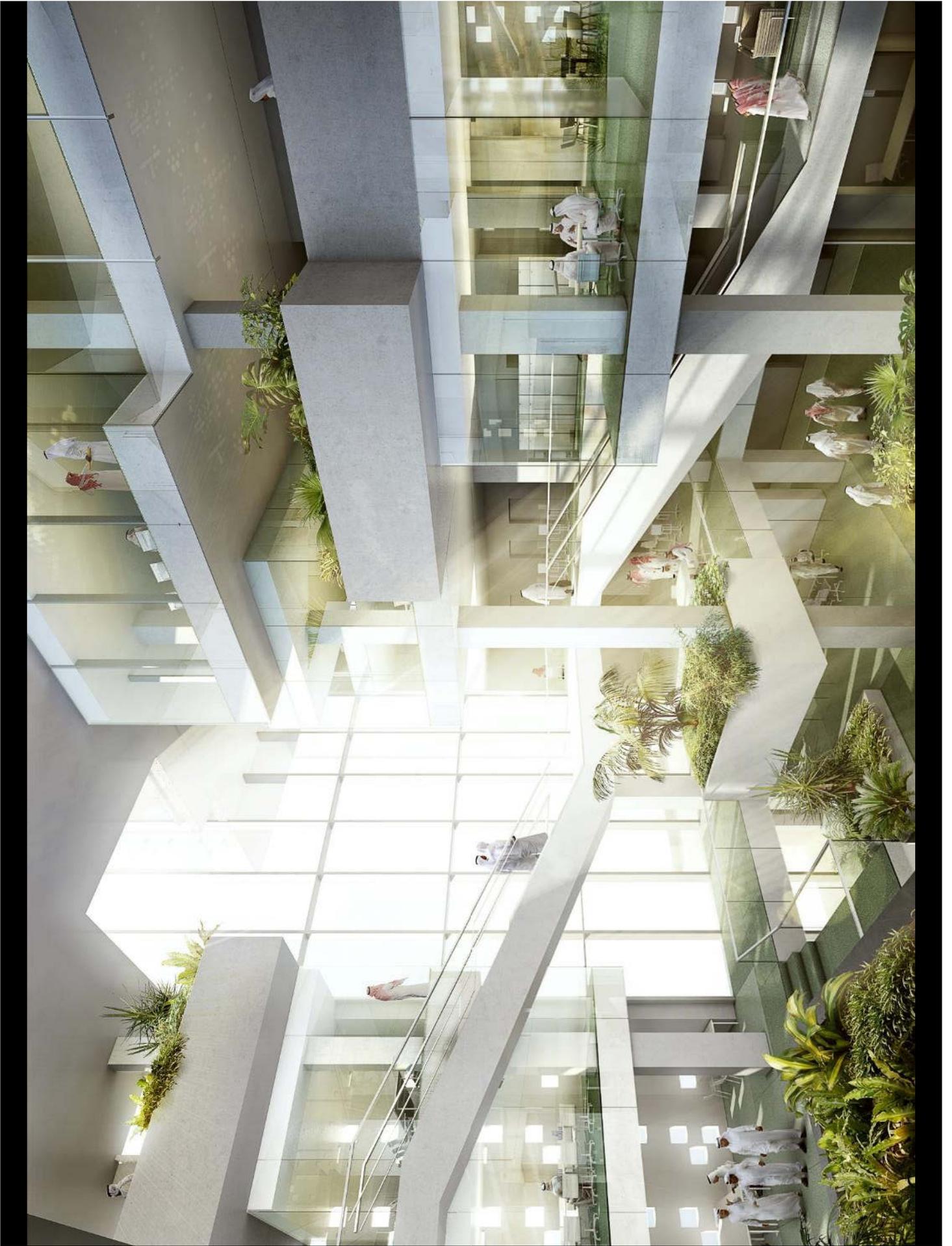


Bodenbelagsplan

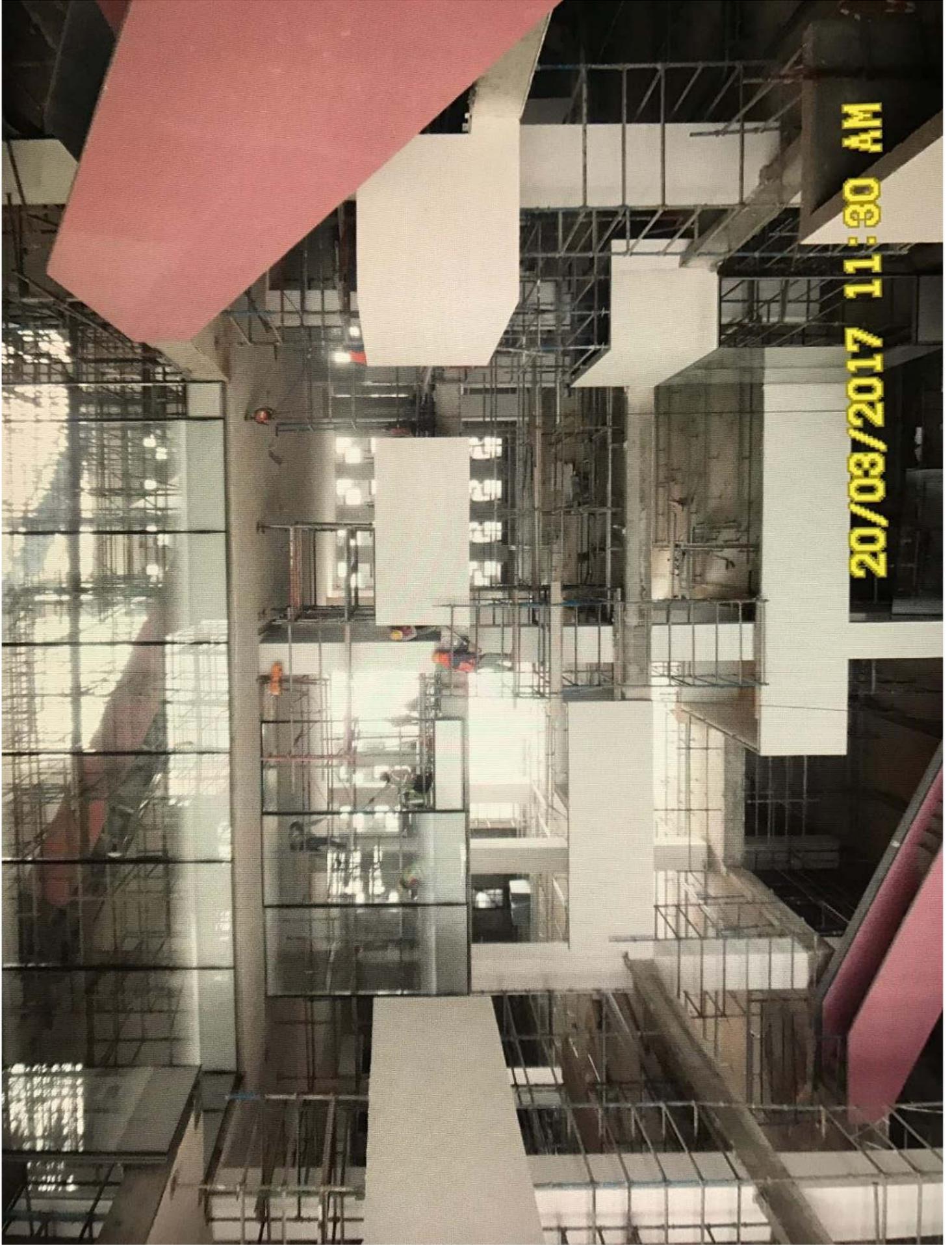


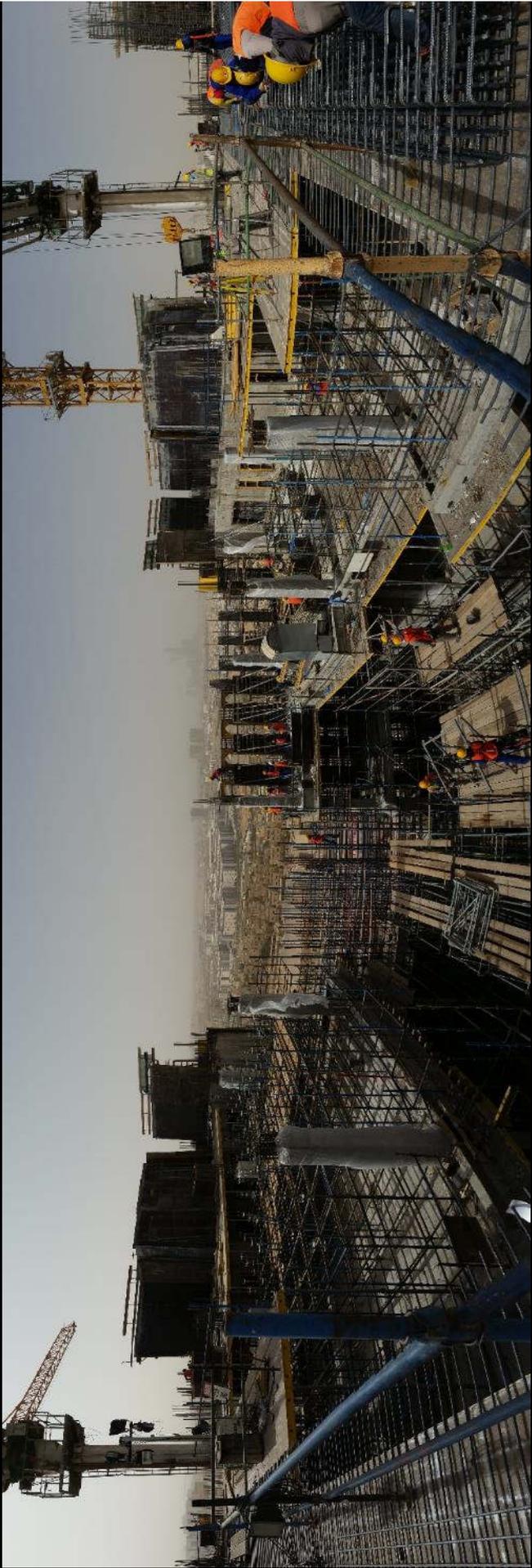




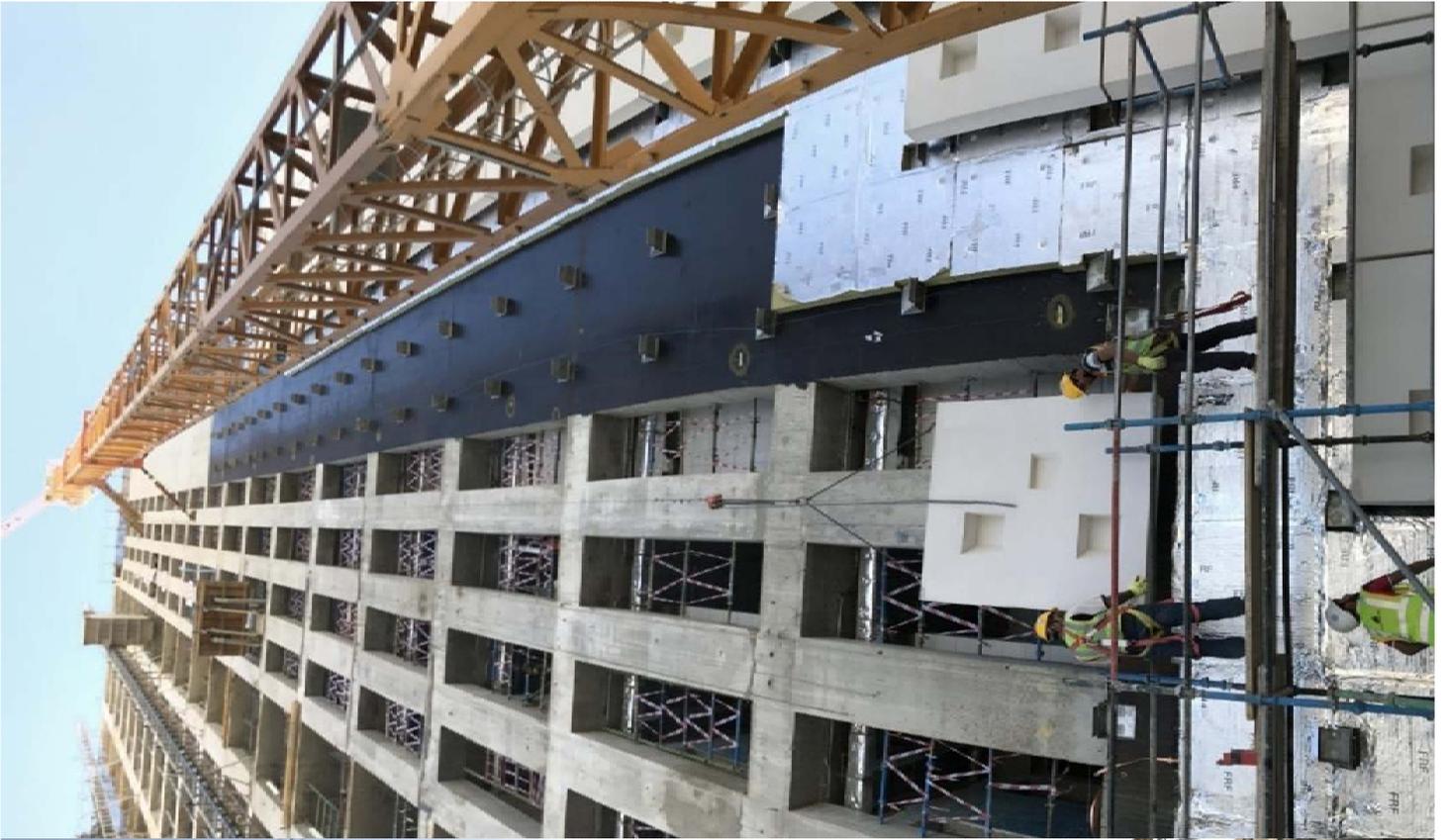




