



REFRAMING ACCESSIBILITY IN ARCHITECTURE:

A Political Ecology of Access

Nikoletta ZAKYNTHINOX XANTHI (nz2419)

COLUMBIA GSAPP

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HYDROGEN SYNERGIES - Transitioning towards a Resilient Future

Core Studio | Sustainability Project | Summer 2024 | Columbia GSAPP - MSAAD
| Group Work | Partners: Kakakhel S. Sh. | instructor: Fierro L. G. | T.A. Rosano P.

CARBON x CONCRETE x OYSTERS

Core Studio V | Carbon Removal Project | Fall-Winter 2024 | Columbia GSAPP - MSAAD
| Individual Work | instructor: Benjamin D. | T.A. Kallikouni F.

OUTSIDE-IN PROJECT “THE CLOUD”

GSAPP ELECTIVE | Pavillion Installation | Fall 2024 | Columbia GSAPP - MSAAD
| Team Work | instructor: L. Hawkinson, G. Solomonoff | T.A. Schneidel Tr.

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| Individual Work | instructor: Wasiuta M. | T.A. Rassai A.

FOREWORD

ACCESSIBILITY AS A POLITICS OF ARCHITECTURAL AGENCY Reclaiming Access to Resources, Landscapes, and Knowledge

ACCESSIBILITY in Architecture is **political, social and cultural and environmental**. It is a mode of spatial justice—a critical negotiation between material systems, socio-political structures, and environmental regimes. It is not reducible to circulation diagrams or compliance metrics; it is a question of real access to resources, to sustainable technologies, to urban and ecological infrastructures, and to the epistemologies that shape them.

Accessibility is scalar and systemic—operating through spatial typologies, tectonic decisions, territorial logics, and questions of authorship and control. It has dimensions, proportions, materiality and architectural expression.

My trajectory at GSAPP began in the advanced studio of Laura Gonzalez Fierro, Accessibility to Sustainability, which foregrounded the architectural implications of energy transition and ecological equity. This was not a studio about form-making in the conventional sense, but about critically situating architectural practice within the planetary urgencies of renewable infrastructure and resource redistribution. How do we, as architects, mediate access to renewable energy systems? What spatial morphologies emerge when energy justice becomes a design imperative? And how does the integration of ecological intelligence reshape urban metabolisms, territorial configurations, and social ecologies?

These questions gained further depth in David Benjamin's studio, where accessibility unfolded across multiple scales—from carbon-sequestering biomaterials embedded within the envelope, to infrastructural landscapes that perform environmental remediation while reintegrating marginalized communities. Architecture became both mediator and amplifier: materializing access to healthier environments, reclaiming polluted waterfronts, and reconstituting the public interior through new forms of collective occupation. The notion of accessibility here was not formal but operative—it redefined thresholds, rearticulated boundaries, and reimaged the politics of inhabitation.

In my final semester, this inquiry culminated in the proposal for a Geological Trance Club—a spatial manifesto for geo-sensorial pedagogy and collective ground awareness. The project positions geology not as inert data but as an active substratum of spatial consciousness. By choreographing sensory interfaces, immersive tectonics, and site-specific narratives, the club functions as a civic instrument that democratizes access to geological knowledge, reinforcing communal bonds through a shared understanding of the Earth's deep time and material legacies.

Across my work, **accessibility emerges not as a resolved condition, but as a contested field of design agency**—where architecture can interrogate the asymmetries of ownership, infrastructure, and environmental access. It invites a critical redefinition of authorship, not as individual expression, but as the capacity to redistribute spatial rights, ecological resources, and epistemological tools.

HYDROGEN SYNERGIES

Transitioning Towards a Resilient Future

<https://www.arch.columbia.edu/student-work/12997-hydrogen-synergies>

This project repurposes an abandoned coal plant in Dunkirk, NY, into a cutting-edge Green Hydrogen facility, transforming an industrial relic into a sustainability hub. It integrates energy production with community engagement, featuring hydroponic gardens, a farmer's market, educational exhibits, a water purification system, and a research center—all leveraging existing infrastructure.

Using electrolysis powered by wind and solar, the plant shifts from fossil fuels to clean energy. Visitors observe this process from an interactive, multi-level deck. Waste heat and water support hydroponic gardens, while a farmers market and community spaces host sustainability-focused events. Purified cooling water returns to the lake, improving its ecosystem.

This project revitalizes the region economically and environmentally, demonstrating how industrial sites can become sustainable energy hubs and fostering an ACCESSIBLE and resilient future for Dunkirk.



Advanced Summer Studio '24: ACCESSIBILITY TO SUSTAINABILITY and the promise of a Future

Studio Instructors: Laura Gonzalez Fierro, Pietro Rosano (TA)

Collaborator: Shirin Sueyda Kakhakel



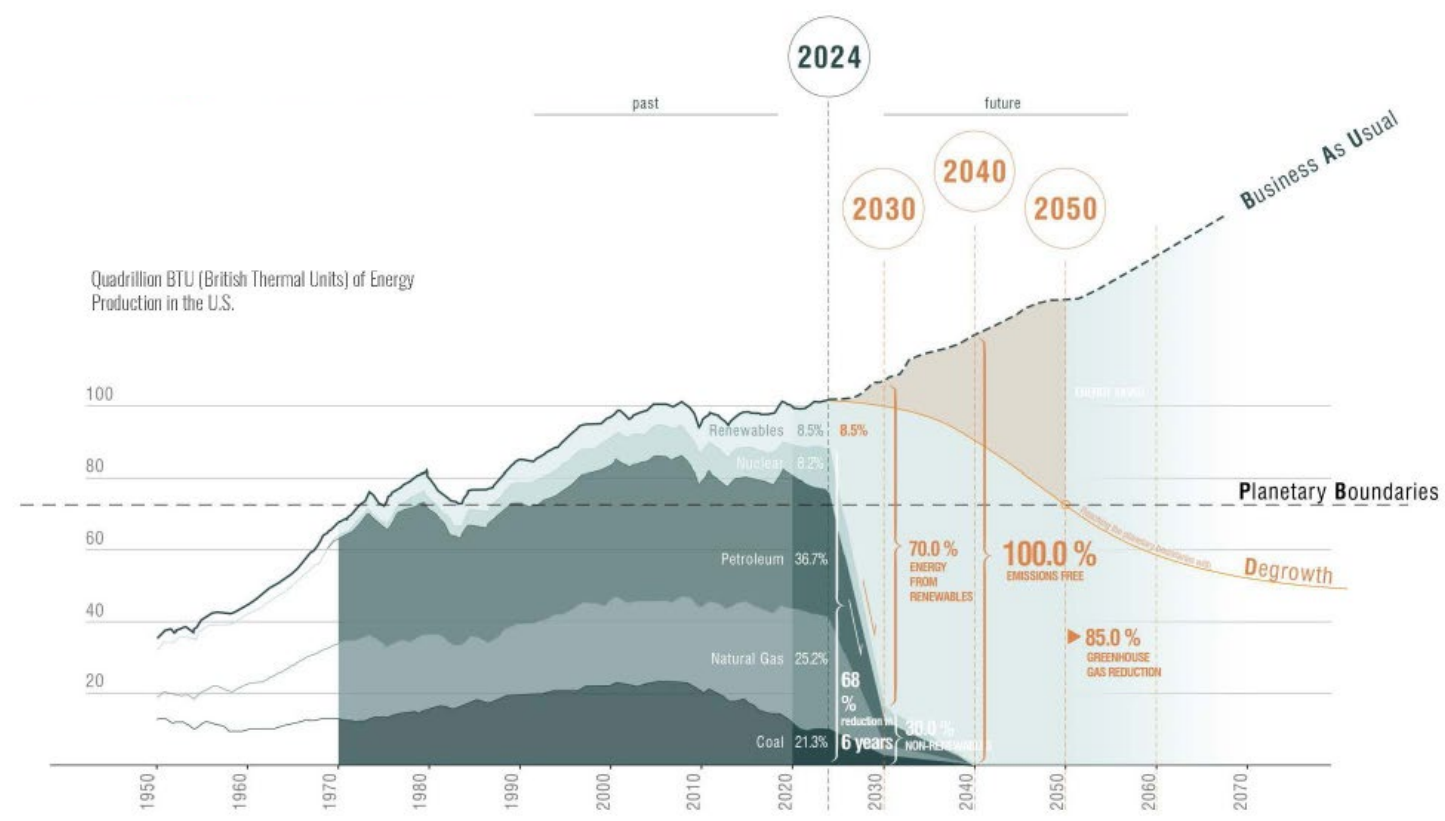
How can we pursue **Accessibility to Sustainable Environments** to achieve **Sufficiency and Resilience**?

How can we respond to possible future scenarios of **Energy Crisis**?

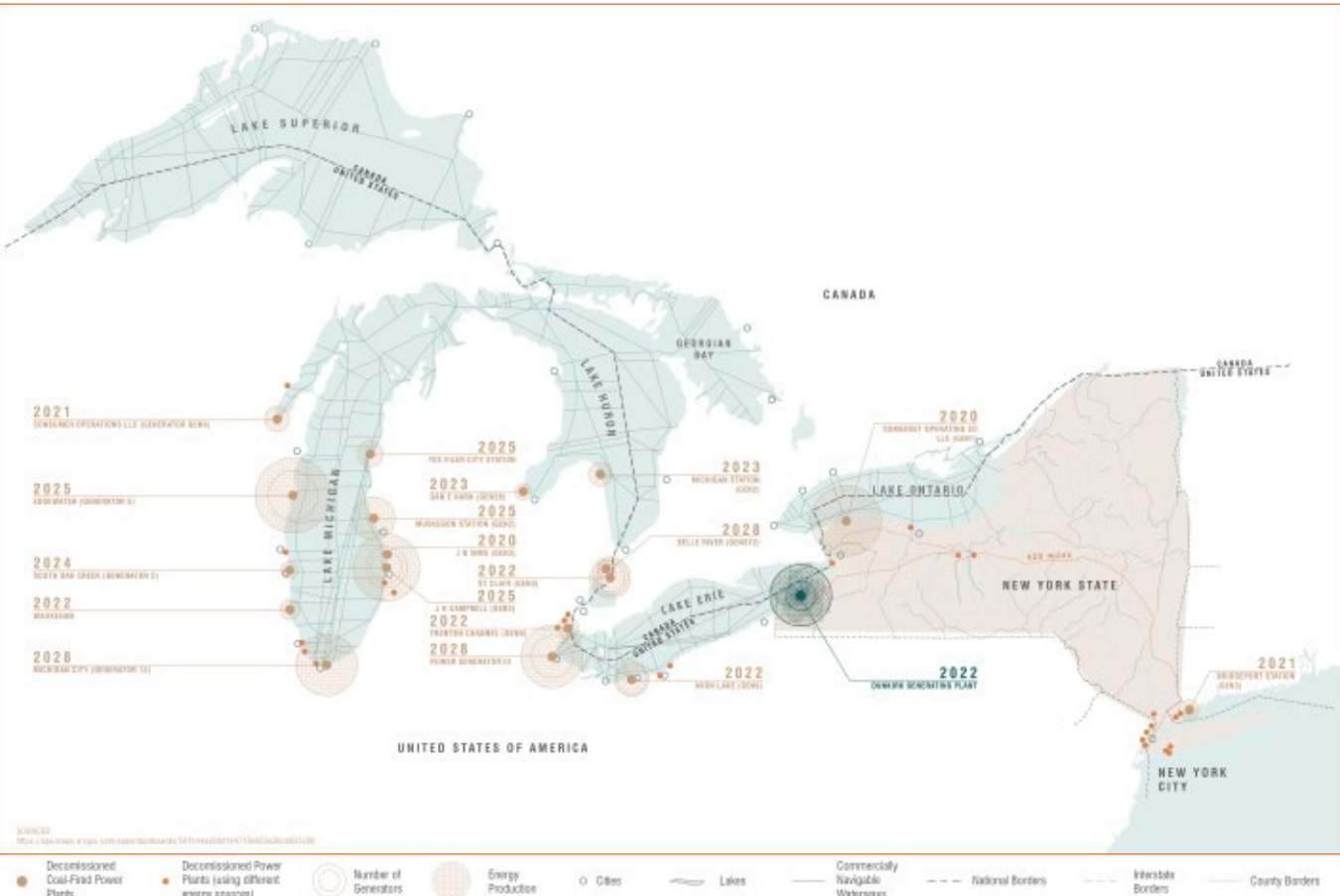
H O W
can we transition towards a more **Sustainable**
and **Equitable** Future?
in a short period of time



NYS Energy Production Timeline



Map of Decommissioning Coal-Fired Power Plants by 2025



A. NYS announces 3 Targets for the following decades:

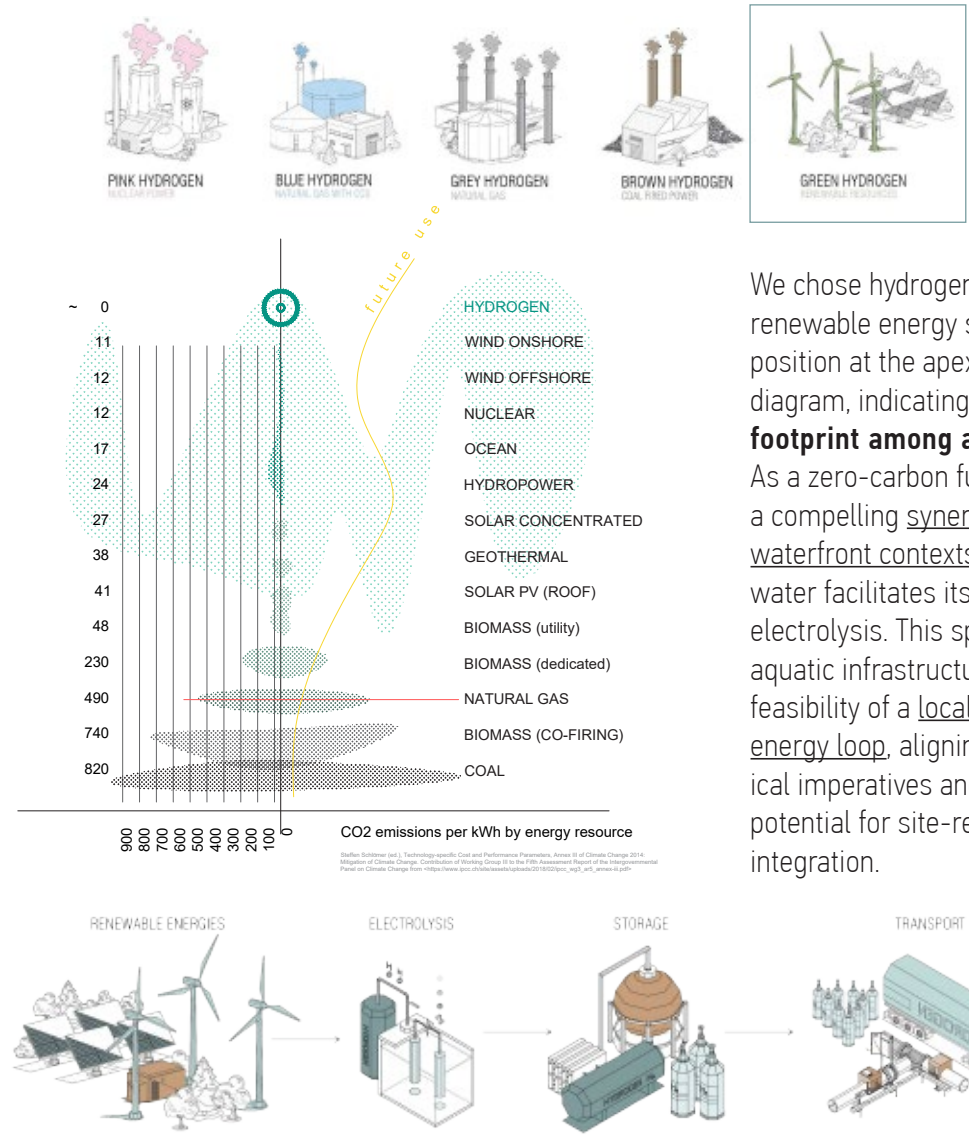
- By 2030, NYS goes Green and will generate 70% of its Energy from renewable sources.
- By 2040, the State will be 100% Emissions free
- By 2050, will achieve 85% Greenhouse Gas Reduction.

B. Oil and Coal-fired Power Plants going decommissioned by 2025

Signed into law in 2019 by the the Climate Leadership and Community Protection Act (CL-CPA)



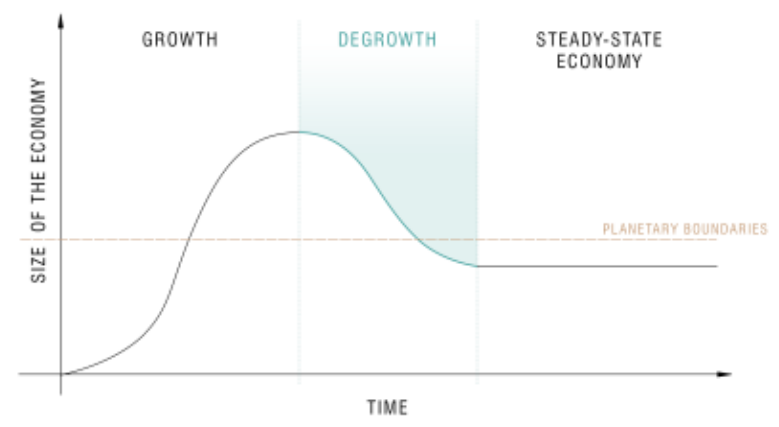
COMBINING GREEN HYDROGEN



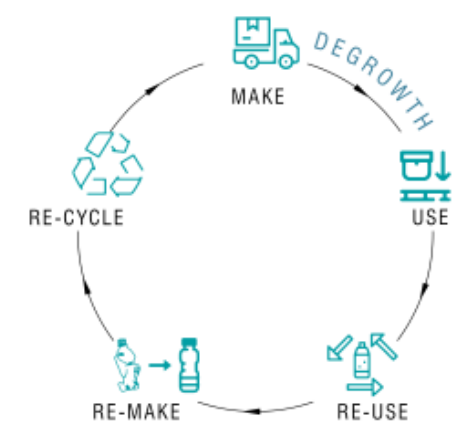
We chose hydrogen as our primary renewable energy source due to its position at the apex of the emissions diagram, indicating **the lowest carbon footprint among available options**. As a zero-carbon fuel, hydrogen offers a compelling synergy with coastal and waterfront contexts, where access to water facilitates its production through electrolysis. This spatial proximity to aquatic infrastructures enhances the feasibility of a localized, sustainable energy loop, aligning both with ecological imperatives and the architectural potential for site-responsive energy integration.

WITH THE CIRCULAR ECONOMY PRACTICES AND THE THEORY OF DEGROWTH

DIAGRAM OF DEGROWTH

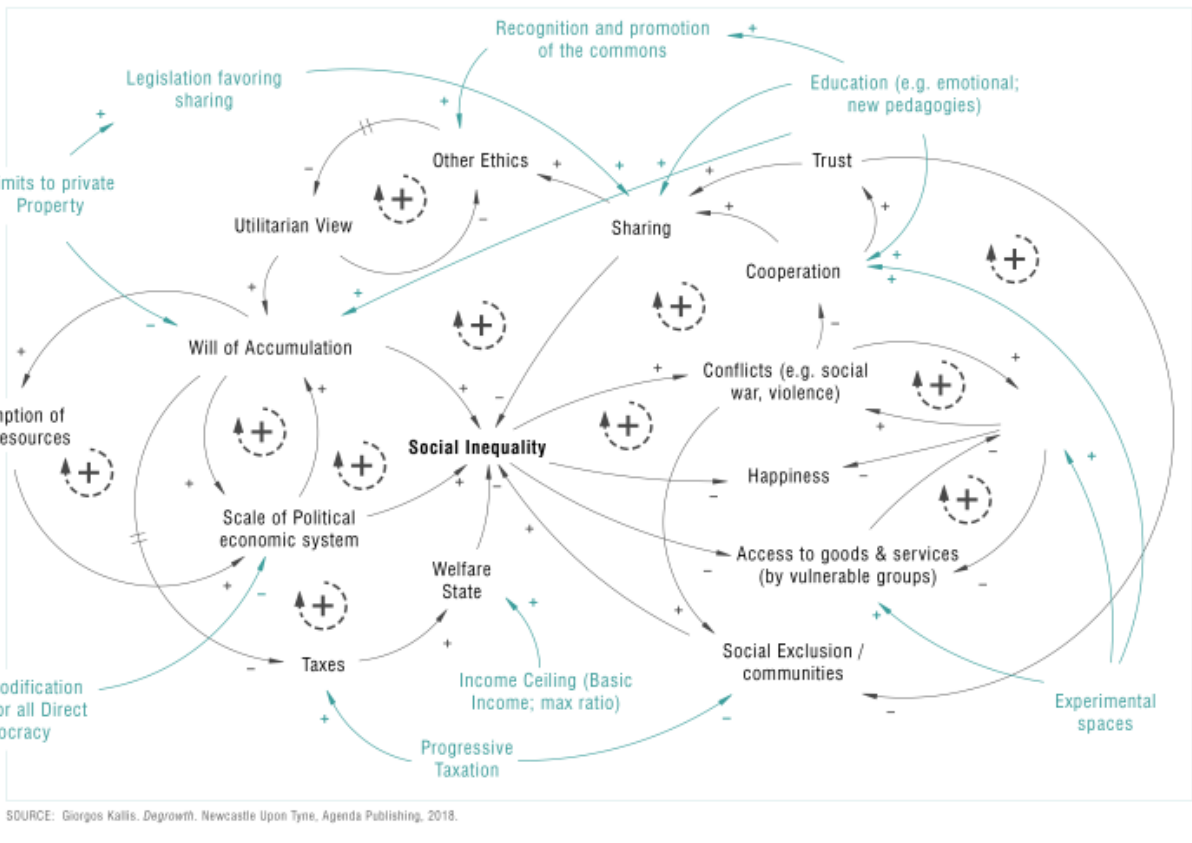
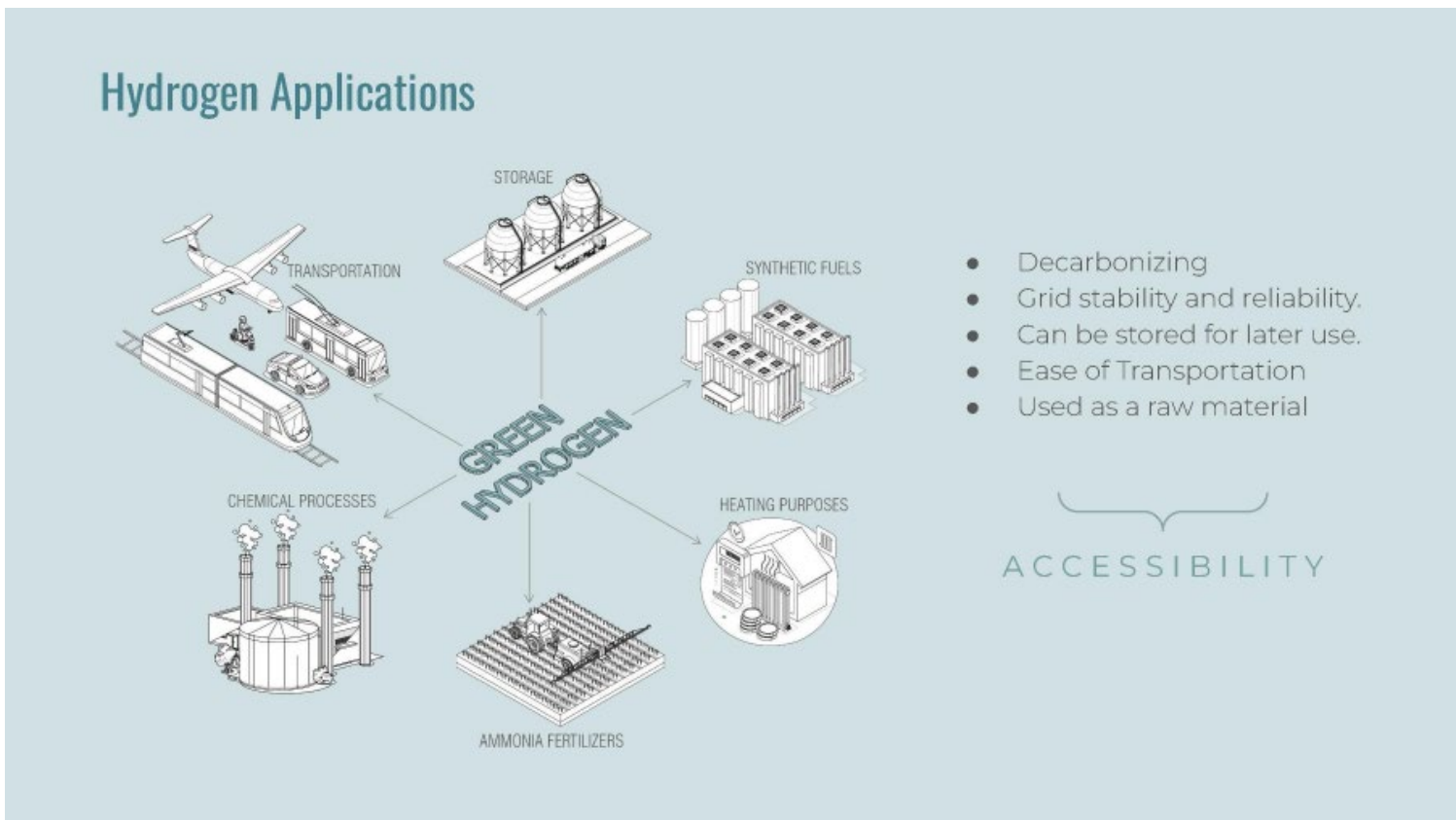


CIRCULAR ECONOMY



In parallel, our decision to adopt principles from the theory of degrowth and the circular economy stems from a critical stance toward the dominant paradigm of perpetual economic expansion. Rather than perpetuating extractive models of energy production, we aim to foster regenerative and closed-loop systems that minimize waste, prioritize longevity, and value qualitative over quantitative growth.

By integrating energy production within the metabolic flows of the site—harvesting, storing, and re-distributing resources in circular patterns—we propose an architecture that not only accommodates but actively participates in post-capitalist ecological transitions. This approach positions energy not as an external utility, but as a spatial, social, and ethical construct embedded in the architectural fabric.



SOURCE: Giorgos Kallis, *Degrowth*, Newcastle Upon Tyne, Agenda Publishing, 2018.

MAP OF DECOMMISSIONED POWER PLANTS AND WATER & AIR POLLUTION

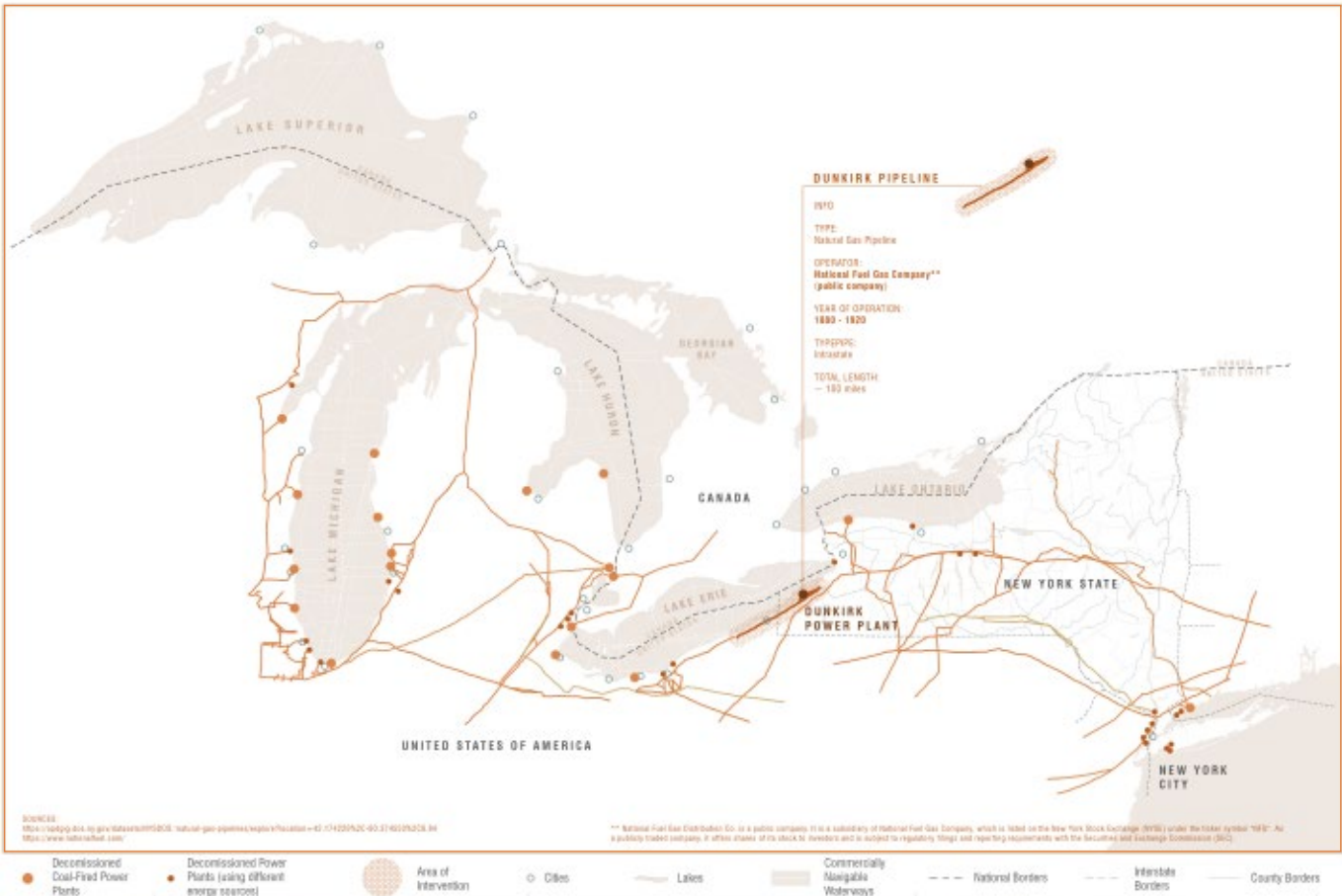


To ground our proposal within site-specific realities, we conducted research into the ecological degradation surrounding the Great Lakes, focusing particularly on the legacy pollution caused by decommissioned fossil-fuel power plants. These post-industrial remnants have left behind toxic sediments, thermal pollution, and disrupted aquatic ecologies—highlighting the urgent need for a cleaner, more symbiotic energy model.

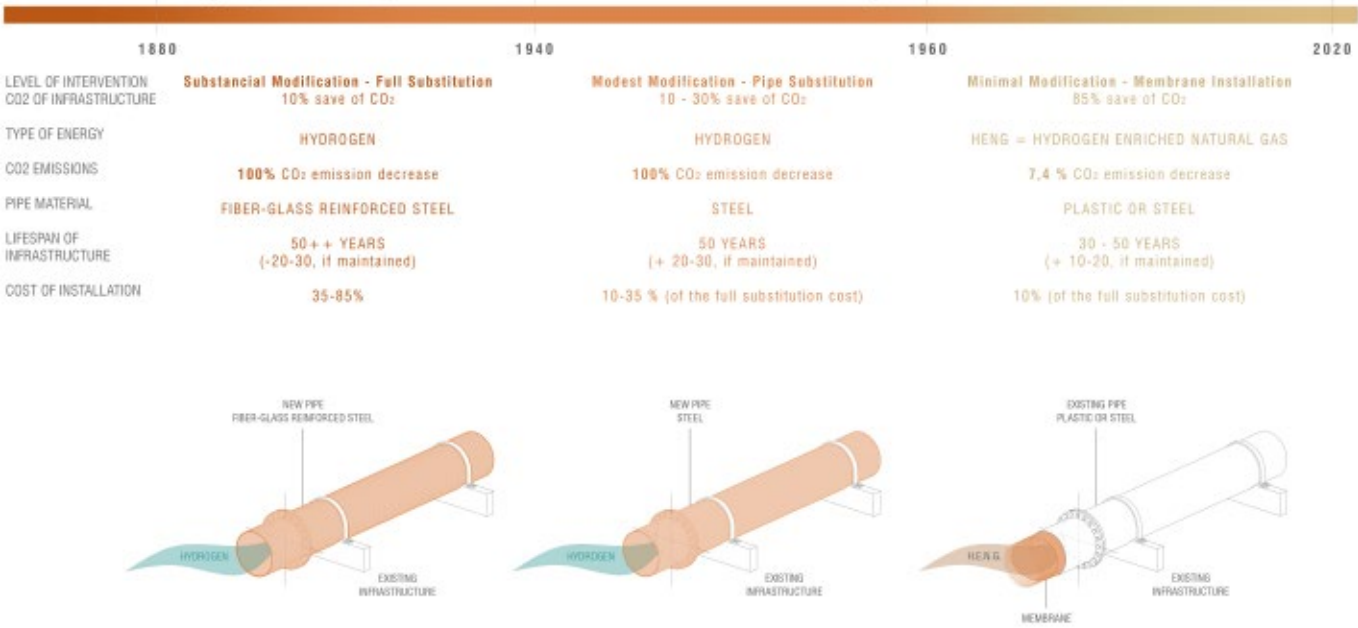


We chose Dunkirk as our site of intervention to propose a new model of energy-producing towns, where **energy generation is decentralized, embedded within the community**, and driven by synergies between infrastructure, ecology, food chains and everyday life. Rather than isolating production, the project repositions it as a collective and spatially integrated process that revitalizes post-industrial territories.

