ARCH_TUC/2024 : DIFFUSED & FLEXIBLE ARCHITECTURAL EDUCATION IN THE CITY

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1_THEORETICAL FRAMEWORK

BACKGROUND RESEARCH

An architecture school is not necessarily a building. It is a network of people...

PARADIGM SHIFT IN ARCHITECTURE

paradigm shift:

a change from one way of thinking
to another, a revolution,
a transformation, a metamorphosis

a change of direction,
reference, concept,
goals, values,
perspective,
attitude



significant shift
of the role of
ARCHITECTURE

ARCHITECTURE

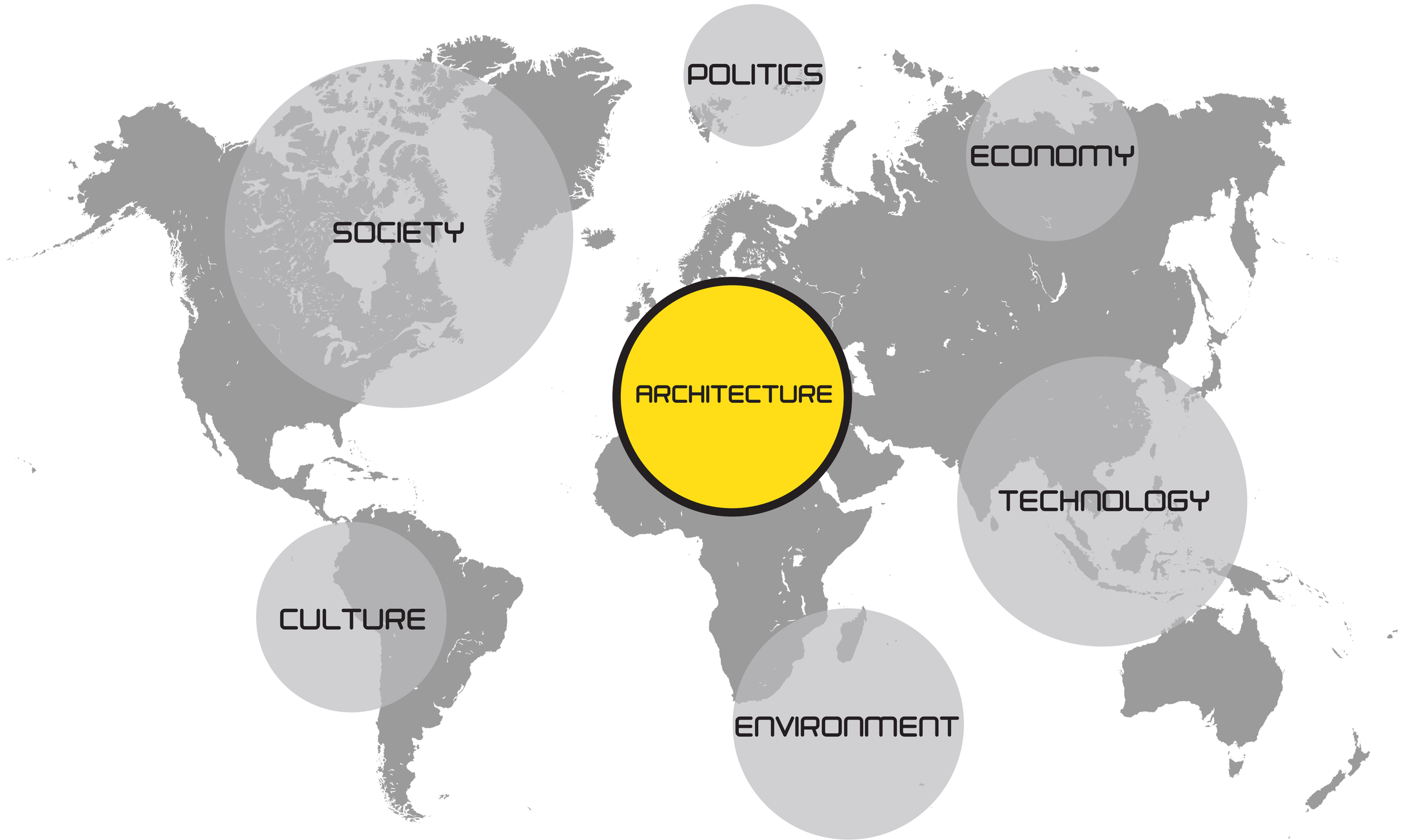
architecture as
classically defined
is gone -
architecture today
has become
indeterminate

age of change
uncertainty
unpredictability

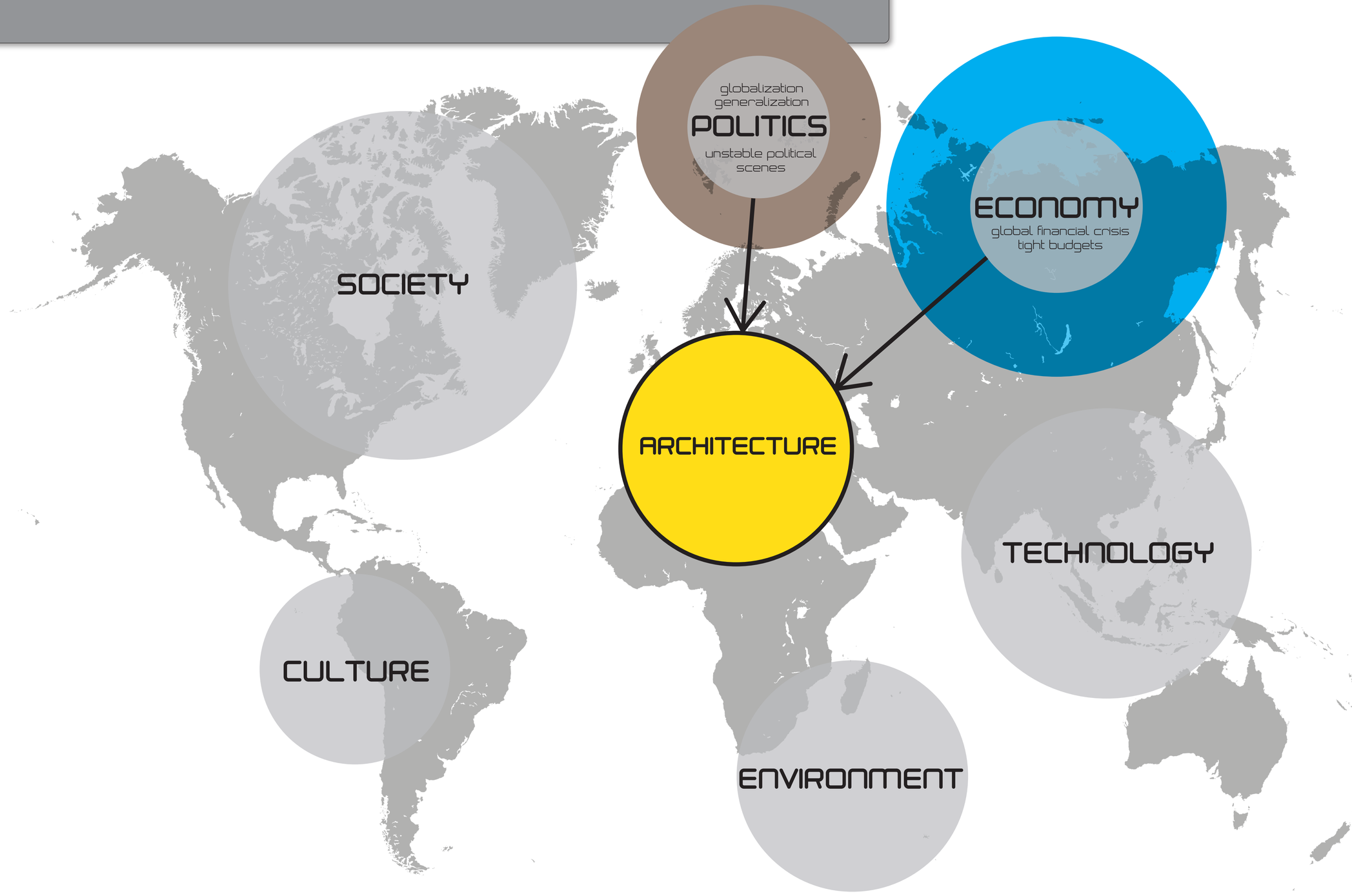
a number of pressing,
complex & qualitative matters
have changed the meaning
& the boundaries
of being an architect

KEY CHEALLENGING FORCES FOR ARCHITECTURE

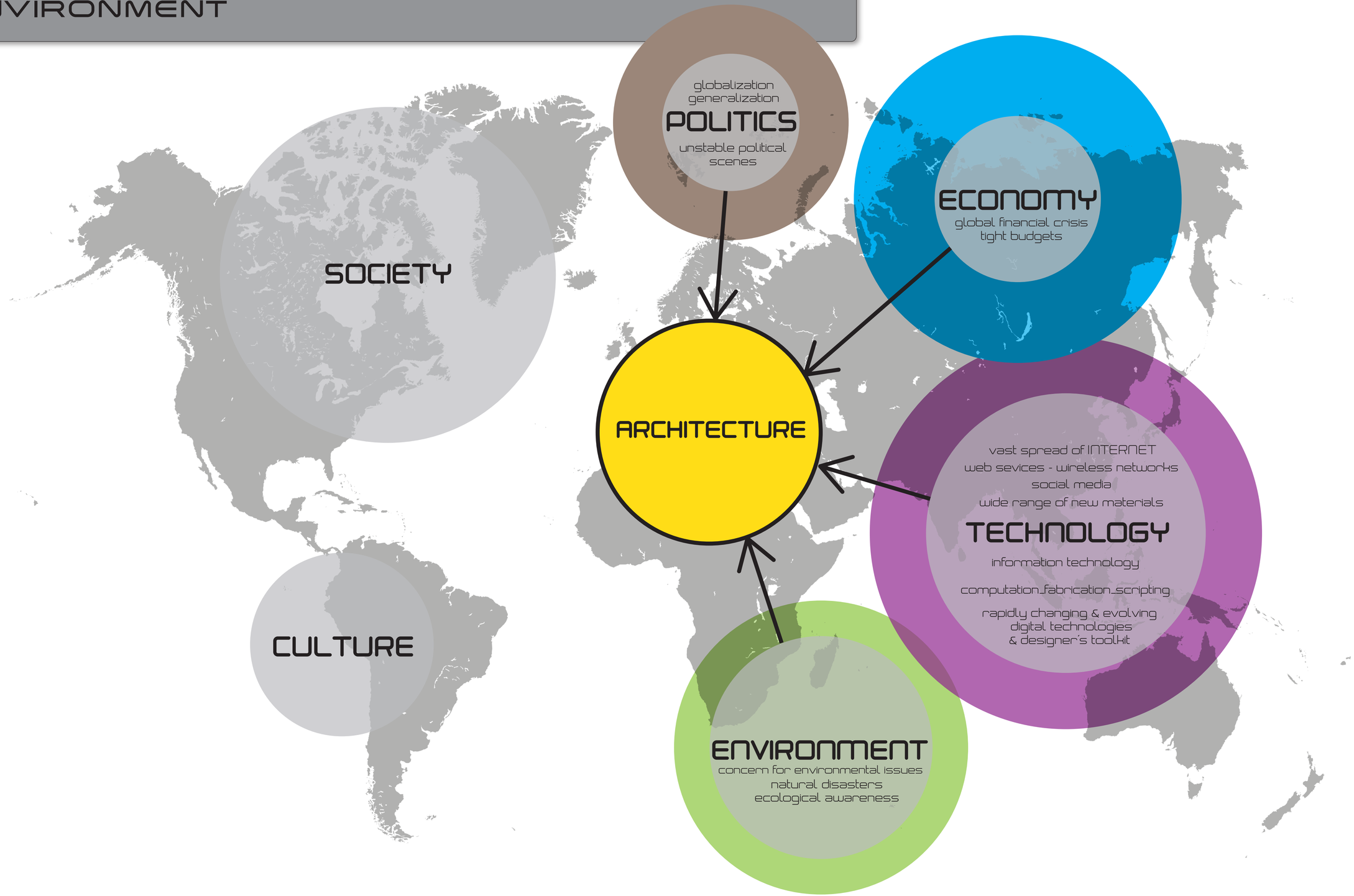
CURRENT & UPCOMING



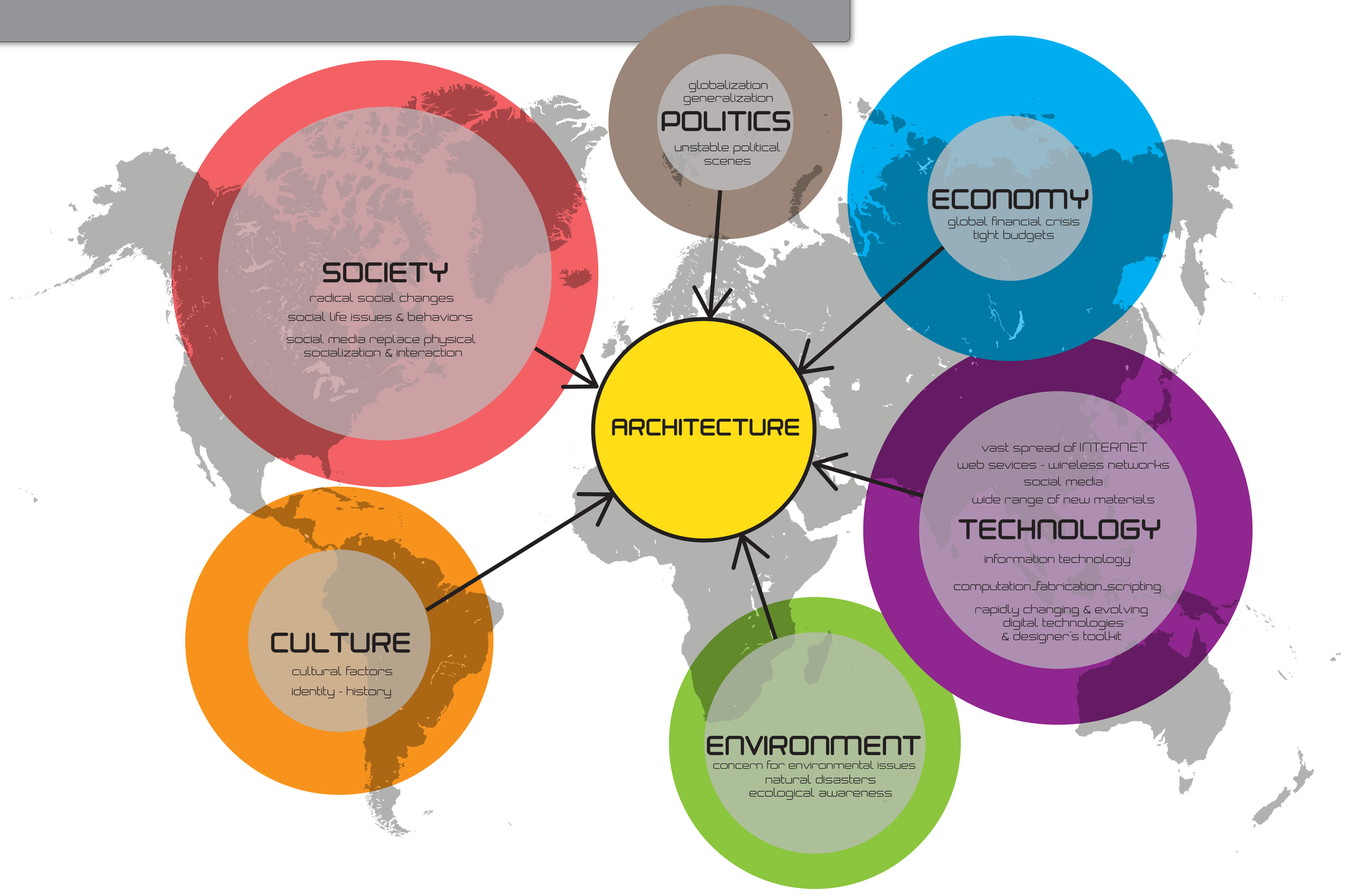
DEALING WITH CHANGE IN POLITICS & ECONOMY



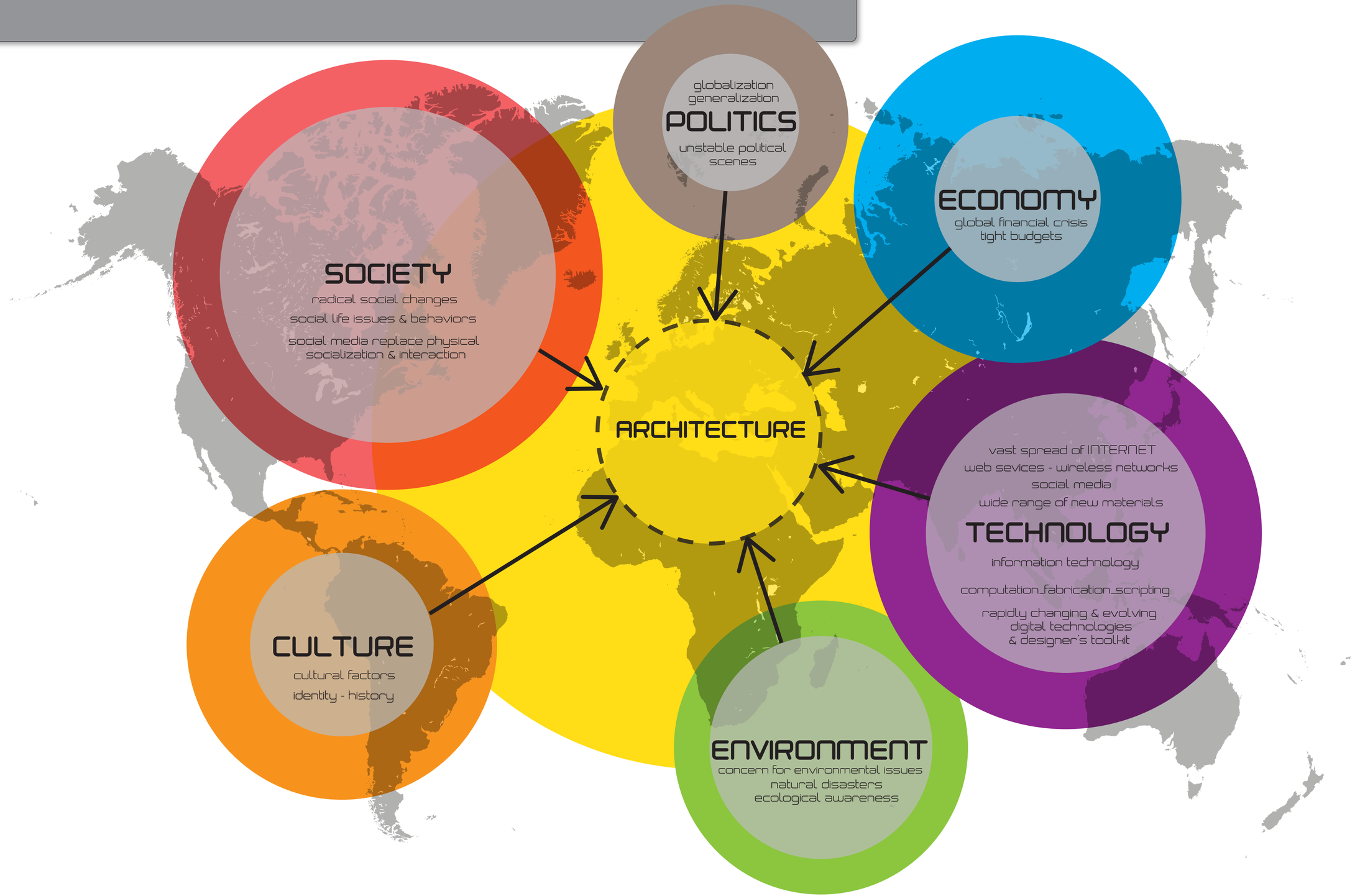
DEALING WITH CHANGE IN TECHNOLOGY & ENVIRONMENT



DEALING WITH CHANGE IN CULTURE & SOCIETY



DEALING WITH CHANGE IN ARCHITECTURE



INTERCONNECTION & INTERACTION OF CHALLENGES

globalization
generalization

POLITICS

unstable political
scenes

ECONOMY

global financial crisis
tight budgets

SOCIETY

radical social changes

social life issues & behaviors

social media replace physical
socialization & interaction

ARCHITECTURE

vast spread of INTERNET
web sevices - wireless networks
social media
wide range of new materials

TECHNOLOGY

information technology

computation_fabrication_scripting

rapidly changing & evolving
digital technologies
& designer´s toolkit

CULTURE

cultural factors
identity - history

ENVIRONMENT

concern for environmental issues
natural disasters
ecological awareness

DEALING WITH CHANGE IN ARCHITECTURE

thinking

globalization
generalization

POLITICS

unstable political scenes

interdisciplinary collaborations

call for identity

ECONOMY

global financial crisis
tight budgets

sustainability
self-sufficiency

SOCIETY

radical social changes

social life issues & behaviors

social media replace physical socialization & interaction

users
people

practice

DIY

purpose oriented

adaptive flexible interactive dynamic environments

needfinding

ARCHITECTURE

studio culture

education

research

MOOCs

vast spread of INTERNET
web sevices - wireless networks
social media
wide range of new materials

TECHNOLOGY

information technology

computation_fabrication_scripting

rapidly changing & evolving digital technologies
& designer's toolkit

"green" technologies & materials

trends

intelligence

systems

open networks

CULTURE

cultural factors

identity - history

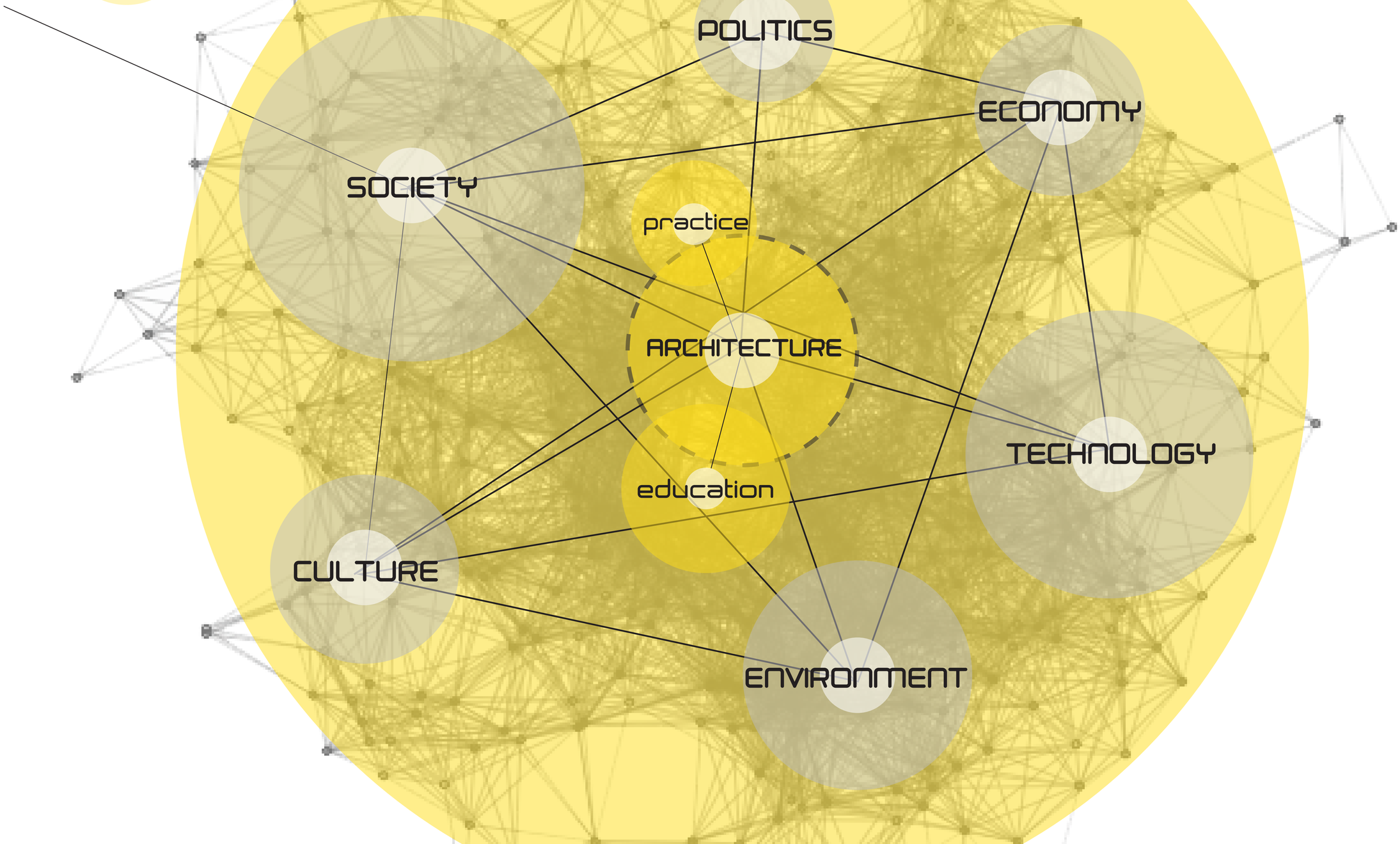
renewable energy resources

ENVIRONMENT

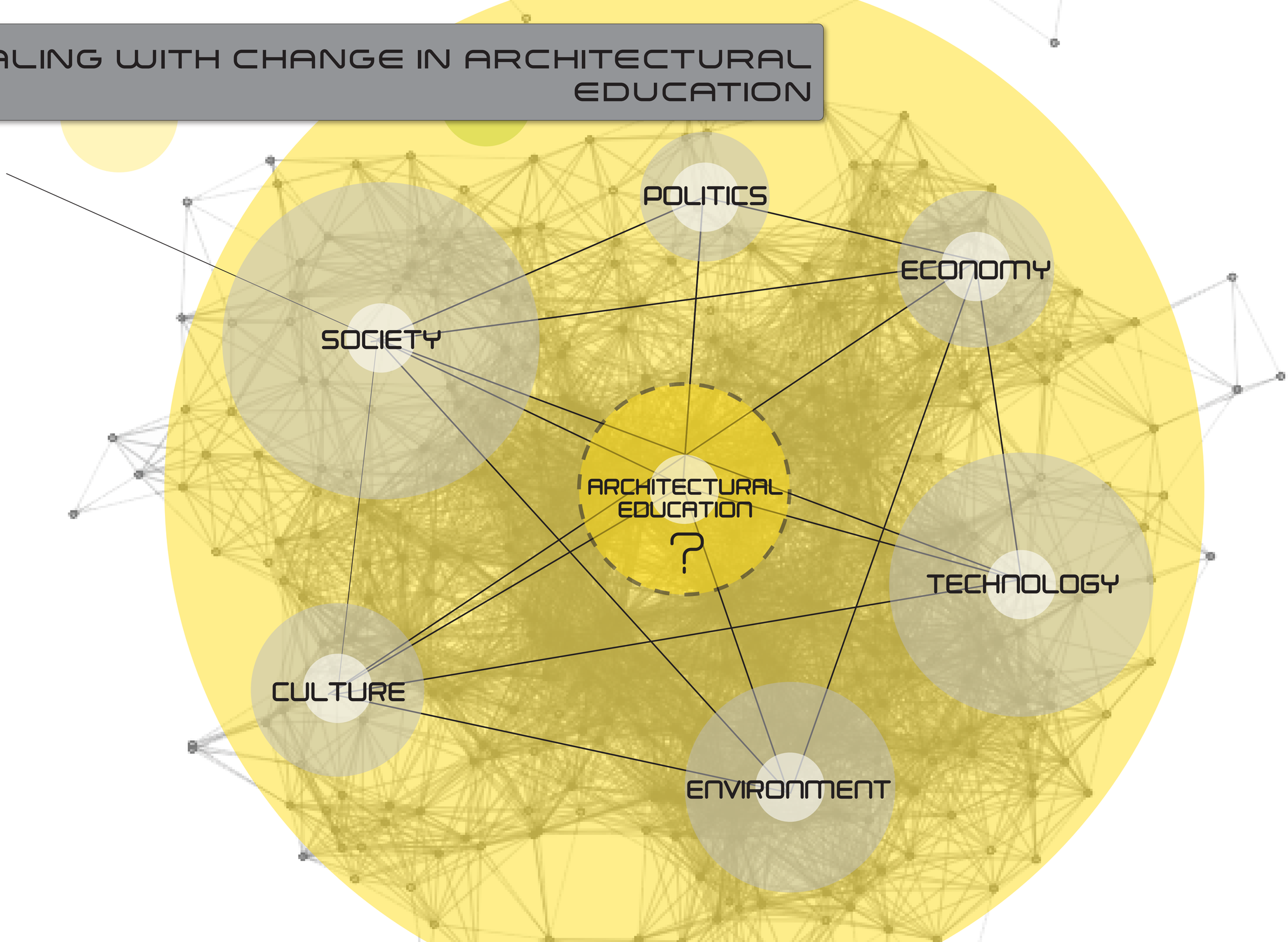
concern for environmental issues
natural disasters
ecological awareness

workshops
fablabs

DEALING WITH CHANGE IN ARCHITECTURAL EDUCATION



DEALING WITH CHANGE IN ARCHITECTURAL EDUCATION



DEALING WITH CHANGE IN ARCHITECTURAL EDUCATION

POLITICS

ECONOMY

SOCIETY

ARCHITECTURAL EDUCATION

the production of alternative paths

an endless mechanism

a spatial act, ethically & socially transformable

ROLE

aesthetics

critical thinking

open horizons

observation & understanding of our world

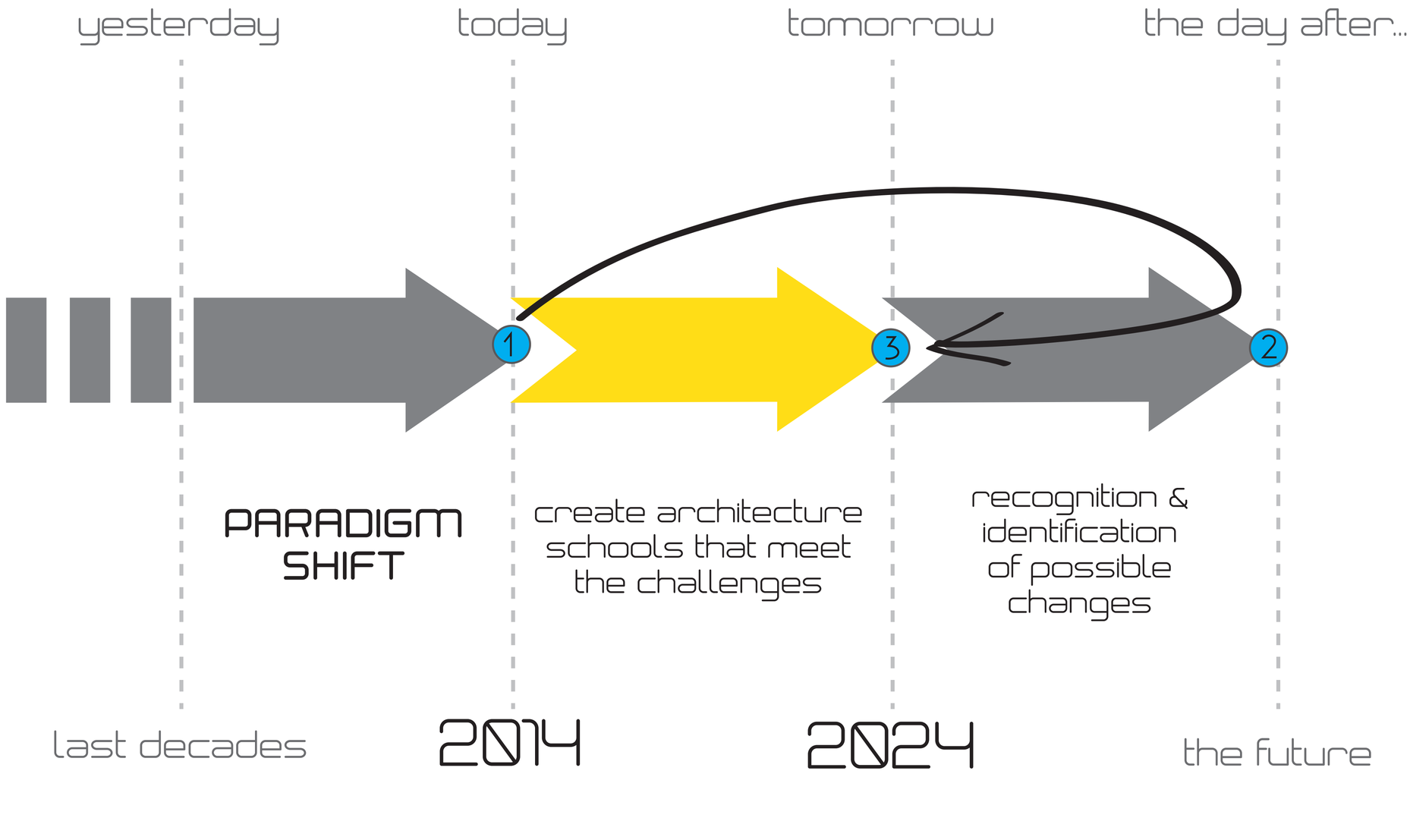
CONTINUOUSLY QUESTION & REDIFINE THE MEANING OF ARCHITECTURE

TECHNOLOGY

CULTURE

ENVIRONMENT

REDEFINITION & STRATEGY PLANNING



OBJECTIVE: CREATE A UNIQUE/ALTERNATIVE/SYSTEMIC MODEL OF ARCHITECTURAL EDUCATION

TRADITIONAL - CONSERVATIVE MODEL VS. PROPOSED ALTERNATIVE MODEL

mechanistic method

education not treated as a whole

knowledge is fragmented
in many unrelated parts

systemic method

education treated as part of a process
which occures within the real world

learning & cultivation through experience,
research & practice

1. closed system VS. open system

limited institutionally and spatially

unlimited institutionally and spatially

2.

focus on architectural outcomes	VS.	focus on architectural systems
objects		processes
forms		mechanisms
representations		social architecture – dynamic approaches
project oriented		purpose oriented

3. linear thinking VS. non-linear thinking

problem-solving problem-worrying

4.

formed by one-way teacher-student relationships

teacher : the active factor &
knowledge provider
student : passive receptor

knowledge consumption

VS.

formed on reciprocal collaborations

promotes dialogue

values of critical pedagogy

active factors: teachers-students-society

knowledge construction

5.

starchitects

praises great personalities of architecture

VS.

interdisciplinary teams

praises & promotes team spirit

recognition of interdisciplinary thinking

6.

static –local

immobile and rigid structures

application in local levels

VS.

mobile – hyperlocal

dynamic – multidimentional
fluid – transformable

hyperlocal(even global) application

7. top–down approach VS. balance between top–down & bottom–up approaches

8. hardware VS. software

9.

hypothetical VS. real

introduces hypothetical assignments
& projects

introduces appreciative inquiry
& active & experiential learning scenarios

10. classic curriculum VS. "hidden" curriculum

refering to the typical context of courses,
their content & rules

no relation or connection between courses

focuses on unwritten values and behavior
beyond course time

11. cautious towards technology

VS.

integrating technology

SOLUTION KEY

integrating the new values to the old ones

introduction of new technologies into the educating process
& education spaces

application & development of interdisciplinary strategies

DON’t impose a specific way of thinking

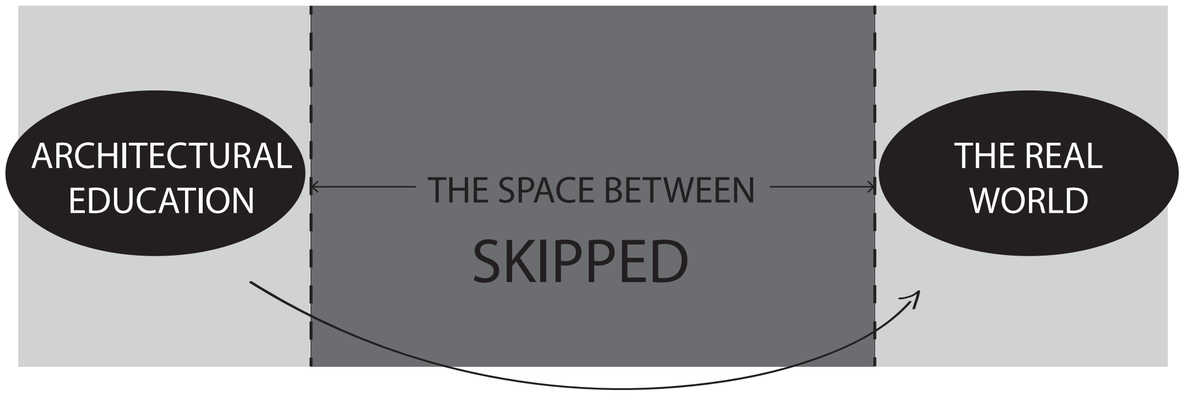
THE SPACE SHOULD:

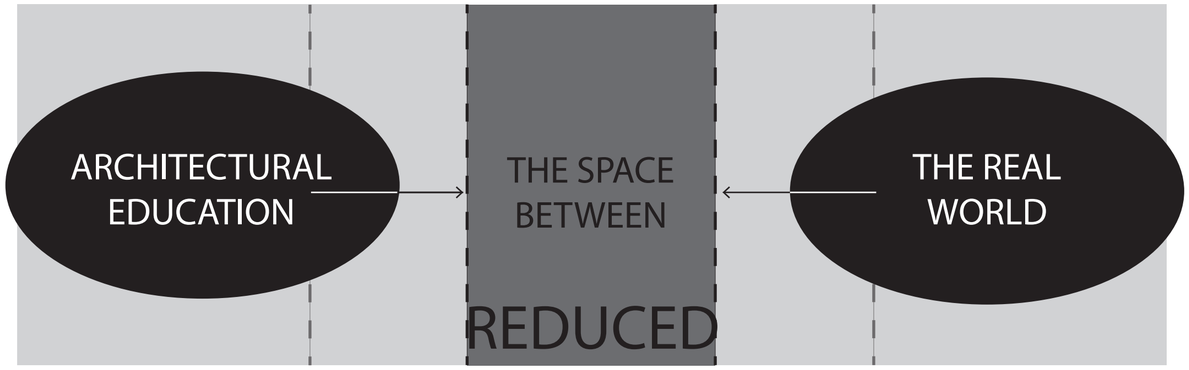
facilitate the art of sharing & cooperation

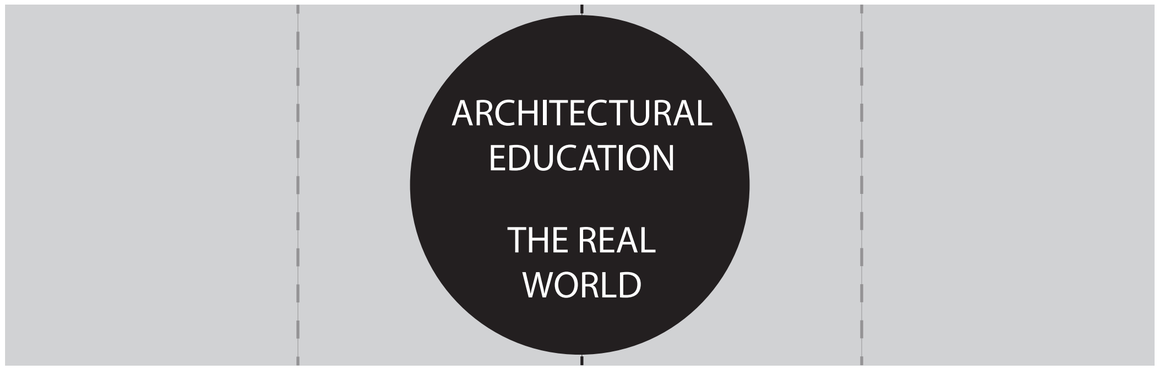
unravel a wide range of possibilities & options

2_CONCEPT DEVELOPMENT & STRETEGIC PLANNING OF AN OPEN ARCHITECTURAL EDUCATION SYSTEM









MERGED & the space between filled...

REDEFINITION OF:

[1] the architectural education system per se
[school of architecture context]

[2] the architectural education system in relation with other discuplines and academic communities
[interdisciplinary strategies]

[3] the architectural education system in relation with non-academic partners, the city and society
[real world connection]

SOCIETY - COMMUNITY - CITY y

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

ACADEMIC COMMUNITY x

discipline x

discipline y

ARCHITECTURE SCHOOL

discipline z

discipline x

ACADEMIC COMMUNITY z

DISCIPLINARY ACADEMIC STRUCTURE

TRADITIONAL MODEL OF ARCHITECTURAL EDUCATION

HIERARCHICAL VERTICAL & HORIZONTAL RELATIONS & LAYERS

CLOSED SYSTEM

FRAGMENTATION OF KNOWLEDGE

SOCIETY - COMMUNITY - CITY y

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY x

discipline x

discipline y

ARCHITECTURE SCHOOL

discipline z

discipline w

ACADEMIC COMMUNITY z

DISCIPLINARY ACADEMIC STRUCTURE

REARRANGEMENT OF RELATIONSHIPS

BIDIRECTIONAL & DYNAMIC RELATIONSHIPS

SYSTEMIC CONFIGURATION

FREE DISTRIBUTION OF KNOWLEDGE

SOCIETY - COMMUNITY - CITY y

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

ACADEMIC COMMUNITY x

discipline x

discipline y

ARCHITECTURE SCHOOL

discipline z

discipline x

ACADEMIC COMMUNITY z

INTER-DISCIPLINARY ACADEMIC STRUCTURE

BREAKING THE BOUNDARIES
OF THE ARCHITECTURE SCHOOL CONTEXT

ARCHITECTURE SCHOOL
APPROACHING OTHER DISCIPLINES

SOCIETY - COMMUNITY - CITY y

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY x

discipline x

discipline y

ARCHITECTURE SCHOOL

discipline z

discipline w

INTERDISCIPLINARY ACADEMIC STRUCTURE

TRIGGERING CREATIVE DIALOGUE AND COLLABORATIONS

ACADEMIC COMMUNITY z

SOCIETY - COMMUNITY - CITY y

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY x

discipline x

discipline y

discipline z

discipline x

ARCHITECTURE SCHOOL SYSTEM
SEEKING EXPANTION

ACADEMIC COMMUNITY z

SOCIETY - COMMUNITY - CITY y

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY x

discipline x

discipline y

discipline x

discipline z

ACADEMIC COMMUNITY z

BREAKING THE BOUNDARIES
OF THE ACADEMIC CONTEXT

ARCHITECTURE SCHOOL SYSTEM
EXPANDING

SOCIETY - COMMUNITY - CITY y

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

ACADEMIC COMMUNITY x

discipline x

discipline y

discipline z

ACADEMIC COMMUNITY z

BREAKING THE BOUNDARIES
BETWEEN CITIES/SOCIETIES

EXPANDING IN A BROADER OPERATING SPACE

SOCIAL AND ACADEMIC INTERACTION

ARCHITECTURAL EDUCATION
BEYOND THE CLASSROOM

SOCIETY - COMMUNITY - CITY y

SOCIETY - COMMUNITY - CITY z

SOCIETY - COMMUNITY - CITY x

ACADEMIC COMMUNITY y

discipline x

ARCHITECTURE SCHOOL

ACADEMIC COMMUNITY x

discipline x

discipline y

ACADEMIC COMMUNITY z

discipline z

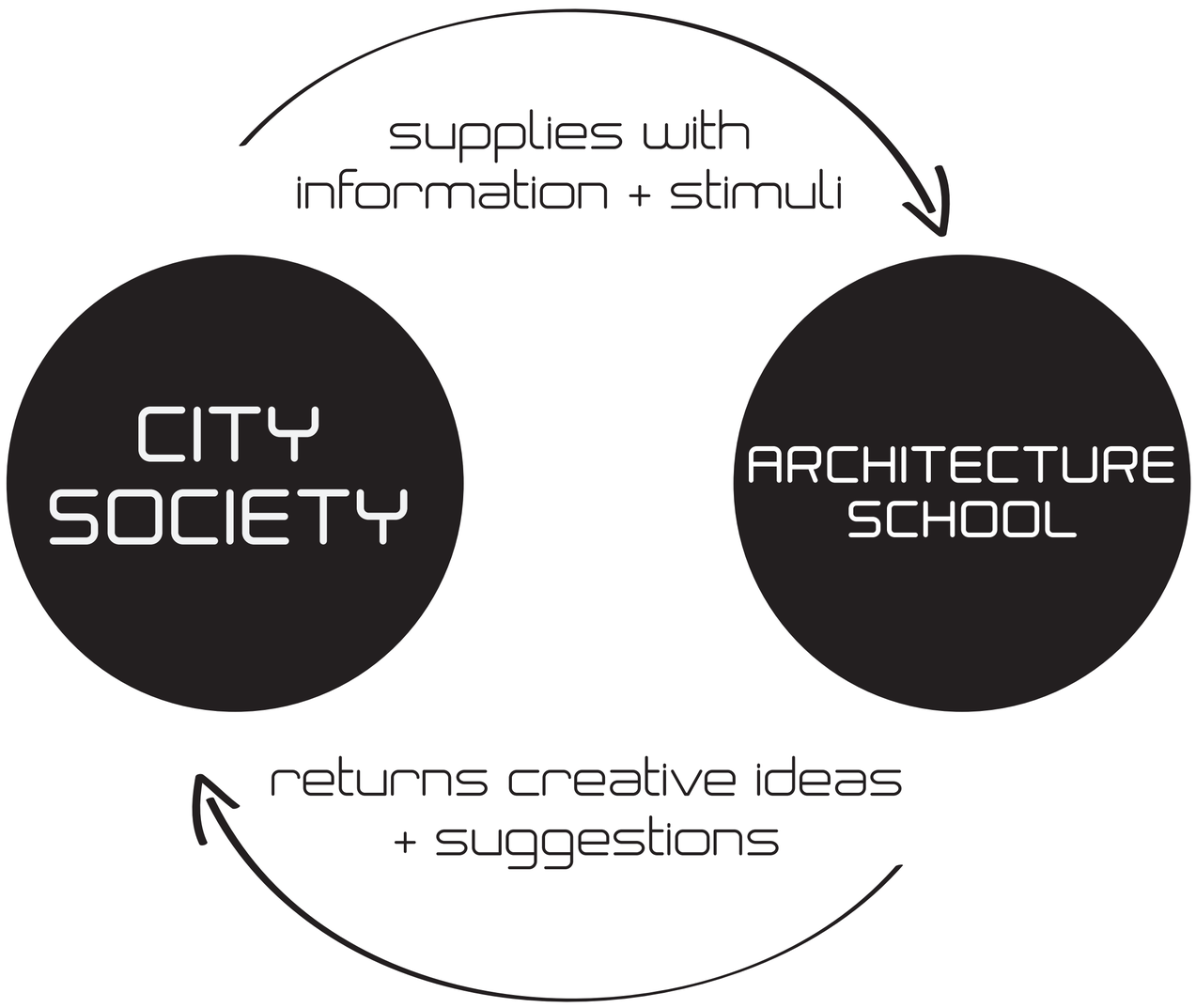
discipline x

NETWORK OF ARCHITECTURAL EDUCATION HUBS

DEVELOPMENT OF ALTERNATIVE ARCHITECTURAL EDUCATION PLATFORMS

KNOWLEDGE BEYOND BOUNDARIES

ARCHITECTURE SCHOOLS SHOULD BE DIFFUSED AND INTEGRATED INTO THE URBAN GRID



ARCHITECTURE SCHOOLS SHOULD BE:

a parallel universe

an on-going procedure

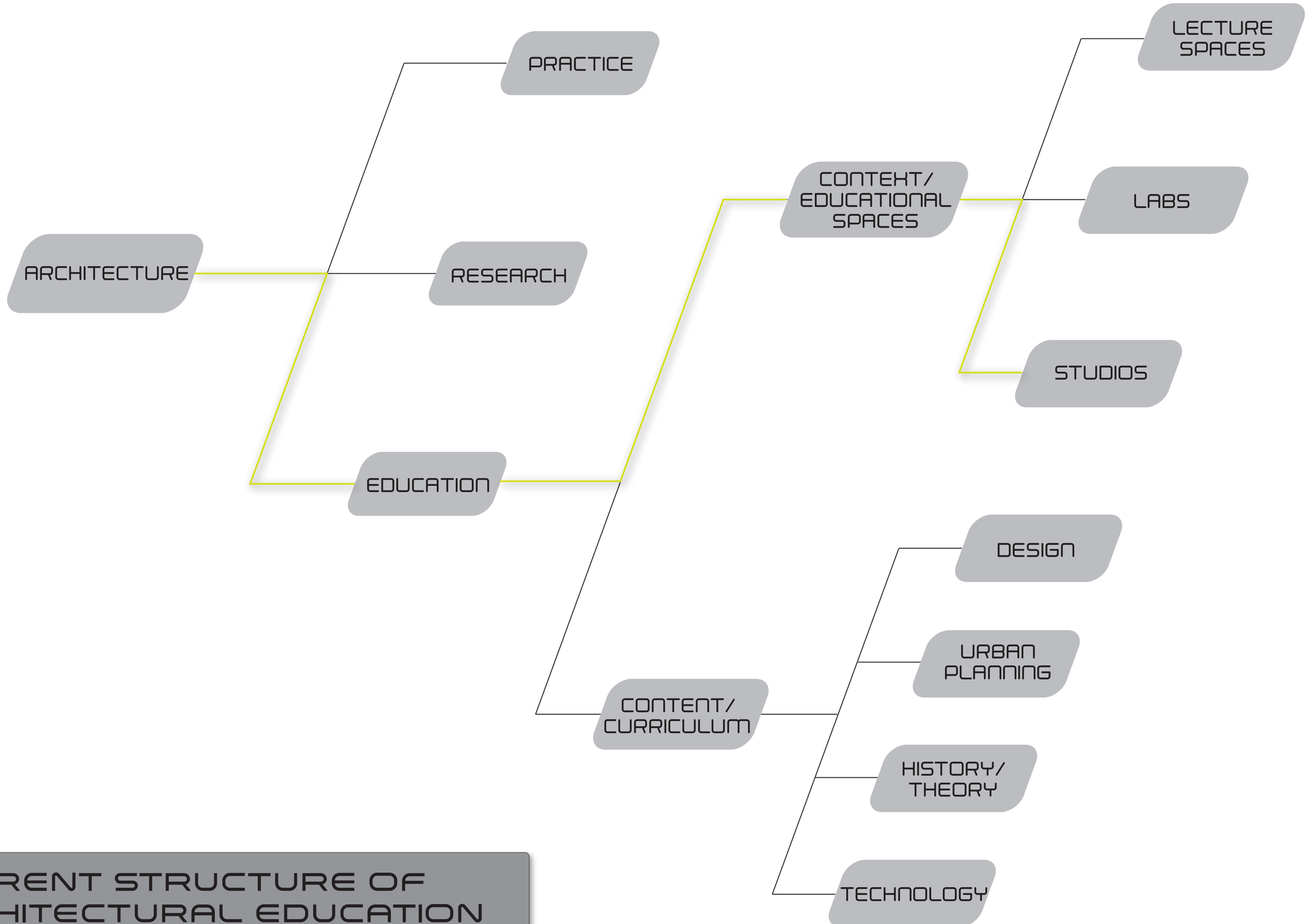
ACTING AS AN OPEN PLATFORM - INFRASTRUCTURE OF EXCHANGING IDEAS

3_ANALYSIS

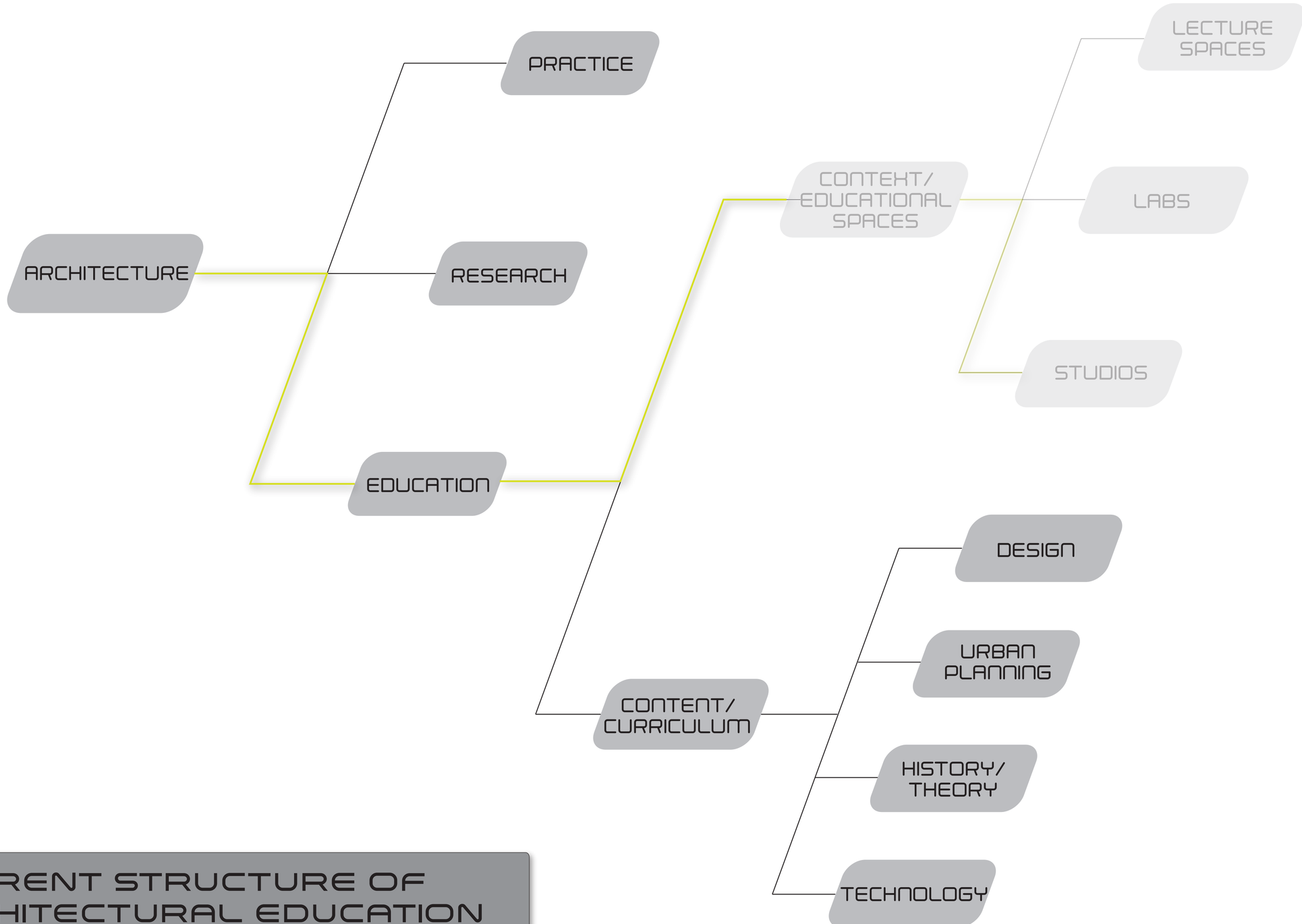
STUDIO CULTURE REVISED

[1]analysis of architectural education structure

[2]redefinition of consisting parameters



CURRENT STRUCTURE OF ARCHITECTURAL EDUCATION



CURRENT STRUCTURE OF ARCHITECTURAL EDUCATION

ARCHITECTURE SCHOOL CURRICULUM

SEMESTER	1	2	3	4	5	6	7	8	9	10
COURSES										
ART	■	■	■	■						
ART HISTORY	■	■								
ARCHITECTURE HISTORY/THEORY	■	■	■	■	■					
ARCHITECTURE THINKING	■	■								
MEANS OF REPRESENTATION	■									
TOPOGRAPHY	■									
ARCHITECTURAL DESIGN	■	■	■	■	■	■	■	■		
OTHER SCIENCES	■	■				■				
DIGITAL TECHNOLOGIES		■	■	■						
STRUCTURAL ENGINEERING			■	■						
ARCHITECTURE & BUILDING TECHNOLOGY		■	■	■	■	■	■			
HISTORY OF THE CITY AND URBANISM			■							
URBAN DESIGN AND PLANNING				■	■	■	■	■		
LANDSCAPE ARCHITECTURE					■			■		
SUSTAINABLE ARCHITECTURE						■				
INTRODUCTION TO PROFESSIONAL PRACTICE							■			
RESTORATION/INTERVENTION						■	■			
ELECTIVES					■	■	■	■		
SPATIAL PLANNING									■	
RESEARCH									■	
FINAL PROJECT										■
TOTAL COURSES	8	6	7	6	5	5	4 +2	3 +3	2	1

ARCHITECTURE SCHOOL CURRICULUM

SEMESTER	1	2	3	4	5	6	7	8	9	10
COURSES										
ART	■	■	■	■						
ART HISTORY	■	■								
ARCHITECTURE HISTORY/THEORY	■	■	■	■	■					
ARCHITECTURE THINKING	■	■								
MEANS OF REPRESENTATION	■									
TOPOGRAPHY	■									
ARCHITECTURAL DESIGN	■	■	■	■	■	■	■	■		
OTHER SCIENCES	■	■				■				
DIGITAL TECHNOLOGIES		■	■	■						
STRUCTURAL ENGINEERING			■	■						
ARCHITECTURE & BUILDING TECHNOLOGY		■	■	■	■	■				
HISTORY OF THE CITY AND URBANISM			■							
URBAN DESIGN AND PLANNING				■	■	■	■	■		
LANDSCAPE ARCHITECTURE					■			■		
SUSTAINABLE ARCHITECTURE						■				
INTRODUCTION TO PROFESSIONAL PRACTICE							■			
RESTORATION/INTERVERNTION						■	■			
ELECTIVES					■	■	■	■	■	
SPATIAL PLANNING									■	
RESEARCH									■	
FINAL PROJECT										■
TOTAL COURSES	8	8	7	7	6 +1	6 +1	4 +2	3 +3	2	1

■ design

■ history/theory

■ technology

■ urbanism/ planning

■ other sciences

CENTRAL CATEGORIES OF COURSES IN ARCHITECTURAL EDUCATION

design

2 3 4 6 10 class hours

- architectural design
- architecture thinking
- means of representation
- fine arts
- landscape architecture
- urban design
- restoration/intervention
- professional practice
- design electives

history & theory

class hours 4 2

- architecture history & theory
- art history
- theoretical electives

30 final project/ thesis

12 research project

- structural engineering
- digital technologies in architecture
- architecture & building technology
- sustainable & bioclimatic architecture
- technology electives

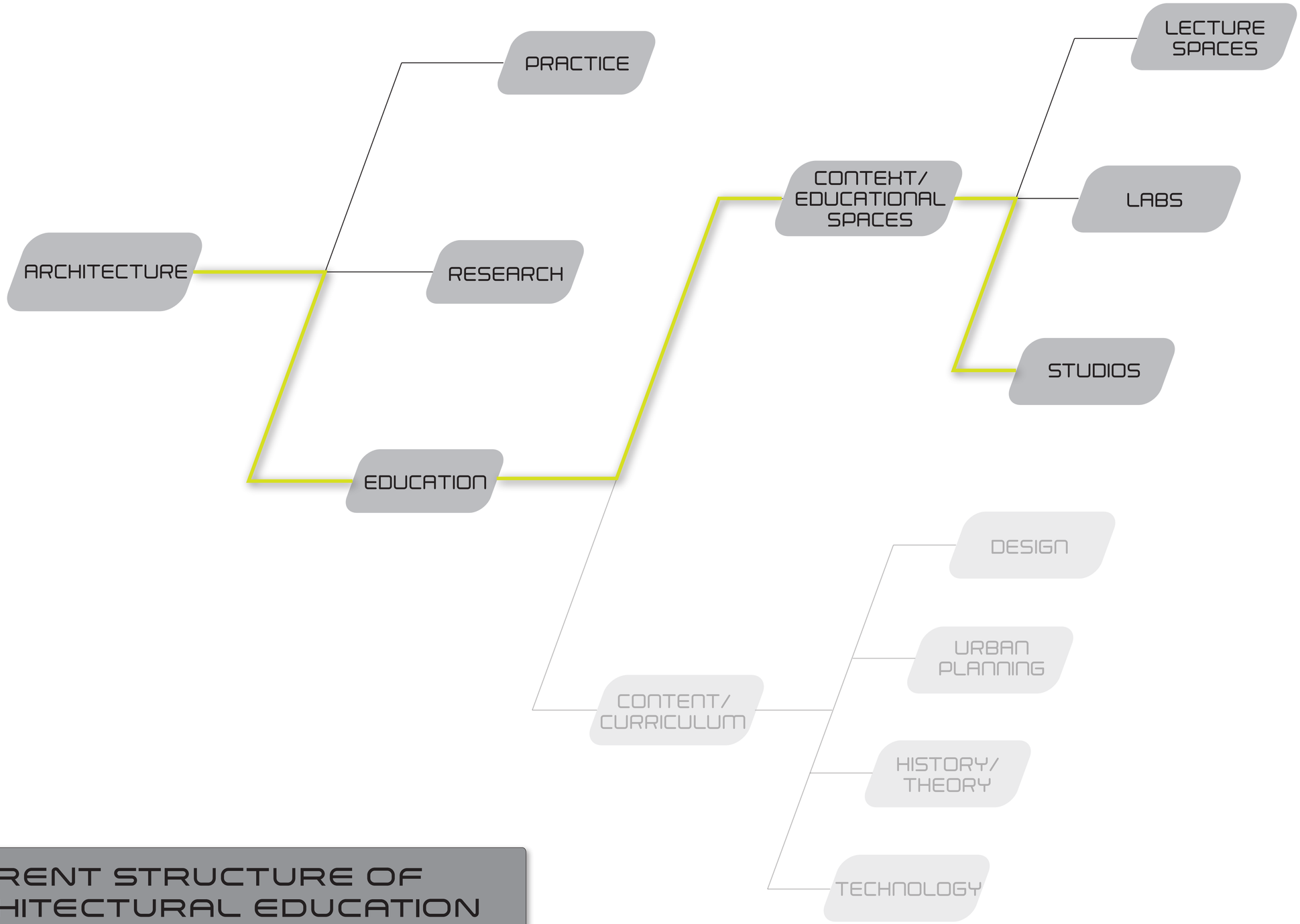
technology

3 4 class hours

- introduction to urban design and planning
- history of the city and urban planning
- urban planning
- spatial planning
- planning electives

class hours 6 4

urban & spatial planning



CURRENT STRUCTURE OF ARCHITECTURAL EDUCATION

ARCHITECTURE

PRACTICE

RESEARCH

EDUCATION

CONTEXT/
EDUCATIONAL
SPACES

LECTURE
SPACES

LABS

STUDIOS

STUDIO
CULTURE

REDEFINITION OF
STUDIO CULTURE

CONTENT/
CURRICULUM

DESIGN

URBAN
PLANNING

HISTORY/
THEORY

TECHNOLOGY

CURRENT STRUCTURE OF ARCHITECTURAL EDUCATION

WHAT IS STUDIO CULTURE???

STUDIO →

the **vital element** of architectural eduaction

a specific type of **educational space**

brings creative people together to:
work | collaborate | invent & elaborate
innovative ideas |question | suggest

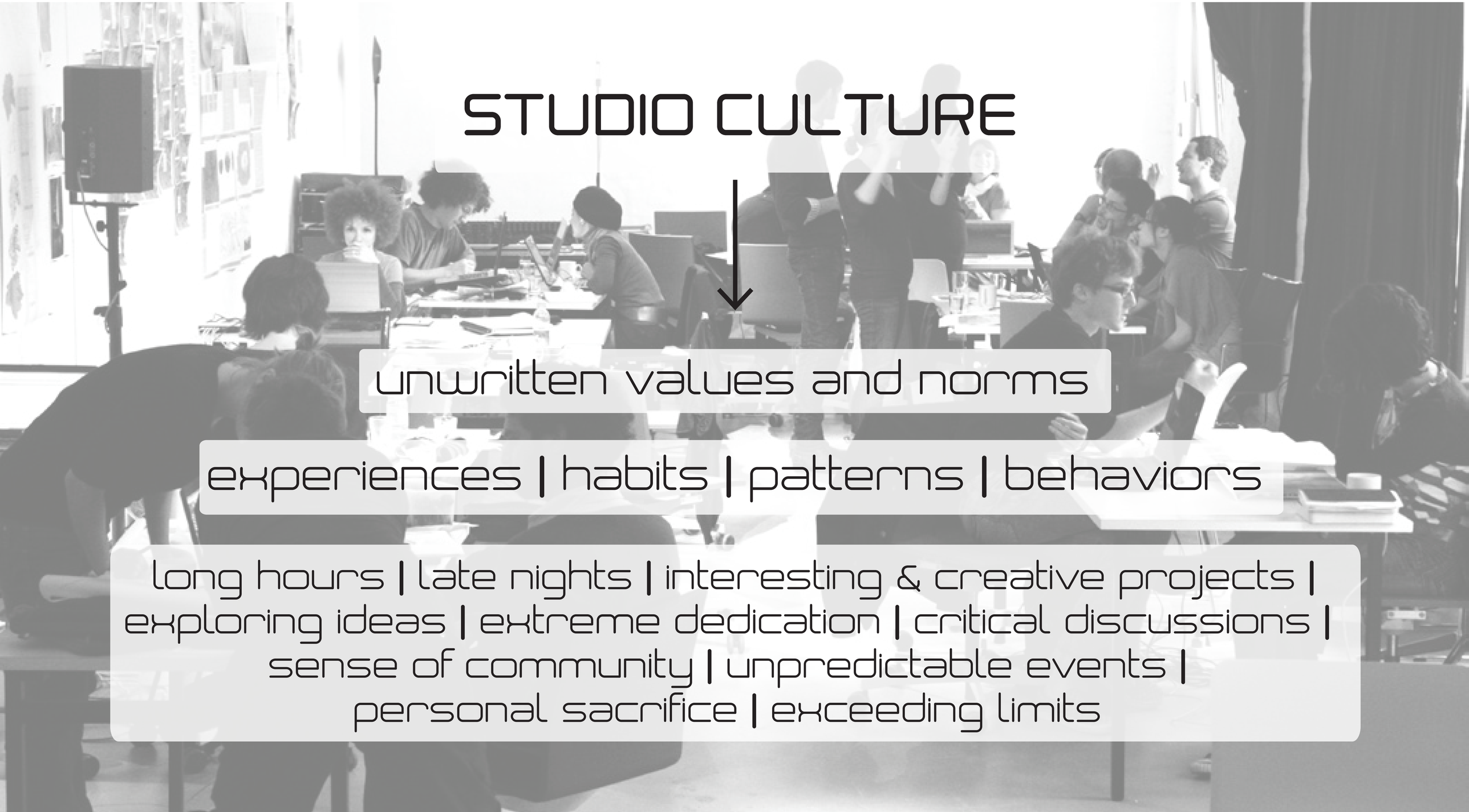
an environment that **cultivates**:
competition | team spirit | inspiration moments

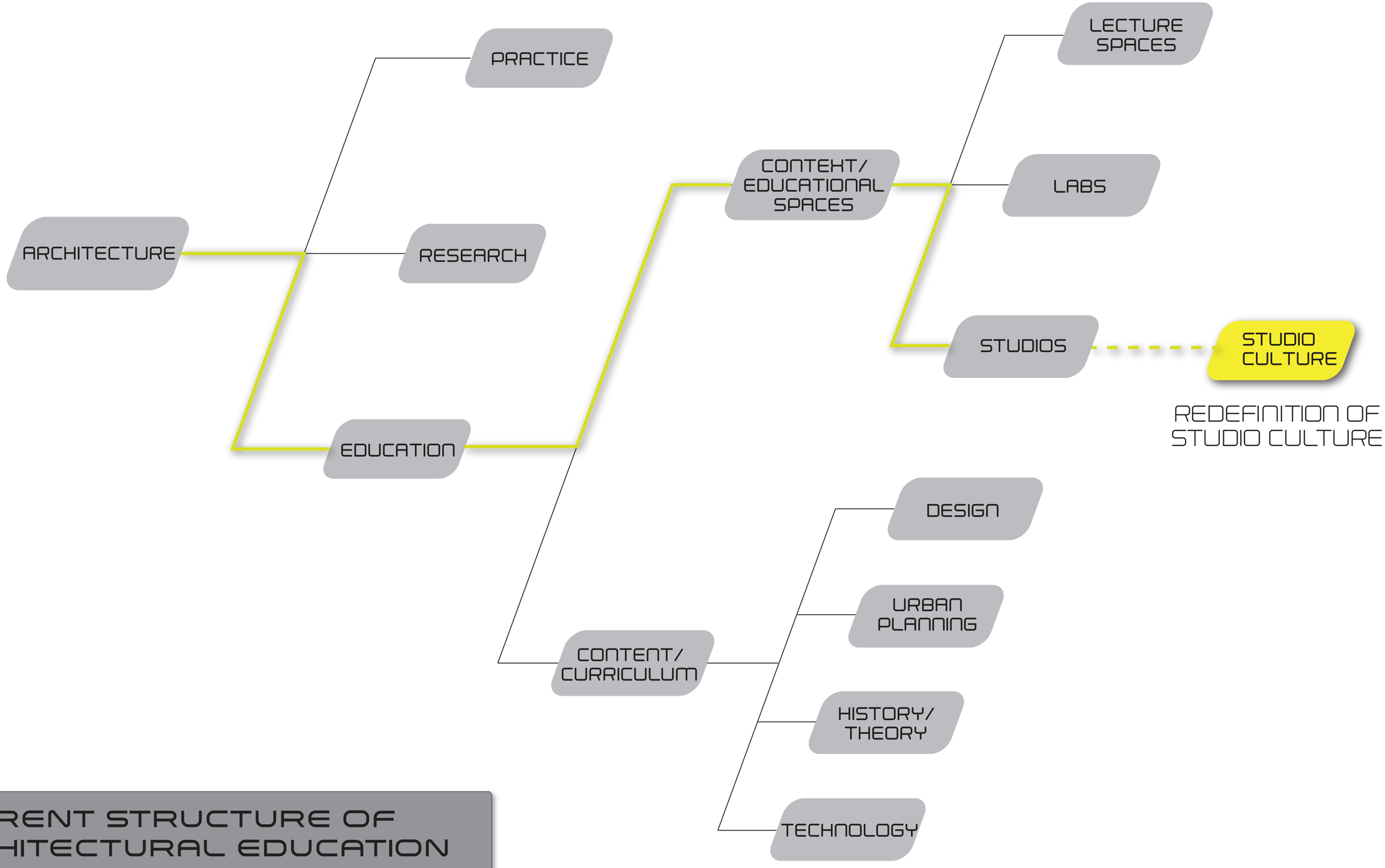
differentiates architecture from other disciplines

very intense & unique **interface**

educational process encourages & supports:
dialogue | cooperation | risk | challenges |
innovation | learning-by-doing

WHAT IS STUDIO CULTURE???





CURRENT STRUCTURE OF ARCHITECTURAL EDUCATION

ARCHITECTURE

EDUCATION

PRACTICE

RESEARCH

NEW STUDIO CULTURE

NEW CONTEXT/ EDUCATIONAL SPACES

LABS

LECTURE SPACES

STUDIOS

FREE

NEW CONTENT/ CURRICULUM

DESIGN

URBAN PLANNING

HISTORY/ THEORY

TECHNOLOGY

connection between courses

SUGGESTED STRUCTURE OF ARCHITECTURAL EDUCATION

ARCHITECTURE SCHOOL CURRICULUM

SEMESTER	1	2	3	4	5	6	7	8	9	10
COURSES										
ART	■	■	■	■						
ART HISTORY	■	■								
ARCHITECTURE HISTORY/THEORY	■	■	■	■	■					
ARCHITECTURE THINKING	■	■								
MEANS OF REPRESENTATION	■									
TOPOGRAPHY	■									
ARCHITECTURAL DESIGN	■	■	■	■	■	■	■	■		
OTHER SCIENCES	■	■				■				
DIGITAL TECHNOLOGIES		■	■	■						
STRUCTURAL ENGINEERING			■	■						
ARCHITECTURE & BUILDING TECHNOLOGY		■	■	■	■	■				
HISTORY OF THE CITY AND URBANISM			■							
URBAN DESIGN AND PLANNING				■	■	■	■	■		
LANDSCAPE ARCHITECTURE					■			■		
SUSTAINABLE ARCHITECTURE						■				
INTRODUCTION TO PROFESSIONAL PRACTICE							■			
RESTORATION/INTERVERNTION						■	■			
ELECTIVES					■	■	■	■		
SPATIAL PLANNING									■	
RESEARCH									■	
FINAL PROJECT										■
TOTAL COURSES	8	8	7	7	6 +1	6 +1	4 +2	3 +3	2	1

■ design
■ history/theory
■ technology
■ urbanism/ planning
■ other sciences

EDUCATION SPACES	STUDIO	LECTURE	LABS	FREE	
ART				√	1
ART HISTORY		√			1
ARCHITECTURE HISTORY/THEORY		√			1
ARCHITECTURE THINKING	√	√			2
MEANS OF REPRESENTATION	√		√		2
TOPOGRAPHY	√			√	2
ARCHITECTURAL DESIGN	√	√	√	√	4
OTHER SCIENCES		√			1
DIGITAL TECHNOLOGIES	√	√	√		3
STRUCTURAL ENGINEERING		√	√		2
ARCHITECTURE & BUILDING TECHNOLOGY	√	√	√		3
HISTORY OF THE CITY AND URBANISM		√			1
URBAN DESIGN AND PLANNING	√	√	√	√	4
LANDSCAPE ARCHITECTURE	√	√			2
SUSTAINABLE ARCHITECTURE	√	√	√		3
INTRODUCTION TO PROFESSIONAL PRACTICE				√	1
RESTORATION/INTERVERNTION	√	√	√		3
ELECTIVES	√	√	√	√	4
SPATIAL PLANNING	√	√			2
RESEARCH				√	1
FINAL PROJECT	√	√	√	√	4
TOTAL COURSES	13	16	10	8	

ARCHITECTURE COURSES EDUCATIONAL SPACES/TYPES

combination of types/
connections between courses

studio

lectures

design electives

architectural design

spatial planning

architecture thinking

history theory critisism

theoretical electives

architecture history & theory

digital technologies

restoration intervention

landscape

architecture & building technology

spatial planning

structural engineering

planning electives

architecture & building technology

urban planning

digital technologies

urban design

means of representation

technology electives

urban design

art history

history of the city & urbanism

sustainable architecture

final project

digital technologies

architecture design

structural engineering

research project

urban planning

fine arts

architecture & building technology

urban design

urban design

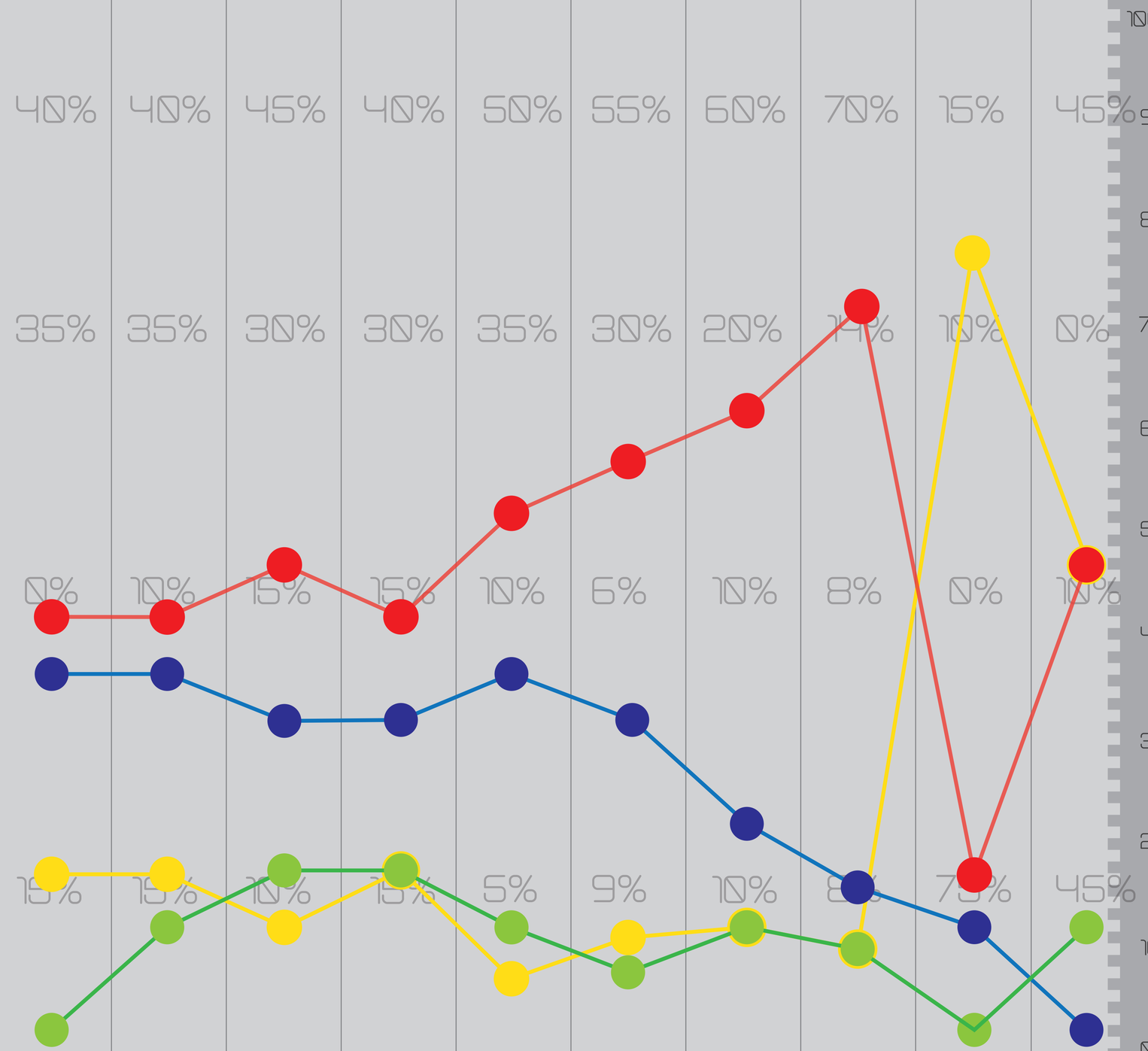
practice

labs

free

USAGE RATES DURING COURSE TIME

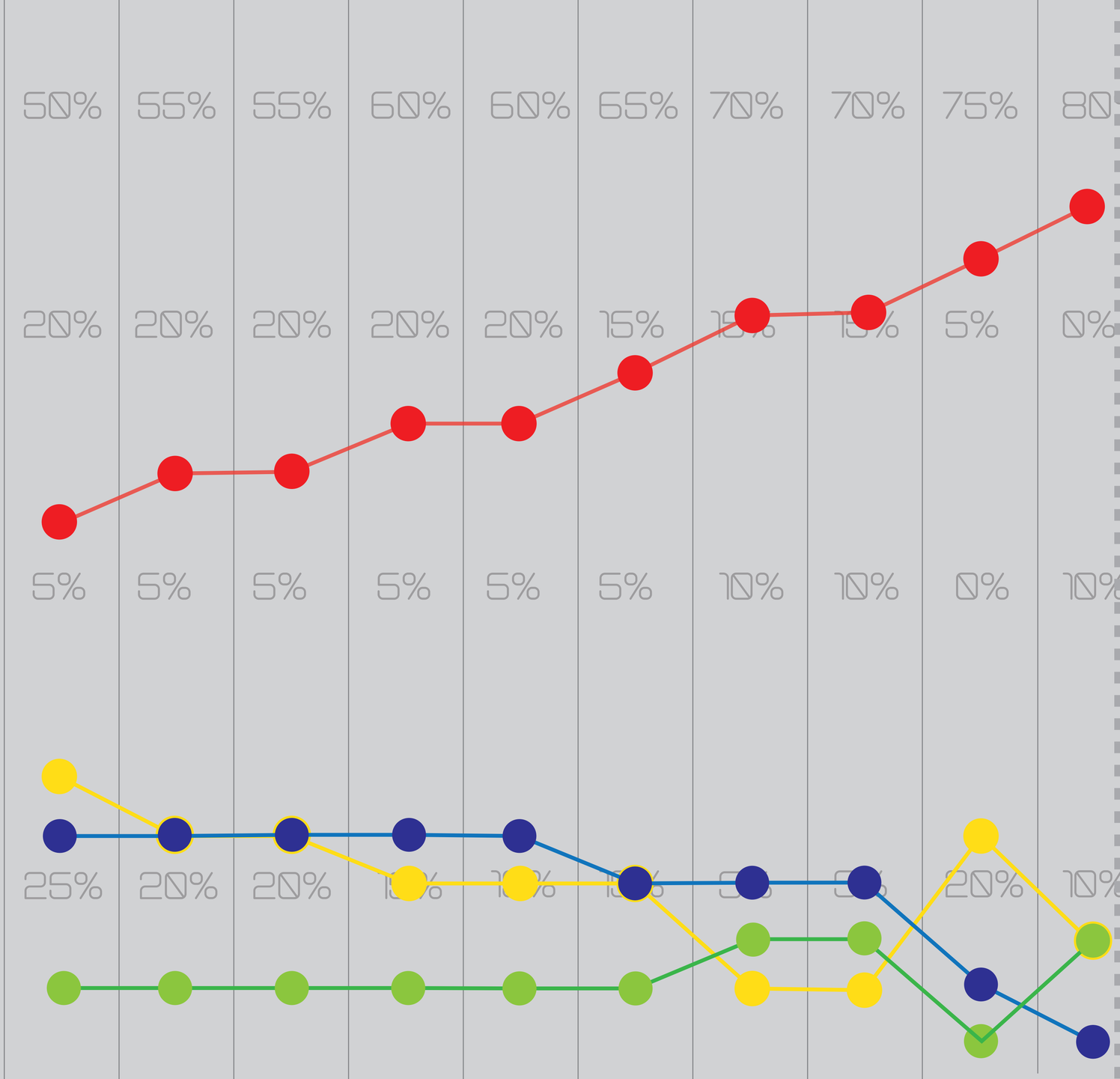
EDUCATION SPACE \ SEMESTER	1	2	3	4	5	6	7	8	9	10
STUDIO	40%	40%	45%	40%	50%	55%	60%	70%	15%	45%
LECTURES	35%	35%	30%	30%	35%	30%	20%	14%	10%	0%
LABS	0%	10%	15%	15%	10%	6%	10%	8%	0%	10%
FREE	15%	15%	10%	15%	5%	9%	10%	8%	75%	45%



SEMESTER

EDUCATION SPACE

	1	2	3	4	5	6	7	8	9	10
STUDIO	50%	55%	55%	60%	60%	65%	70%	70%	75%	80%
LECTURES	20%	20%	20%	20%	20%	15%	10%	10%	5%	0%
LABS	5%	5%	5%	5%	5%	5%	10%	10%	0%	10%
FREE	25%	20%	20%	10%	10%	10%	5%	5%	20%	10%



SECOND COURSE TIME USAGE RATES BEYOND

FIRST PLACE + SECOND PLACE + THIRD PLACE



comfort
privacy

+



intensity
creativity

+



interaction
leisure

MERGING OF PLACES

NEW ARCHITECTURE SCHOOL

NEW STUDIO CULTURE

SPATIAL REQUIREMENTS PROGRAM

PREVIOUS & CURRENT (...-2014)	PROBLEM	SOLUTION	FUTURE - UPCOMING (2024-....)
DESIGN STUDIOS PHYSICAL (**100-130** students per academic year * **8** years average studying time = **800-1040** total working spaces) **working space per person** consists of desk (120cm*80cm) & chair ~ **2.2 - 3.2** sqm per person 800-1040 students * 2 sqm = **1600-2080** sqm in one single building only for studios	too many students/ disfuncitonal for educating process uncomfortable/ too small high density in one single place	decrease number of students increase personal working space create concentration hubs	**DESIGN STUDIOS** PHYSICAL & VIRTUAL (**60-65** students/academic year * **6-7** years average studying time = **360-455** total working spaces) working space consists of pure open space to use as desired by user (octagon **3.5** sqm per person) 360-455 students * 3.5sqm = **1260 - 1592** sqm scattered in various places in the city
LECTURE ROOMS PHYSICAL 2-3 big lecture rooms that often stay empty and unused	used only for purely theoretical courses	elimination of lecture rooms per se introduce MOOCs (Massive Open Online Courses)	**LECTURE CONFIGURATIONS** PHYSICAL & VIRTUAL transformation/reconfiguration of design studios into smaller and efficient lecture rooms engage with e-lectures
COMPUTER LABS PHYSICAL **FABRICATION LABS** PHYSICAL	not used anymore static structures with heavy equipment no flexibility	eliminate computer labs increase equipment make mobile and flexible	**MOBILE LABS** PHYSICAL replace with vehicles moving and transfering equipment wherever needed
STAFF OFFICES PHYSICAL (20-30 lecturers & professors = 20-30 offices)	signifies boundaries between students and professors/ students go to professors/ meet in a specific pre-defined space	"office" is where professor is eliminates boundaries/ professors and students work together/ share same equipment & infrastructure/ meet anywhere in the city	**STAFF OFFICES** PHYSICAL & VIRTUAL (20-30 lecturers & professors = 20-30 working spaces/studios)
STORAGE SPACE PHYSICAL lockers should be equal to the number of students (800-1040)	not enough space - not enough lockers	storage space integrated in studio infrustructure	**STORAGE SPACE** PHYSICAL & VIRTUAL enough storage space per student

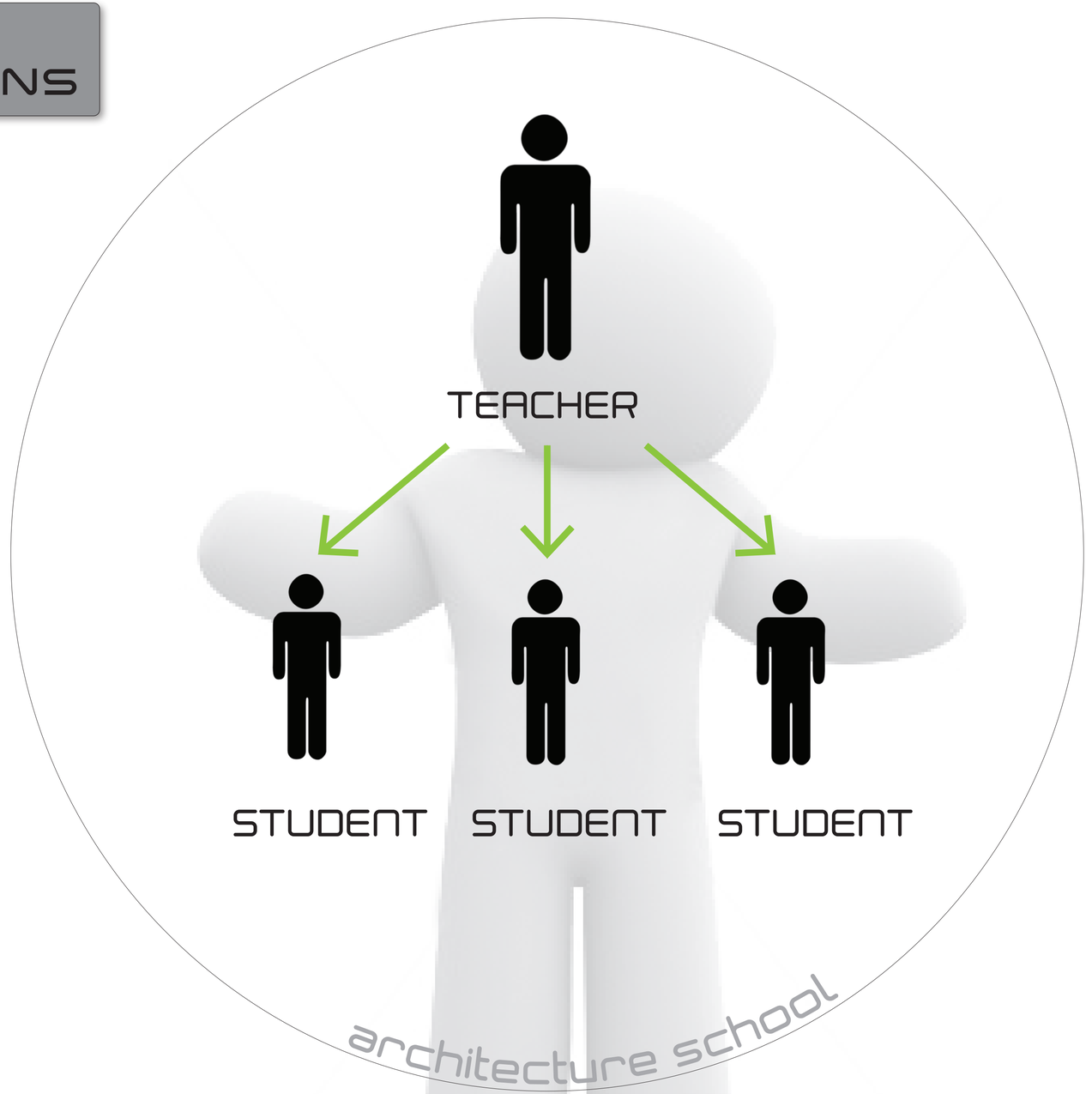
SPATIAL REQUIREMENTS PROGRAM

PREVIOUS & CURRENT (...-2014)	PROBLEM	SOLUTION	FUTURE - UPCOMING (2024-....)
ADMINISTRATION OFFICES PHYSICAL 1 head secretary of school + 2 (2 offices in architecture department building)	works fine physical one-on-one service	optimization → add online service/ works better/ saves time	**ADMINISTRATION SERVICES** PHYSICAL & VIRTUAL 1 head secretary 1 secretary for each academic year 6 secretaries
LIBRARY PHYSICAL many books	works fine takes time	optimization → add online service/ upload all books online/ works better/ saves time	**E-LIBRARY** PHYSICAL & VIRTUAL digital books
EXHIBITION SPACE PHYSICAL empty/open & circulation spaces in architecture school buildings	demonstrates work of students only to other students & possible visitors	demonstrate work of students to the society they concern intrigue public dialogue on architecture	**PUBLIC EXHIBITIONS** PHYSICAL studios convert into exhibition configurations
OTHER FACILITIES PHYSICAL (wc/cafe... free space)	provided in the school	provided by the city	**OTHER FACILITIES** PHYSICAL use city's infrastructure
ARCHITECTURE SCHOOL BUILDING	architectural education limited supressed in a building	architectural education diffused/released in the urban/social environment	**ARCHITECTURAL EdUCATION OPEN PLATFORMS**

