

SPACE PUPPY

MIXED REALITY
PODS

METaverse

Transitioning (to) Future Cities

Trans-disciplinary platforms as instruments to democratize technology for participatory use in building back neglected urban voids of Riga

ROBOT
ASSISTANT

AR HEADSET

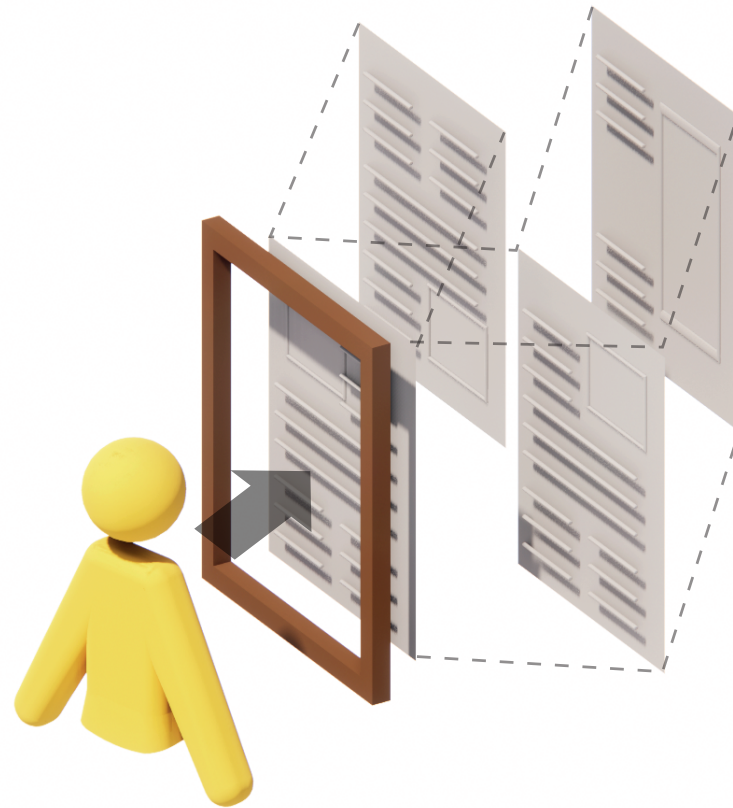
METaverse
DAO OR PHYSICAL APPLICATION
SITE DRIVERS
LOCATION STUDY
PROGRAMMATIC STRATEGY
CONCEPT DRIVERS
DESIGN STRATEGY
STRUCTURE AND CLIMATE
TECHNICAL DRAWINGS
CITY OF THE FUTURE
VR SESSION

METaverse

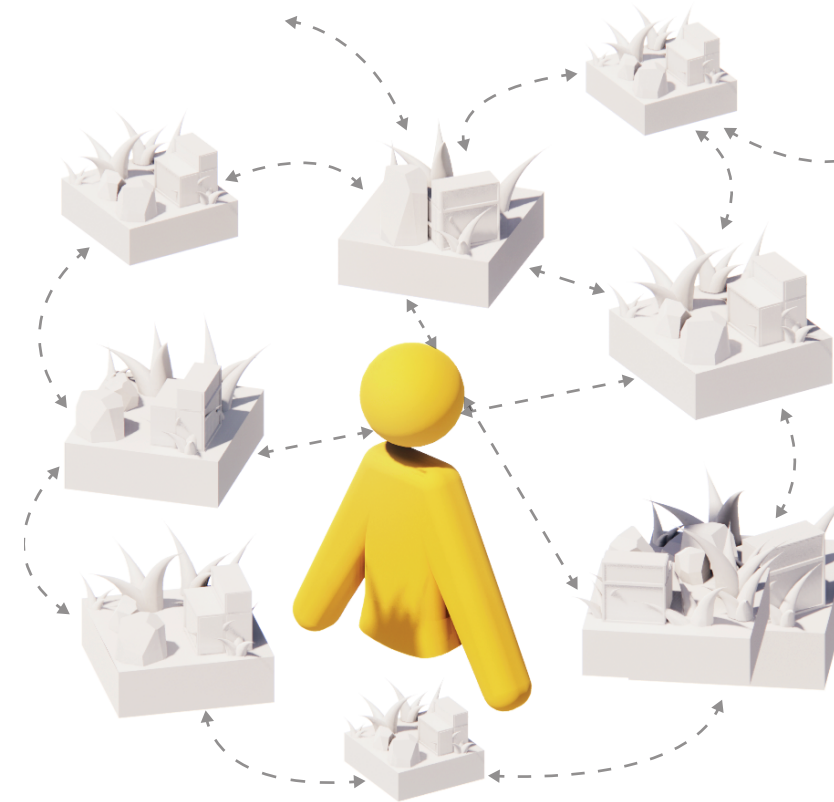
Ecosystem and Technology

METaverse ???

2D Lines to 3D Immersion

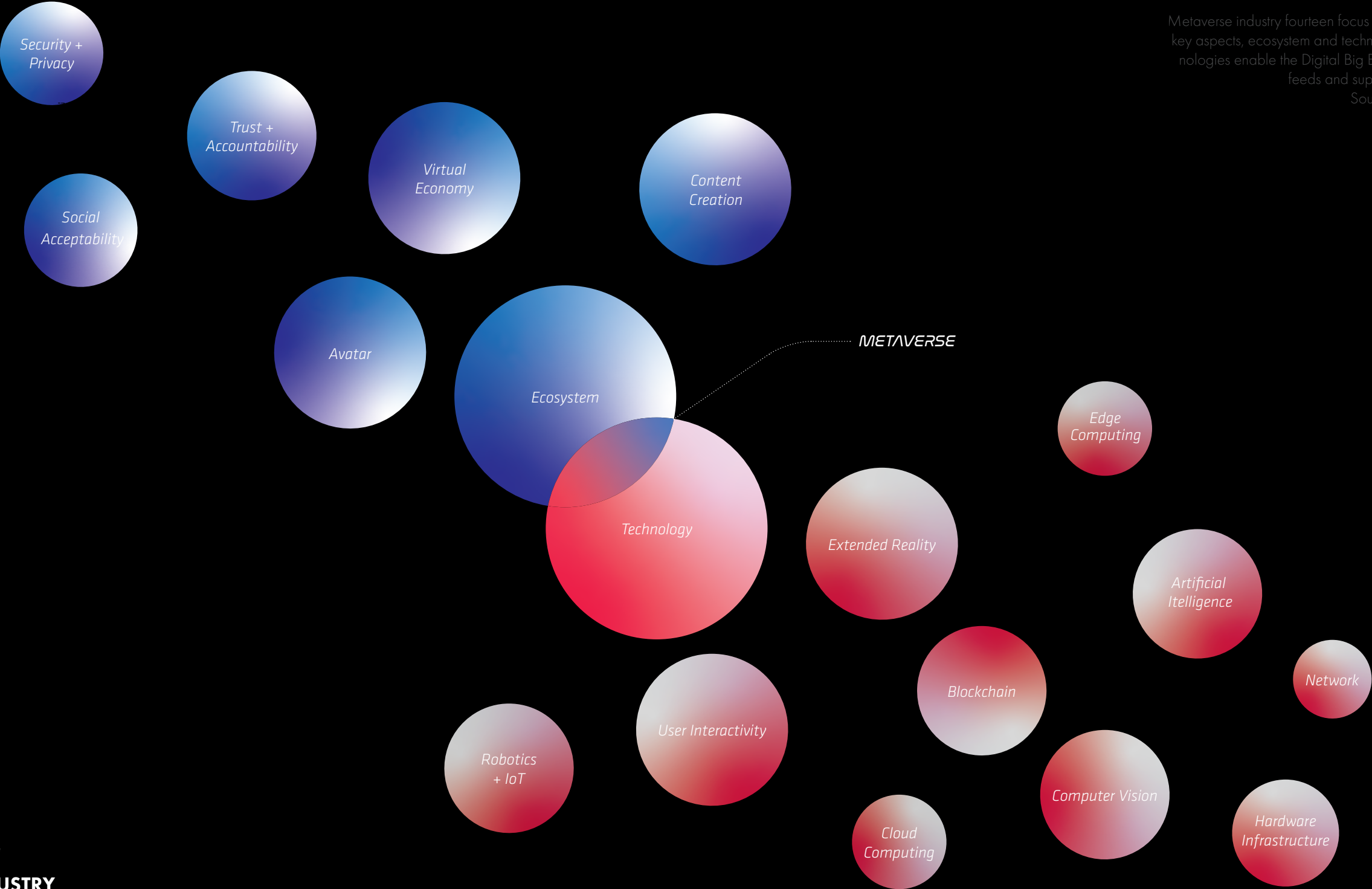


Internet
// Today //



Internet
// Tomorrow //

Metaverse industry fourteen focus areas fall under two key aspects, ecosystem and technology. The key technologies enable the Digital Big Bang, which in return feeds and supports the ecosystem.
Source: Lee et al., 2021

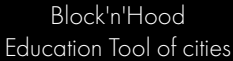
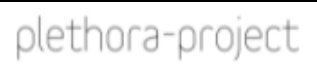


The Digital Big Bang
METaverse INDUSTRY

CREATING THE METAVERSE

User Generated Content Platform

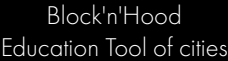
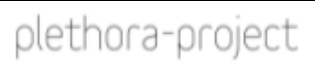
Gaming Platforms
(Closest Metaverse Companies)



Tech Platforms
(New + Existing Companies Transitioning)



Architecture Platforms
(Shows AI/Digital Twin/ Content Creation Traits)



The current market focuses on game-ish virtual spaces because video games test technologies and cultural and social features. An interesting observation was made during the research is that almost all metaverse companies are building a toolkit for users to build virtual worlds from. Many companies are facilitating infrastructure creation, as the the strongest asset of web3 (metaverse) is the user focused ownership and new economic models. CityDAO.io is one of the first networks to create decentralised asset ownership for physical reality, the first land-based metaverse.

Metaverse Components

General Equilibrium

Originally I referred to the metaverse as 3d worlds for meetings that live somewhere on the cloud or the internet if you will. But the research revealed that the metaverse power lies within the user generated content, and highly collaborative and trustless decision making. But more importantly, these creations and collaboration can be funded and implemented by actual people who need it.

If gaming can be viewed as idealized and fictional version of the physical world, the metaverse technologies (DAO, Smart Contracts and blockchains) are creating a new world system and policies where these fictional creations can directly shape governments, finance and the built environment, by participation of anyone with a digital device.

Basically the metaverse is building a new world order.



Identity Systems

Fortnite

User Generated Environments

Sandbox



Interaction
Access VR/AR/PC/Tablet

Own Land

Sandbox Virtual Property

LAND

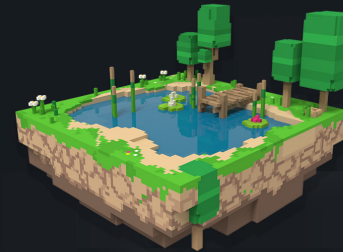
PORTION OF METAVERSE

(ERC-721)

LANDS are portions of the metaverse open to player ownership.

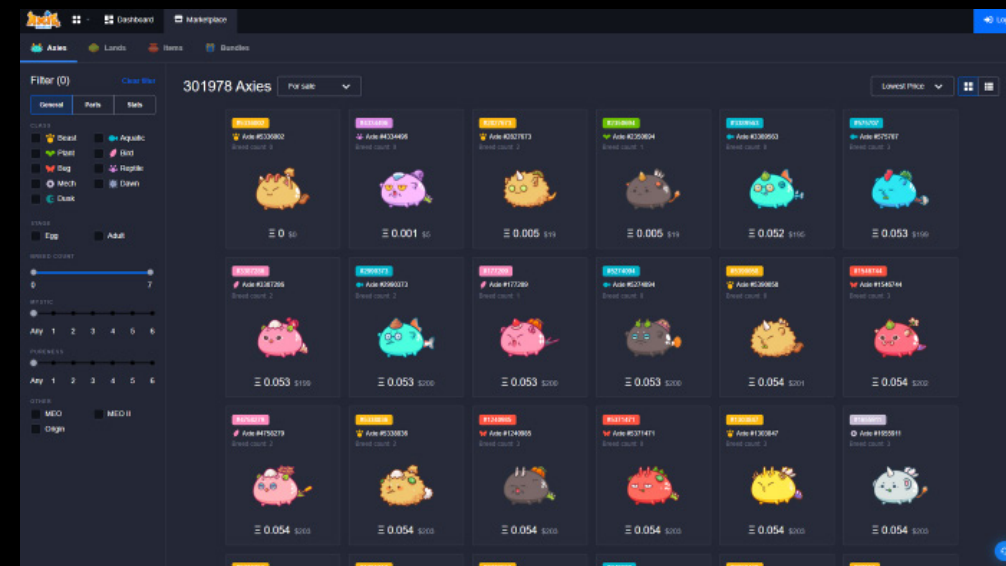
They can be edited by their owner and contain other tokens (ASSETS, GAMES) to create experiences.

Multiple LANDS can be linked together to form a bigger parcel (ESTATE)



Create
Unity Platform

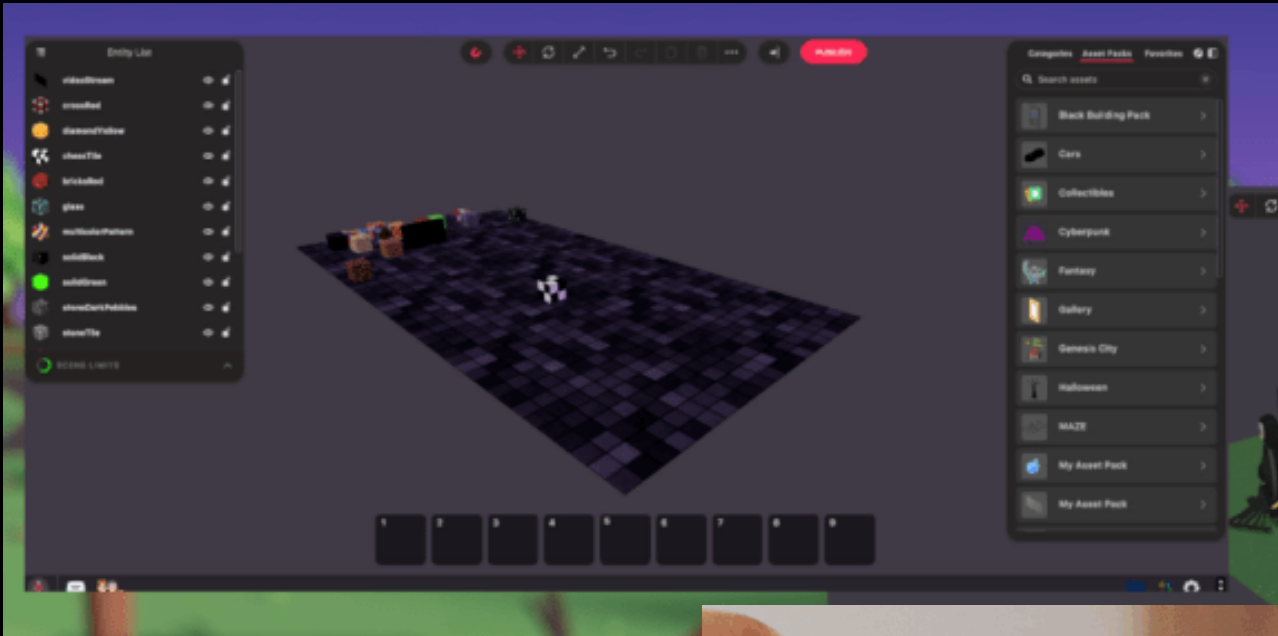
Sell Creation
Blockchain Economy



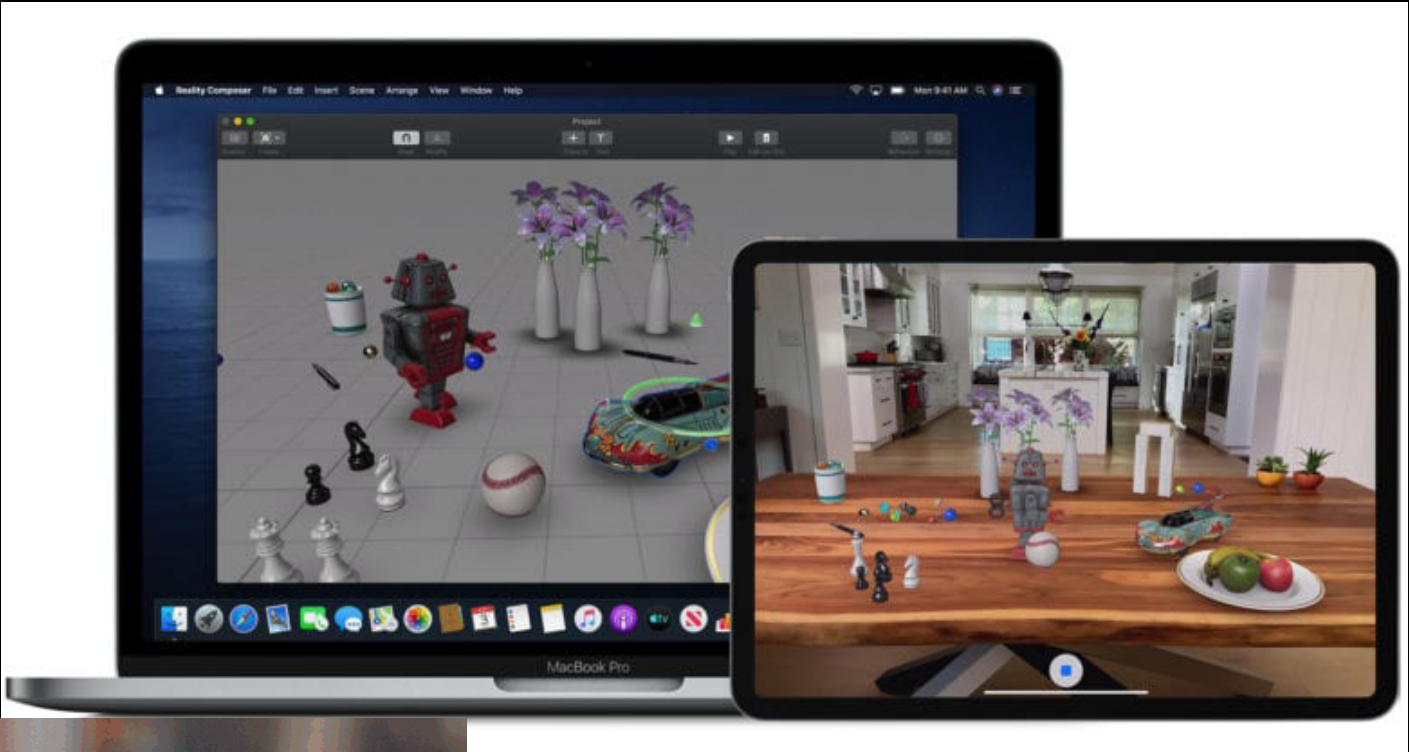
Experience / Socialize
Fortnite Travis Scott Concert