MAP OF THE PIPELINE SYSTEM AROUND THE GREAT LAKES

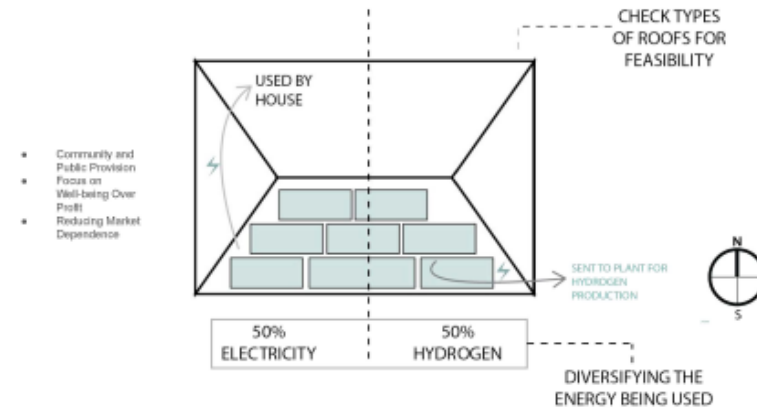


Simultaneously, we investigated the existing natural gas pipeline infrastructure across the region to assess the feasibility of repurposing these networks for hydrogen distribution. Our research revealed that, with appropriate retrofitting, segments of the current pipeline system could serve as transitional conduits for hydrogen, **enabling decentralized access** while avoiding the environmental and financial costs of entirely new infrastructural developments. This dual investigation—into both environmental remediation and infrastructural adaptability—reinforces our proposal for a site-sensitive, degrowth-informed energy strategy that reimagines existing systems not as liabilities, but as latent assets in a circular, post-carbon urban metabolism.

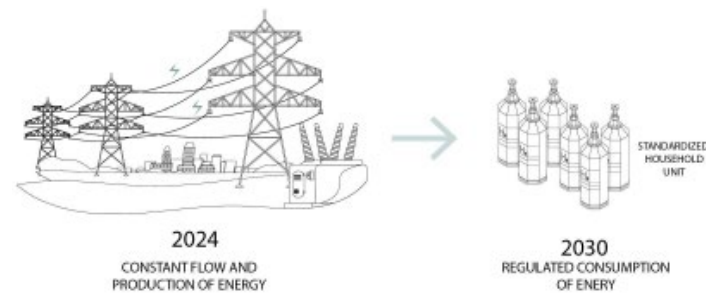


Following 6 Principles towards ACCESSIBILITY, EQUITY and RESILIENCY

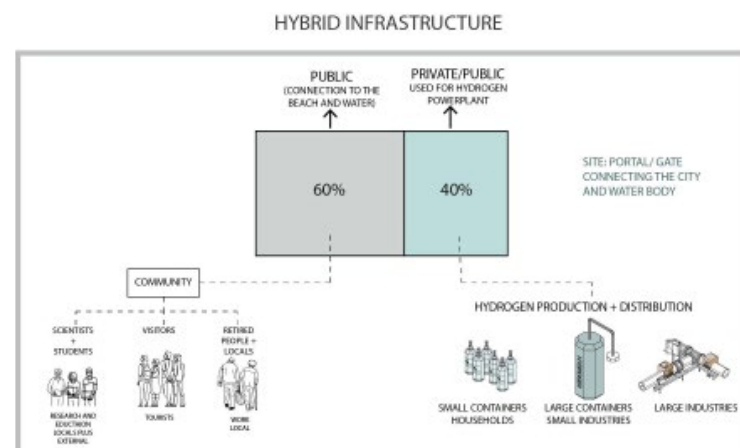
1. How small scale will have an impact on Local Energy production and Consumption



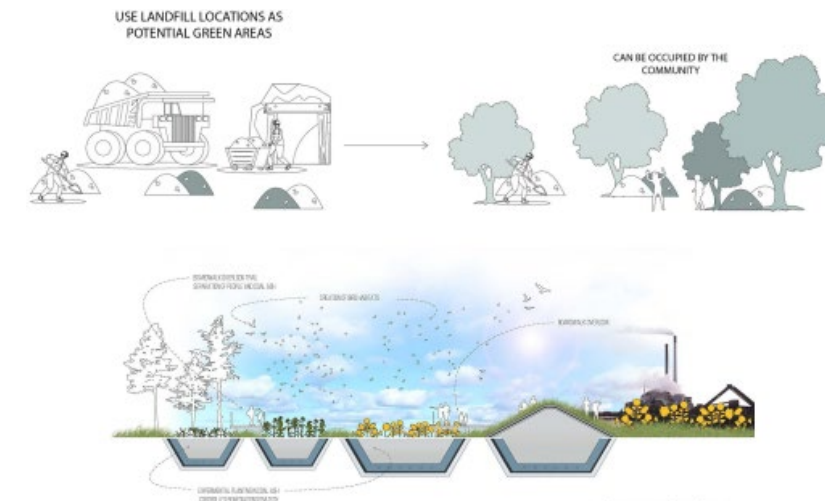
2. Regulation of the Energy Production and Consumption - Slowing down the Economy



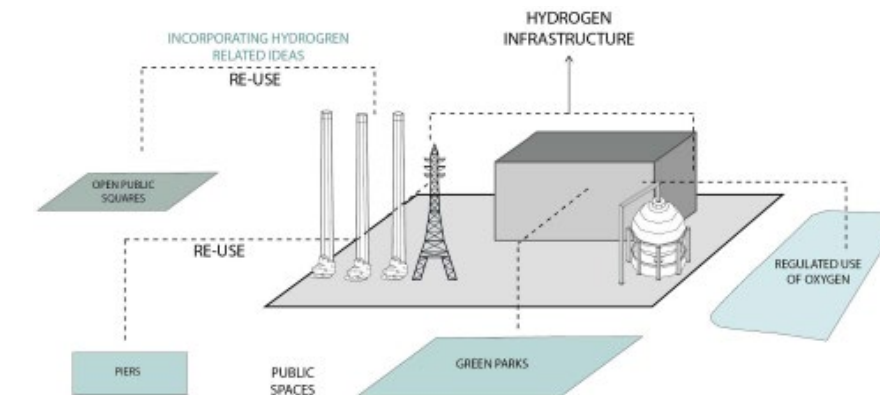
3. Adaptive Reuse of the Spaces of the Power Plant



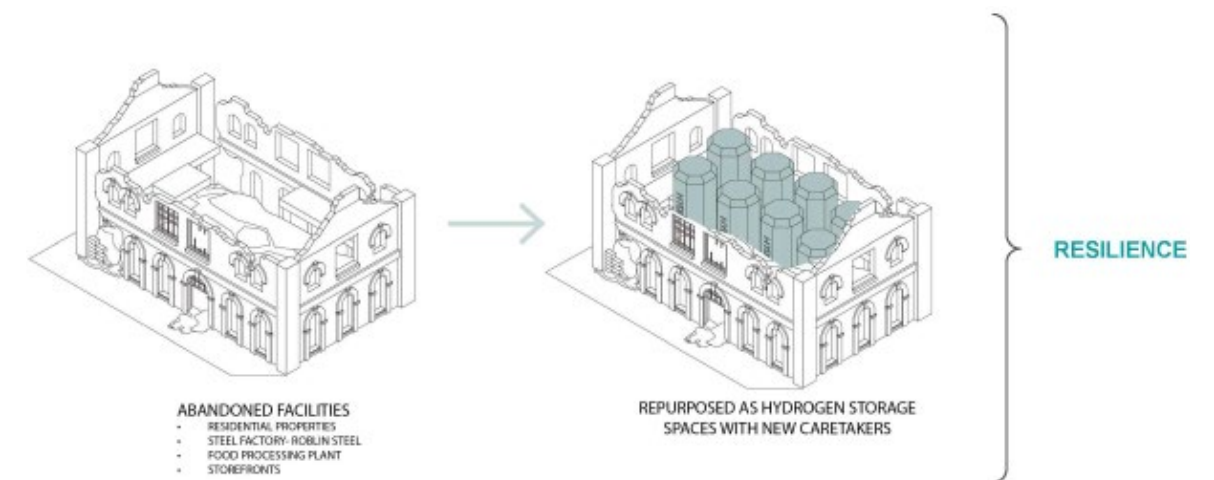
4. Turning waste into Resources



5. Repurposing the Plant and its infrastructure - Introduction of Hydrogen to the community



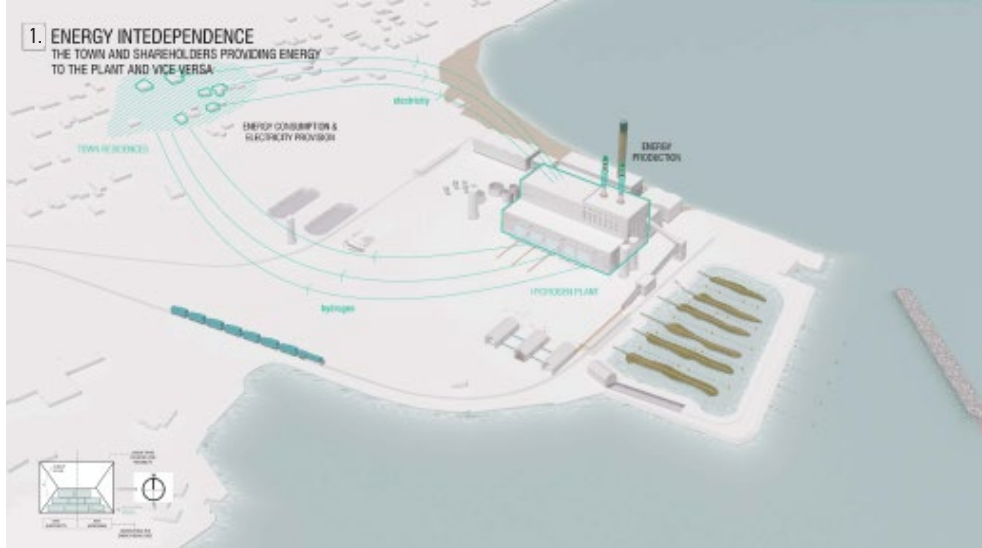
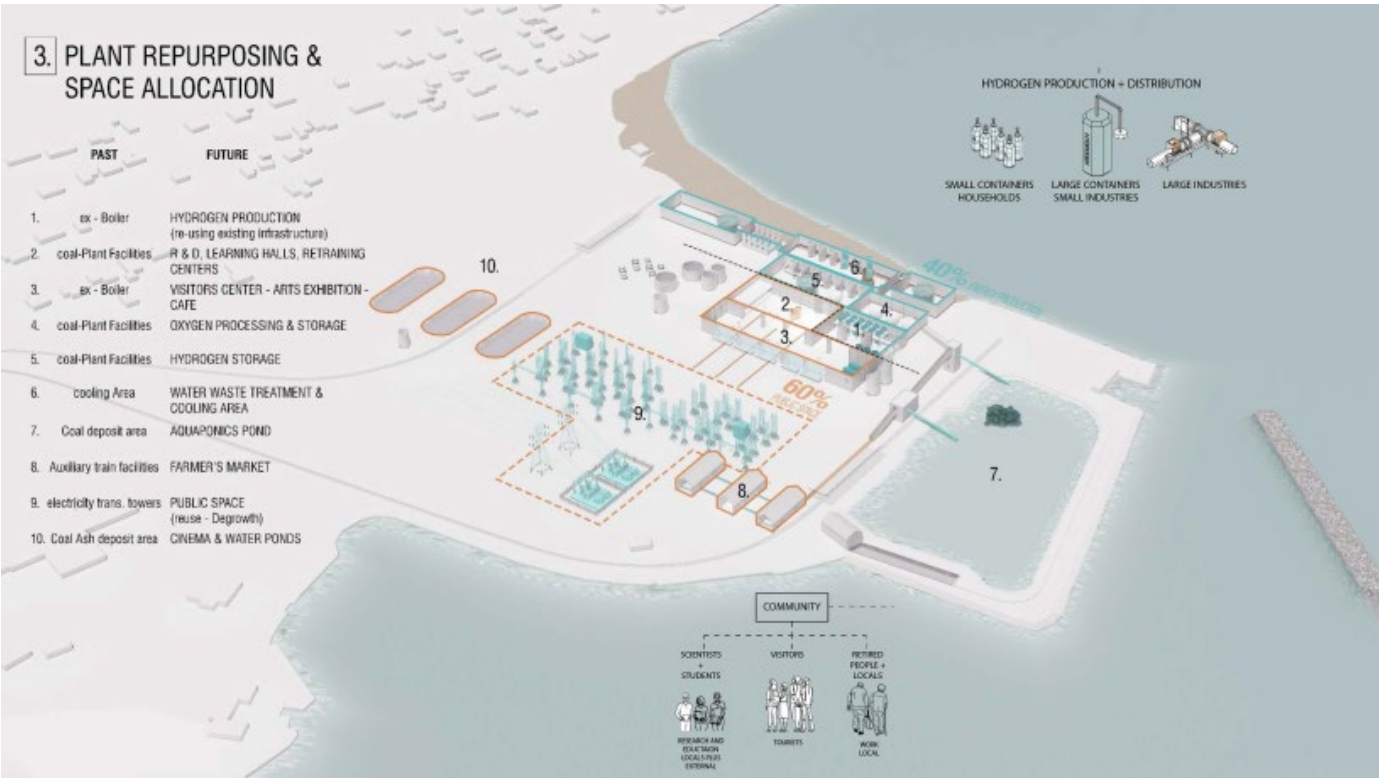
6. Creating Communities resilient to Stresses and Crises



PLANNING AND TIMELINE OF LEGISLATIONAL, OWNERSHIP, and OPERATIOAL CHANGES

- 1. Initially, the power plant transitions into an **employee-owned cooperative** through an ESOP model, aligning labor with ownership and decentralizing economic power.
- 2. 40% of the site remains dedicated to hydrogen energy production, while the remaining **60% is transformed into public space**, fostering civic life.
- 3. Existing industrial structures such as antennas, pipes, etc are repurposed through design in accordance with de-growth principles—minimizing extraction and maximizing reuse.
- 4. The former coal deposit is converted into an aquaponics system, supplying the community with high-protein food, sustained by the oxygen byproduct of hydrogen electrolysis, thus forming a closed-loop synergy between energy and sustenance.

All steps of the transformation are planned.



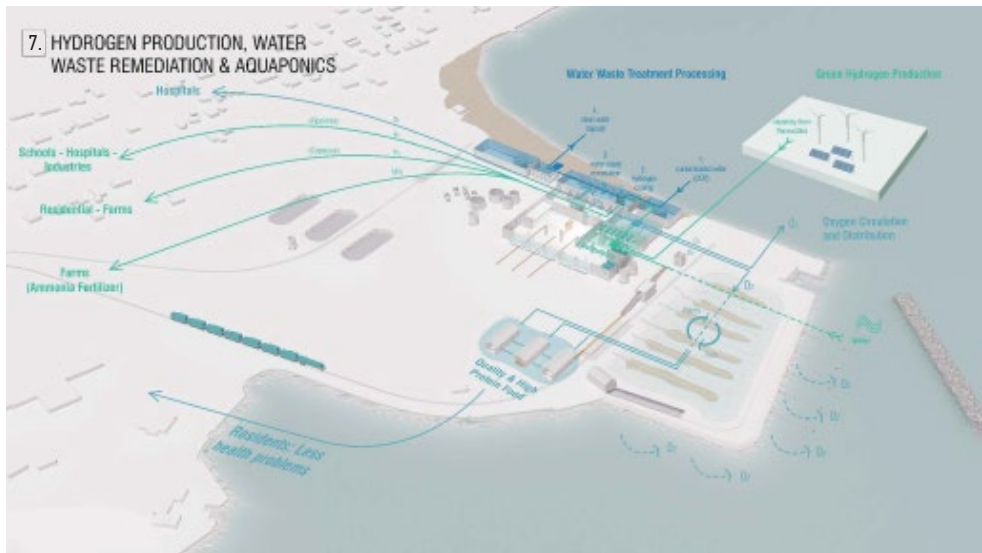
Synergy among the Hydro-gen Power plant and the households



Aquaponics for Water Remediation and the restoration of the aqua life



Land Remediation - use of bio-logical elements and microor-ganisms to restore the Soil

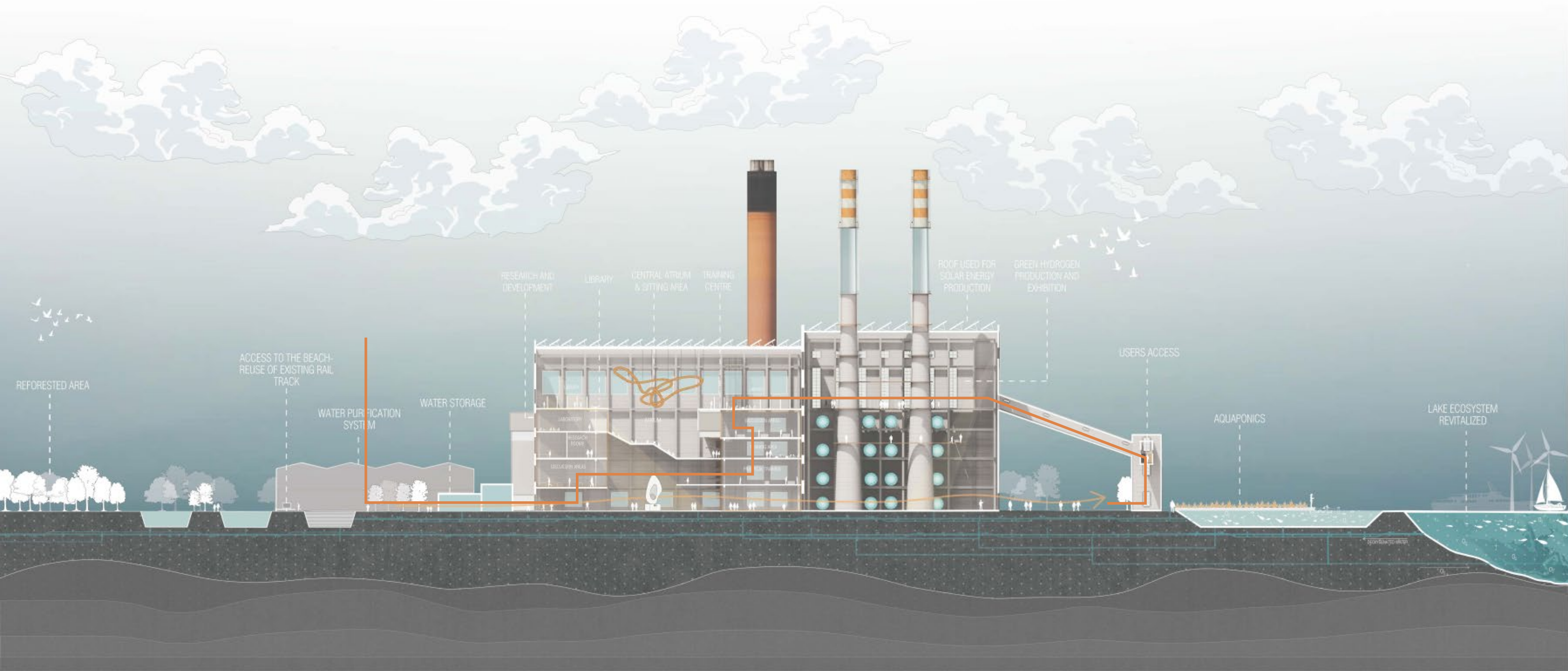


Synergy of the Hydrogen Prod-duction, the Aquaponics and the Water Waste Treatment Facility

Following the exact path once taken by coal as it moved toward the plant's burners, visitors trace the historical trajectory of energy production—from fossil fuels to hydrogen. Along this route, curated moments of visual access into the active energy systems reveal the contemporary machinery of hydrogen production.

For the first time in history, the public engages directly—spatially and intellectually—with the active infrastructure of energy, as the power plant opens spatially and functionally to civic life and the community.

It is **ACCESSIBILITY to Renewable Energy, to City Infrastructures, to Public Spaces, to Health and quality food, to Knowledge and Expertise.**





PLANT OWNERSHIP: NRG
PLANT SIZE: 96 ACRES (0.15 MILES)
FUTURE PLANS: NONE AS YET



DEGROWTH

1. Decommunification
2. Relocalization
3. Economic Democracy
4. Sufficiency
5. Resilience
6. *Bien Vivre* (Good living)
7. Ecological Sustainability

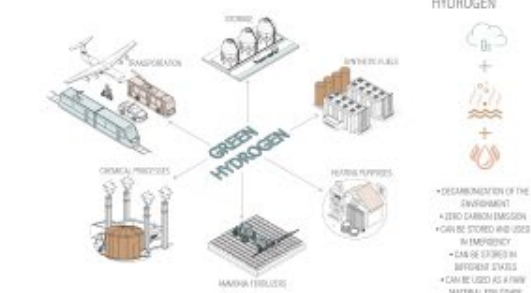


DECOMMISSIONED PLANTS



HYDROGEN

WHY DO WE NEED HYDROGEN?



GREEN HYDROGEN PRODUCTION



DUNKIRK: A HYDROGEN UNIVERSE



MIDTERMS Presentation Panel | size: 48' x 96'

SITE: DUNKIRK, NEW YORK STATE
SIZE OF TOWN: 4.6-SQ MILES
POPULATION: 11,000
PLANT OWNERSHIP: FRIG
PLANT SIZE: 96 ACRES (0.15 MILES)
FUTURE PLANS: NONE AS YET



FINALS Presentation Panel | size: 48' x 96'



CARBON x OYSTERS x CONCRETE

Transforming Athens in 2050

This project uses Processed Limestone and Oyster Shells, two synergistic byproducts of CO2 Removal processes and creates a new type of Materiality, Oyster-crete, that will transform Athens in 2050.

Grounded in two key strategies—Carbon Removal and Carbon Avoidance—the project addresses the city's deteriorating built environment through the creation of a new, quasi-“parasitic” facade that aims to enhance the structural integrity and thermal performance of the urban “Polykatoikia,” thereby extending its lifespan and transforming its architectural typology. New shared balconies facing towards the sun and the deliberation of the ground floor, providing access to the people to the inner slot of the Urban Block mean that Carbon Architecture is not only about Carbon Capture or Air Remediation, but also Accessibility.



LIMESTONE



OYSTER SHELLS



CONCRETE



RCA
[=Recycled Concrete Aggregate]



BASALT

SITE: Athens, Greece

SUBJECT: Material - Urban Design

TYPE: CO2 removal strategy - Adaptive
Re-Use

CO-LAB: Individual Work

DATE: Dec. 2024



CARBON x CONCRETE x SHELLS

TRANSFORMING ATHENS IN 2050

ATHENS (?):

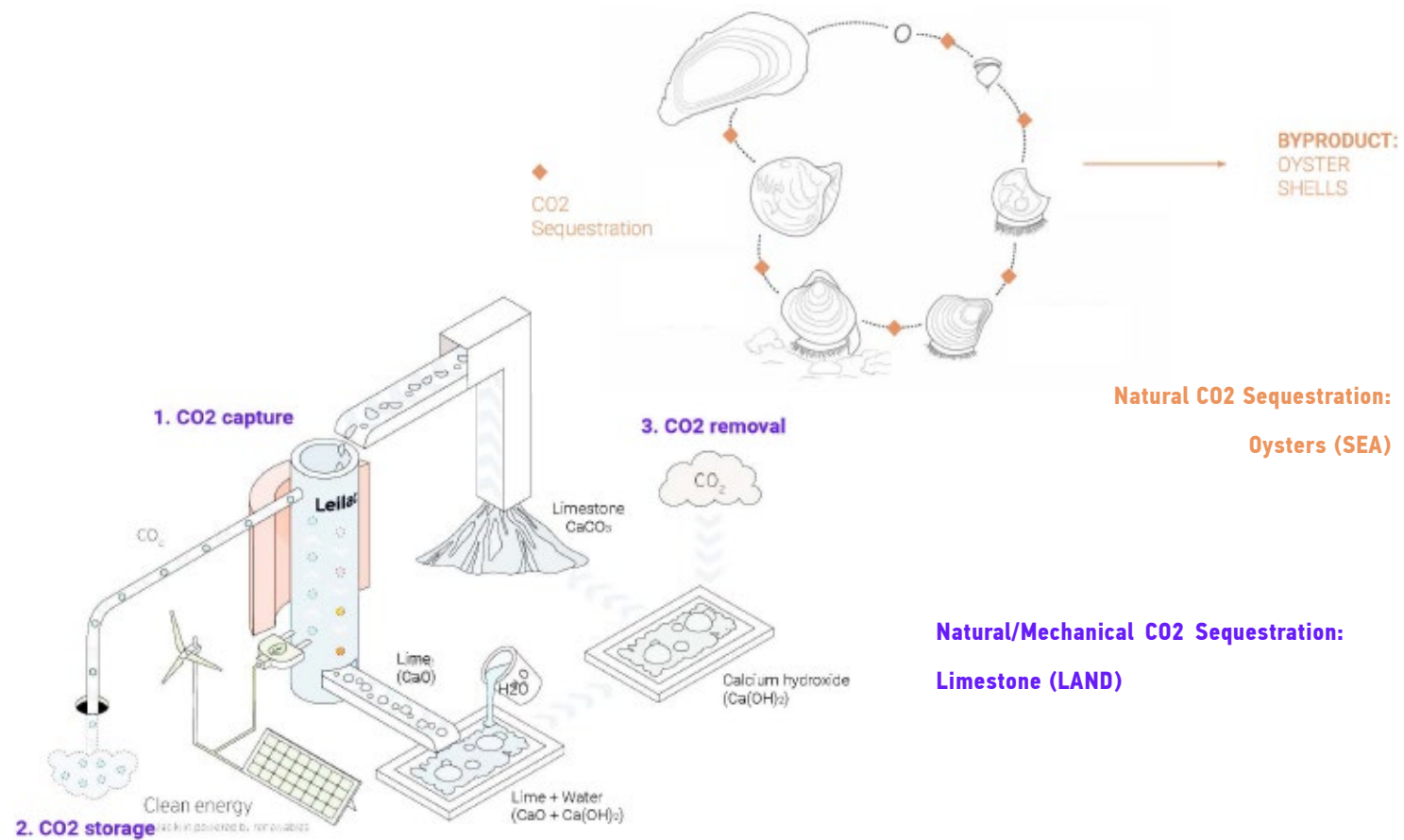
50 % of the built environment will have to be demolished

Concrete 's lifespan extends
up to 100 years



SOURCE: Personal file





One 6-stories "Polykatoikia"

1,300 tonnes of concrete
156 tonnes of cement
0.9 tons CO₂ / ton of cement

= ~ 140 tonnes

**AVOIDED
CARBON**

One Urban Block

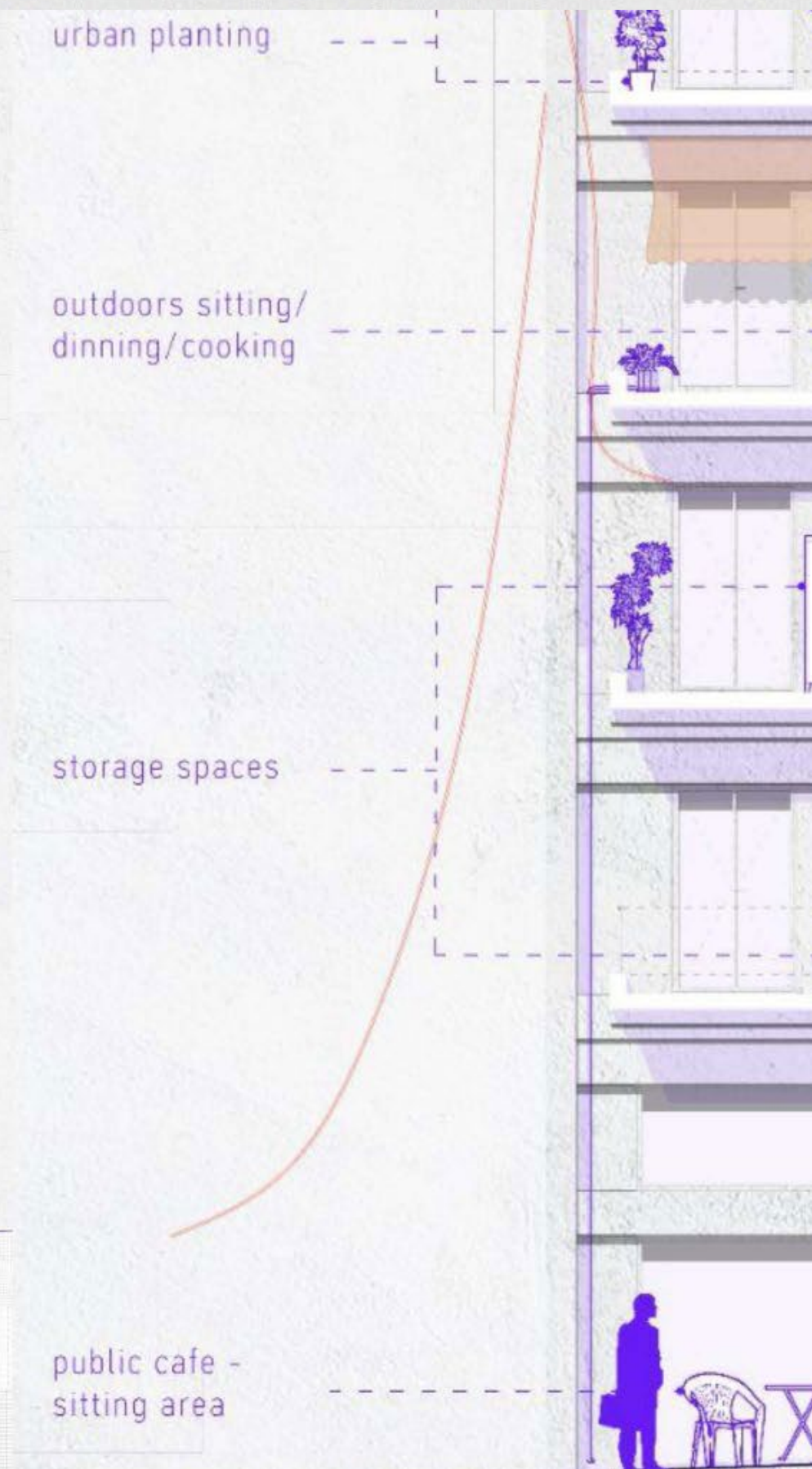
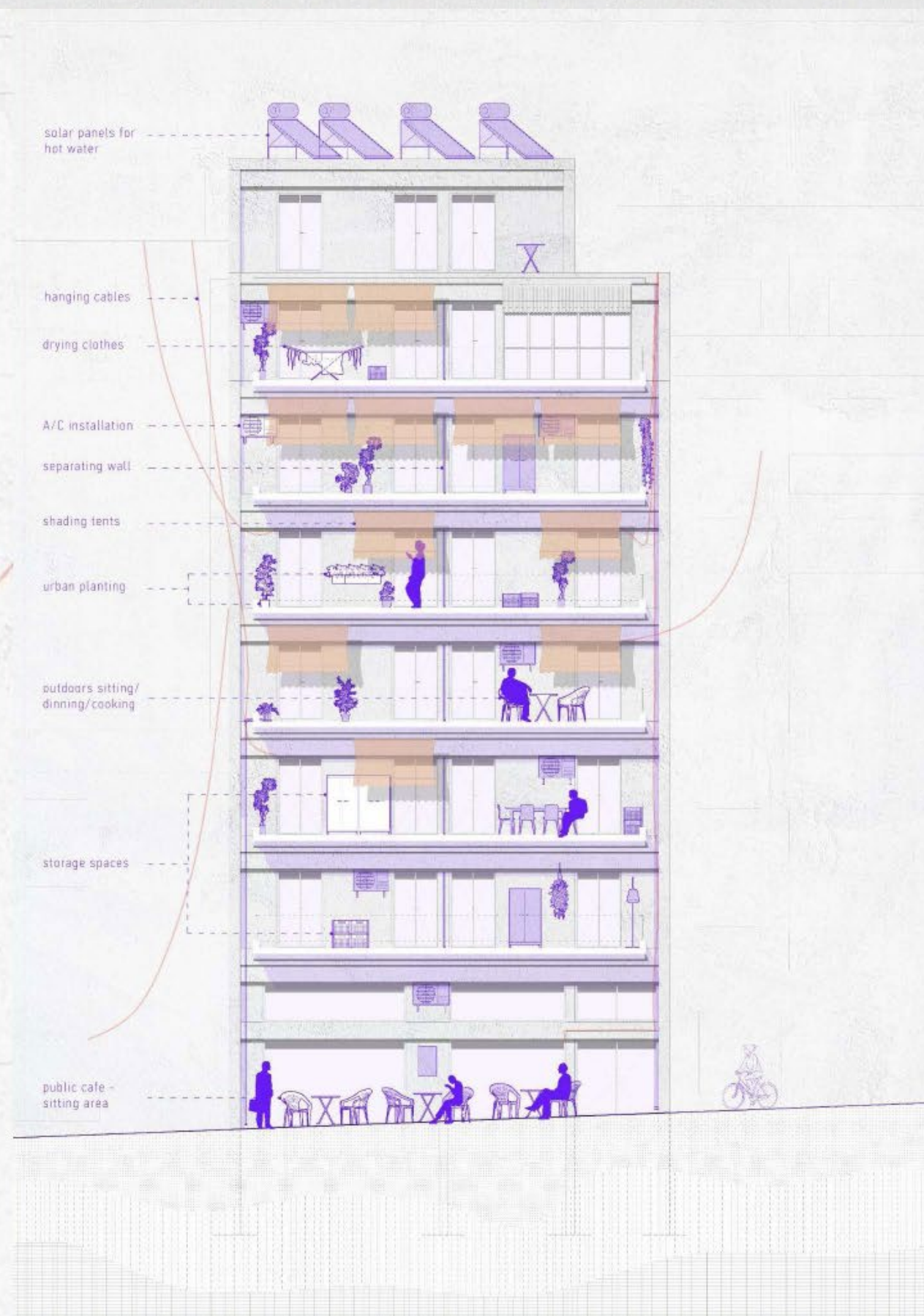
~ 7 "Polykatoikias"
x 140 tonnes CO₂/ polykatoikia