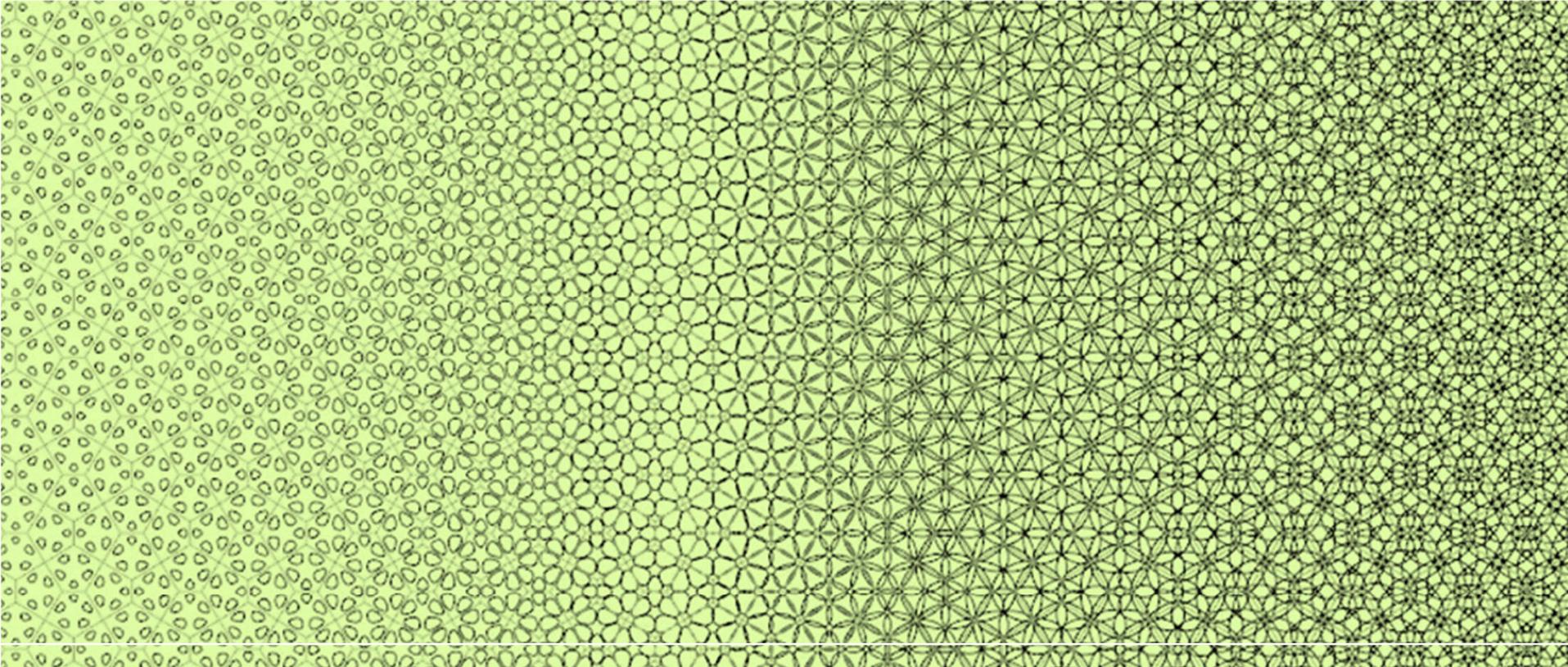












100 Jahre Schweiz

100

100

100



Imagine a place which creates an atmosphere with all goods from nature:
fresh air, natural daylight, smooth sounds, warm materials ...