USERS

_USER CODING
_USER INTERACTIONS

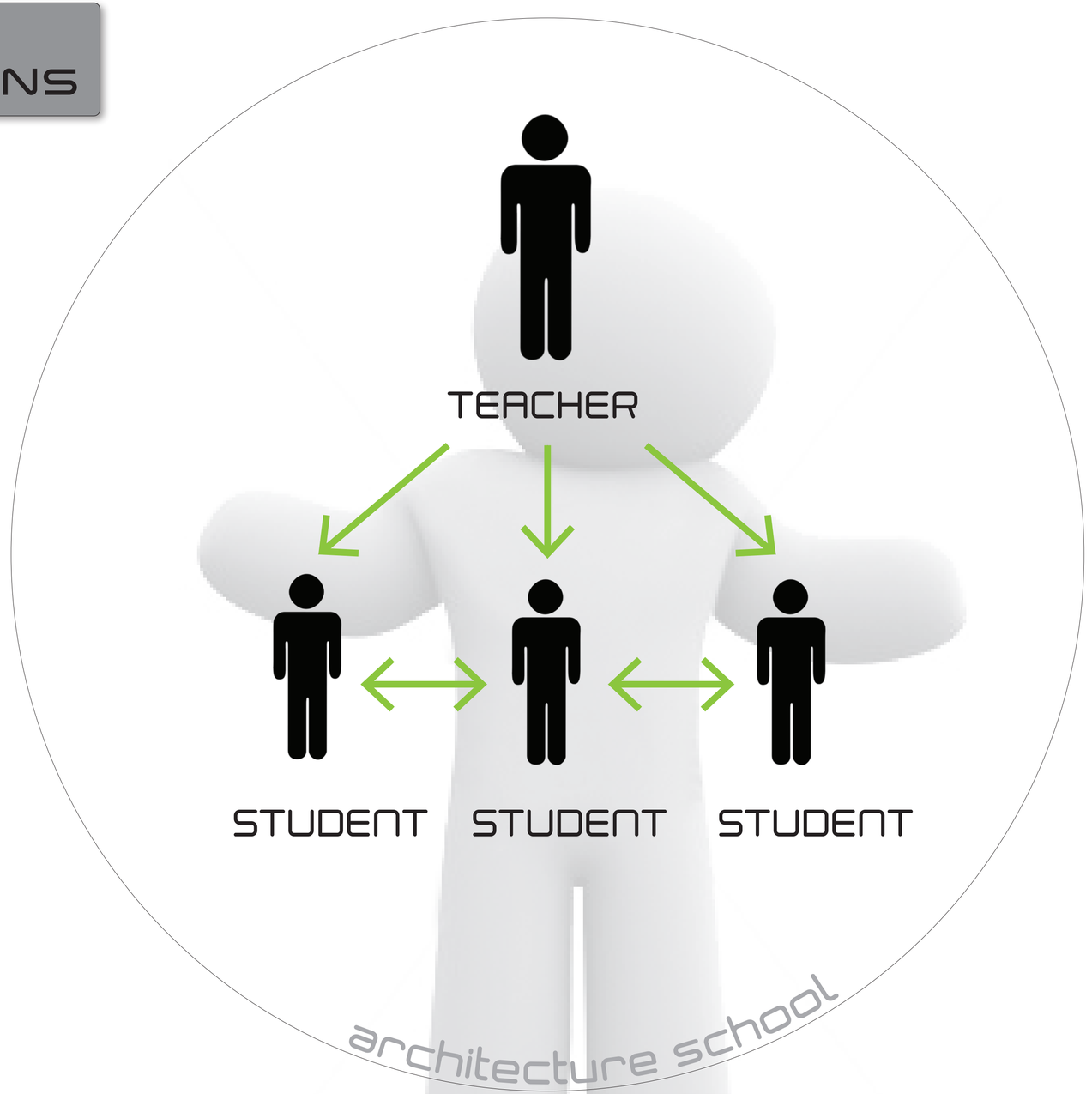




USERS

_USER CODING
_USER INTERACTIONS

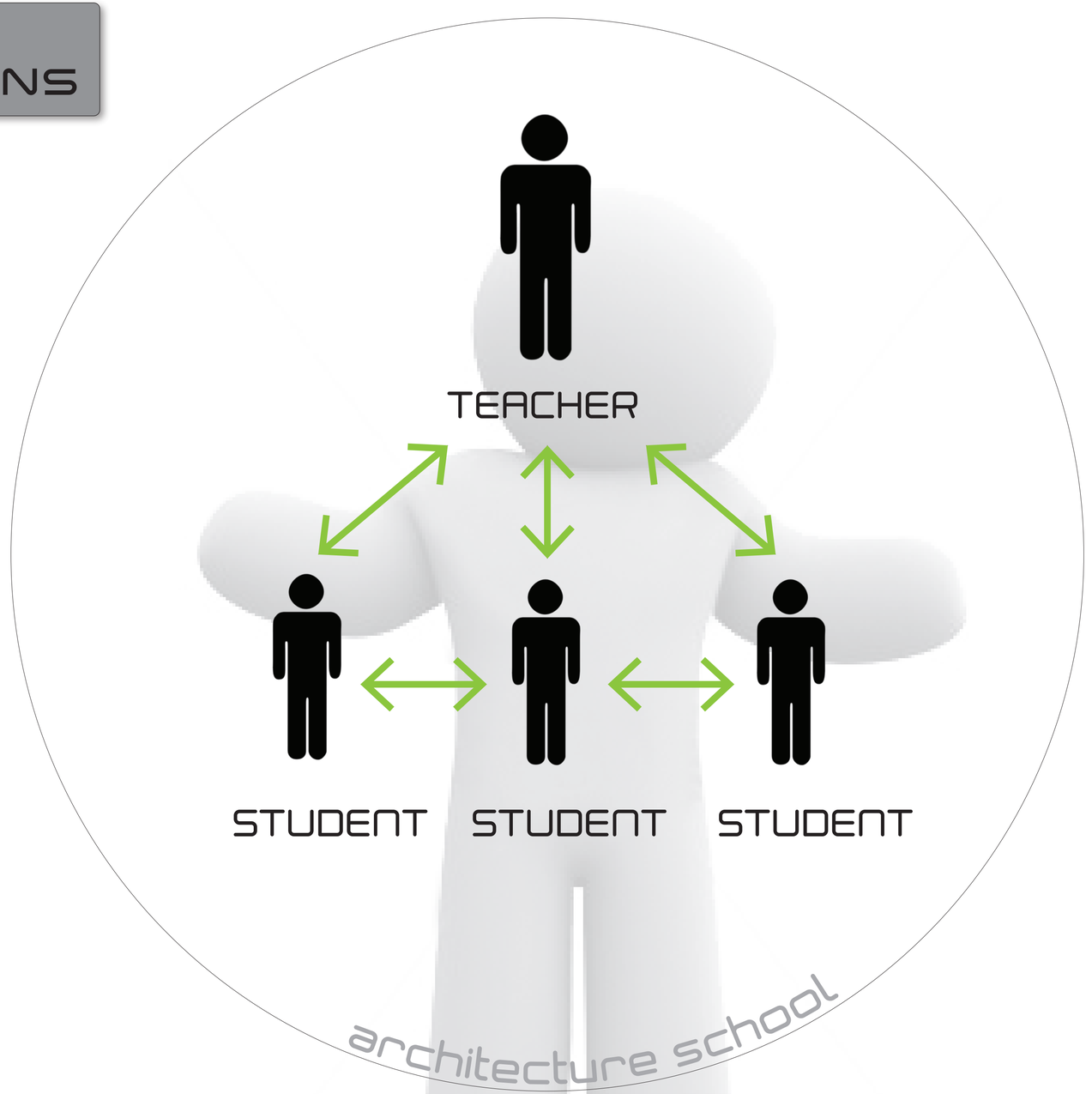




USERS

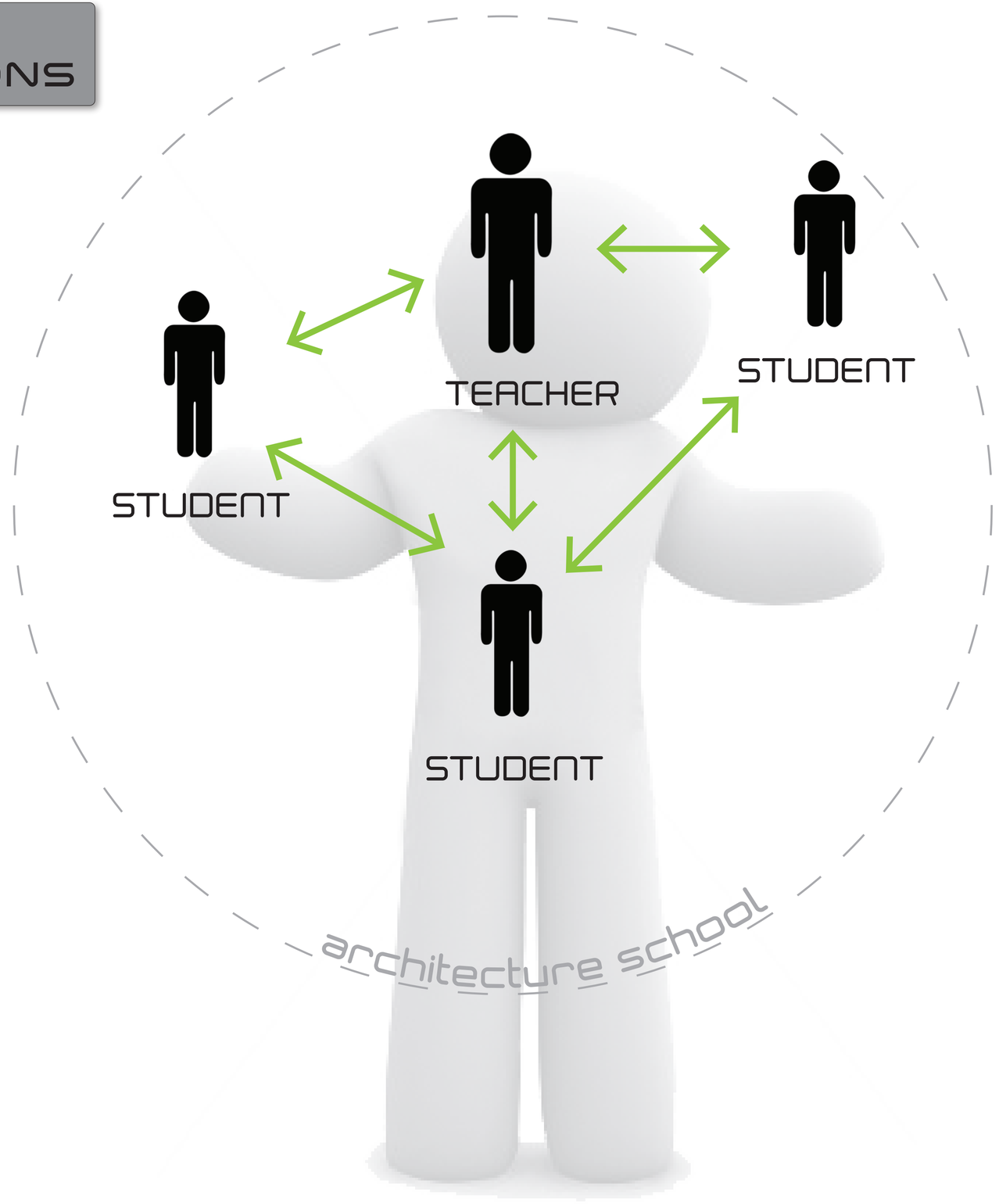
_USER CODING
_USER INTERACTIONS





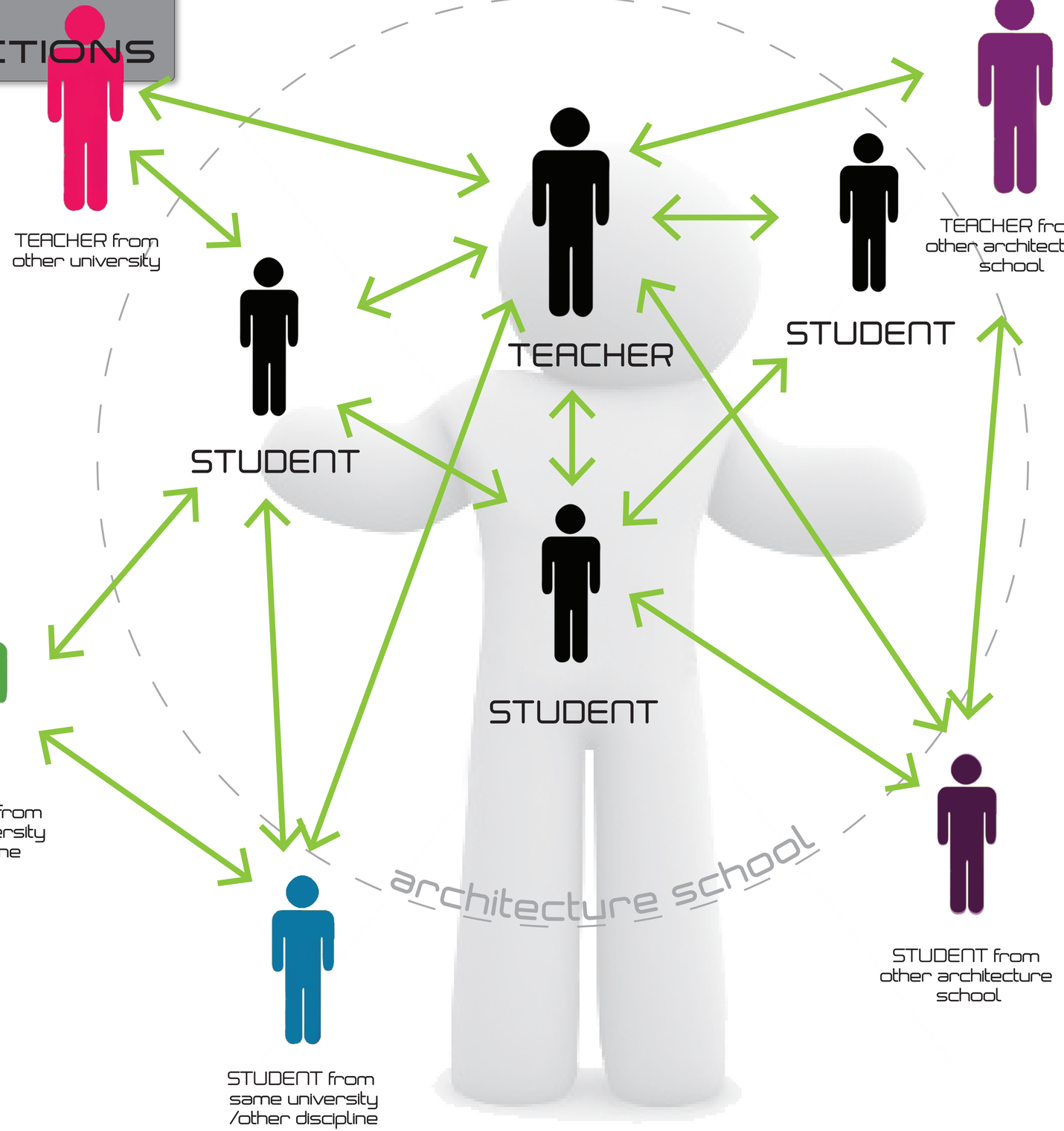
USERS _USER CODING _USER INTERACTIONS



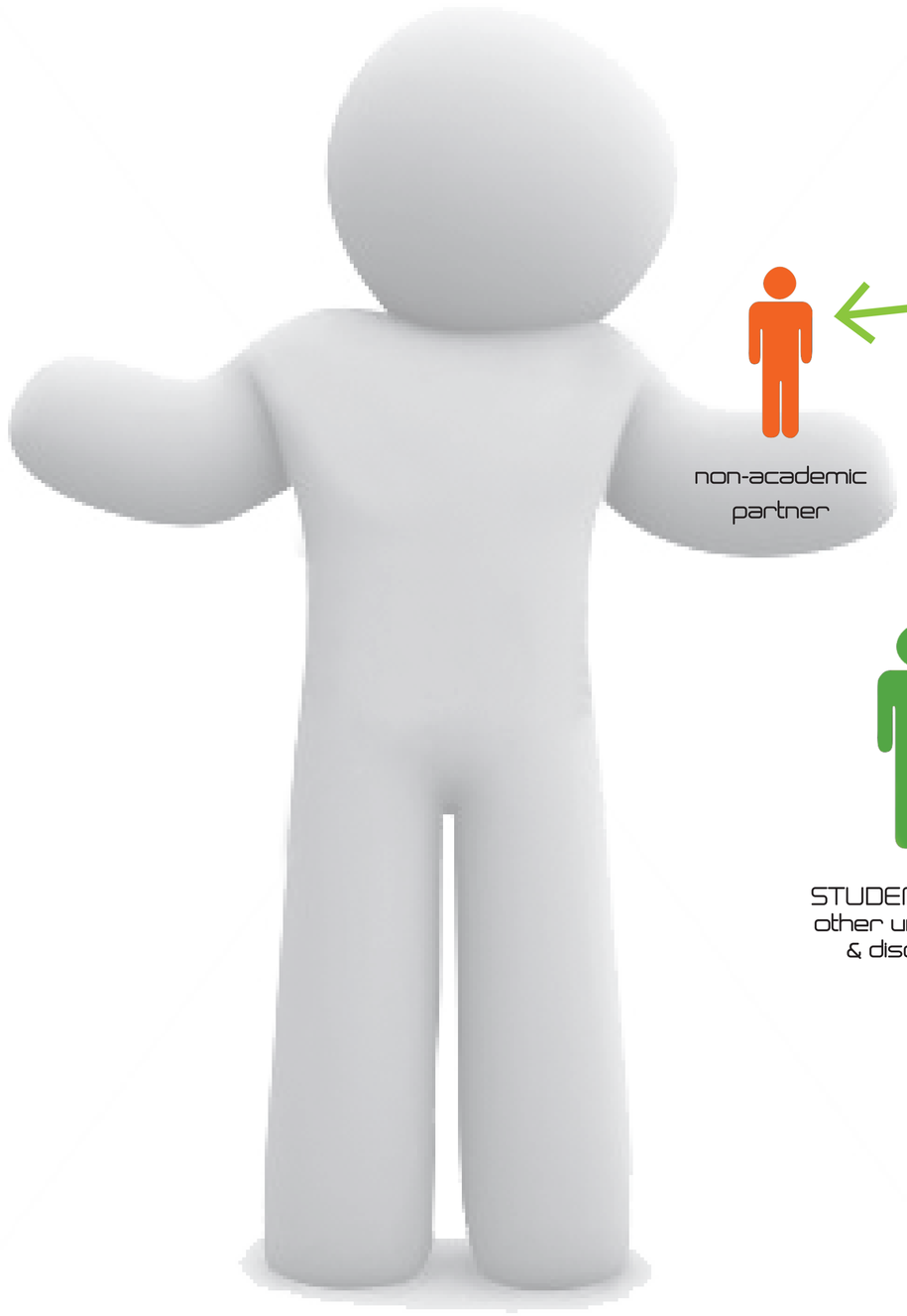


USERS _USER CODING _USER INTERACTIONS





USERS _USER CODING _USER INTERACTIONS



non-academic partner

CITIZEN

TEACHER from other university

TEACHER

TEACHER from other architecture school

STUDENT

STUDENT

STUDENT

STUDENT from other university & discipline

STUDENT from same university /other discipline

CITIZEN

CITIZEN

CITIZEN of other community

STUDENT from other architecture school

architecture school

STUDIO CULTURE

communication
connectivity
collaboration
social environments

REQUIREMENTS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant – permanent	static – mobile	rigid – flexible	fixed/stable – transformable	calm – intense	public – private	limited – 24/7	1 hour spent – 24	limited – unlimited/ absolute	physical – virtual/ digital	hardware – software	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – dense	small – great	ultra low – sequential – parallel

LABS

- printing (computer labs)
- fabrication (fabrication labs)
- experiments & testing (research labs)

– computers/printers/plotters/scanners
– material storage/desk/desk/working surface

– computers/laser cutters/3d printers
– CNC/material storage/toolbox
– desk/workspace/working surface

– laptops/working surfaces/electronics
– materials/material storage/boards/tools

LECTURE SPACES

- lectures
- presentations
- screenings
- group meetings
- discussions
- conferences/ panels
- teleconferences
- board assemblies
- exams
- debates

– seats/writing & projection surfaces/podium
– microphone/projector/speakers/camera
– projection surfaces/empty boards/desks
– projector/laptop/microphones

– projection surface/projector/seats/laptop

– seats/working surface/laptops/boards

– seats/writing surfaces/boards

– podium/seats/desks/lectern/projector
/laptop/microphones/headsets/speakers/
projection surface/cameras/web-based system

– podium/seats/microphones

– podium/seats/writing surfaces/board

– seats/desks/podium/board

STUDIOS

- design classes
- projects
- workshops
- short lectures
- mid-presentations
- reviews
- exhibitions
- physical modeling
- brainstorming
- seminars/ tutorials

– seats/desks/podium/board
– laptops

– seats/desks/board/storage space/shelves
– laptops

– seats/desks/board
– laptops

– seats/writing & projection surface/board
– laptop/projector/podium

– seats/desks/projection surface/boards
– laptop/projector

– seats/working surface/board
– laptop

– empty vertical & horizontal surfaces

– seats/working surfaces
– laptops/storage space/toolbox

– seats/desks/boards
– laptops/tablets

– seats/desks/boards/projection surface
– laptops/projector/podium

FREE SPACES

- socializing
- thinking/studying
- site visiting/ tours
- observation
- photography/ sketching
- data collection/ analysis
- art classes
- walks
- relaxing/sleeping
- unpredictable events

– laptops/tablets/smart phones/web applications
– seats

– laptops/seat/tablet/desks/books/notebooks

– camera/tablet/headsets
–tour wireless system & application

– seat/tablet/notebook

– camera/sketchbook/tablet

– tablet/notebook/laptop

– easel/art tools/seat

– tablet/smartphone

– soft surface/dark isolated space

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

introduction of MOBILE LABS

- decrease or elimination of hardware use
- focus on software
- remaining hardware: smaller, compact & easily transported

TRANSFORMABLE INFRASTRUCTURE

- serves studio & lecture activities at the same time
- adapts into urban grid according to activity & users needs
- hybrid structure:
--- static part
(secures stability)
--- moving part
(accepts users' changes)
- acts as receptor of plug-in free mode installation
- creates and separates groups
- energy self-sufficient
- deployable unit
- can be also used as urban equipment
- constantly changing
- live multiagent system

PORTABLE PERSONAL WORKSPACE

- spatial device
- easy in-situ installation
- stand-alone
- self-supporting
- comfortable
- leightweight
- durable
- energy self-sufficient
- wireless connection to whole system (link device)

STUDIO CULTURE

communication
connectivity
collaboration
social environments

REQUIREMENTS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant – permanent	static – mobile	rigid – flexible	fixed/stable – transformable	calm – intense	public – private	limited – 24/7	1 hour spent – 24	limited – unlimited/ absolute	physical – virtual/ digital	hardware – software	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – dense	small – great	ultra flow – sequential – parallel
		none – sphere – semi – high	none – low – mid – high	none – limited – semi – high		low – mid – high	low – mid – high	low – mid – high		low – controlled – high	compulsory, desirable, optional	wired – wireless both		low – mid – high	low – mid – ultra high	controlled – uncontrolled asynchronous – synchronous
LABS	- printing (computer labs) - fabrication (fabrication labs) - experiments & testing (research labs)												– computers/printers/plotters/scanners – material storage/stati desks/working surface – computers/laser cutters/3d printers – CNC/material storage/toolbox – static workspace/working surface – laptops/working surfaces/electronics – materials/material storage/boards/tools			
LECTURE SPACES	- lectures - presentations - screenings - group meetings - discussions - conferences/ panels - teleconferences - board assemblies - exams - debates												– seats/working & projection surface/podium – microphone/projector/speakers/camera – projection surface/projector/seats/desk – projector/material/spheres – projection surface/projector/seats/desk – seats/working surface/material/table – seats/working surface/material/table – podium/seats/material/projector – desktop/microphone/seats/speakers/projector – projection surface/camera/seats/material/table – podium/seats/material/projector – podium/seats/working surface/board – seats/material/podium/material			
STUDIOS	- design classes - projects - workshops - short lectures - mid-presentations - reviews - exhibitions - physical modeling - brainstorming - seminars/ tutorials												– seats/desks/podium/board – seats/desks/board/storage space/shelves – material/material/material – seats/material/material – seats/working & projection surface/board – laptops/projector/podium – seats/desks/projection surface/table – material/material – table/working surface/material – material/material – empty volume in horizontal surfaces – seats/working surfaces – material/storage space/footrest – seats/desks/boards – material/material – seats/desks/boards/projection surface – laptops/projector/podium			
FREE SPACES	- socializing - thinking/studying - site visiting/ tours - observation - photography/ sketching - data collection/ analysis - art classes - walks - relaxing/sleeping - unpredictable events												– laptops/entertainment phones/wifi/ applications/ seats – laptops/seat/tables/desks/boards/materials – camera/material/material – door/wireless system/ID application – seat/table/material/material – camera/seat/material/material – material/material/material – laptop/material/material – seat/material/material – seat/material/material – laptops/cameras/phones – soft surfaces/seats/material/spatial			

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

introduction of MOBILE LABS

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TRANSFORMABLE INFRASTRUCTURE

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- constantly changing
- live multiagent system

PORTABLE PERSONAL WORKSPACE

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- stand-alone
- self-supporting
- comfortable
- leightweight
- durable
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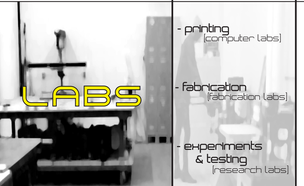
- wireless connection to whole system (link device)

KEYINDICATORS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION	OUTPUT
RANGE		instant – none, ephemeral, semi, high – permanent	static – none, low, mid, high – mobile	rigid – none, limited, semi, high – flexible	fixed/stable – transformable	calm – low, mid, high – intense	public – low, mid, high – private	limited – low, mid, high – 24/7	1 – 24 hours spent	limited – low, controlled, high – unlimited/absolute	physical – compulsory, desirable, optional – virtual/digital	hardware wired – enquire both – software wireless	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – low, mid, high – dense	small – low, mid, high – great	ultra low – controlled – ultra high – uncontrolled; sequential – asynchronous; parallel – asynchronous	DESIGN INTENTIONS & CONSIDERATIONS
																	
LABS	- printing (computer labs)												– computers/printers/plotters/scanners – material storage/stall desk/working surface				introduction of MOBILE LABS
	- fabrication (fabrication labs)												– computers/laser cutters/3d printers – CNC/material storage/toolbox – stall workspace/ working surface				- use existing spaces in campus or university property in the city
	- experiments & testing (research labs)												– laptops/working surfaces/electronics – materials/material storage/boards/tools				- decrease or elimination of hardware use - focus on software - remaining hardware: smaller, compact & easily transported

STUDIO CULTURE

communication
connectivity
collaboration
social environments

REQUIREMENTS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant – permanent	static – mobile	rigid – flexible	fixed/stable – transformable	calm – intense	public – private	limited – 24/7	1 hour spent – 24	limited – unlimited/ absolute	physical – virtual/ digital	hardware – software	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – dense	small – great	ultra low – sequential – parallel

LABS

- printing (computer labs)
- fabrication (fabrication labs)
- experiments & testing (research labs)

– computers/printers/plotters/scanners
– material storage/desk/desk/working surface

– computers/laser cutters/3d printers
– CNC/material storage/toolbox
– desk/workspace/working surface

– laptops/working surfaces/electronics
– materials/material storage/boards/tools

LECTURE SPACES

- lectures
- presentations
- screenings
- group meetings
- discussions
- conferences/ panels
- teleconferences
- board assemblies
- exams
- debates

– seats/writing & projection surfaces/podium
– microphone/projector/speakers/camera
– projection surfaces/empty boards/desks
– projector/laptop/microphones

– projection surface/projector/seats/laptop

– seats/working surface/laptops/boards

– seats/writing surfaces/boards

– podium/seats/desks/lectern/projector
/laptop/microphones/headsets/speakers/
projection surface/cameras/web-based system

– podium/seats/microphones

– podium/seats/writing surfaces/board

– seats/desks/podium/board

STUDIOS

- design classes
- projects
- workshops
- short lectures
- mid-presentations
- reviews
- exhibitions
- physical modeling
- brainstorming
- seminars/ tutorials

– seats/desks/podium/board
– laptops

– seats/desks/board/storage space/shelves
– laptops

– seats/desks/board
– laptops

– seats/writing & projection surface/board
– laptop/projector/podium

– seats/desks/projection surface/boards
– laptop/projector

– seats/working surface/board
– laptop

– empty vertical & horizontal surfaces

– seats/working surfaces
– laptops/storage space/toolbox

– seats/desks/boards
– laptops/tablets

– seats/desks/boards/projection surface
– laptops/projector/podium

FREE SPACES

- socializing
- thinking/studying
- site visiting/ tours
- observation
- photography/ sketching
- data collection/ analysis
- art classes
- walks
- relaxing/sleeping
- unpredictable events

– laptops/tablets/smart phones/web applications
– seats

– laptops/seat/tablet/desks/books/notebooks

– camera/tablet/headsets
–tour wireless system & application

– seat/tablet/notebook

– camera/sketchbook/tablet

– tablet/notebook/laptop

– easel/art tools/seat

– tablet/smartphone

– soft surface/dark isolated space

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

introduction of MOBILE LABS

- decrease or elimination of hardware use
- focus on software
- remaining hardware: smaller, compact & easily transported

TRANSFORMABLE INFRASTRUCTURE

- serves studio & lecture activities at the same time
- adapts into urban grid according to activity & users needs
- hybrid structure:
--- static part
(secures stability)
--- moving part
(accepts users' changes)
- acts as receptor of plug-in free mode installation
- creates and separates groups
- energy self-sufficient
- deployable unit
- can be also used as urban equipment
- constantly changing
- live multiagent system

PORTABLE PERSONAL WORKSPACE

- spatial device
- easy in-situ installation
- stand-alone
- self-supporting
- comfortable
- leightweight
- durable
- energy self-sufficient
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STUDIO CULTURE

ommunication
onnectivity
ollaboration
ocial environments

KEY INDICATORS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant / permanent (none, ephemeral, semi, high)	static / mobile (none, low, mid, high)	rigid / flexible (none, limited, semi, high)	fixed/stable / transformable	calm / intense (low, mid, high)	public / private (low, mid, high)	limited / 24/7 (low, mid, high)	1 / 24 (hours spent)	limited / unlimited/absolute (low, controlled, high)	physical / virtual/digital (compulsory, desirable, optional)	hardware / software (wired, wireless, both)	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs whenever possible	sparse / dense (low, mid, high)	small / great (low, mid, wide, high)	ultra low / ultra high (controlled, uncontrolled) / sequential / parallel (asynchronous, synchronous)
LABS	- printing (computer labs) - fabrication (fabrication labs) - experiments & testing (research labs)												– computers/printers/plotters/scanners – material storage/stall/desk/working surface – computers/laser cutters/3d printers – CNC/material storage/tools – stall/workspace/working surface – laptops/working surfaces/electronics – materials/material storage/boards/tools			
LECTURE SPACES	- lectures - presentations - screenings - group meetings - discussions - conferences/ panels - teleconferences - board assemblies - exams - debates												– seats/wording & projection surfaces/podium – microphone/projector/speakers/camera – projection surfaces/empty boards/desks – projector/laptop/microphones – projection surfaces/projector/seats/laptop – seats/working surfaces/laptops/boards – seats/wording surfaces/boards – podium/seats/desks/sectors/projector/laptop/microphones/headsets/speakers/projection surfaces/cameras/web-based system – podium/seats/microphones – podium/seats/wording surfaces/board – seats/desks/podium/board			
STUDIOS	- design classes - projects - workshops - short lectures - mid-presentations - reviews - exhibitions - physical modeling - brainstorming - seminars/ tutorials												– seats/desks/podium/board – laptops – seats/desks/board/storage space/shelves – laptops – seats/desks/board – laptops – seats/wording & projection surfaces/board – laptop/projector/podium – seats/desks/projection surfaces/boards – laptop/projector – seats/working surfaces/board – laptop – empty vertical & horizontal surfaces – seats/working surfaces – laptop/storage space/toolbox – seats/desks/boards – laptops/tablets – seats/desks/boards/projection surfaces – laptops/projector/podium			
FREE SPACES	- socializing - thinking/studying - site visiting/ tours - observation - photography/ sketching - data collection/ analysis - art classes - walks - relaxing/sleeping - unpredictable events												– laptops/tablets/smart phones/web applications – seats – laptops/seat/tablet/desk/books/notebooks – camera/tablet/headsets –four wireless system & application – seat/tablet/notebook – camera/sketchbook/tablet – tablet/notebook/laptop – easel/art tools/seat – tablet/smartphone – soft surface/dark isolated space			

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

introduction of MOBILE LABS

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- durable
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- wireless connection to whole system (link device)

EDUCATIONAL SPACES/TYPES

RANGE



ACTIVITIES

- socializing
- thinking/studying
- site visiting/ tours
- observation
- photography/ sketching
- data collection/ analysis
- art classes
- walks
- relaxing/sleeping
- unpredictable events

KEY INDICATORS

PERMANENCE — instant / permanent — none, ephemeral, semi, high

MOBILITY — static / mobile — none, low, mid, high

FLEXIBILITY — rigid / flexible — none, limited, semi, high

TRANSFORMABILITY — fixed/stable / transformable

INTENSITY — calm / intense — low, mid, high

PRIVACY — public / private — low, mid, high

ACCESSIBILITY — limited / 24/7 — low, mid, high

TIME — 1 / 24 — hours spent

FREEDOM — limited / unlimited/ absolute — low, controlled, high

PRESENCE — physical / virtual/ digital — compulsory, desirable, optional

TECHNOLOGY — hardware / software — wired, wireless, both

EQUIPMENT
- robust, flexible communication infrastructure
- strong network servers & individual distribution hubs wherever possible
- laptops/tablets/smartphones/web applications
- seats
- laptops/seat/tablet/desk/books/notebooks
- camera/tablet/headsets
- four wireless system & application
- seat/tablet/notebook
- camera/sketchbook/tablet
- tablet/notebook/laptop
- easel/art tools/seat
- tablet/smartphone
- soft surface/dark isolated space

DENSITY — sparse / dense — low, mid, high

IMPACT — small / great — low, mid, considerable, high

INTERACTION — ultra low / ultra high — controlled / uncontrolled; sequence / parallel — asynchronous / synchronous

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

PORTABLE PERSONAL WORKSPACE

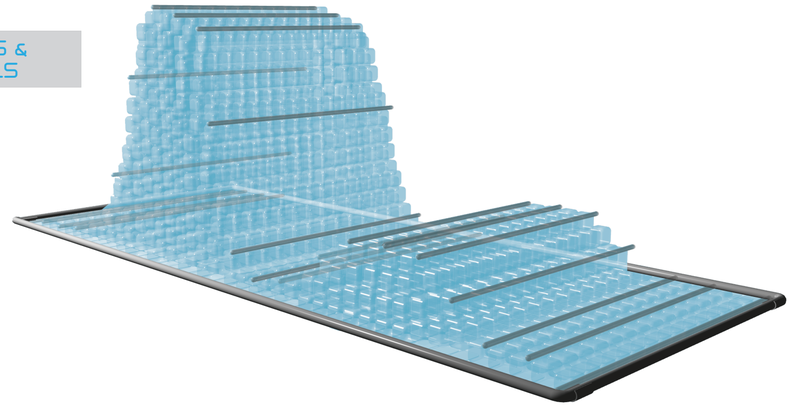
- spatial device
- easy in-situ installation
- stand-alone
- self-supporting
- comfortable
- leightweight
- durable
- energy self-sufficient
- wireless connection to whole system [link device]

FREE MODE:
TRANSFORMABLE INTERACTIVE INFLATABLE SEAT_FLOOR

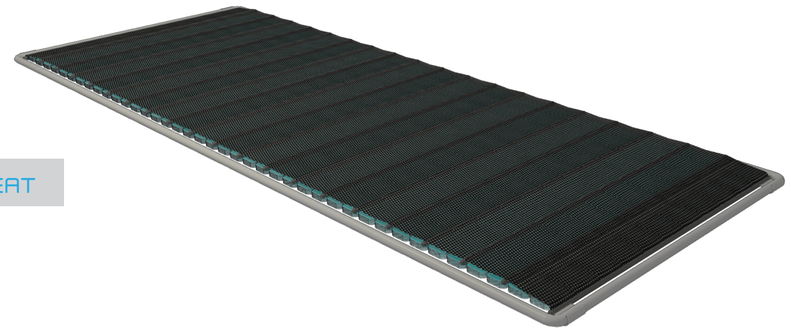
STRETCHED FABRIC
IN INFLATED POSITION



CONTROL BARS &
INFLATED CELLS



UNINFLATED SEAT



AIR CELL TECHNOLOGY

air cell inflatables/pneumatic structures – **advanced constructions**

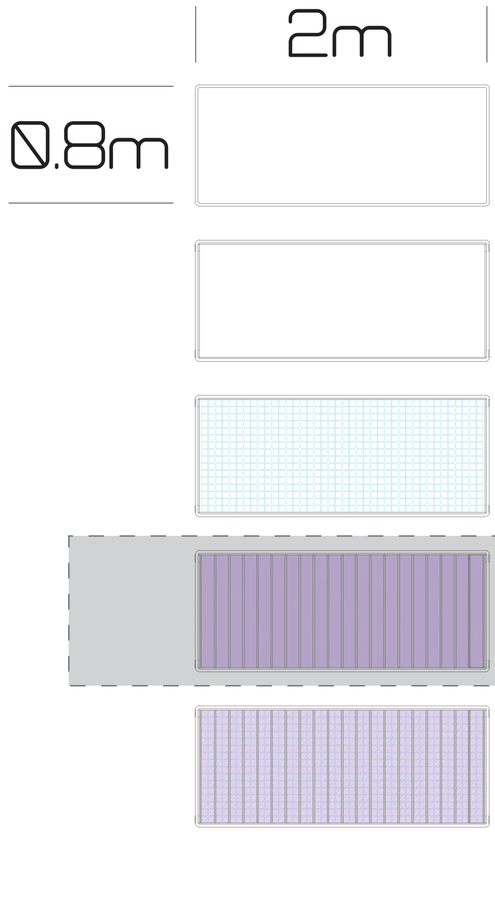
self–supporting with air fun – no need for foundation, hardware, wires

great thermal and sound **insulation properties**

temperature tolerant (–30 C / +70 C)

life expectancy – depends on climate on climate of installation and UV light levels

manufacturing off site _ in–situ **installation** – **portability**



CARACTERISTICS

stand - alone
cheap
durable
lightweight
roomy-comfortable
versatile - transformable
easy setup - DIY
virtual connectivity
energy independent

COMPONENTS

foldable
plastic
frame

polyethylenic
ground sheet
with plastic clips

layer of
inflatable cells

supple rubber
bars with wires
breathable
super-stretch
fabric

VARIATIONS

initial postition
of control points
[rubber bars]

observing
thinking

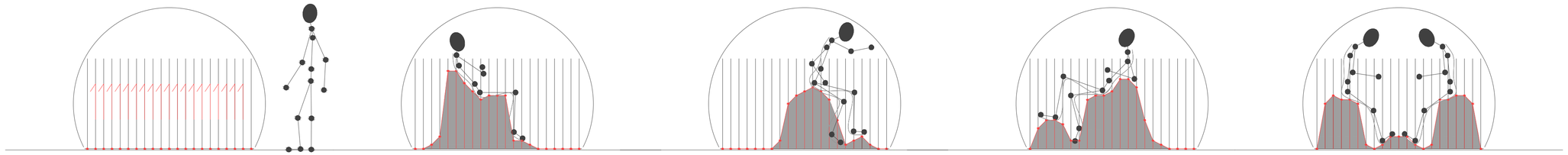
sketching
drawing

socializing
discussing

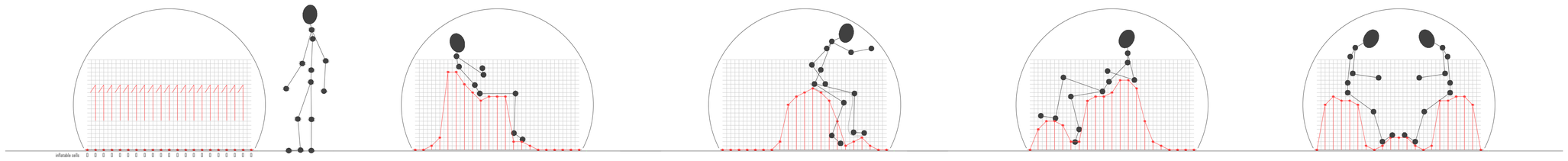
collaborating
brainstorming

human
body sillouettes
in optimal and
comfortable
sitting positions

inflated volumes

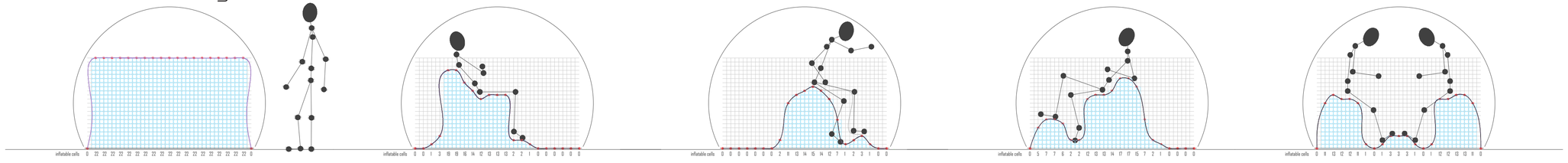


diagrammatic
representation
of relocation
of control points



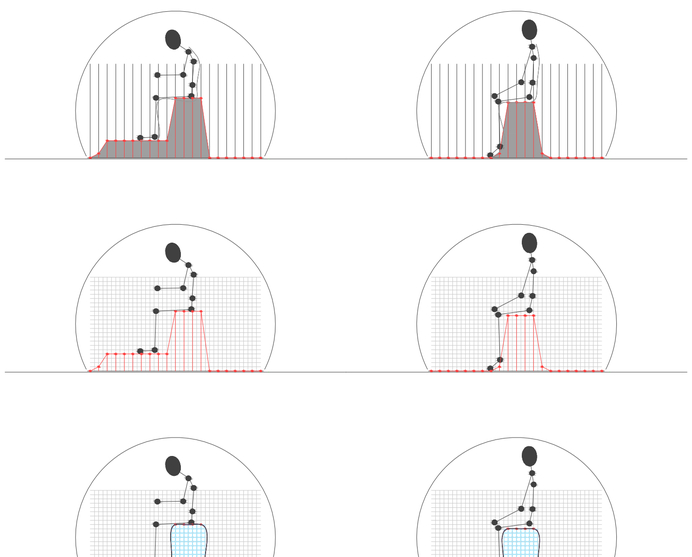
uninflated
inflatable cell grid

inflation of cells
&
final shape of seat



maximum
inflation

EMBEDDED TECHNOLOGIES / FURTHER TRANSFORMATIONS



active seating
work posture problems

SENSORS & HARDWARE COMPONENTS

force – pressure sensor (measures ambient air pressure)

passive infrared sensor / motion-based detector (detects presence and position of body parts)

arduino microcontrollers (controling air valves for air flow)

series of leds work as a lighting information system

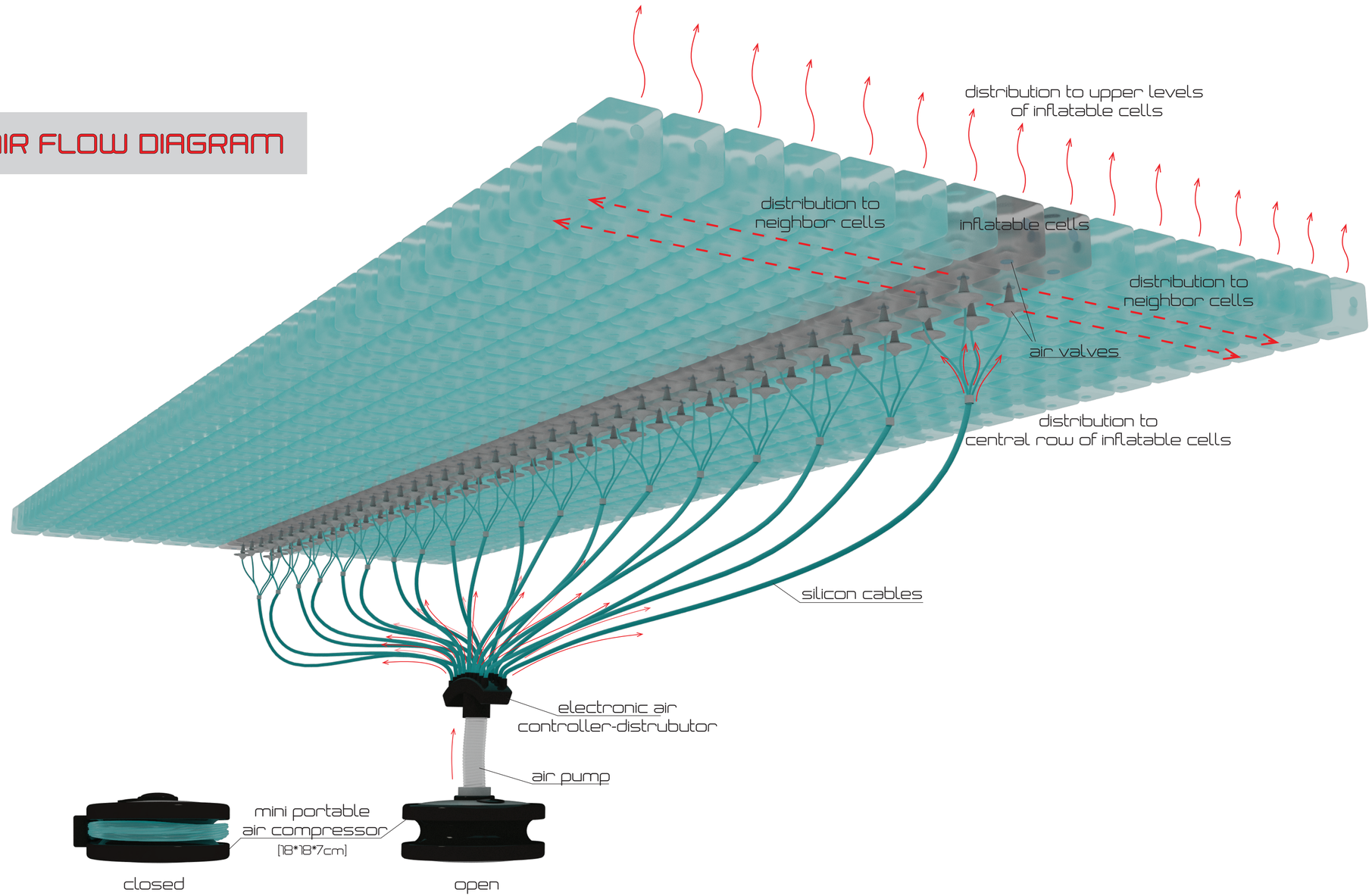
flexible thin plastic electromechanically operated **air valves**

mini flexible solar panel – energy provider



INFLATION PROCESS

AIR FLOW DIAGRAM



DROP STITCH TECHNOLOGY

promising technology for **super-strong** future inflatable structures

fast inflation – deflation – rock-hard rigidity

working pressures up to 1 atmosphere

available **thickness** : 5 – 50 cm

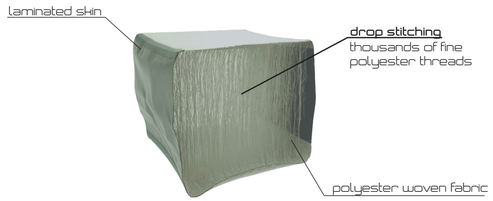
easy transortation and storage

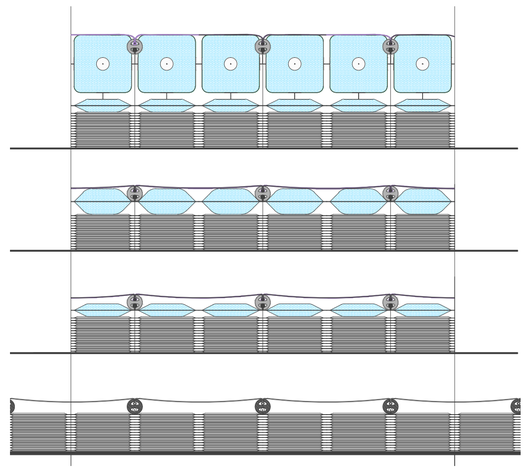
membrane fibers – fiberglass (strength / durability) & polyester (cheap)

membrane coating – silicon rubber & teflon

completely water & airtight

high torsional stifness –
wind resistant up to 80 knots





FREE MODE:
POP-UP TENT / POP-UP DEVICE

CHARACTERISTICS

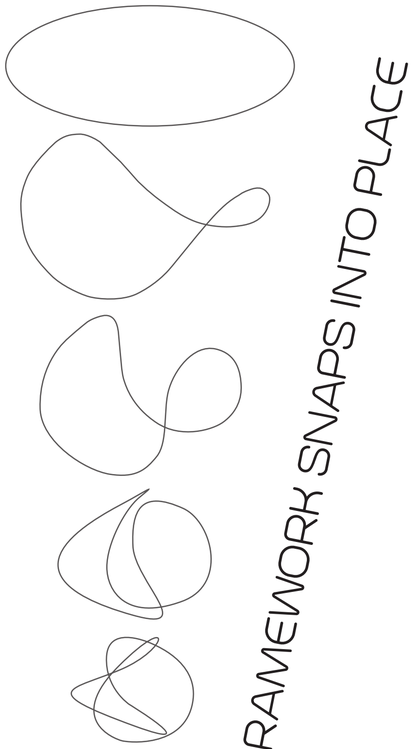
free standing tent
[non-dependable]

maximum impact

randomness/
unpredictability

easy assembly/
disassembly

instant in situ
configuration of space

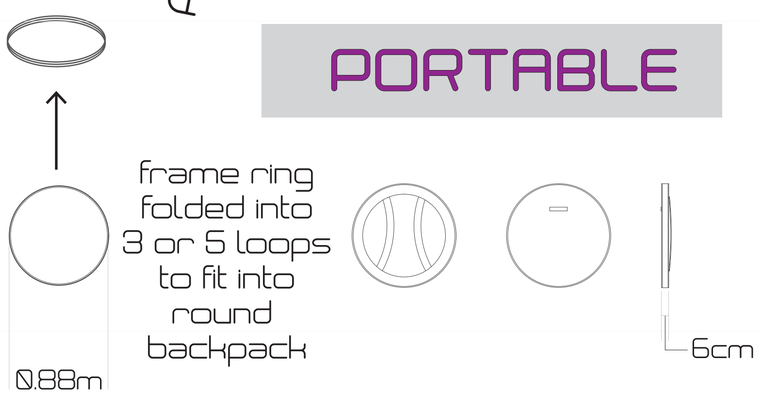


OVERCURVATURE

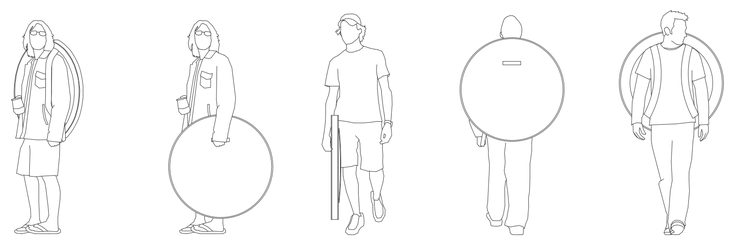
- describes the buckling and folding of foldable tent rings