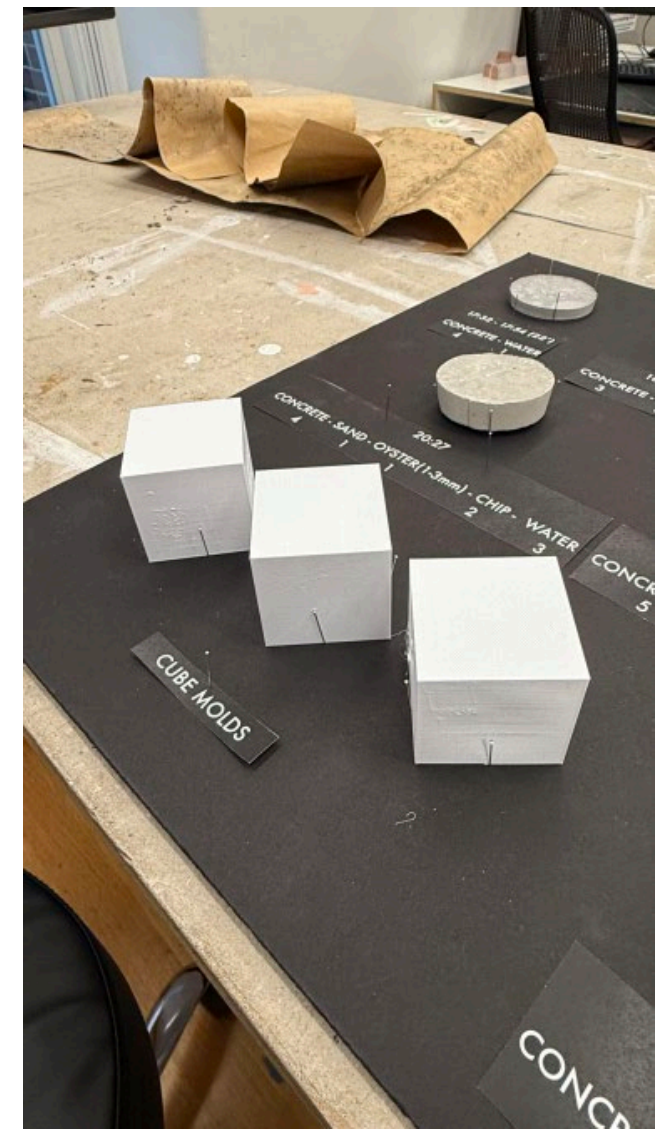
= 980 tonnes

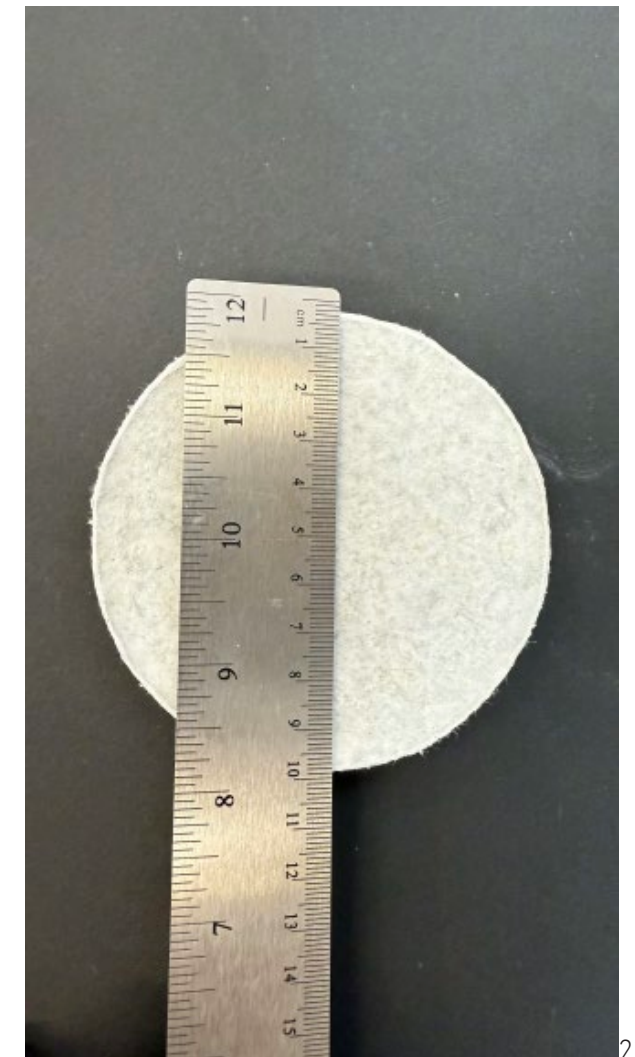
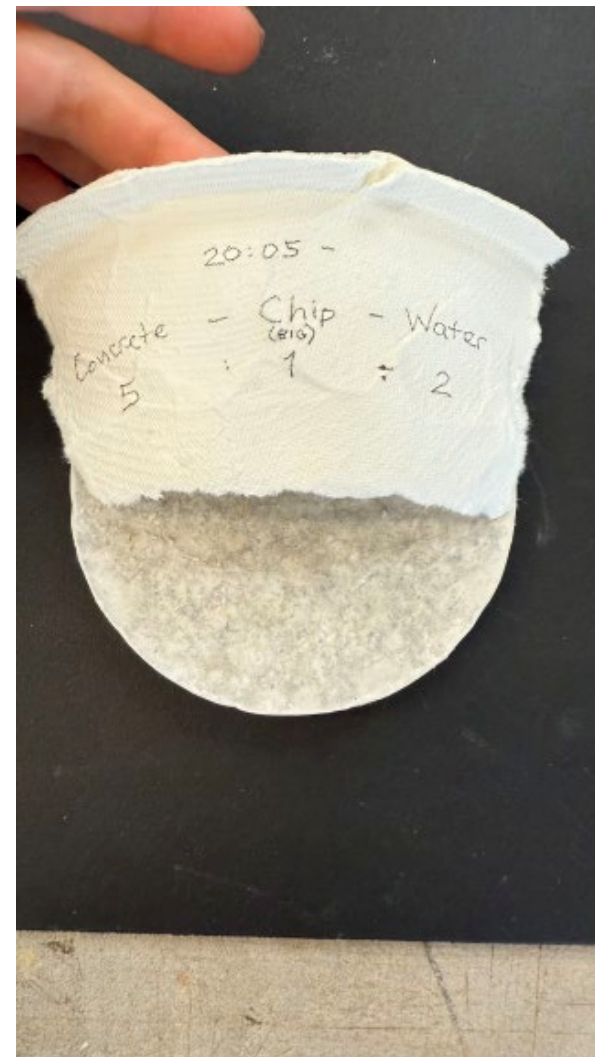
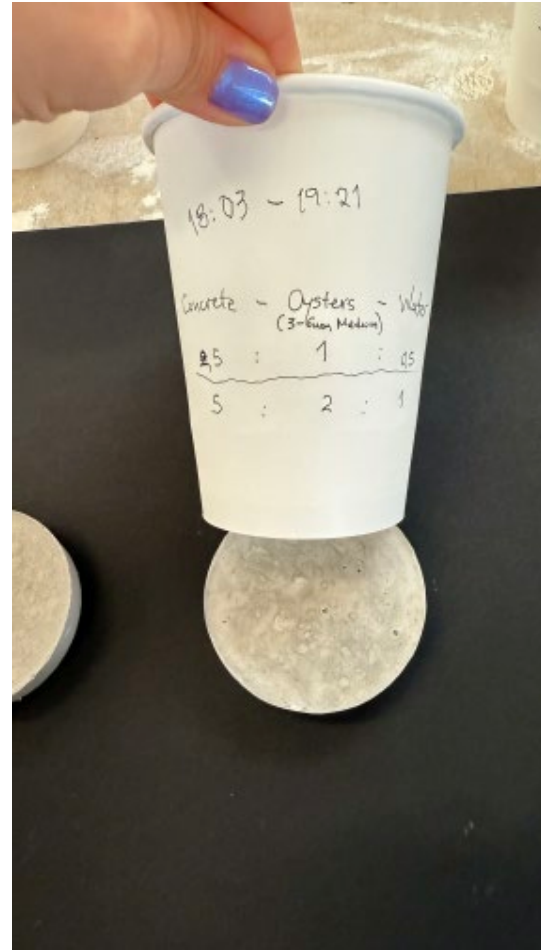
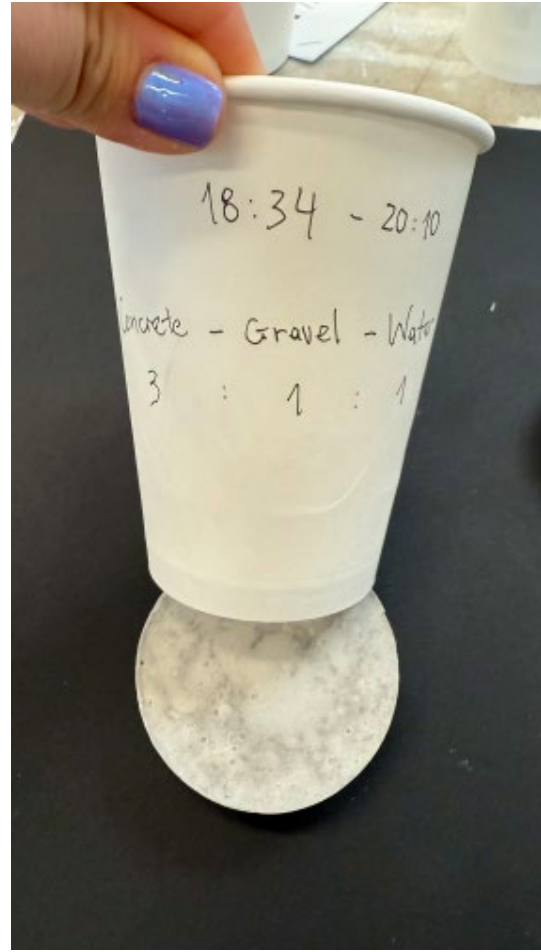
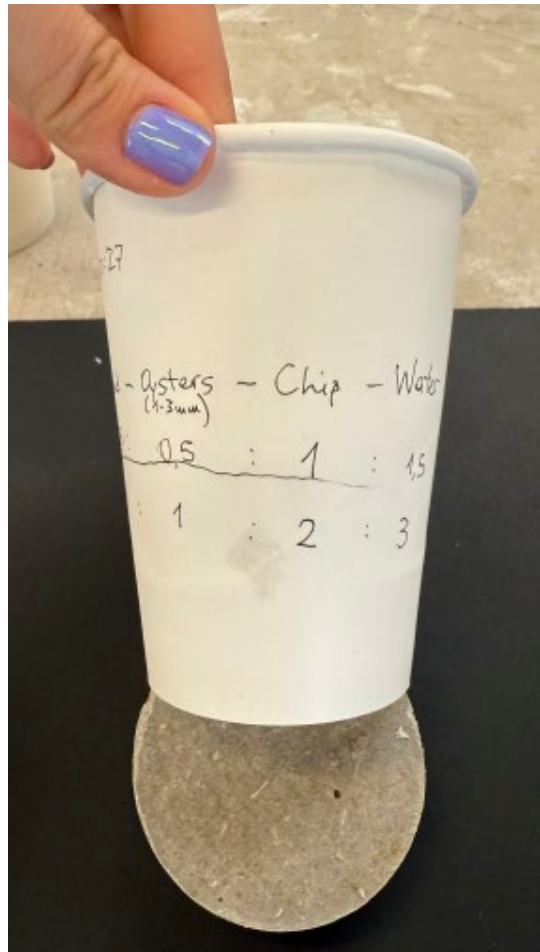
**AVOIDED
CARBON**

ATHENS ?

**AVOIDED
CARBON**



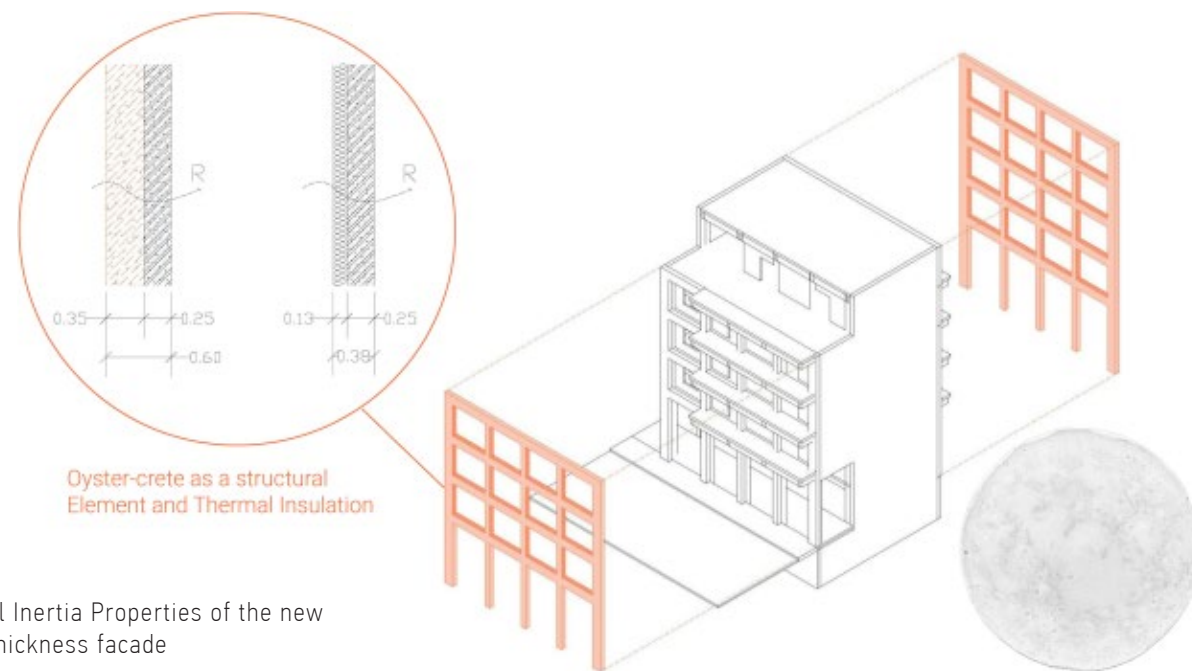




Facade Experimentations with AI

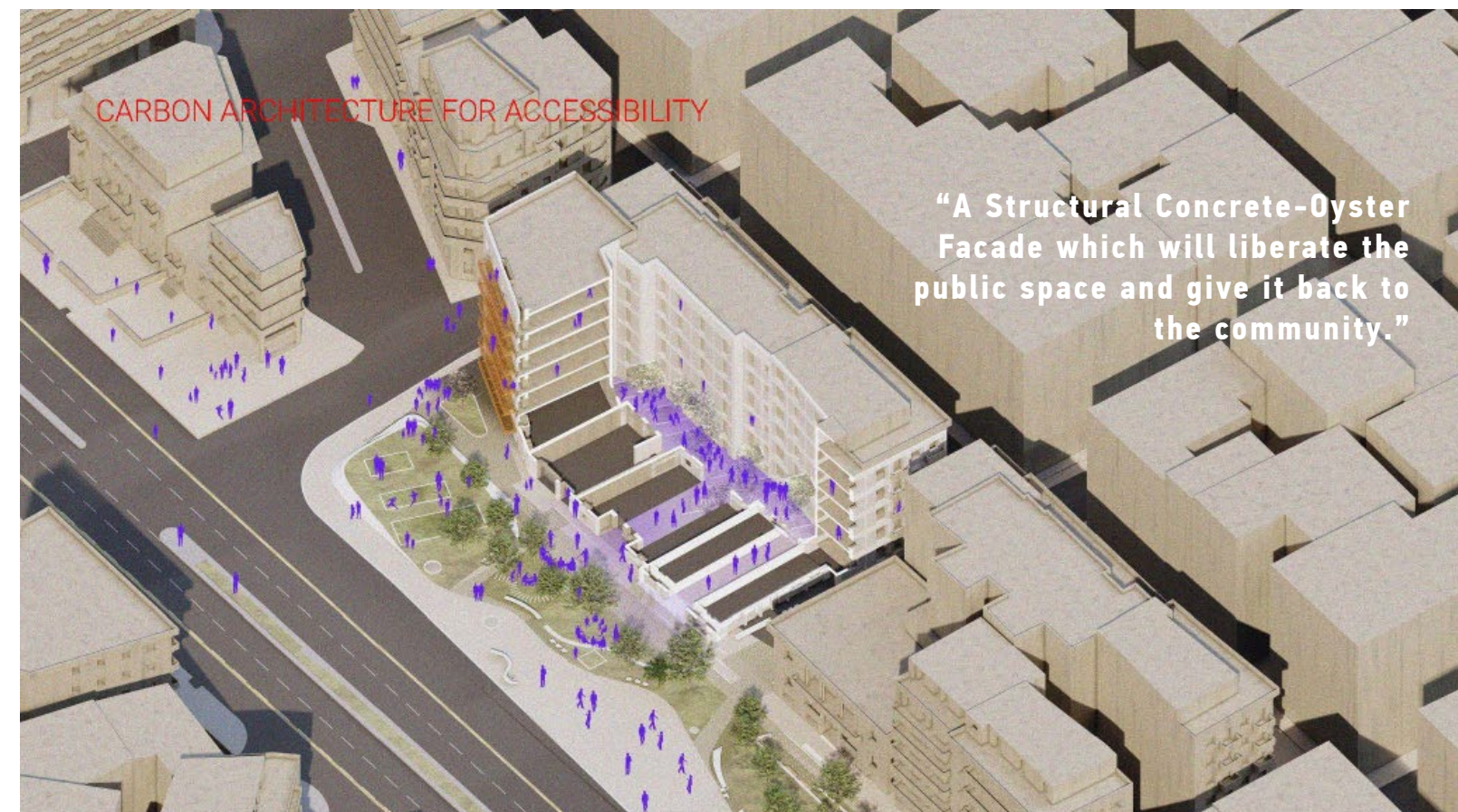
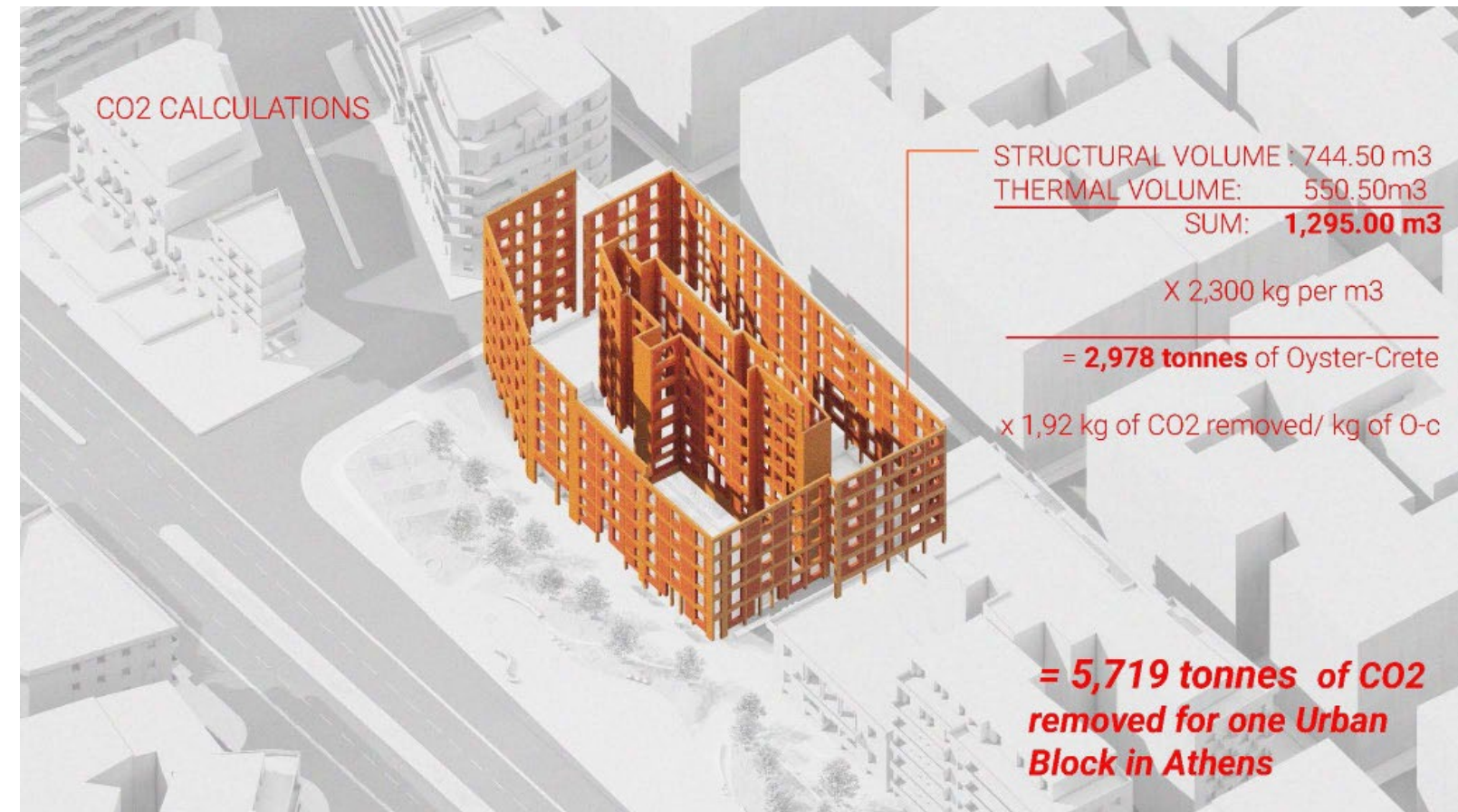


The architectural application of oyster-crete aims to redefine the typology of the greek residential building called "polykatoikia" by transforming its balconies into semi-public, shared spaces, vital for Athens' social fabric. This project advocates for material locality, environmental responsiveness, and a sustainable approach to urban resilience, illustrating how architectural innovation can contribute to the global carbon challenge.

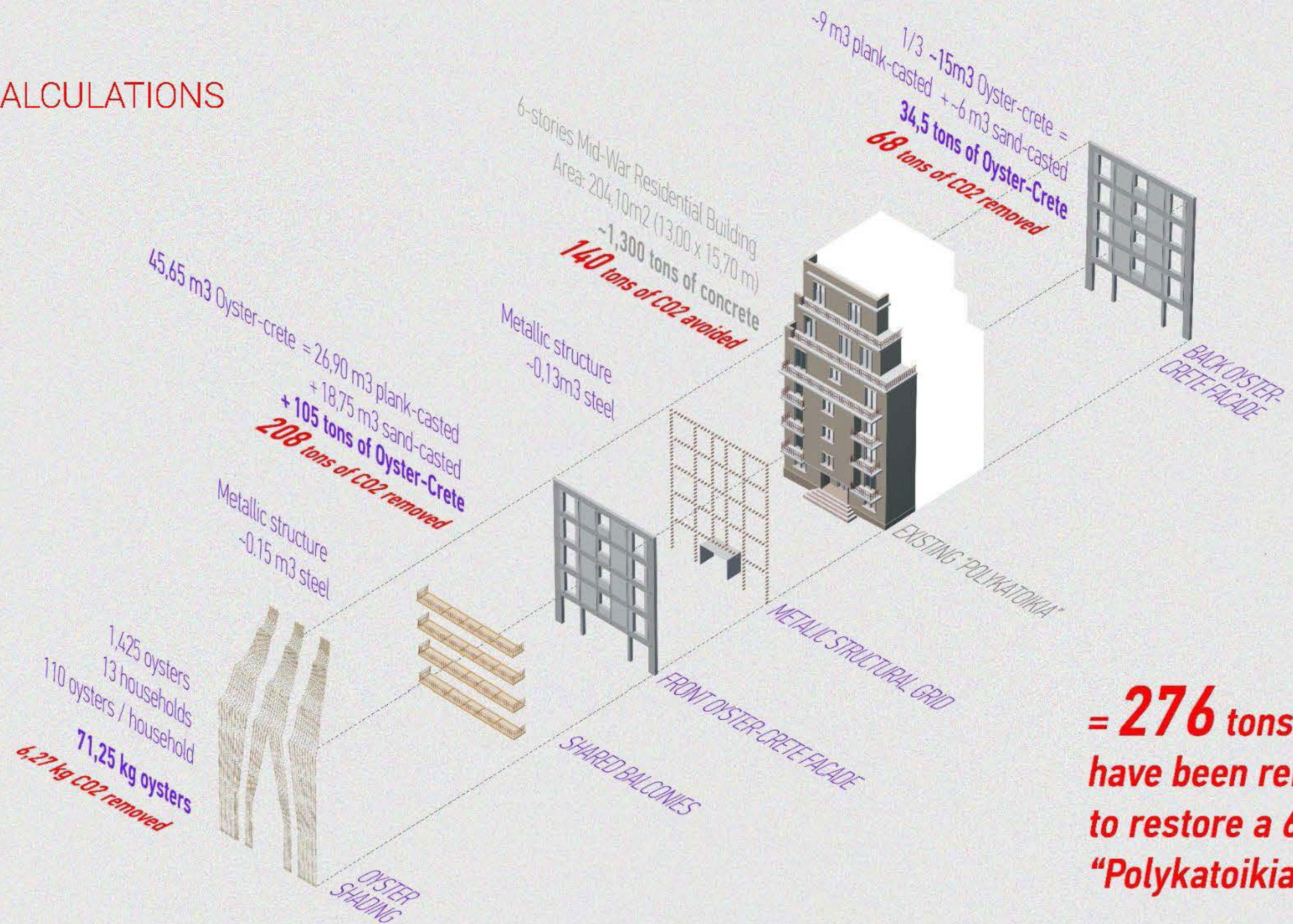


Thermal Inertia Properties of the new 35cm-thickness facade

A core principle of Scaled CO2 is the reduction of global concrete production—currently at 30 gigatonnes annually—by substituting traditional concrete with this innovative material that can sequester CO2. Oyster-crete adheres to a 3:1 ratio: for every three kilograms of material produced, one kilogram of CO2 is removed. This is achieved by capturing CO2 both in limestone processing, as demonstrated by companies like Heirloom Carbon, and through the natural CO2-capturing process of oyster shell formation. The captured CO2 is stored within the material itself, integrating it into the urban landscape.