THE 6D BRAND EXPERIENCE



RELAXATION



acoustic



room proportion



light



room climate



technological integration



colours



market value

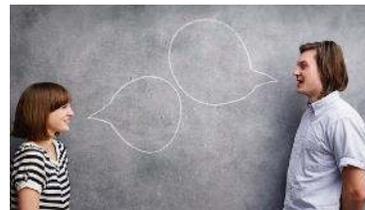


room sequence

ACTIVATION



orientation



face to face



security



corporate design



rituals



material



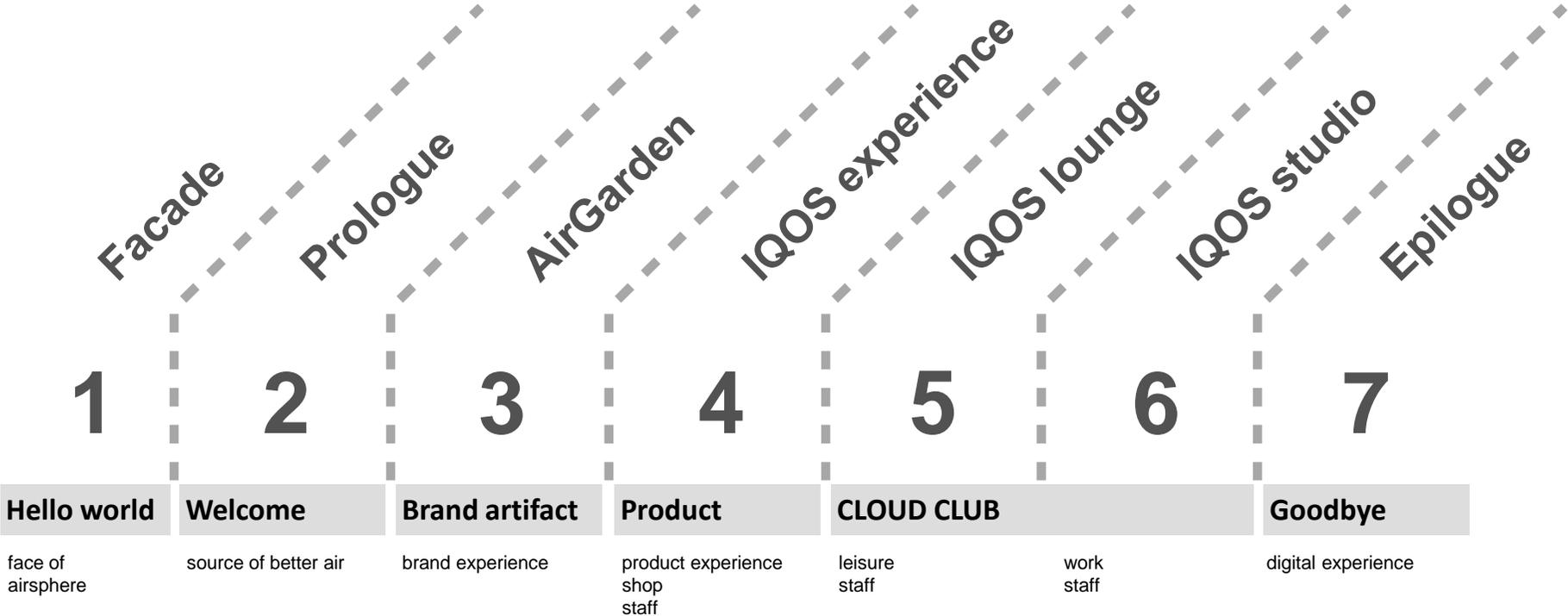
forms

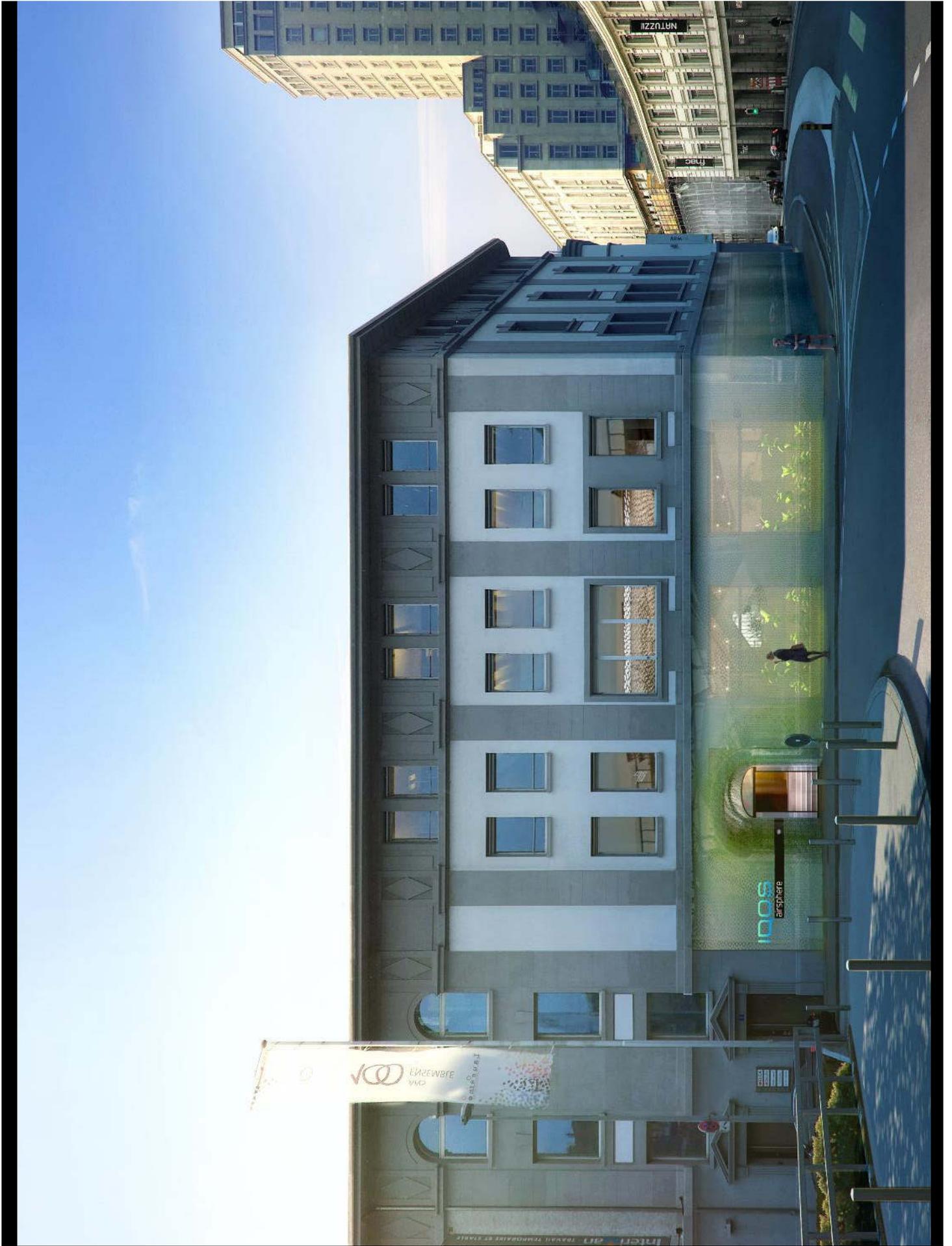


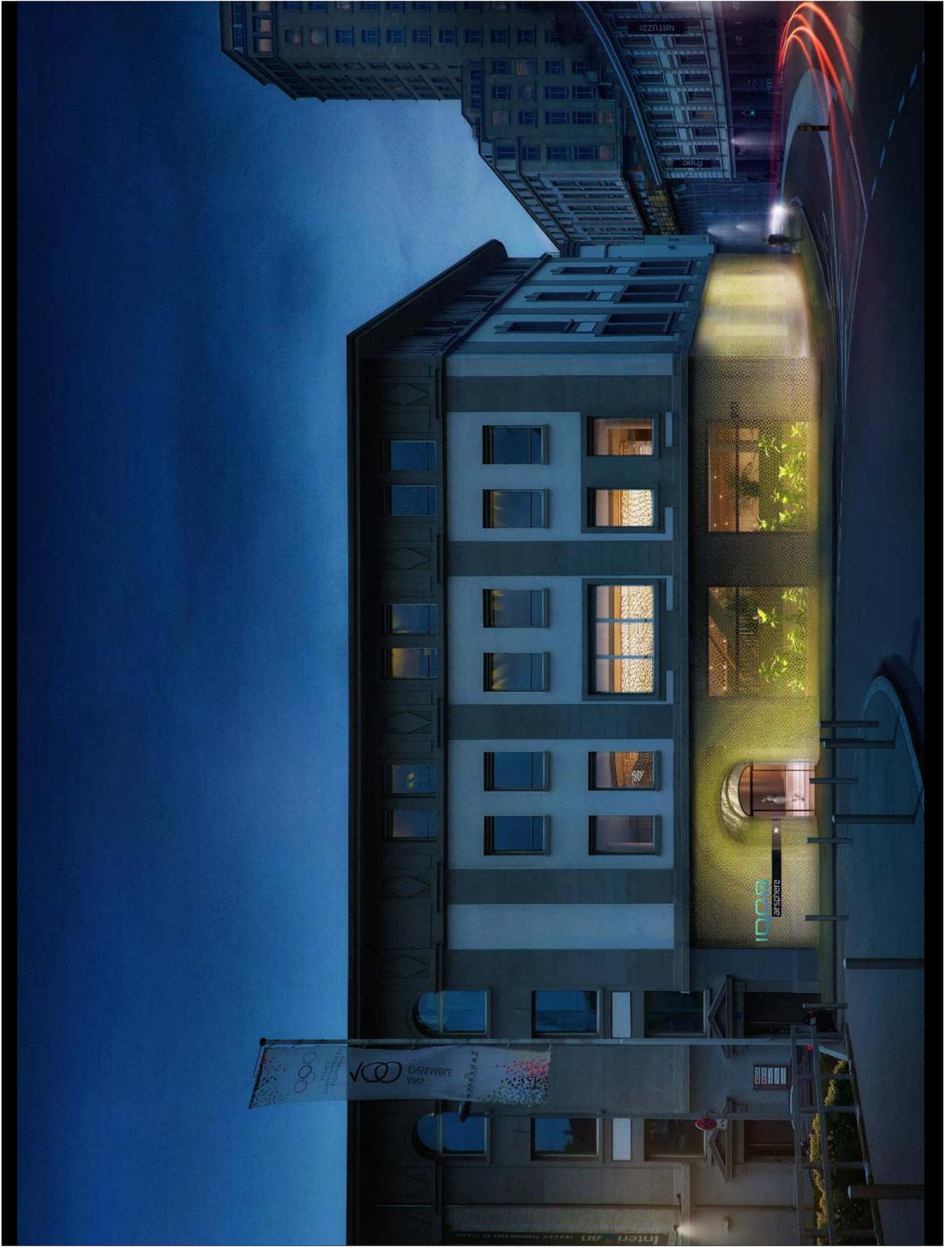
diversion

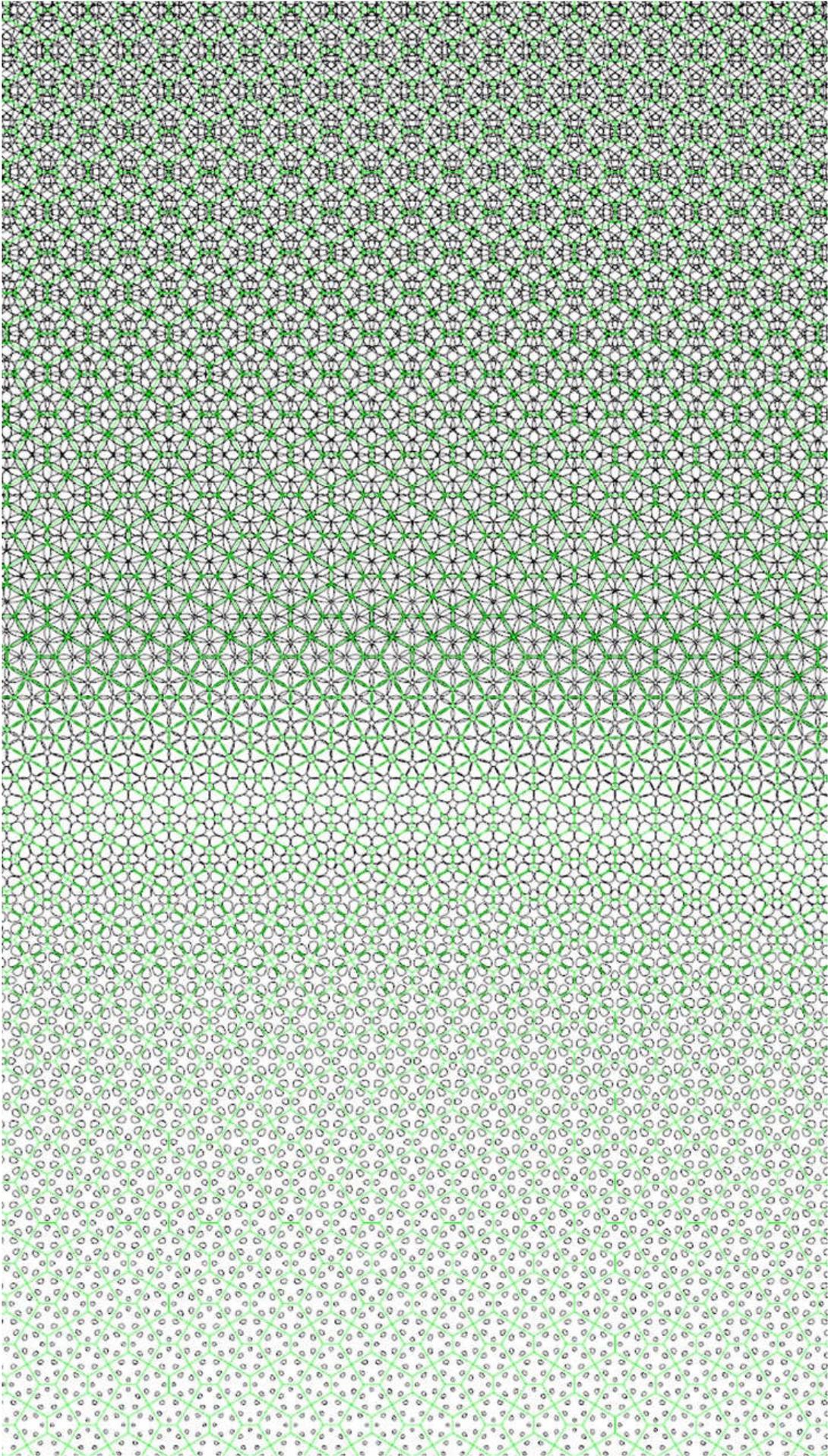
IQOS SCENOGRAPHY

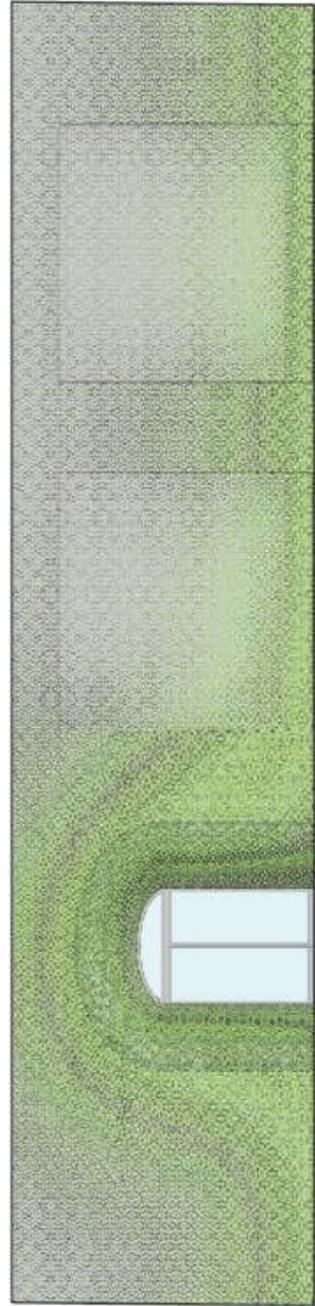