PORTABLE

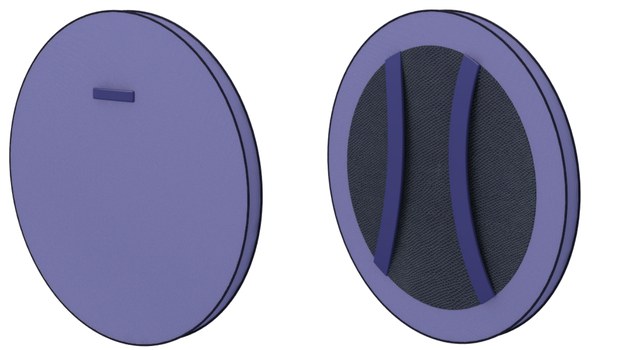


efficient storage and transportation_



LIGHTWEIGHT

CIRCULAR BACKPACK

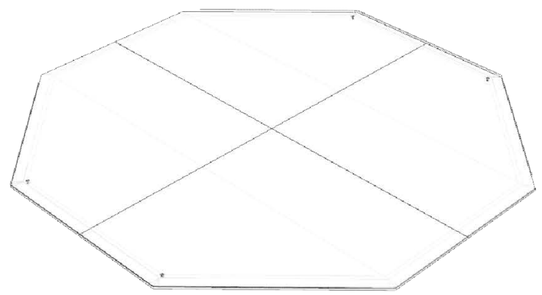


front - handle

back - shoulder straps

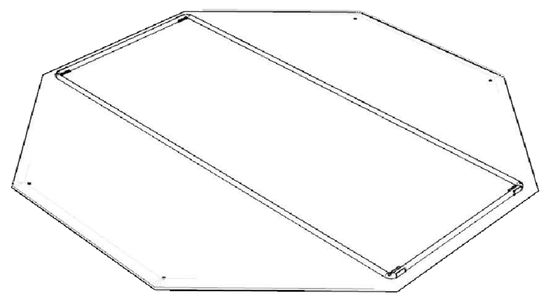
STANDARD SET UP PROCEDURE

1 unfolding polyethylene ground sheet



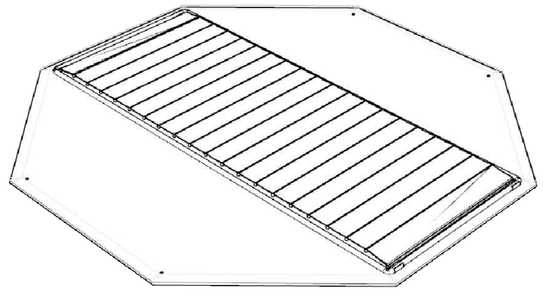
STANDARD SET UP PROCEDURE

2 unfold floor frame



STANDARD SET UP PROCEDURE

3 setup inflatable floor



STANDARD SET UP PROCEDURE

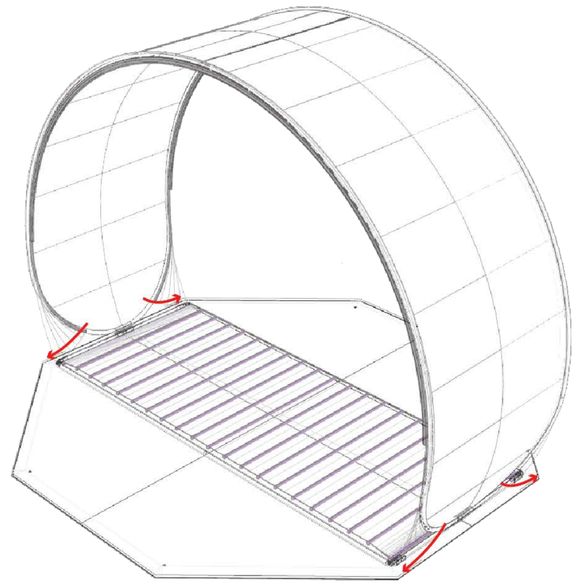
4 unfold
central part



2 layers → outer fabric
2 layers → inner screen

STANDARD SET UP PROCEDURE

5 lock position
secure stability



release
2nd layer
of attached
poles & fabric

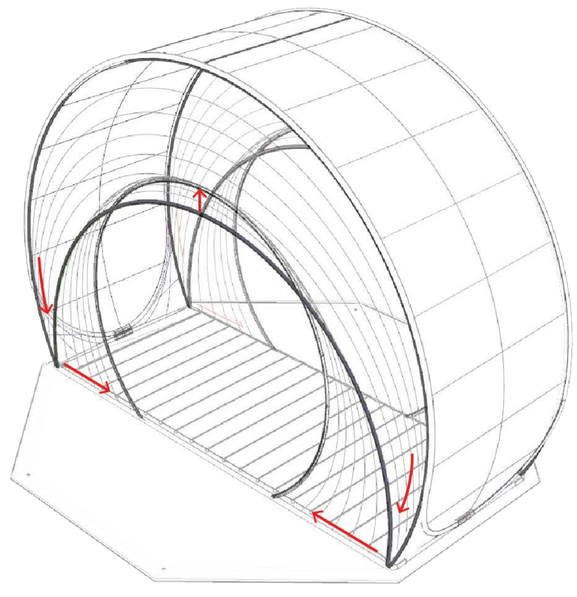
&

plug into
floor frame

VARIATIONS

7a

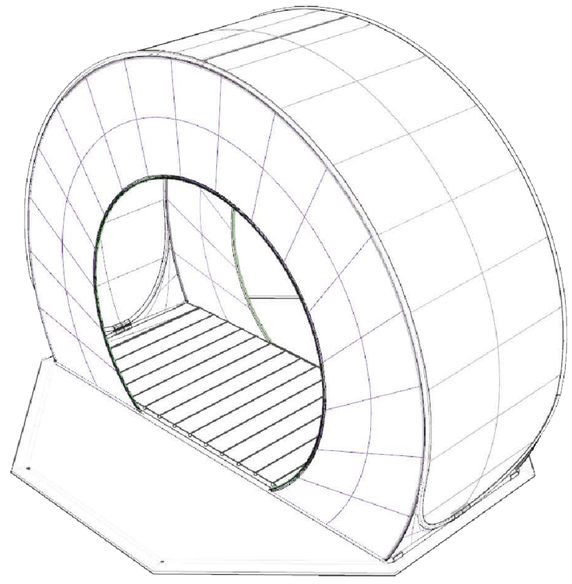
pull edges of
2nd layer of
poles & fabric
down & to the center



VARIATIONS

7a

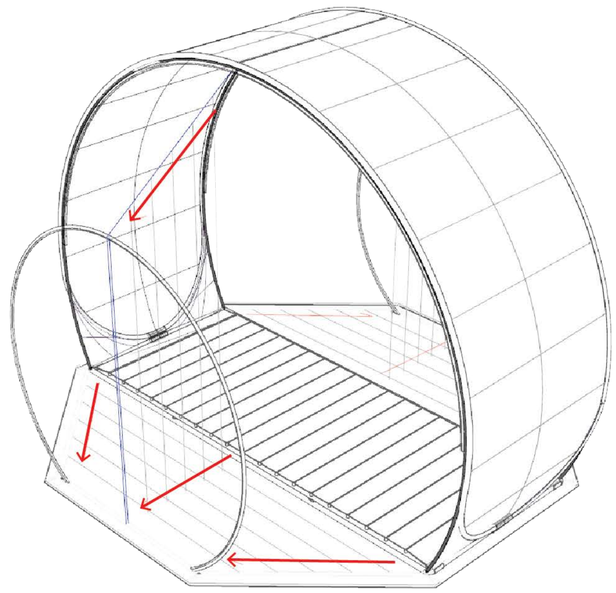
pull edges of
2nd layer of
poles & fabric
down & to the center



VARIATIONS

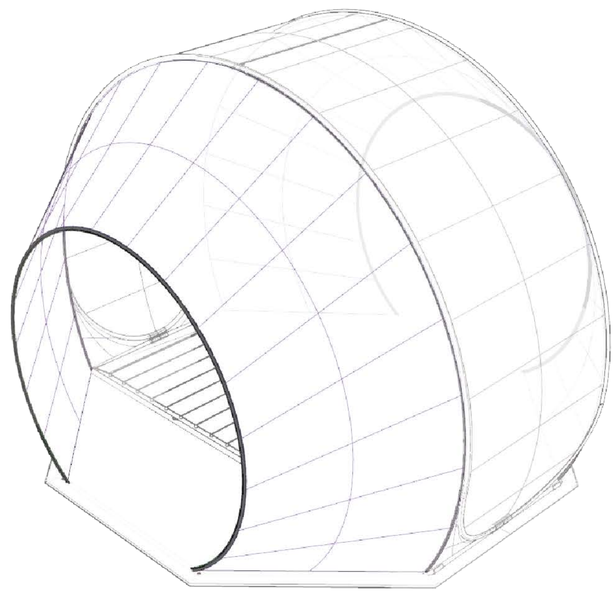
8a

pull out edges of
2nd layer of
poles & fabric



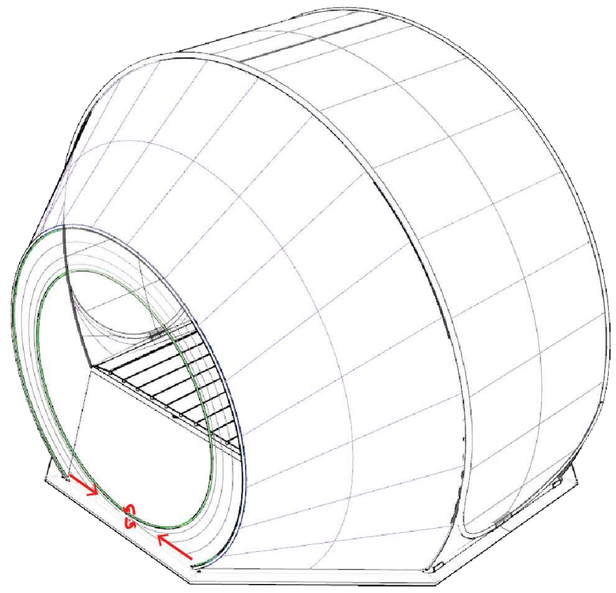
8a

pull out edges of
2nd layer of
poles & fabric



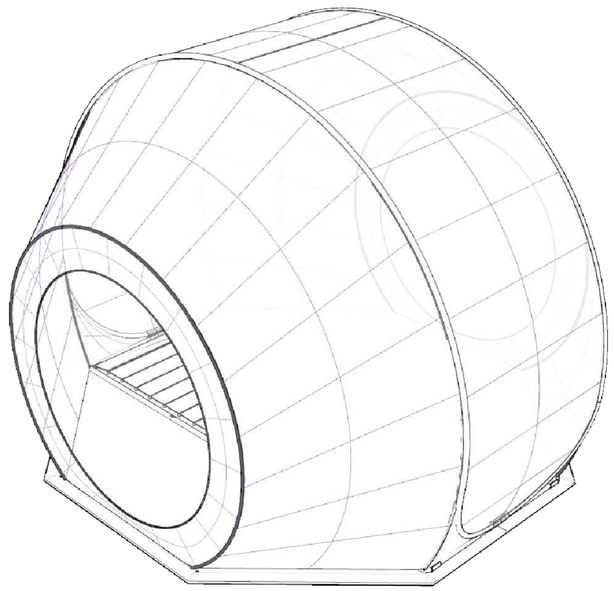
8b

pull 3rd layer of
poles & fabric
to the center

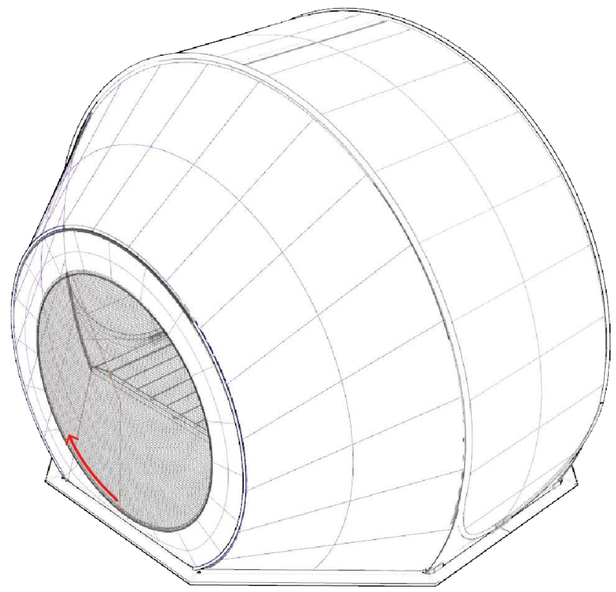


8b

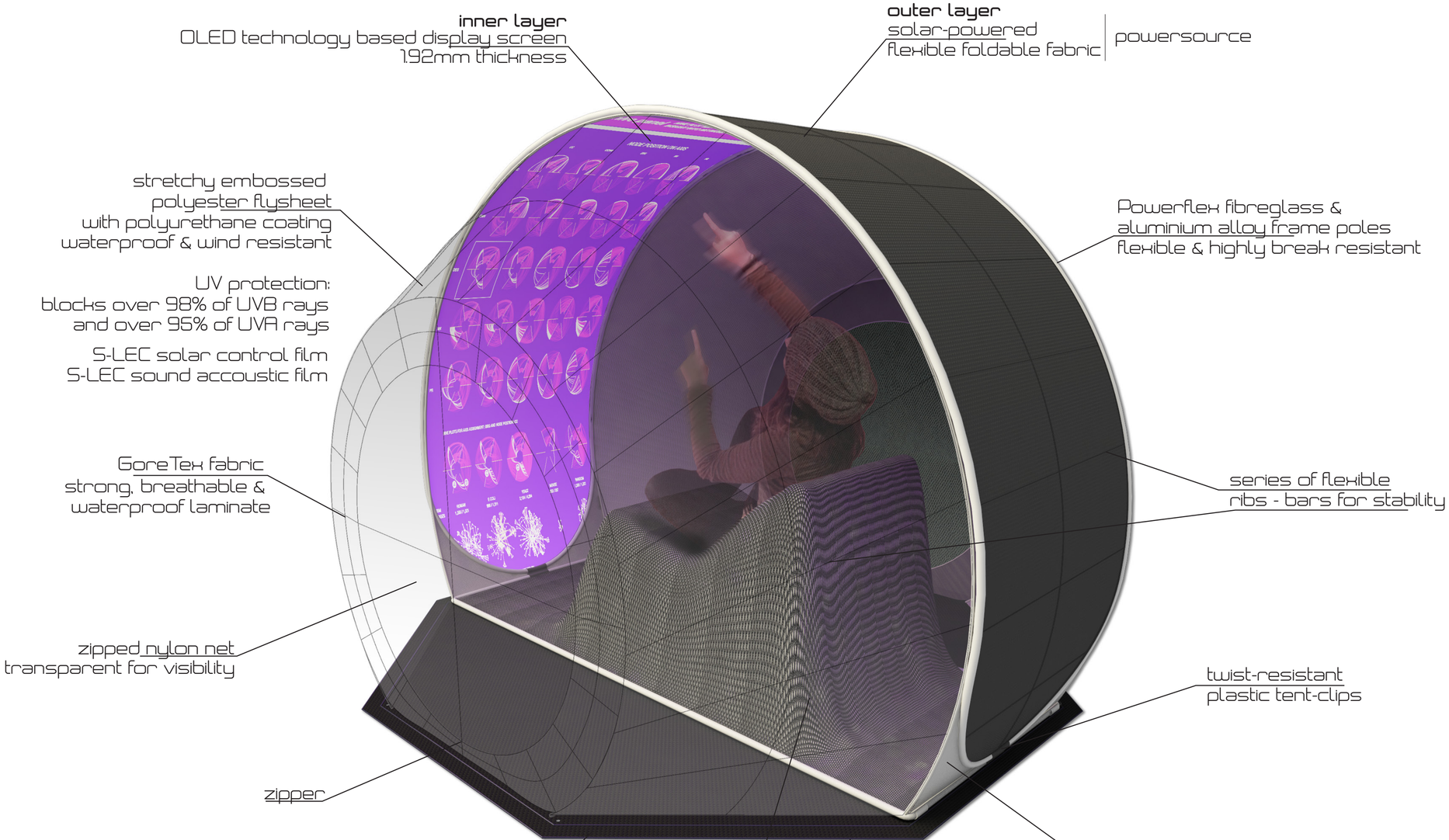
pull 3rd layer of
poles & fabric
to the center



8c zip net (final layer)



MATERIALS


inner layer
OLED technology based display screen
192mm thickness
outer layer
solar-powered
flexible foldable fabric
powersource
stretchy embossed
polyester flysheet
with polyurethane coating
waterproof & wind resistant
UV protection:
blocks over 98% of UVB rays
and over 95% of UVA rays
S-LEC solar control film
S-LEC sound accoustic film
Powerflex fibreglass &
aluminium alloy frame poles
flexible & highly break resistant
GoreTex fabric
strong, breathable &
waterproof laminate
series of flexible
ribs - bars for stability
zipped nylon net
transparent for visibility
twist-resistant
plastic tent-clips
zipper
breathable polyester fabric
polyethylene ground sheet
waterproof to 10000mm
warm and durable
fully thermo-bonded taped seams
inflatable seat

EMBEDDED TECHNOLOGIES

EMERGING TECHNOLOGIES
powered user interface
for a compelling and efficient workspace

Augmented Reality [AR] Google's Glasses

- first person view - direct real-time immersive experience
- the interaction and display of superiposed layers of graphics, audio and other sense enhancement over a real-world environment
- virtual filed trips_students see supplement and interactive information appearing on historical artifacts/places

Cloud Computing

- digital libraries, projects & learning resources in the cloud
- cloud - based universities_anytime accessibility for students - faculty - staff
- convenience to work anywhere, anytime

Virtual Learning Environments [VLE]

- attend classes from all over the world in a virtual environment
- minimize physical presence/encourage interaction
- participate in discussions/FORUMS/instant feedback

Online Social Networking

- social-based approach to education - more relevant for future students
- free sharing of ideas - empowering learning as a personal responsibility
- enhancement of collaboration and team-building initiavives
- engaging local community

Touchless Sensing Gestural Technologies

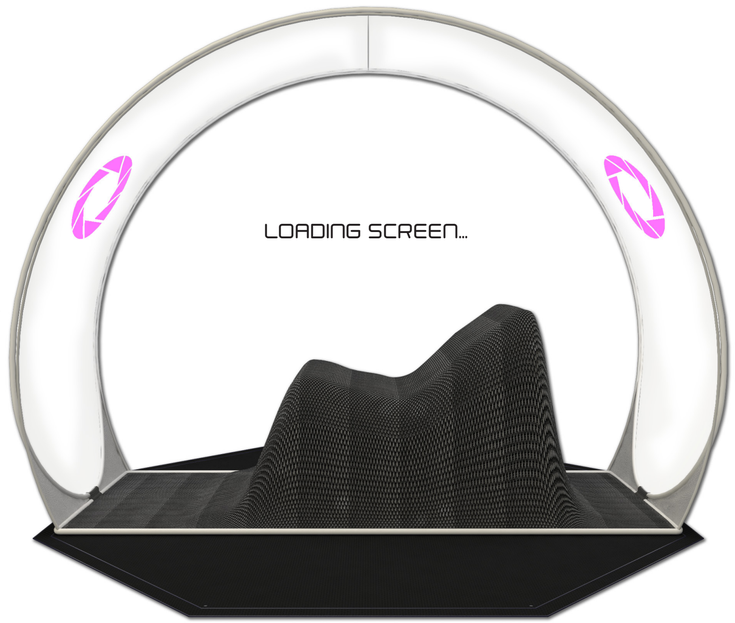
- motion sensors/ devices/ cameras / in-built projectors

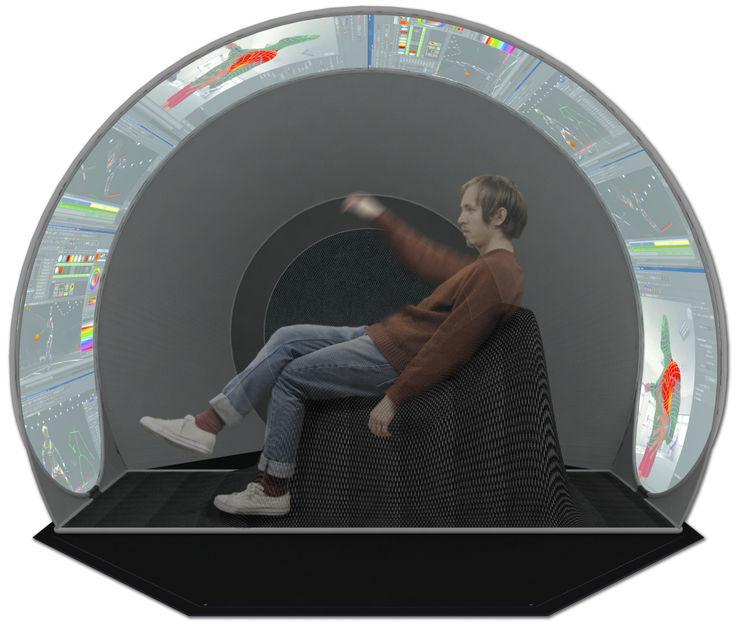
Leap Motion
Tobii Rex
Elliptic Labs
Eye Sight Technology
PointGrab Myoelectric Armband
Kinect
Airwriting
Holographic Projections

Biometrics

- measure alertness/attention/concentration using physiological attributes and behavioral tendencies
- user identification and access control

Eye Tracking
Facial Recognition
Fingerprint Scanning
Iris & Retina Scanning
Voice Recognition
Heartbeat Biometrics
Gait Analysis
Body Odor
DNA





STUDIO CULTURE

communication
connectivity
collaboration
social environments

REQUIREMENTS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant – permanent	static – mobile	rigid – flexible	fixed/stable – transformable	calm – intense	public – private	limited – 24/7	1 hour spent – 24	limited – unlimited/ absolute	physical – virtual/ digital	hardware – software	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – dense	small – great	ultra low – sequential – parallel

LABS

- printing (computer labs)
- fabrication (fabrication labs)
- experiments & testing (research labs)

– computers/printers/plotters/scanners
– material storage/desk/desk/working surface

– computers/laser cutters/3d printers
– CNC/material storage/toolbox
– desk/workspace/working surface

– laptops/working surfaces/electronics
– materials/material storage/boards/tools

LECTURE SPACES

- lectures
- presentations
- screenings
- group meetings
- discussions
- conferences/ panels
- teleconferences
- board assemblies
- exams
- debates

– seats/writing & projection surfaces/podium
– microphone/projector/speakers/camera
– projection surfaces/empty boards/desks
– projector/laptop/microphones

– projection surface/projector/seats/laptop

– seats/working surface/laptops/boards

– seats/writing surfaces/boards

– podium/seats/desks/lectern/projector
/laptop/microphones/headsets/speakers/
projection surface/cameras/web-based system

– podium/seats/microphones

– podium/seats/writing surfaces/board

– seats/desks/podium/board

STUDIOS

- design classes
- projects
- workshops
- short lectures
- mid-presentations
- reviews
- exhibitions
- physical modeling
- brainstorming
- seminars/ tutorials

– seats/desks/podium/board
– laptops

– seats/desks/board/storage space/shelves
– laptops

– seats/desks/board
– laptops

– seats/writing & projection surface/board
– laptop/projector/podium

– seats/desks/projection surface/boards
– laptop/projector

– seats/working surface/board
– laptop

– empty vertical & horizontal surfaces

– seats/working surfaces
– laptops/storage space/toolbox

– seats/desks/boards
– laptops/tablets

– seats/desks/boards/projection surface
– laptops/projector/podium

FREE SPACES

- socializing
- thinking/studying
- site visiting/ tours
- observation
- photography/ sketching
- data collection/ analysis
- art classes
- walks
- relaxing/sleeping
- unpredictable events

– laptops/tablets/smart phones/web applications
– seats

– laptops/seat/tablet/desks/books/notebooks

– camera/tablet/headsets
–tour wireless system & application

– seat/tablet/notebook

– camera/sketchbook/tablet

– tablet/notebook/laptop

– easel/art tools/seat

– tablet/smartphone

– soft surface/dark isolated space

OUTPUT

DESIGN INTENTIONS & CONSIDERATIONS

introduction of MOBILE LABS

- decrease or elimination of hardware use
- focus on software
- remaining hardware: smaller, compact & easily transported

TRANSFORMABLE INFRASTRUCTURE

- serves studio & lecture activities at the same time
- adapts into urban grid according to activity & users needs
- hybrid structure:
--- static part
(secures stability)
--- moving part
(accepts users' changes)
- acts as receptor of plug-in free mode installation
- creates and separates groups
- energy self-sufficient
- deployable unit
- can be also used as urban equipment
- constantly changing
- live multiagent system

PORTABLE PERSONAL WORKSPACE

- spatial device
- easy in-situ installation
- stand-alone
- self-supporting
- comfortable
- leightweight
- durable
- energy self-sufficient
- wireless connection to whole system (link device)

STUDIO CULTURE

communication
connectivity
collaboration
social environments

INDICATORS

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LABS	- printing (computer labs) - fabrication (fabrication lab) - experiments & testing (research labs)												– computers/printers/plotters/scanners – material storage (mdf, wood, paper, acrylic, fabric)			
LECTURE SPACES	- lectures - presentations - screenings - group meetings - discussions - conferences/ panels - teleconferences - board assemblies - exams - debates												– seats/writing & projection surfaces/podium – microphones/projector/speakers/camera – projection surfaces/empty boards/desks – projector/laptop/microphones – projection surface/projector/seats/laptop – seats/working surface/laptops/boards – seats/writing surfaces/boards – podium/seats/desks/lectern/projector /laptop/microphones/headsets/speakers/ projection surface/cameras/web-based system – podium/seats/microphones – podium/seats/writing surfaces/board – seats/desks/podium/board			
STUDIOS	- design classes - projects - workshops - short lectures - mid-presentations - reviews - exhibitions - physical modeling - brainstorming - seminars/ tutorials												– seats/desks/podium/board – laptops – seats/desks/board/storage space/shelves – laptops – seats/desks/board – laptops – seats/writing & projection surface/board – laptop/projector/podium – seats/desks/projection surface/boards – laptop/projector – seats/working surface/board – laptop – empty vertical & horizontal surfaces – seats/working surfaces – laptops/storage space/toolbox – seats/desks/boards – laptops/tablets – seats/desks/boards/projection surface – laptops/projector/podium			
FREE SPACES	- socializing - thinking/studying - site visiting/ tours - observation - photography/ sketching - data collection/ analysis - art classes - walks - relaxing/sleeping - unpredictable events												– computers/printers/plotters/scanners – material storage (mdf, wood, paper, acrylic, fabric) – computers/laser cutting/3d printers – digital fabrication equipment – craft workspace/ sewing surface – laptops/working surfaces/seats/ – materials/material storage/boards/tools			

OUTPUT

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- comfortable
- leightweight
- durable
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KEY INDICATORS

EDUCATIONAL SPACES/TYPES	ACTIVITIES	PERMANENCE	MOBILITY	FLEXIBILITY	TRANSFORMABILITY	INTENSITY	PRIVACY	ACCESSIBILITY	TIME	FREEDOM	PRESENCE	TECHNOLOGY	EQUIPMENT	DENSITY	IMPACT	INTERACTION
RANGE		instant – permanent (none, ephemeral, semi, high)	static – mobile (none, low, mid, high)	rigid – flexible (none, limited, semi, high)	fixed/stable – transformable	calm – intense (low, mid, high)	public – private (low, mid, high)	limited – 24/7 (low, mid, high)	1 – 24 hours spent	limited – unlimited/absolute (low, controlled, high)	physical – virtual/digital (compulsory, desirable, optional)	hardware wired – software wireless (anyware, both)	– robust, flexible communication infrastructure – strong network servers & individual distribution hubs wherever possible	sparse – dense (low, mid, high)	small – great (low, mid, consider, able, high)	ultra low – ultra high (controlled, uncontrolled)
 LECTURE SPACES	- lectures												– seats/writing & projection surfaces/podium – microphone/projector/speakers/camera			
	- presentations												– projection surfaces/empty boards/desks – projector/laptop/microphones			
	- screenings												– projection surface/projector/seats/laptop			
	- group meetings												– seats/working surface/laptops/boards			
	- discussions												– seats/writing surfaces/boards			
	- conferences/ panels												– podium/seats/desks/lectern/projector /laptop/microphones/headsets/speakers/ projection surface/cameras/web-based system			
	- teleconferences															
	- board assemblies												– podium/seats/microphones			
	- exams												– podium/seats/writing surfaces/board			
	- debates												– seats/desks/podium/board			
 STUDIOS	- design classes												– seats/desks/podium/board – laptops			
	- projects												– seats/desks/board/storage space/shelves – laptops			
	- workshops												– seats/desks/board – laptops			
	- short lectures												– seats/writing & projection surface/board – laptop/projector/podium			
	- mid-presentations												– seats/desk/projection surface/boards – laptop/projector			
	- reviews												– seats/working surface/board – laptop			
	- exhibitions												– empty vertical & horizontal surfaces			
	- physical modeling												– seats/working surfaces – laptop/storage space/toolbox			
	- brainstorming												– seats/desks/boards – laptops/tablets			
	- seminars/ tutorials												– seats/desks/boards/projection surface – laptops/projector/podium			

OUTPUT

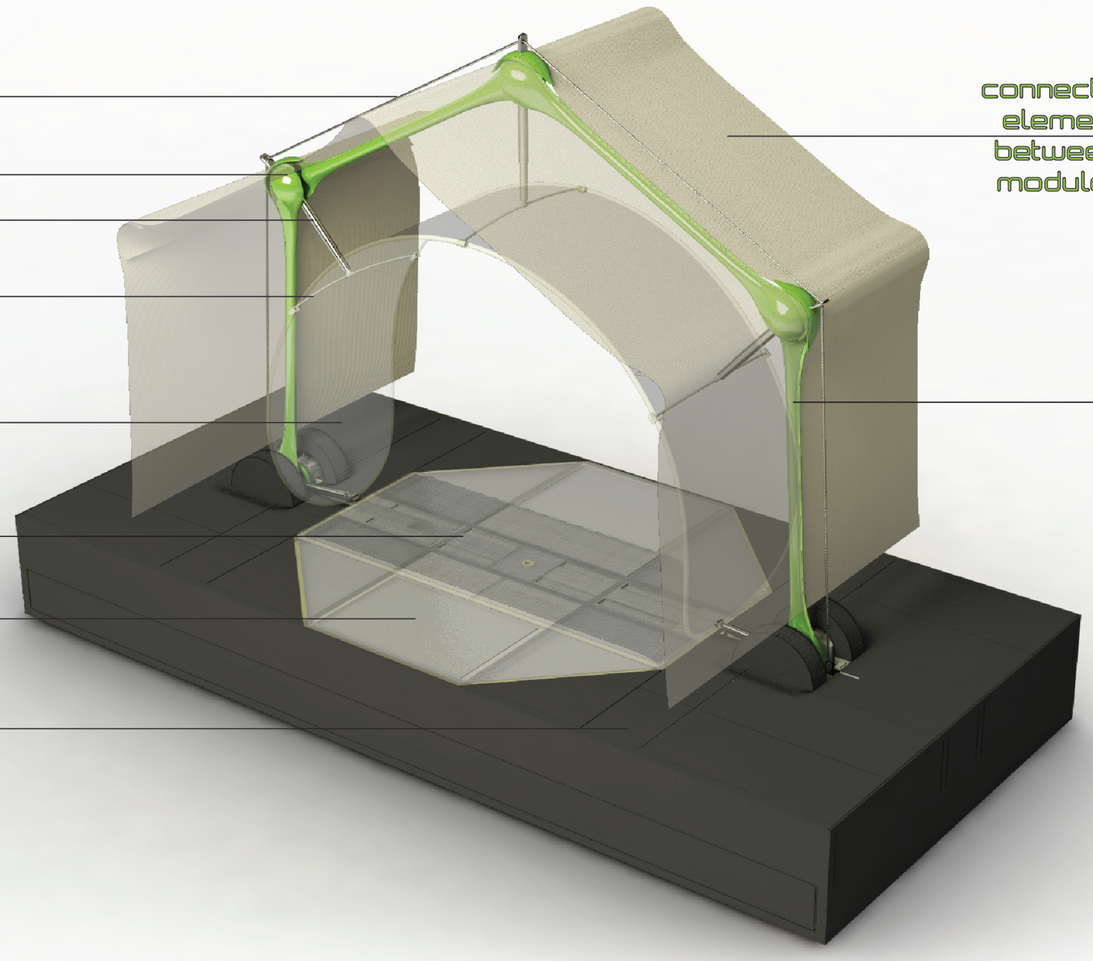
DESIGN INTENTIONS & CONSIDERATIONS

TRANSFORMABLE INFRASTRUCTURE

- serves studio & lecture activities at the same time
- adapts into urban grid according to activity & users needs
- hybrid structure:
  --- static part (secures stability)
  --- moving part (accepts users' changes)
- acts as receptor of plug-in free mode installation
- creates and separates groups
- energy self-sufficient
- deployable unit
- can be also used as urban equipment
- constantly changing
- live multiagent system

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_

INITIAL POSITION
closed elements



cable

metal node

hydraulic pistons
aluminium leightweight

spacers
strong plastic
twist resistant

plugged-in
pop up tent

hidden
stroage spaces

octagon coating
soft rubber
plastic material

platform coating
resistant PVC

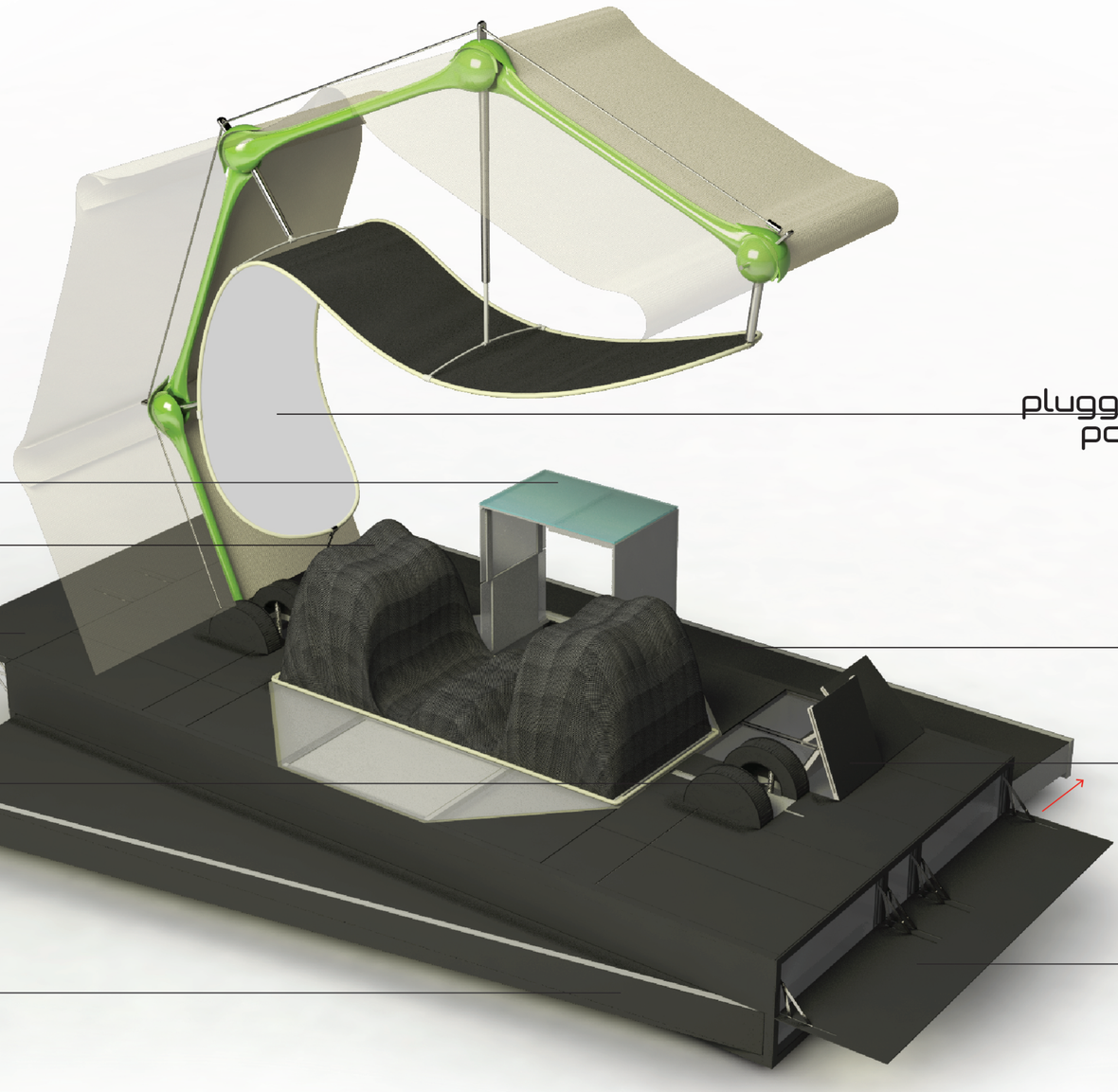
connection element between modules

outer cloth
super-elastic fabric
solar/wind energy
absorbing pores

mechanical arms
strong rigid plastic

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_

FINAL POSITION
open elements



plugged-in transformed
pop-up tent - screen

foldable table

inflatable seat

collapsible
side elements
extending platform area
forming passages

screw lift
mechanism
supporting & manipulating
the mechanical arm

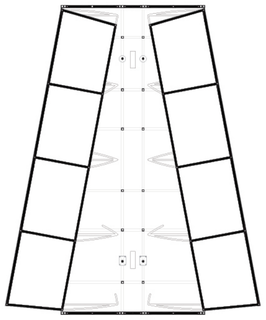
sliding - rotating
element
forming round
configurations

straight sliding
element
forming passages
separating groups

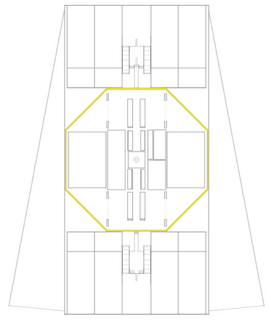
foldable
public seat

collapsible
side elements
forming passages

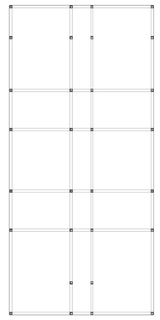
PLATFORM LAYERS



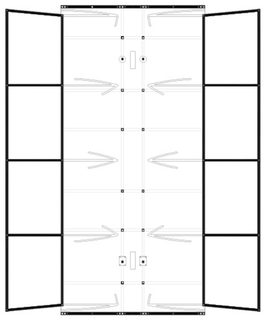
open rotated
sliding elements



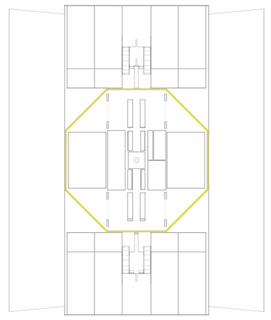
top view of
open sliding elements



platform frame
layer 2



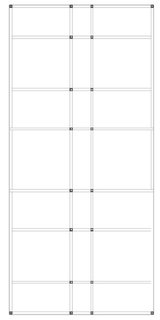
open straight
sliding elements



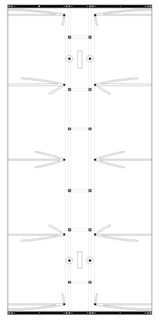
top view of
open straight
sliding elements



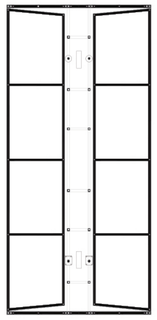
position of
wheels



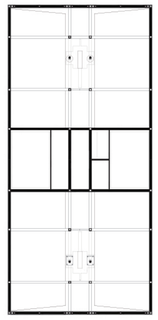
platform frame
layer 1



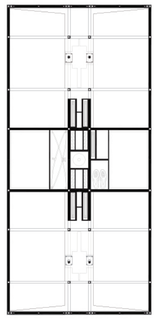
rails for sliding
elements



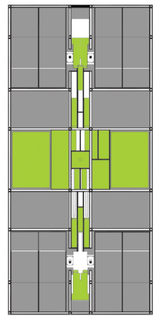
closed sliding
elements



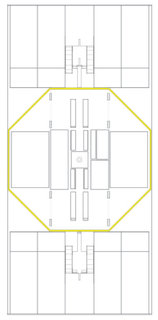
storage
spaces



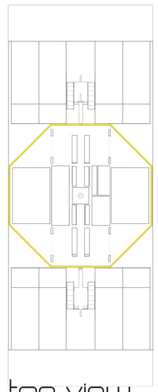
hidden elements
in storage spaces



covers &
sliding covers

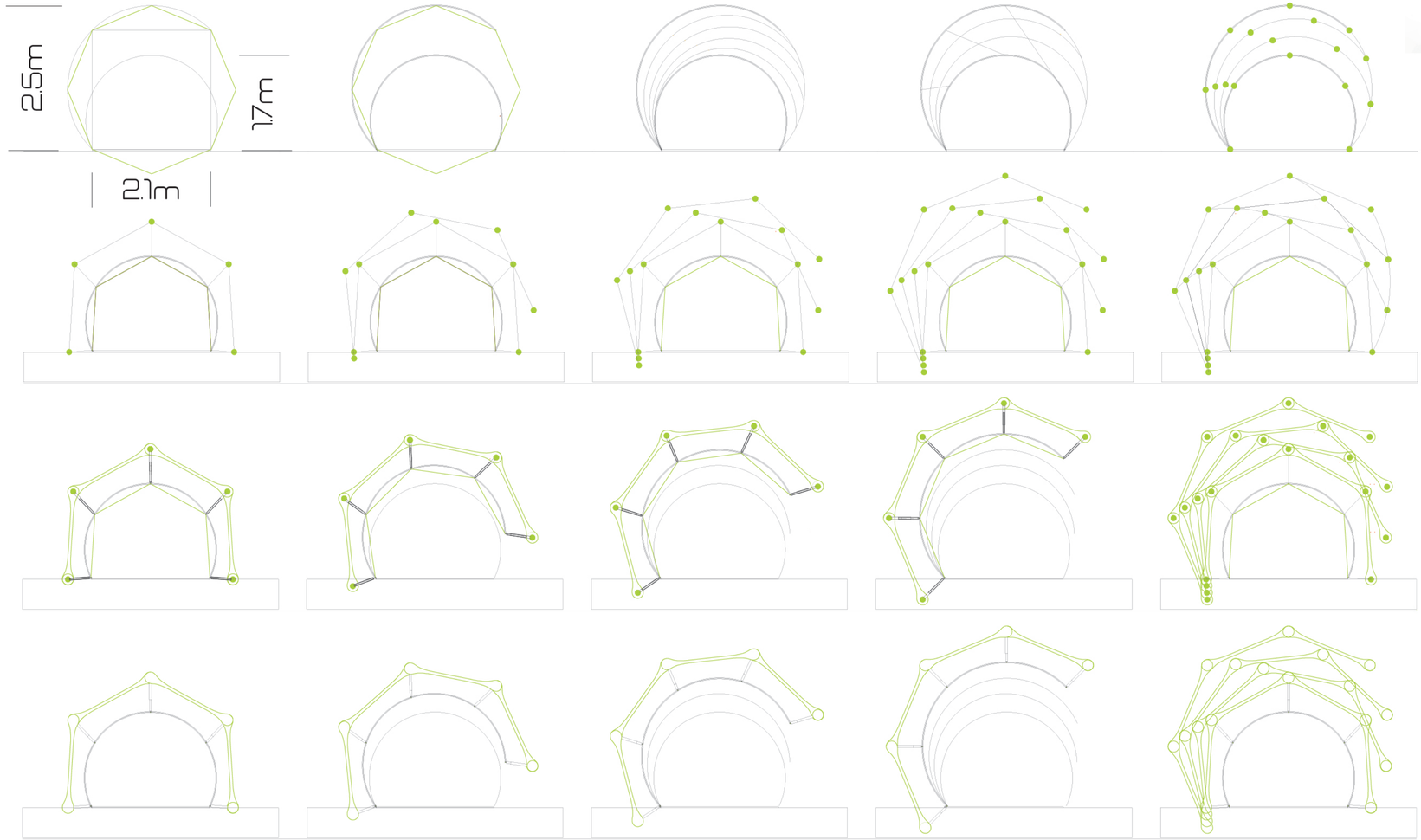


top view
completely closed
platform



top view
open side
elements

MECHANICAL ARM



pop-up tent
positions
transformations
& control points

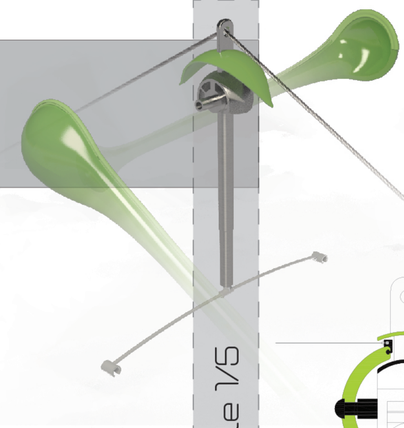
mechanical
arm positions
transformations
& control points