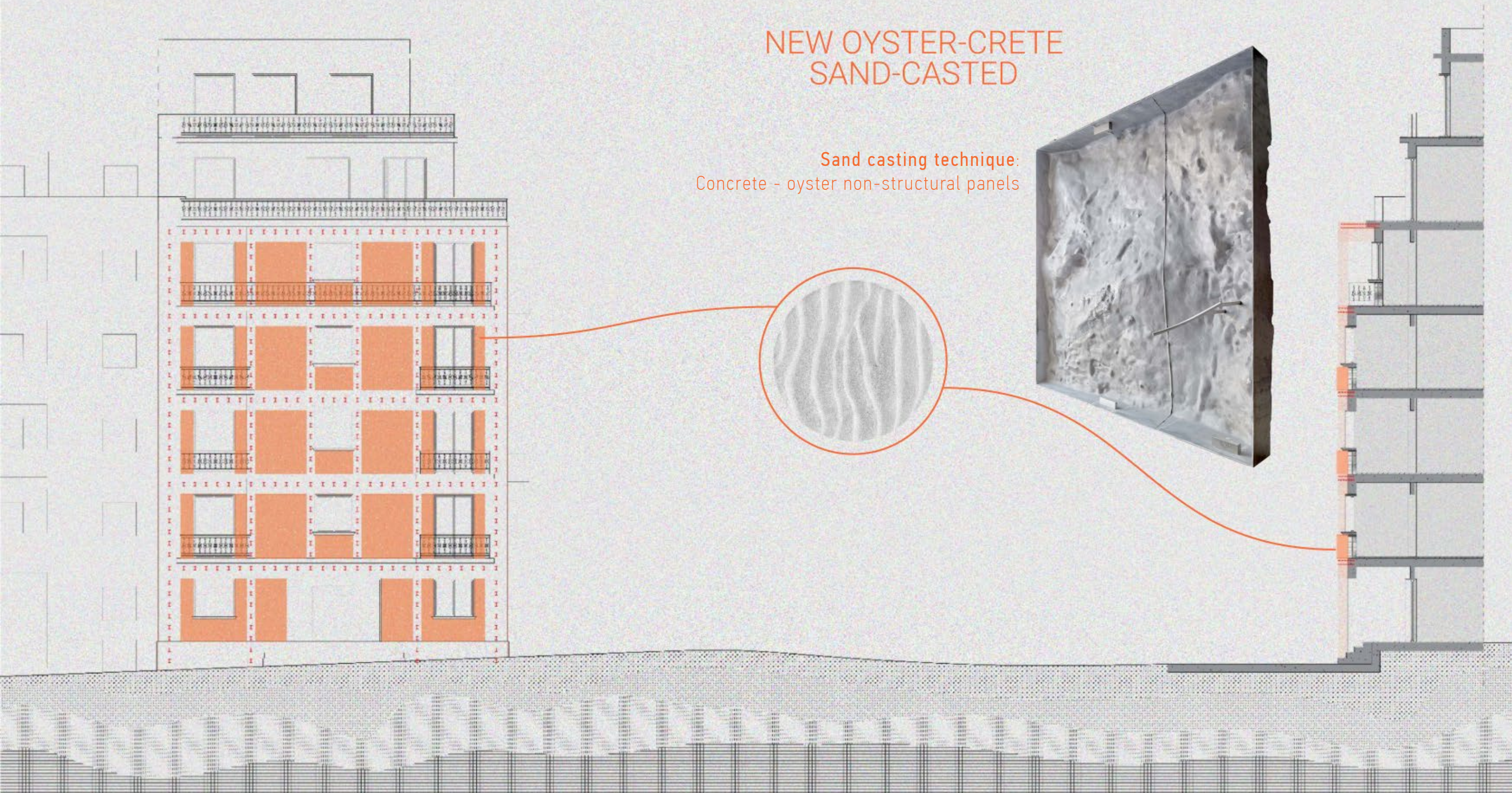
CO2 CALCULATIONS



= 276 tons of CO₂ will have been removed to restore a 6-stories "Polykatoikia" in Athens

NEW OYSTER-CRETE SAND-CASTED

Sand casting technique:
Concrete - oyster non-structural panels



MIDTERMS Presentation Panel | size: 48' x 96'

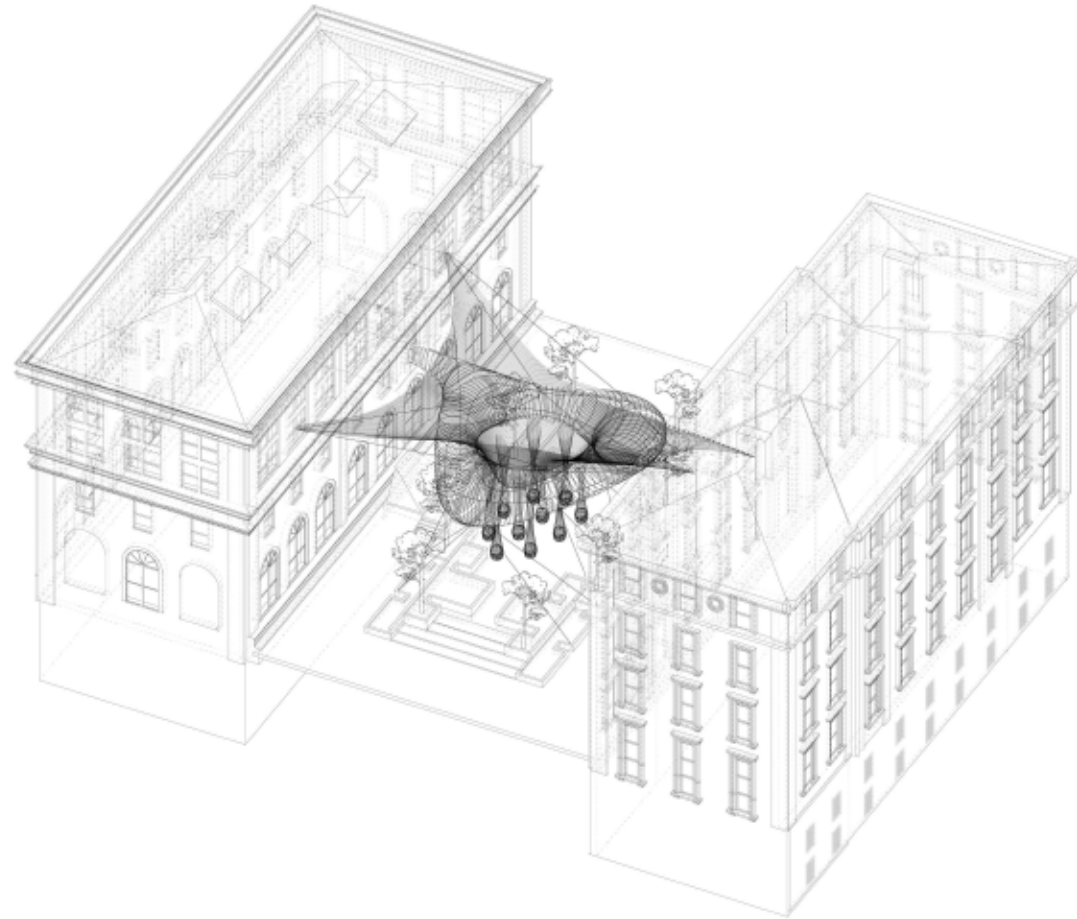
FINALS Presentation Panel | size: 48' x 96'



"THE CLOUD"

MAKING AVERY PLAZA OPEN AND ACCESSIBLE TO ALL

XXX



PLANNING AND EXECUTION
OF EVENTS:

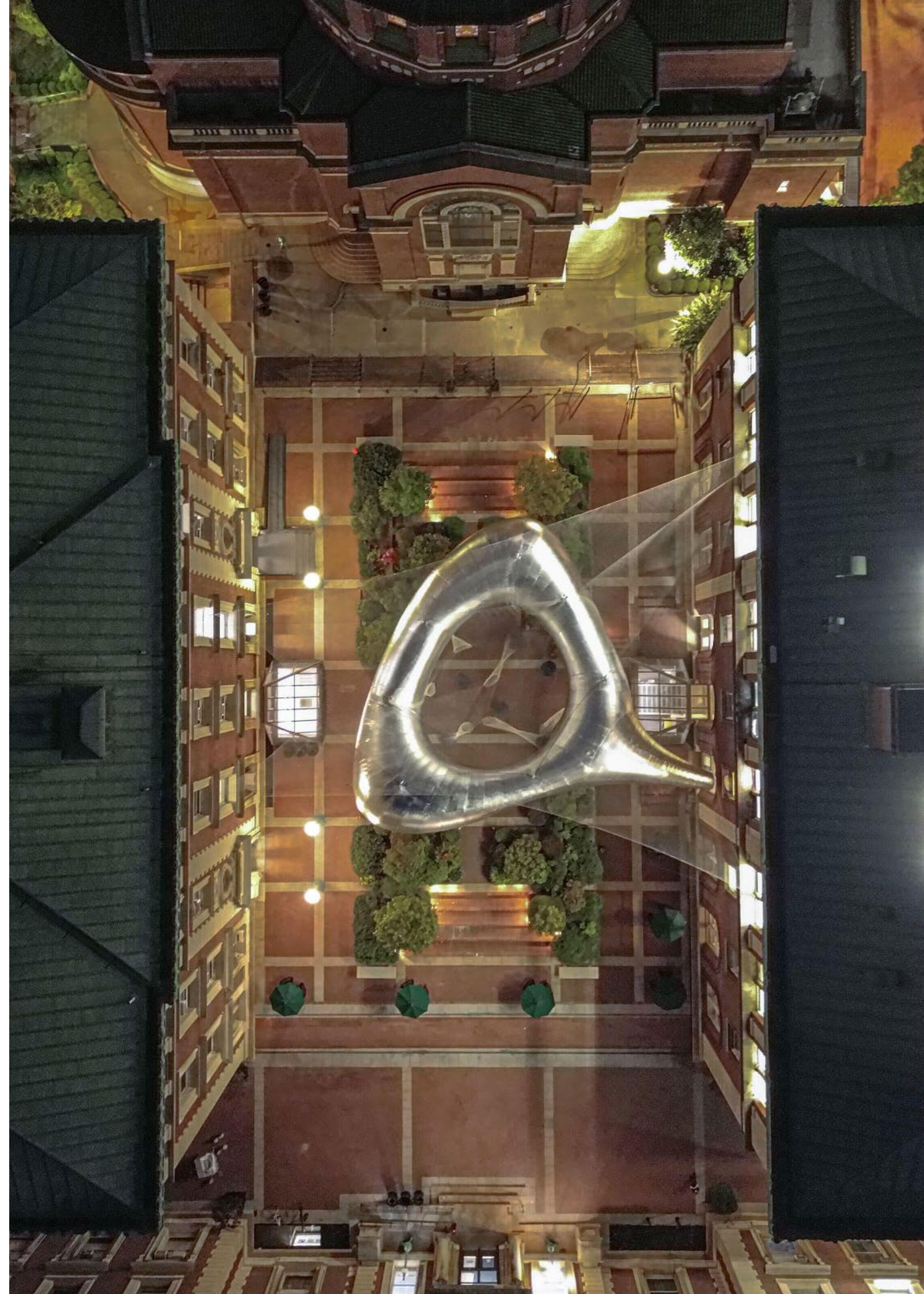
- _GSAPP OPEN HOUSE
- _GSAPP MIDTERMS x3
- _MARK WIGLEY LECTURE
- _JULIEN CONCERT
- _YOGA CLASS
- _GSAPP CLOUD PARTY

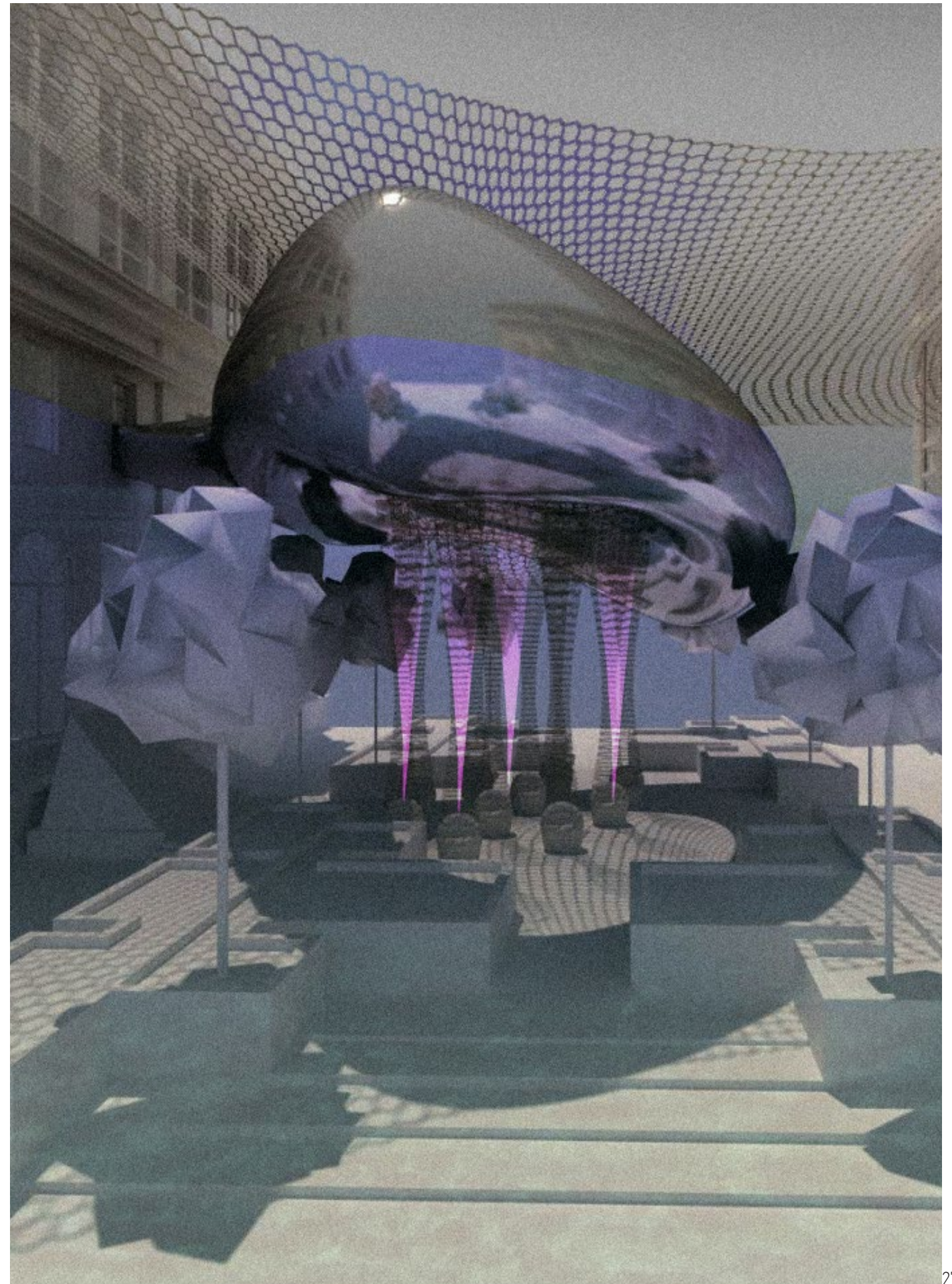
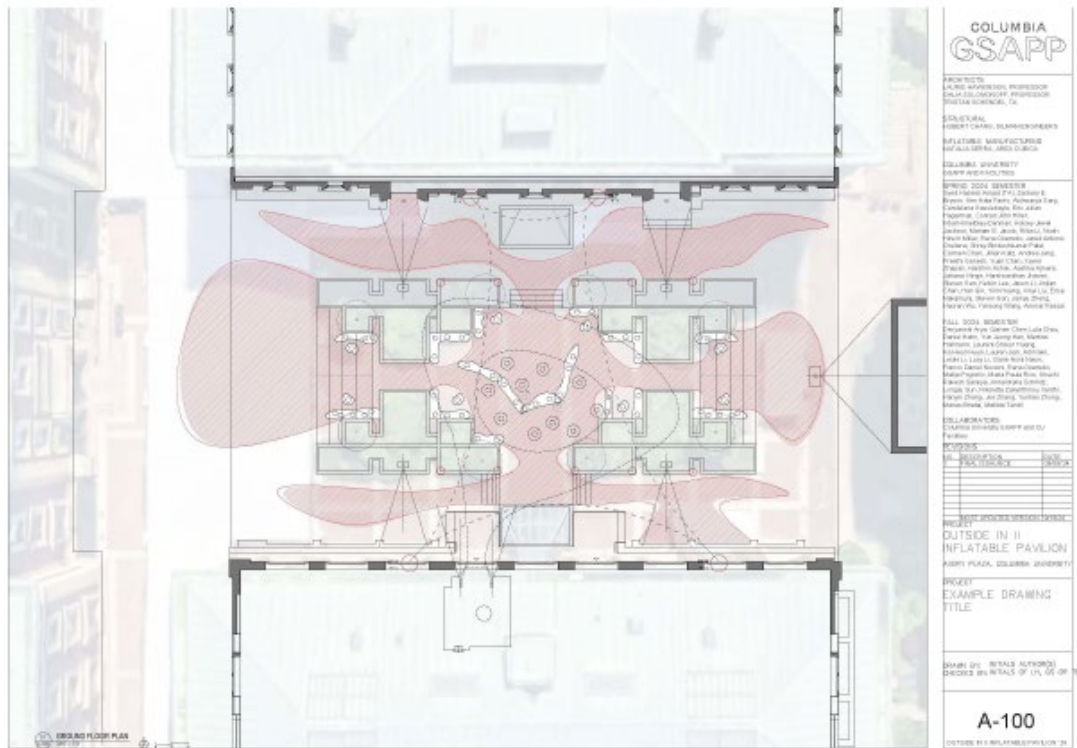
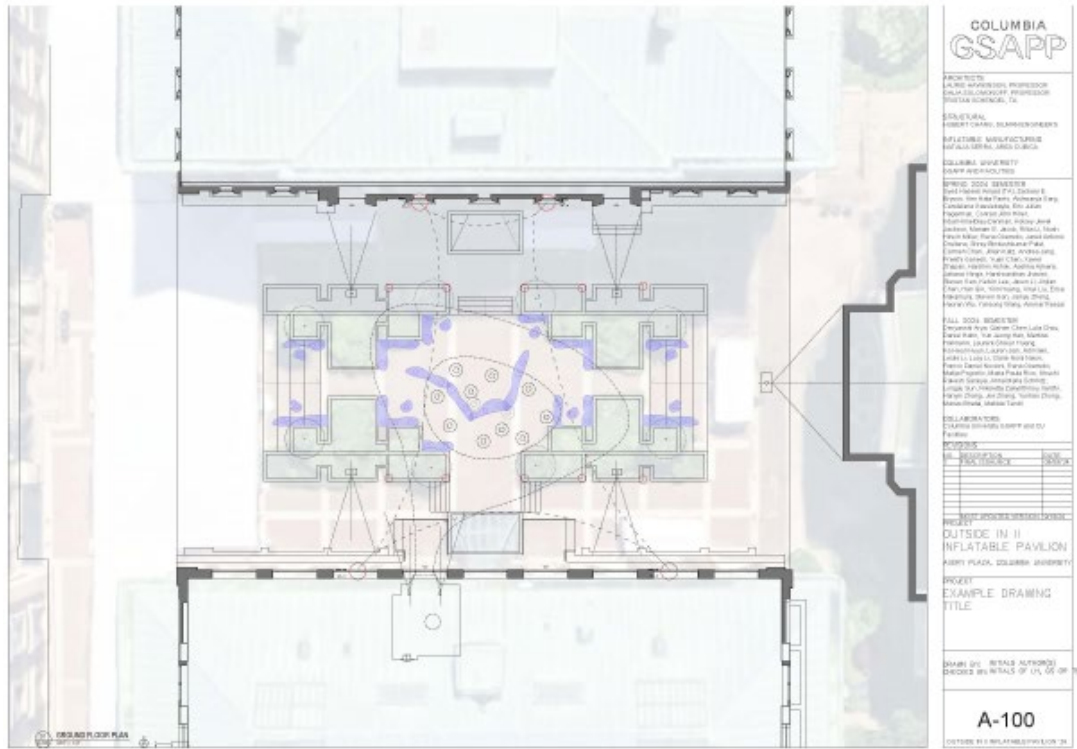
FURNITURE DESIGN &
CONSTRUCTION

ARTISTIC CURATION

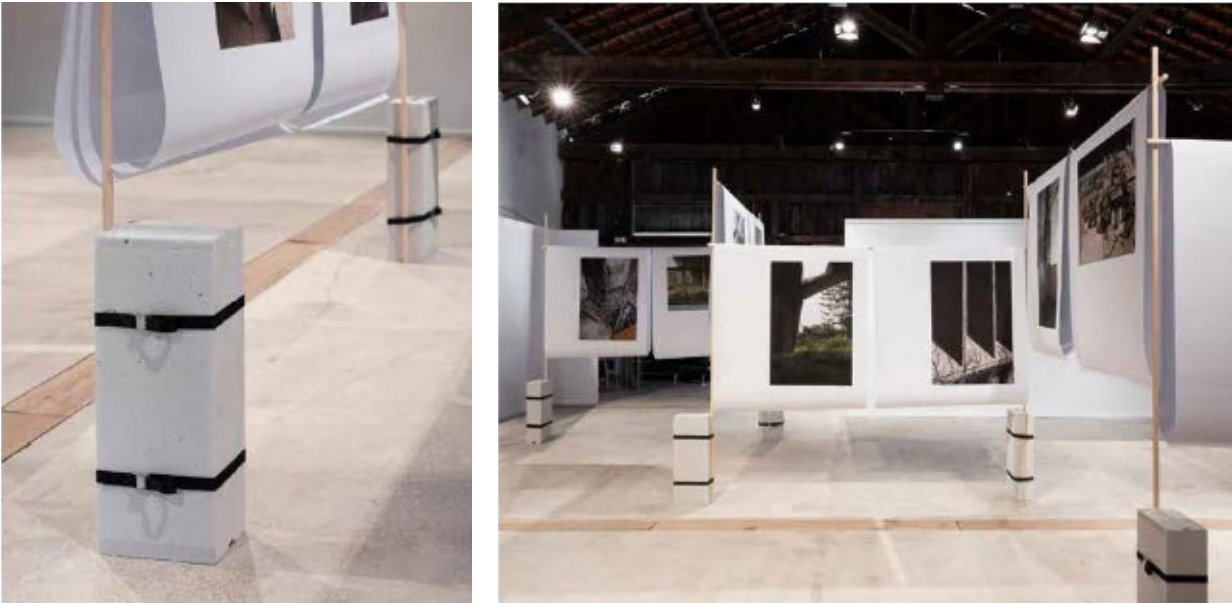
GSAPP Elective: INSIDE-OUT PROJECT II

Elective Instructors: Laurie Hawkinson, Galia Solomonoff, Tristan Schendel (T.A.)





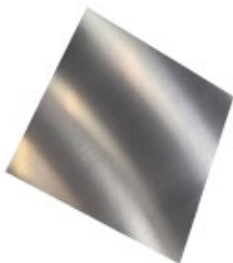
FURNITURE DESIGN & CON-
STRUCTION



BLACK STRAPS



CONCRETE BLOCKS



METAL SHEETS



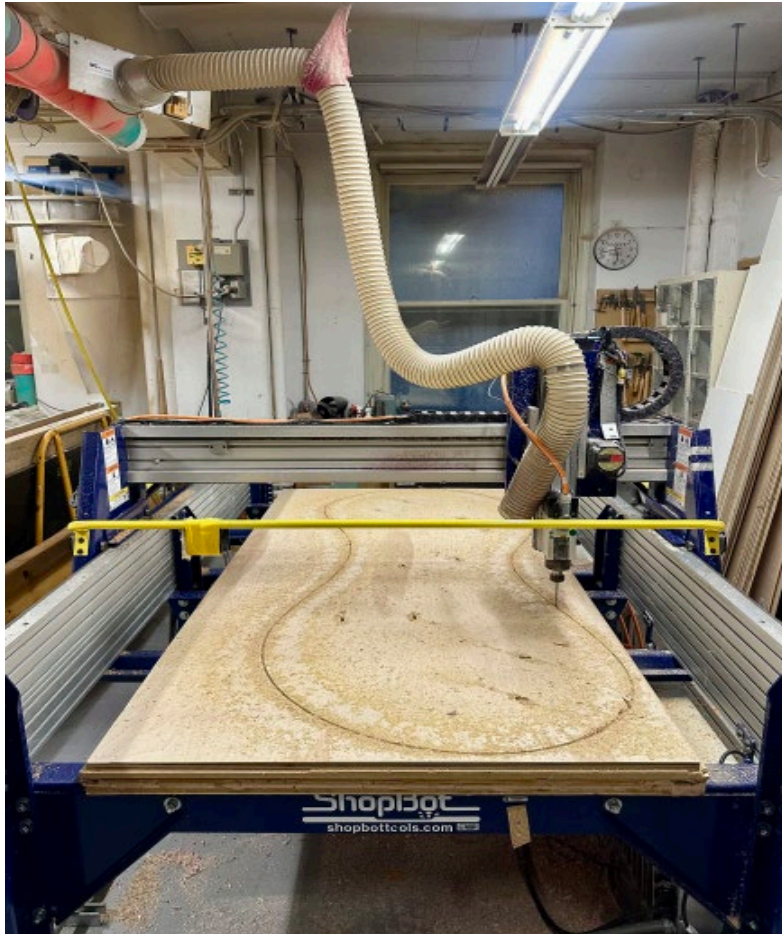
PLYWOOD

The concept behind this exhibition design offers a flexible, efficient, and adaptable solution for showcasing midterm projects in an academic or professional setting. Here's a description of the idea:

MODULAR AND VERSATILE DESIGN

The exhibition system is based on a series of easily buildable and demountable components, designed to serve as a versatile foundation for displaying various types of work. This modular approach allows for quick setup, reconfiguration, and dismantling, making it ideal for temporary exhibitions or frequently changing displays.





KEY COMPONENTS

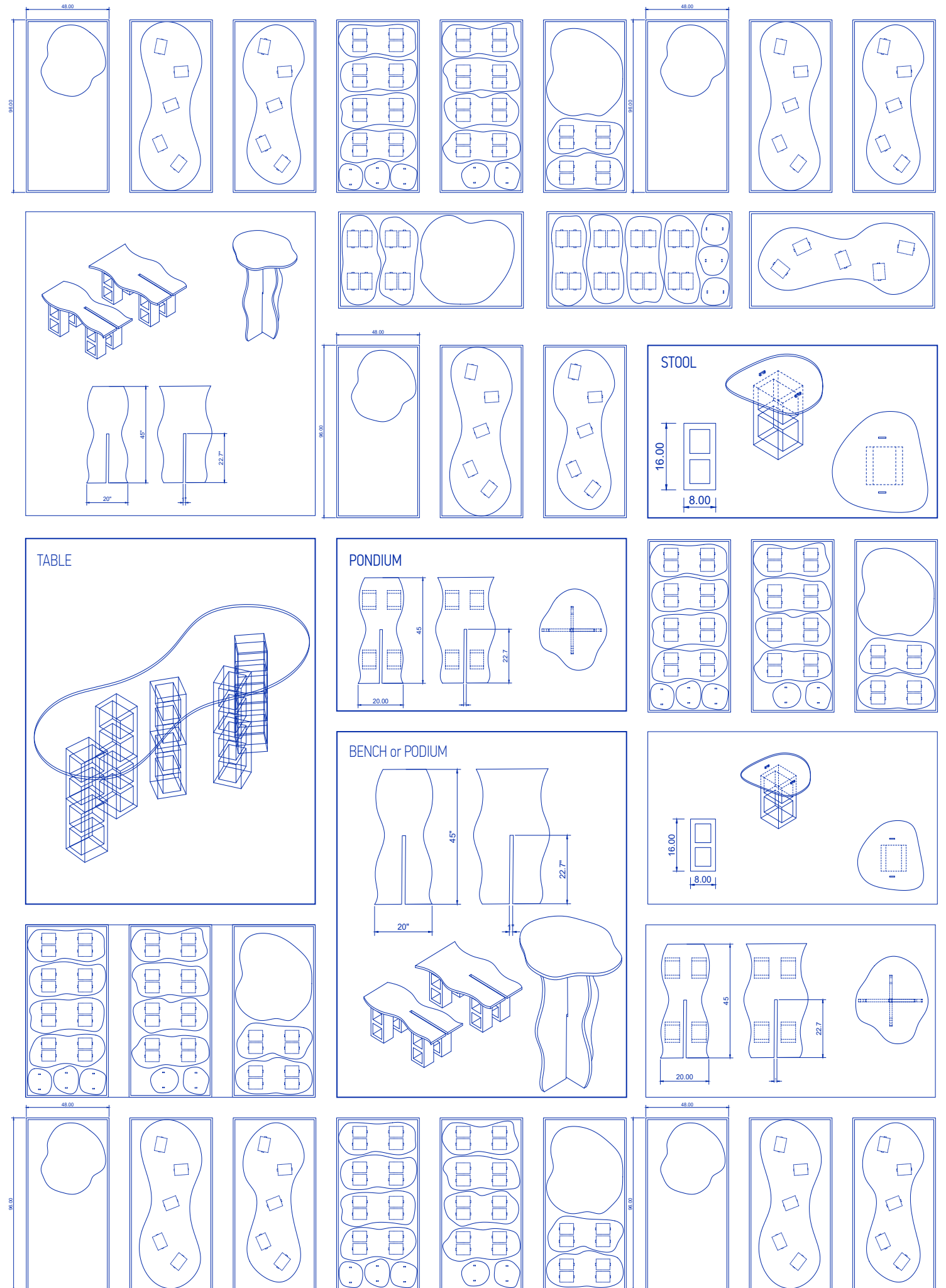
Side Tables and Tables: These serve as display surfaces for three-dimensional objects, models, or smaller-scale works. They can be arranged in different configurations to suit the space and exhibition needs.

Pin-up Boards: Vertical surfaces are incorporated for displaying two-dimensional works such as drawings, posters, or photographs. These can be free-standing or attached to the modular structure.

Structural Framework: A lightweight, possibly tubular or flat-pack system that can be easily assembled without specialized tools.

ADAPTABILITY

- Gallery-style
- Studio-style
- Interactive



MONDAY 28st of October 2024
7 pm

Following Monday studios, the inflatable pavilion "Cloud" transformed into a vibrant gathering spot for the GSAPP community during a self-organized party. Under the glowing curves of the installation, students came together to celebrate creativity and camaraderie.

The festivities featured two talented GSAPP DJs: Jennifer Marcos (MArch), who filled the pavilion with electronic beats from 7–9 PM, and Baek Sungjun (MSAAD), who kept the energy alive from 9–10 PM. A dedicated team of students carried 30 pizzas and 35 two-liter bottles of beverages to fuel the night, creating a feast to match the lively atmosphere.

With music, food, and connection, the "Cloud" Party embodied the collaborative and playful spirit of GSAPP, turning an architectural experiment into an unforgettable celebration!



INVITING MARK WIGLEY and moderating for his lecture entitled "INSIDE THE OUTSIDE"





MARK WIGLEY LECTURE

MONDAY 21st of October 2024
3:30 pm

Under the billowing curves of the inflatable pavilion "Cloud," Dean Emeritus Mark Wigley delivered a captivating lecture titled "INSIDE THE OUTSIDE," introduced and moderated by MSAAD students Nikoletta Zakyntinou-Xanthi and Matija Pogorić.

With his signature wit, Wigley explored the provocative idea that "we are all pipes," emphasizing the interconnectedness of systems, flows, and architectural spaces. He argued that architecture is not merely about enclosing space but about channeling and shaping flows of energy, air, and life itself.

Using "Cloud" as both a literal and metaphorical backdrop, Wigley reflected on inflatable structures' ability to embody a continuous exchange between inside and outside, challenging attendees to rethink their designs and roles as architects.



GSAPP OPEN HOUSE

MONDAY 21st of October 2024
All Day

The in-person Open House for Prospective Students was held on Monday, October 21, 2024, with campus and building tours, meetings with the Dean, Program Directors, faculty, and students, open courses and design studio reviews, lectures, receptions, and more.

People from all over the world came to attend the OPEN HOUSE of Columbia GSAPP.





CULTURAL DATA-GEOLOGIES

A GEOLOGICAL TRANCE CLUB - in Solfatara Crater

This project explores the volcanic landscapes of Vesuvius and the Phlegraean Fields as sites of intense geological signaling, where Earth's dynamic systems intersect with human perception and technological mediation. Investigating the dual nature of volcanoes—as both destructive and preservative forces—the project examines how these bodies act as thresholds between deep time and human time, subterranean movement and surface inhabitation.

Provoking questions about our modern relationship with geology, the project calls for a re-conceptualization of how we communicate with the Earth. As an architectural response, it proposes a network of impermanent structures situated in permanent geological hotspots. These interventions mediate between the technical, physical, and metaphysical dimensions of volcanic activity—rendering invisible signals into spatial experience. They invite a new form of geological architecture: one that transcends spectacle, integrates data into design, and re-imagines our planetary co-existence through a deeper dialogue with Earth's inner life.

Through a detailed catalog of contemporary monitoring instruments—ranging from analog seismometers and thermal cameras to InSAR satellites and micro-barometers—the project constructs a hyperspectral identity of Vesuvius as a living geological entity. These technologies decode the volcano's silent language of tremors, heat, gas, and deformation, transforming raw data into systems of early warning, spatial mapping, and civil protection.