TOOLKIT OF PLATFORMS

User Generated Content Platform



Decentraland Virtual SDK



Apple Reality Kit

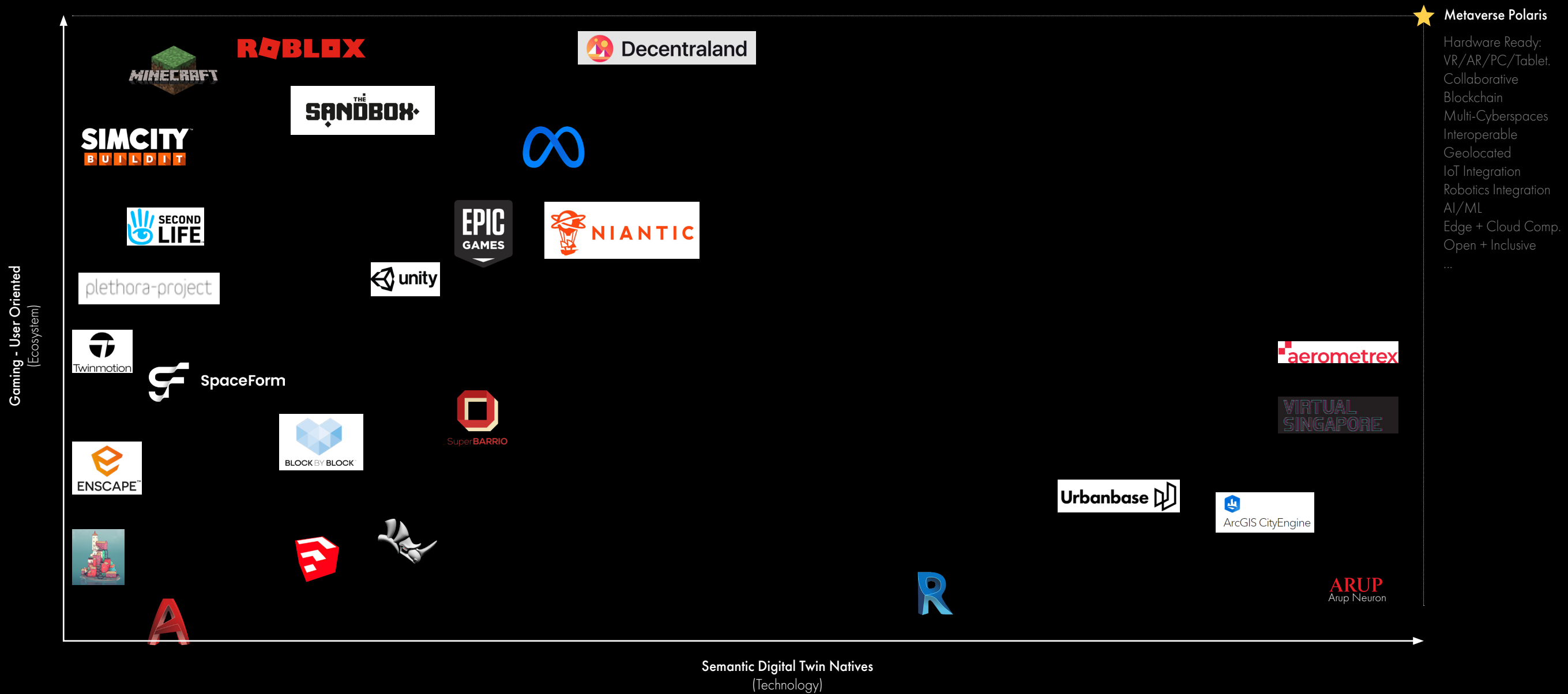


Google AR Core

PLATFORM MV GRAPH

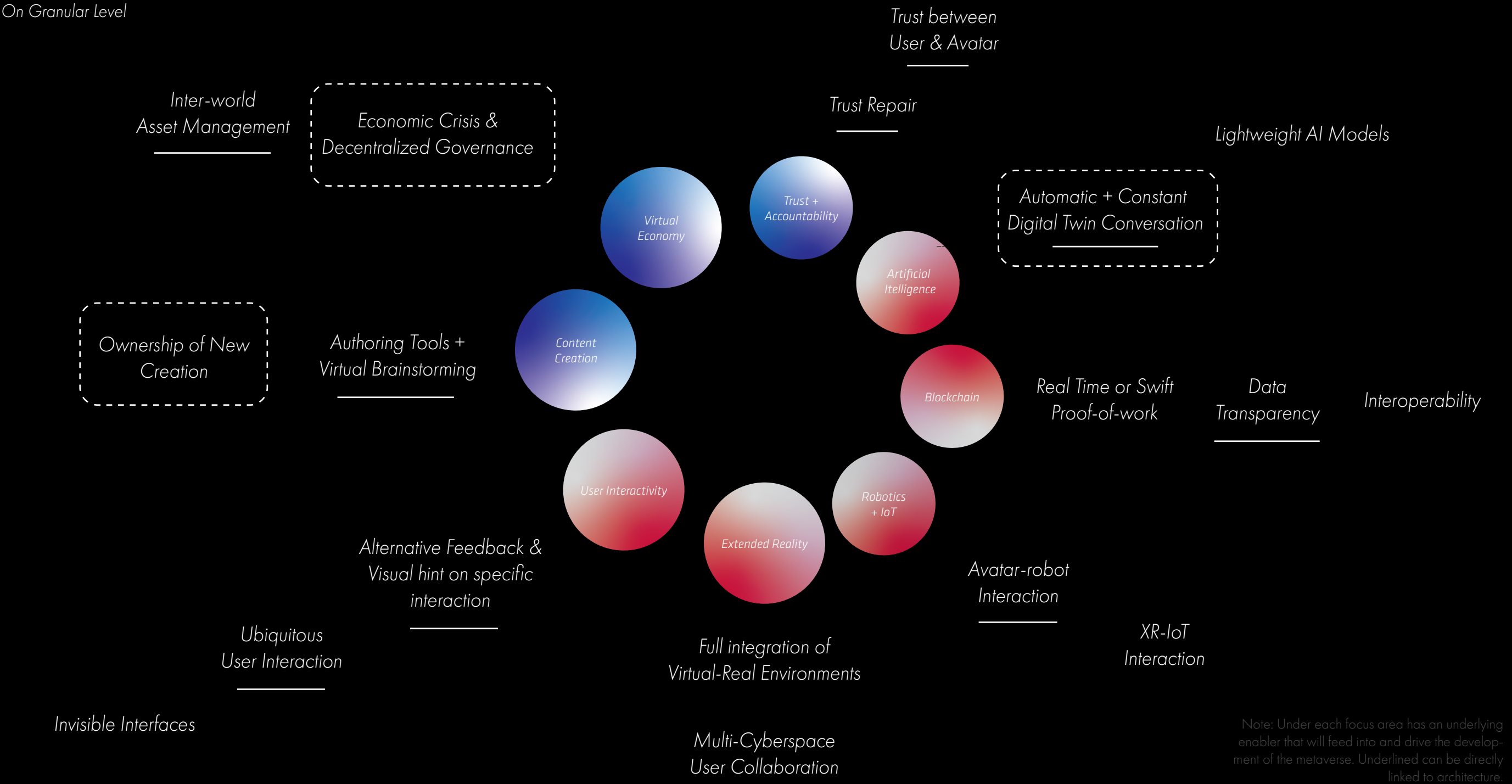
How Metaversy Are Current Platforms

Gaming platforms are heavily built around users, content creation and interaction. Tech is needed to make them more interoperable and augmented. Decentraland is the closes we have to metaverse, as its the first iteration of tech+ecosystem merged. While architectural models are dumb or smart. Dumb models are incredibly good in creating content but lack data overlay and non-architect usability, on the other hand some are highly data driven but lack user-friendly interaction. Each software could be placed against each criterion.



METaverse ENABLERS

On Granular Level



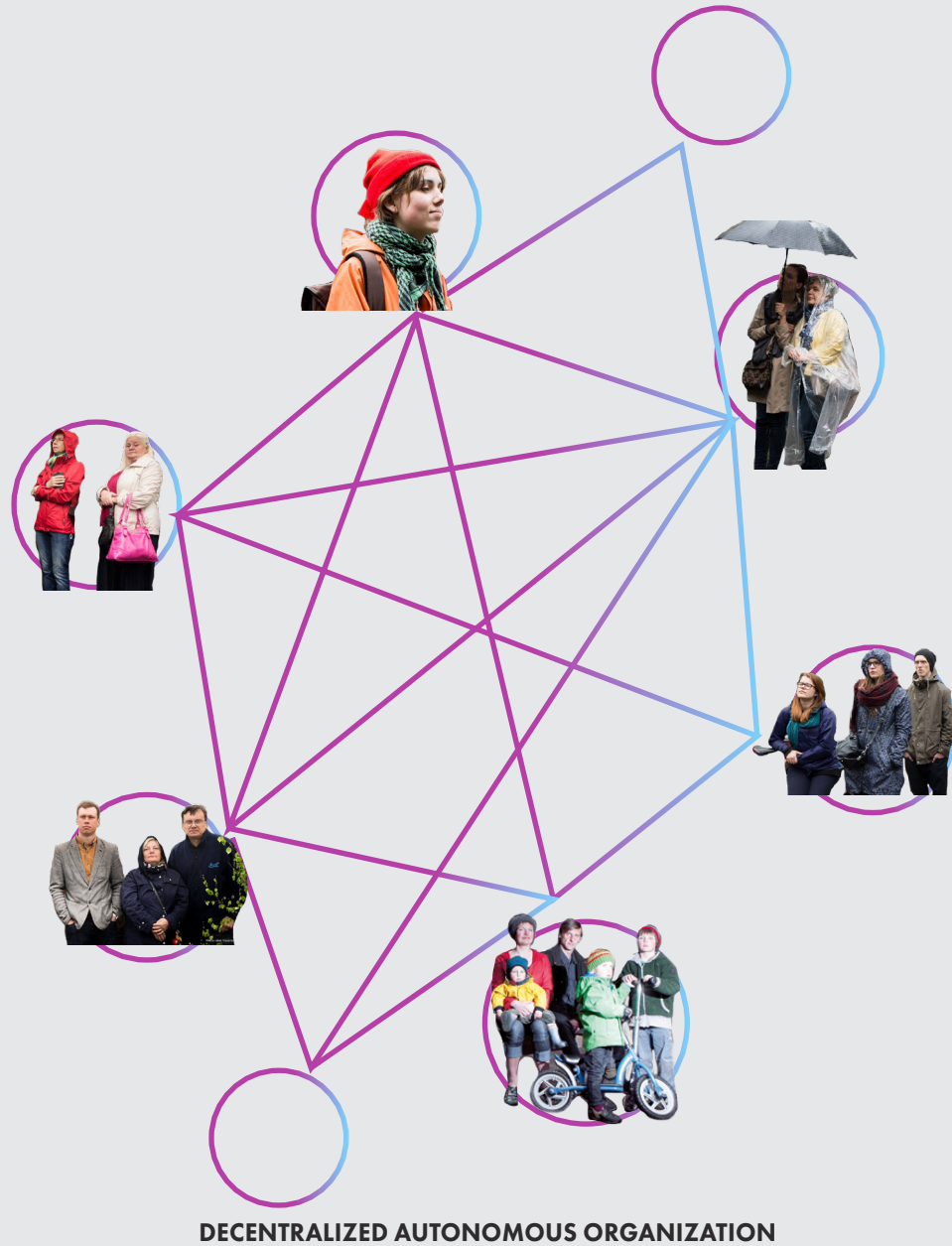
DAO

Right To The City

DECENTRALIZED AUTONOMOUS ORGANIZATION (DAO)

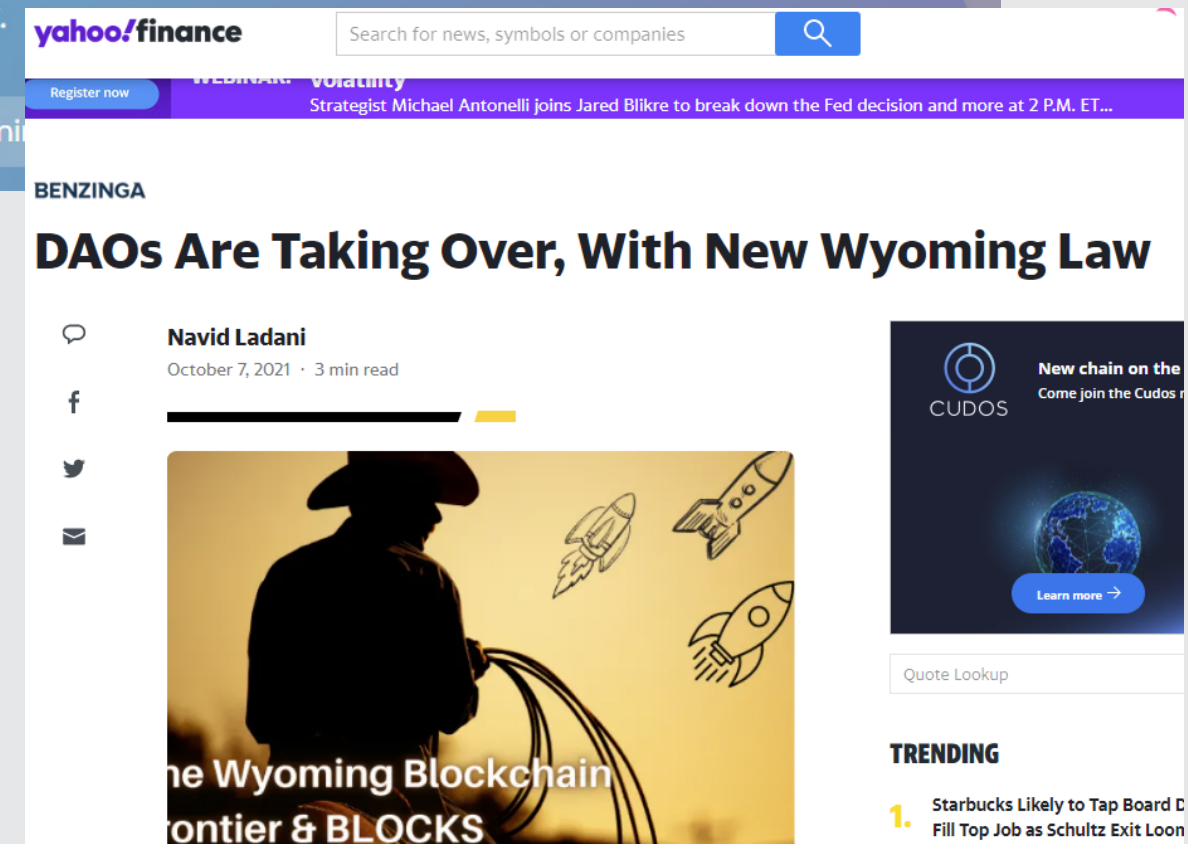
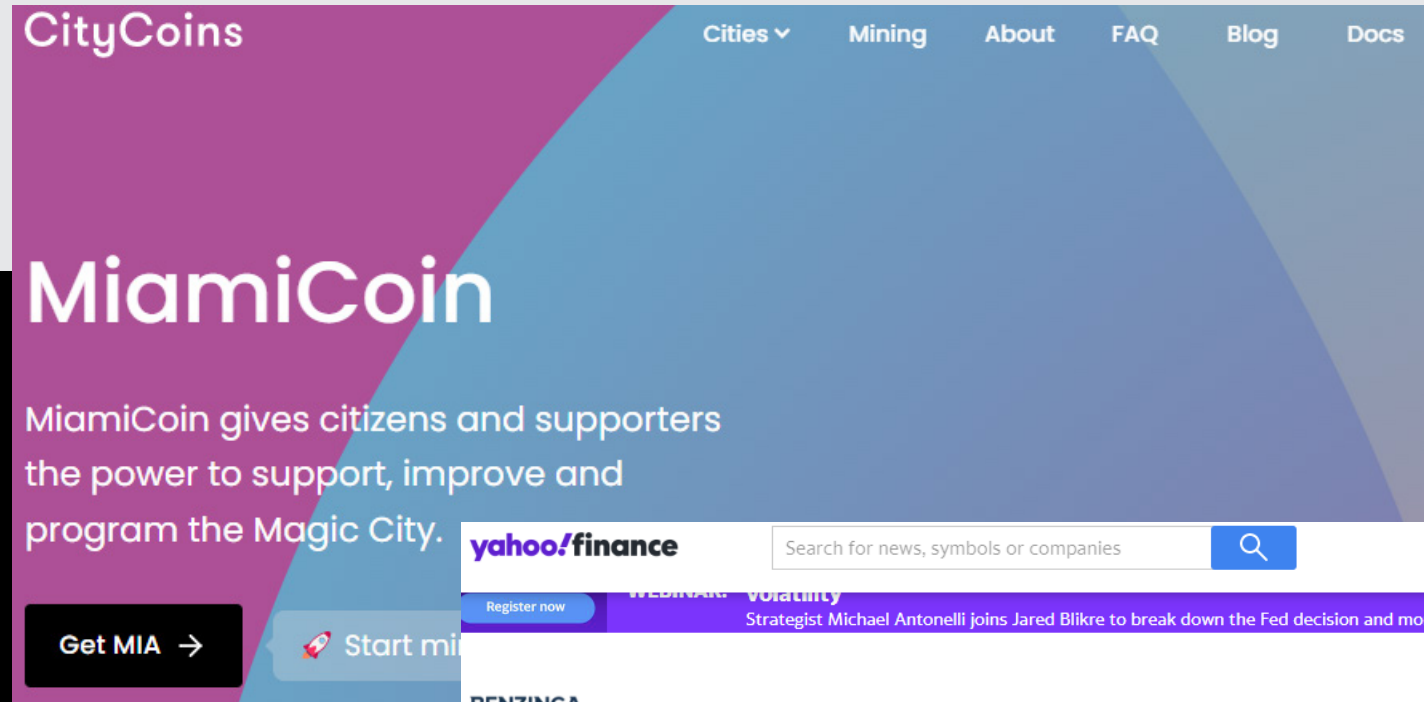
New World Order Shaped By Users