mechanical
arm & pistons
positions &
pop-up tent
transformations

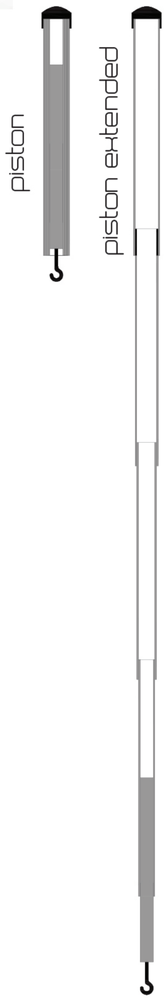
DESIGN PROCESS DIAGRAMS_ scale 1/50

DETAILS_ scale 1/5



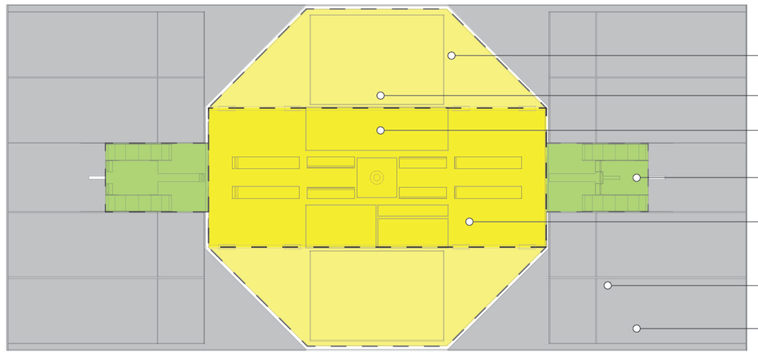


node detail



RELATIONSHIP DIAGRAMS BETWEEN MODULES

1 module - scale 1/20



personal workspace zone

transformable table

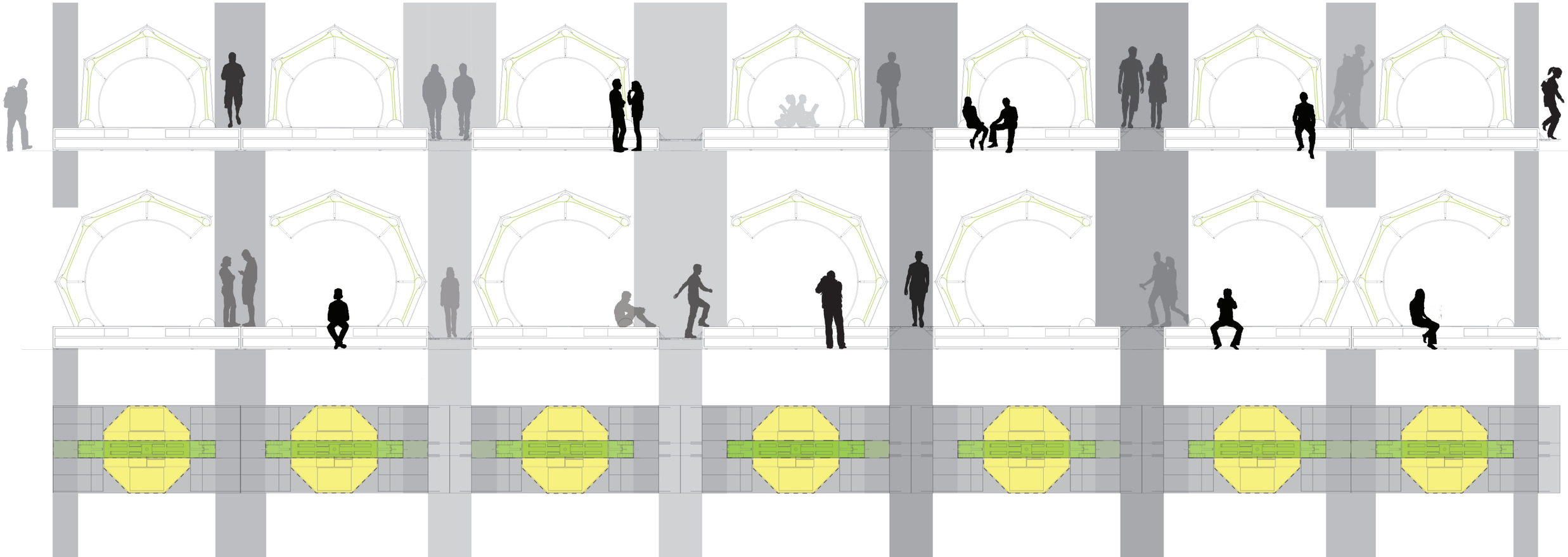
storage spaces

mechanical arm zone

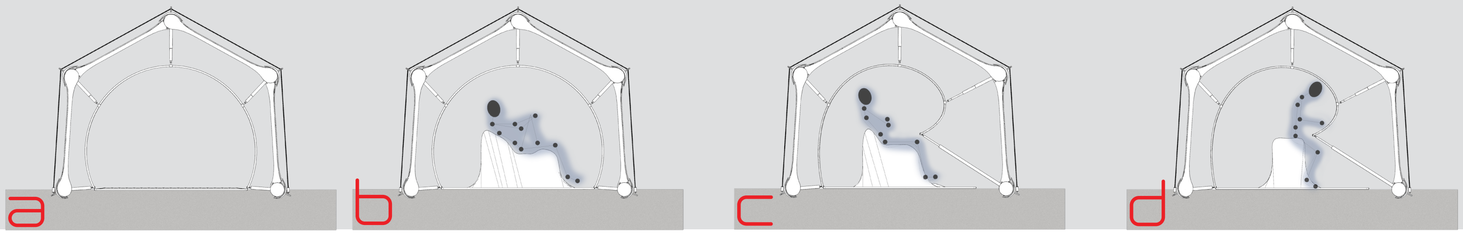
inflatable seat position

[circulation & seating] **public zone**

transformable seating

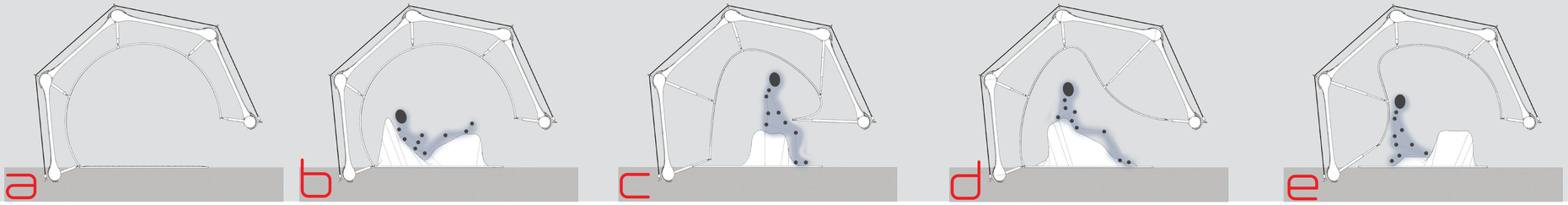


CUSTOMIZATION OF SPACE



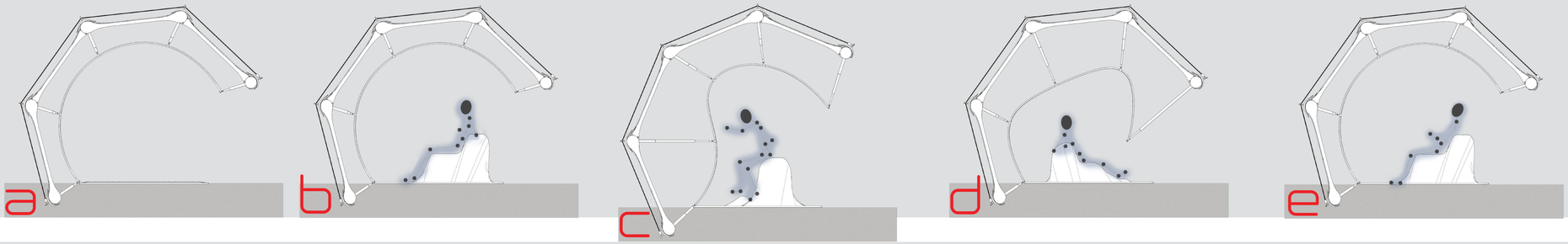
1

initial position
of mechanical
arm – CLOSED



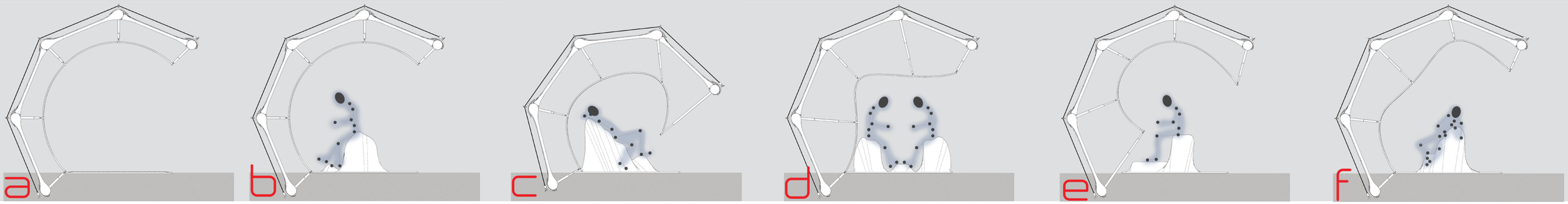
2

intermediate(1)
position of
mechanical arm



3

intermediate(2)
position of
mechanical arm

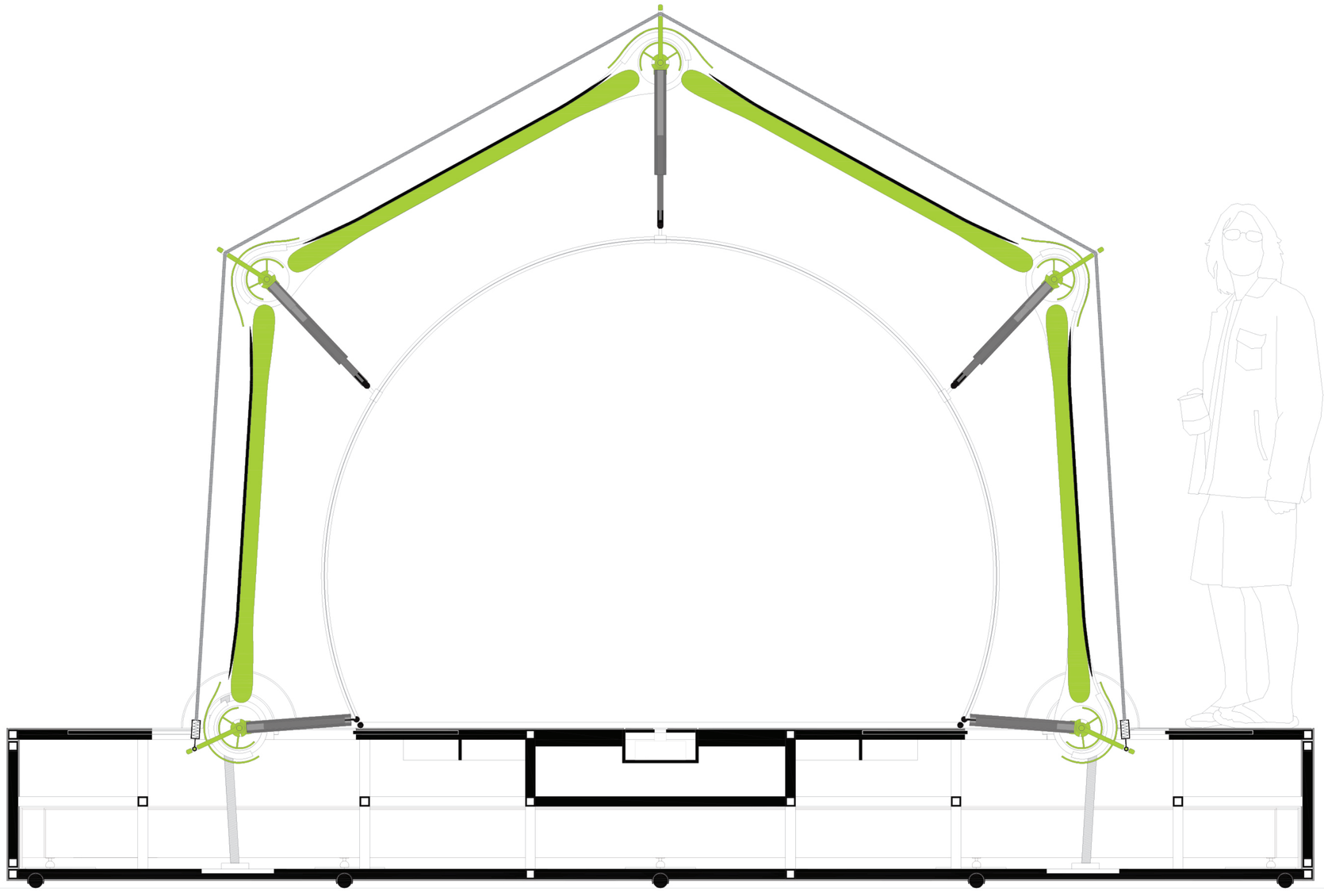


4

final position
of mechanical
arm – OPEN

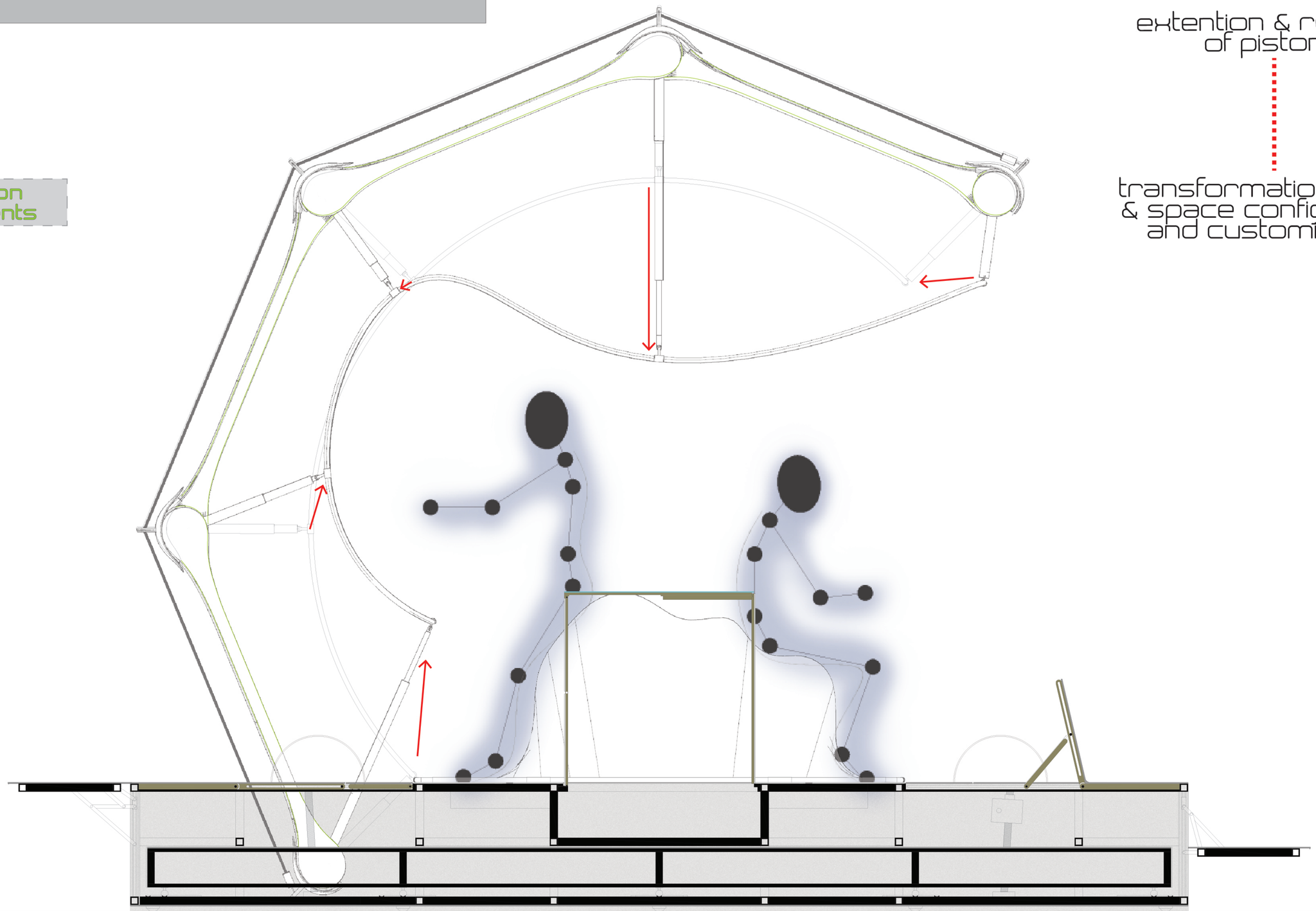
DETAIL SECTIONS

initial position
closed elements



DETAIL SECTIONS

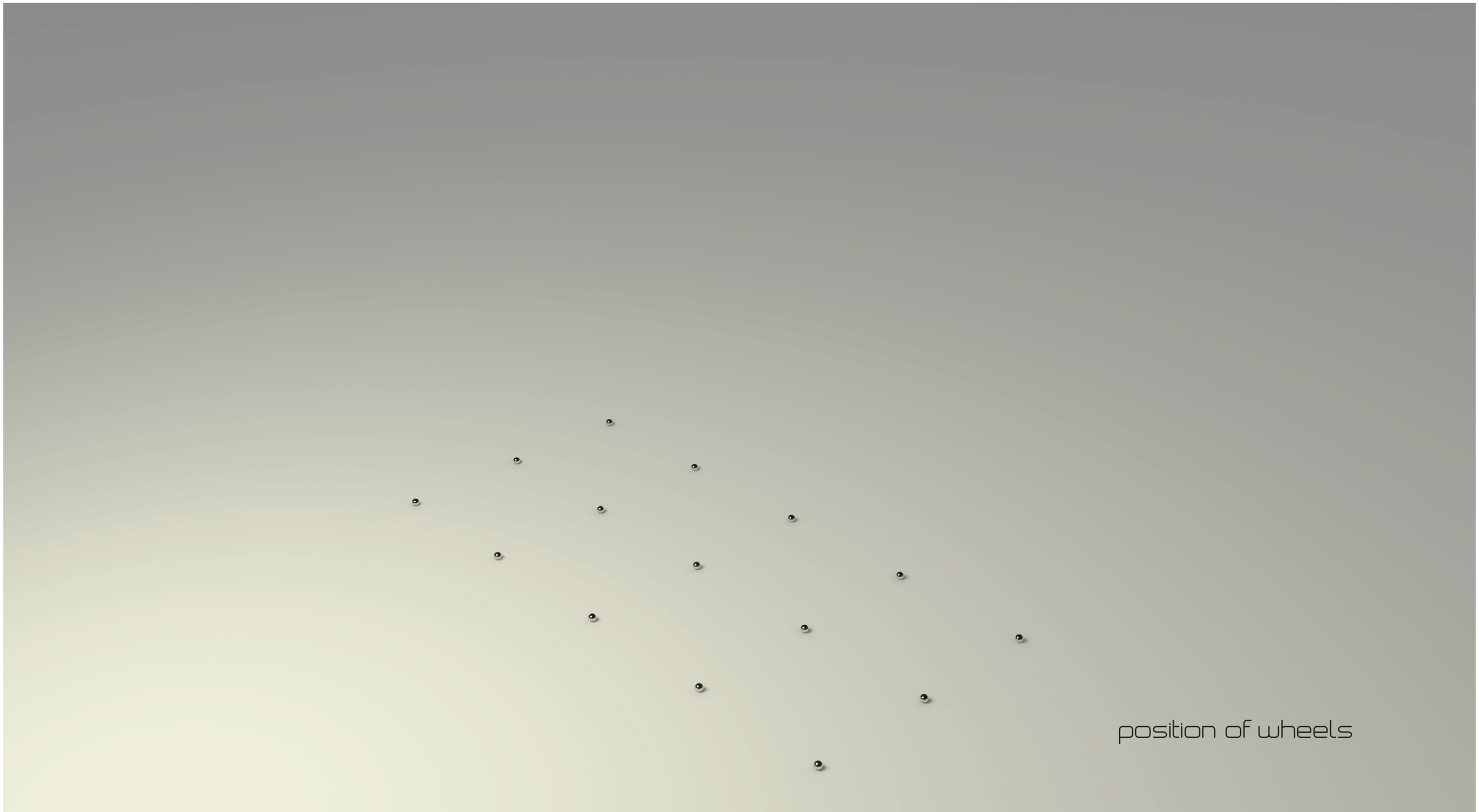
final position
open elements



extention & rotation
of pistons

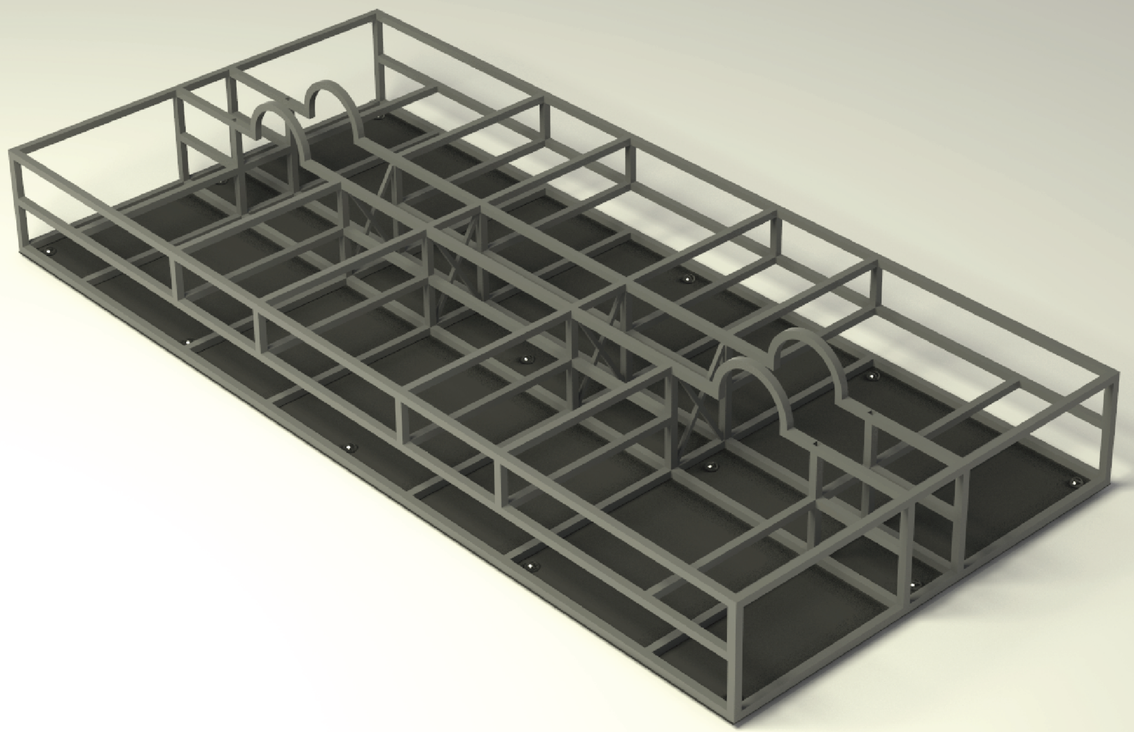
transformation of tent
& space configuration
and customization

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



STUDIO + LECTURE MODES:

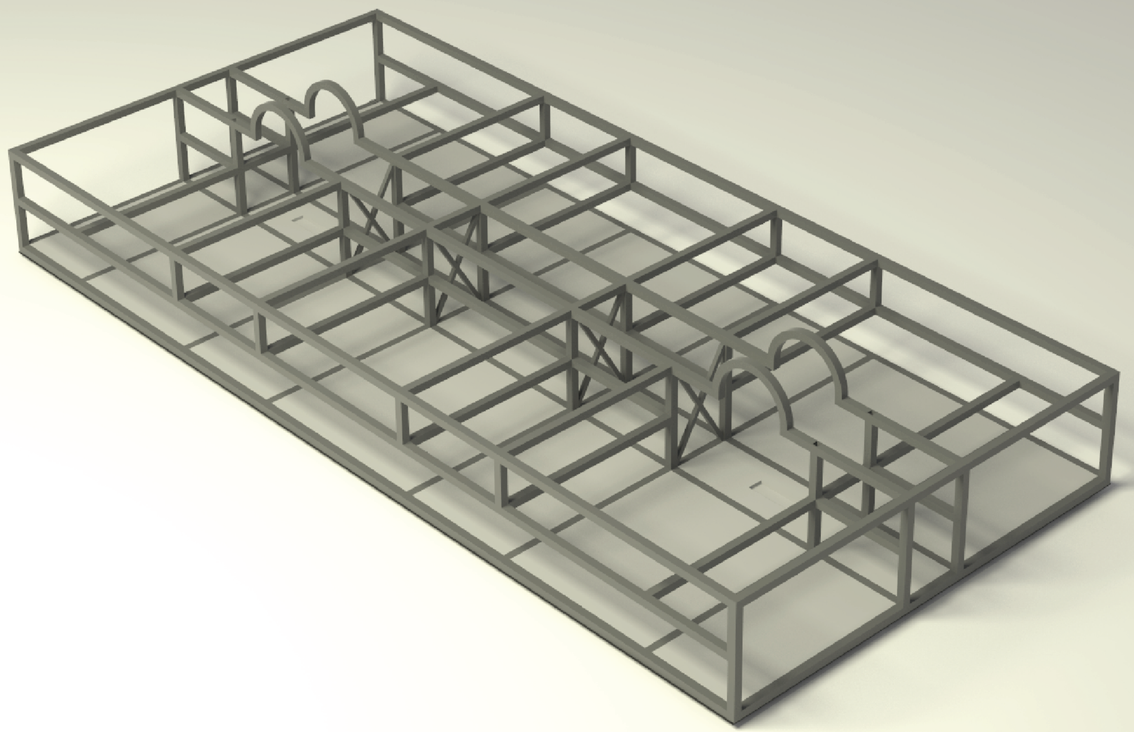
TRANSFORMABLE INFRASTRUCTURE_



structural frame

STUDIO + LECTURE MODES:

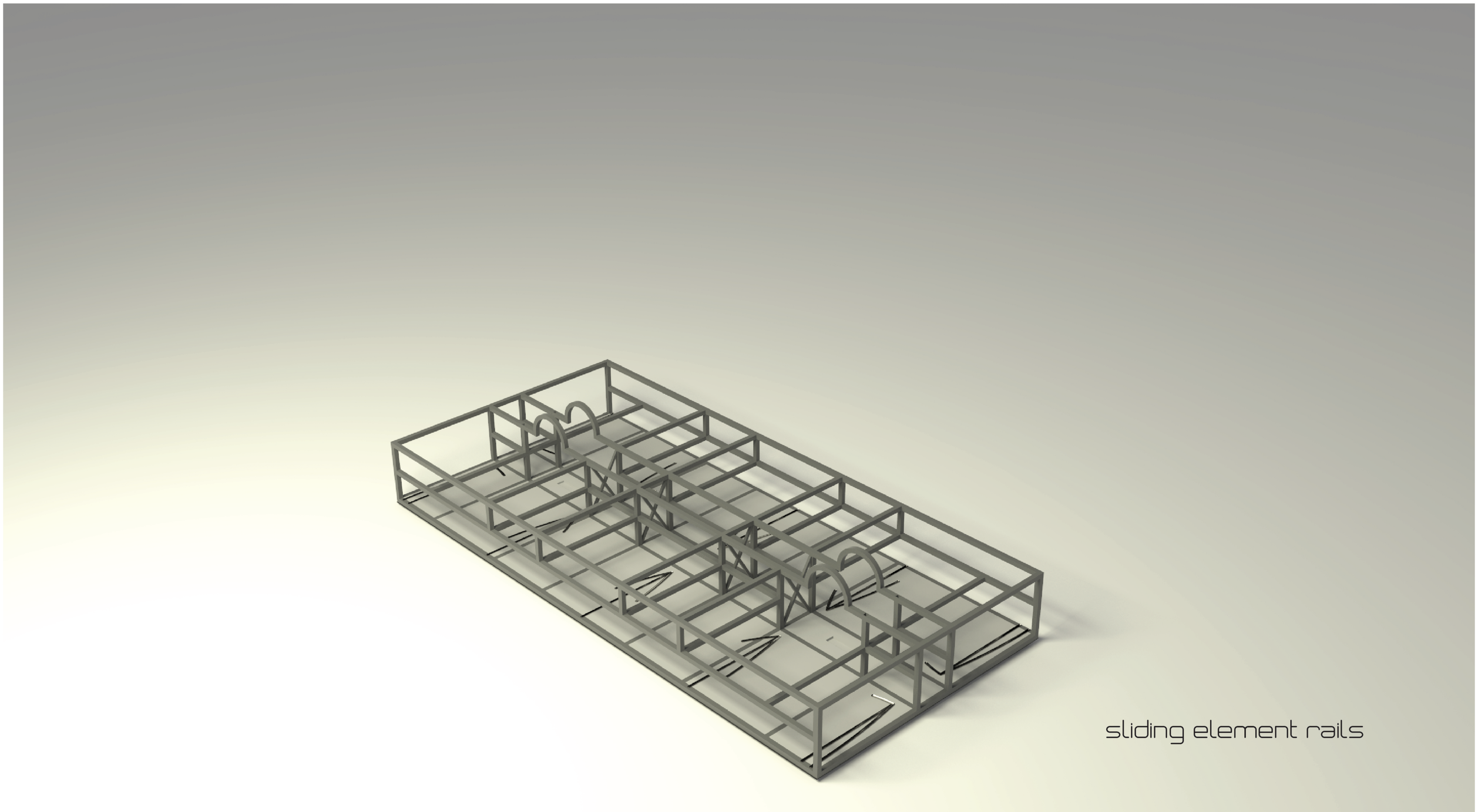
TRANSFORMABLE INFRASTRUCTURE_



platform insulation

STUDIO + LECTURE MODES:

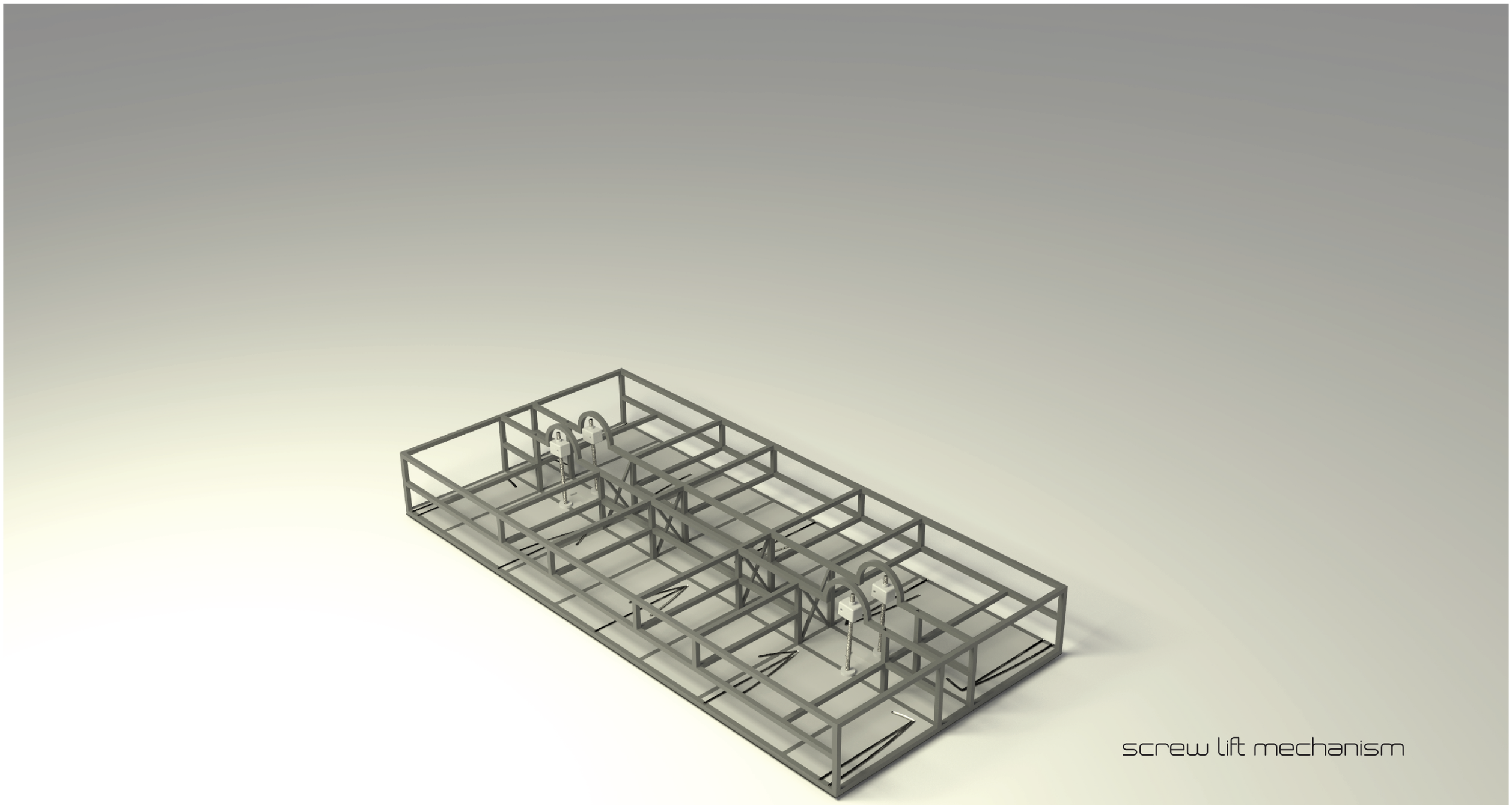
TRANSFORMABLE INFRASTRUCTURE_



sliding element rails

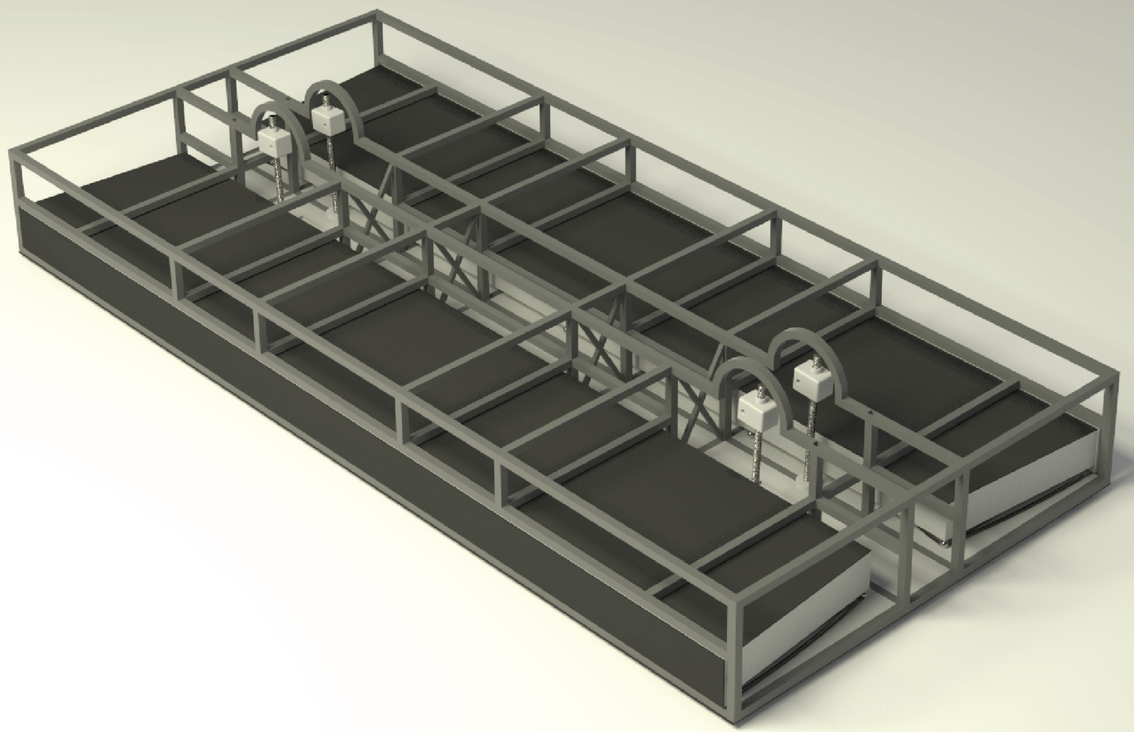
STUDIO + LECTURE MODES:

TRANSFORMABLE INFRASTRUCTURE_



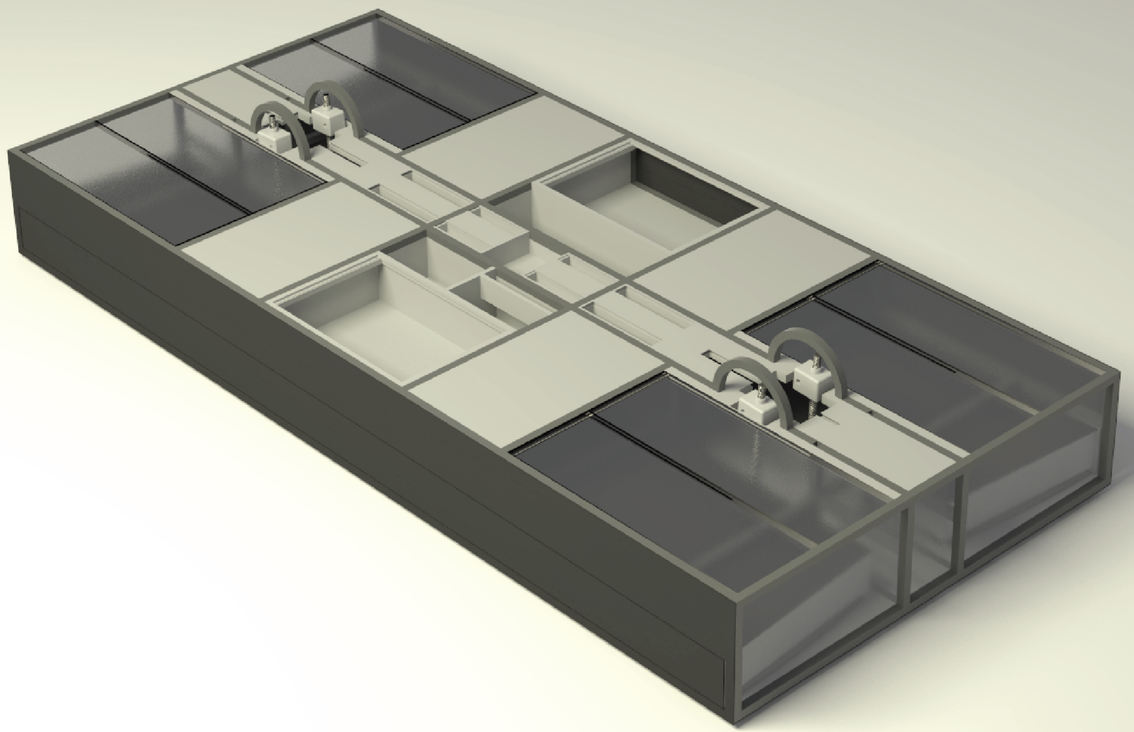
screw lift mechanism

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



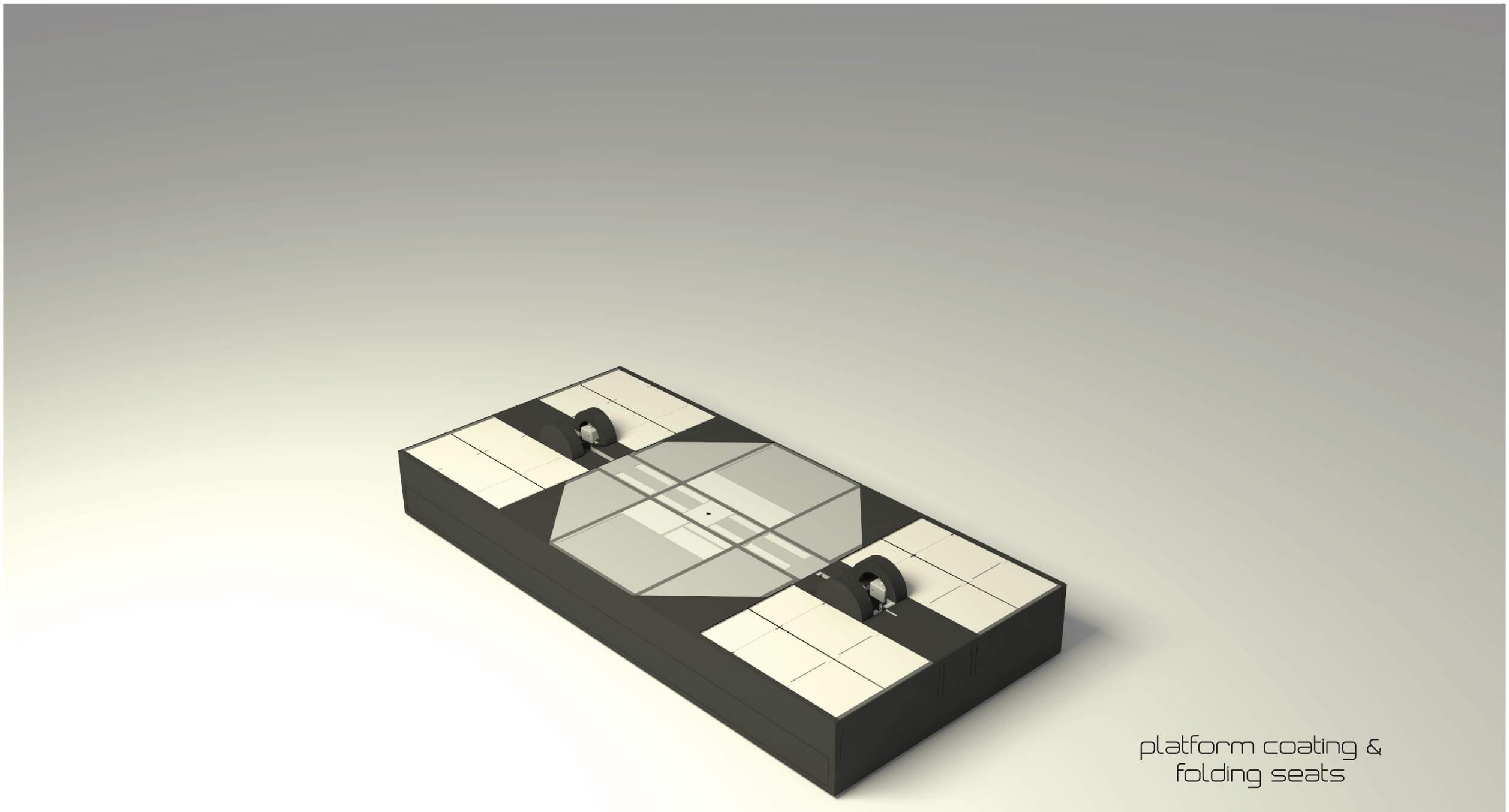
sliding elements

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



storage space &
floor coverings

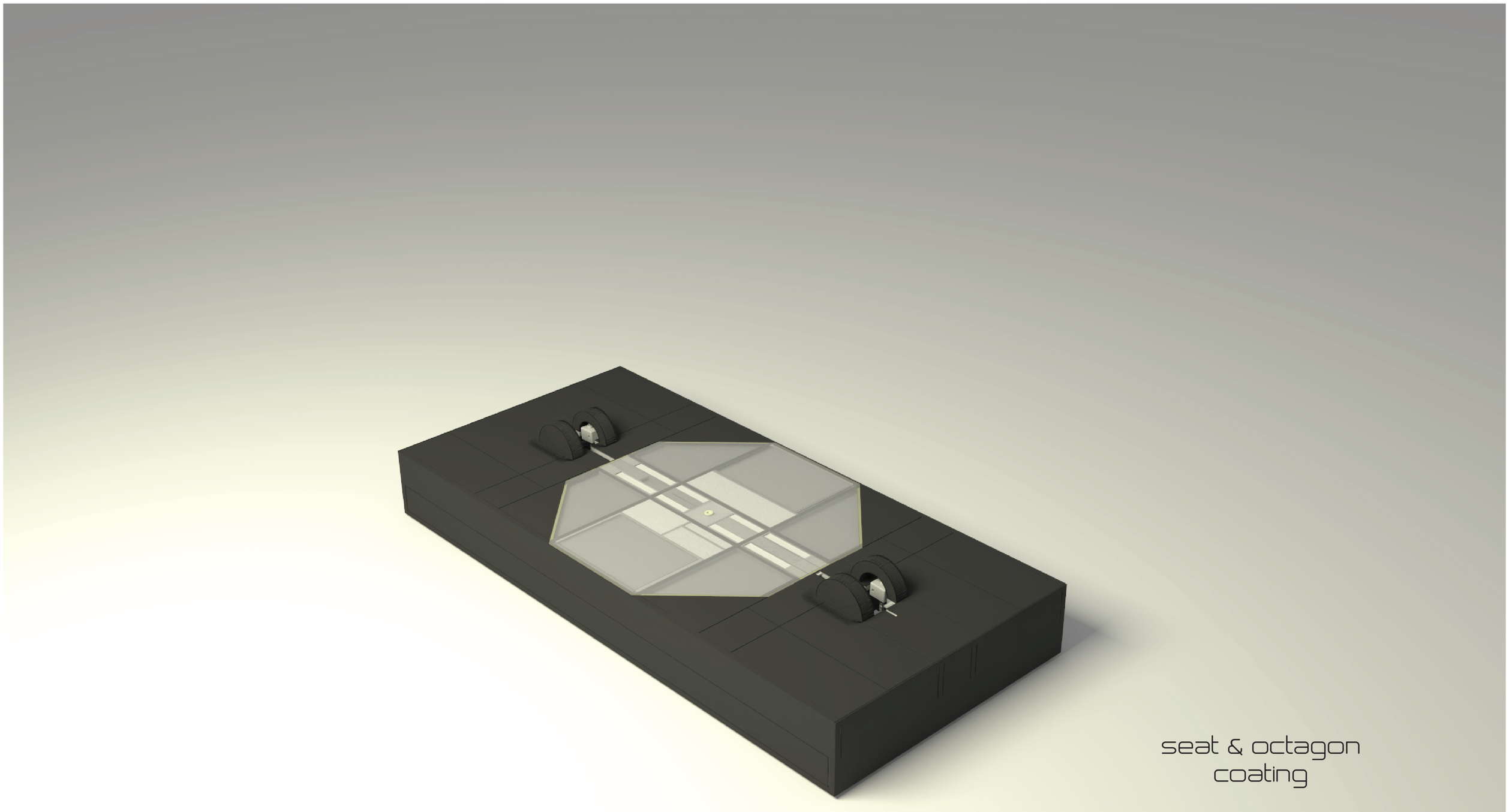
STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



platform coating &
folding seats

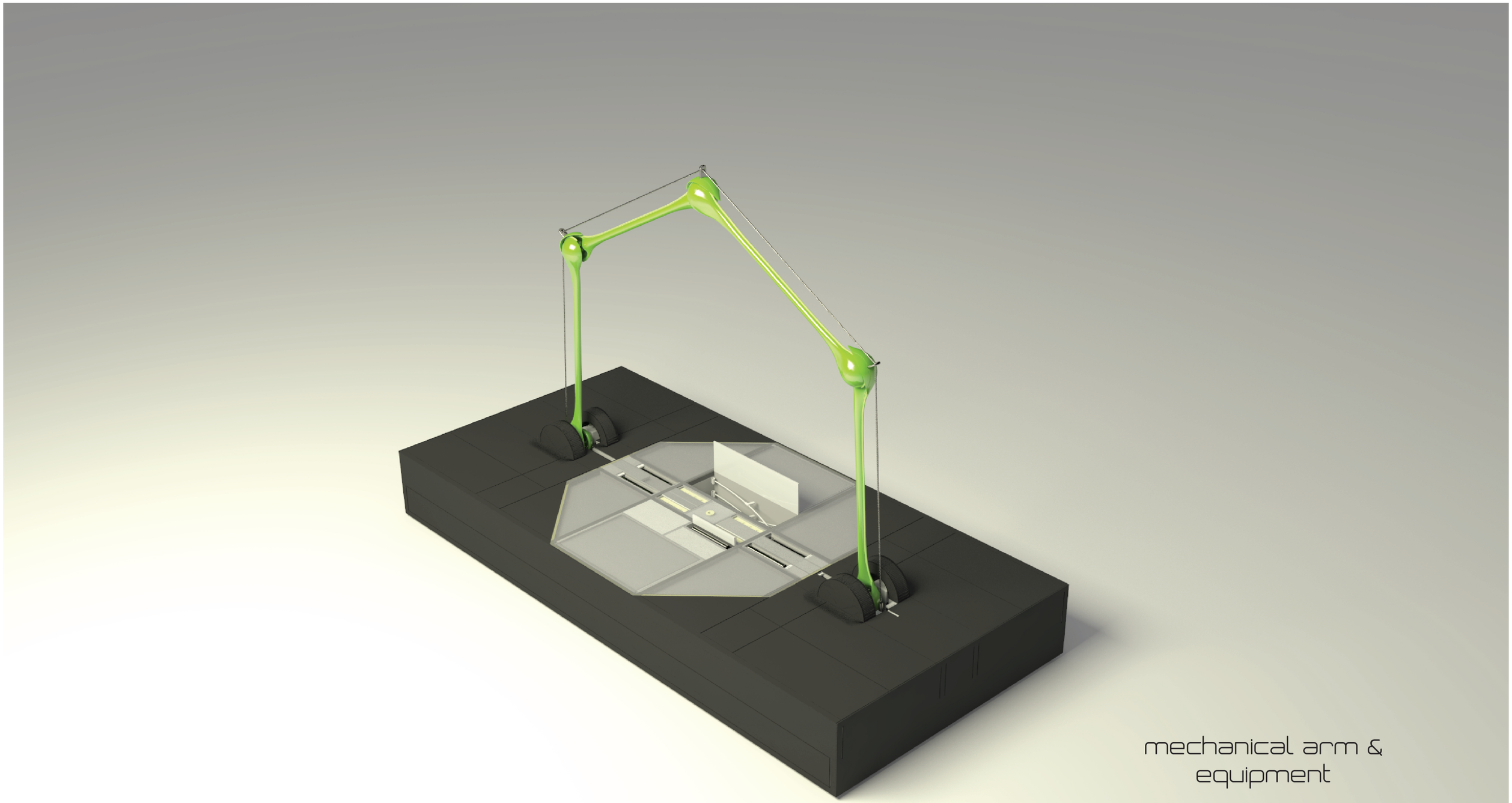
STUDIO + LECTURE MODES:

TRANSFORMABLE INFRASTRUCTURE_



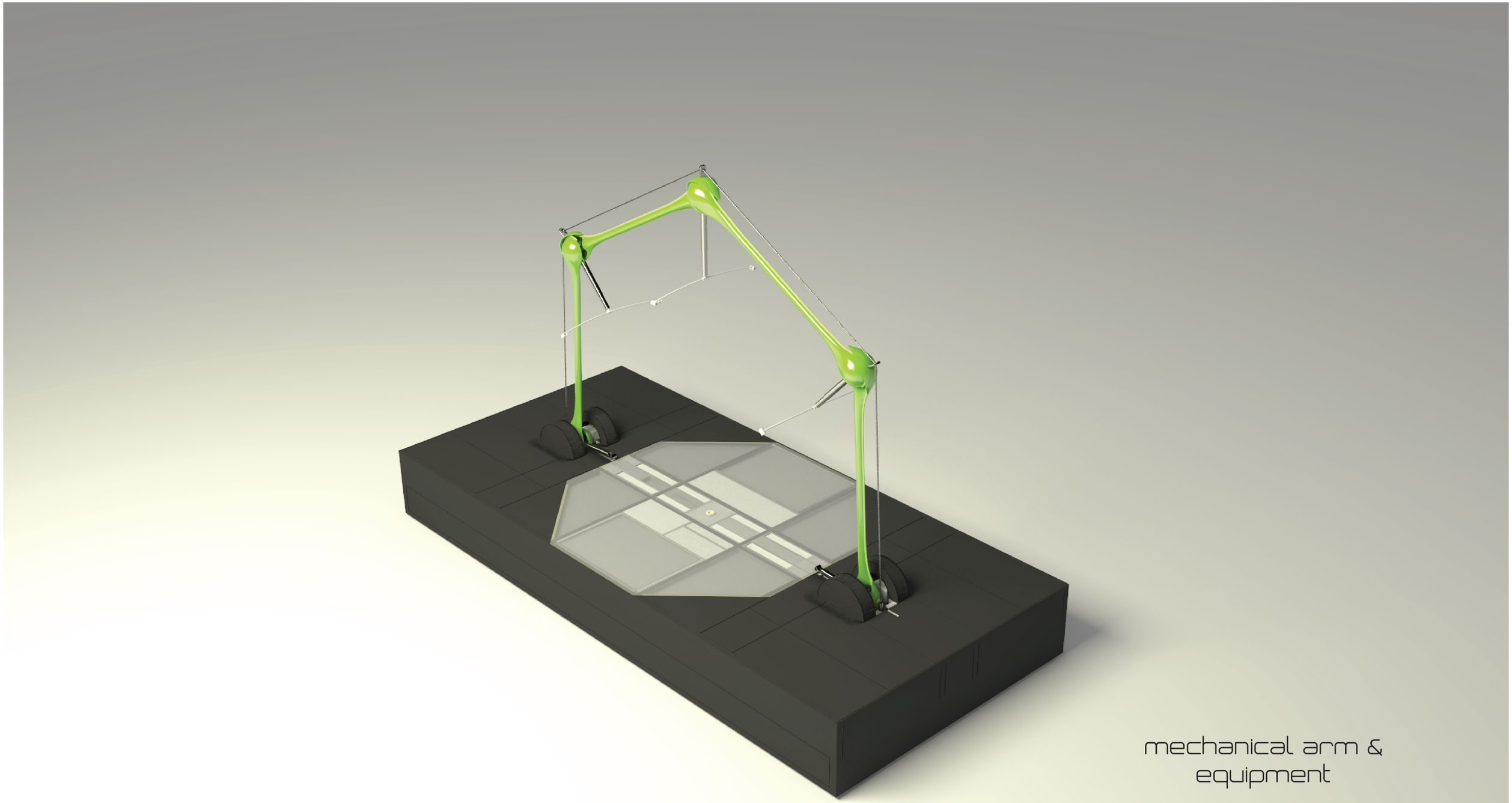
seat & octagon
coating

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



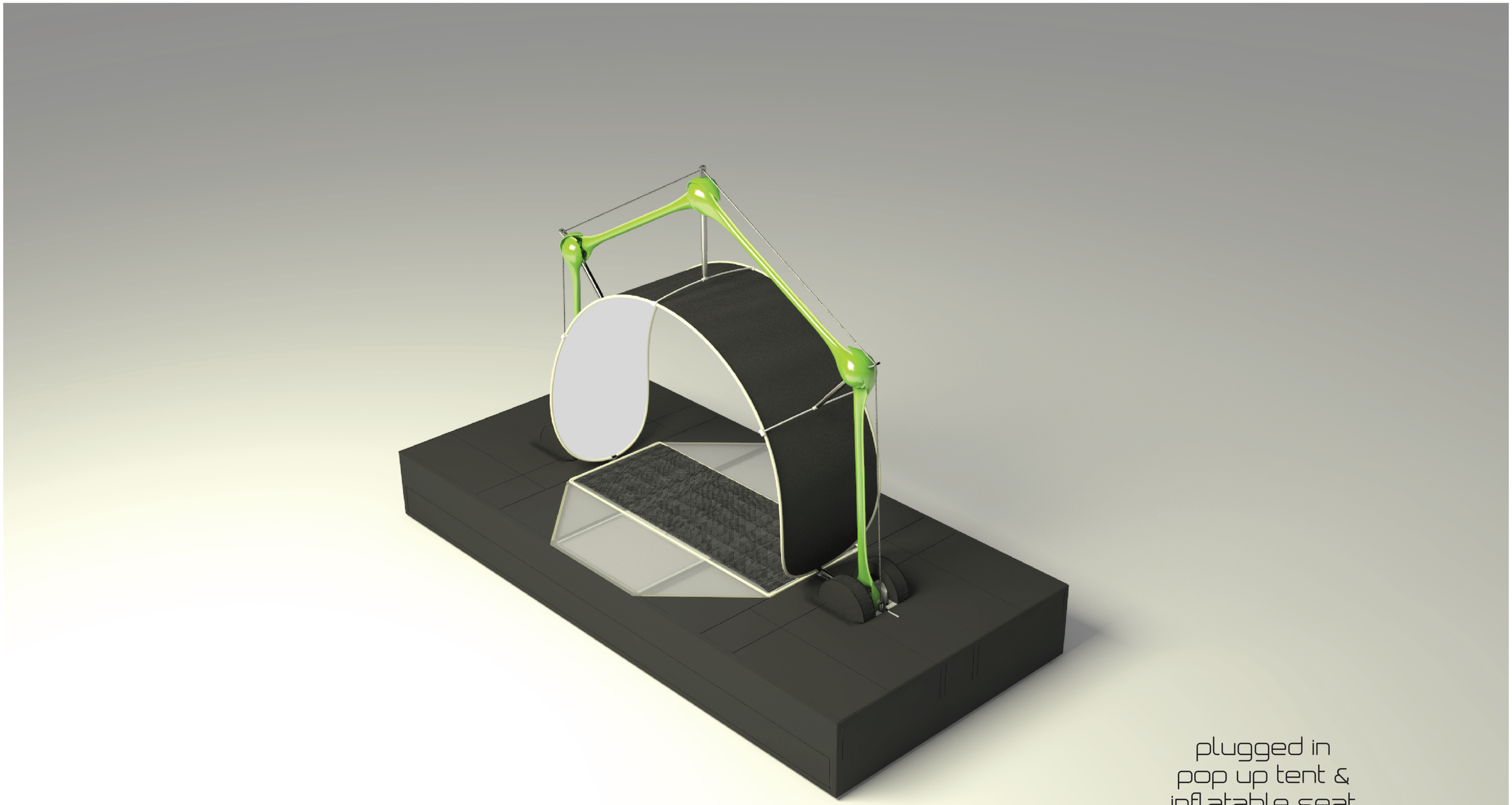
mechanical arm &
equipment

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



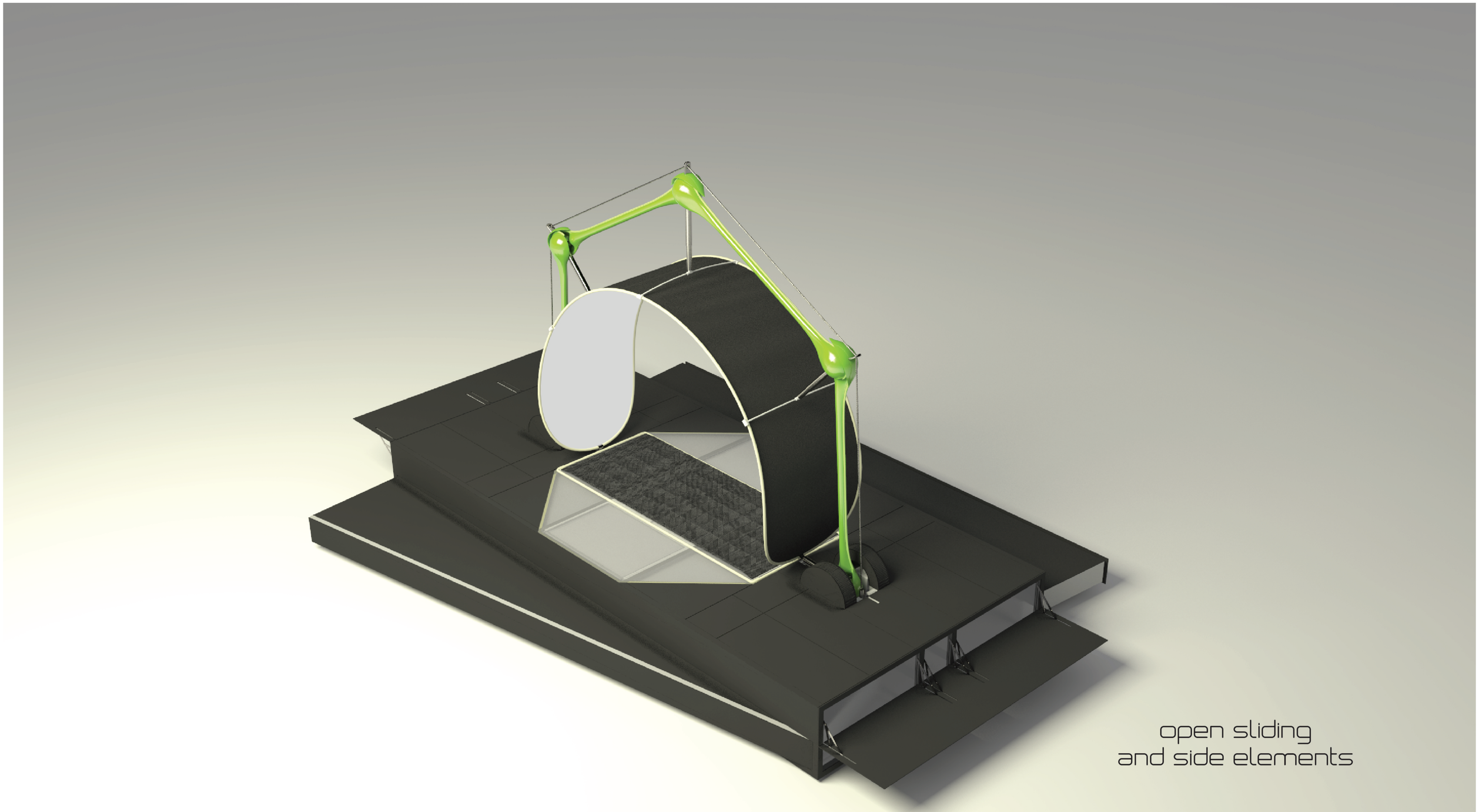
mechanical arm &
equipment

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



plugged in
pop up tent &
inflatable seat

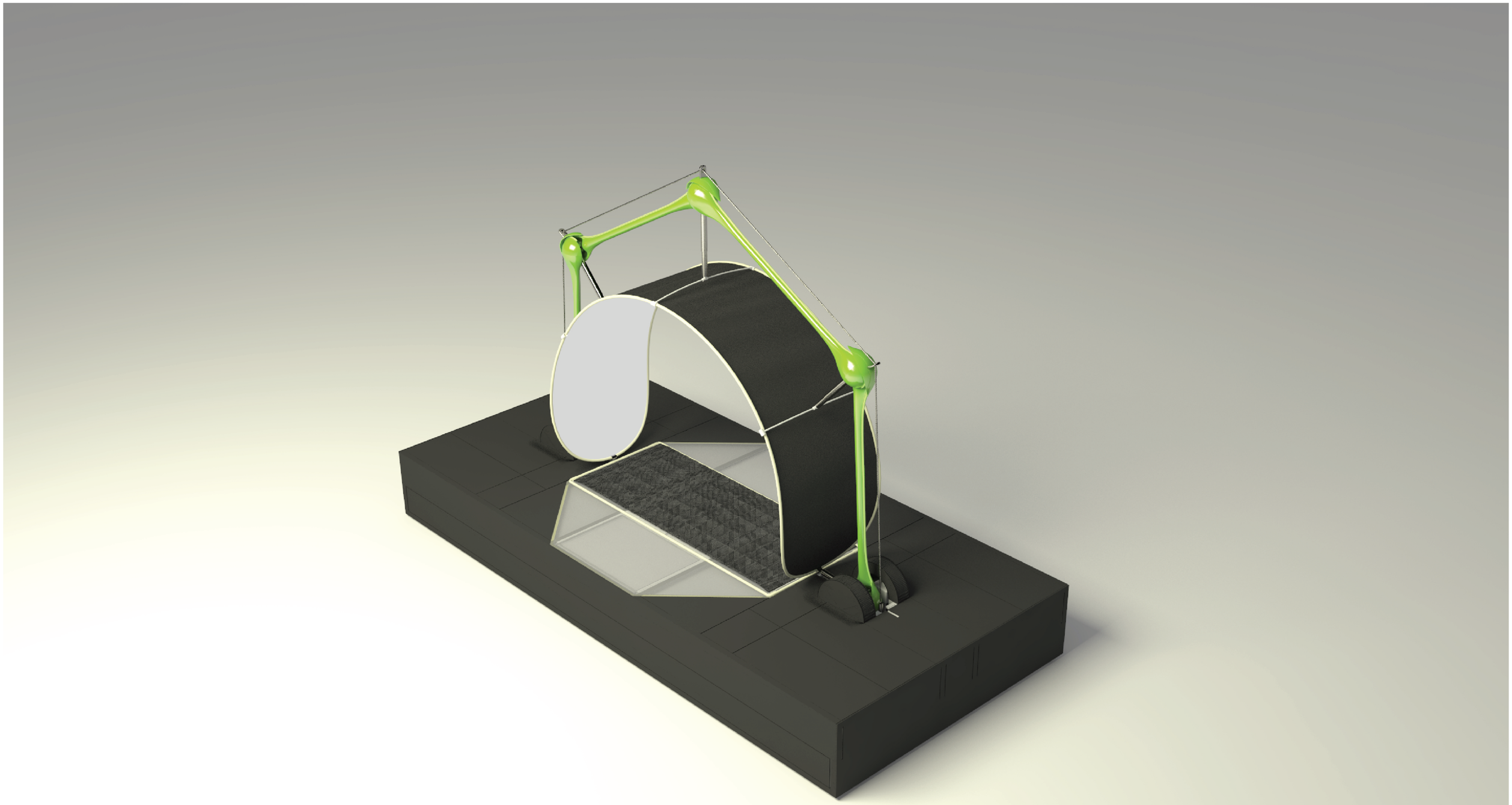
STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



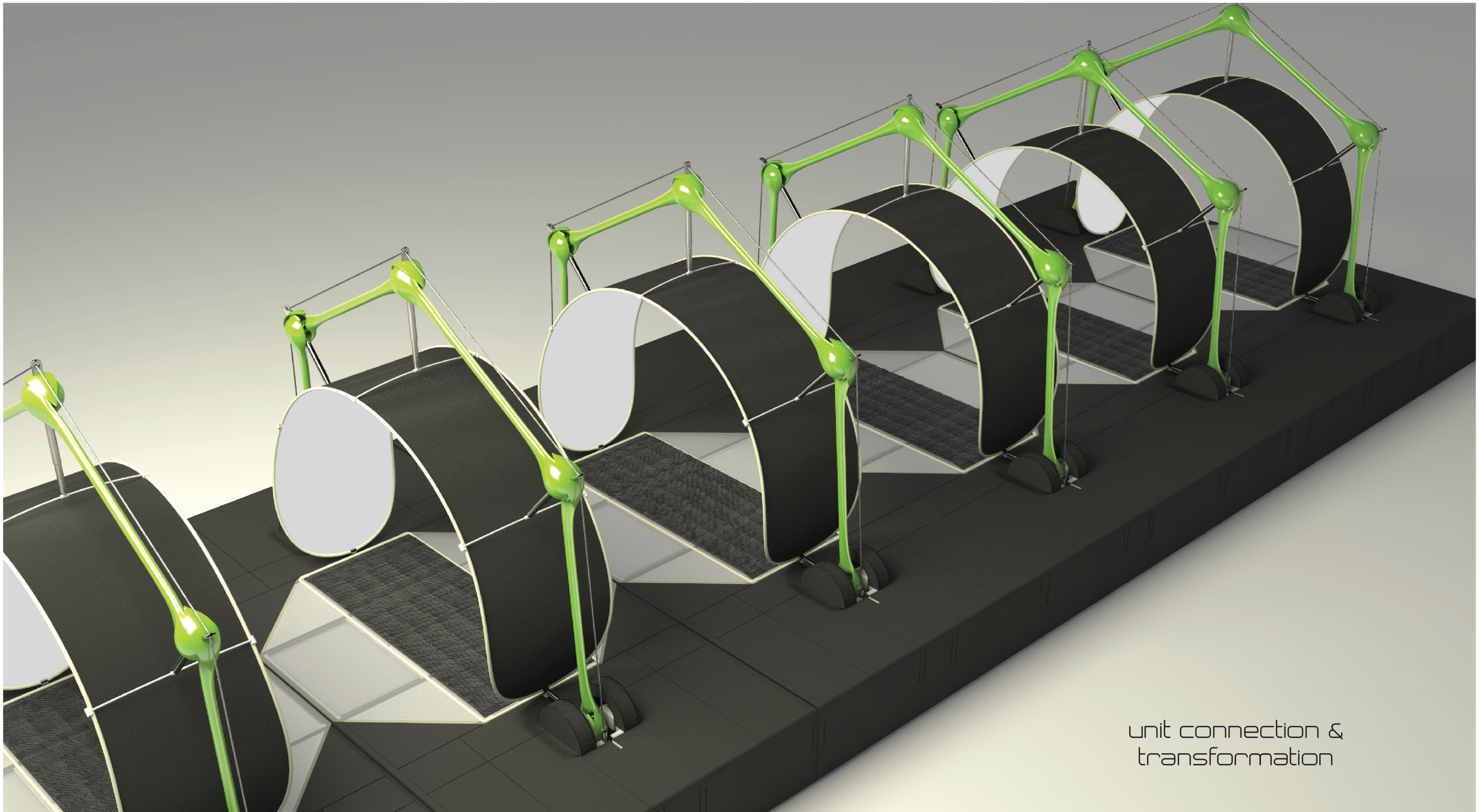
open sliding
and side elements

STUDIO + LECTURE MODES:

TRANSFORMABLE INFRASTRUCTURE_

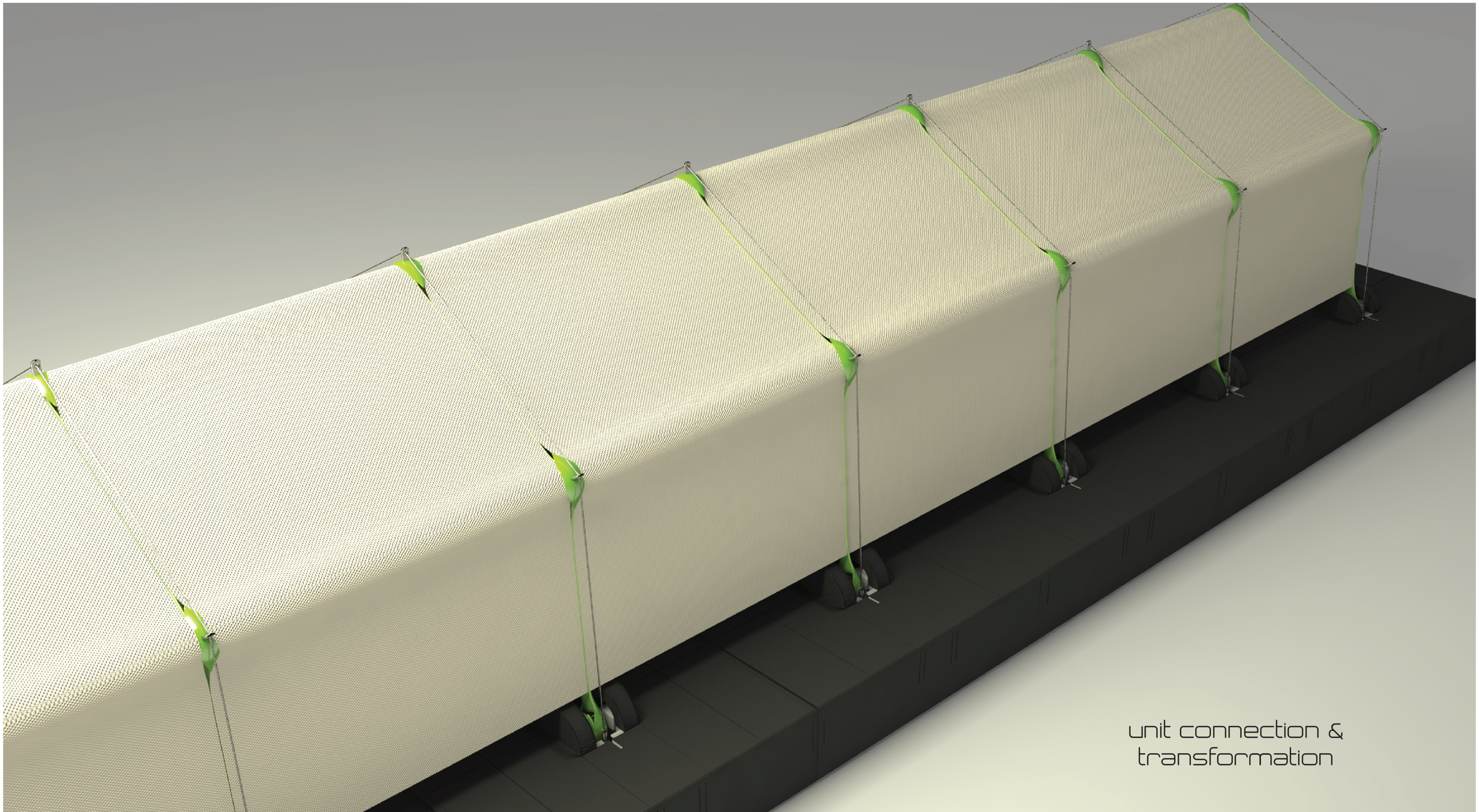


STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



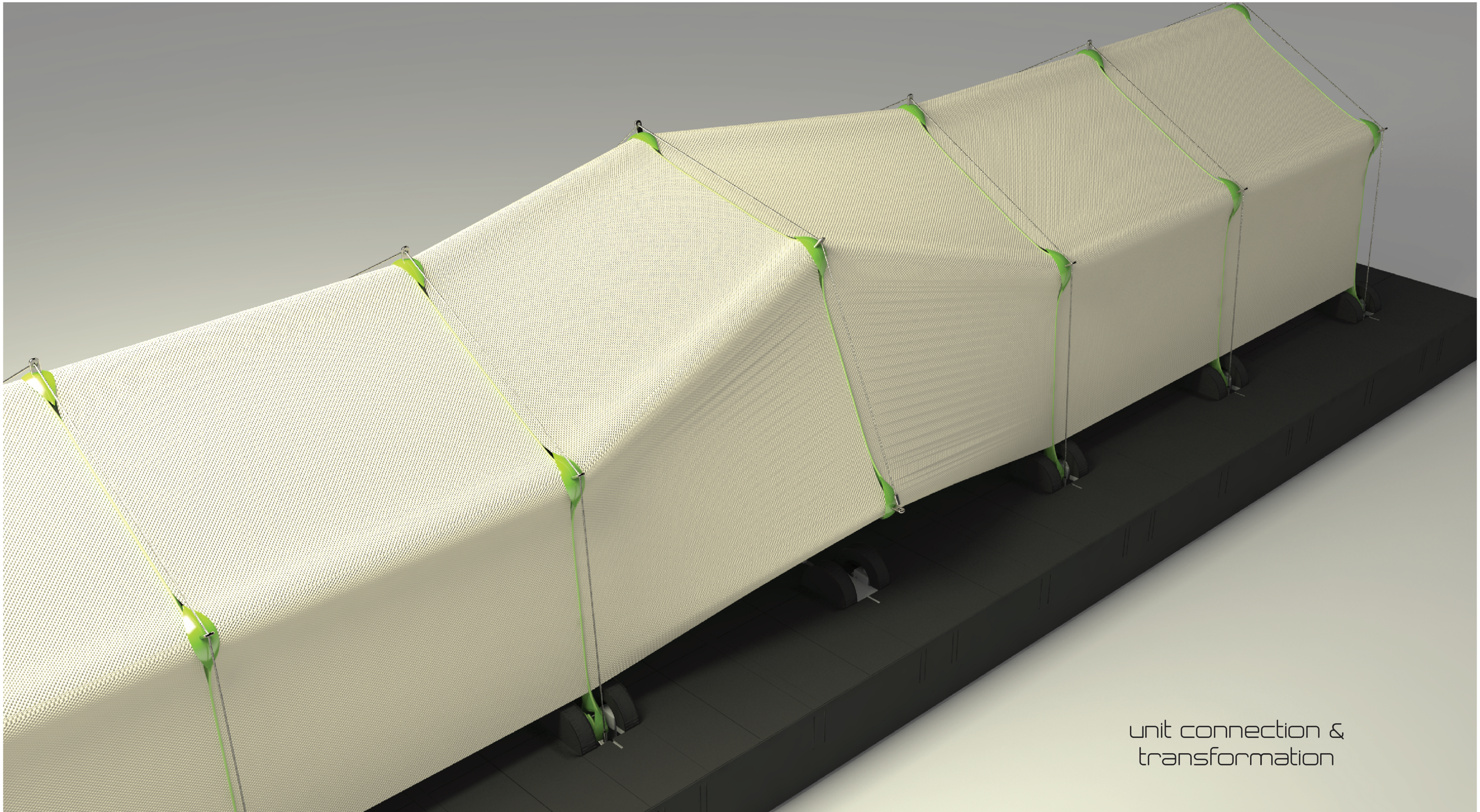
unit connection &
transformation

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_

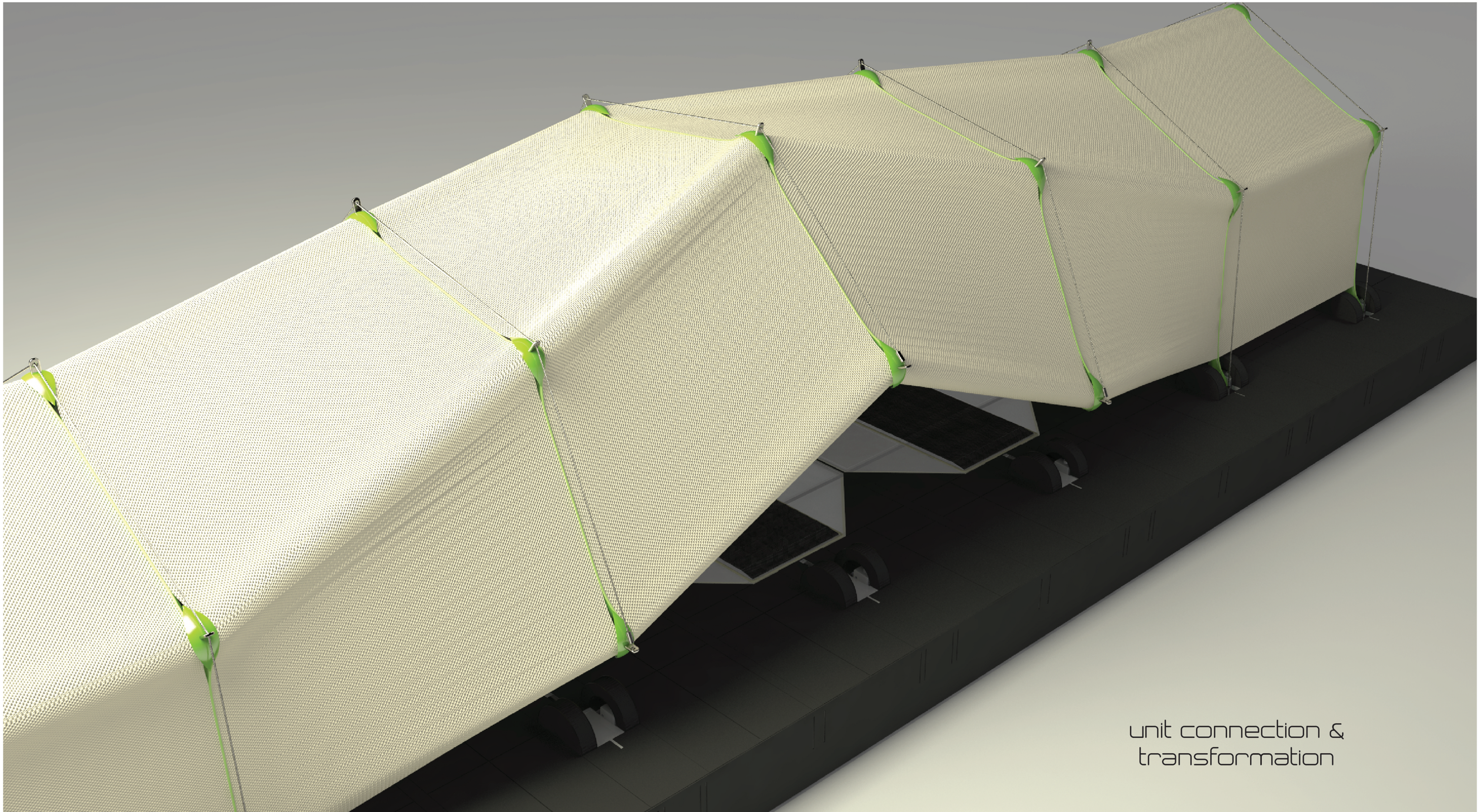


unit connection &
transformation

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_

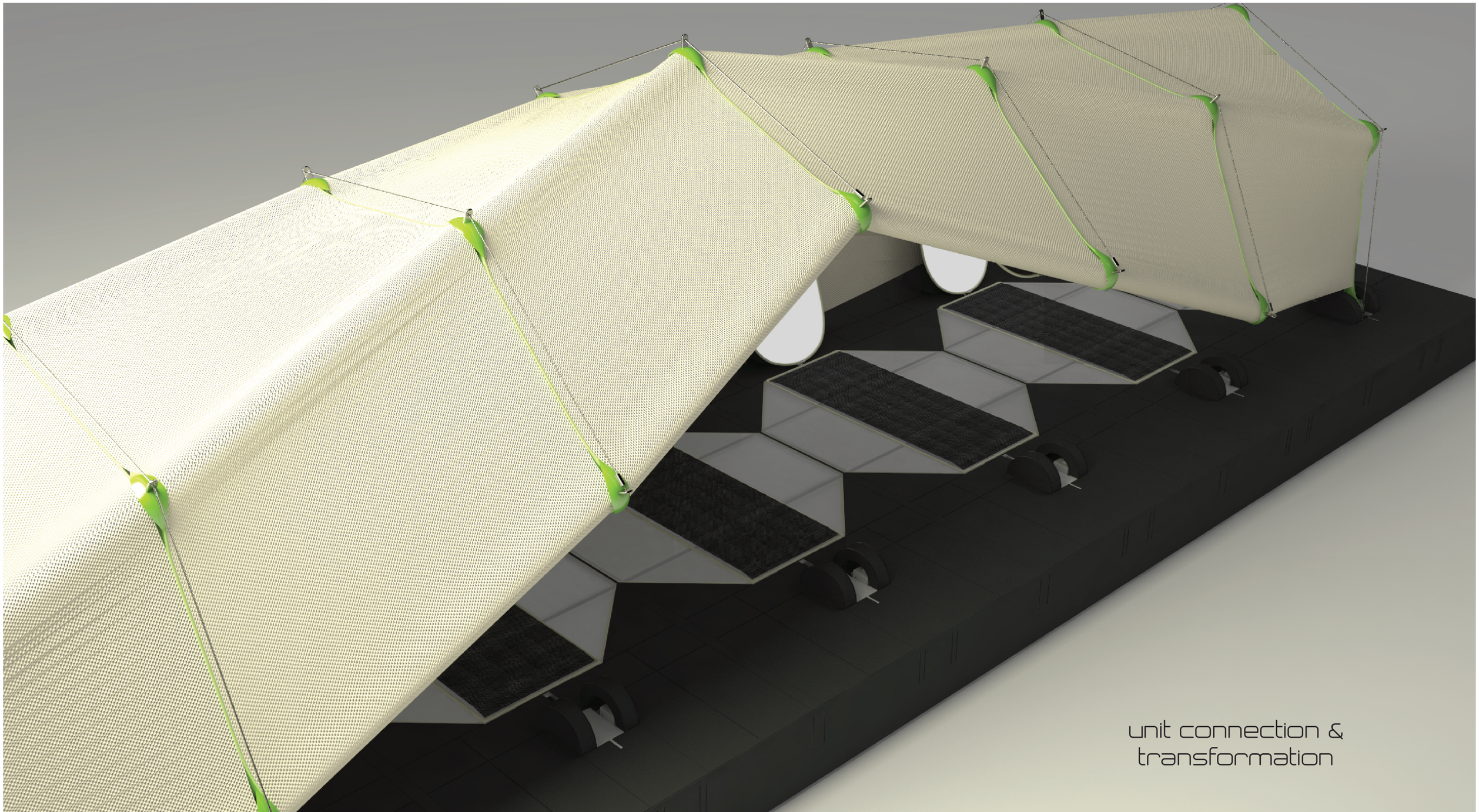


STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



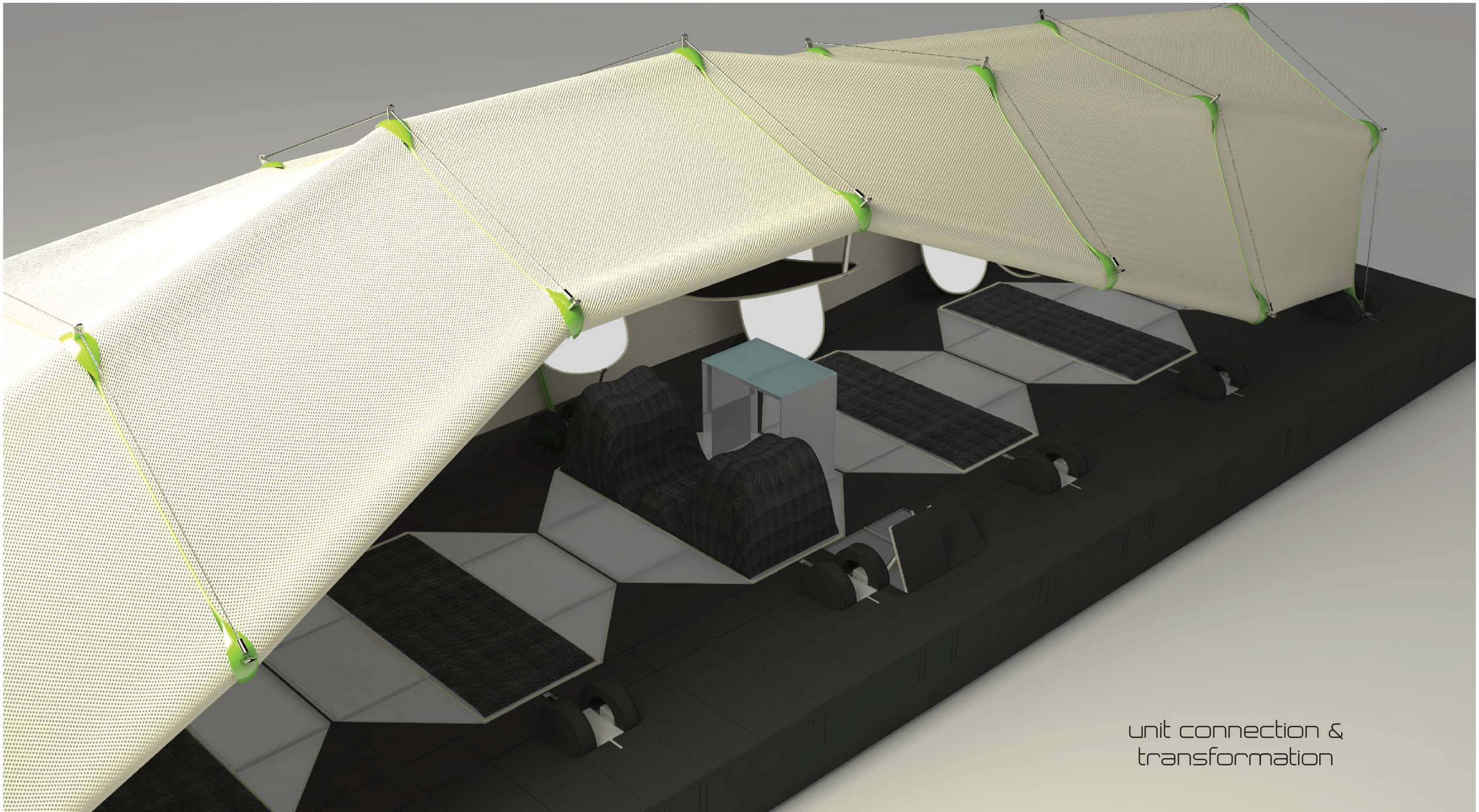
unit connection &
transformation

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_



unit connection &
transformation

STUDIO + LECTURE MODES:
TRANSFORMABLE INFRASTRUCTURE_

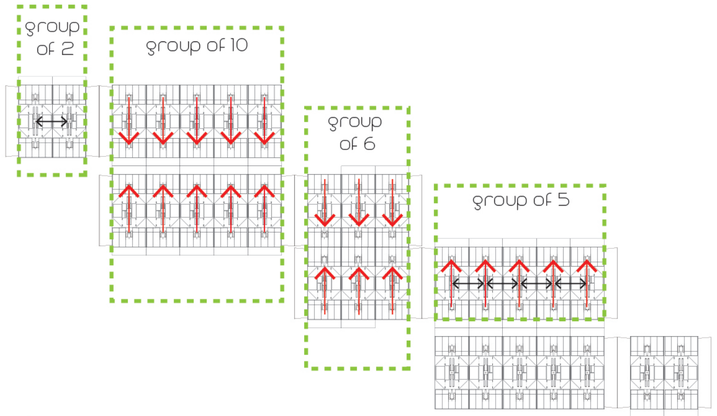


unit connection &
transformation

POSSIBLE COMBINATIONS & SETTINGS

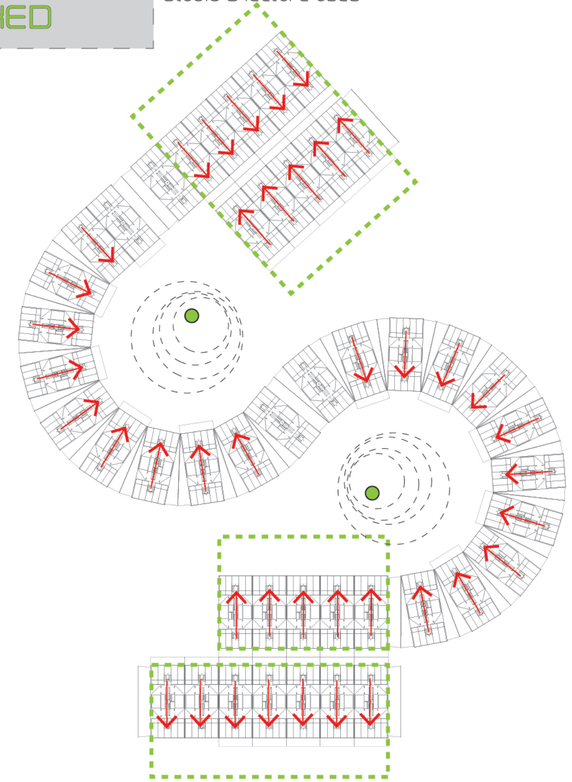
LINEAR

studio mode
forming work groups



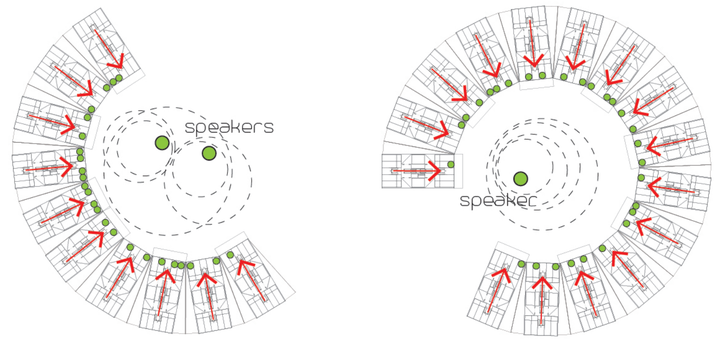
MIXED

studio & lecture uses



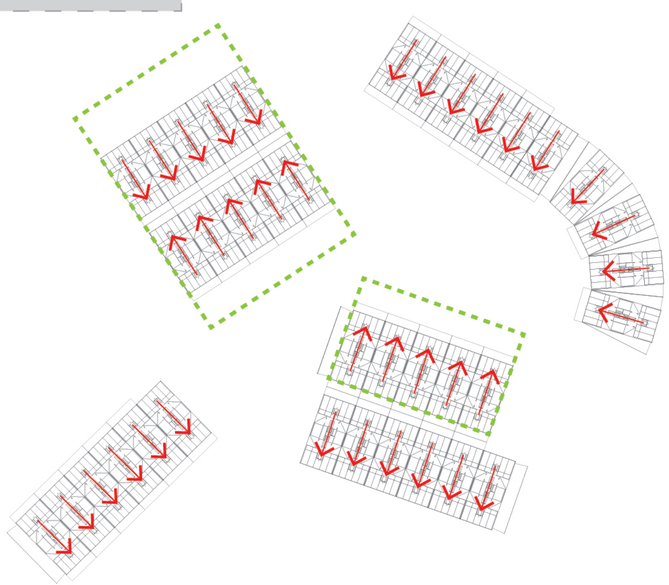
CIRCULAR

lecture mode
attention on speaker
interaction betweer peers



SCATTERED

dispersed groups
of same or different course



5_URBAN NETWORK

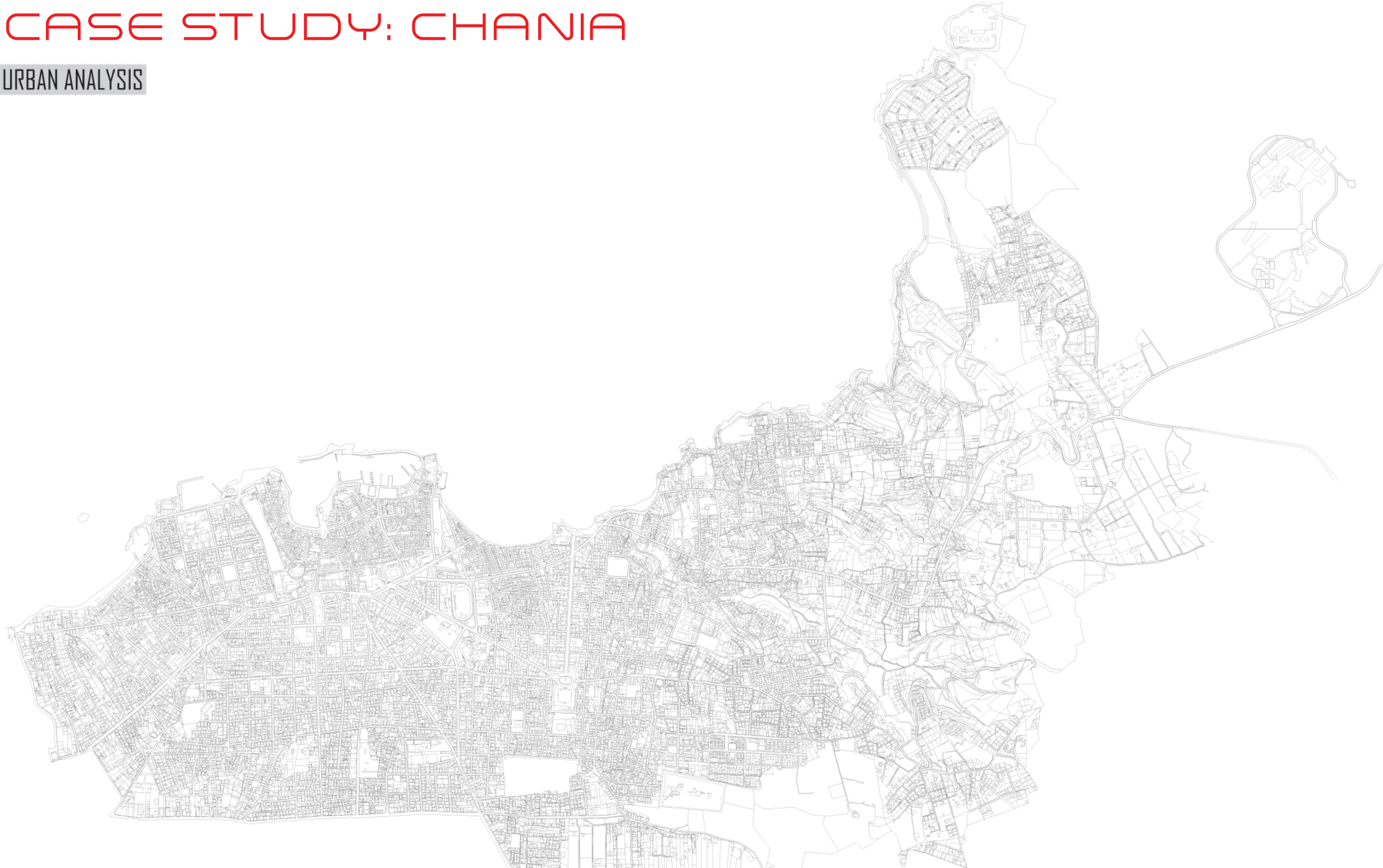
ARCH_TUC/2024: diffused & flexible architectural education in the city

[1] urban analysis of Chania

[2] proposal application

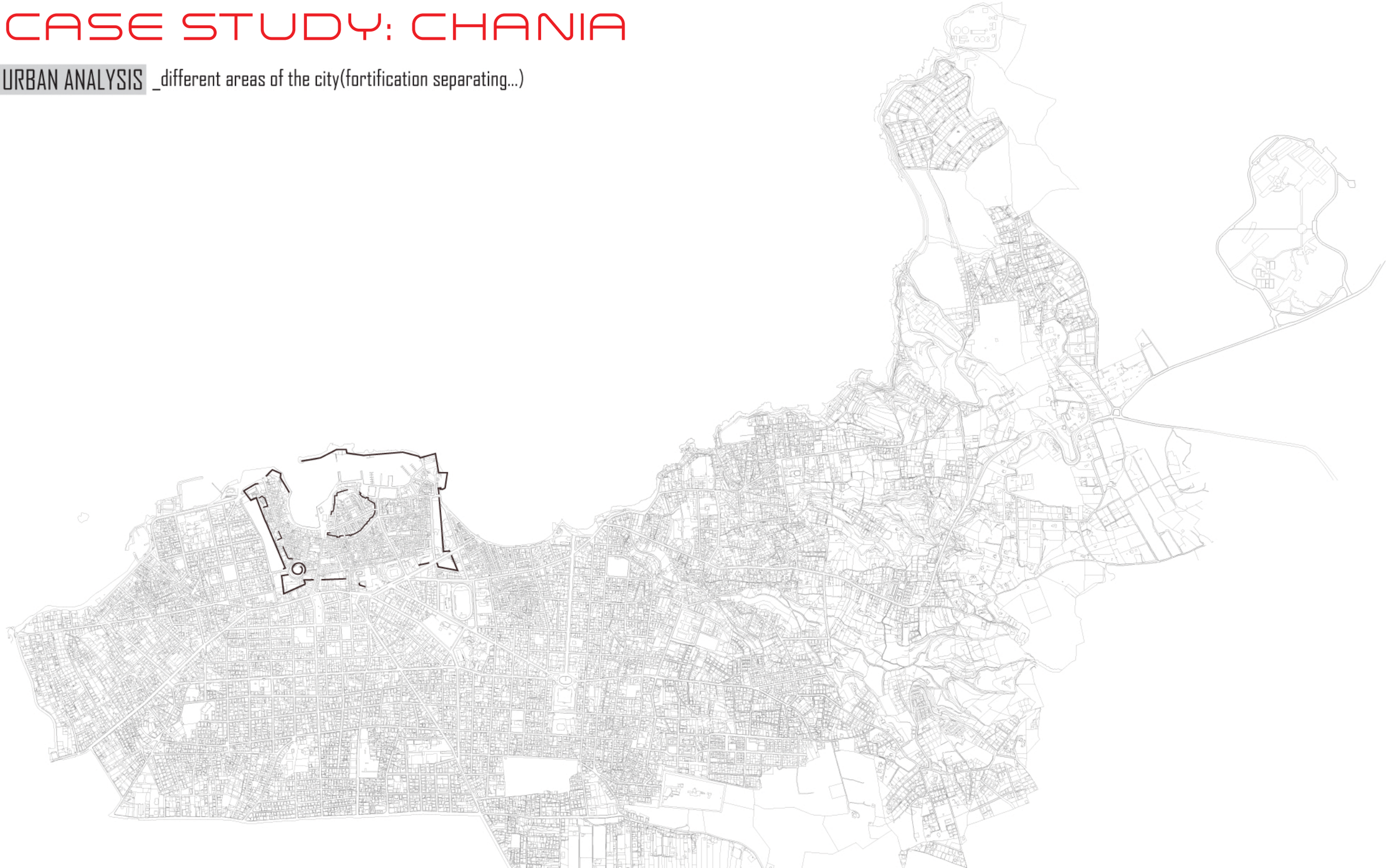
CASE STUDY: CHANIA

URBAN ANALYSIS



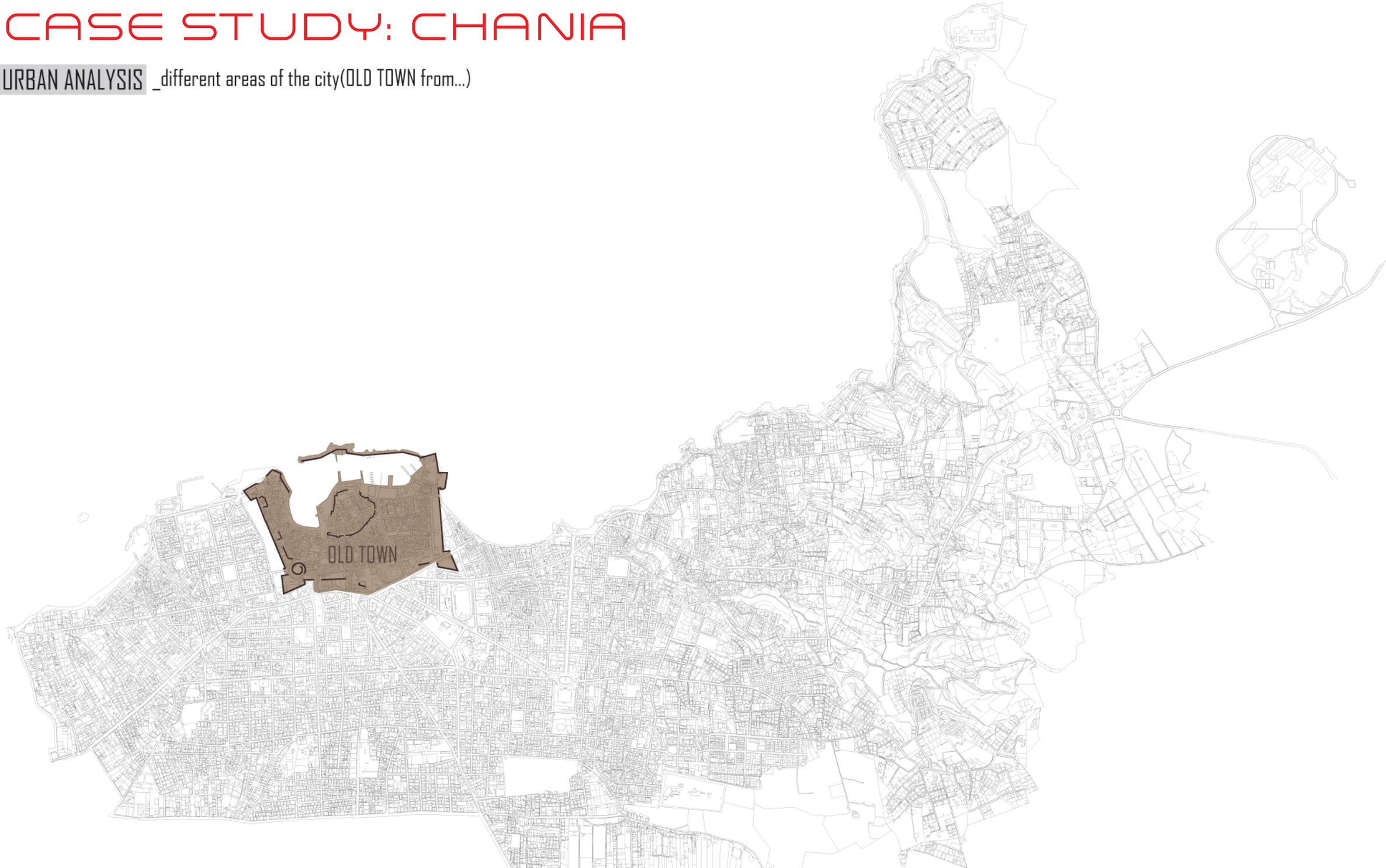
CASE STUDY: CHANIA

URBAN ANALYSIS _different areas of the city(fortification separating...)