SITE: Solfatara Crater, Napoli, Italy

SUBJECT: Architecture - Media - Technology

TYPE: Architectural Project

CO-LAB: Individual Work

DATE: On-going



Geology is signaling!~

Our relationship with Geology and Volcanoes is mediated through

technological data,

numbers,

!-

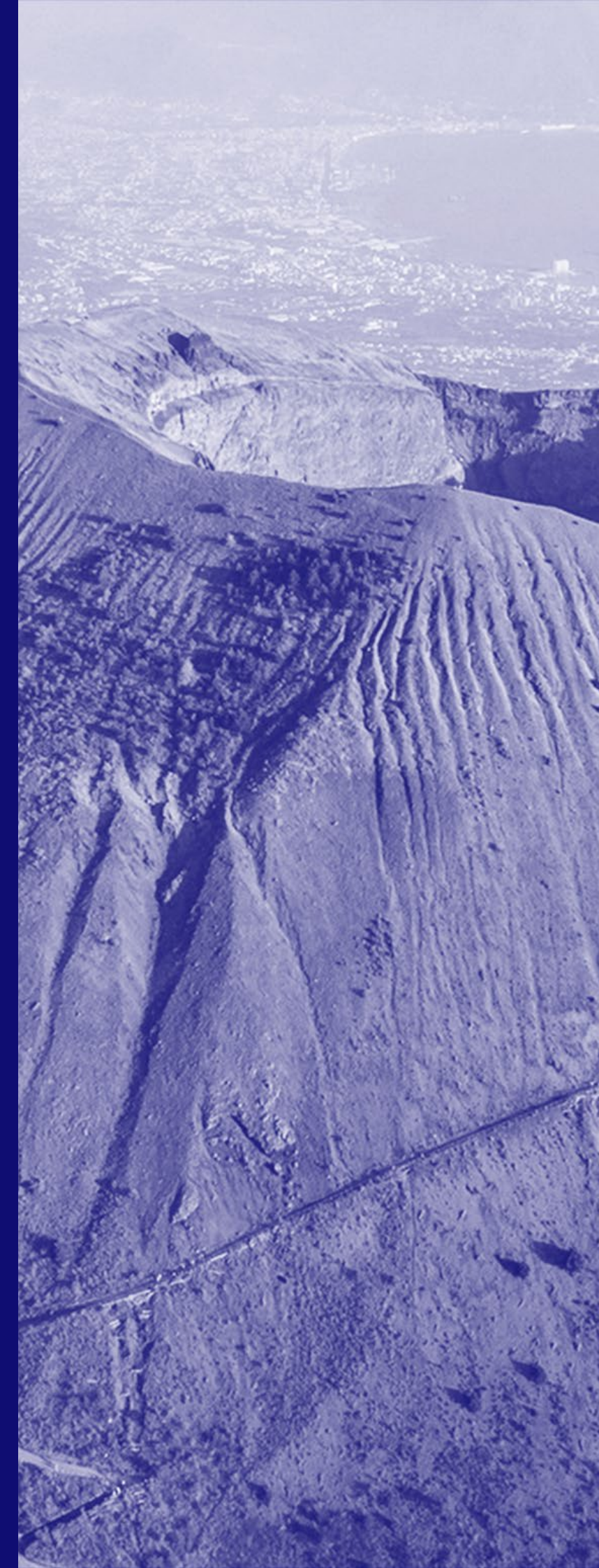
incomprehensible graphs

(

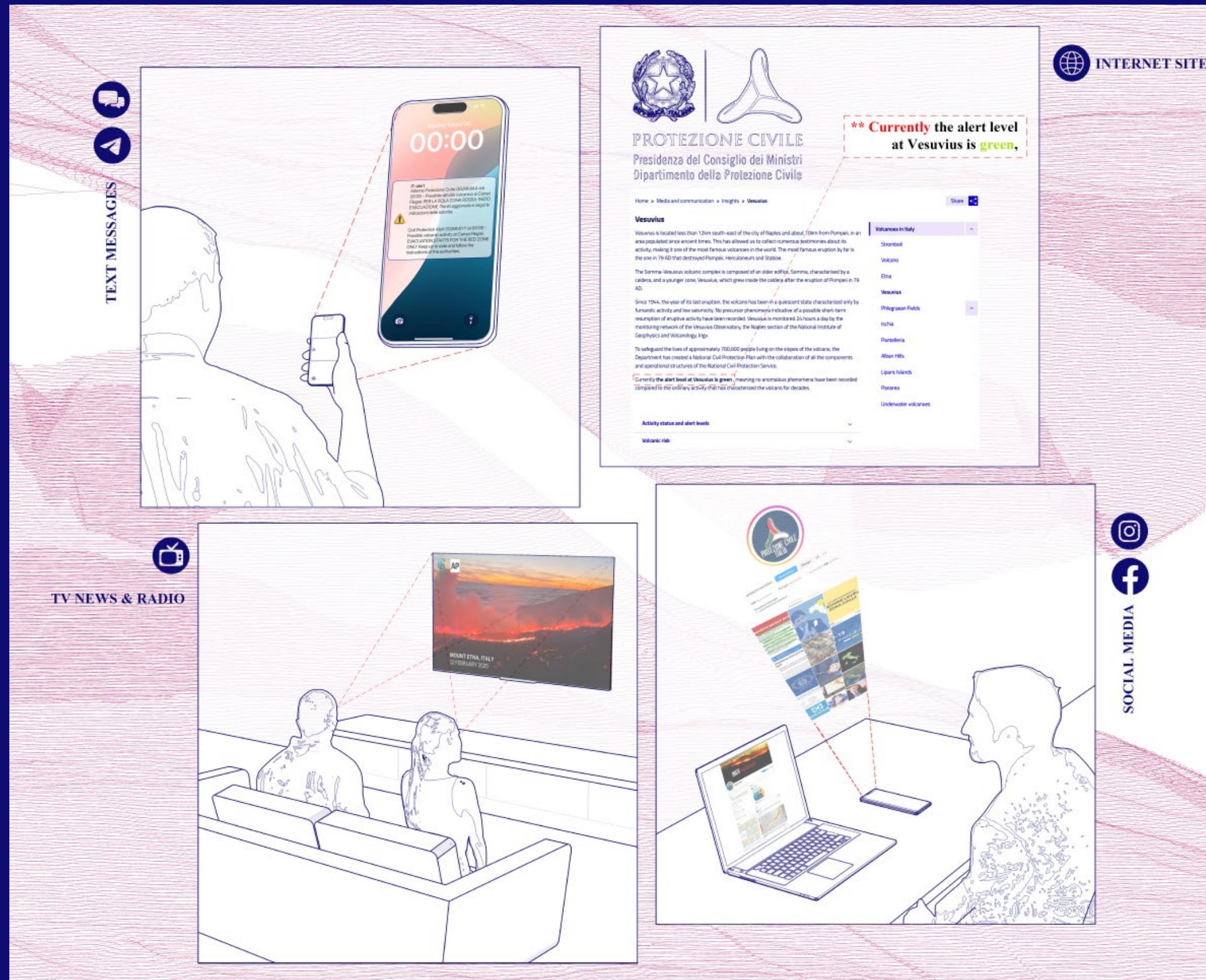
and

signals.~

And the only aim for the development of this technological culture is to predict eruptions,
shaping a culture of protection and avoidance around this **active soma of geology.**



This is Geology and geological data communicated to humans through technological media



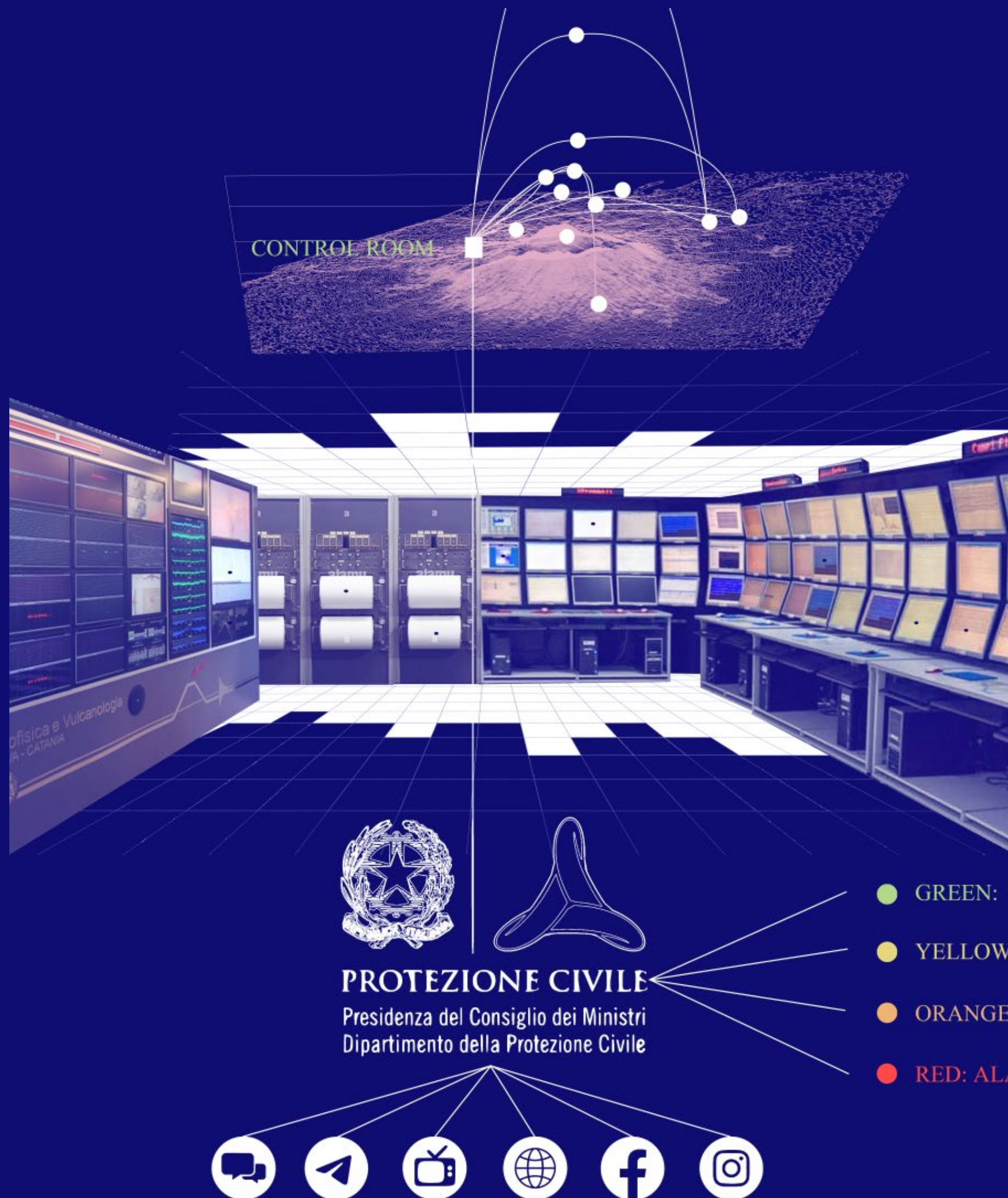
0. GEOLOGY

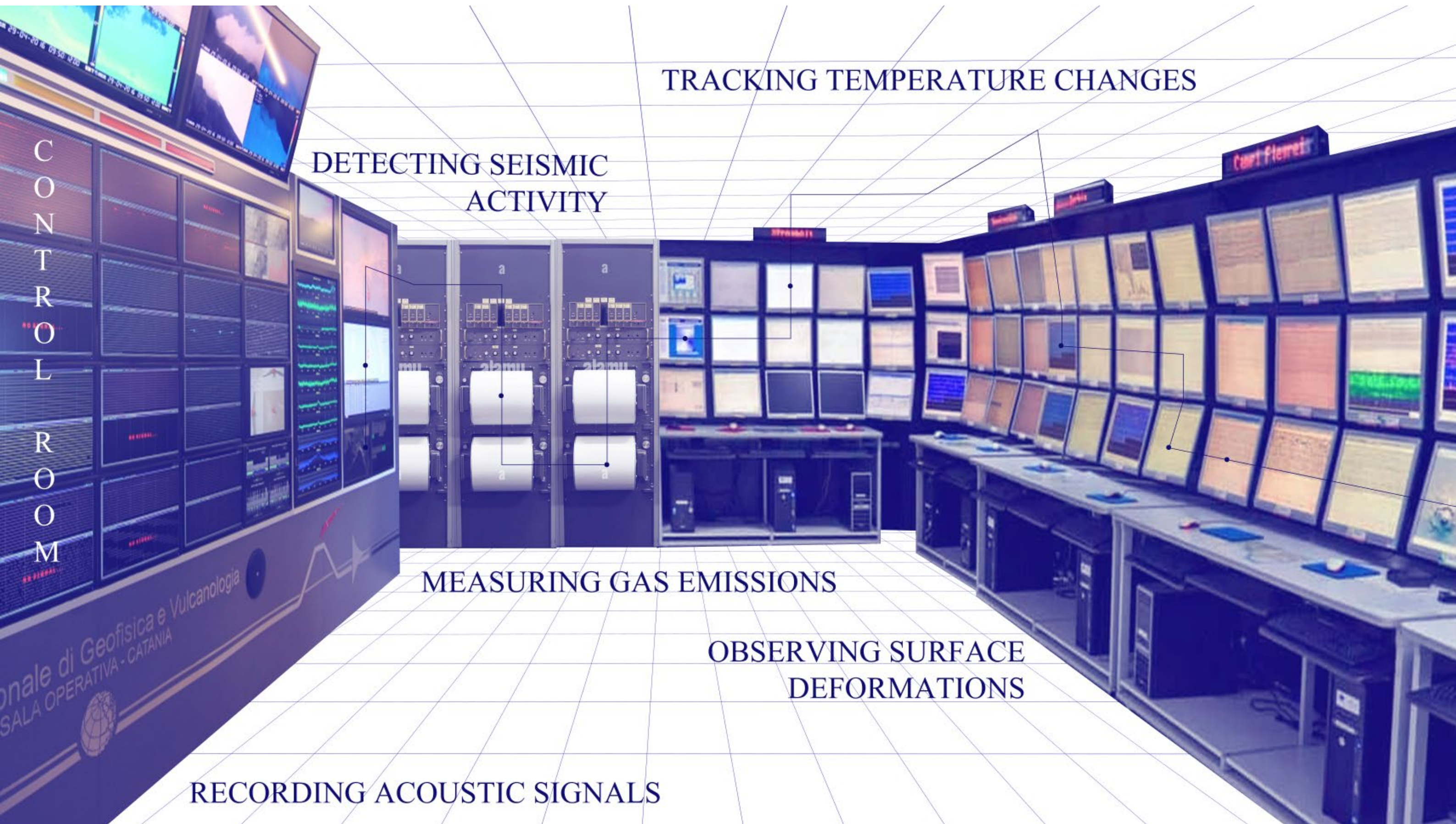
1. MONITORS

2. CONTROL ROOM

3. CIVIL PROTECTION

4. PEOPLE





TRACKING TEMPERATURE CHANGES

DETECTING SEISMIC
ACTIVITY

MEASURING GAS EMISSIONS

OBSERVING SURFACE
DEFORMATIONS

RECORDING ACOUSTIC SIGNALS

CATALOGUE_page 1

Geology, as a primordial mass body, pulses with a deep, animate intensity—a slow, tectonic vitality that resists the illusion of inertness. It is a vibrant matter where the lithic world becomes more than backdrop or resource; it becomes a co-actor, a sentient archive of planetary becoming.

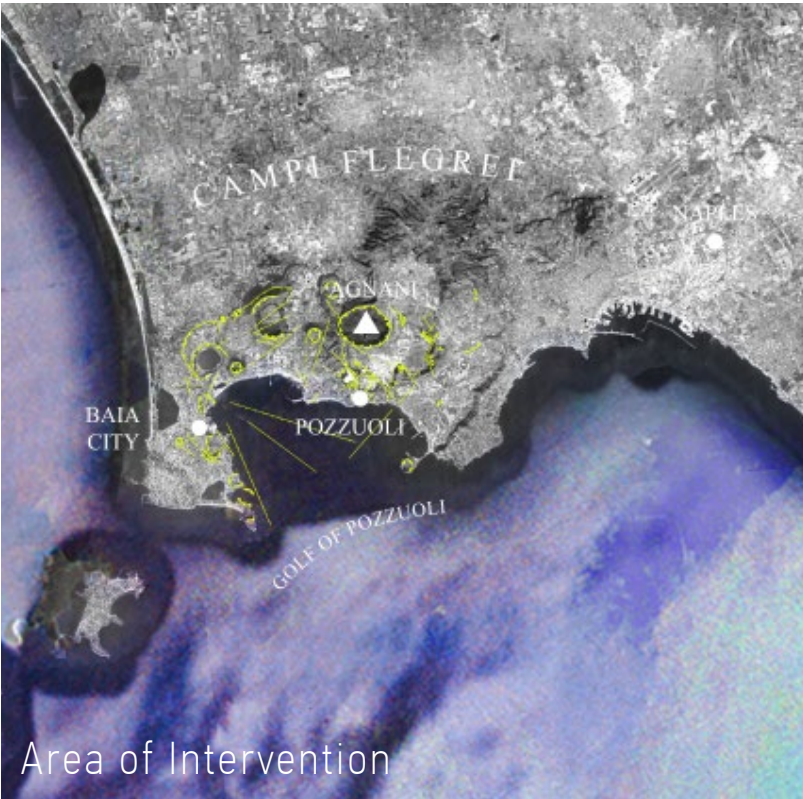
The signaling apparatus of volcanoes consists of a series of different technological instruments, analog or digital, developed by humans to catch the geological frequencies of volcanic locales.

All together, they give information about the soma of the volcano, which also, most of its inner fleshs still remain unknown – and construct , let's say - a hyper-spectral Data cube of Vesuvius, forming at the same time a **spatial digital identity of this geological body.**

Yet, geological data that explain how geology acts is transmitted to an enclosed and dark space called “The Control Room”, where people have **NO ACCESS.**

Our relationship with the body of geology is mediated through technological data, numbers, incomprehensible graphs and signals. And this techno-culture is fundamentally designed to forecast eruptions, cultivating a culture of precaution and risk aversion as the only response and inter-connection to these dynamic geological forces.

Geology is coded in colours (green, yellow, orange, red) and communicated though technological media, only to give notice on emergencies. How can we make geology accessible?



	NAME	IMAGE	DIMENSIONS			RELATION TO GROUND			DISTANCE TO CRATER	DEPTH or DISTANSE TO GROUND		TYPE OF DATA	SAMPLE OF DATA
			x	y	z								
1	Seismometer		58	40	20		0		x	0	0	Seismogram	
2	Thermal Camera		118	104	152		0		x	0	0	Thermal Imagery	
3	Tiltmeter		35	37	29	x			1 - 5 km	- 3 m		Tilt	
4a	Dilatometer		17	17	216	x			2 - 10 km	- 100 m		Ground Deformation (Volumetric changes)	
4b	Dilatometer (Control Unit)		45	62	24		0		2 - 10 km	0	0	Pressure Indications	x
5	Borehole Strain Meter		12	12	216	x			2 - 10 km	- 250 m		Ground Deformation (Strain)	
6	Infrasonic Microbarometer (MB3)		15	18	17	x			1 - 15 km	< 1m		Acoustic Spectrograms	
7	Drone with Multigas Analyzer		92	85	52			x	o		100 - 500m	Gas Emissions	
8	LiDAR* Airborne Airplane (Piper PA-31 Navajo)		1242	943	324			x	o		500 m - 10 km	Ground Deformation (LiDAR scanning)	
9	InSAR* Satellite (Sentinel-1A)		1200	189	263			x	o		500 - 800 km	Ground Deformation (InSAR scanning)	
10	GPS Station		133	117	162		0		1 - 10 km	0	0	Radio Waves (L1 & L2)	x
11	Antenna		69	63	81		0		2 - 15 km	0	0	Microwaves	x
12	Solar Panels		250	96	109		0		(depending)	0	0	x	x

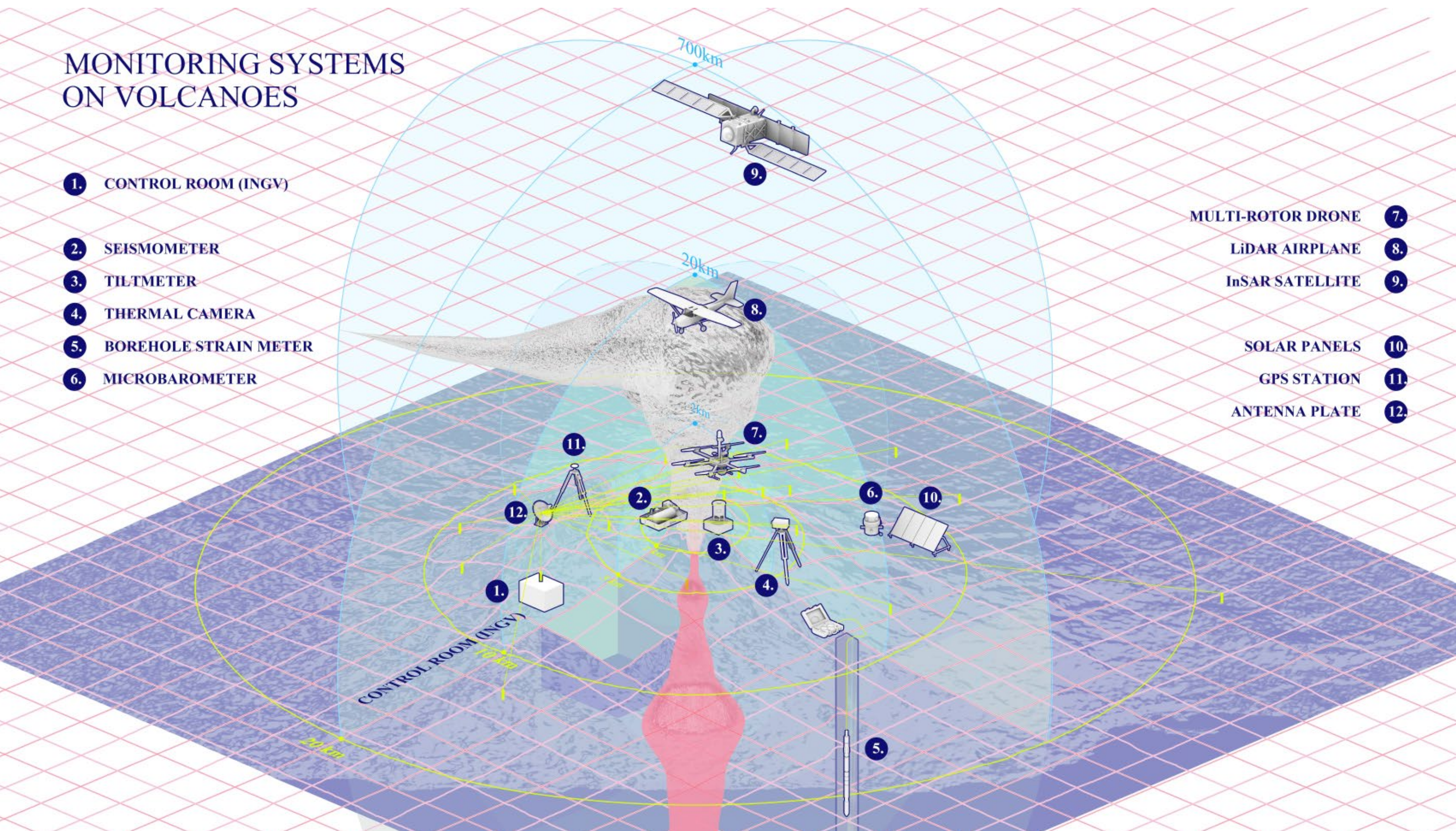
*LiDAR = Light Detection and Ranging

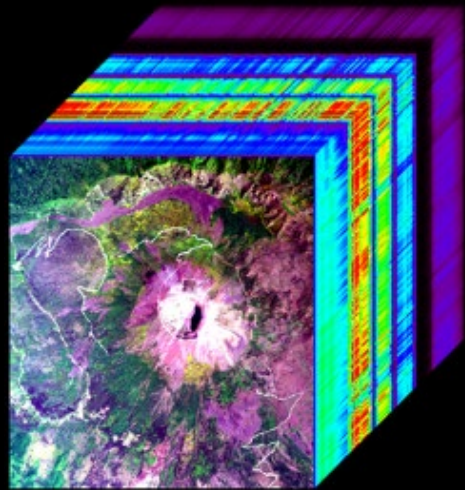
*InSAR = Interferometric Synthetic Aperture Radar

MONITORING SYSTEMS ON VOLCANOES

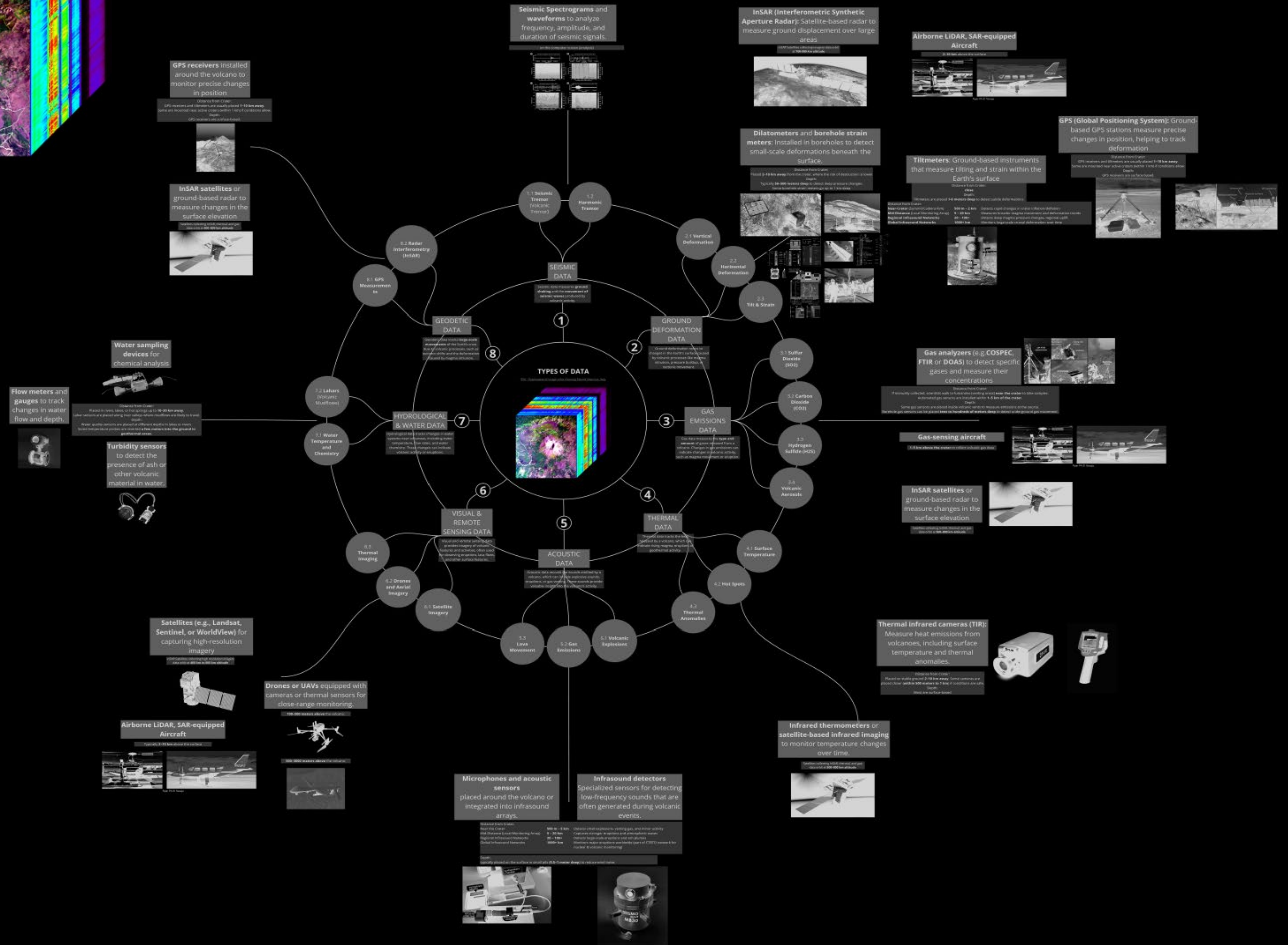
- 1. CONTROL ROOM (INGV)
- 2. SEISMOMETER
- 3. TILTMETER
- 4. THERMAL CAMERA
- 5. BOREHOLE STRAIN METER
- 6. MICROBAROMETER

- MULTI-ROTOR DRONE 7.
- LiDAR AIRPLANE 8.
- InSAR SATELLITE 9.
- SOLAR PANELS 10.
- GPS STATION 11.
- ANTENNA PLATE 12.