KICKSTARTER



DAO AS A LICENSE

Platformization As A Filter



RIGA

As a case study



CITY OF RIGA

Similar Area Size As Rotterdam



Petersala + Andrejsala

Skanste

Brasa

Teika

Grīņķalns

Purvciems

City Center

Avoti

Old Town

Dārziems

Moscow District

Islands

Tower Hill

Agens Hill

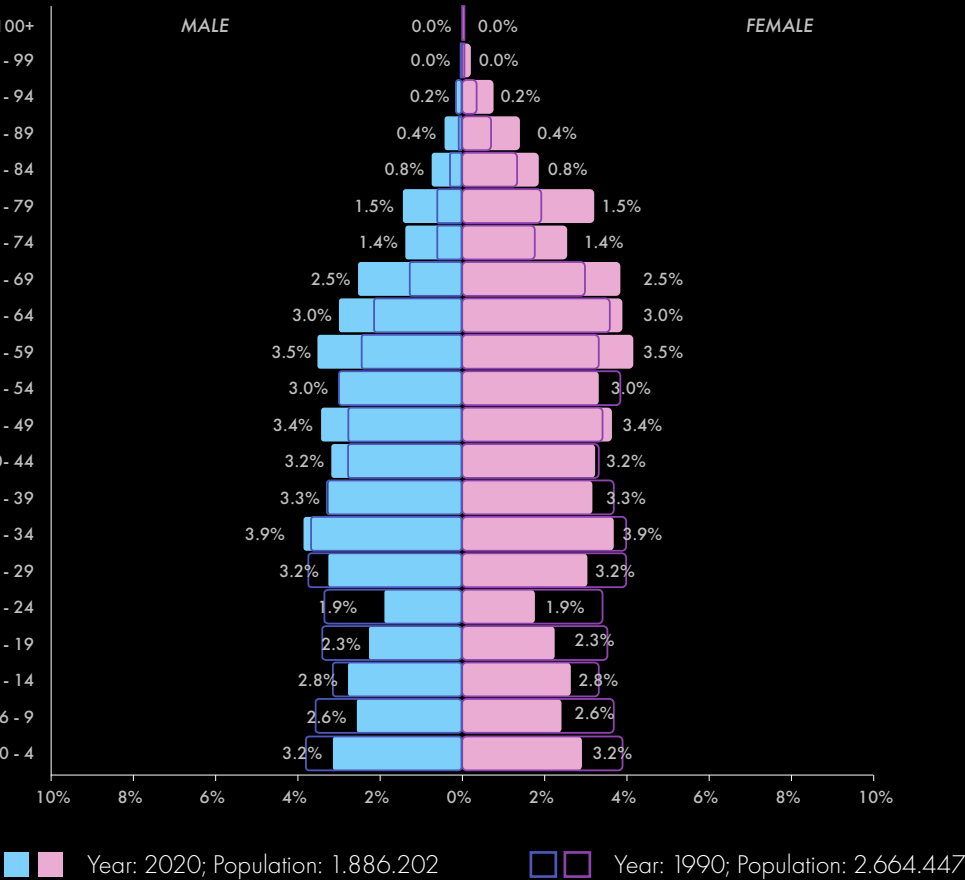
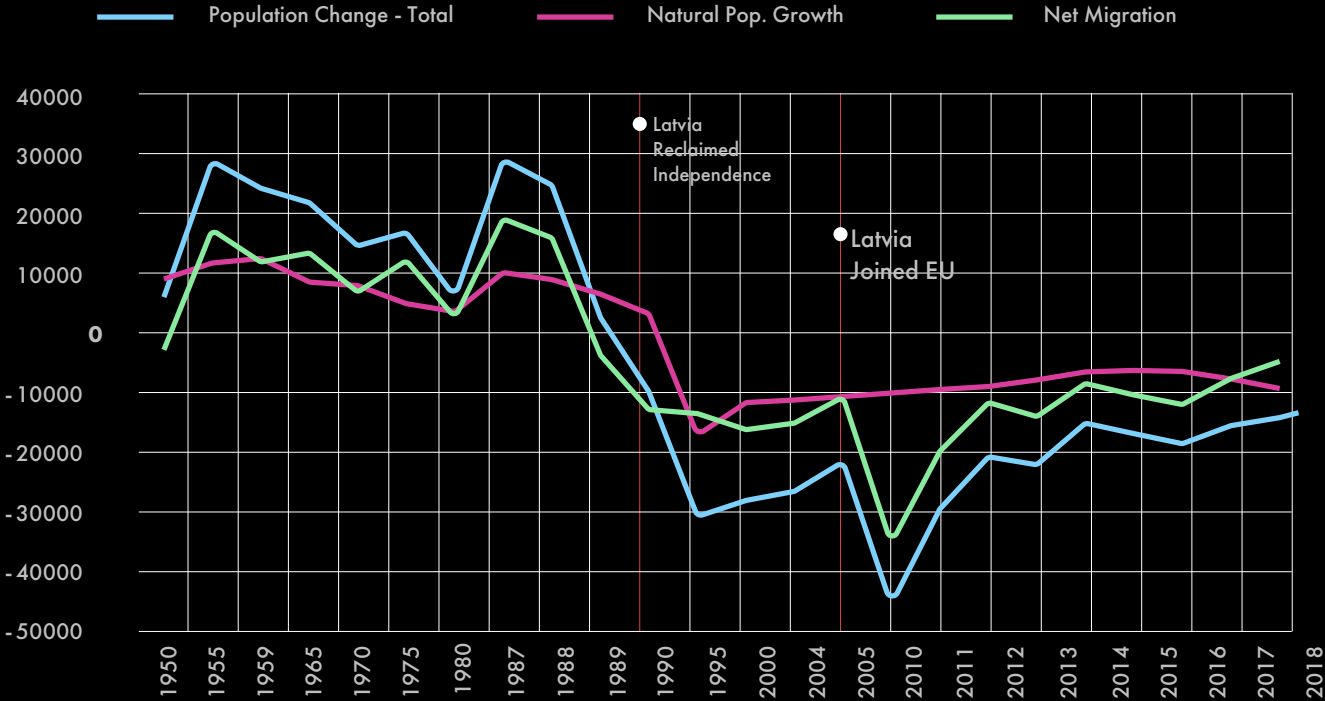
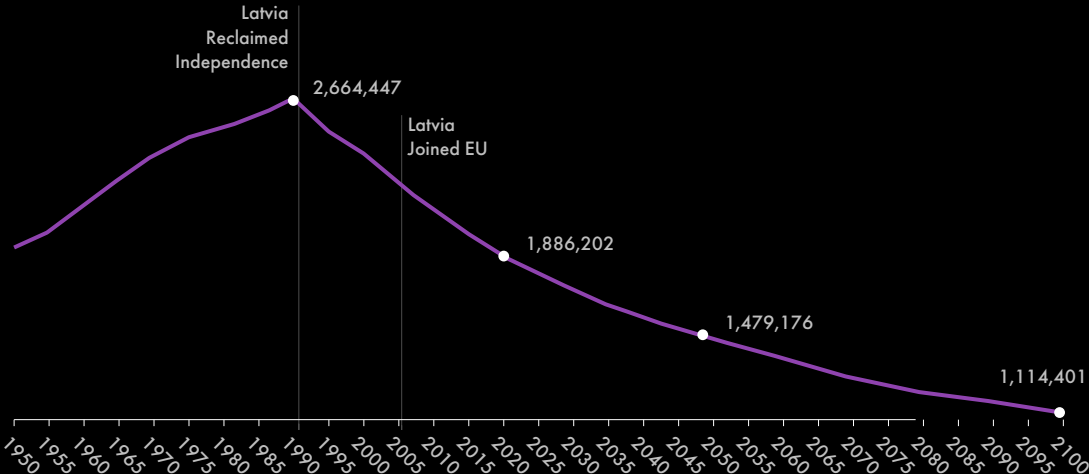
Kipsala

00 500 1000m

POPULATION LOSS

Key Causes

Historically, Latvia had a stable economy due to strong agriculture which has experienced irregular periods of economic growth due to occupation. The country has been on an economic decline for the last 110 years. (Borgen, 2017) This has had a downward impact on Latvia's population which is predicted to collapse by 2050. The strongest economic contributors, the working population (15-35) continue to migrate to other countries world wide. Latvia has a scarcity of natural resources, but the largest shortage comes from the economic opportunities. Following this the second largest is the working population which is strongly correlated. (Williams, 2021) The country is going through health system crisis which does not encourage young families to have babies. Goverment is opening dual citizenship schemes, increasing language and integration classes to foster migrant return, although this hasn't proven to be efficient, as the focuse has not been on a sustainable job market which would incentivize displaced Latvians to return, and even attract other nations. One third of Latvian population lives in Riga.



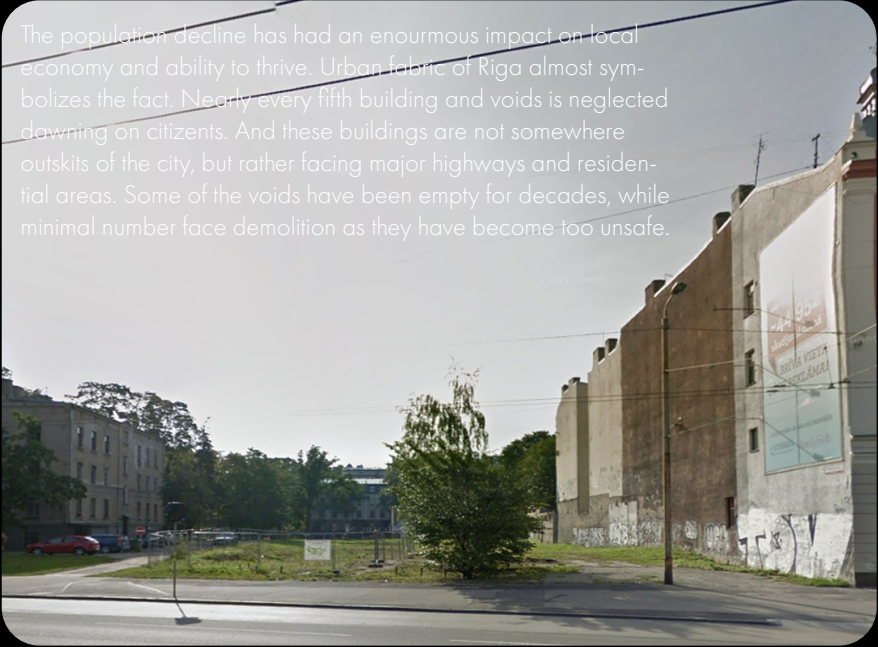
Source: Latvian Statistical Database. https://data.stat.gov.lv/pxweb/en/OSP_PUB/START__POP__JR__IRS010/table/tableViewLayout1/ Accessed: 15.12.2021

Source: Borgen Magazine. Poverty in Latvia. January, 2017. <https://www.borgenmagazine.com/poverty-in-latvia/> Accessed: 15.12.2021 Source: Williams, 2021. Latvia: Population Decline Since the Fall of the USSR. <https://storymaps.arcgis.com/stories/274857726df3467888f38803cdb4dc6f> Accessed: 15.12.2021

URAN SPACES

Derelict Urban Fabric

The population decline has had an enourmous impact on local economy and ability to thrive. Urban fabric of Riga almost symbolizes the fact. Nearly every fifth building and voids is neglected dawning on citizens. And these buildings are not somewhere outskirts of the city, but rather facing major highways and residen-tial areas. Some of the voids have been empty for decades, while minimal number face demolition as they have become too unsafe.



URBAN VOIDS

Local Desired Regeneration Points

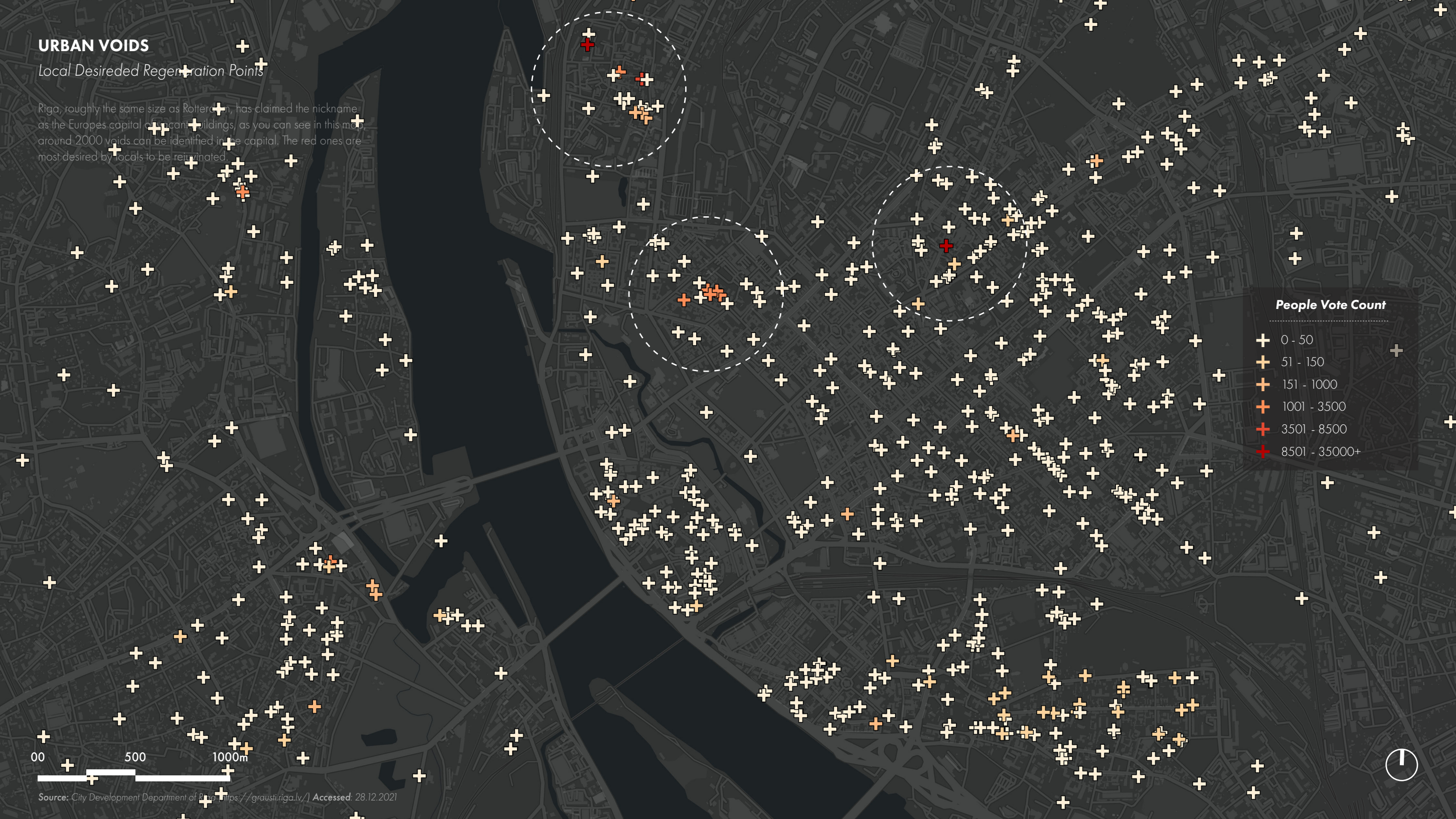
Riga, roughly the same size as Rotterdam, has claimed the nickname as the Europe's capital of urban buildings, as you can see in this map, around 2000 voids can be identified in the capital. The red ones are most desired by locals to be regenerated.

People Vote Count

- 0 - 50
- 51 - 150
- 151 - 1000
- 1001 - 3500
- 3501 - 8500
- 8501 - 35000+



Source: City Development Department of Riga <https://grauti.riga.lv/> Accessed: 28.12.2021



URBAN VOIDS
Property Destruction Level Classification

- Void Classification**
- A / Ruined
 - B / Semi Ruined
 - C / Semi Intact
 - Unclassified



Class A



Class B



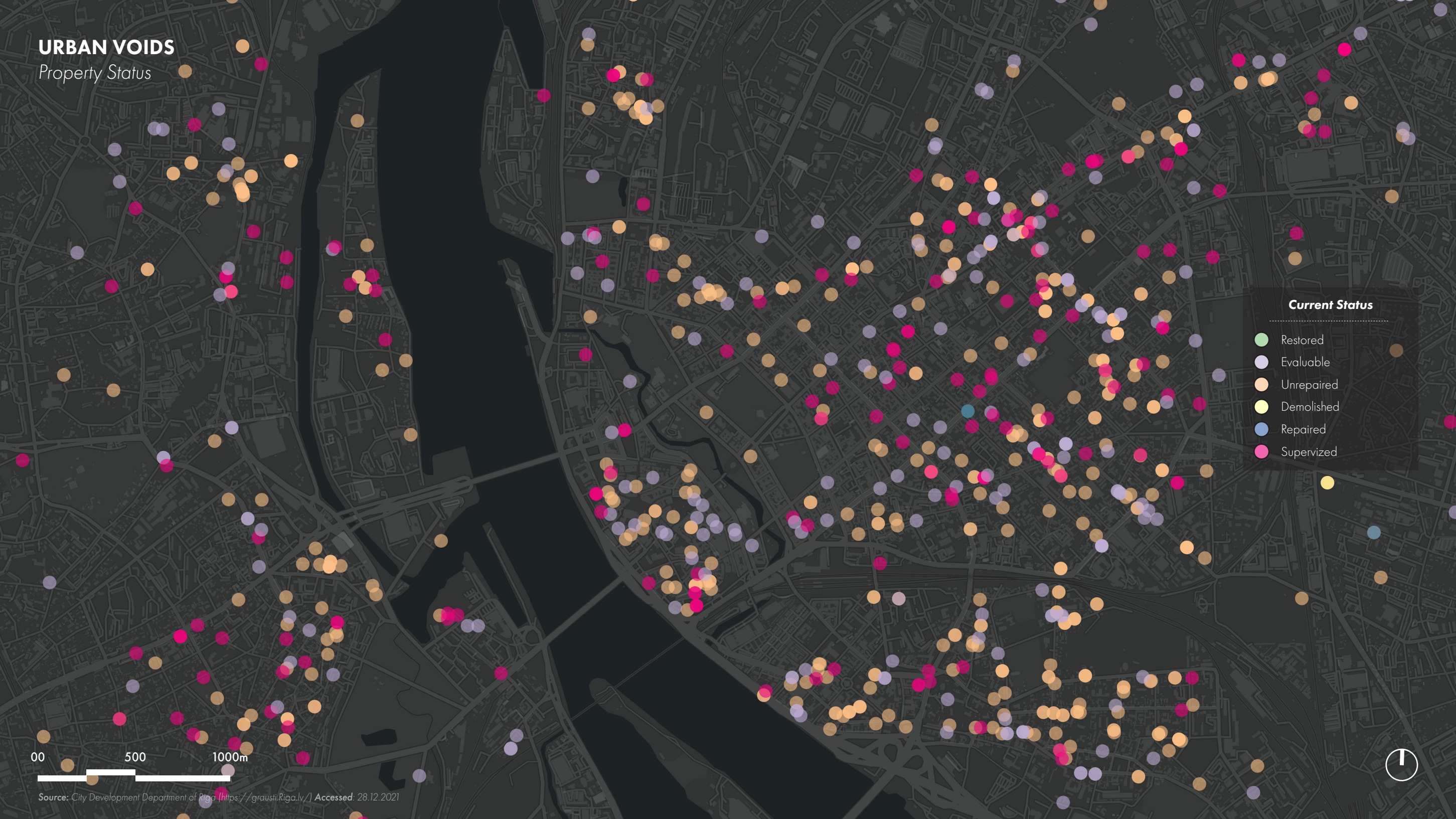
Class C



Source: City Development Department of Riga (<https://grauiti.Riga.lv/>) Accessed: 28.12.2021



URBAN VOIDS
Property Status



Current Status

- Restored
- Evaluable
- Unrepaired
- Demolished
- Repaired
- Supervised

00 500 1000m

Source: City Development Department of Riga (<https://grauti.Riga.lv/>) Accessed: 28.12.2021

URBAN FABRIC

Population Density

Pop Density (2019)



00 500 1000m

Source: Consultancy Firm Grupa 93 (<https://www.drcgis.com/home/user.html?user=Grupa93>) Accessed: 28.12.2021

NGO INITIATIVES

Temporary Solution For Permanent Void



Source: Visegrad Funds, 2014. https://issuu.com/kekfoundation/docs/vacant_central_europe Accessed: 16.10.2021

Source: Refill, 2017. A Journey Through etmporary Use. <https://refillthecity.wordpress.com/> Accessed: 16.10.2021

TACTICAL VS METAVERSE

Metaverse As A New Methodology

Tactical urbanism is a great way to create attention and make changes to your local area. It engages locals, is solution driven, usually low cost and is initiated by bottom up groups. Which is great, although locations like Riga, does not have time to spend 5+ years on one void at time. Locations like this, multiple parties need to be triggered simultaneously. Politically it can be challenging as officials change every few years, even when they are around they can be barely trusted. High profile initiatives will need a honest governance systems. Metaverse can be seen as the next generation tactical urbanism methodology. An interactive location and site specific content creation platforms which automatically builds and securely stores datasets on the edge or cloud.