SPATIAL STORYTELLING



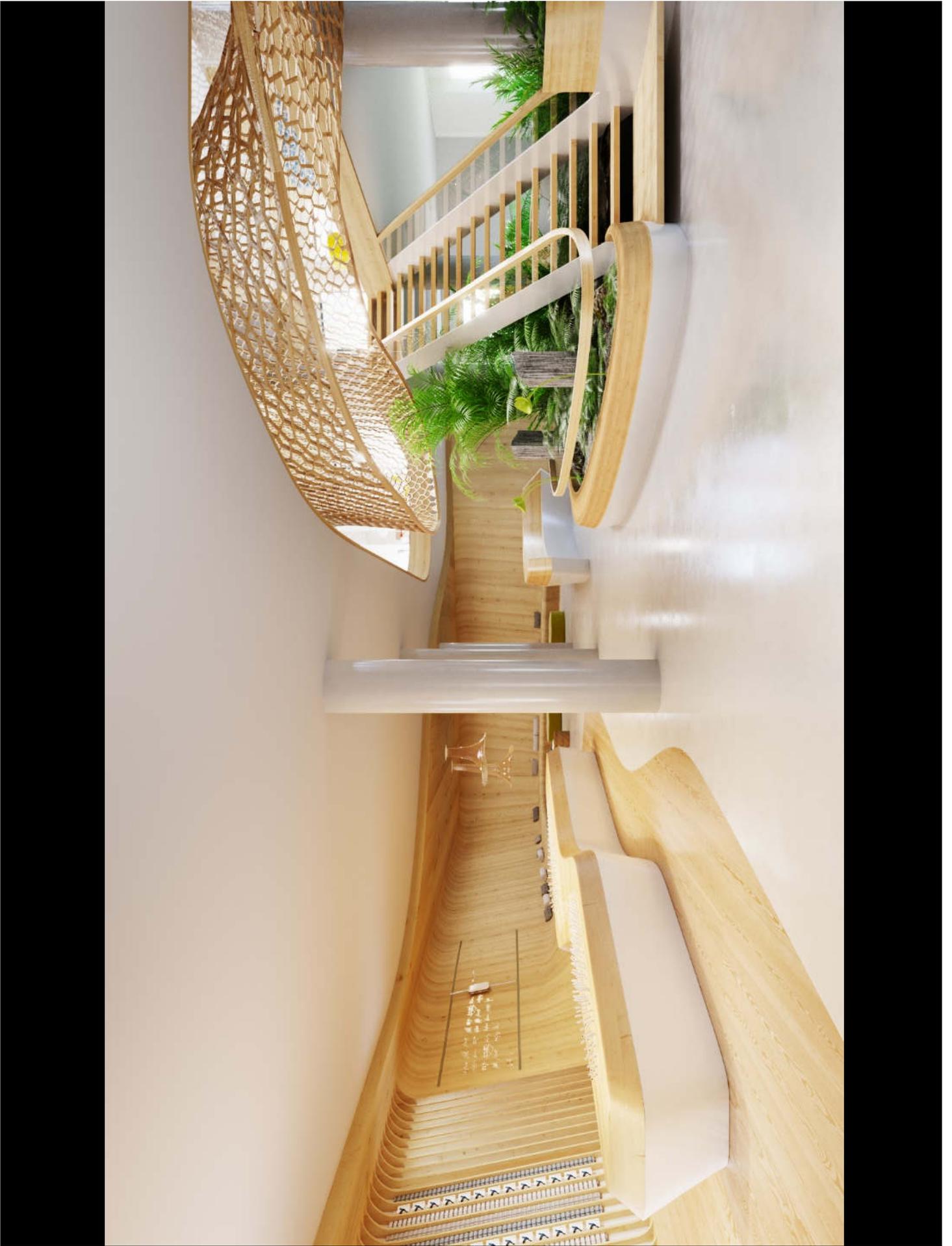


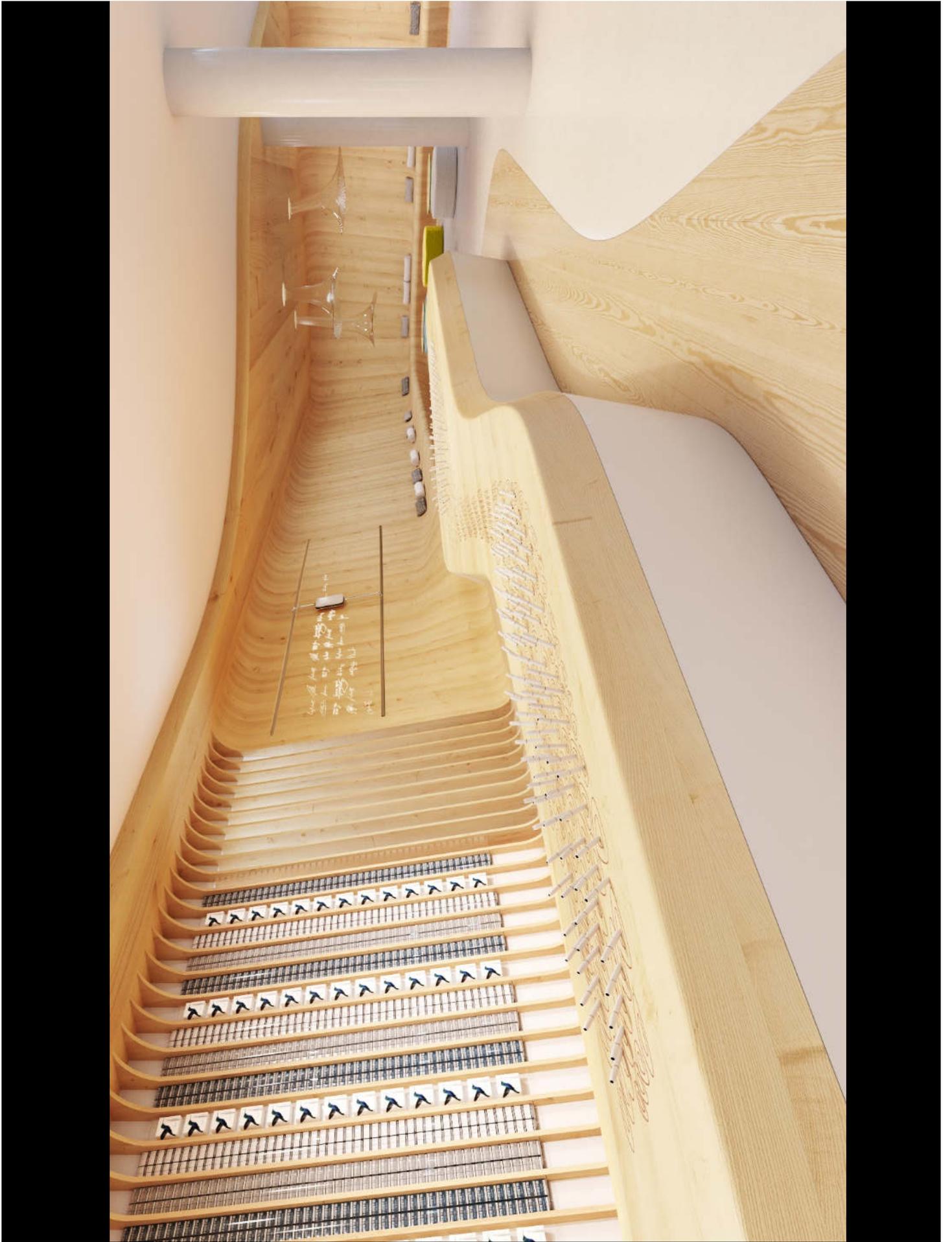


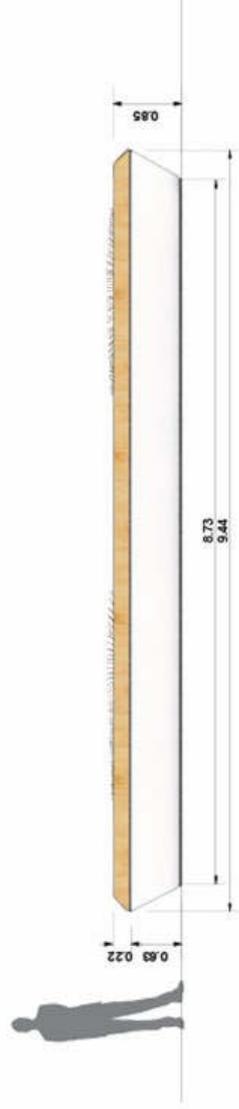
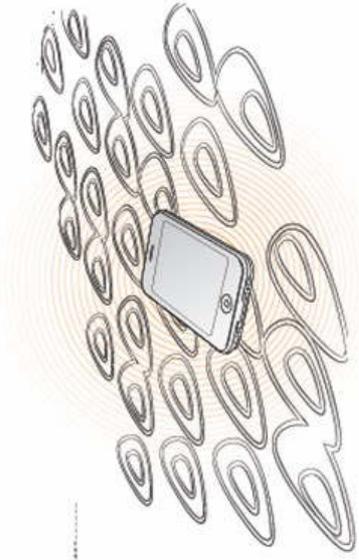
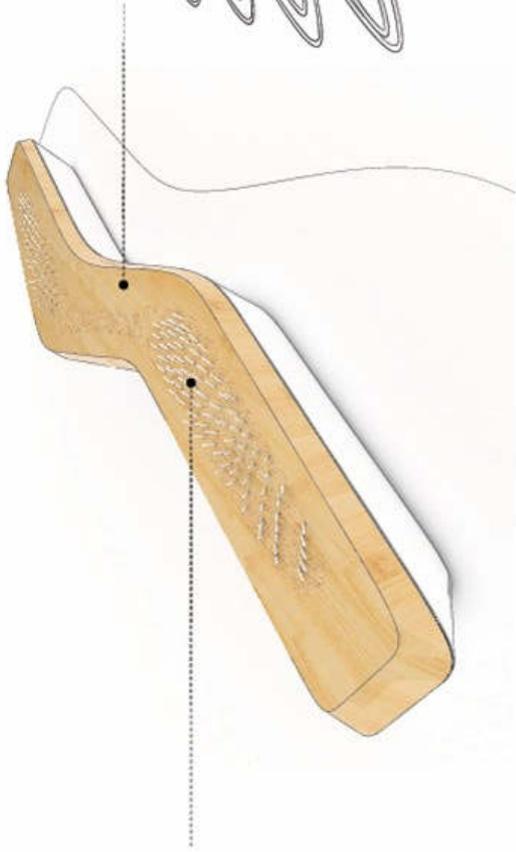
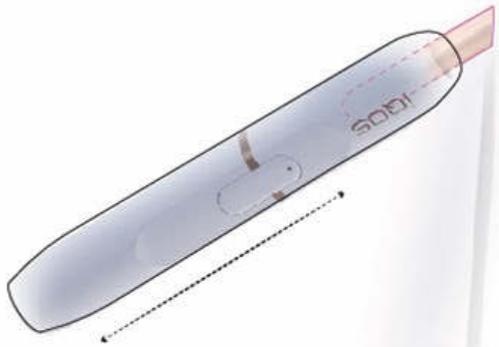