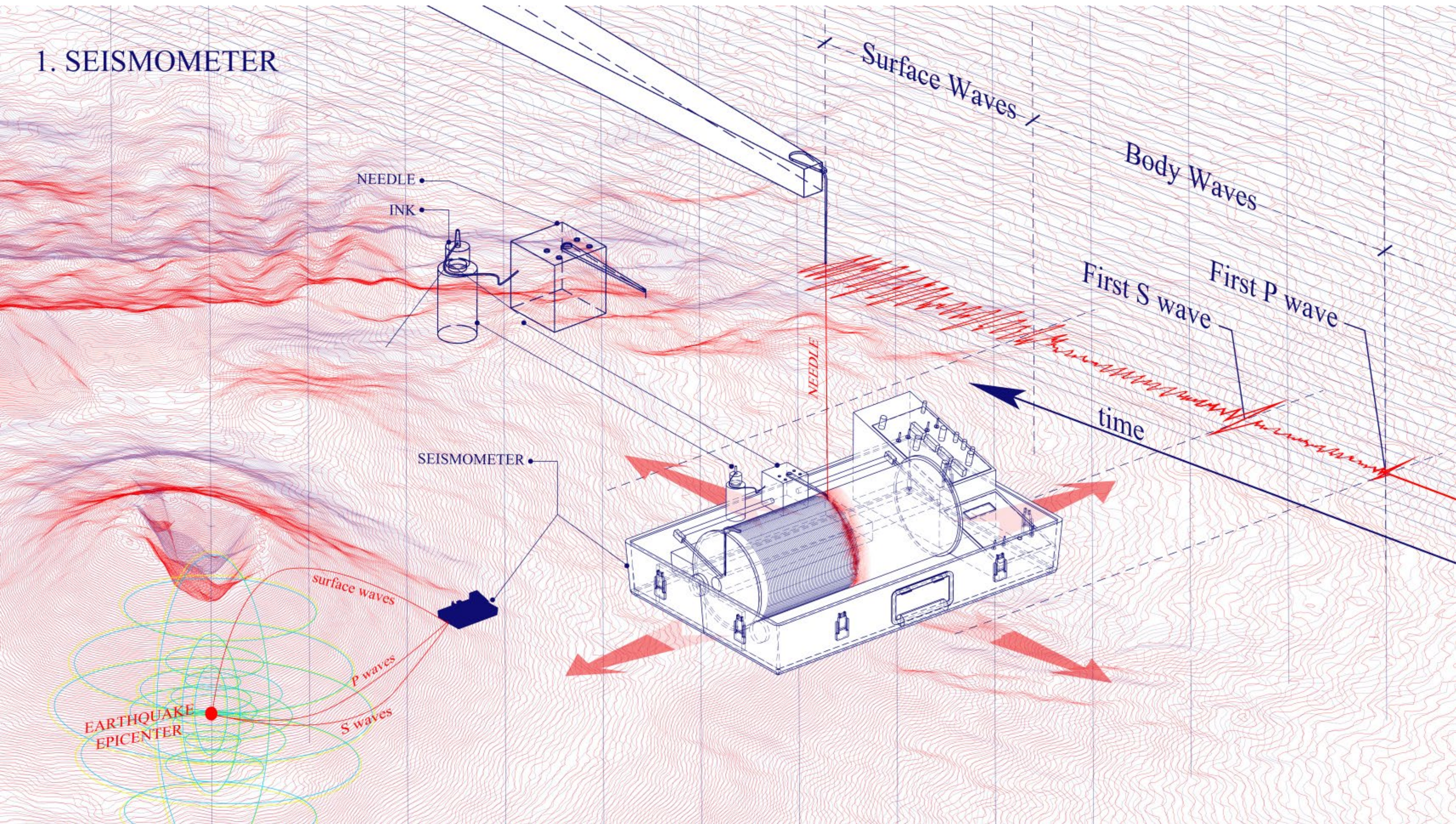




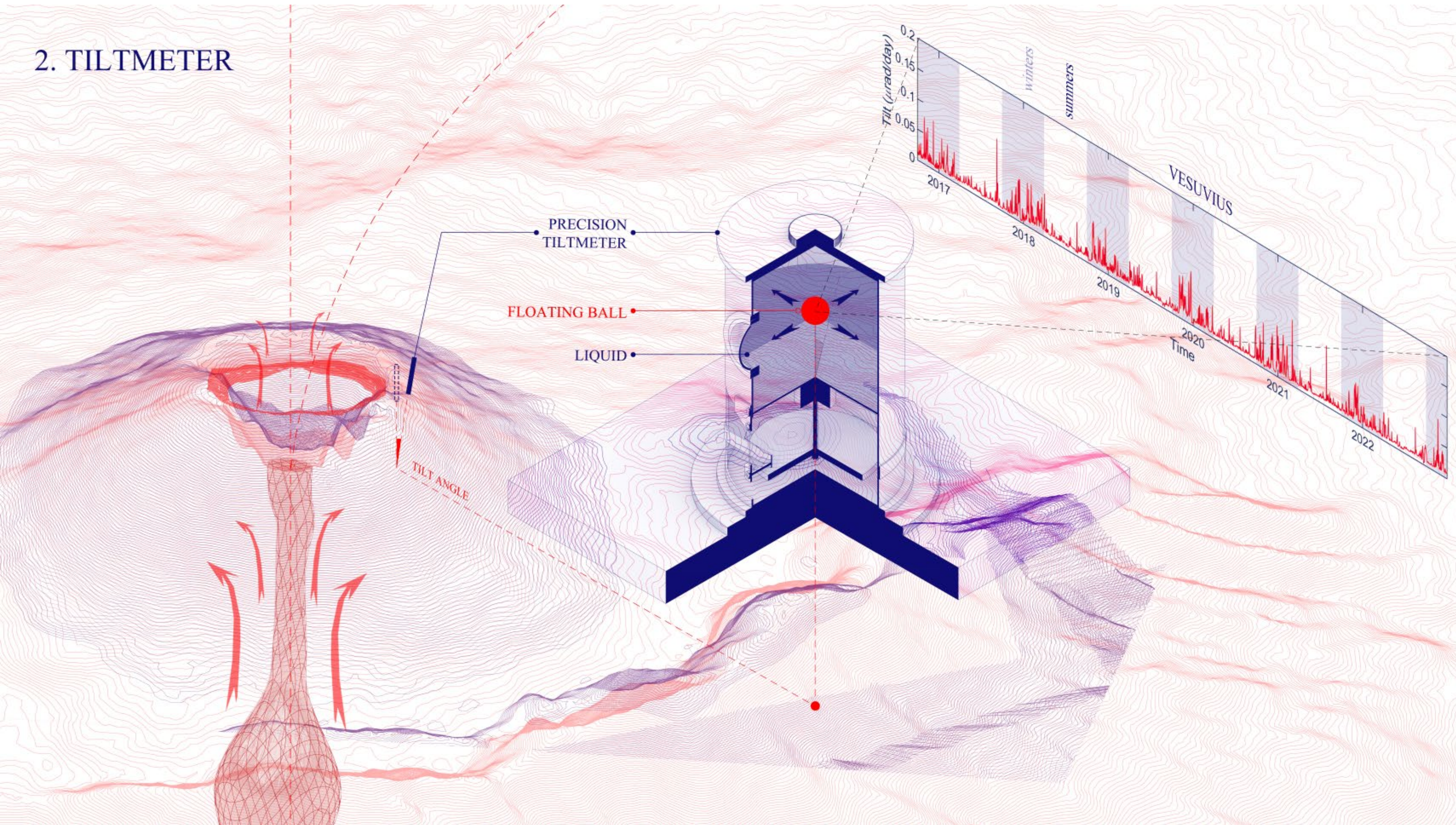
The Hyper-Spectral DataCube of Vesuvius



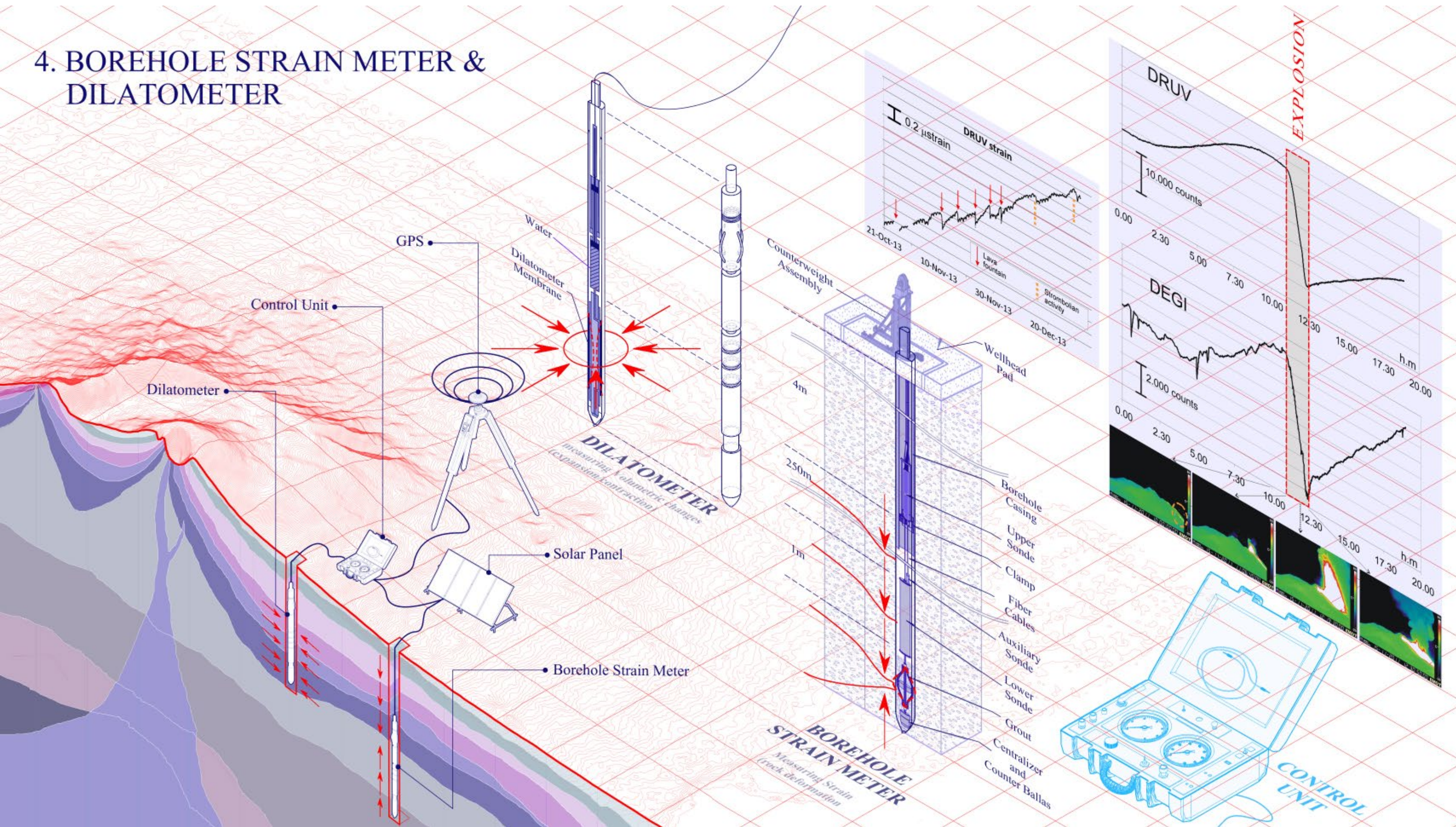
1. SEISMOMETER



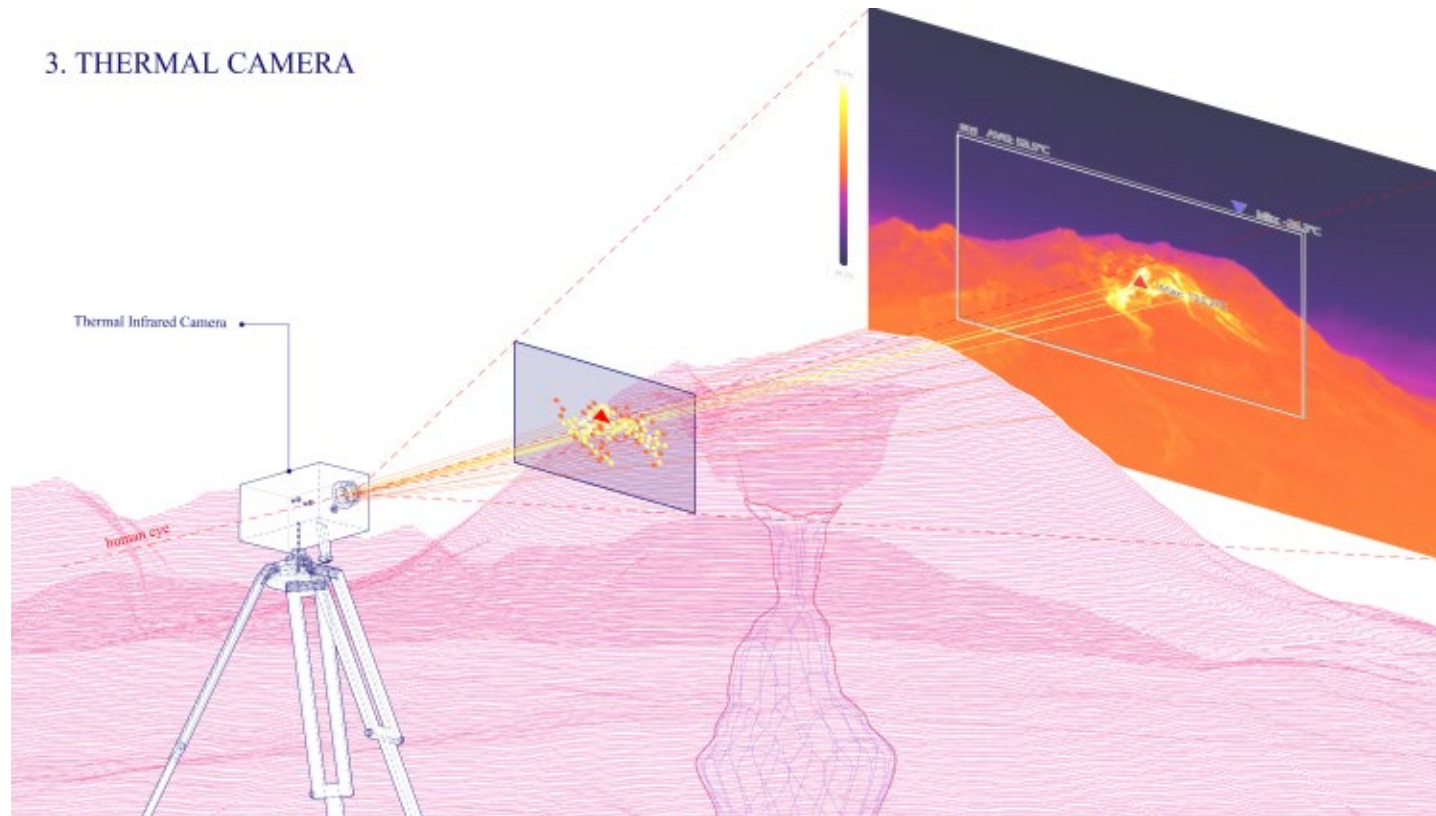
2. TILTMETER



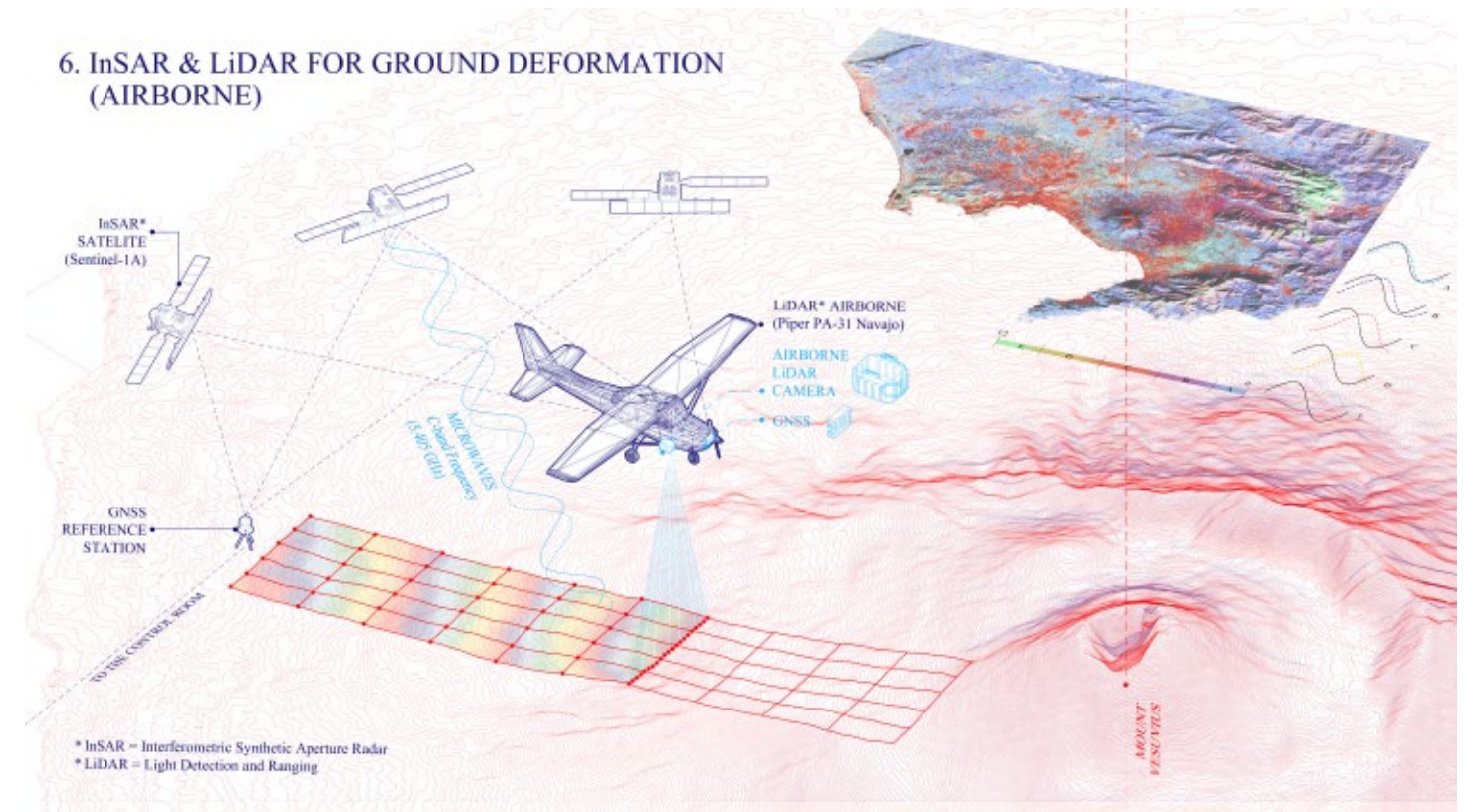
4. BOREHOLE STRAIN METER & DILATOMETER



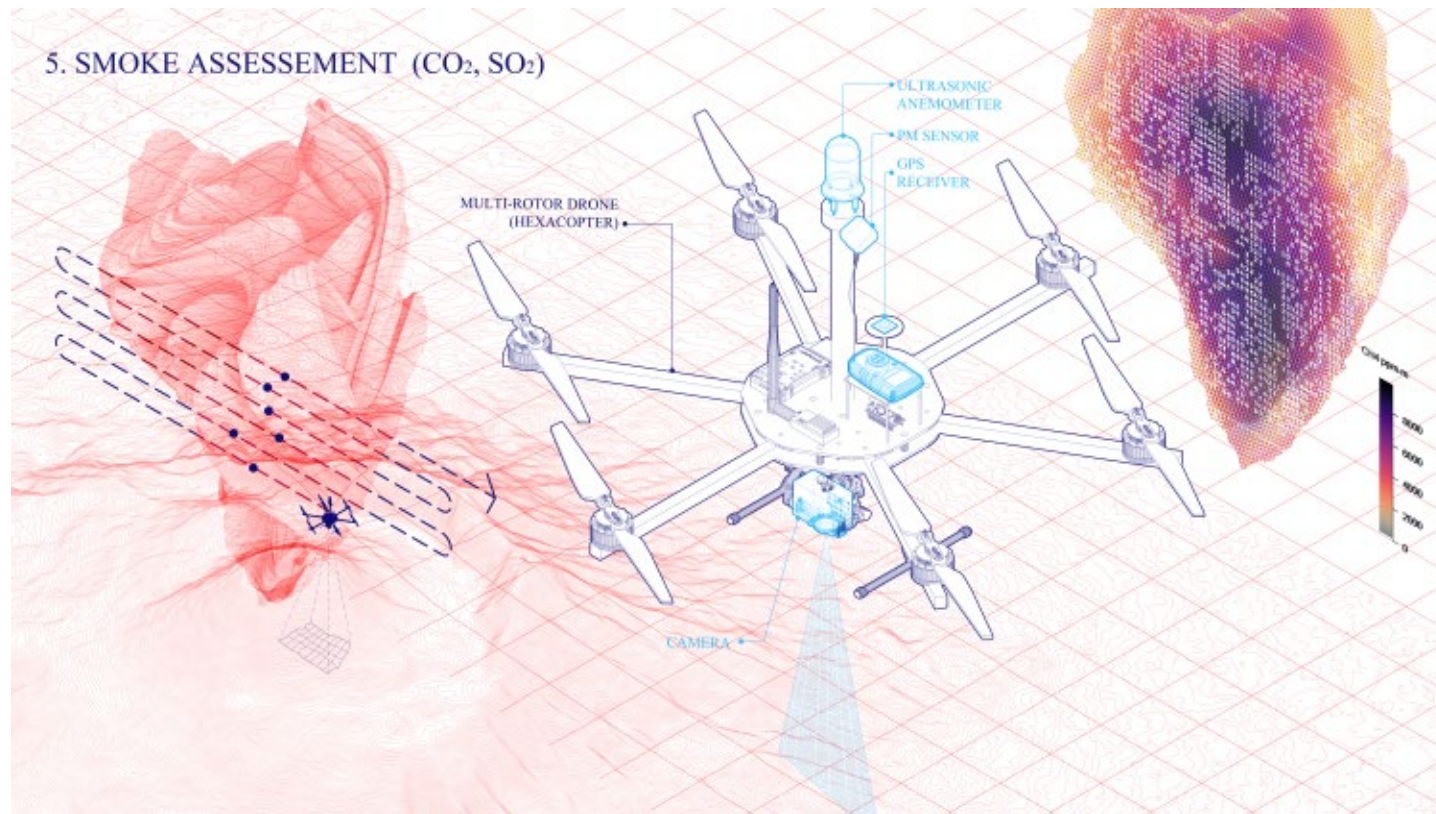
3. THERMAL CAMERA



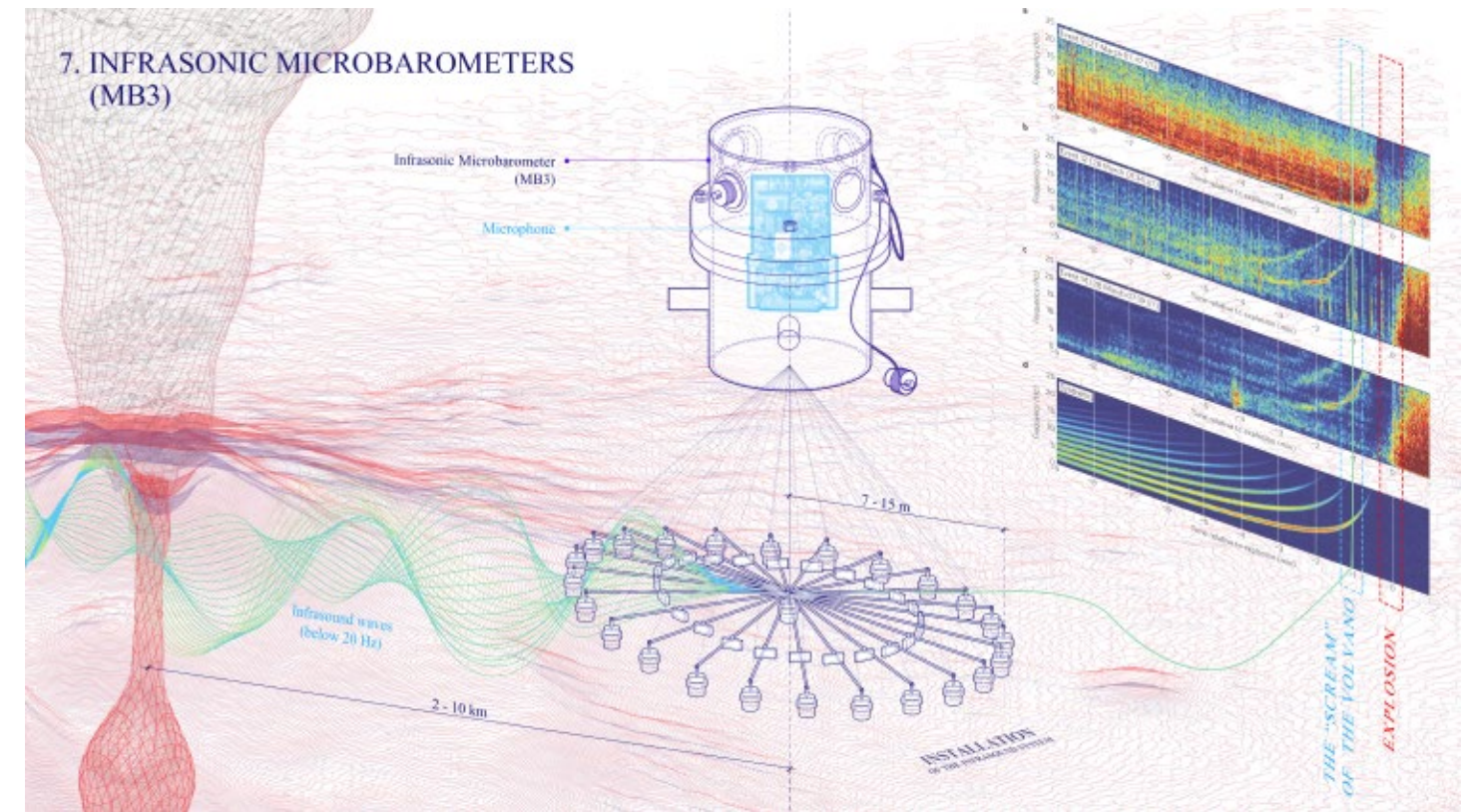
6. InSAR & LiDAR FOR GROUND DEFORMATION (AIRBORNE)



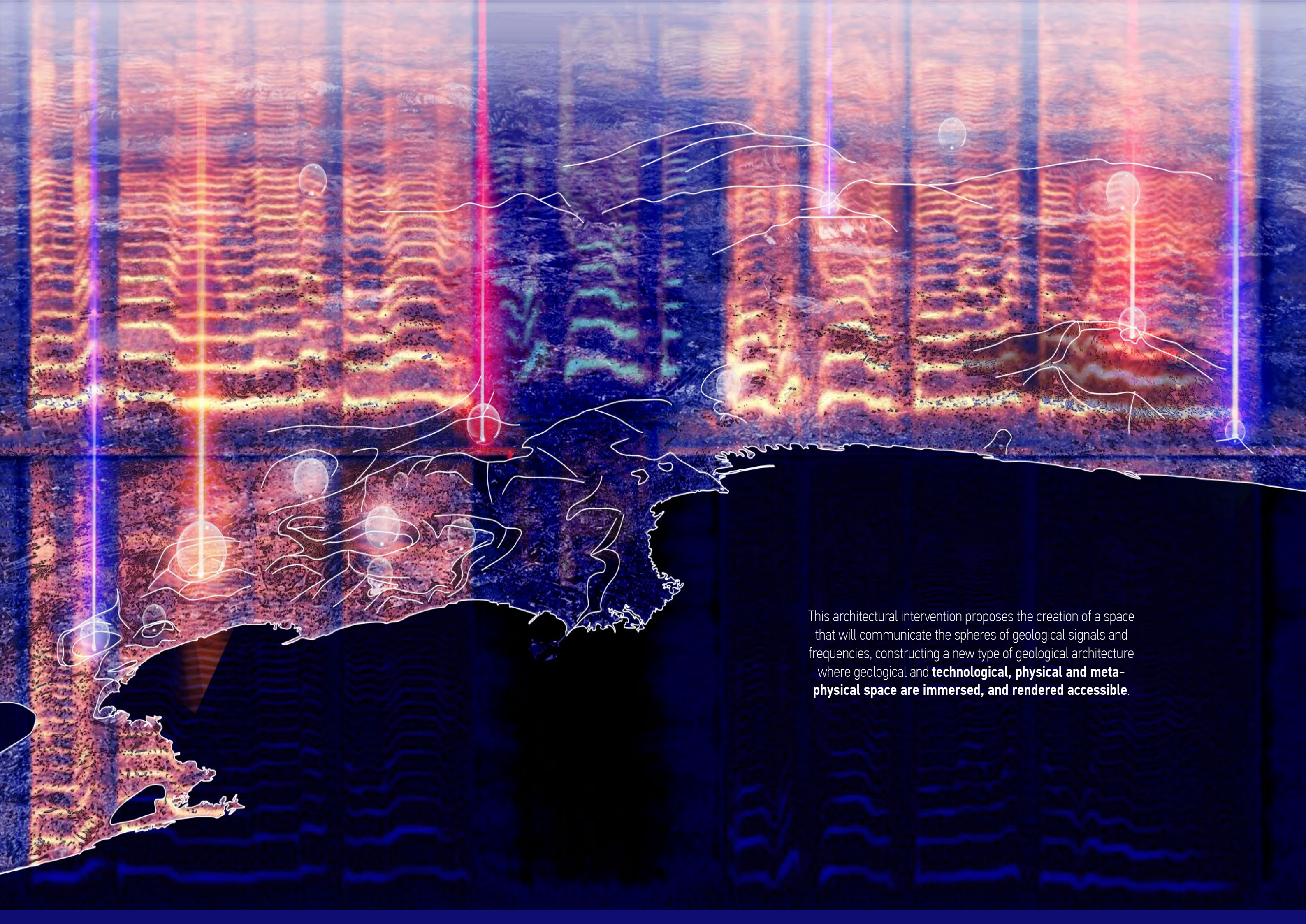
5. SMOKE ASSESSEMENT (CO_2 , SO_2)



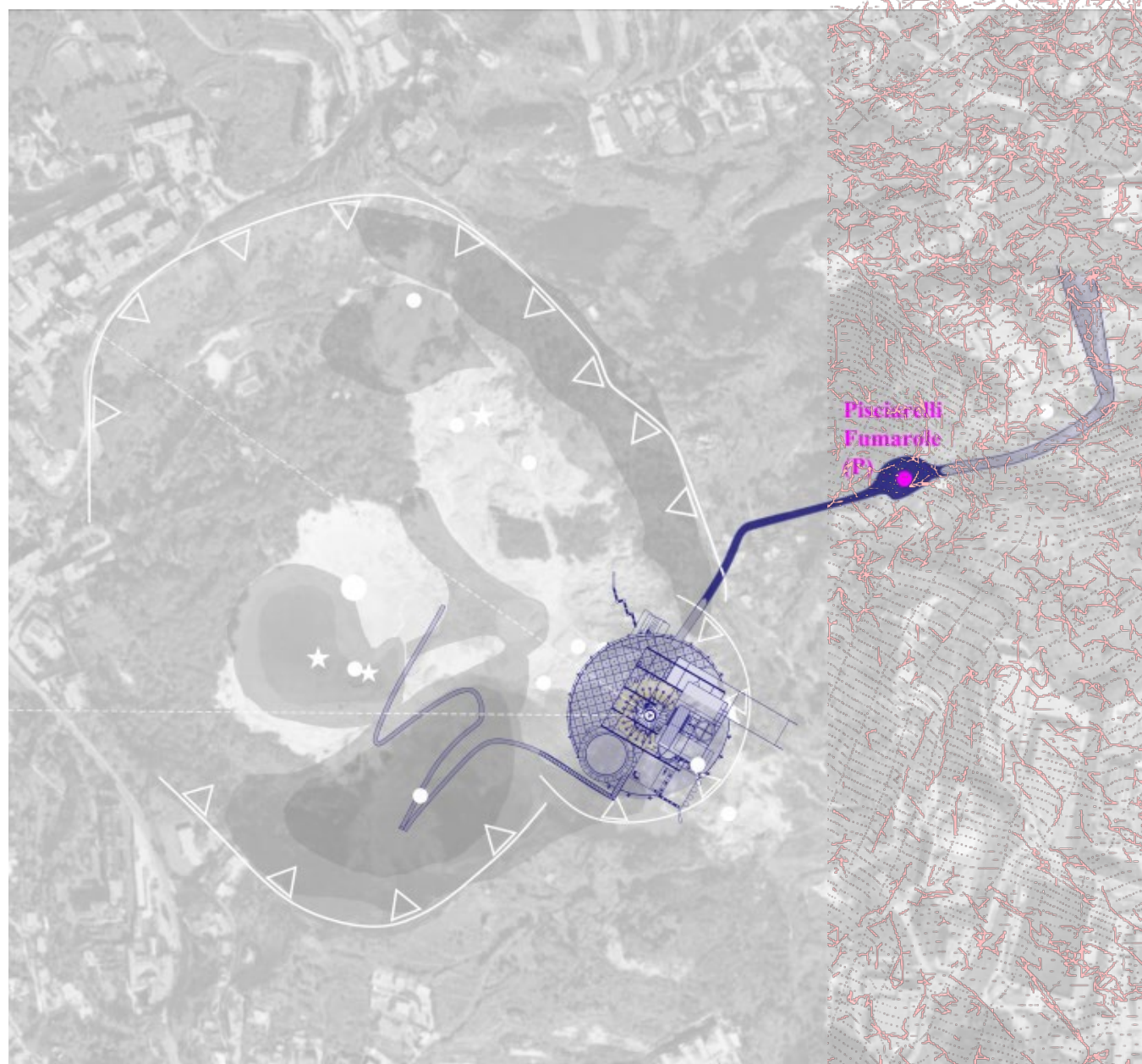
7. INFRASONIC MICROBAROMETERS (MB3)



Through a detailed catalog of contemporary monitoring instruments—ranging from analog seismometers and thermal cameras to InSAR satellites and micro-barometers—the project constructs a hyperspectral identity of Vesuvius as a living geological entity. These technologies decode the volcano's silent language of tremors, heat, gas, and deformation, transforming raw data into systems of early warning, spatial mapping, and civil protection.



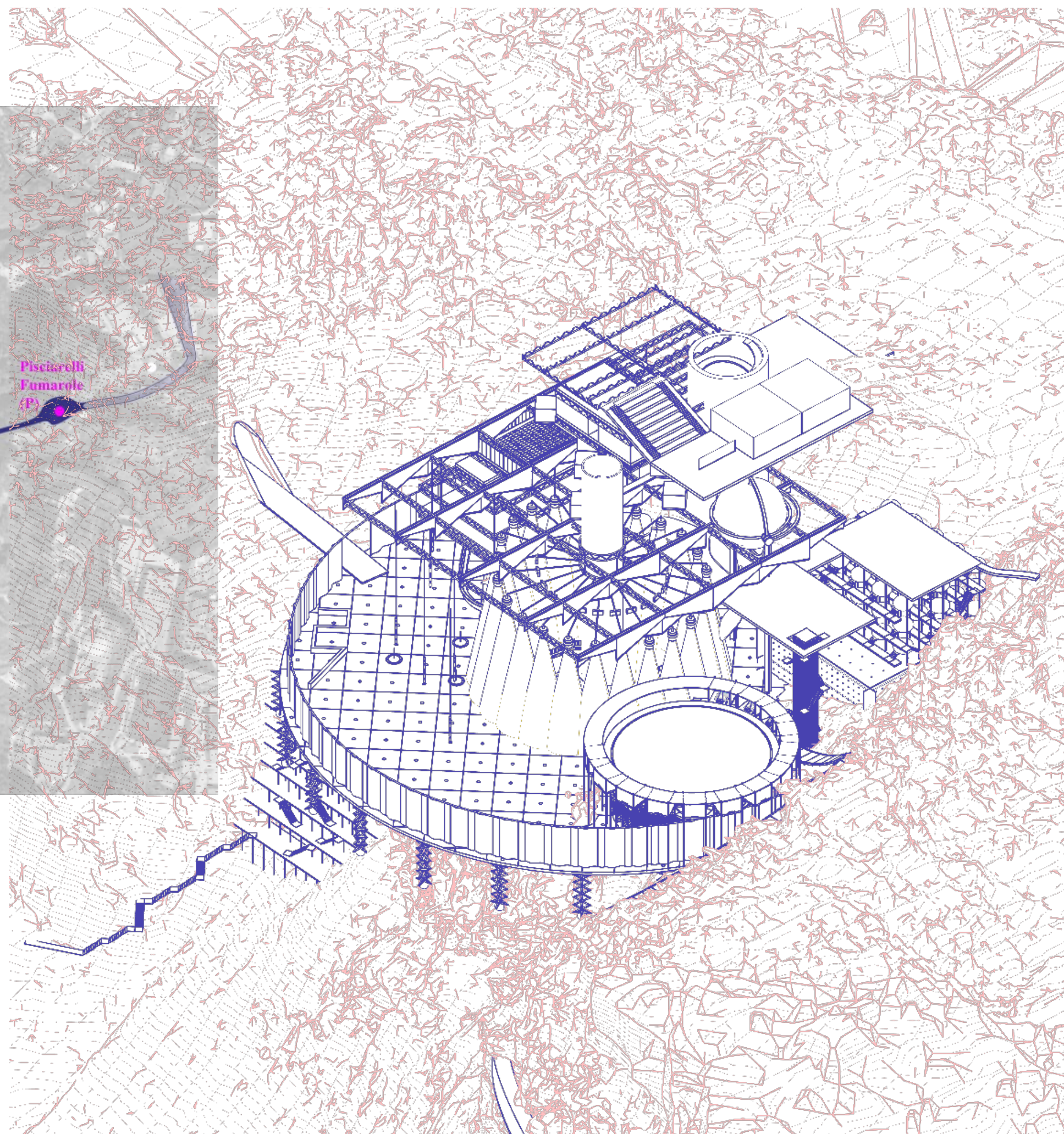
This architectural intervention proposes the creation of a space that will communicate the spheres of geological signals and frequencies, constructing a new type of geological architecture where geological and **technological, physical and meta-physical space are immersed, and rendered accessible.**



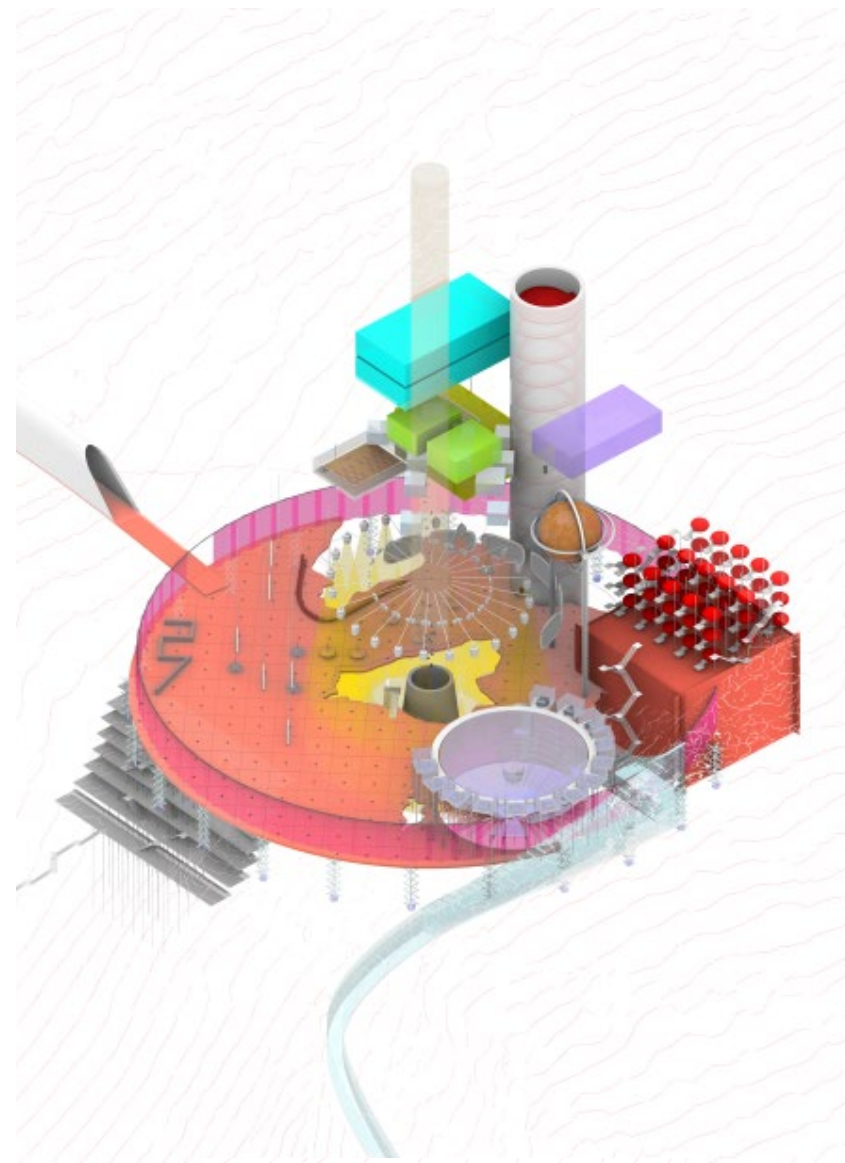
My intervention, as part of this network, is located in the Solfatara Crater of Campi Flegrei, a dormant volcanic crater in the middle of the city of Naples, reopening the tourist geological hotspot for visitors and the community.