As an example can be seen in Amersfoort, The Netherlands. Most of the empty spaces in Amersfoort are privately owned. Local initiatives and businesses had a hard time finding each other. Amersfoort has engaged the networking organisation Matchpoint to create a platform for the two parties to find one another. Matchpoint has set up a website and is building a strong database. Events are organised where parties can network and find their match.

Some estate brokers see the matchmaking service as a competitive action and don't want to collaborate with Matchpoint. As a neutral partner outside of the municipality, Matchpoint is in a better position to make matches than a department within the administration would be.



#1. LEGAL FRAMEWORK
Temporary use should be recognised as a practice by the municipal administration and included in the legal frame of building regulations.

#2. BROKERING
Temporary use requires accurate, dedicated mediation between stakeholders and support in the field for the entire duration of the temporary use, and beyond.

#3. SUPPORT
To benefit from temporary use and fully use its potential, initiatives need support.

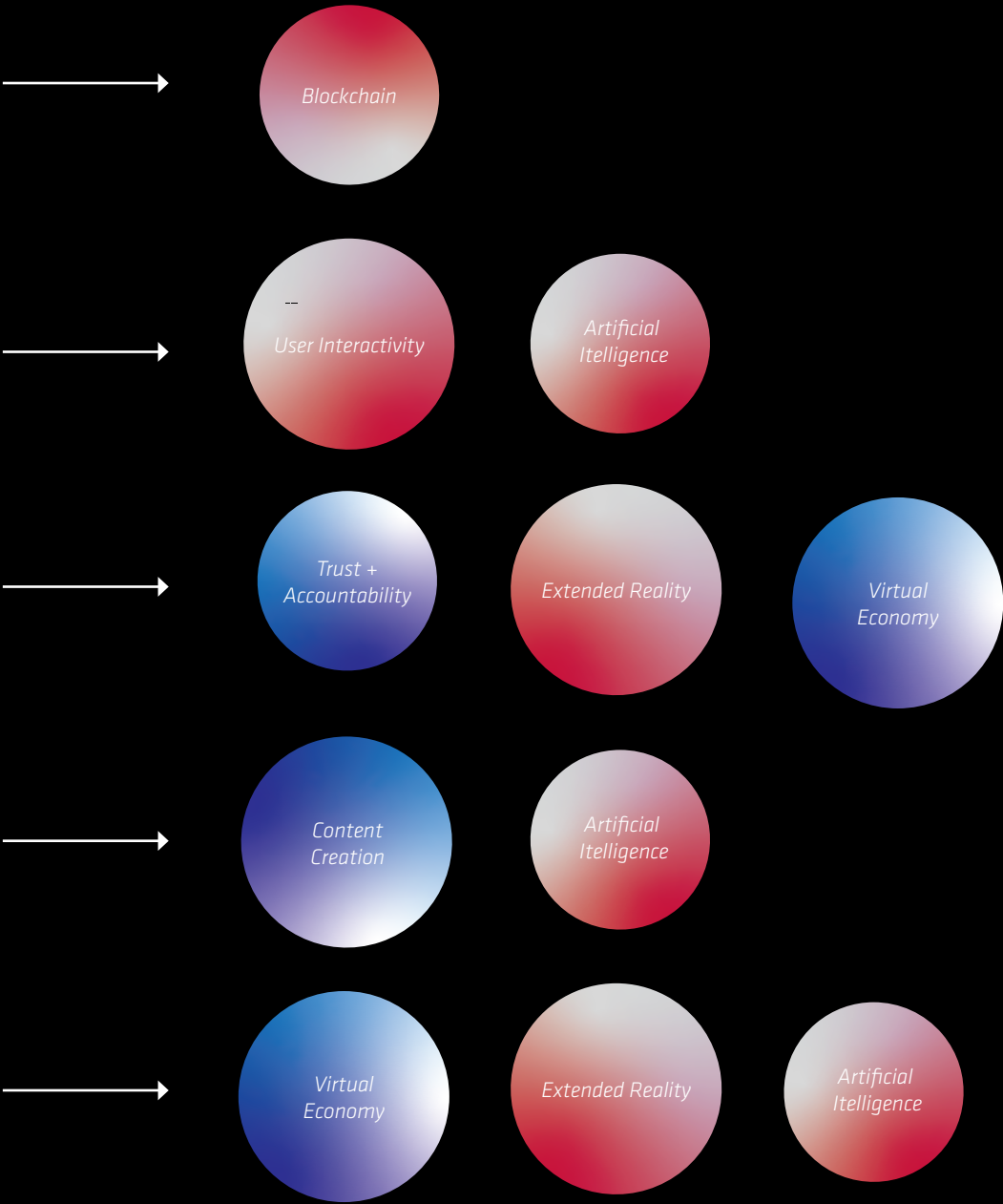
#4. TEMPORARY USE BECOMES NORMAL
Temporary use is the new normal. Vacant urban spaces are no longer considered anomalies. As a result, temporary use is likely to develop further into a public service.

#5. URBAN LABS AND STRATEGIC TEMPORARY USE
Temporary use is a tool for bottom-up urban planning and a laboratory to experiment with the city of tomorrow.

SMALL SCALE LOCAL INITIATIVE
(Bottom-Up)

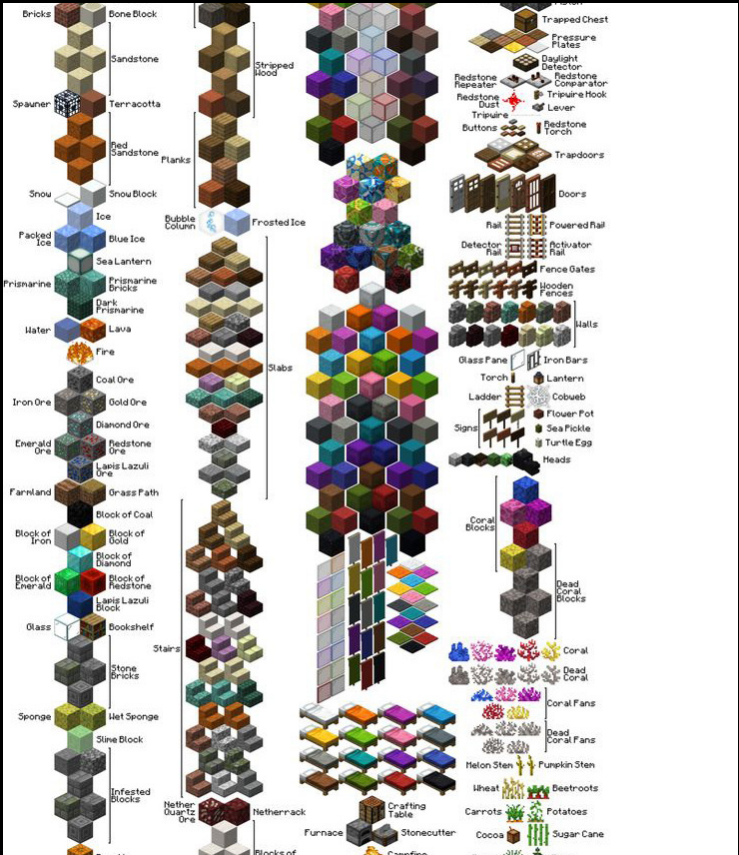
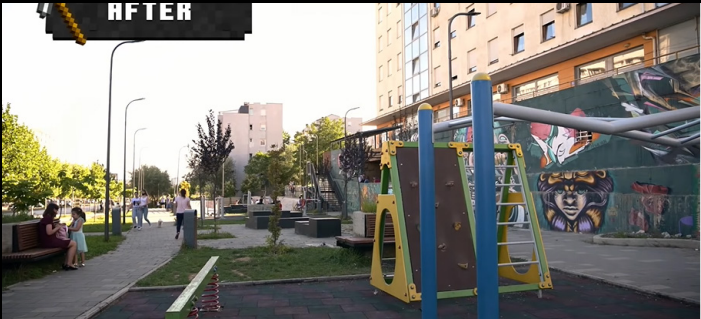


BIG SCALE INTERNATIONAL SUPPORT
(Bottom-Up+Top-Down)



MINECRAFT IN USE

Building Peace In Kosovo



NEXT GENERATION EU

Europe's Focus Sectors

Next Gen EU is a 800+ Billion euro fund provided to European countries. First three sections highlight the green initiatives which directly affect architecture. Second focuses on the digitalization and education technology, while making education more accessible. Lastly, the EU highlights the focus on education and encouraging people to study science and technology which will open more doors to green and digital future. All these elements can feed into a catalytic project to boost Latvia's future.

Make It Green

Europe is on track to become the first climate-neutral continent by 2050 – we will produce no more greenhouse gases than our ecosystems can naturally absorb. With NextGenerationEU, we will invest in environmentally-friendly technologies, roll out greener vehicles and public transport, and make our buildings and public spaces more energy efficient.

But we also need to protect our natural environment. We will:

- improve water quality in our rivers and seas, reduce waste and plastic litter, plant billions of trees and bring back the bees
- create green spaces in our cities and increase the use of renewable energy
- make farming more environmentally-friendly so our food is healthier.



- * ... make our buildings and public spaces more energy efficient.
- * Create green spaces in our cities and increase the use of renewable energy.

Make it Digital

The future will be driven by technology. So we're making the next 10 years Europe's digital decade! With NextGenerationEU:

- you will be able to connect everywhere with 5G and EU-wide ultra-fast broadband
- you will receive a digital identity (eID), making it easier to access online public services and giving you more control over your personal data
- our cities will become smarter and more efficient
- online shopping will be more secure
- artificial intelligence will help us to fight climate change and improve healthcare, transport and education.

The EU is funding online training courses so that everyone, young or old, can improve their digital skills. We're helping small and medium-sized businesses go online. And we're making e-education more accessible.

Interested? Join a training session ^(EN | ***), find an apprenticeship in digital technologies ^(EN | ***), and discover how to stay safe online ^(EN | ***).

With NextGenerationEU, we're ready to make Europe digital, are you with us?



- * ... the next 10 years Europe's digital decade!
- * making it easier to access online public services and giving you more control over your personal data.
- * training courses so that everyone, young or old, can improve their digital skills.

Make it Strong

The pandemic has impacted all of our lives. Many have suffered illness or bereavement, others have lost jobs or income. Now we want to build a stronger, more resilient Europe.

With NextGenerationEU, we are:

- encouraging young people to study science and technology, which open doors to the green and digital jobs of the future
- supporting further education and apprenticeships
- offering loans and grants to young entrepreneurs.

But the EU is also helping many sectors bounce back. We're boosting support for tourism, culture and the arts across the Union, making them more digital and sustainable.

See how EU support can help you continue your education or find your dream job. Check out our Erasmus+ ^(EN | ***) opportunities and our EU Youth Guarantee. Find out what support is available for your business to become more green and digital ^(EN | ***).

With NextGenerationEU, we're ready to make Europe strong, are you with us?



- * ... encouraging young people to study science and technology, which open doors to the green and digital jobs of the future.
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CASE SITE

NFT ing Urban Voids

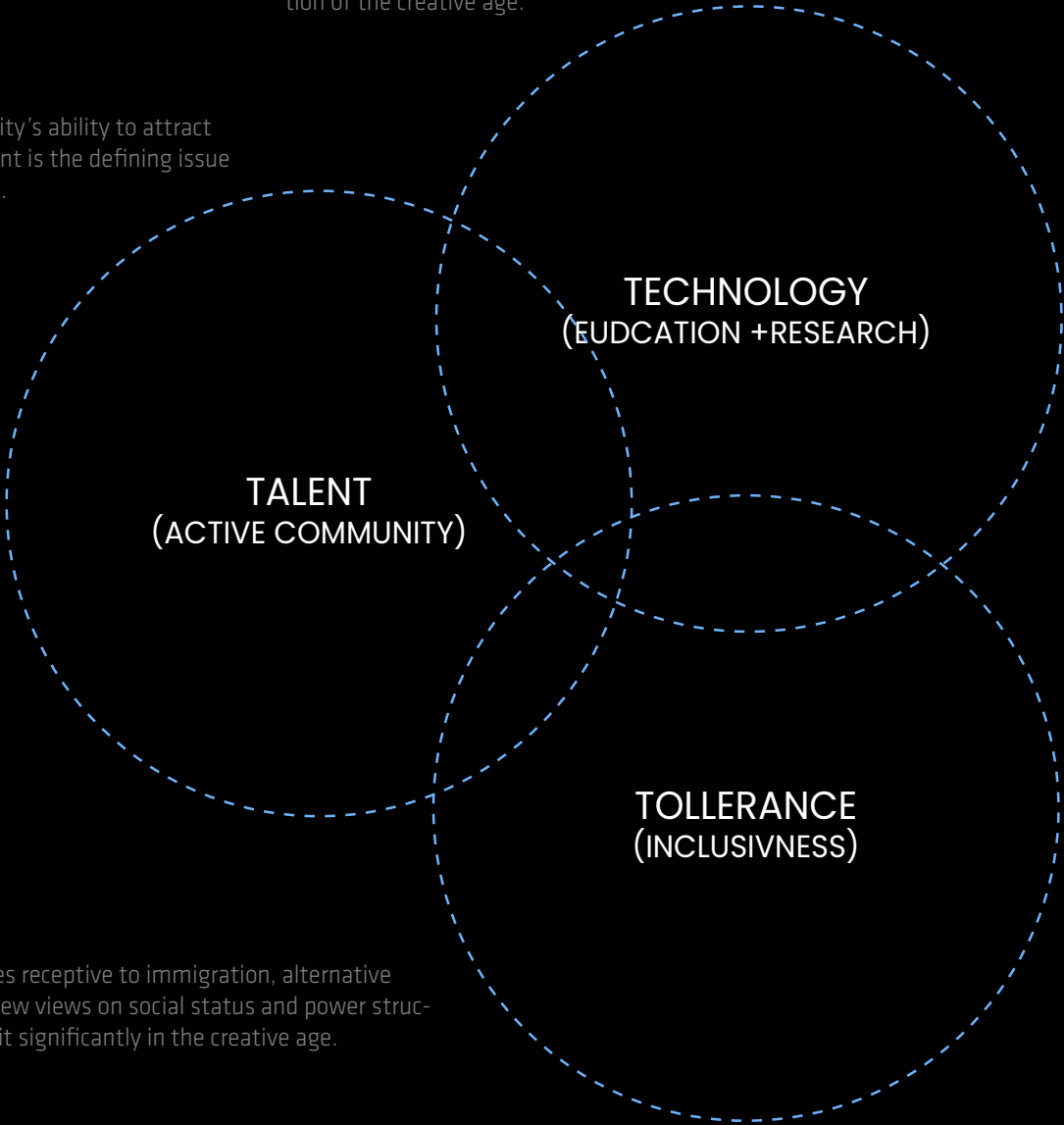


SITE DRIVERS

Two Way Strategy

Tech: Universities are paramount to this, and provide a key hub institution of the creative age.