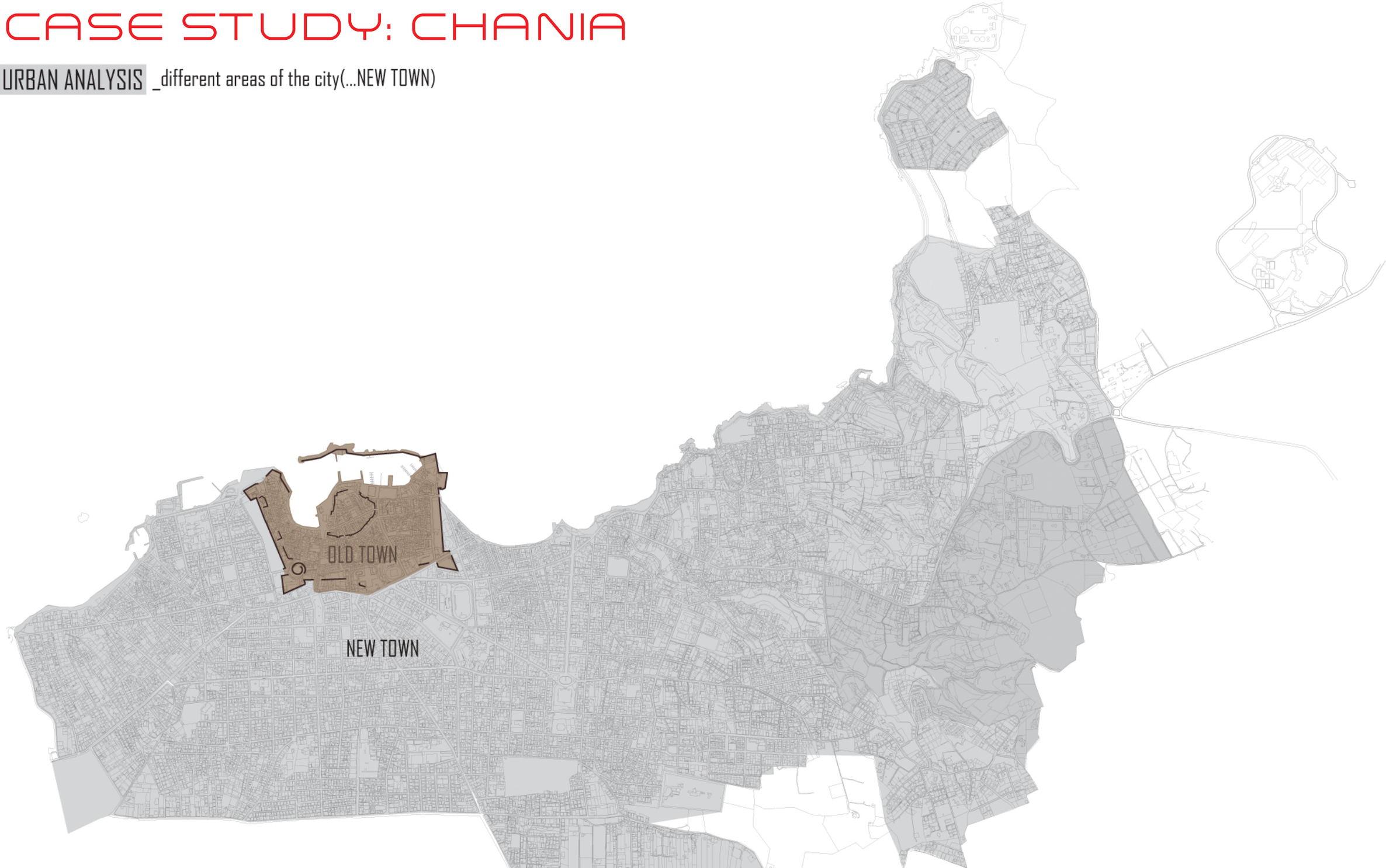
CASE STUDY: CHANIA

URBAN ANALYSIS _different areas of the city(OLD TOWN from...)



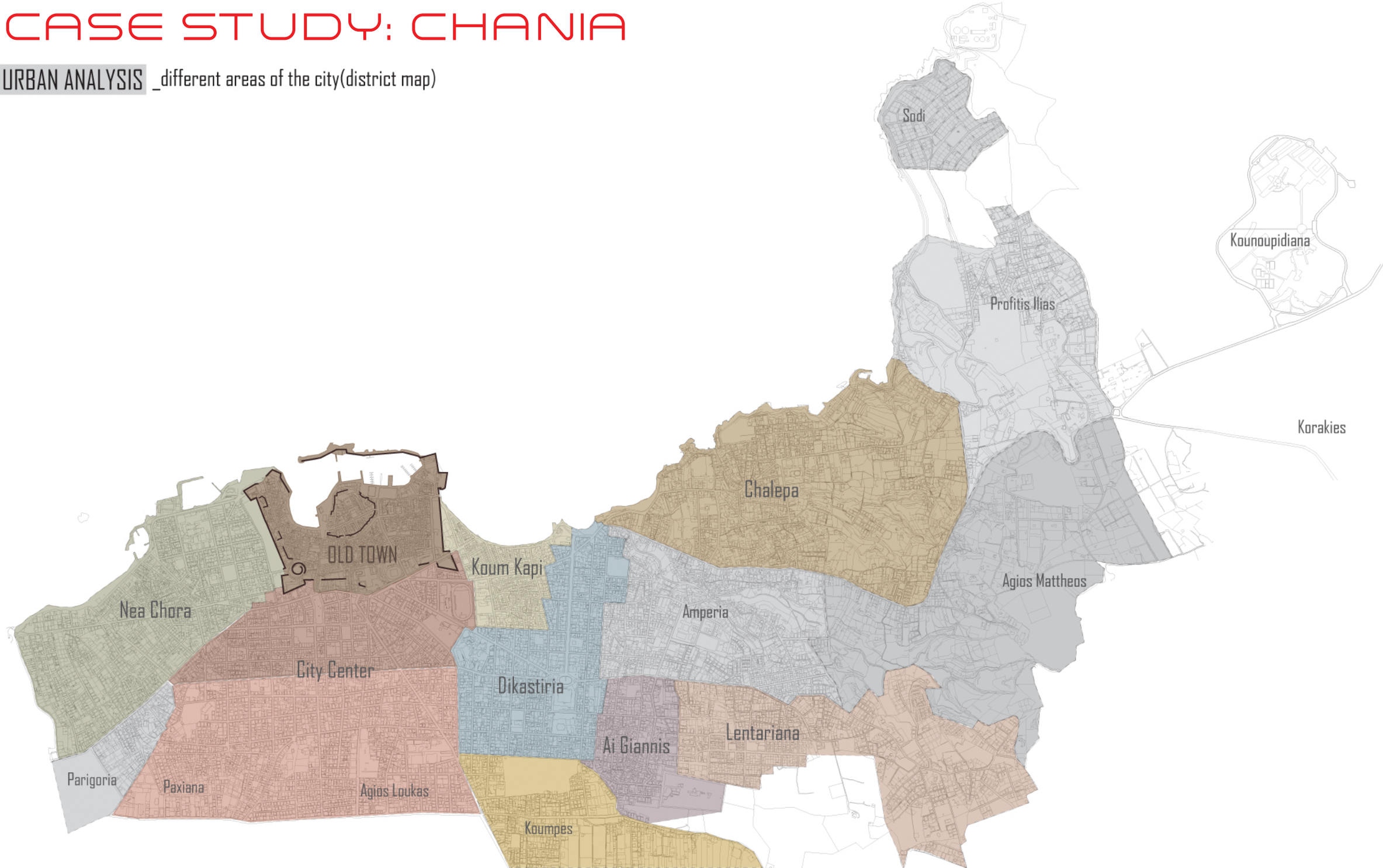
CASE STUDY: CHANIA

URBAN ANALYSIS _different areas of the city(...NEW TOWN)



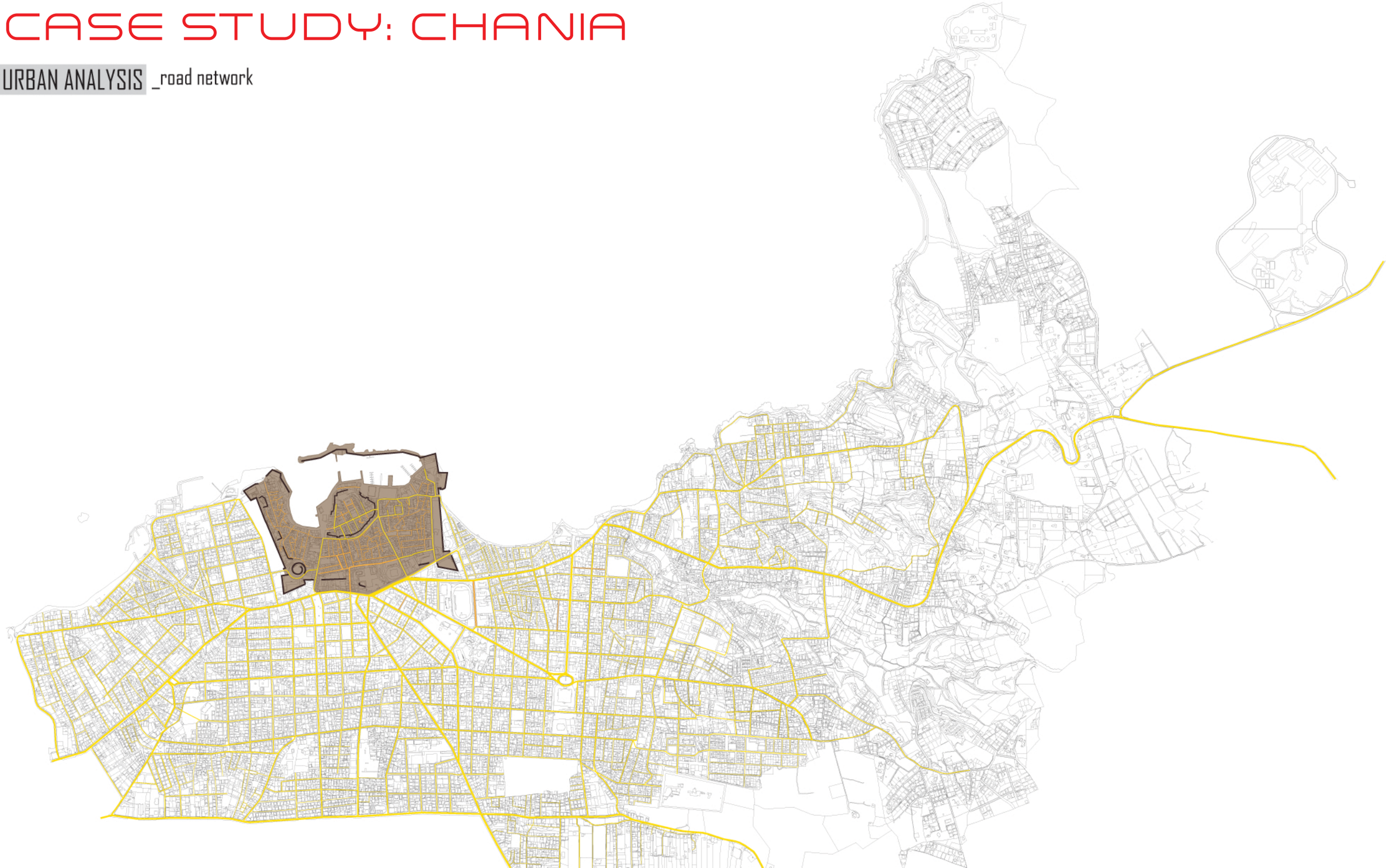
CASE STUDY: CHANIA

URBAN ANALYSIS _different areas of the city(district map)



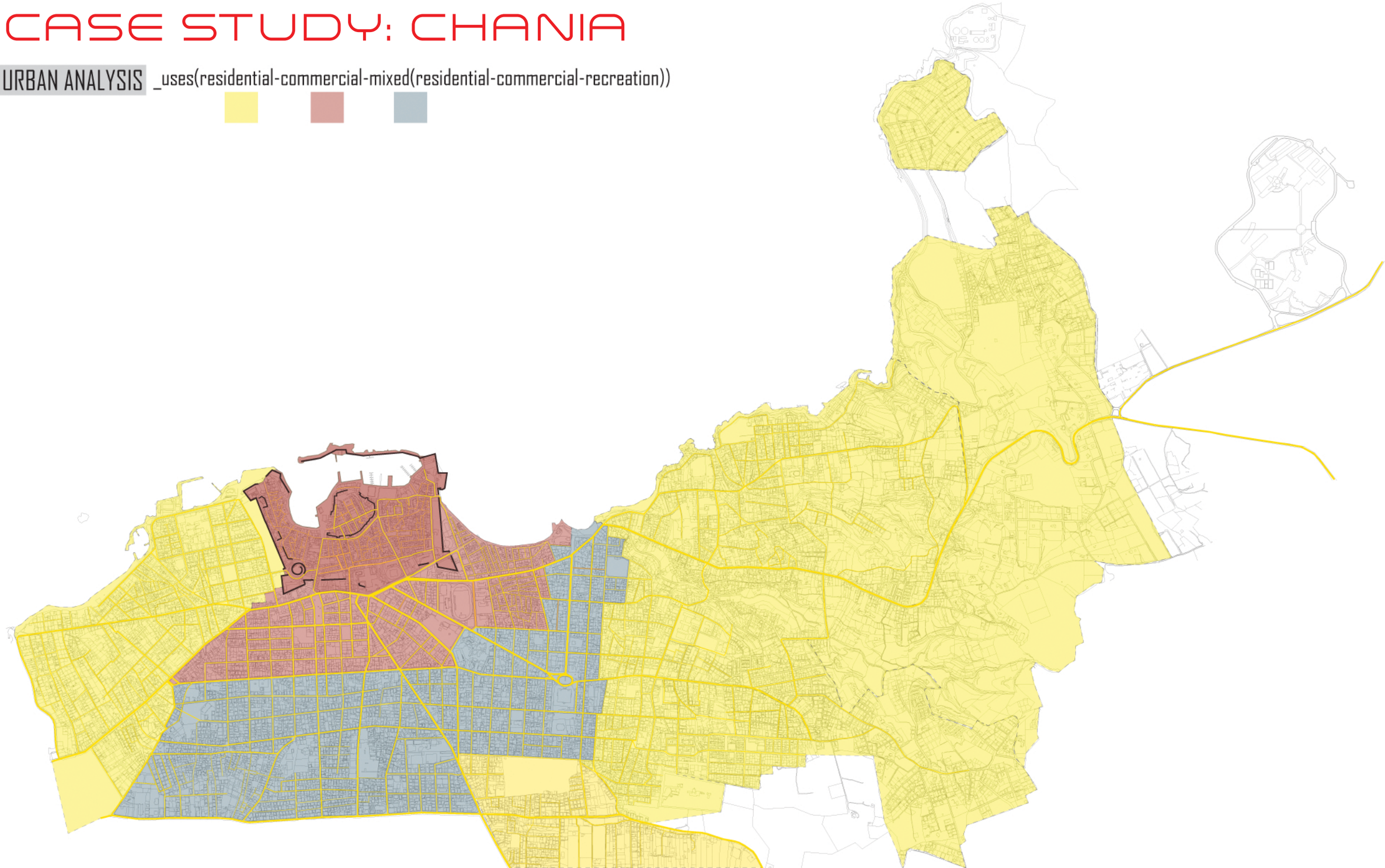
CASE STUDY: CHANIA

URBAN ANALYSIS _road network



CASE STUDY: CHANIA

URBAN ANALYSIS _uses(residential-commercial-mixed(residential-commercial-recreation))



CASE STUDY: CHANIA

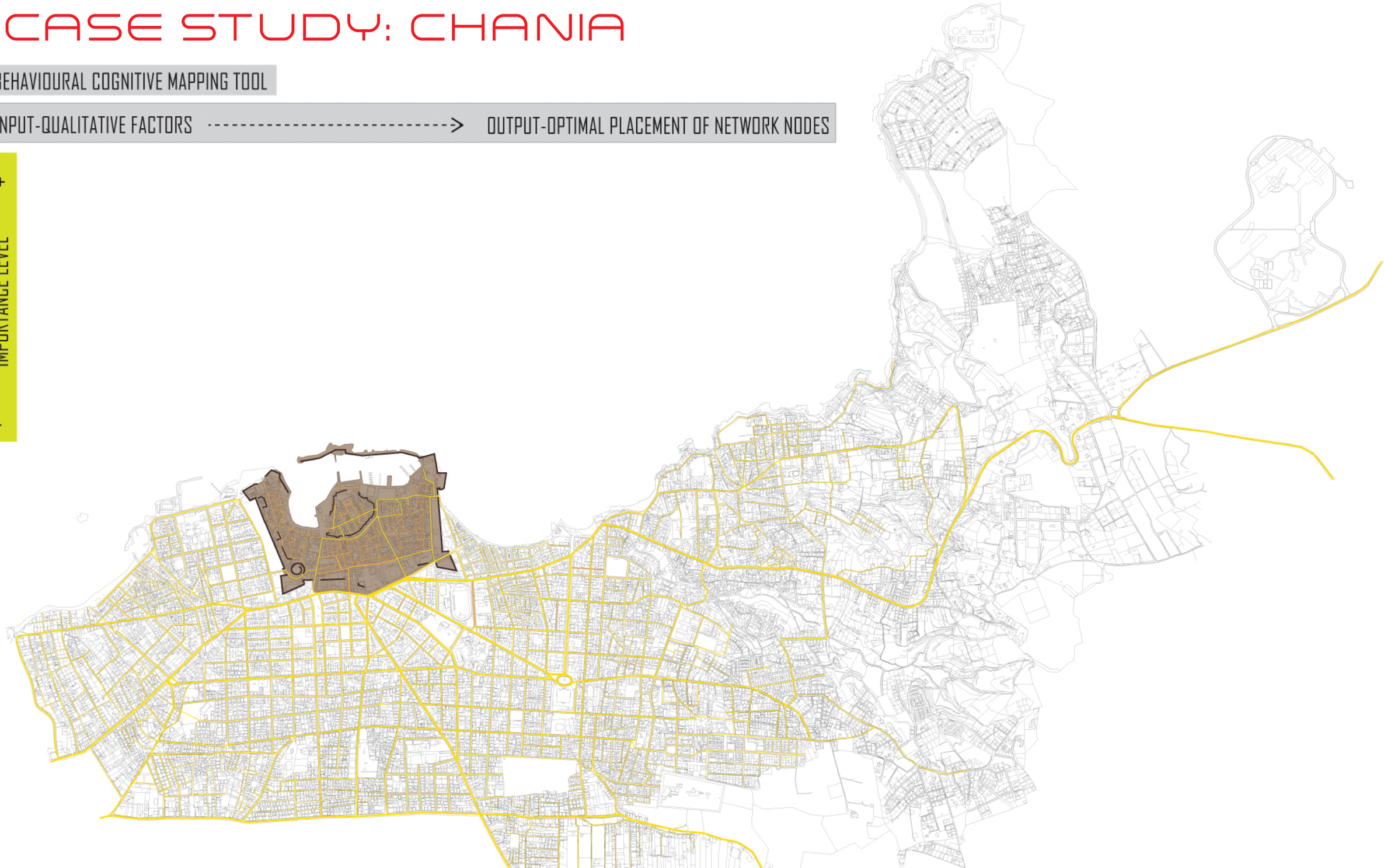
BEHAVIOURAL COGNITIVE MAPPING TOOL

INPUT-QUALITATIVE FACTORS ----------> OUTPUT-OPTIMAL PLACEMENT OF NETWORK NODES

IMPORTANCE LEVEL

+

-



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IMPORTANCE LEVEL

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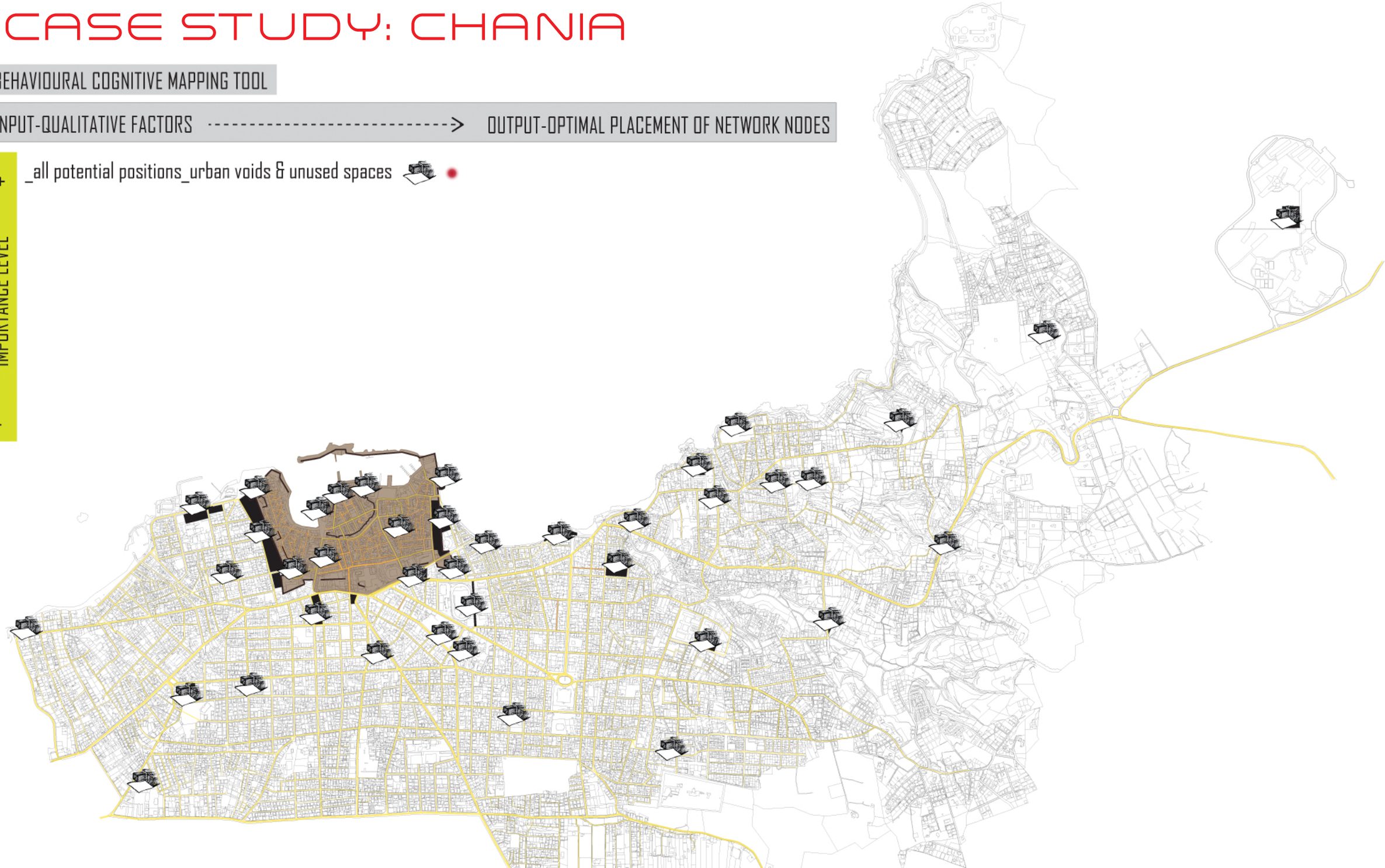

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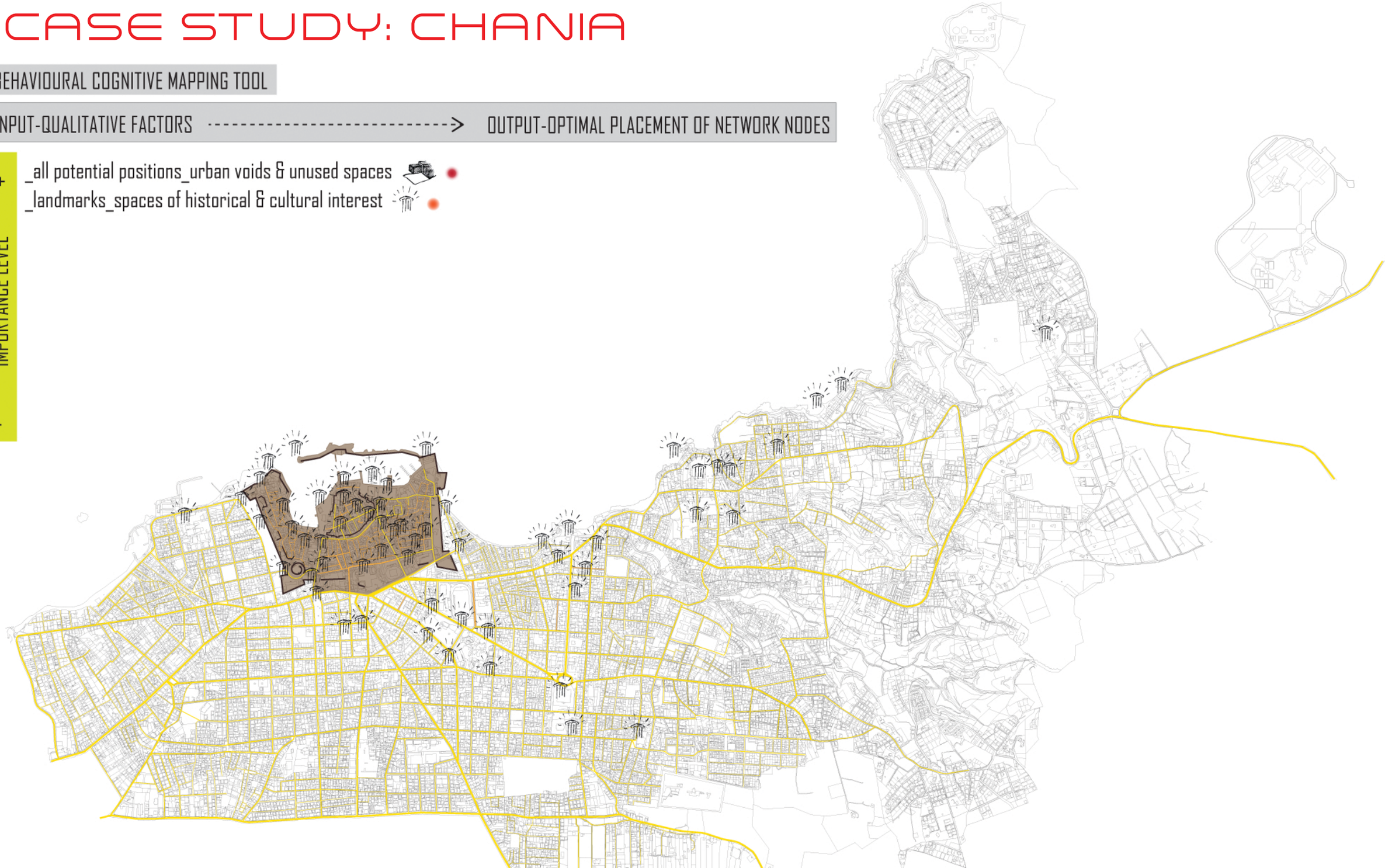

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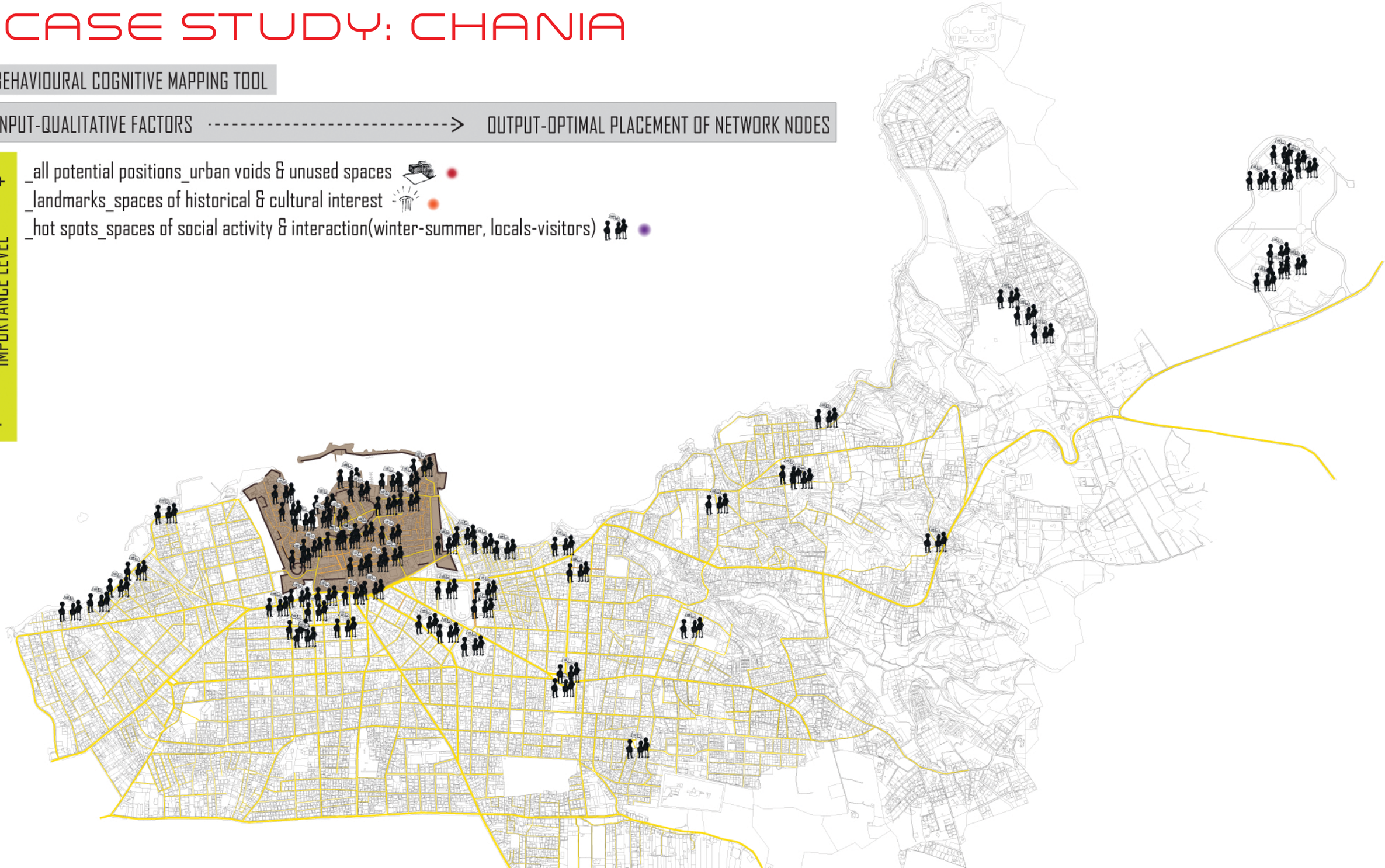

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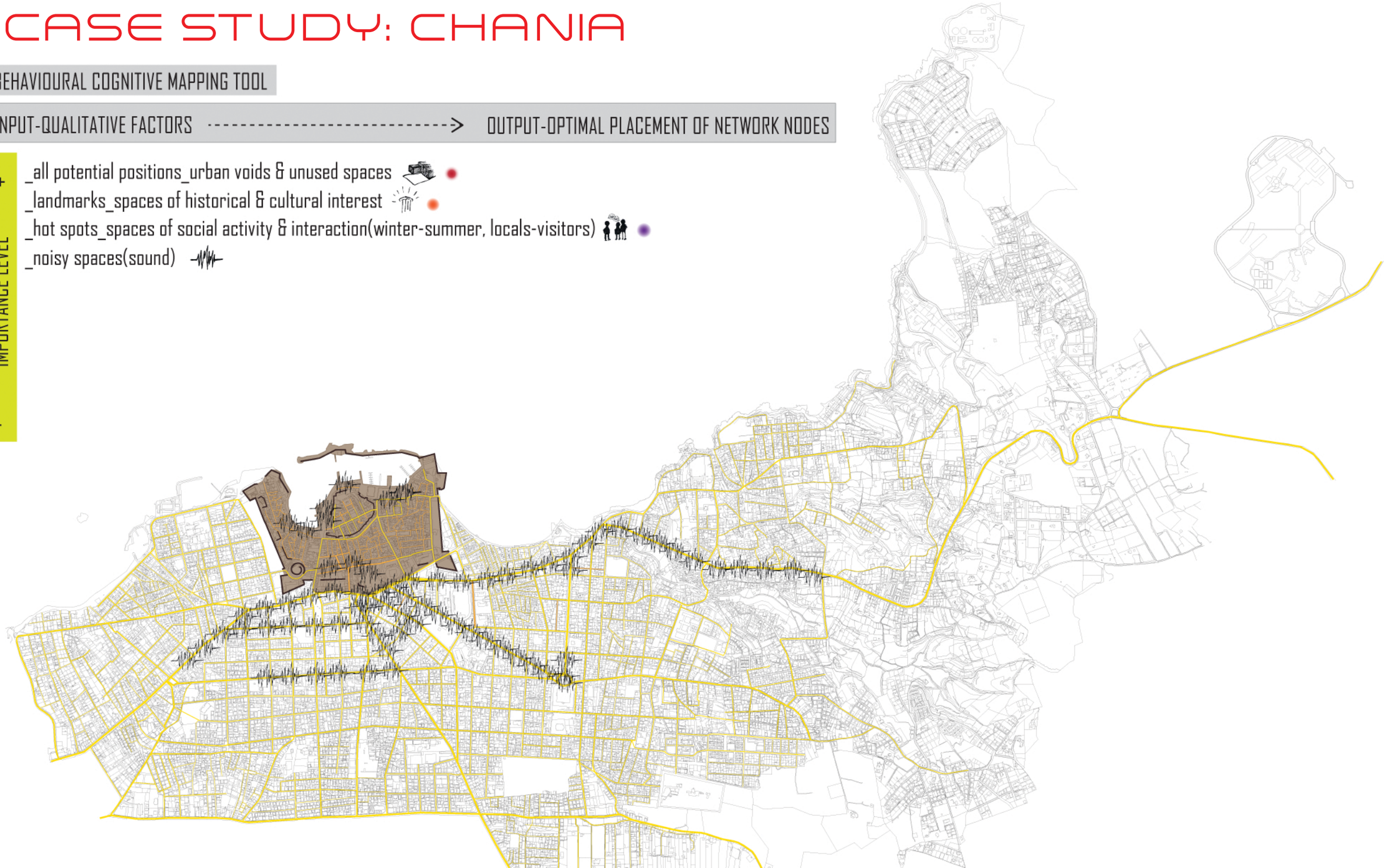

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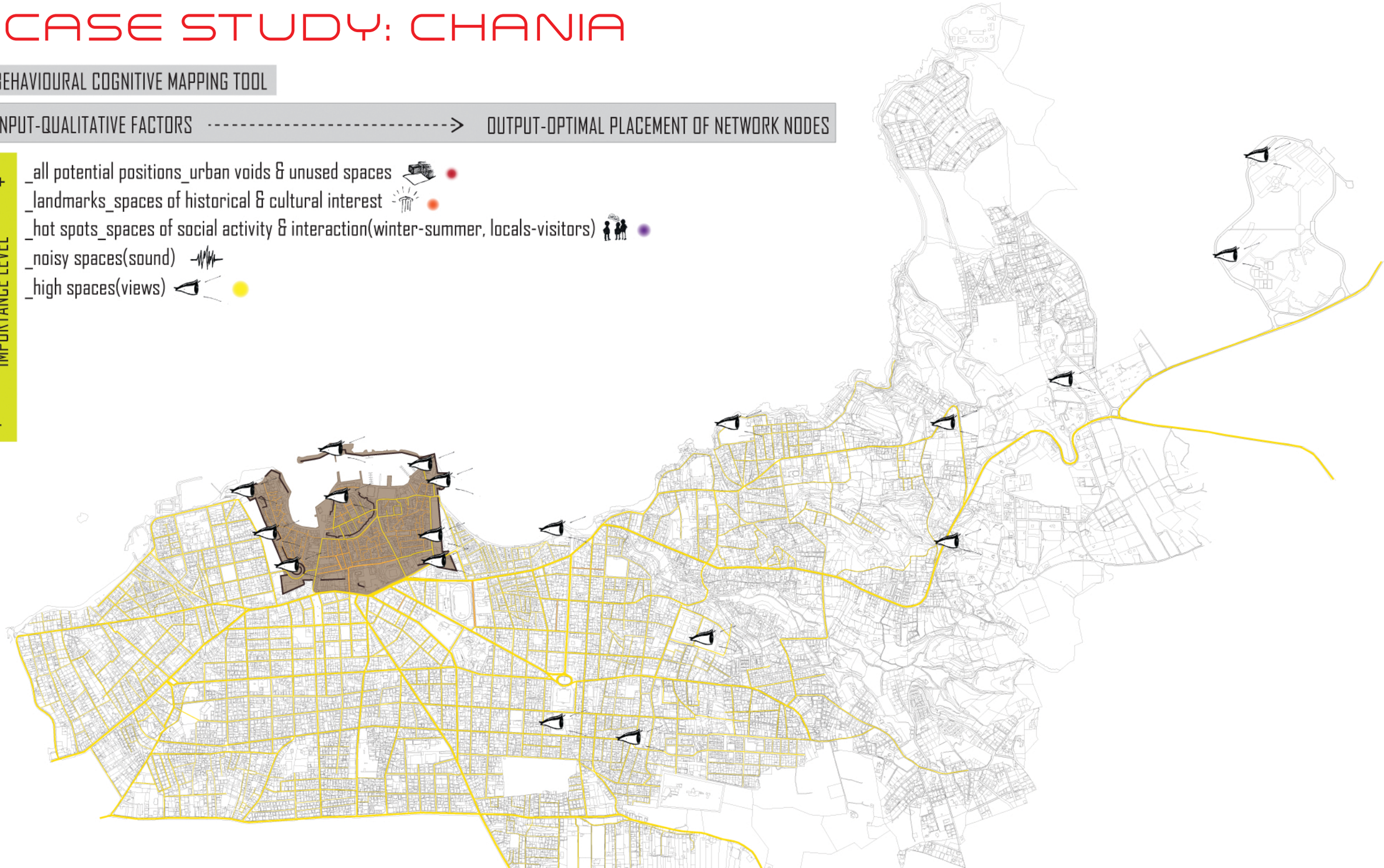

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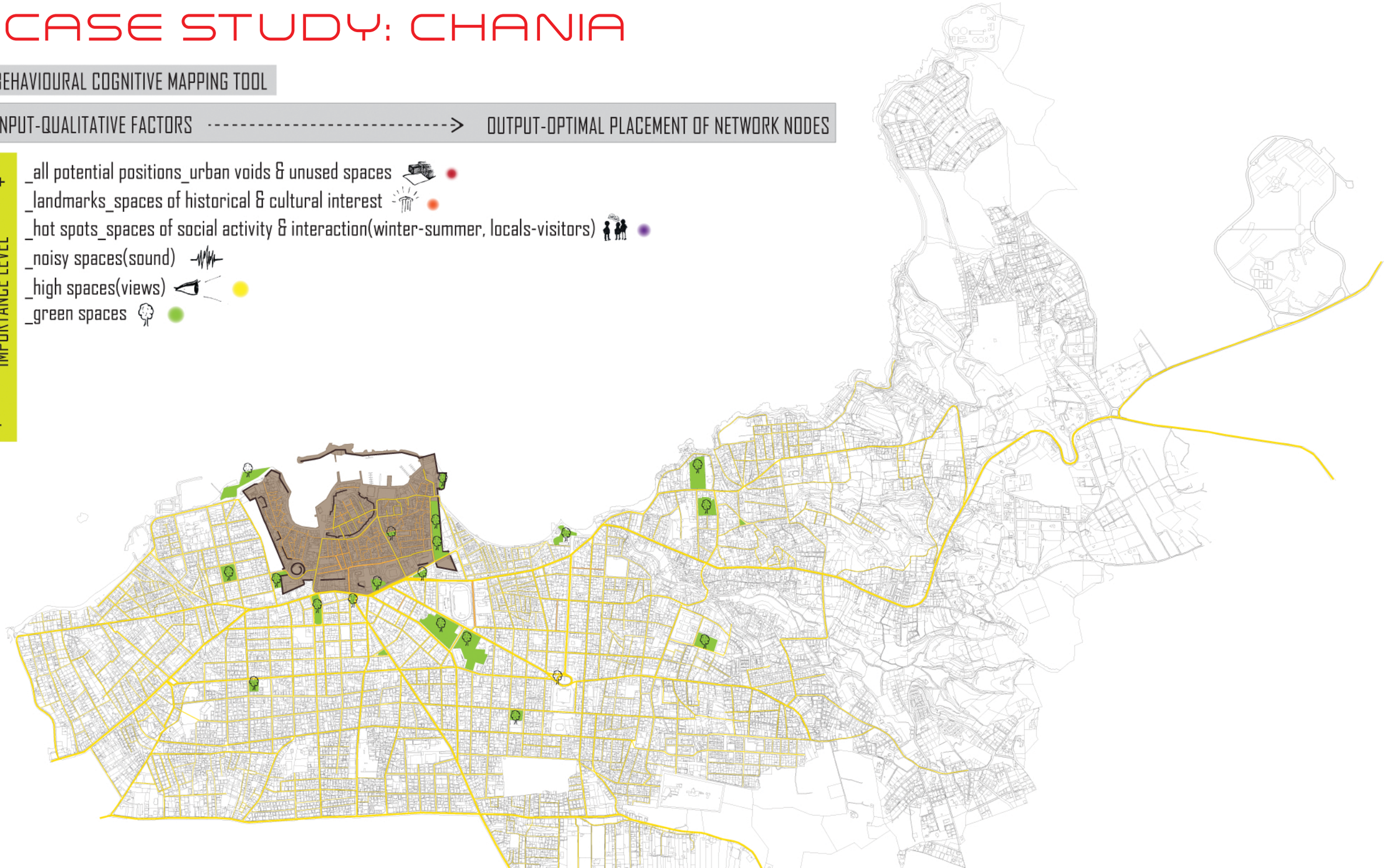

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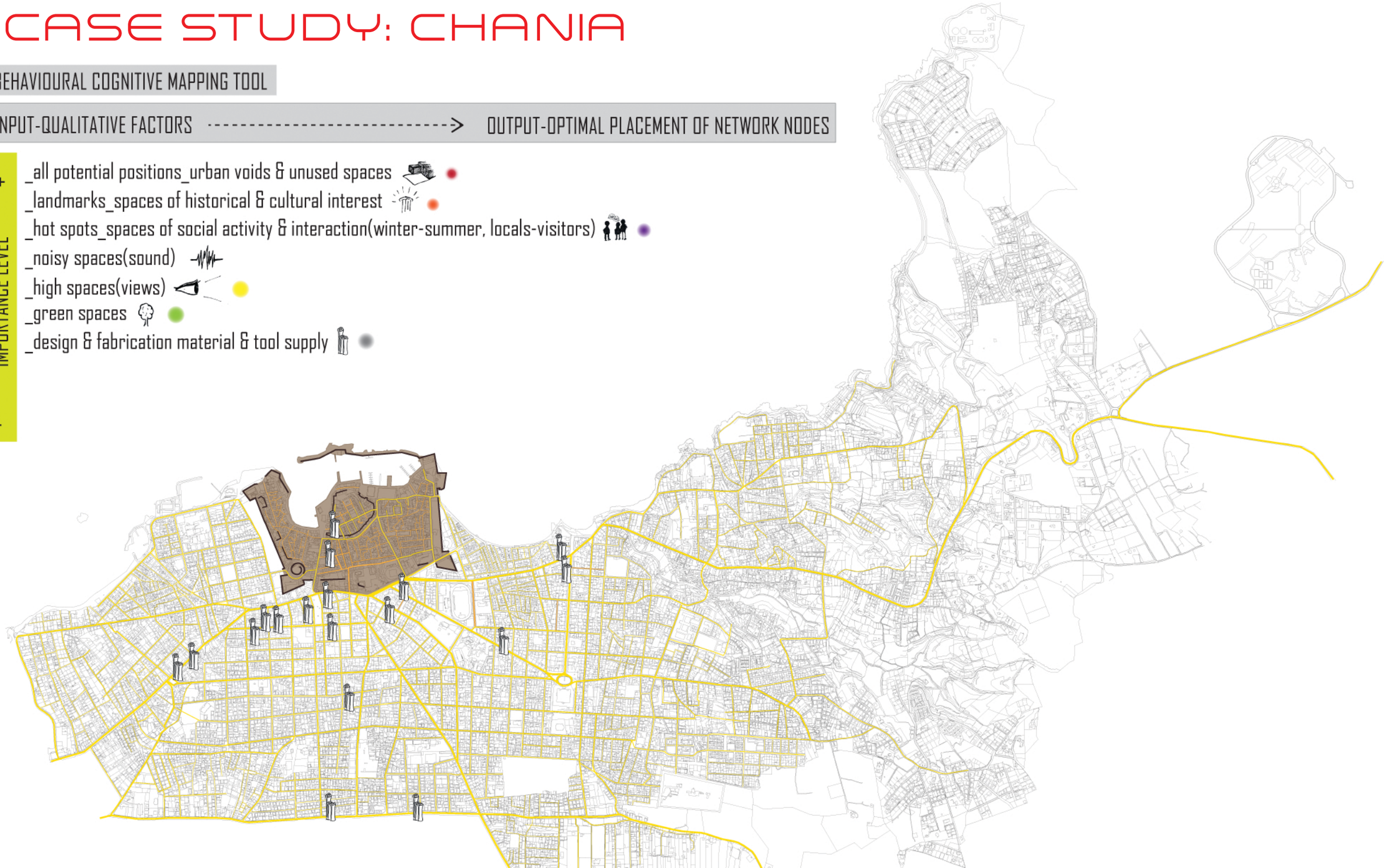
_design & fabrication material & tool supply