This is an experientially immersed space of geological data conversion to space, movement, vibrations, images and sounds, producing effects of simultaneity of geological and human bodies re-ordered in one hybrid trance machine, aimed for scientists, tourists and locals.

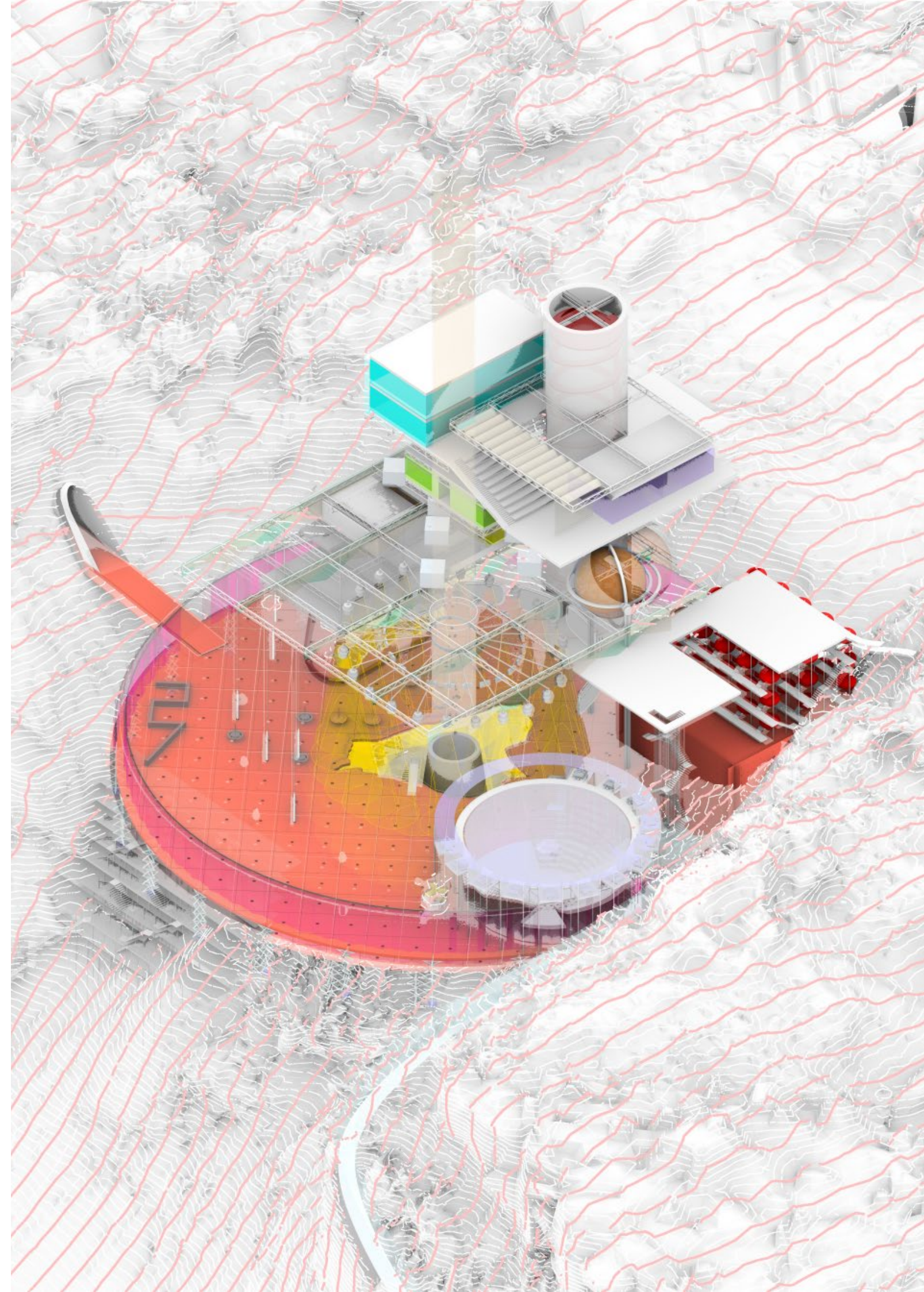
It contains rooms of conversions of GEOLOGICAL DATA TO SPACE, SOUND, VISUALIZATIONS, AND VIBRATIONS.

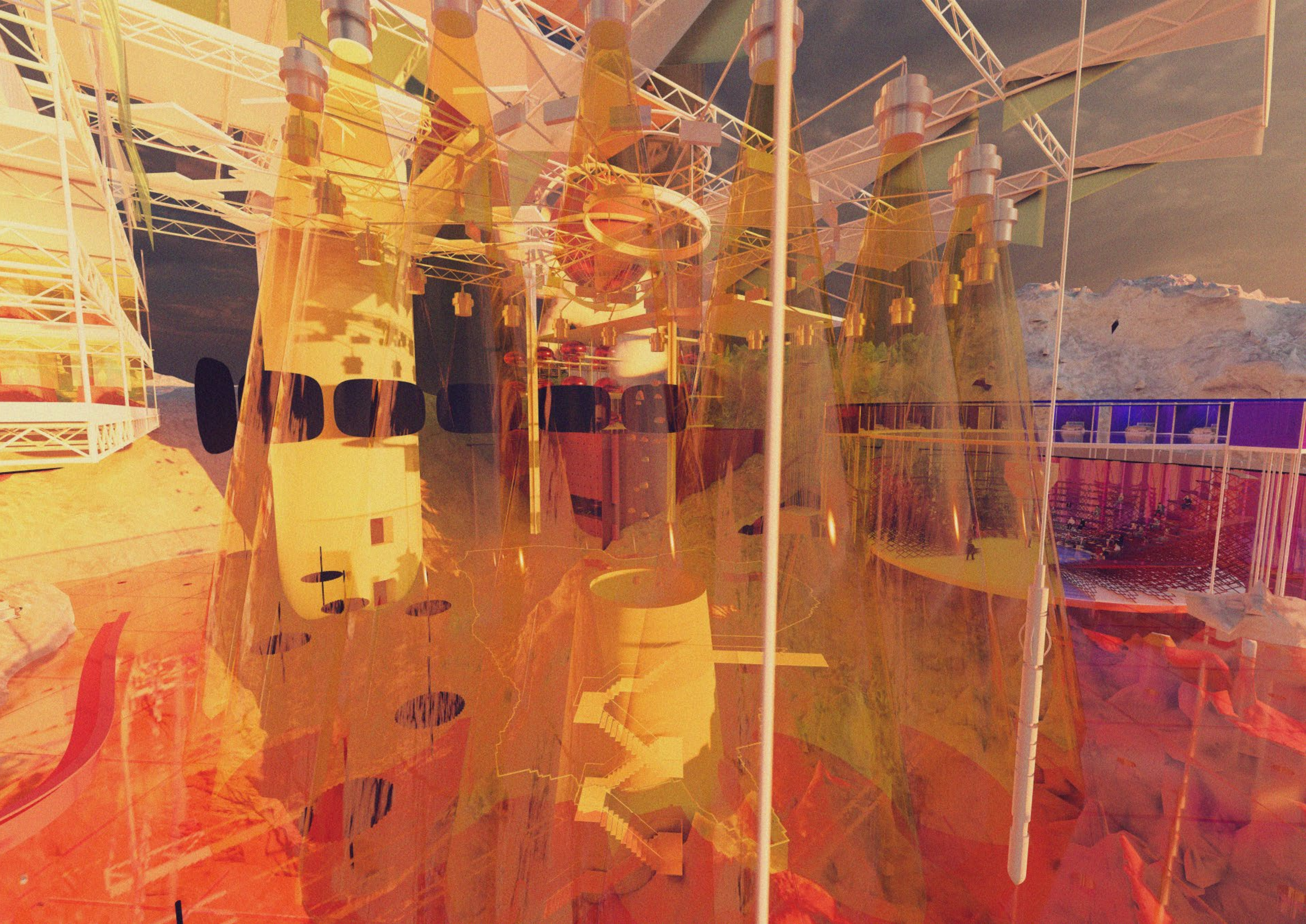


AXONOMETRIC DRAWING - USES OF THE GEOLOGICAL TRANCE CLUB

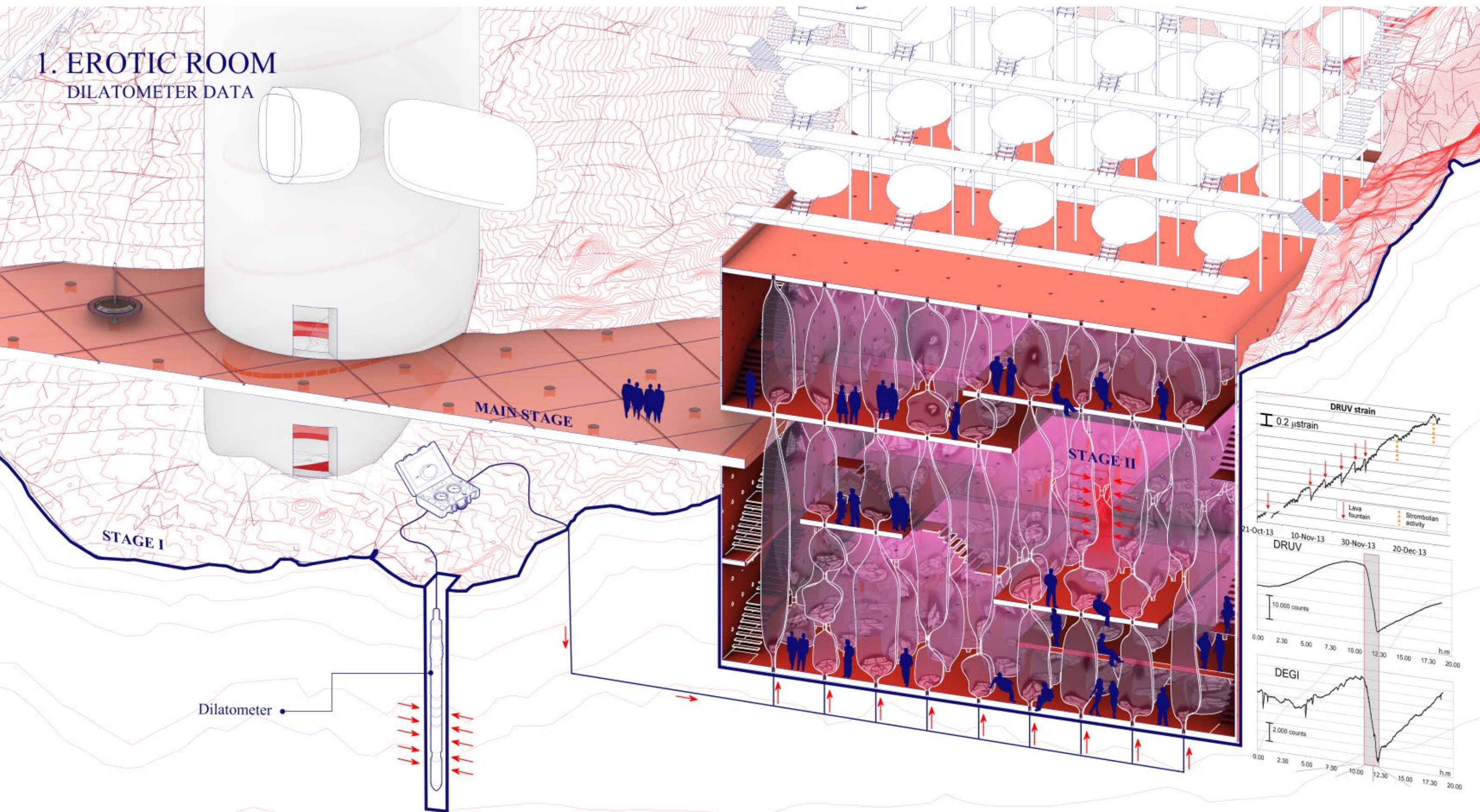


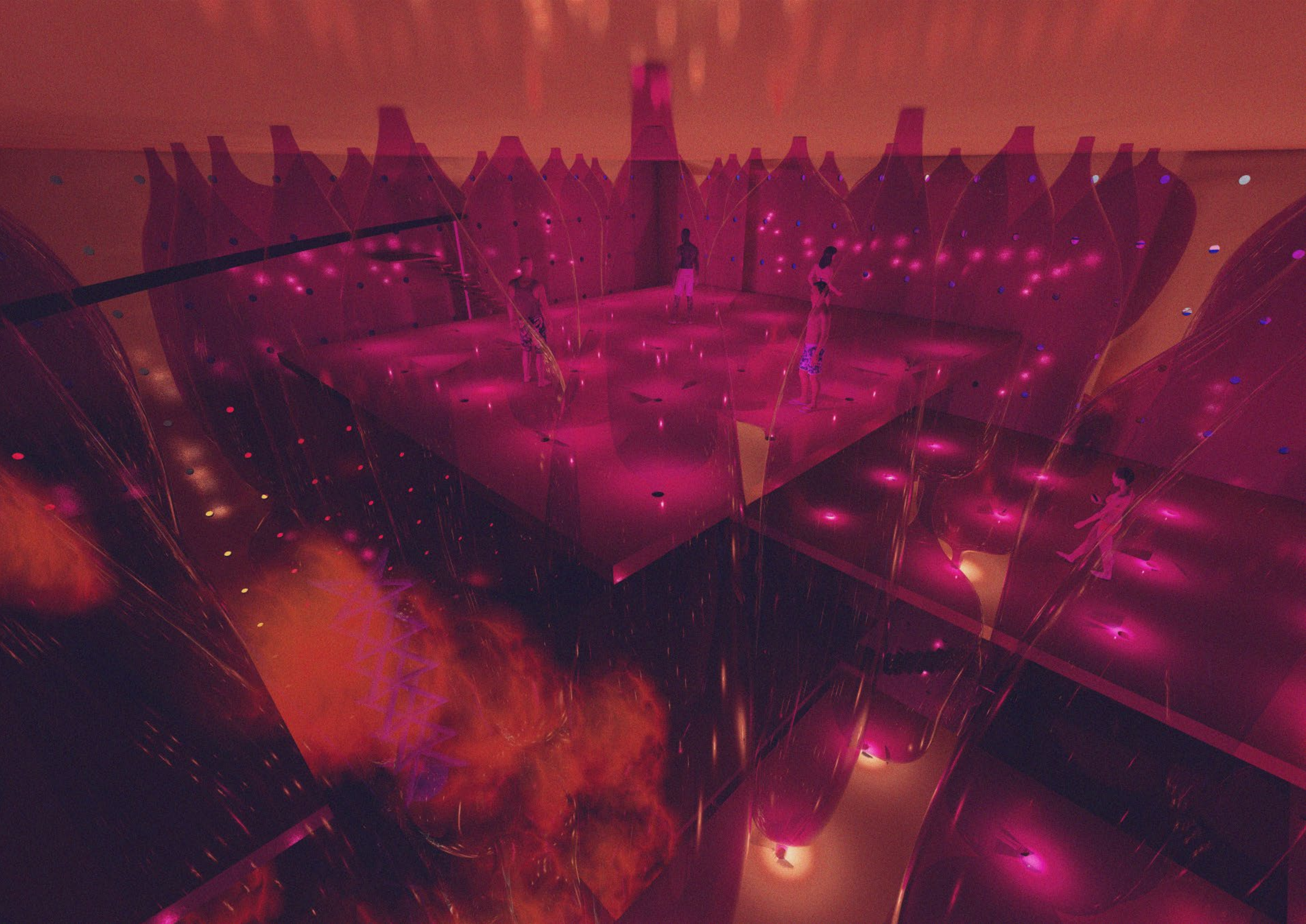
- ◆ GEO - TRANCE CLUB
- ◆ P - WAVES PILATES
- ◆ EROTIC ROOM
- ◆ SCIENTISTS' TILT THEATER
- ◆ SEISMIC BED
- ◆ WATER-FLOATING GEO-CAPSULES
- ◆ THERMO-SPECTROSCOPY PLANETARIUM
- ◆ EARTHQUAKE RUN (GYM)
- ◆ GEO-SPECTRUM JAZZ ROOM
- ◆ SMOKE ASSESSEMENT WEAVING CLASS
- ◆ SOLFATARA THERMAL TVs
- ◆ VULCANO-DATA ARCHIVE & VR
- ◆ INFRASOUND CURTAIN





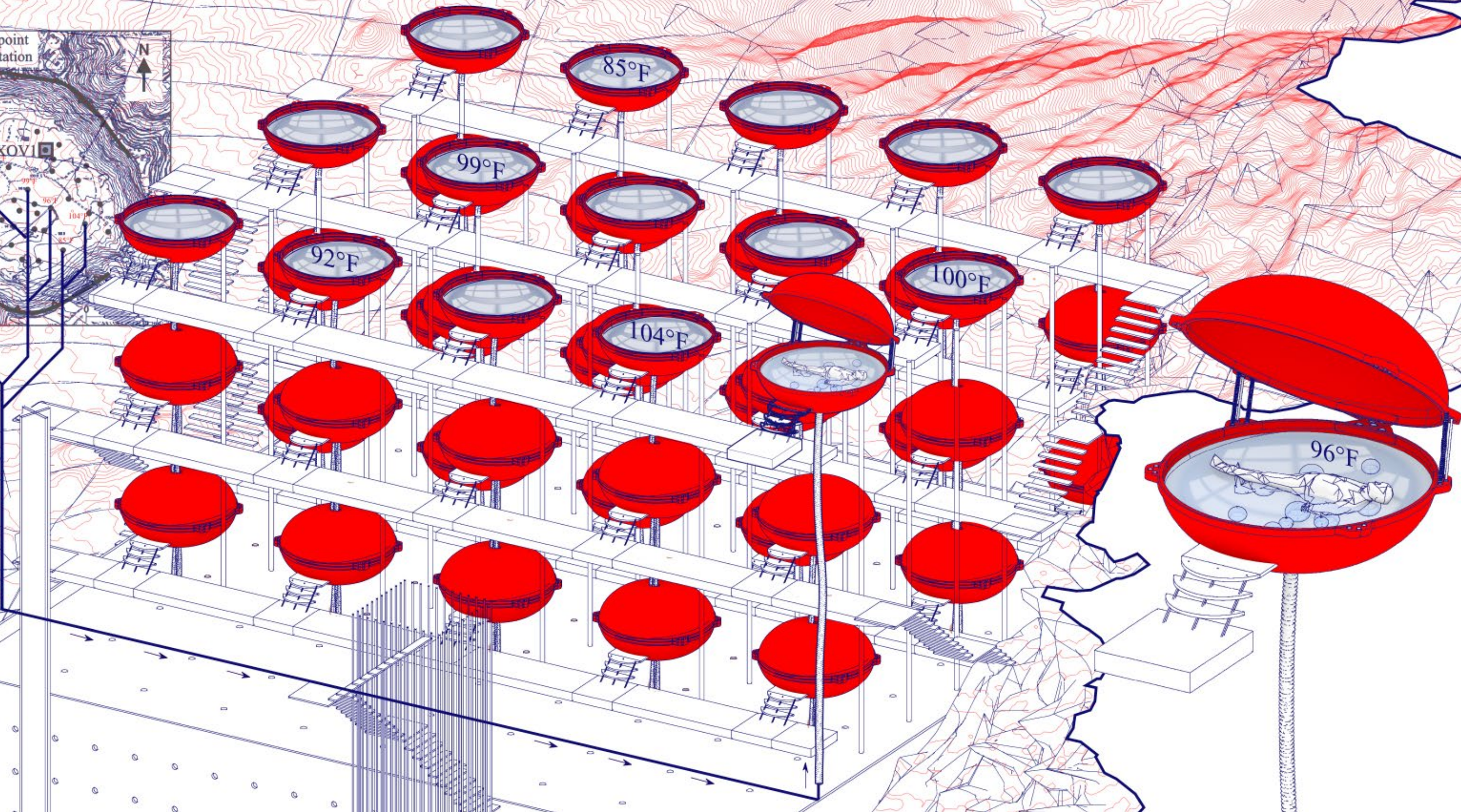
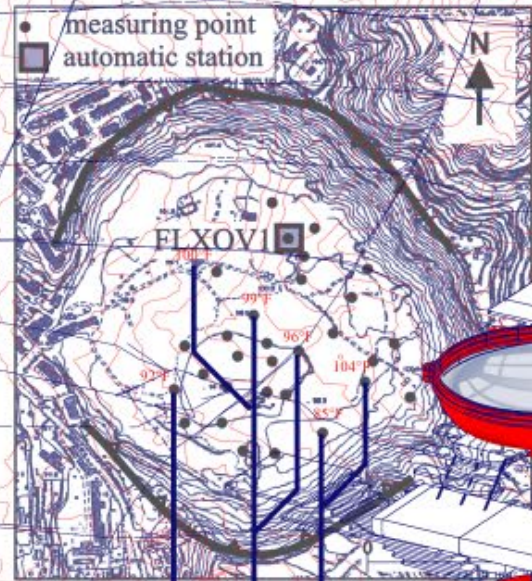
1. EROTIC ROOM DILATOMETER DATA