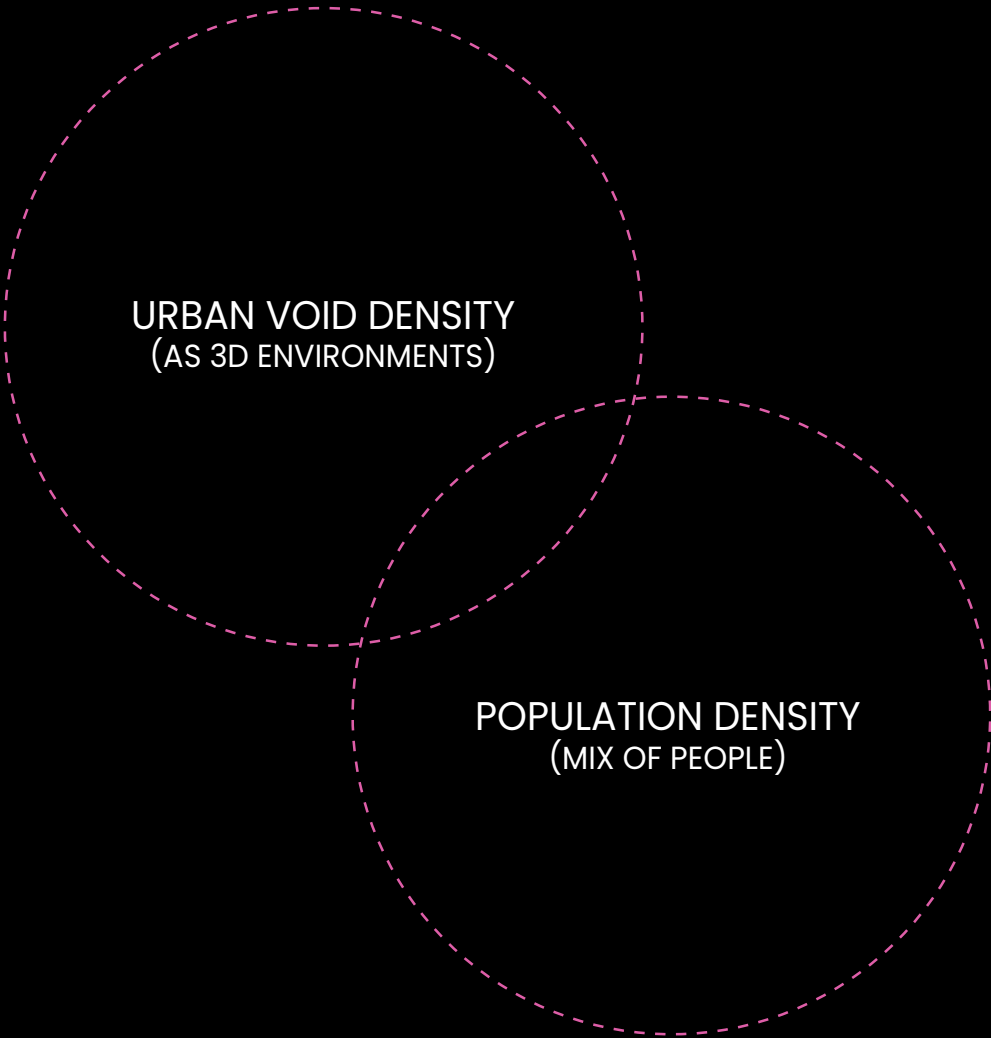
Talent: A community's ability to attract and retain top talent is the defining issue of the creative age.



Tolerance: Places receptive to immigration, alternative lifestyles, and new views on social status and power structures will benefit significantly in the creative age.

RICHARD FLORIDA
(Formula For Urban Rejuvination)

Fro the site I am looking at two strategies that will initiate an architectural project and help foster the research in metaverse. Richard Florida is a known researcher with a formula to foster neighbourhoods growth. This has been critisized to trigger gentrification, but with metaverse as a tool for governance and 'city access ', we can avoid further community dispalcement.



METVERSE
(Key Principles)



URBAN VOIDS

Local Desired Regeneration Points

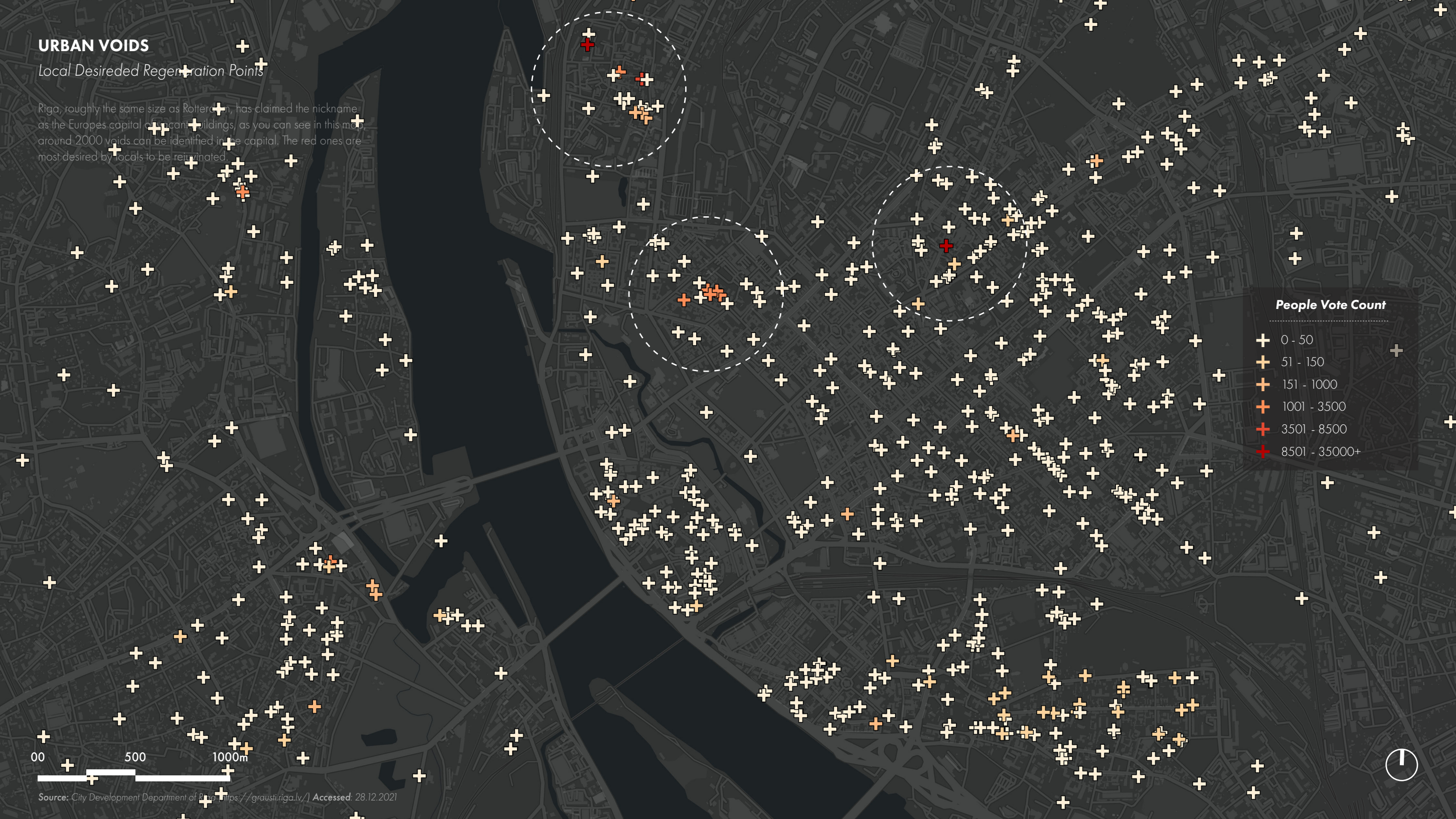
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- 1001 - 3500
- 3501 - 8500
- 8501 - 35000+



Source: City Development Department of Riga <https://grauisti.riga.lv/> Accessed: 28.12.2021



LOCATION COMPARISON

Identifying Neighbourhood Potentials

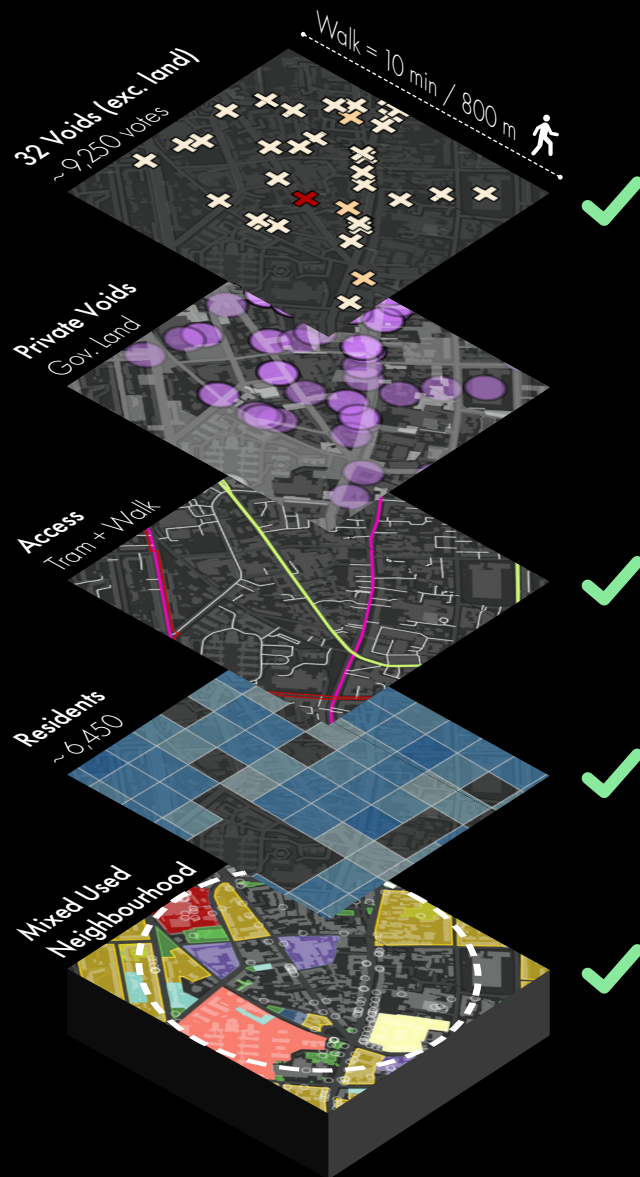
People Vote

Ownership

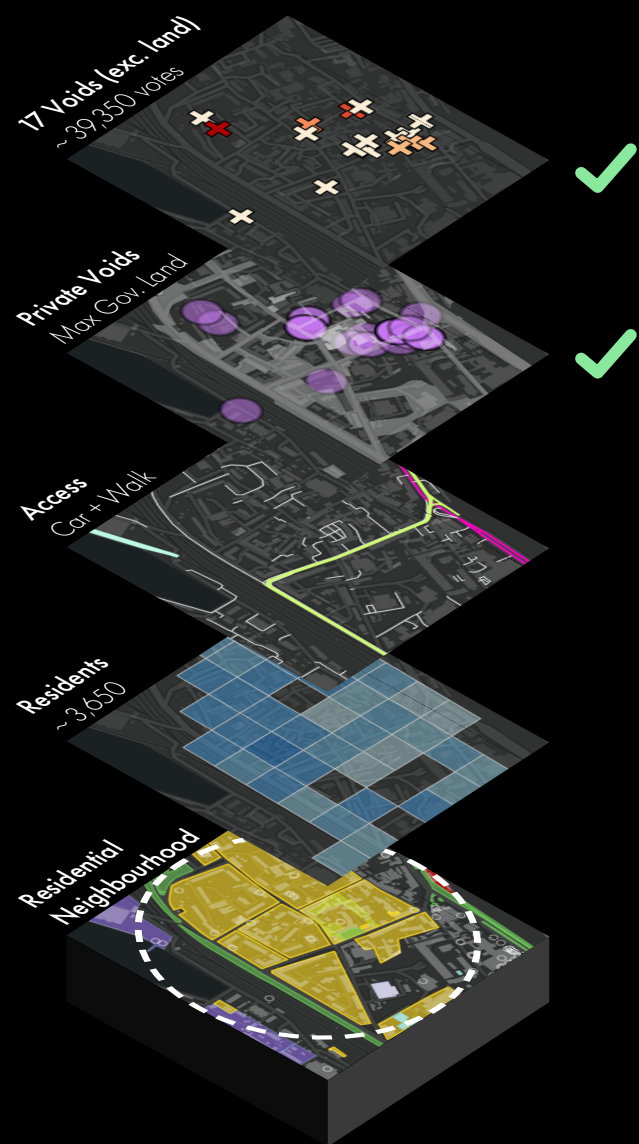
Infrastructure

Population

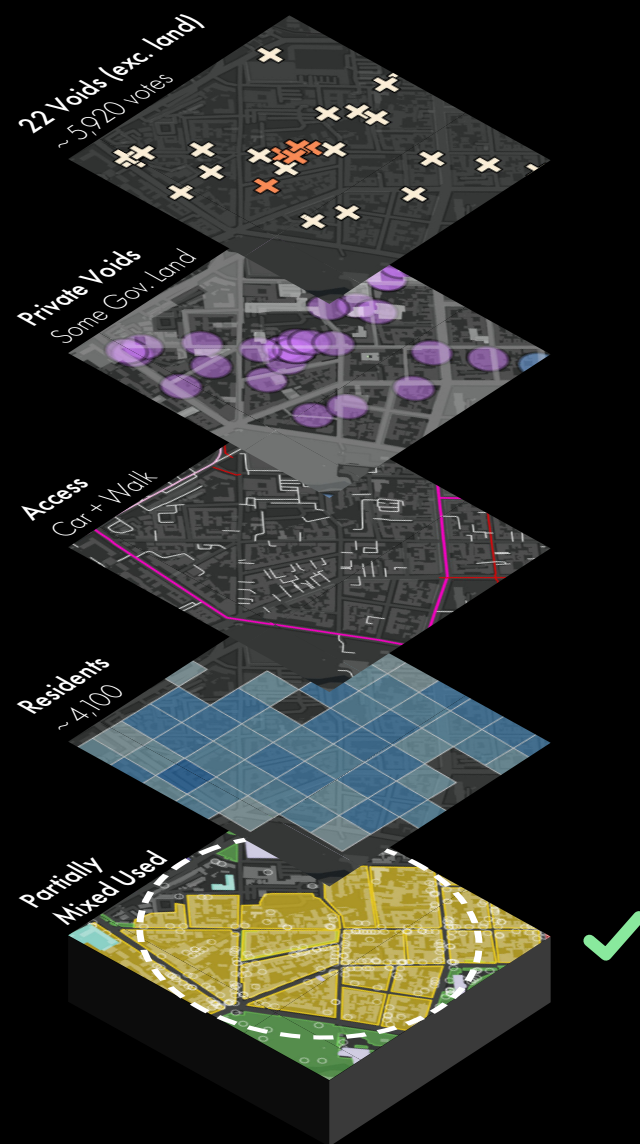
Land use



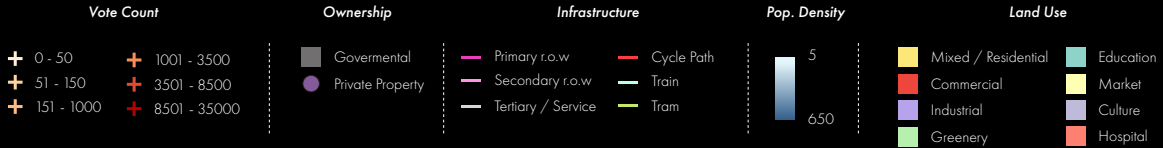
Peace Street



Outer Center



Silent Center



ANCHORS + LAND USE

Is It Worth The Walk ?

Anchors:
 Are defined as sites that are expected to be generators and receivers of pedestrian activity. While Frontage Quality explains where people are likely to want to walk, Anchors tell us where people are likely to need to walk—or at least to find the walk most useful. The job of Identifying Anchors (Speck, 2018)

Total of 174 attributes (POI):

- | | |
|-------------------------|---------------------------|
| Art Center - 1 | Hotel - 1 |
| Art Pieces - 4 | Jeweller - 2 |
| ATM - 7 | Kindergarten - 1 |
| Bakery - 1 | Kiosk - 1 |
| Bank - 1 | Laundry - 1 |
| Bar - 7 | Memorial - 2 |
| Beuty Shop - 2 | Phone Shop - 1 |
| Bench - 1 | Museum - 2 |
| Beverage Shop - 4 | Nightclub - 4 |
| Bike Rental - 5 | Optician - 3 |
| Bike Shop - 1 | Outdoor Shop - 2 |
| Bookshop - 2 | Pharmacy - 5 |
| Cafe - 9 | Playground - 4 |
| Camera Surveillance - 9 | Police - 2 |
| Chemist - 1 | Post Box - 1 |
| Clothe Store - 8 | Pub - 6 |
| Community Center - 1 | Recycling - 4 |
| Computer Shop - 1 | Restaraunt - 9 |
| Convenience Store - 5 | School - 5 |
| Dentist - 5 | Shoe Shop - 3 |
| Doctor - 1 | Sports Shop - 4 |
| DIY Store - 1 | Supermarket - 2 |
| Embassy - 1 (Rom) | Theatre - 1 |
| Fast Food - 8 | Toilet - 2 |
| Florits - 3 | Toy Shop - 2 |
| Fountain - 1 | Travel Agent - 3 |
| Furniture Store - 1 | University - 1 |
| Gift Shop - 1 | Vending Any + Parking - 2 |
| Guesthouse - 1 | Waste Basket - 3 |
| Hairdressers - 9 | |



FRONTAGES

Frontage Quality Assesment

Frontage Quality Assessment. While Frontage Quality explains where people are likely to want to walk, Anchors tell us where people are likely to need to walk—or at least to find the walk most useful. Determining where people are likely to walk in a study area.

Frontage Criteria:
cities, a street with friendly buildings on both sides is an A. When one side becomes a blank wall, it drops to a B. A blank wall across from a parking structure is perhaps a D. Two trash-strewn lots, an F. What matters is that the system is internally consistent so that pockets of good or bad can be identified.

Frontage Criteria

- A - Street Friendly Buildings
- B - Blank Facade On One Side
- C -Two Blank Facades Facing
- D - Parking Lot + Blank Wall
- E -Parking Lots
- F - Trash-Strewn Lots



FUTURLESS VOIDS

Overall Neglect

Many voids around the Peace Street have been vacant for decades. Lack desire and funding is turning these temporary spaces into permanent parking spots. This creates a larger dependancy of cars when actually physical distances between points of interests can be walked in under 10 minutes. Metaverse platforms can encourage walking and city exploration, while allowing to report or suggest an alternative to city emptyness.