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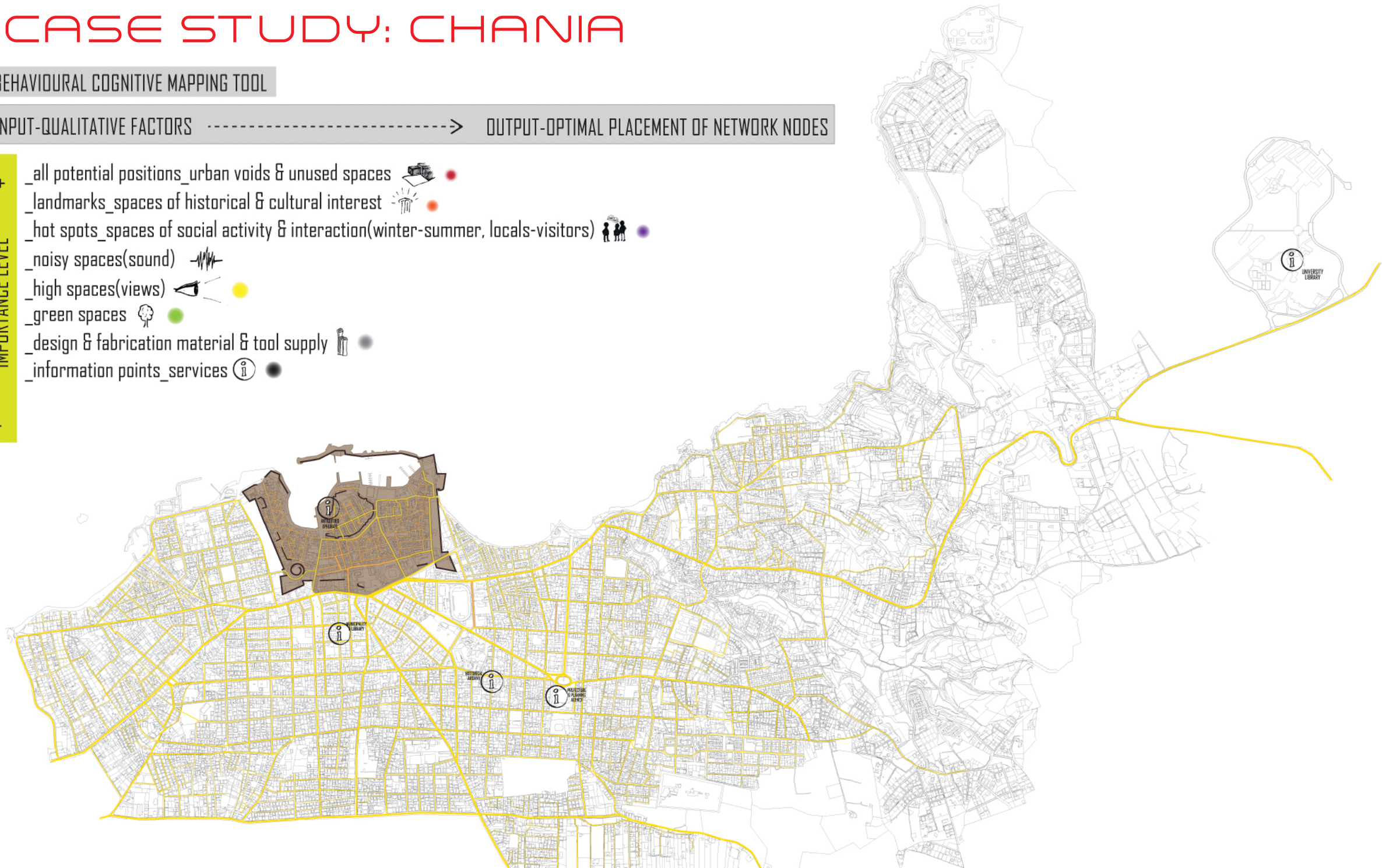

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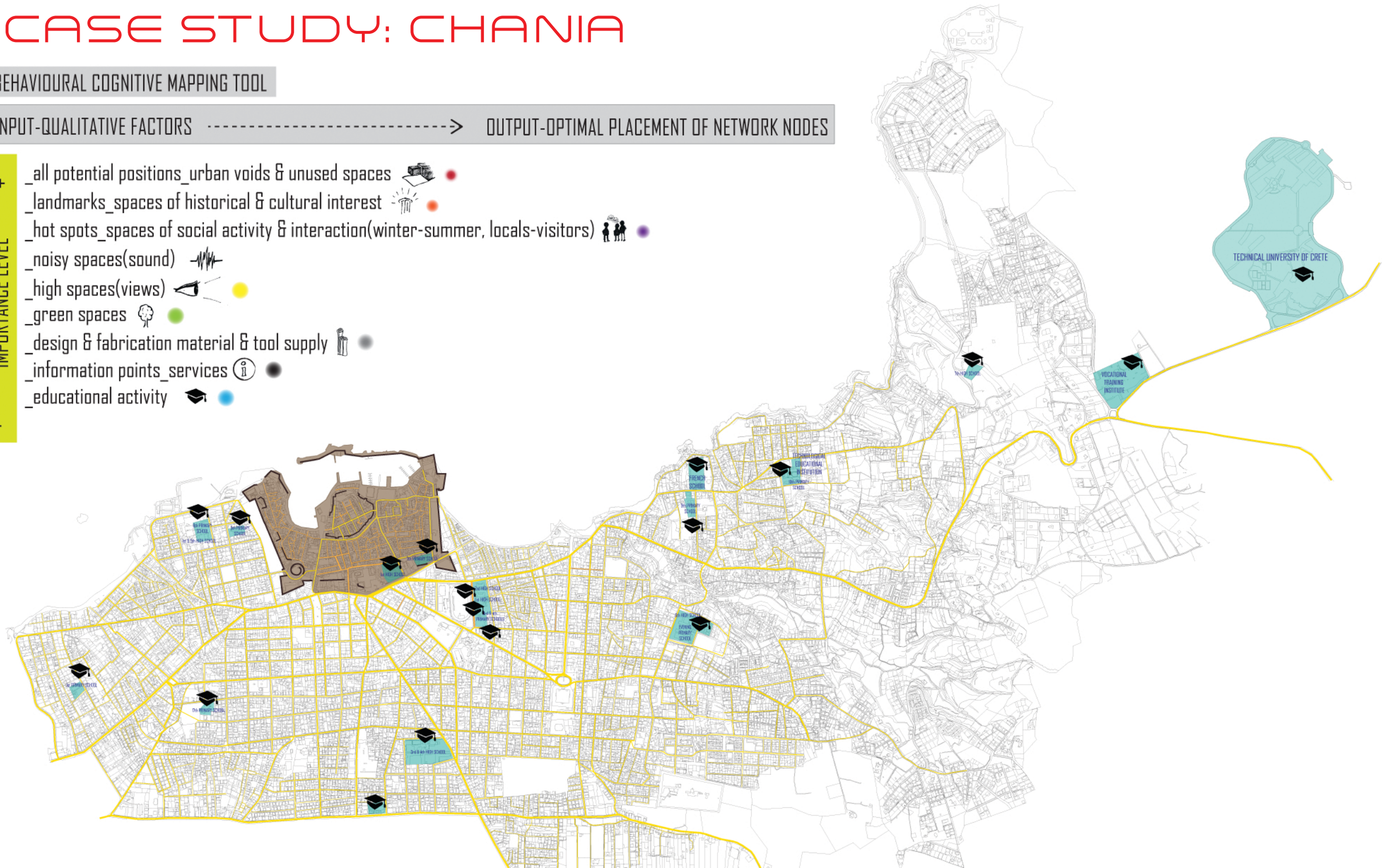
_information points_services

_educational activity



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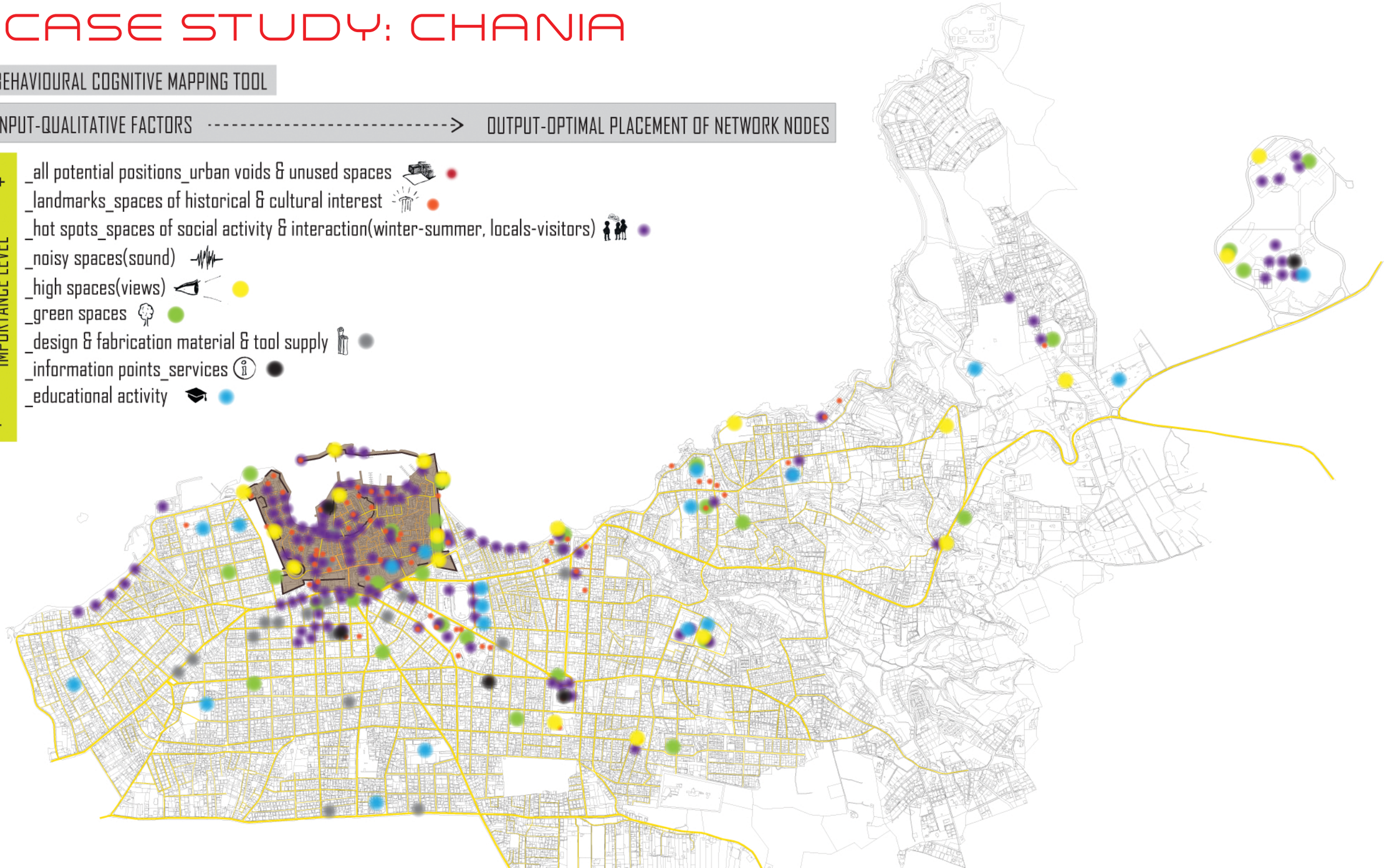

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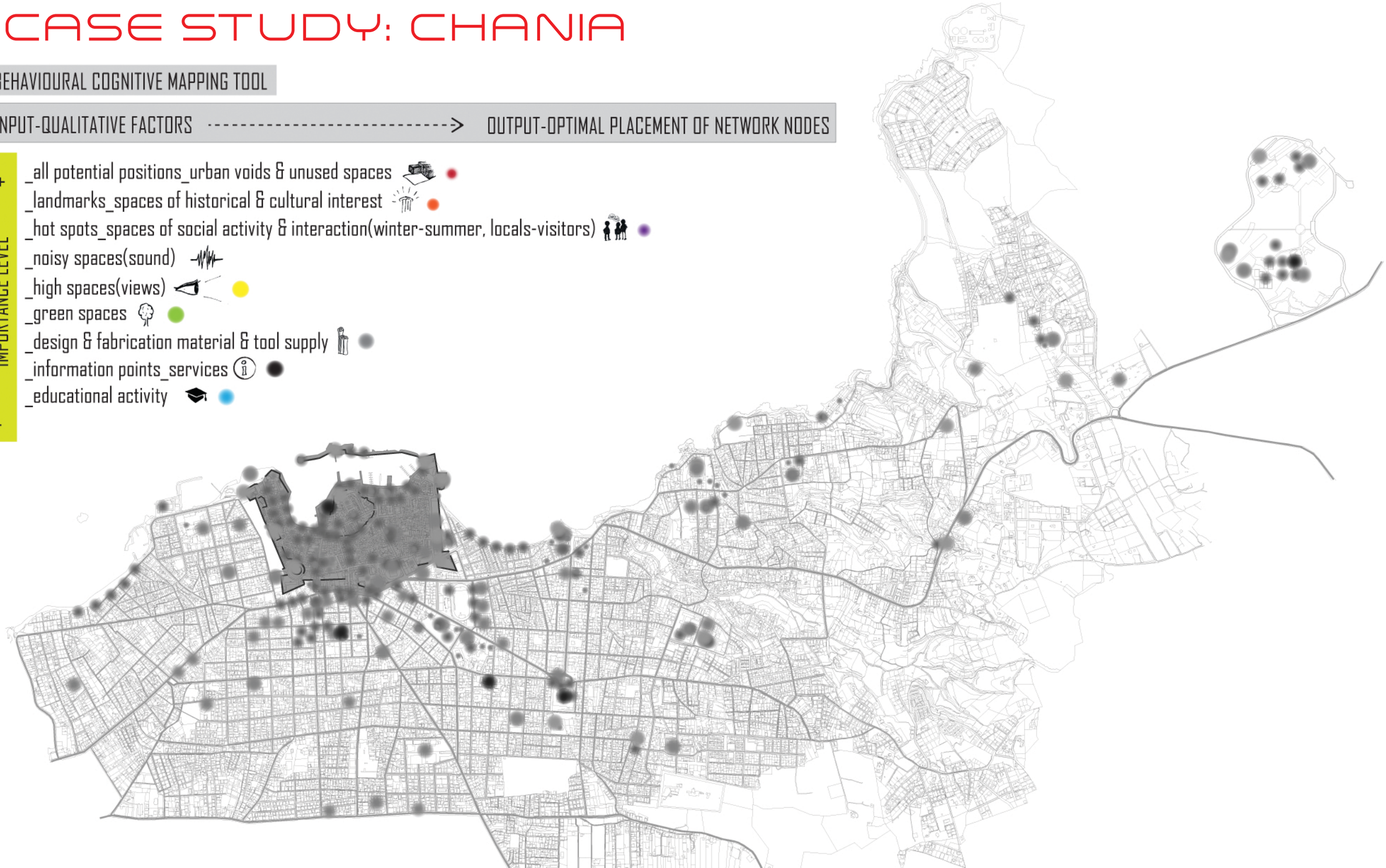

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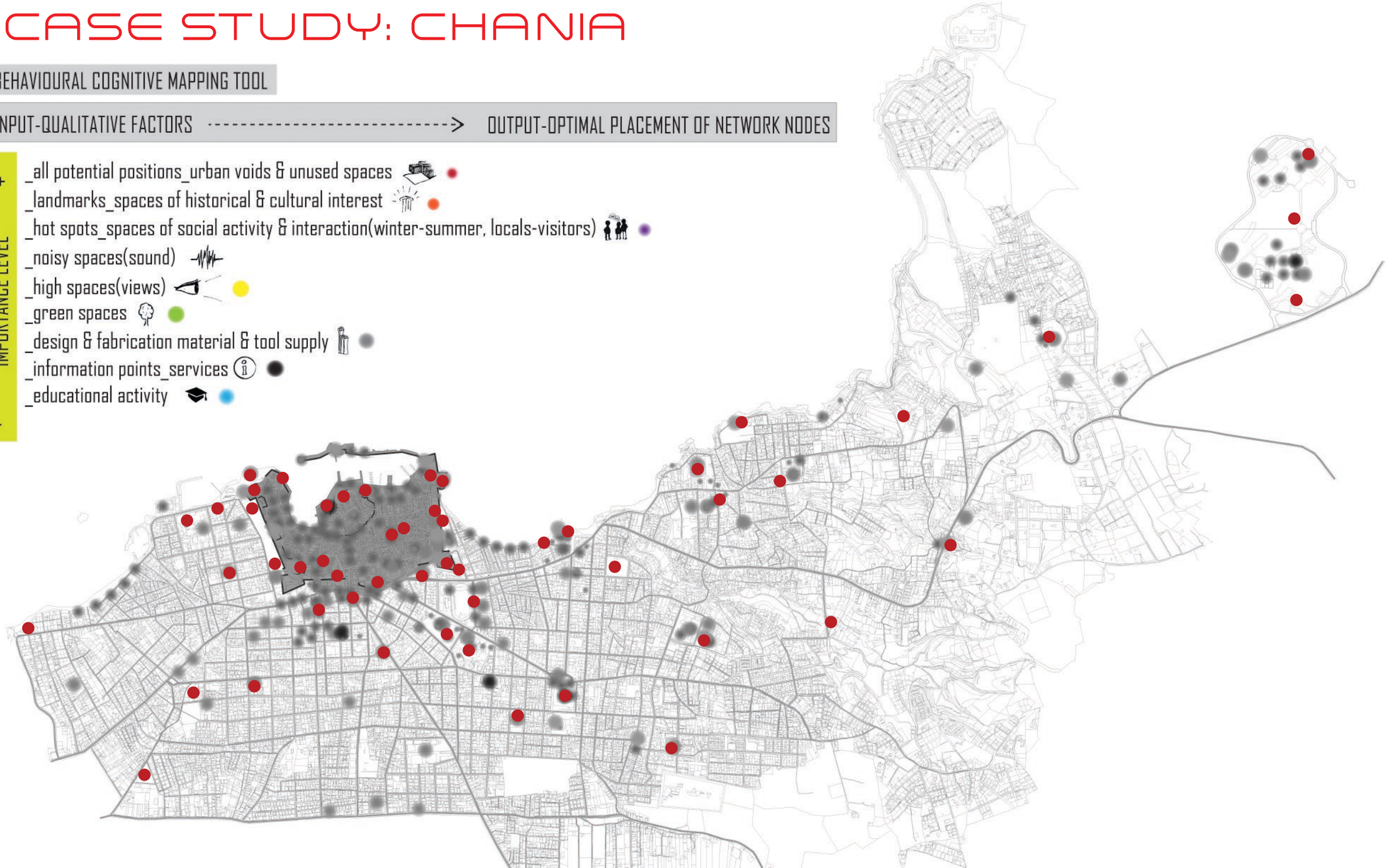

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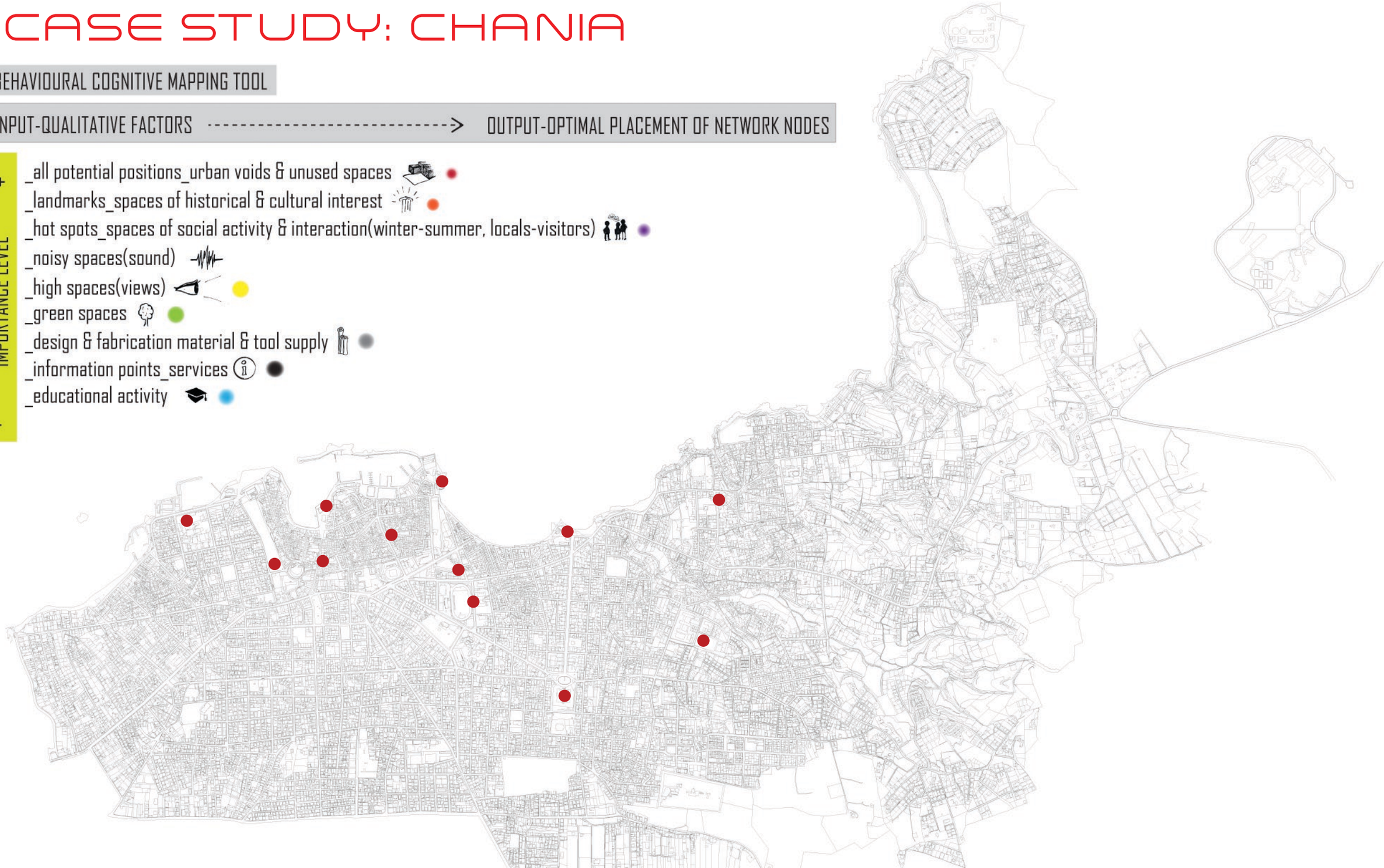

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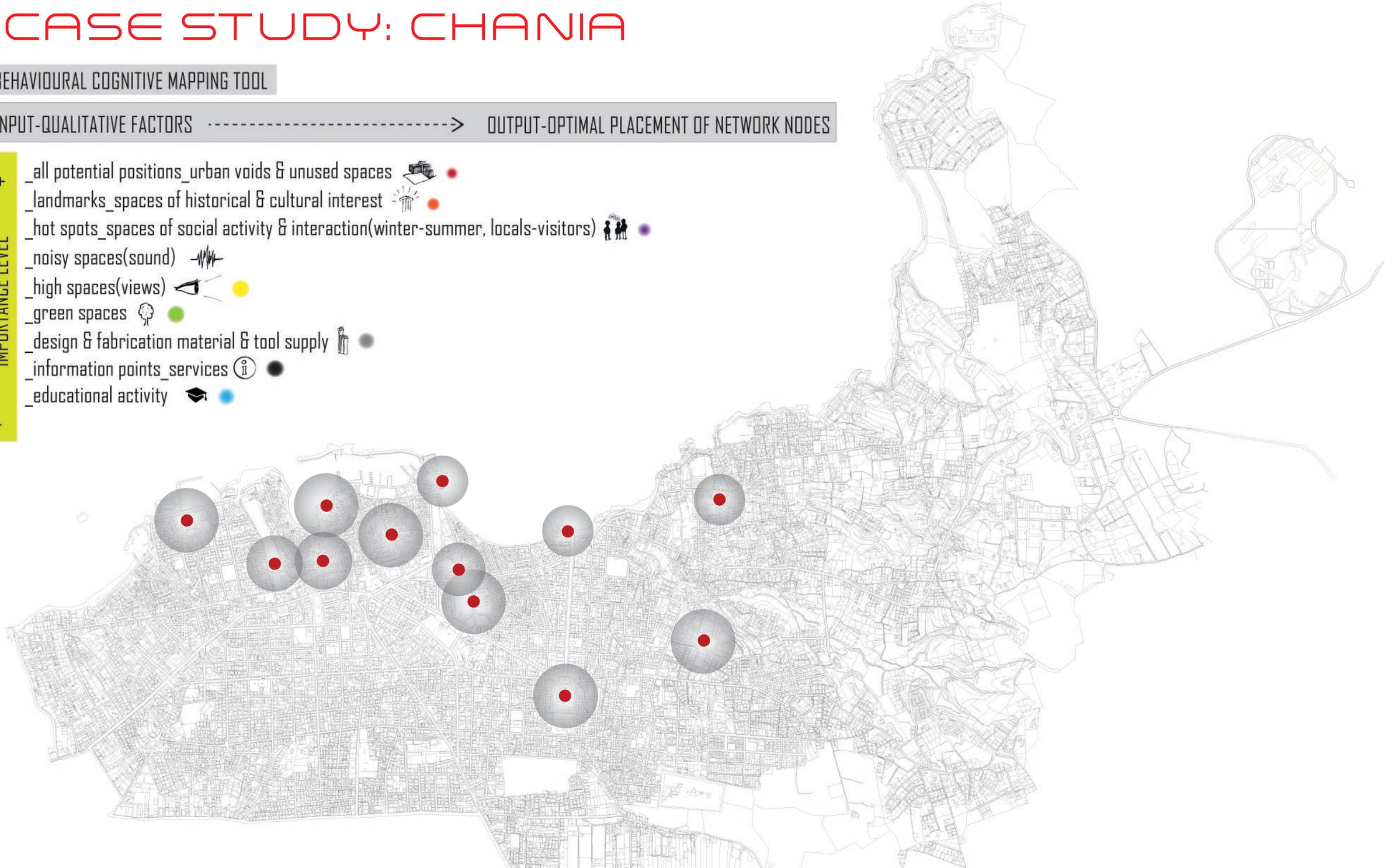

ARCH_TUC 2024 NETWORK :

diffusive and flexible architectural education in the city



ARCH_TUC 2024 NETWORK :

diffusive and flexible architectural education in the city



LOCATION_
palio limani

ACTIVITY_
8th semester
architectural
design
studio.
case study:
waterfront
redevelopment

UNITS_
65

CAPACITY_
min_65
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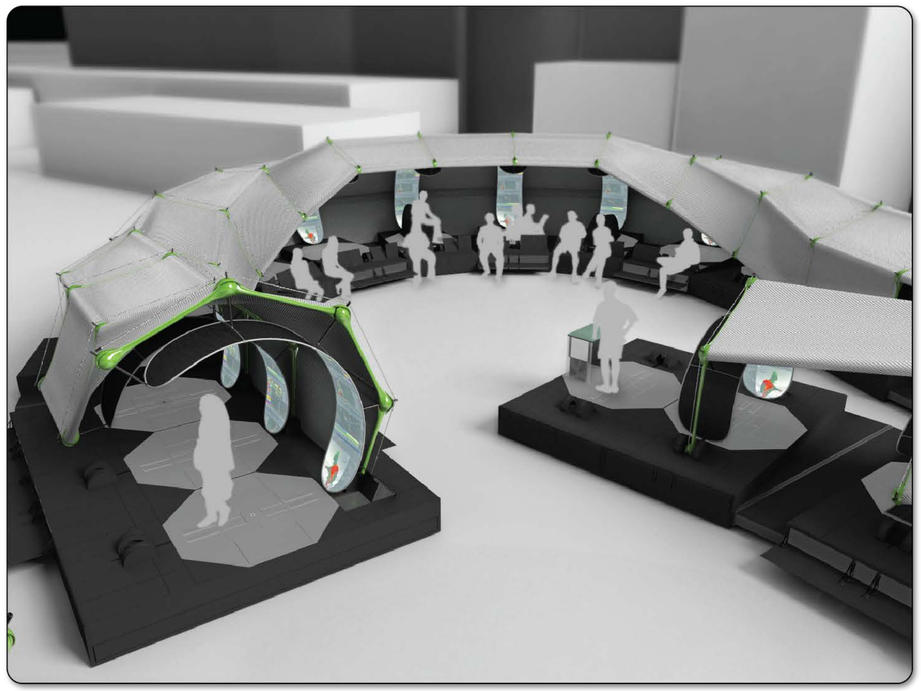

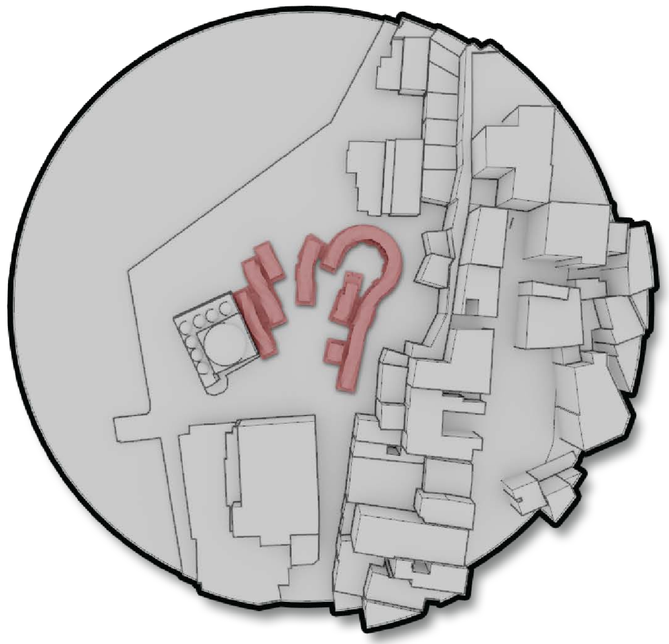

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ACTIVITY_
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UNITS_
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CAPACITY_
...



LOCATION_
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LOCATION_
sidewalk between schools and municipal stadium

ACTIVITY_
student work exhibition

UNITS_
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CAPACITY_
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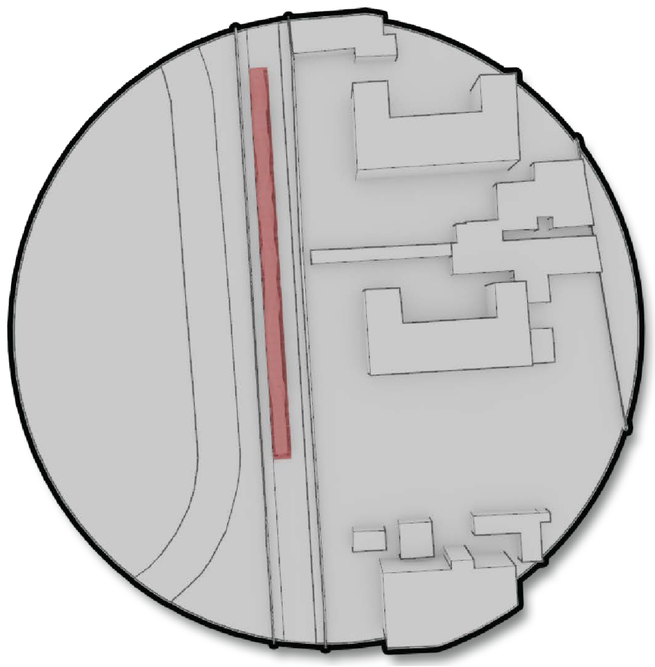

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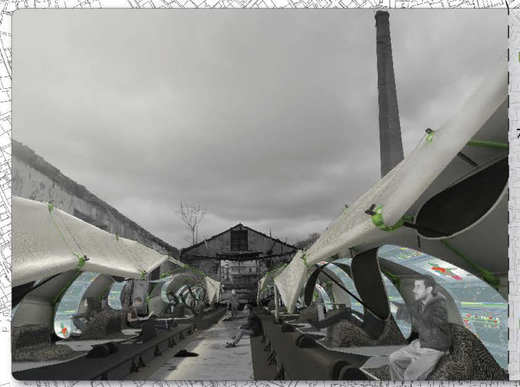
urban design
class

UNITS_
11

CAPACITY_
20



LOCATION_
AVEA

ACTIVITY_
7th semester
optional
restoration
studio.
case study:
former
industrial
area reuse

UNITS_
40

CAPACITY_
min_40
max_100

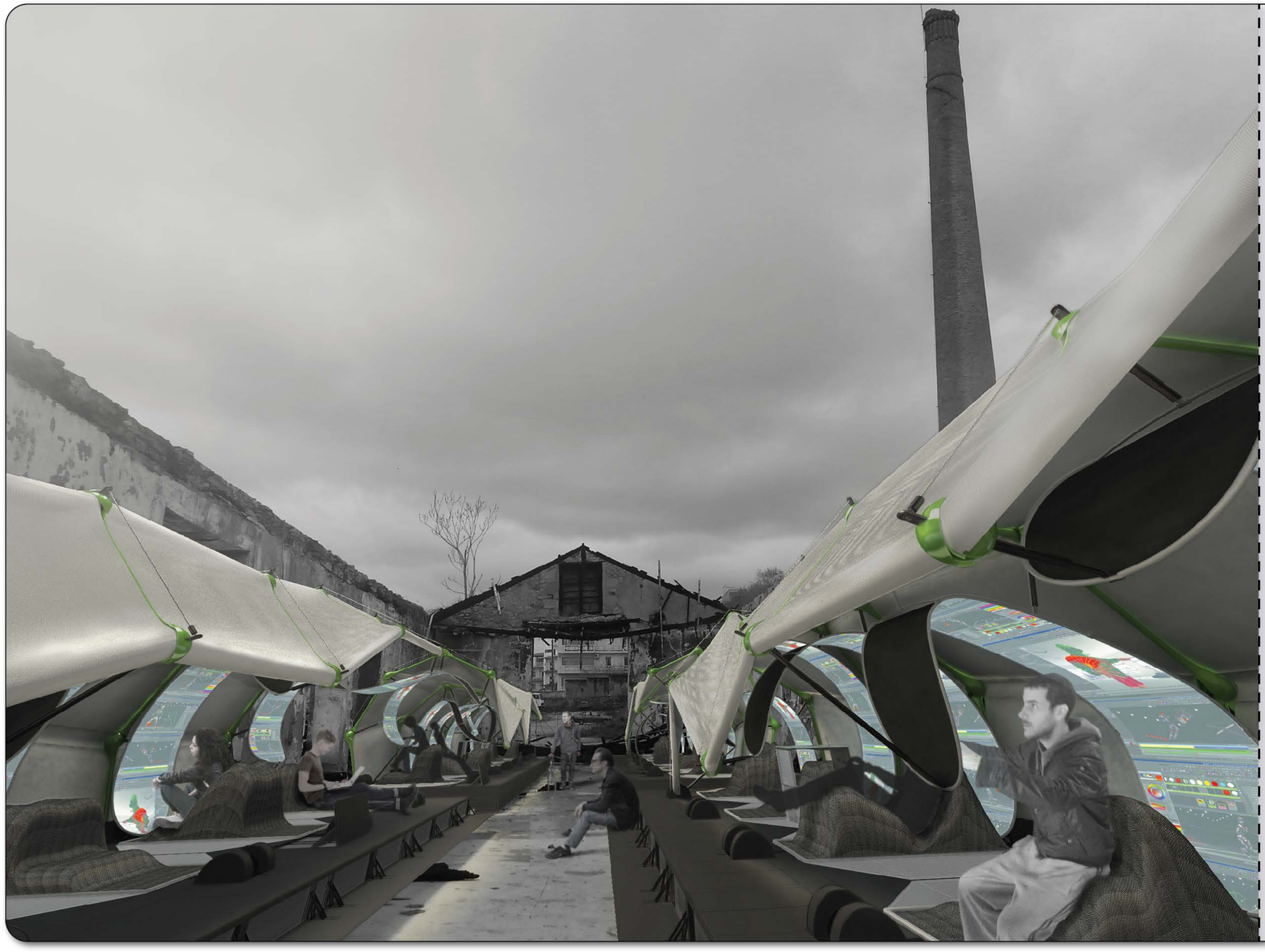


LOCATION_
sidewalk between
schools and
municipal stadium

ACTIVITY_
student work
exibition

UNITS_
50

CAPACITY_
...



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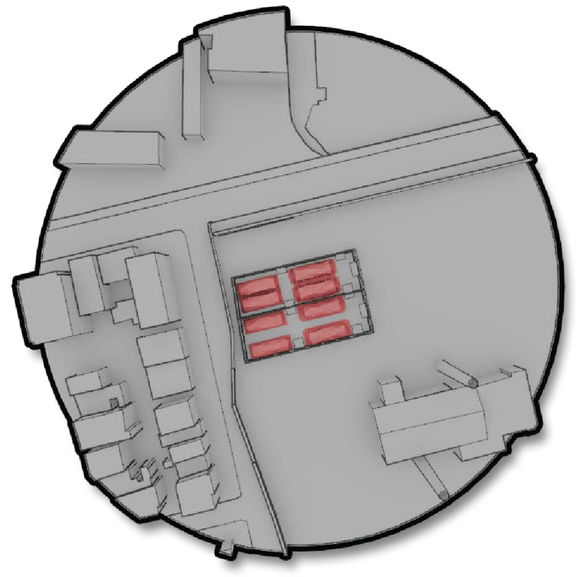

ARCH_TUC 2024 NETWORK :

diffusive and flexible architectural education in the city



LOCATION_
palio limani

ACTIVITY_
8th semester
architectural
design
studio.
case study:
waterfront
redevelopment

UNITS_
65

CAPACITY_
min_65
max_120



LOCATION_
splantzia
square
sector_2

ACTIVITY_
free

UNITS_
13

CAPACITY_
...



LOCATION_
splantzia
square
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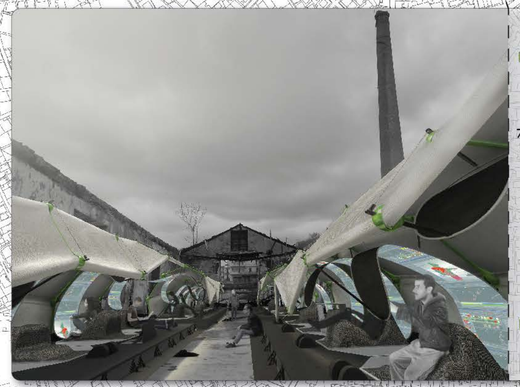

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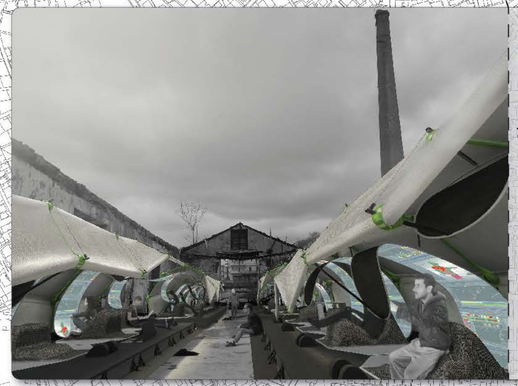

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LOCATION_
dagli str. /
elenas
venizelou
square

ACTIVITY_
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UNITS_
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CAPACITY_
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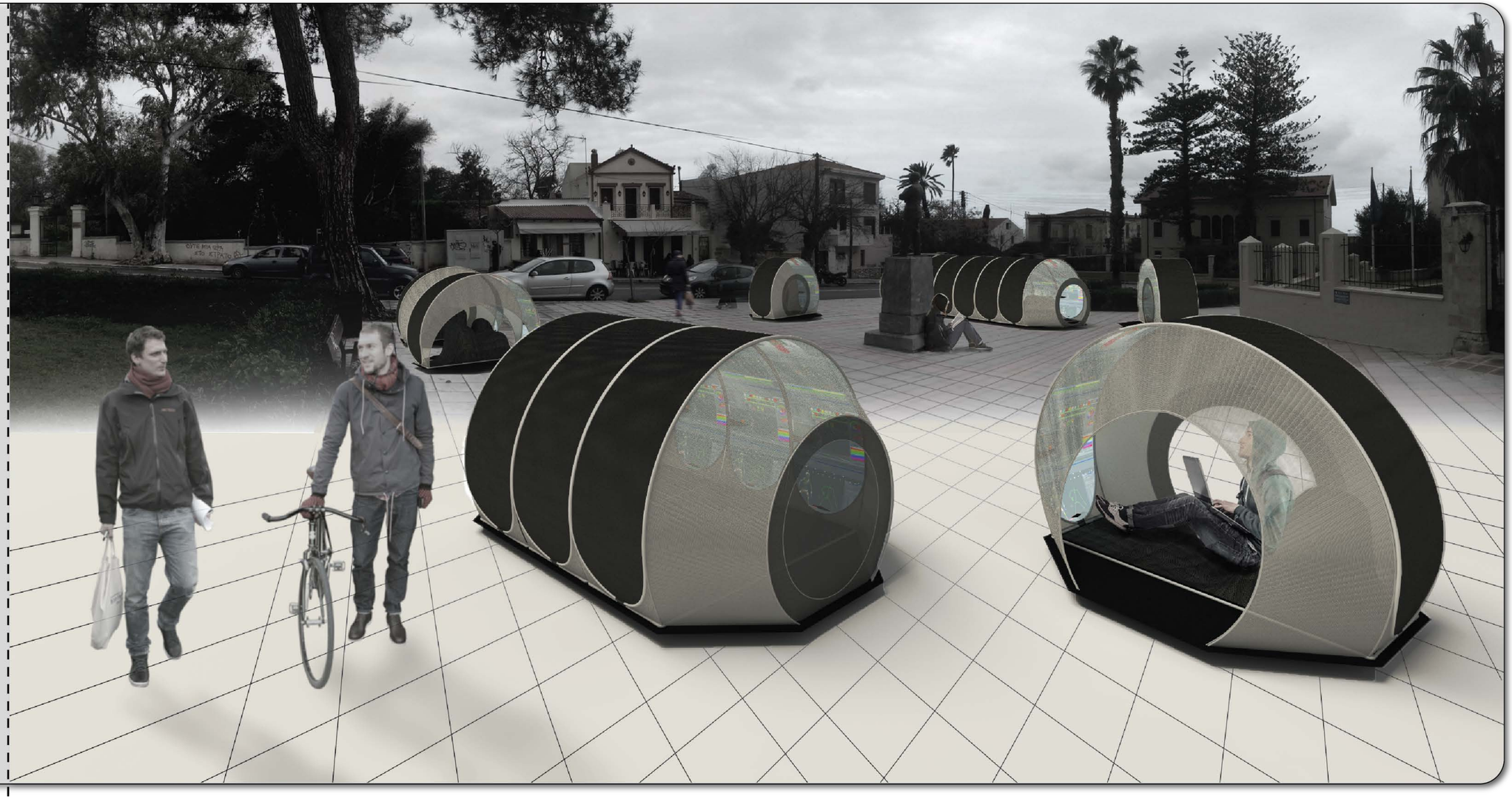

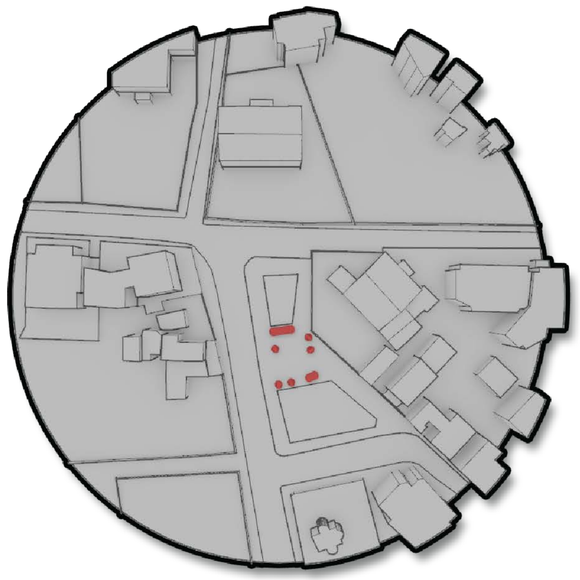

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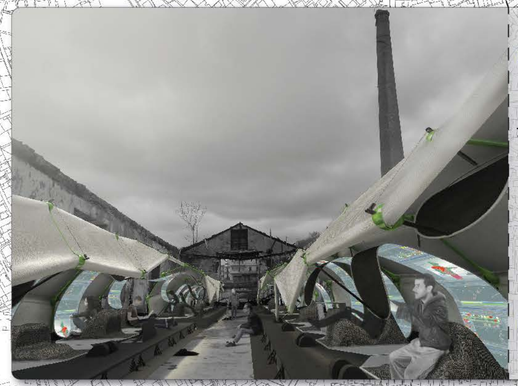

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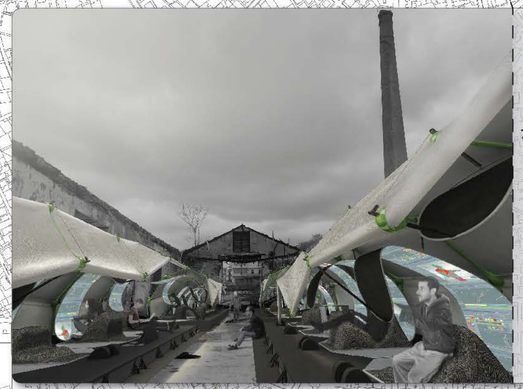

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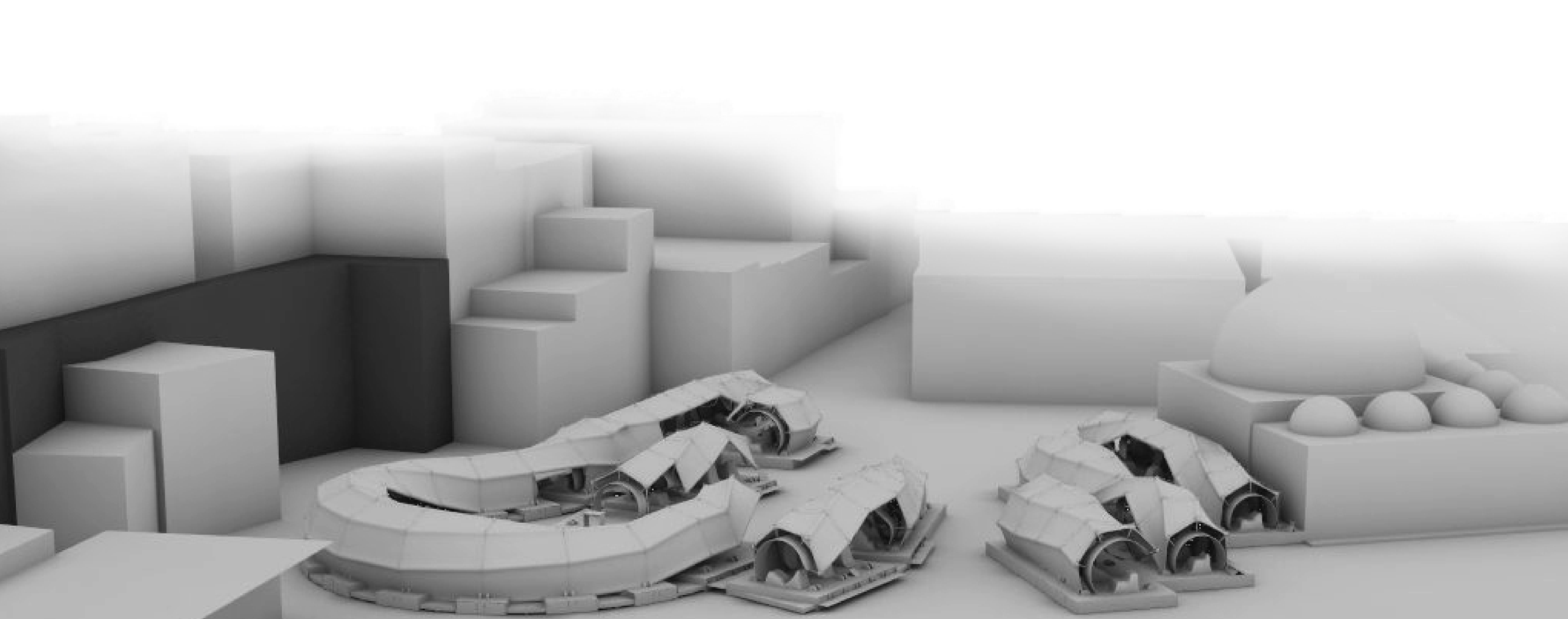

THE END :)