2. WATER-FLOATING GEO-CAPSULES

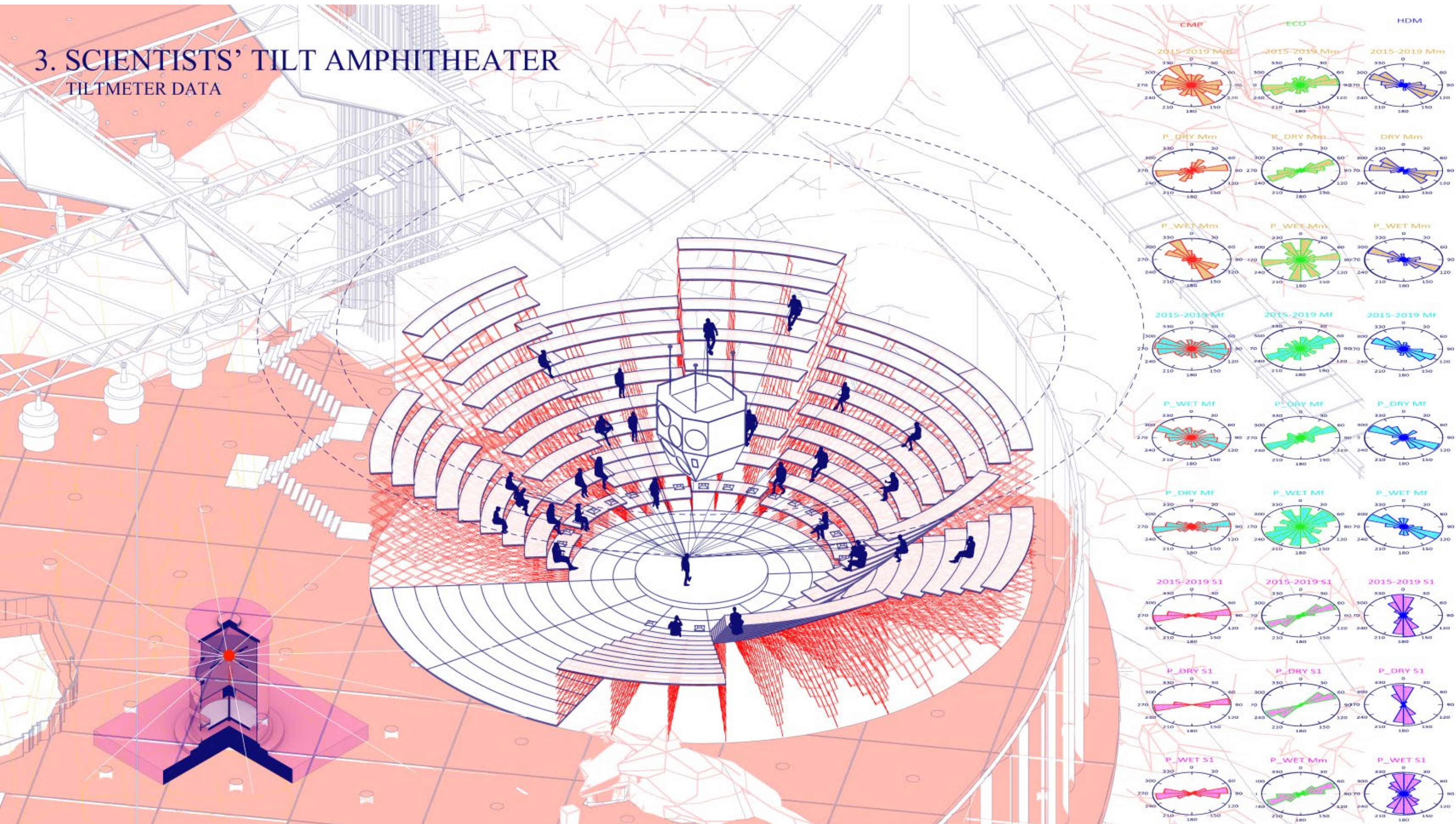
WATER TEMPERATURE DATA





3. SCIENTISTS' TILT AMPHITHEATER

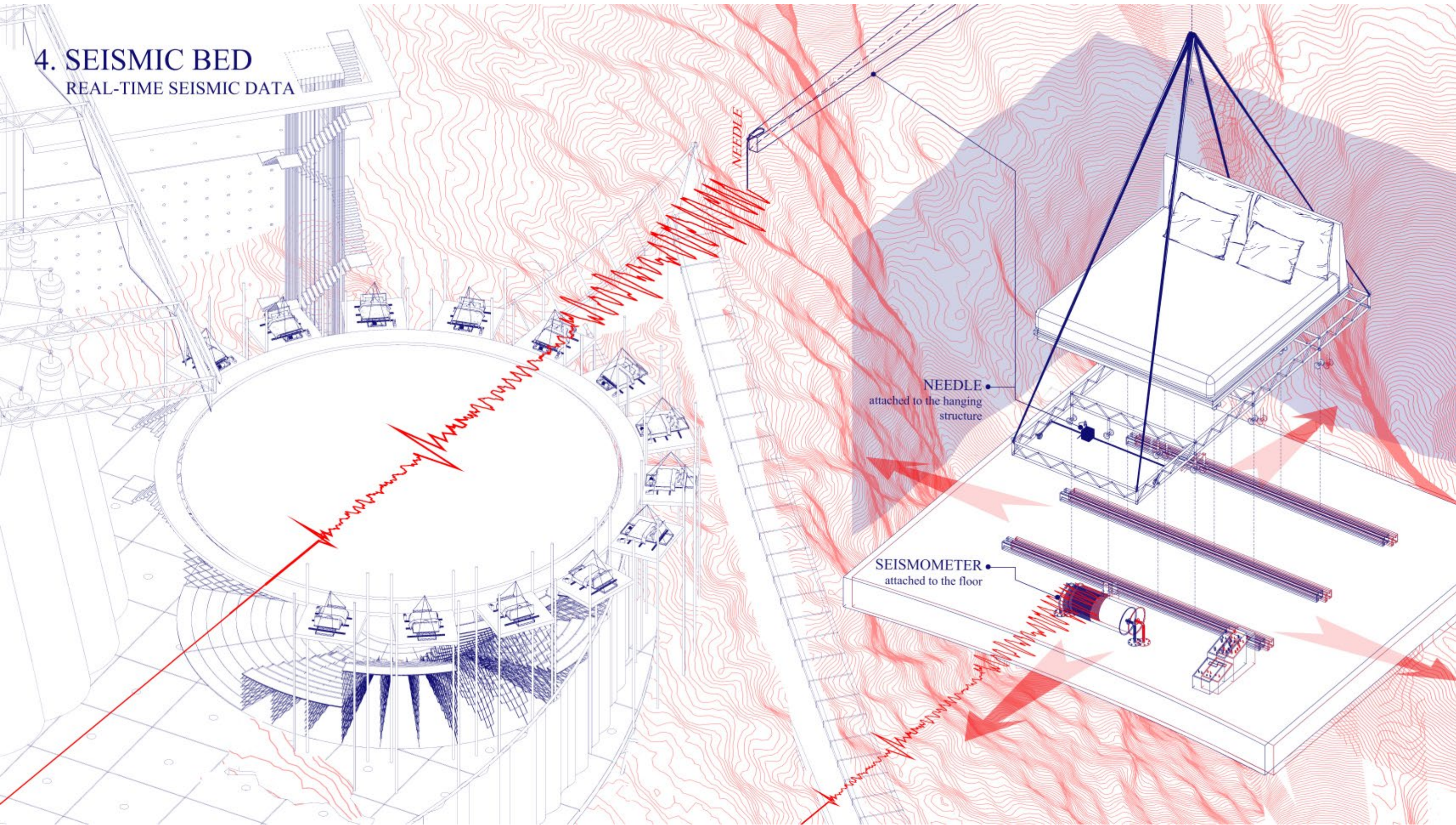
TILTMETER DATA





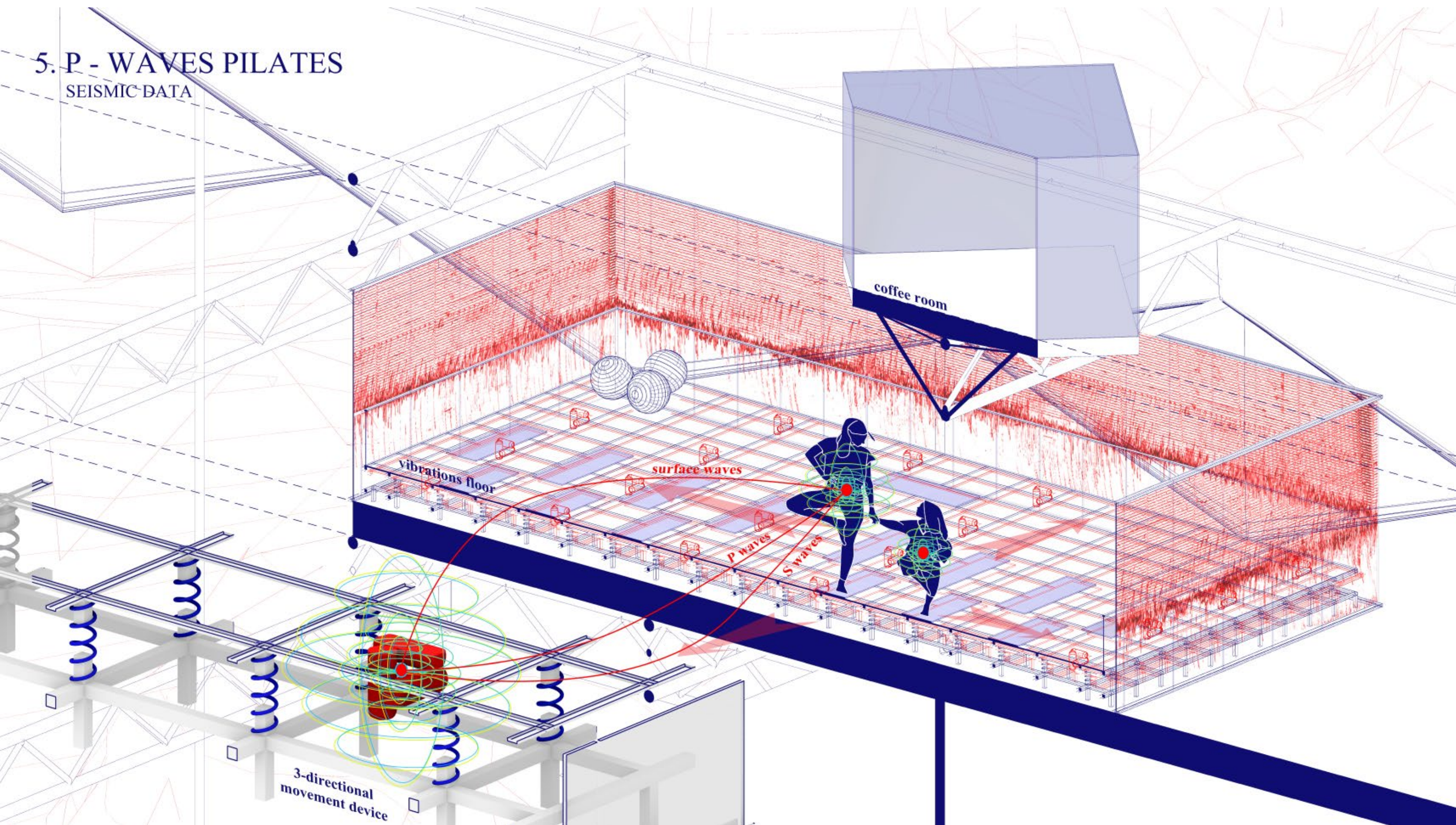
4. SEISMIC BED

REAL-TIME SEISMIC DATA



5. P - WAVES PILATES

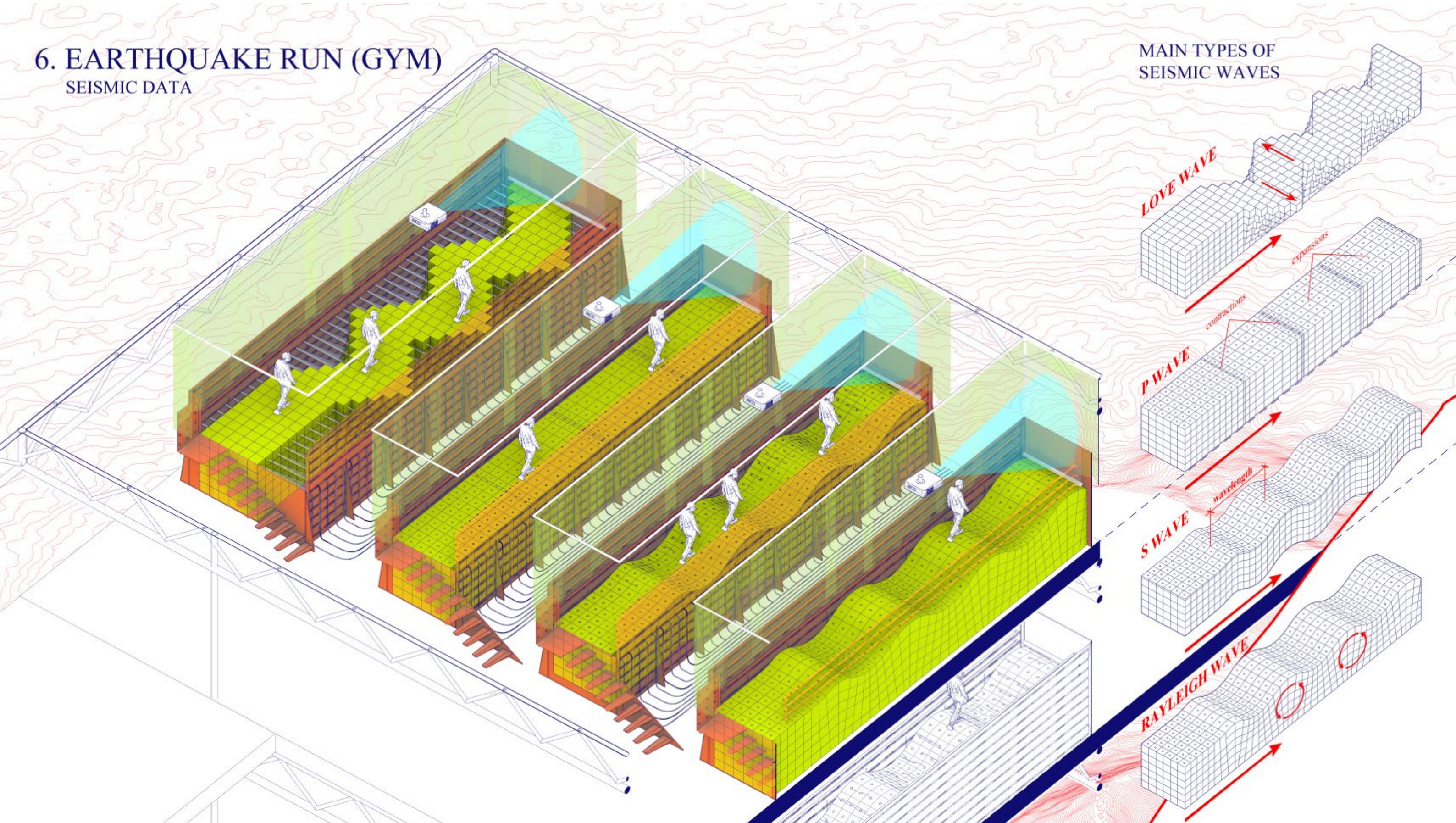
SEISMIC DATA

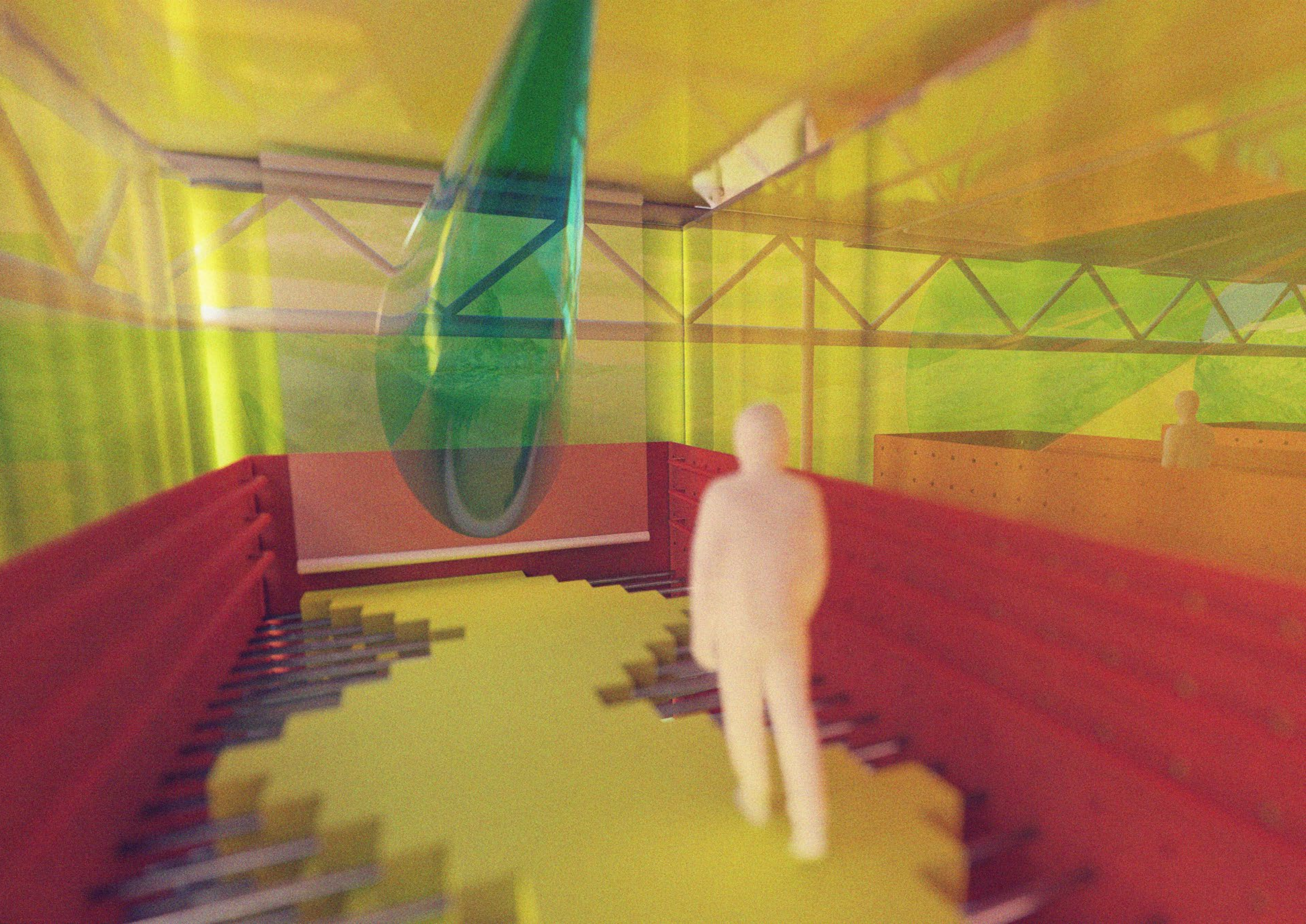


6. EARTHQUAKE RUN (GYM)

SEISMIC DATA

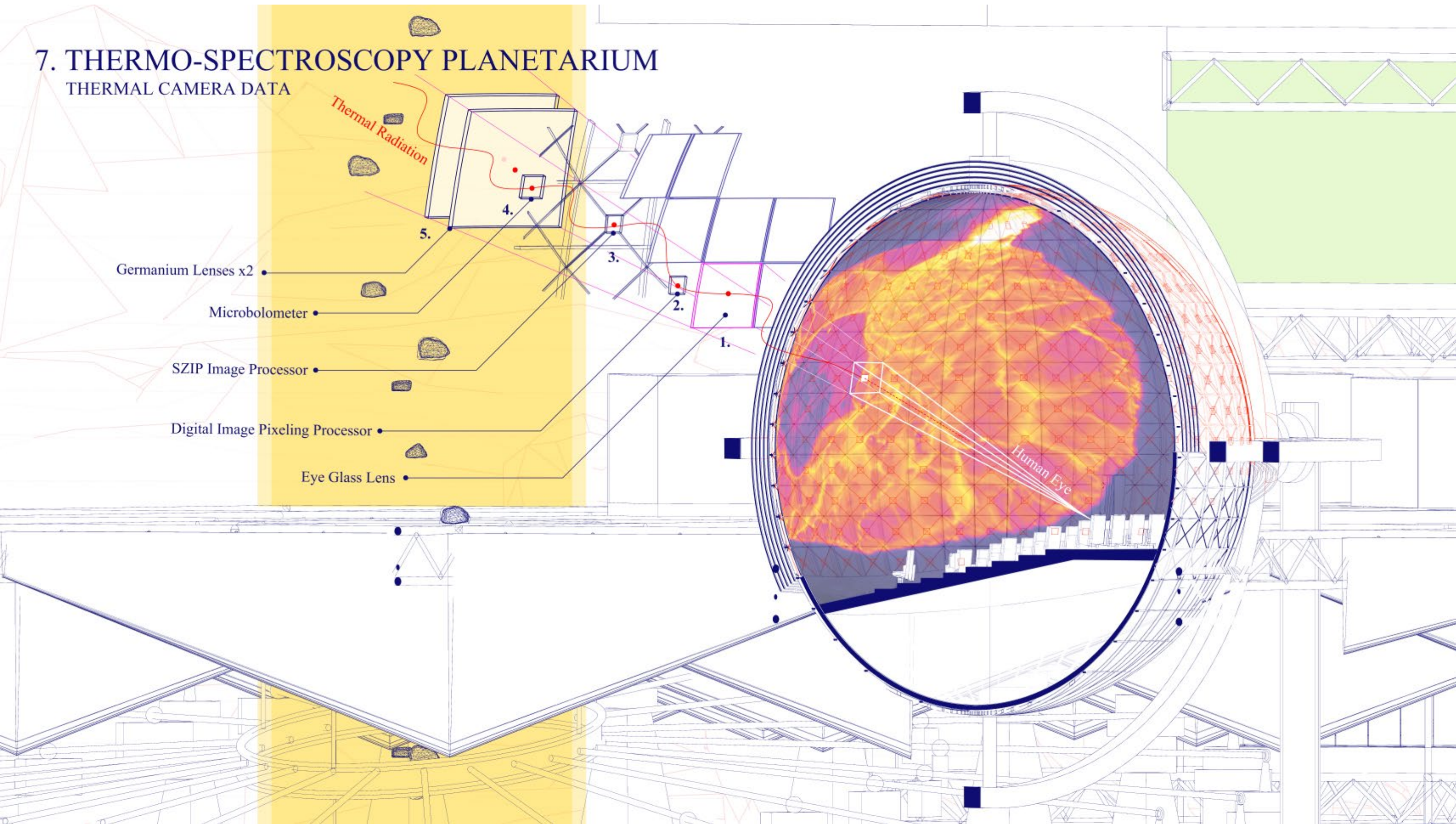
MAIN TYPES OF SEISMIC WAVES





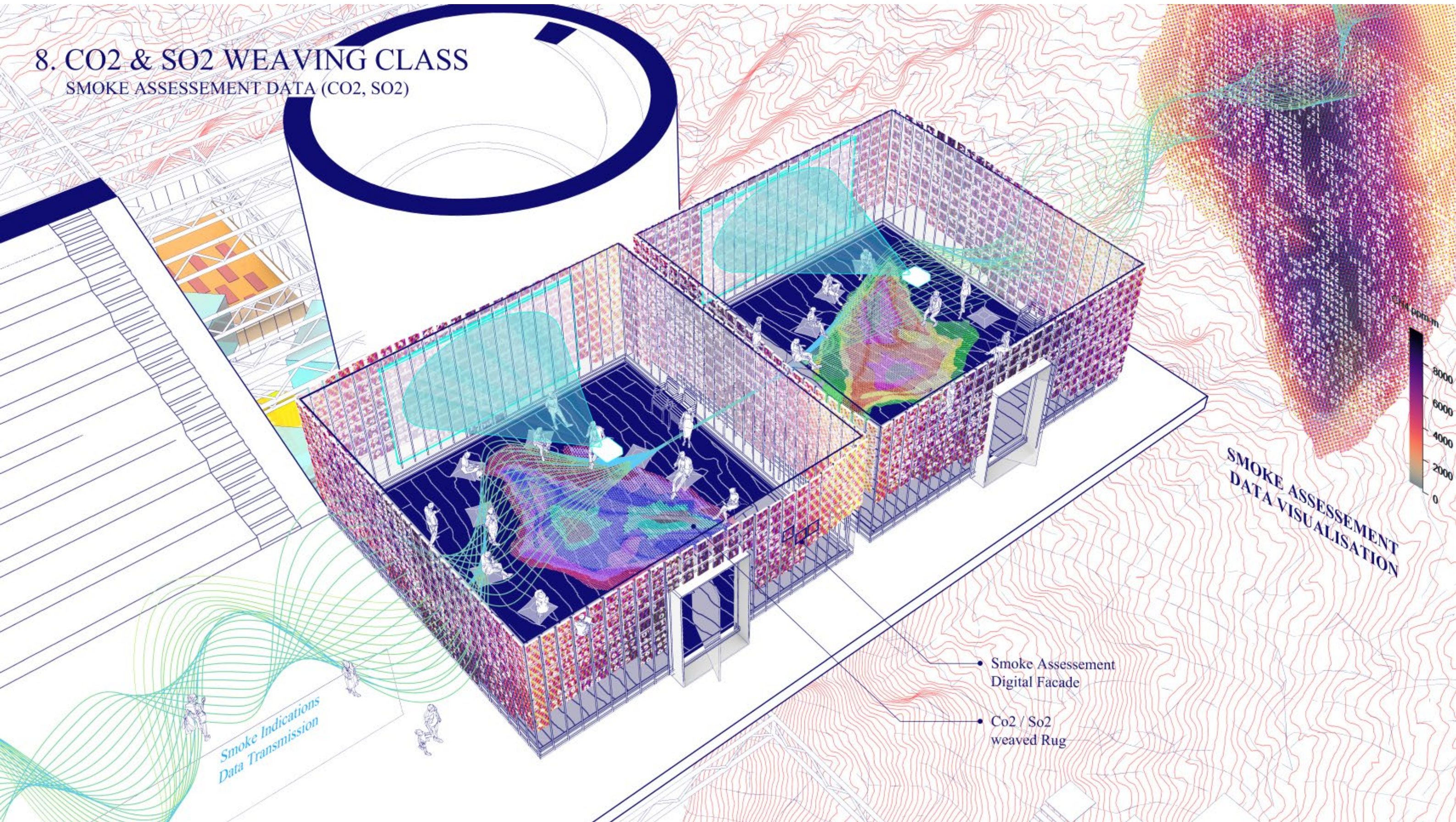
7. THERMO-SPECTROSCOPY PLANETARIUM

THERMAL CAMERA DATA



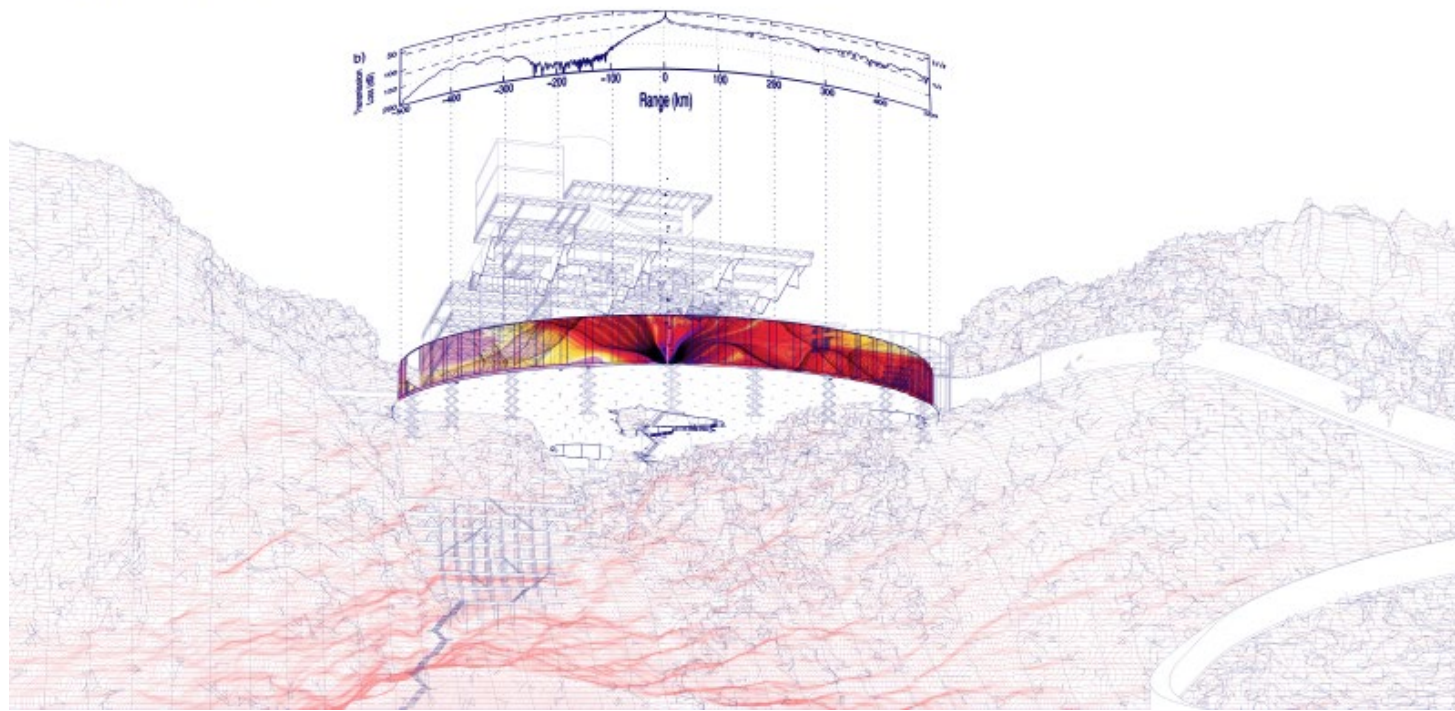
8. CO₂ & SO₂ WEAVING CLASS

SMOKE ASSESSEMENT DATA (CO₂, SO₂)



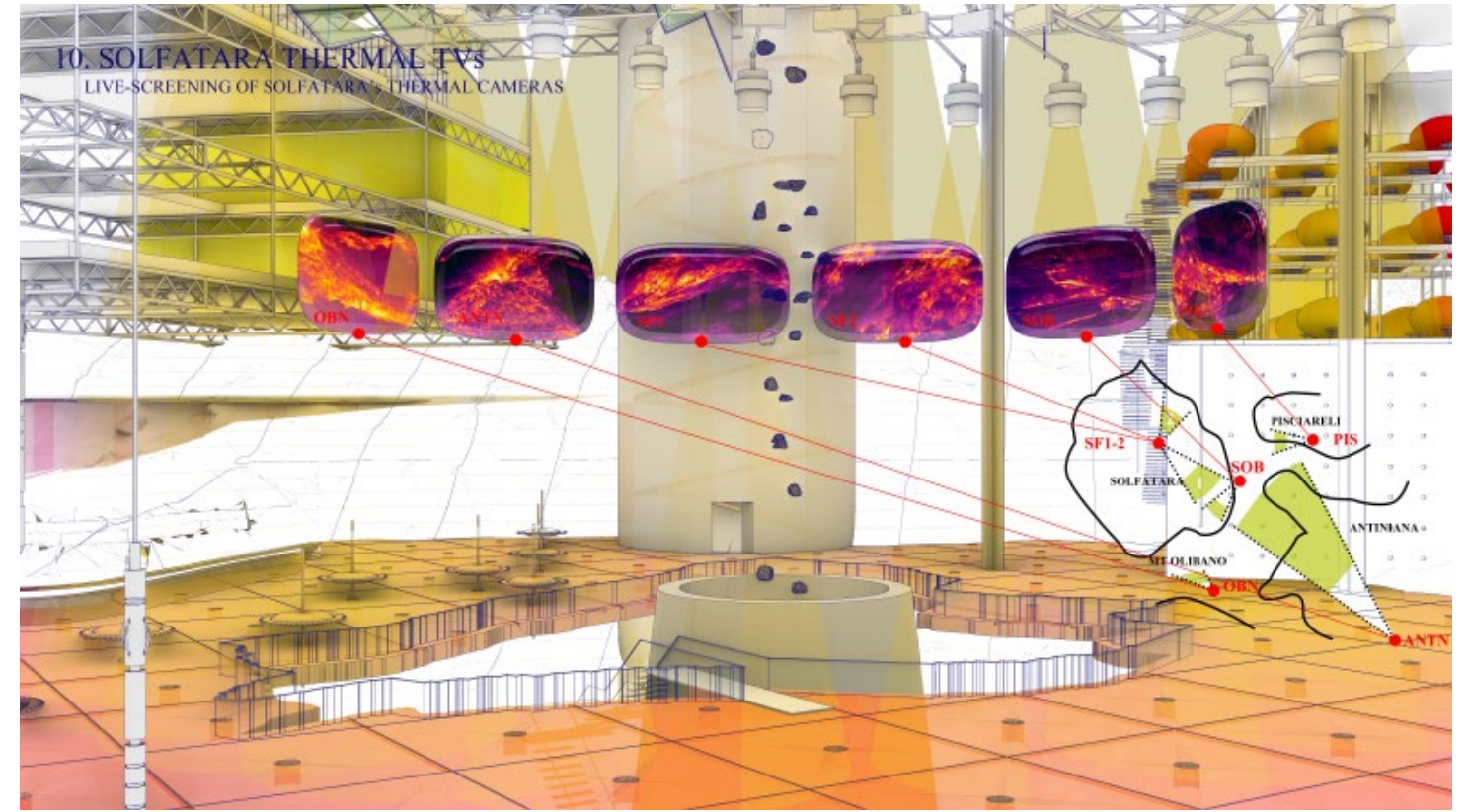
9. INFRASOUND CURTAIN

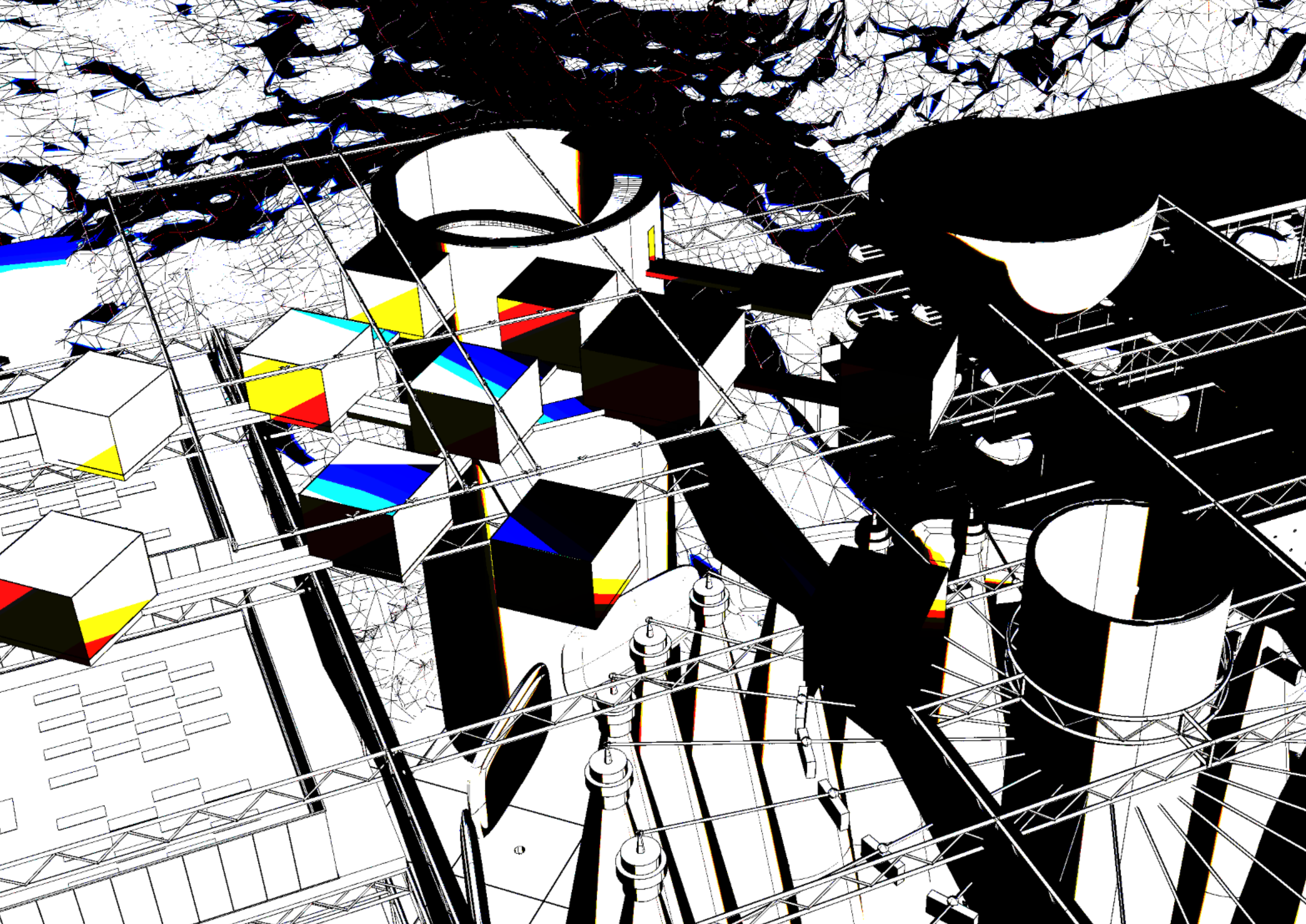
INFRASOUND DATA

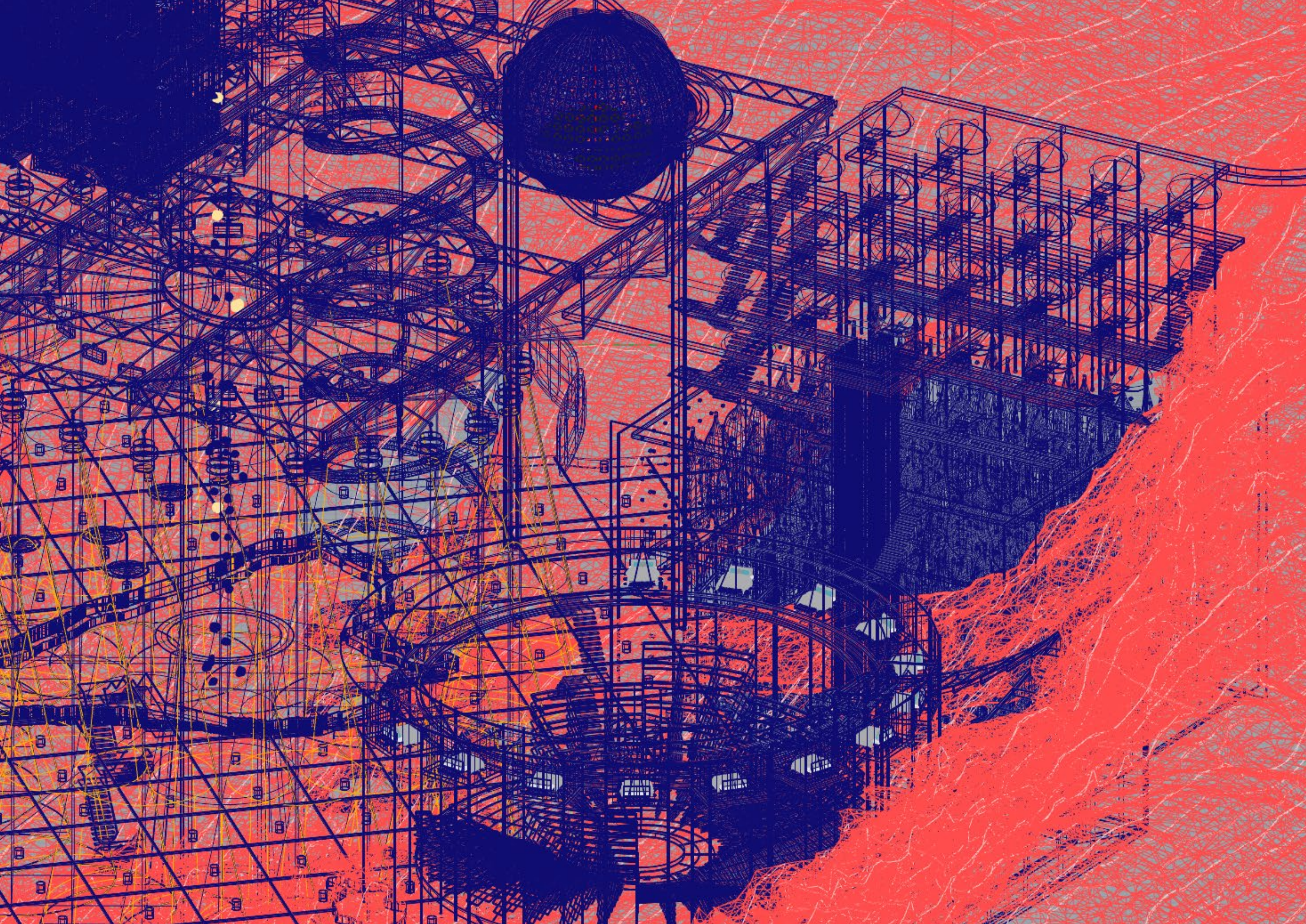


10. SOLFATARA THERMAL TVS

LIVE-SCREENING OF SOLFATARA THERMAL CAMERAS







INFRASOUND
MUSIC ROOM

EARTHQUAKE GYM

P-WAVES PILATES

SO₂ WEAVING ROOMS

THERMAL CAMERA
PLANETARIUM

WATER TEMPERATURE
GEO-CAPSULES

SOLFATARA
THERMAL TVs

INFR.

TILT AMPHITHEATER