Plot Number
01000230064

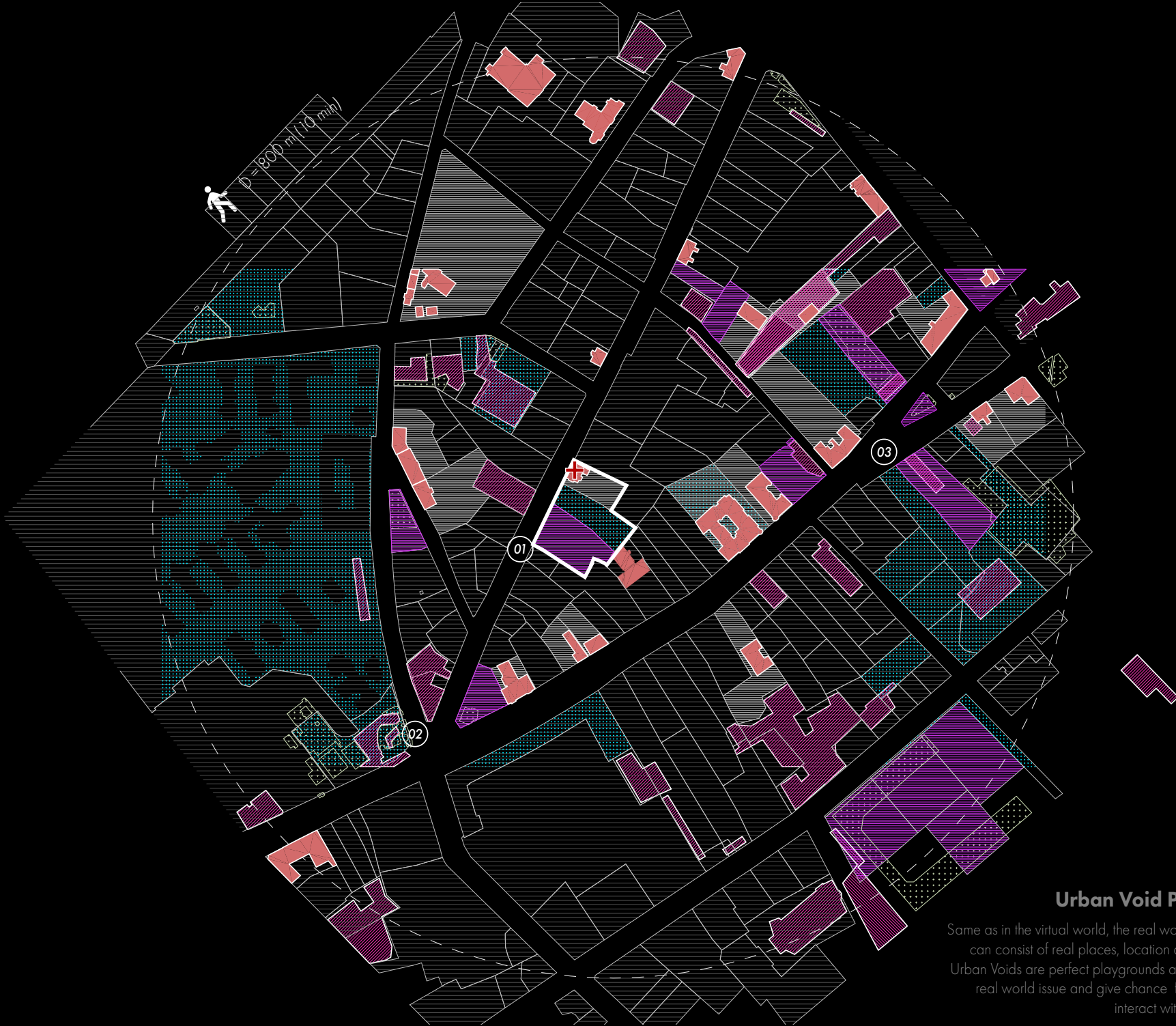


Plot Number
01000230099



Plot Number
01000280009

- Neglected Buildings
- Building Plot
- Open Parking Plots
- Gov. Owned Land
- Empty Plots
- Potential Site/ Highest Voted



Urban Void Potential

Same as in the virtual world, the real world metaverse can consist of real places, location and qualities. Urban Voids are perfect playgrounds as it combines real world issue and give chance for people to interact with emptyness.

PEACE STREET NEIGHBOURHOOD



Streets



Peace Street Summer Festival



Freedom Boulevard



Peace Street Tram



Peace Street Tram



Peace Street Summer Festival



Freedom Boulevard



National Theatre



LOCALS

Mutigeneration Families / Artists / Young Professionals

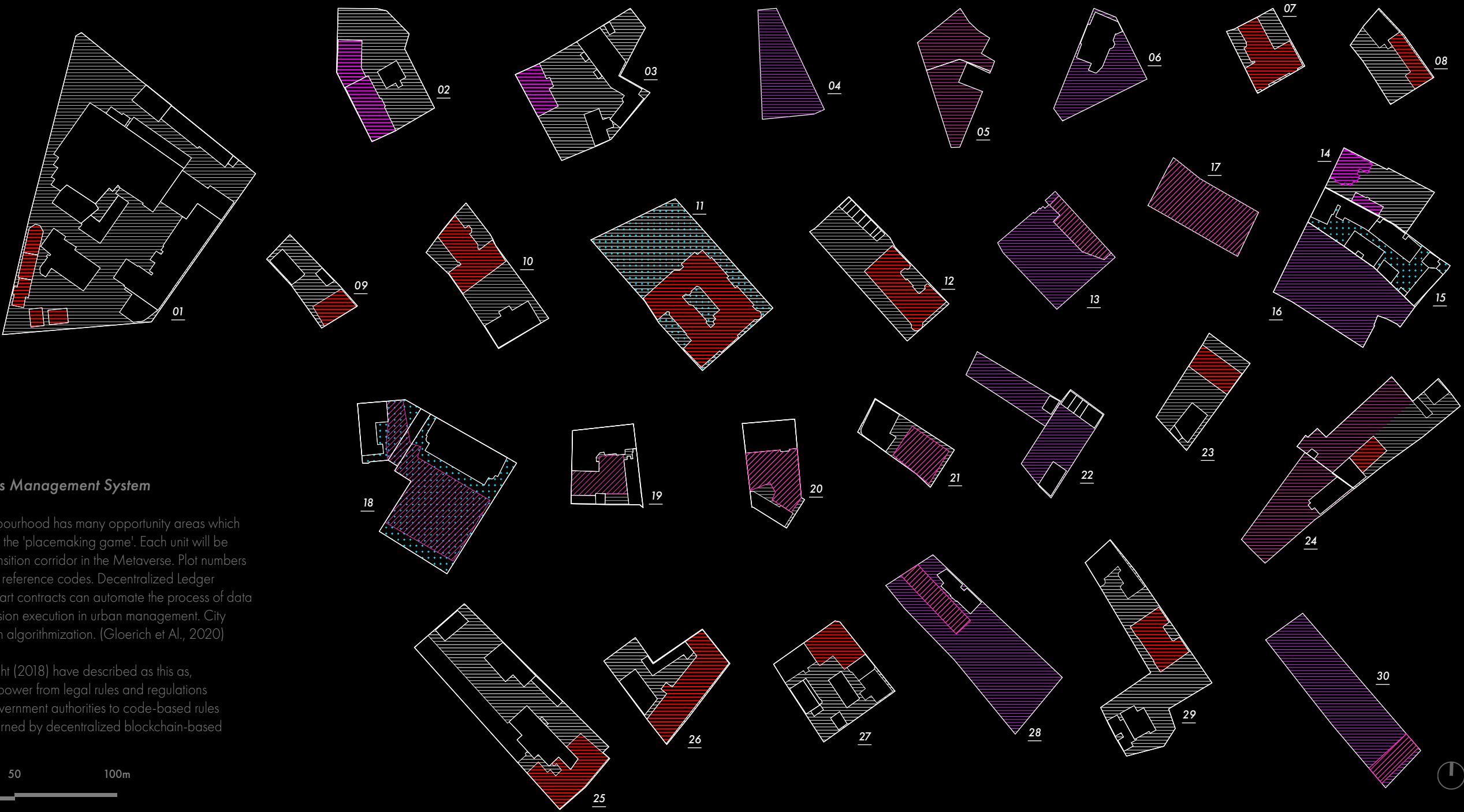


A local family has recently moved from a noisy main street with the tram passing by to an apartment facing the courtyard.

METaverse WORLD

Potential Metaverse 'Playgrounds'

- Neglected Buildings
- Building Plot
- Gov. Owned Land
- Empty Plots
- Open Parking Plots



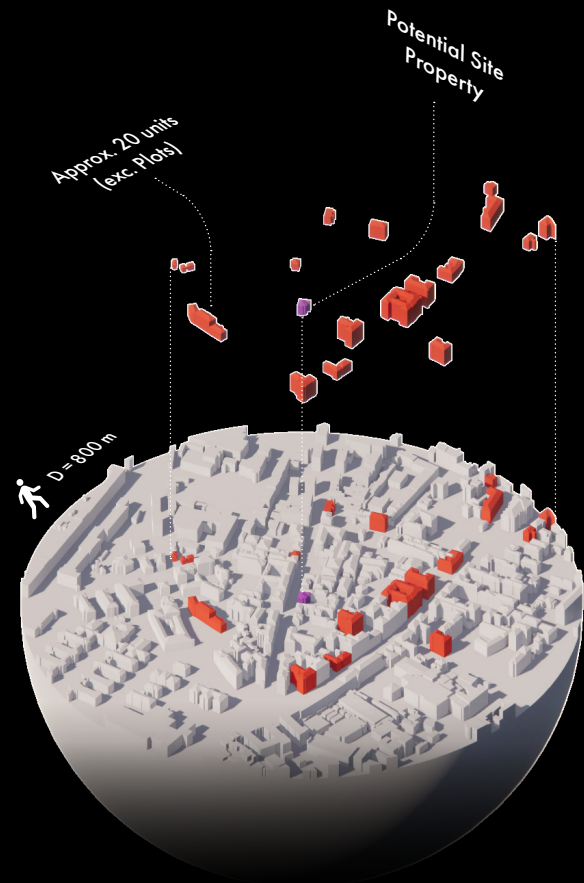
City As A Rights Management System

Peace Street neighbourhood has many opportunity areas which are great for testing the 'placemaking game'. Each unit will be connected by a transition corridor in the Metaverse. Plot numbers work similar to NFT reference codes. Decentralized Ledger Technology with smart contracts can automate the process of data gathering and decision execution in urban management. City governance through algorithmization. (Gloerich et Al., 2020)

De Filippi and Wright (2018) have described as this as, "a structural shift of power from legal rules and regulations administered by government authorities to code-based rules and protocols governed by decentralized blockchain-based networks."

URBAN VOIDS AS METAVERSE WORLDS

Potential Metaverse 'Playgrounds'

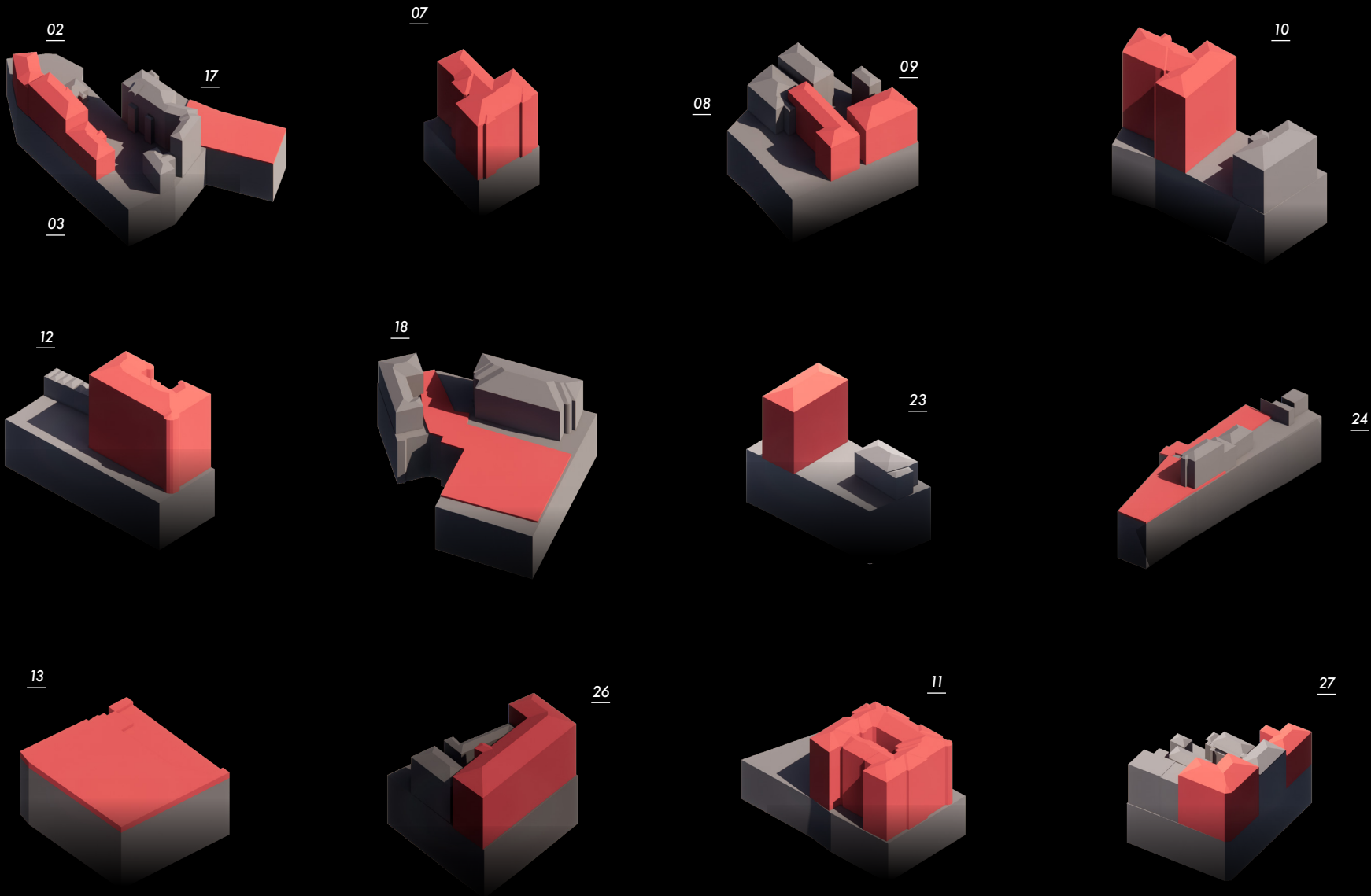


Urban Void Count

There are around 20 neglected buildings within 400m radius from the site (purple building). Each building and plot (shown next slides) can become part of the Metaverse world where locals can interact with the city, proposing alternative neighbourhoods.

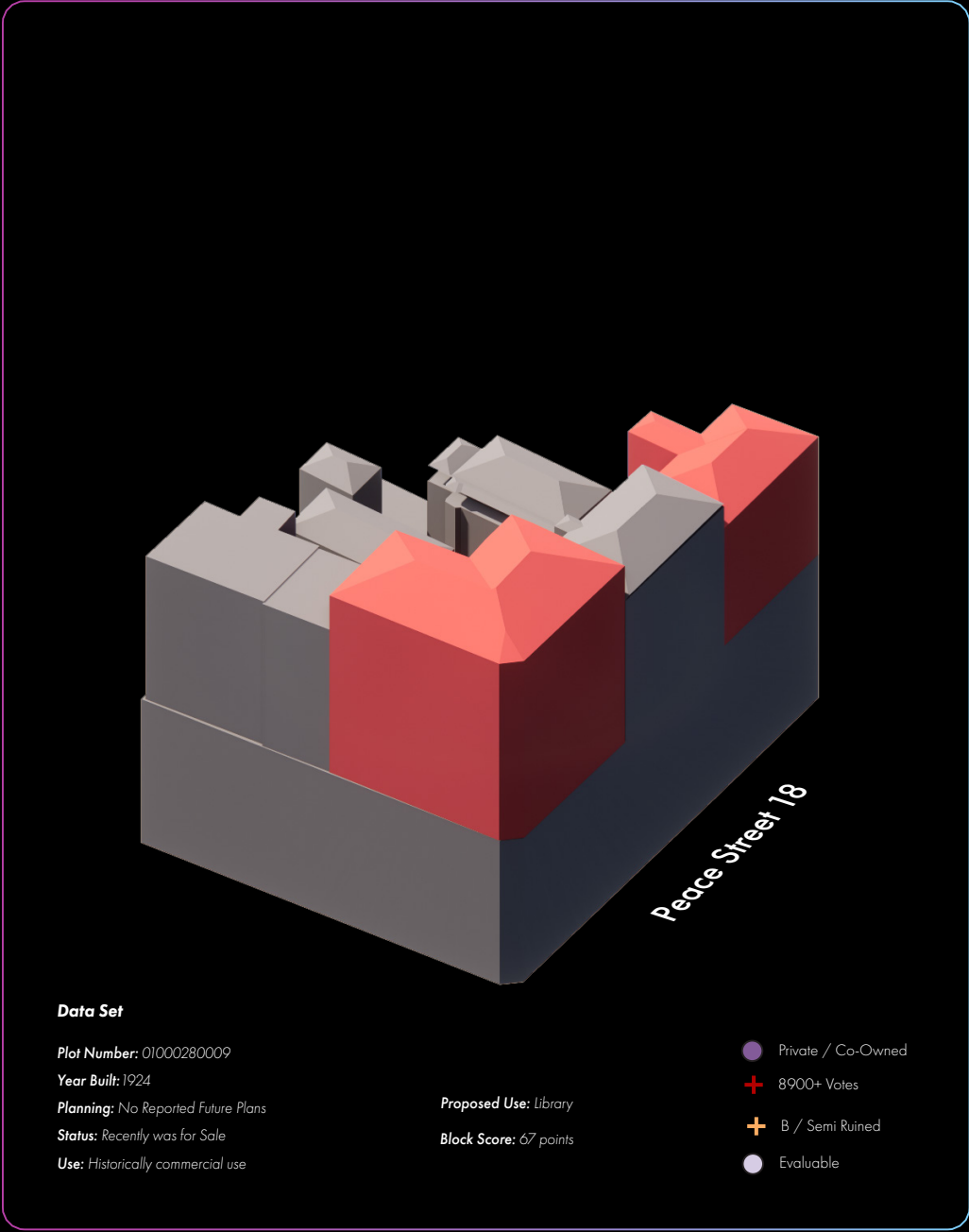
Blockchain Digital Twin

Each axo highlights an opportunity unit which can be 'played' with in the Metaverse. It can be experienced via augmented reality when being close to the specific location or through virtual reality headset remotely. Each void stores a digital twin on a decentralized blockchain. Latvia experiences a vast corruption, which typically happens through the built environment and urban design projects. How we build and collabotate has an opportunity to change due to web3 and Metaverse technologies.



NON FUNGIBLE TOKEN - NFT

Urban Voids As An NFT



SITE

As A Catalyst

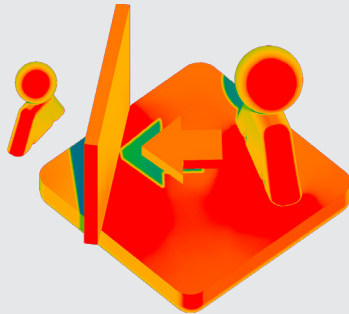
THE MISSING PUZZLE
Programmatic Potentials



The Center of Creative Learning (CCL)

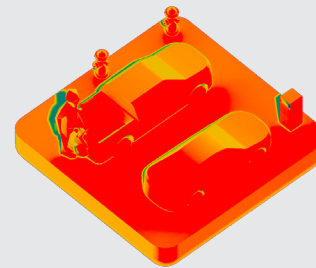
CENTER OF CREATIVE LEARNING

On-Site Existing program, local user needs.



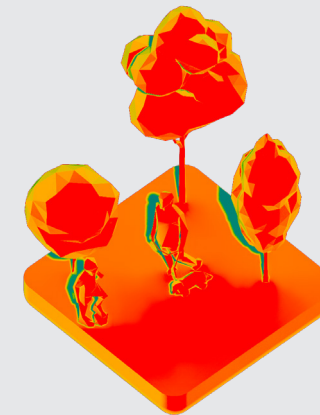
VISUAL CONNECTION

In general rooms lack a well-thought-out and visually stimulating storage system that would make the environment easier to perceive, make it easier to navigate the materials, and space itself.