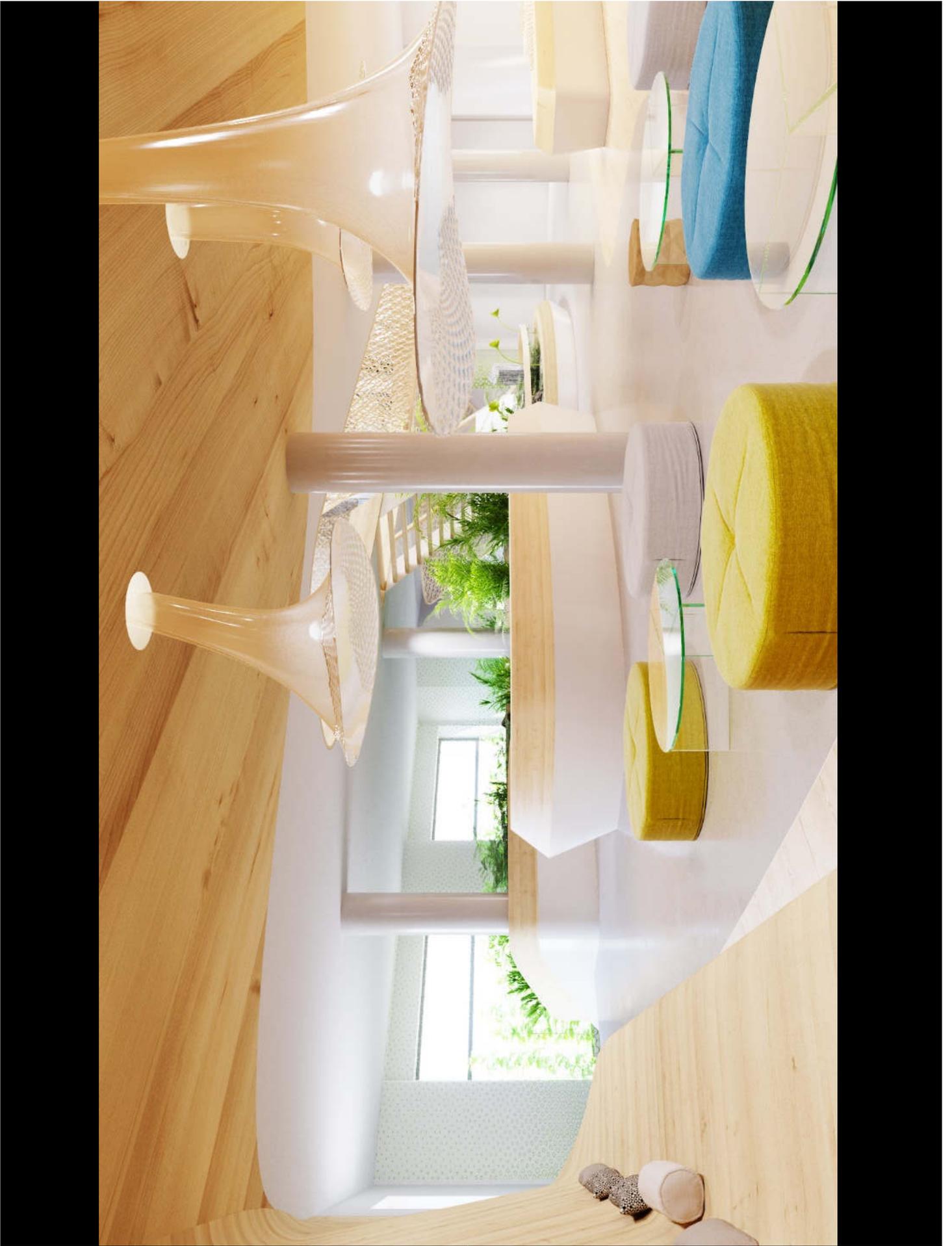


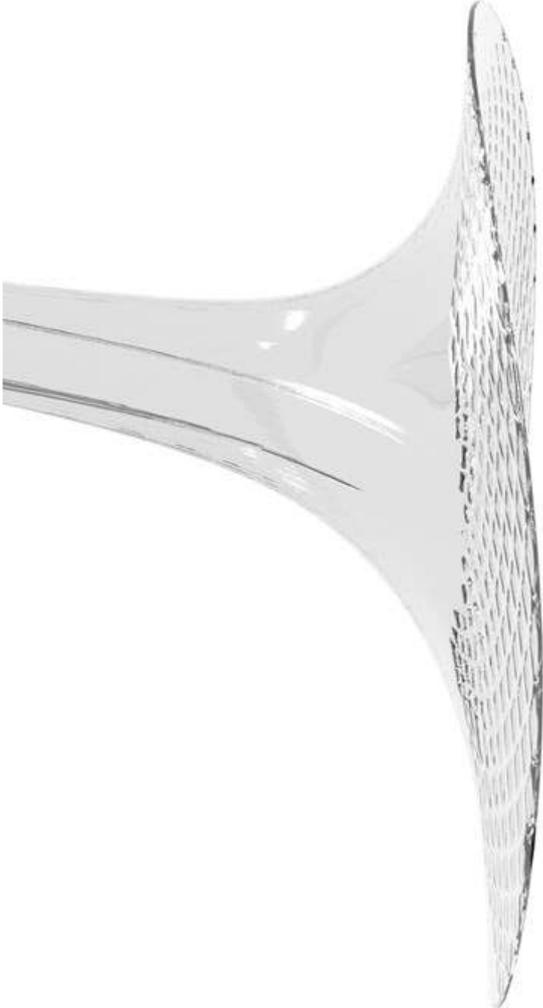


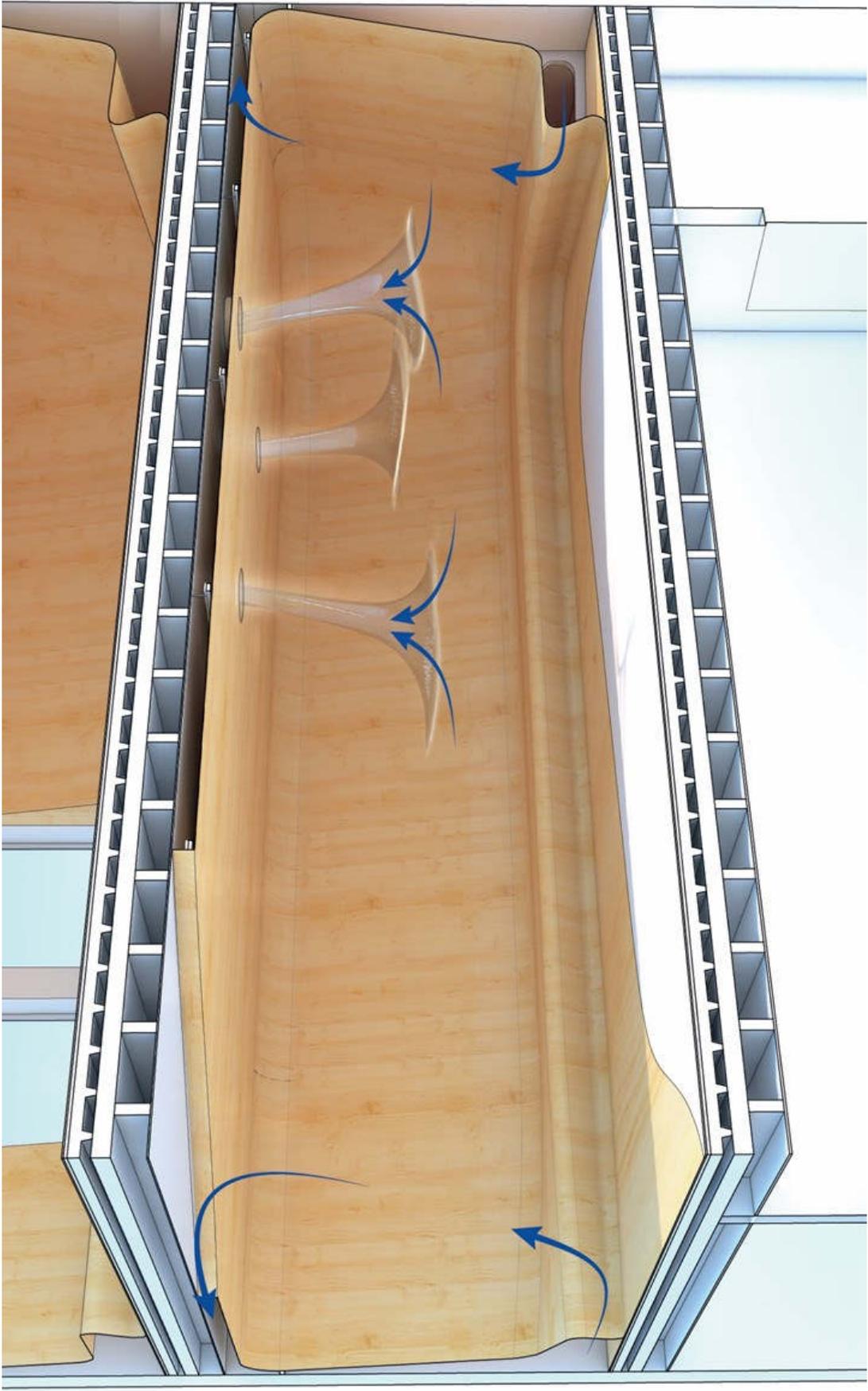


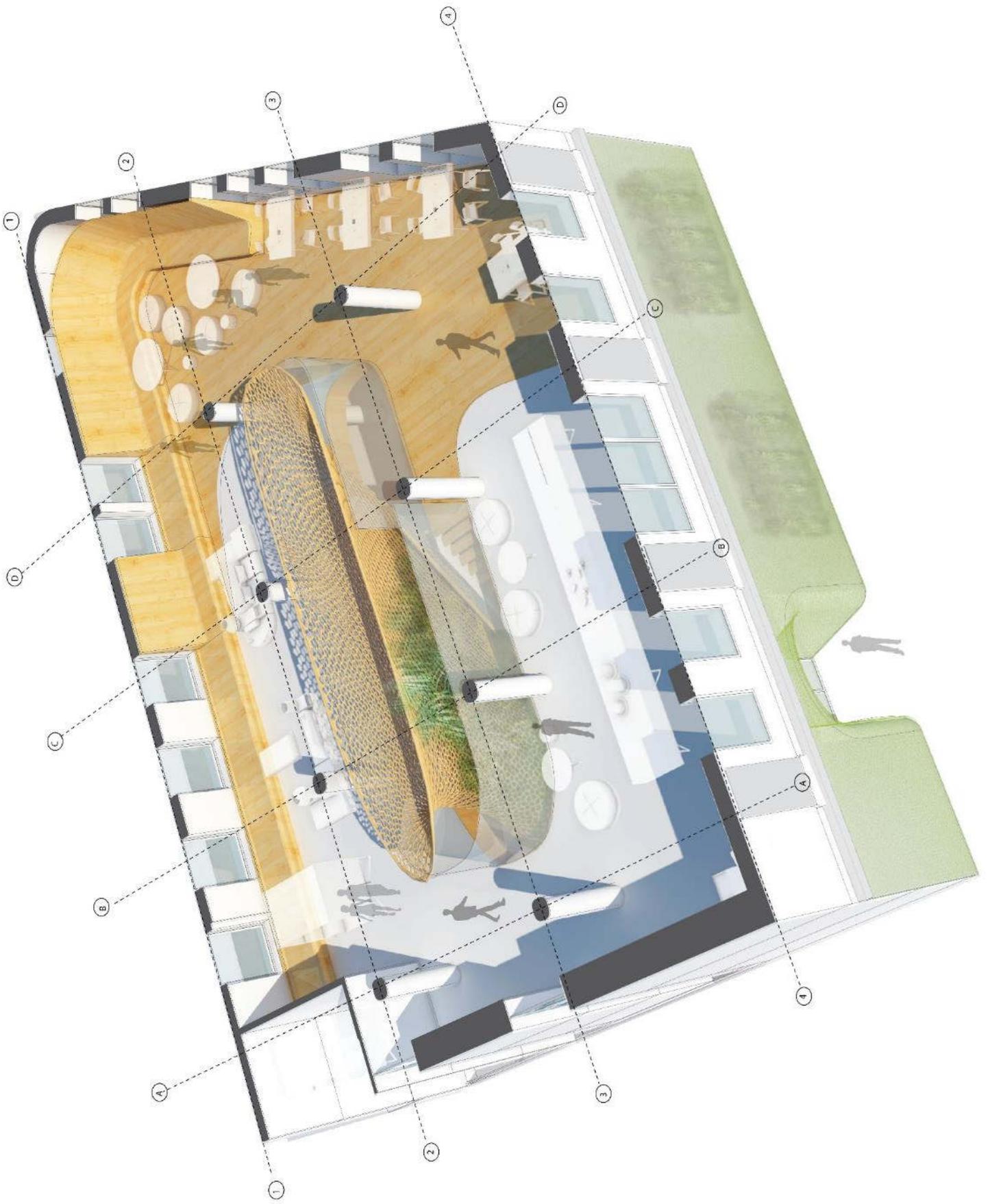


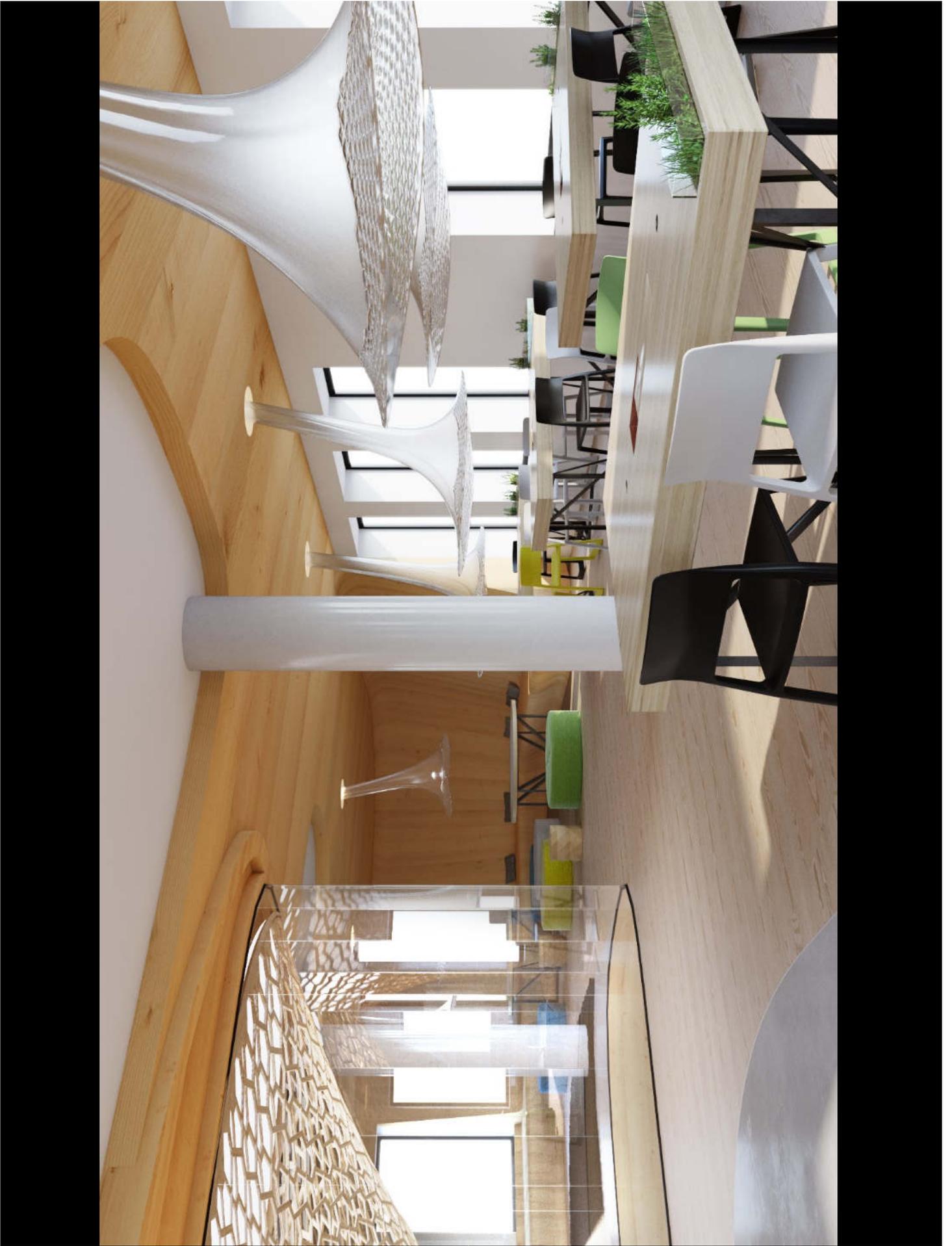


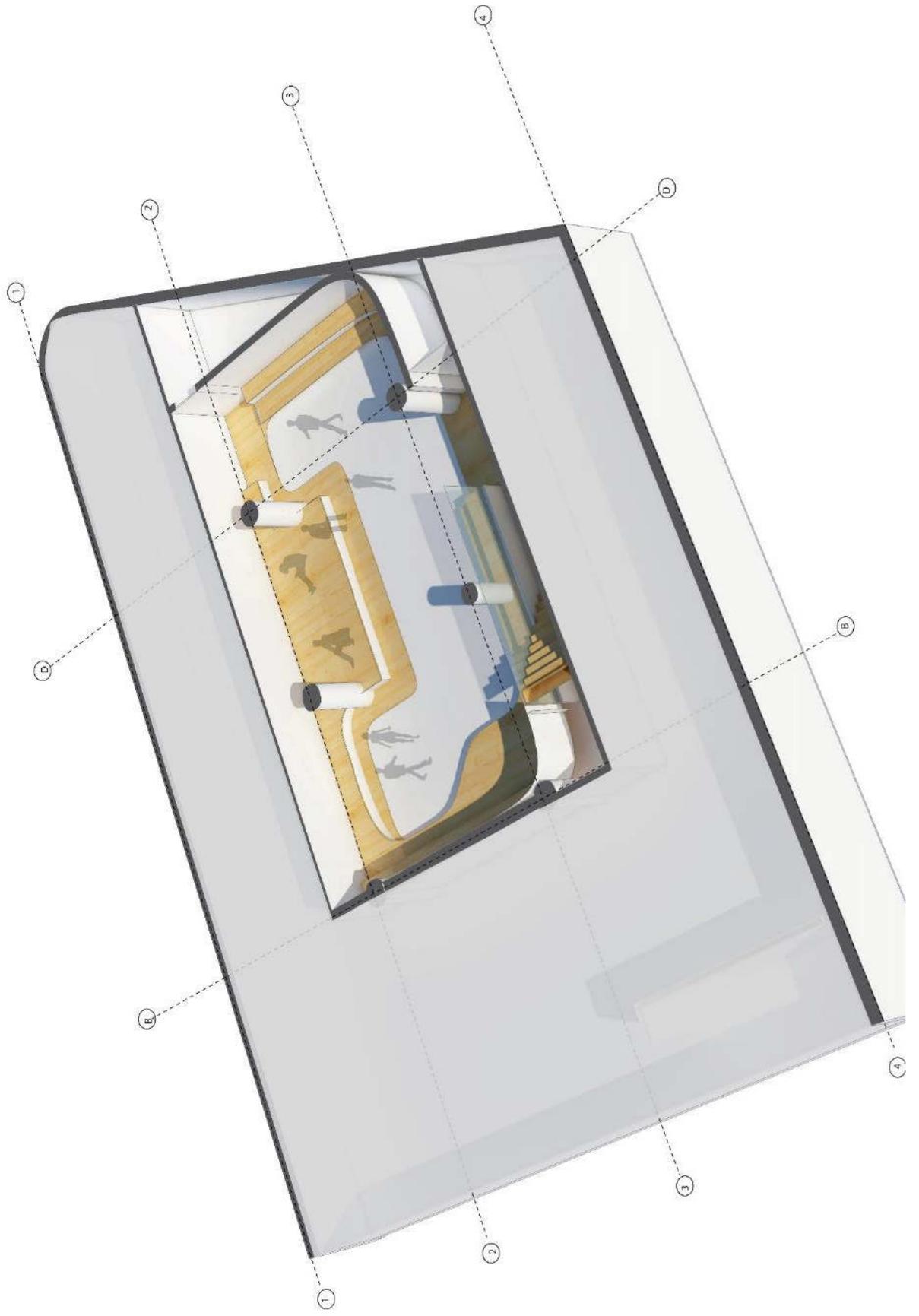














A. AIR GARDEN



A.1 *Bambusa nana*
Bamboo Palm



A.2 *Pteris multifida* - "Jade Waterfall"
Spider Brake Fern



A.3 *Pteris vittata*
Ladder Brake Fern



A.4 *Thuidium delicatulum*
Delicate Fern Moss

B. TOBACCO FACADE



B.1 *Nicotiana glauca*
Flowering Tobacco



B.1 *Nicotiana glauca*
Flowering Tobacco



C.1.1 *Nicotiana glauca*
Flowering Tobacco



C.2.5 *Nicotiana glauca*
Flowering Tobacco

C. MICRO GARDEN



D.1 *Rosmarinus officinalis*
Rosemary



D.2 *Thymus vulgaris*
Thyme



D.3 *Salvia officinalis*
Sage



D.4 *Laurus nobilis*
Bay Leaf

D. HERBAL AROMAS



D.5 *Origanum vulgare*
Oregano



D.6 *Mentha piperita*
Peppermint