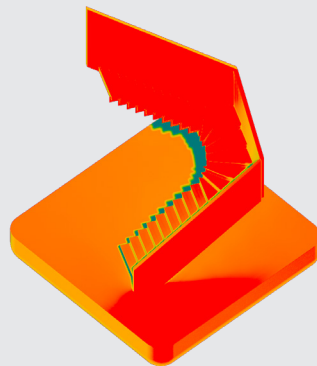
POOR BACK-YARD

We sometimes decorate the street in front of the building. We have a yard but it is in poor state for people to come together.



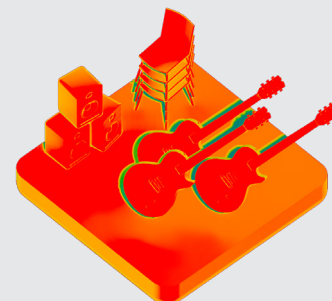
MULTIFUNCTIONAL YARD NEEDED

In my opinion, it would be important to use the outdoor area efficiently and create a multifunctional area where various types of competitions, competitions and other events can be organized.



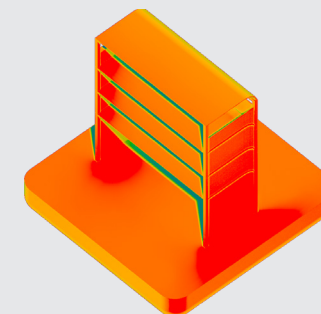
STAIRS

the physical environment is not inclusive, there is no elevator and lots of stairs. Building should be accessible to all mobility needs.



EQUIPMENT

We try to remodel the existing spaces with appropriate equipment and sound insulation where needed for the workshops.



STORAGE

The electronics classroom is adapted so that it is more convenient to store all the components needed for classes, student work, teaching materials

THE SITE
Dashed Outline



PROGRAM

Strategy

Play Space
Physical and Cyber
Events Hall
2500 sqm

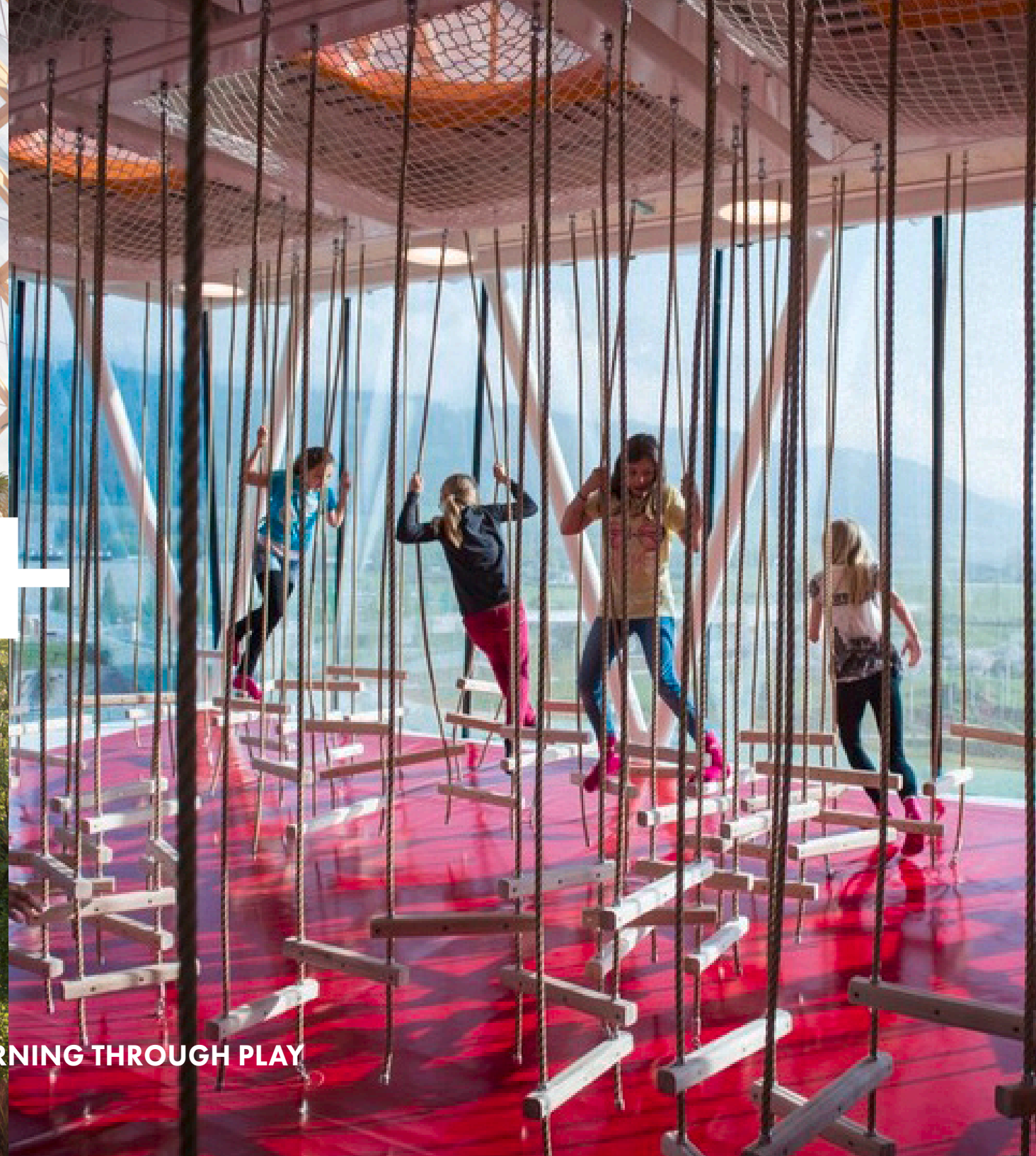


OPEN AND AGE INCLUSIVE OPEN PUBLIC REALM

Play Space,
Physical and Cyber
Events Hall
2500 sqm



SERENDIPITOUS LEARNING THROUGH PLAY



Fab Labs
800 sqm



Mixed Reality
Labs
1100 sqm



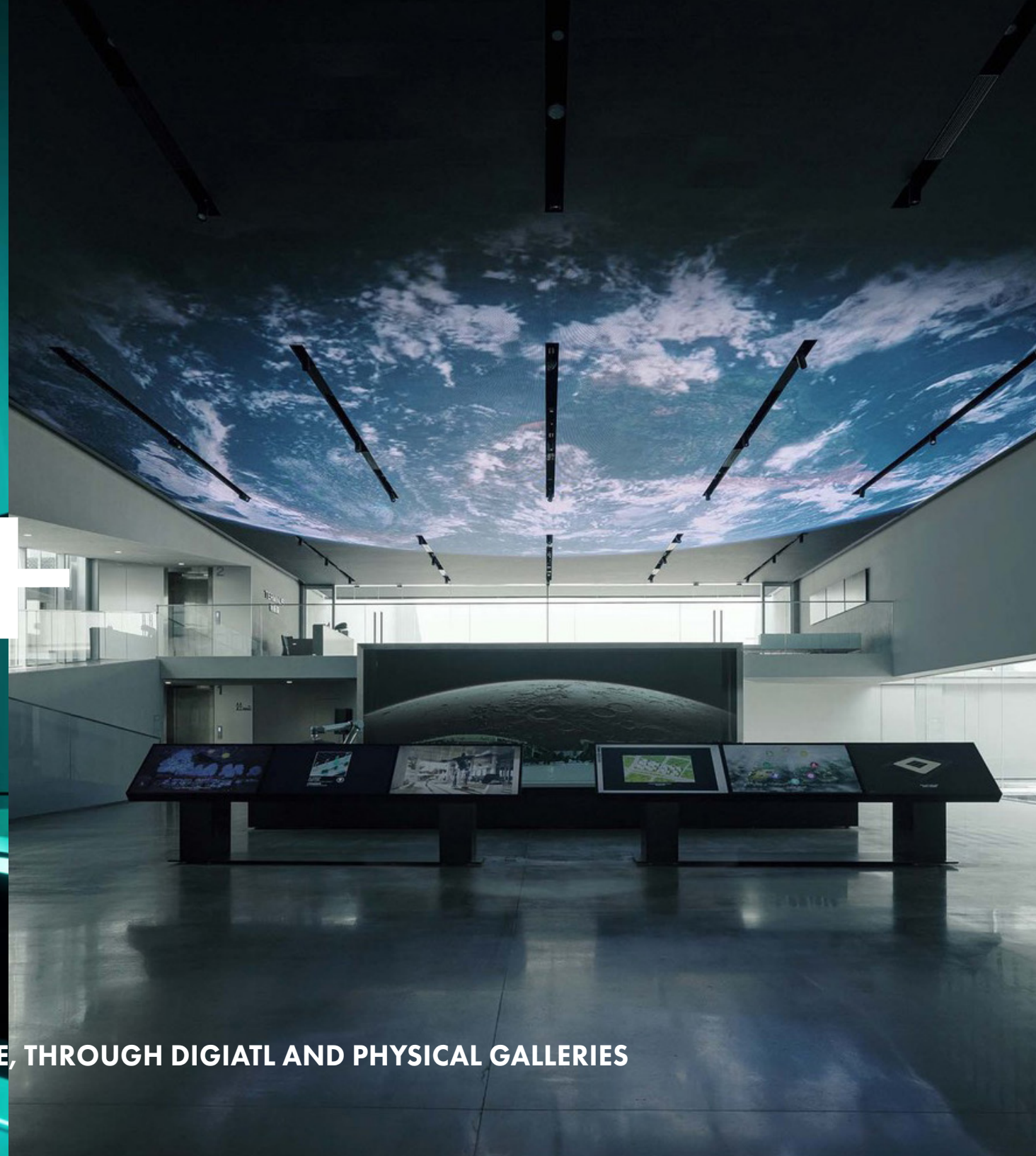
RESEARCH AND EXPLORATIVE COLLABORATION BETWEEN LOCALS AND PROFESSIONALS
USING MIXED MEDIUM AND FABRICATION

SHORT AND COMMUNITY LIVING FOR TRAVELING TALENT

Co Living
1000 sqm



Metaverse
Galleries
750 sqm



WIDENING THE OUTREACH OF THE METAVERSE, THROUGH DIGITAL AND PHYSICAL GALLERIES



SPACE PUPPY

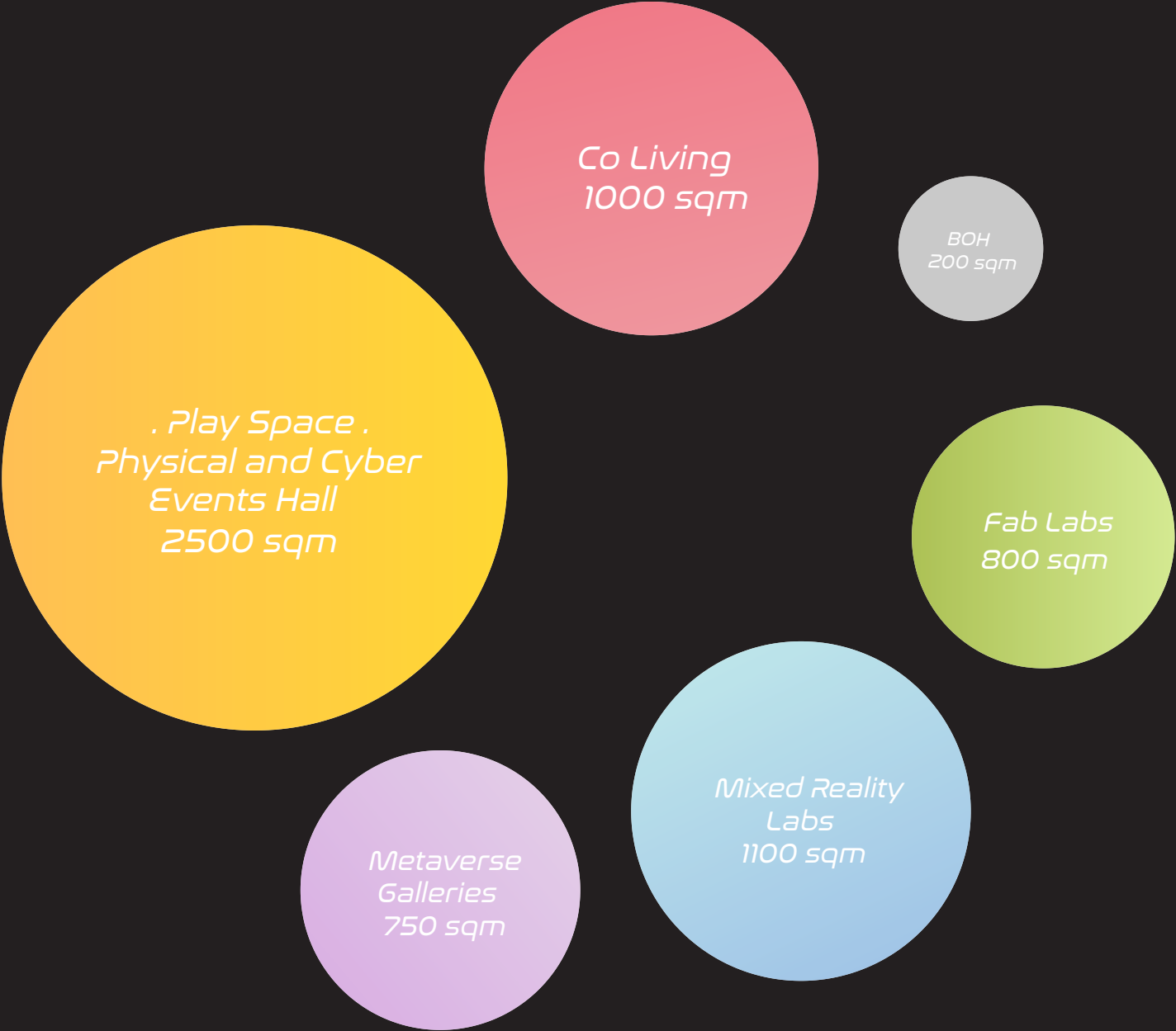
MIXED REALITY
PODS

ROBOT
ASSISTANT

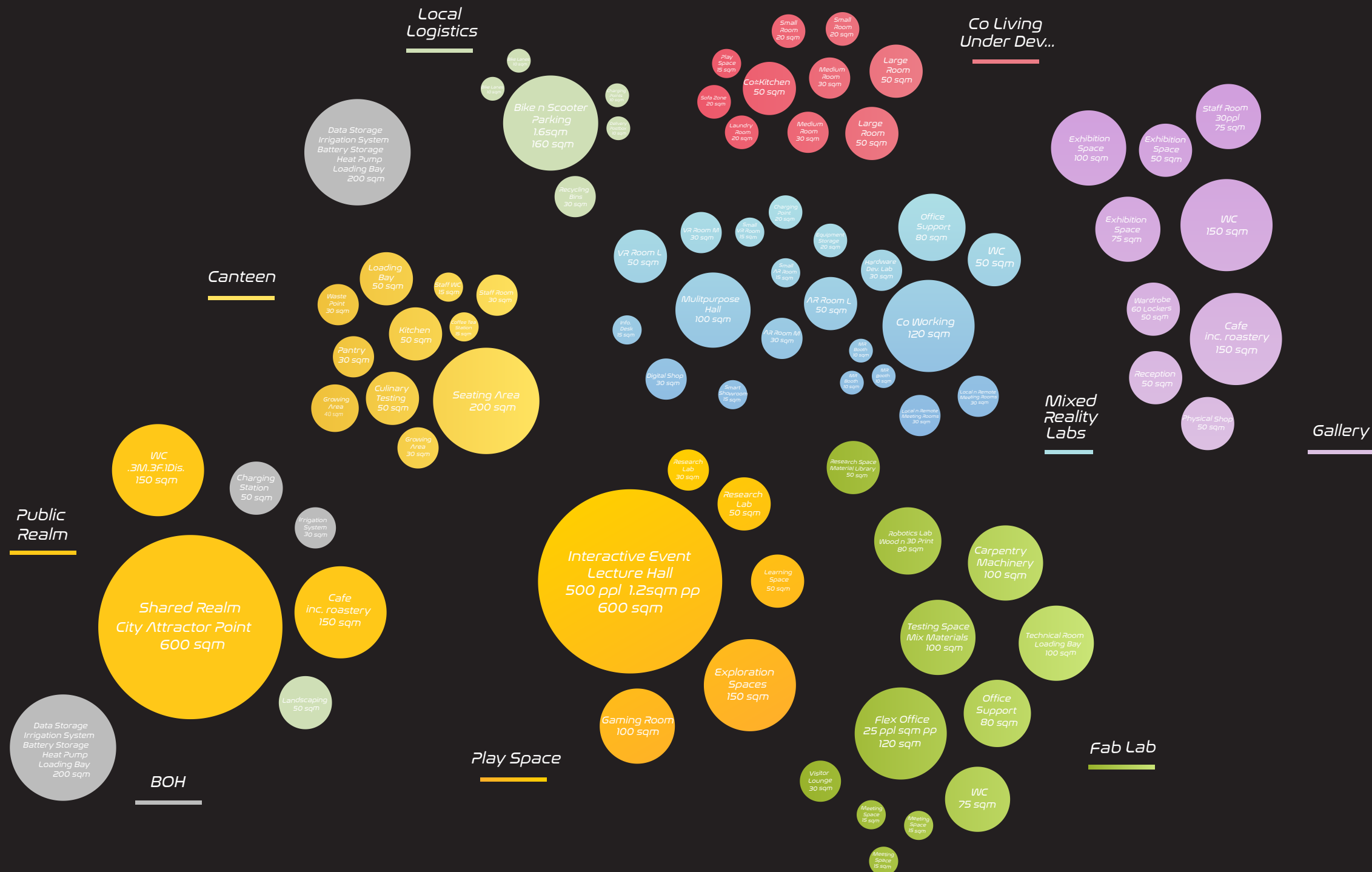
AR HEADSET

PROGRAM RELATIONSHIP

Physical Space



UPDATE

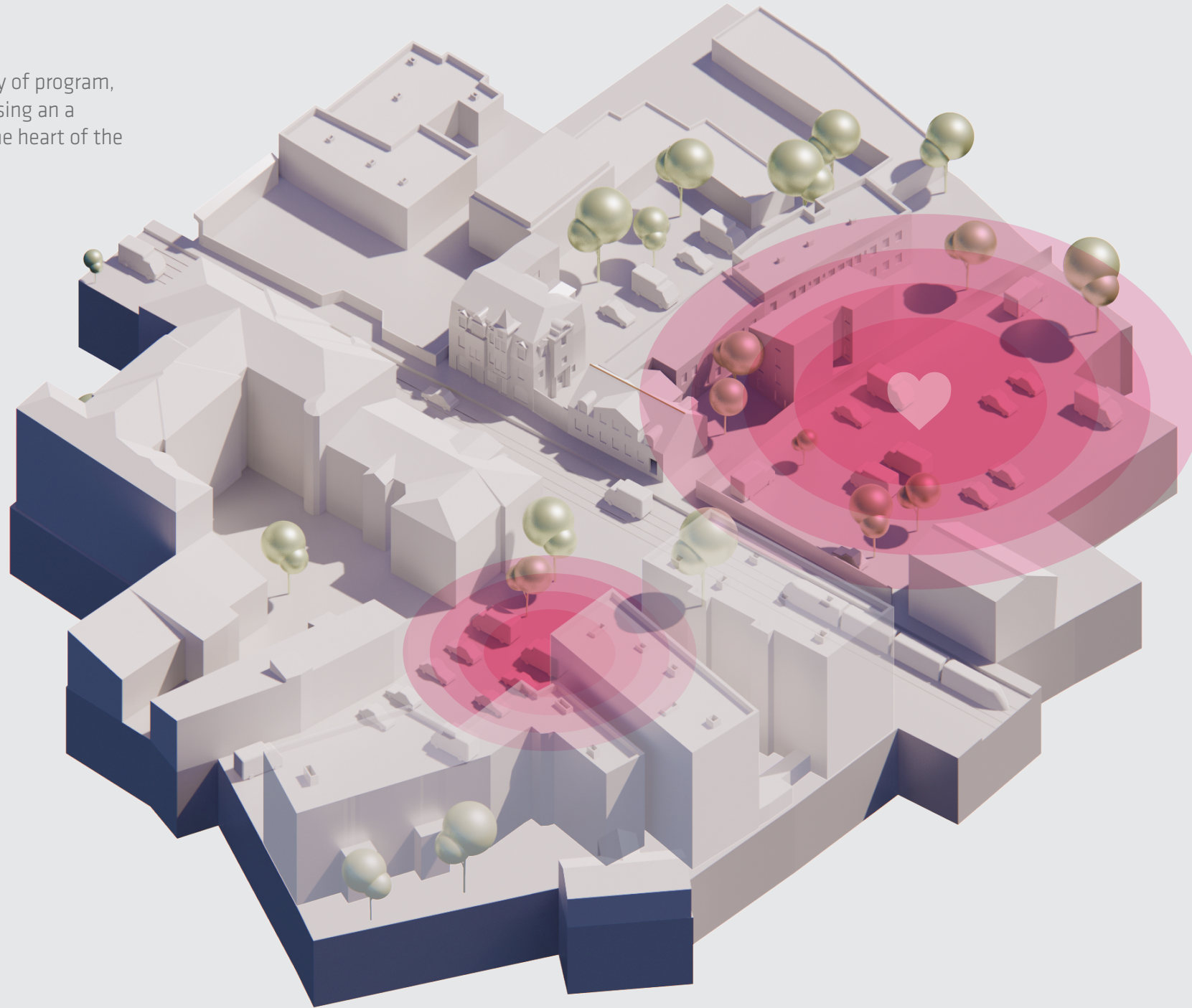


CONCEPT

Drivers

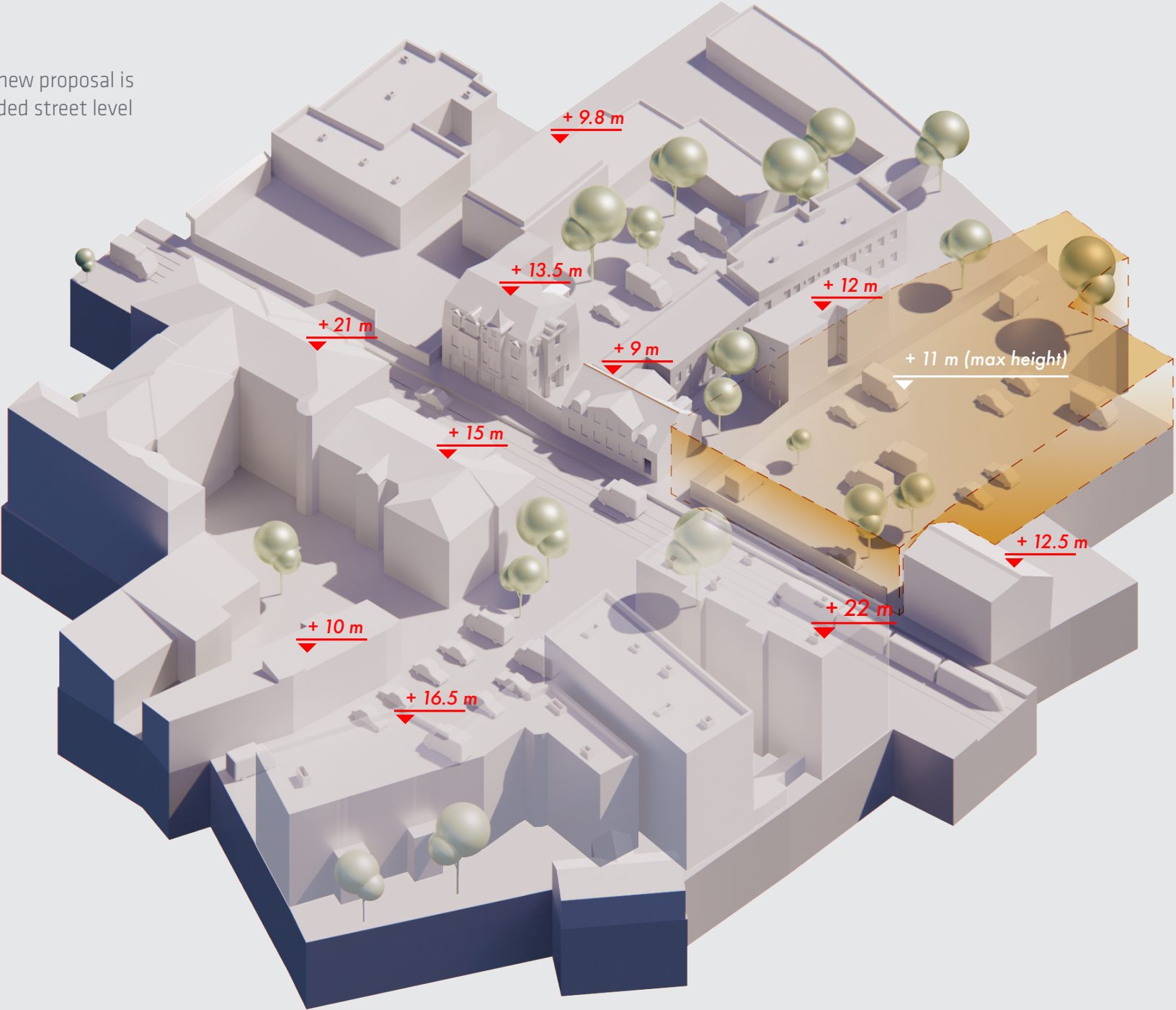
The Heart

The building is trying to avoid hierarchy of program, with decentralized layout, while proposing an attraction point to draw passerby to the heart of the campus.



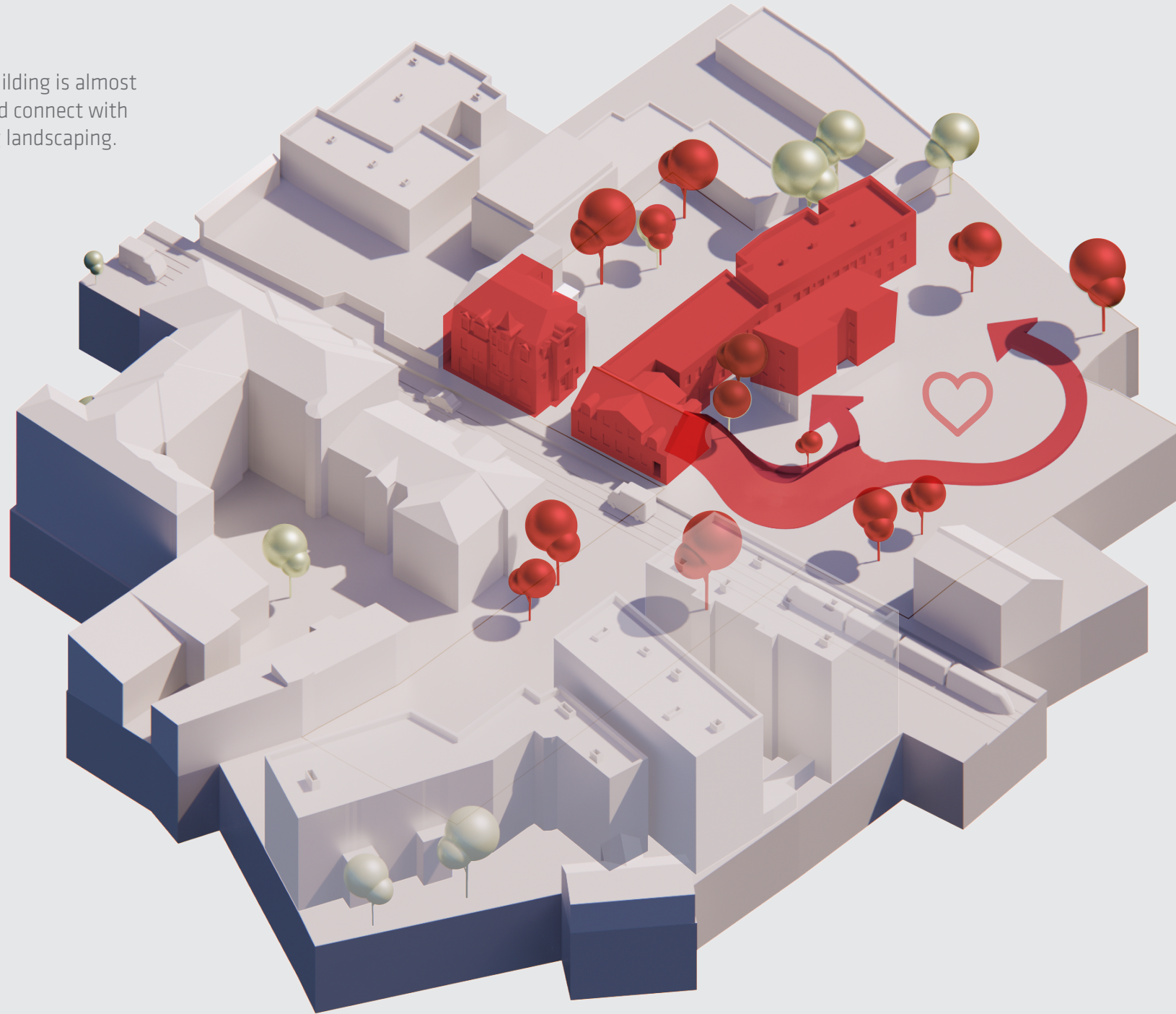
Iconic Yet Grounded

The average building height is **+11 m**, a new proposal is playing these heights to create a grounded street level presence.



Heirloom

The existing, late 1800s gabled roof building is almost stretched outwards to meet the city and connect with its sibling and respecting the existing landscaping.



Public Realm

Fostering contact where contact is almost impossible. I am trying to treat the building and project almost as a public space for all age groups and backgrounds.



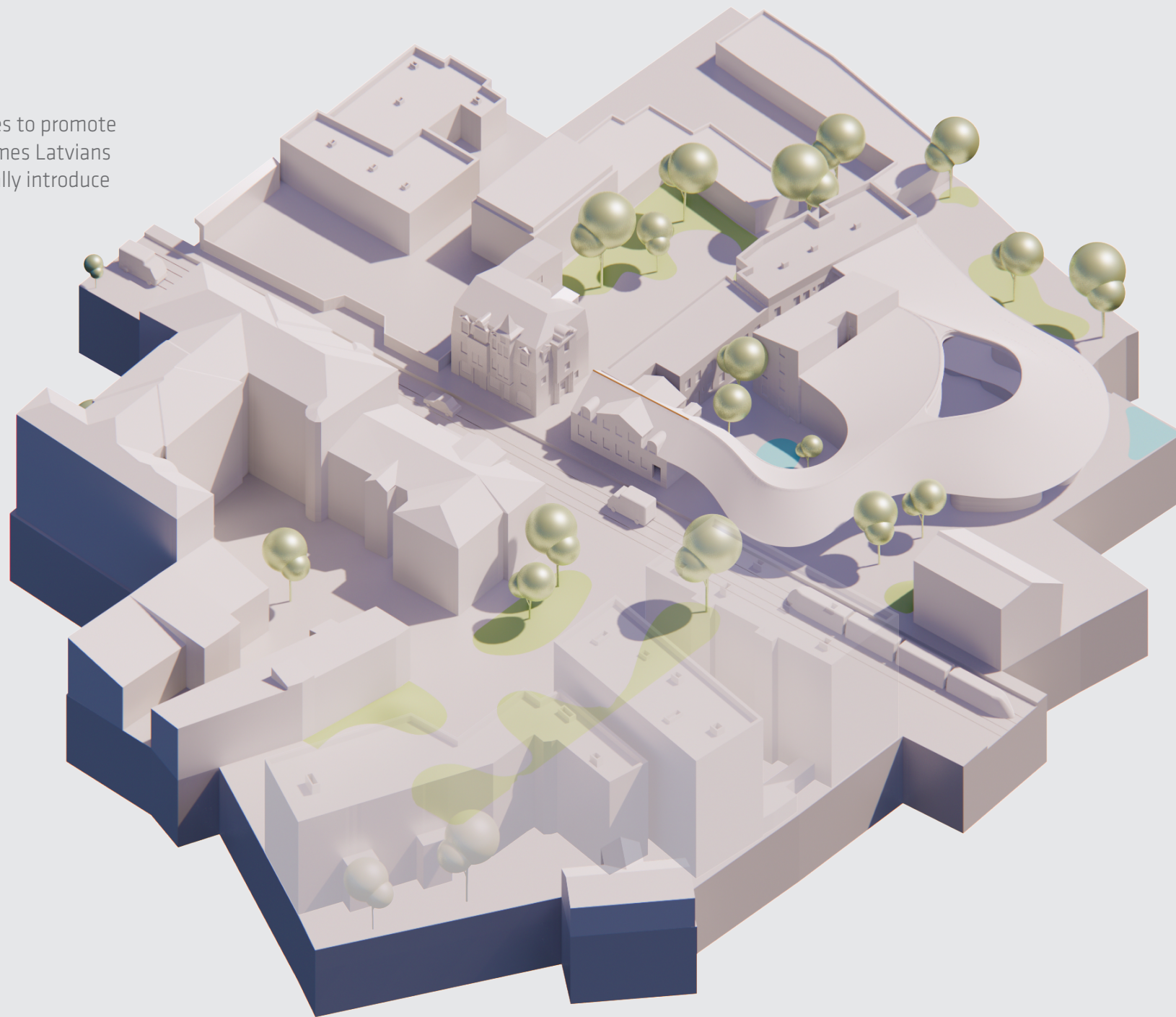
Sun Shaped Canopy

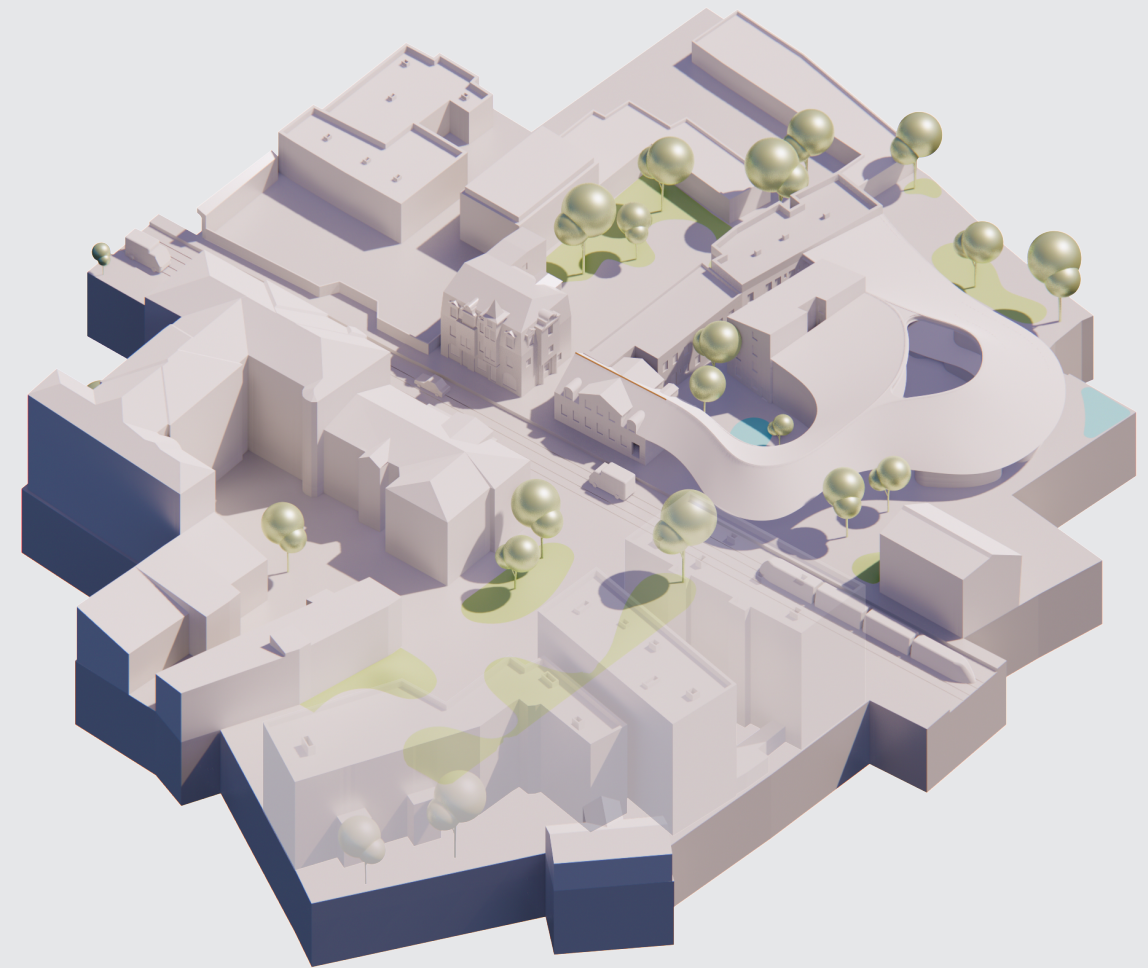
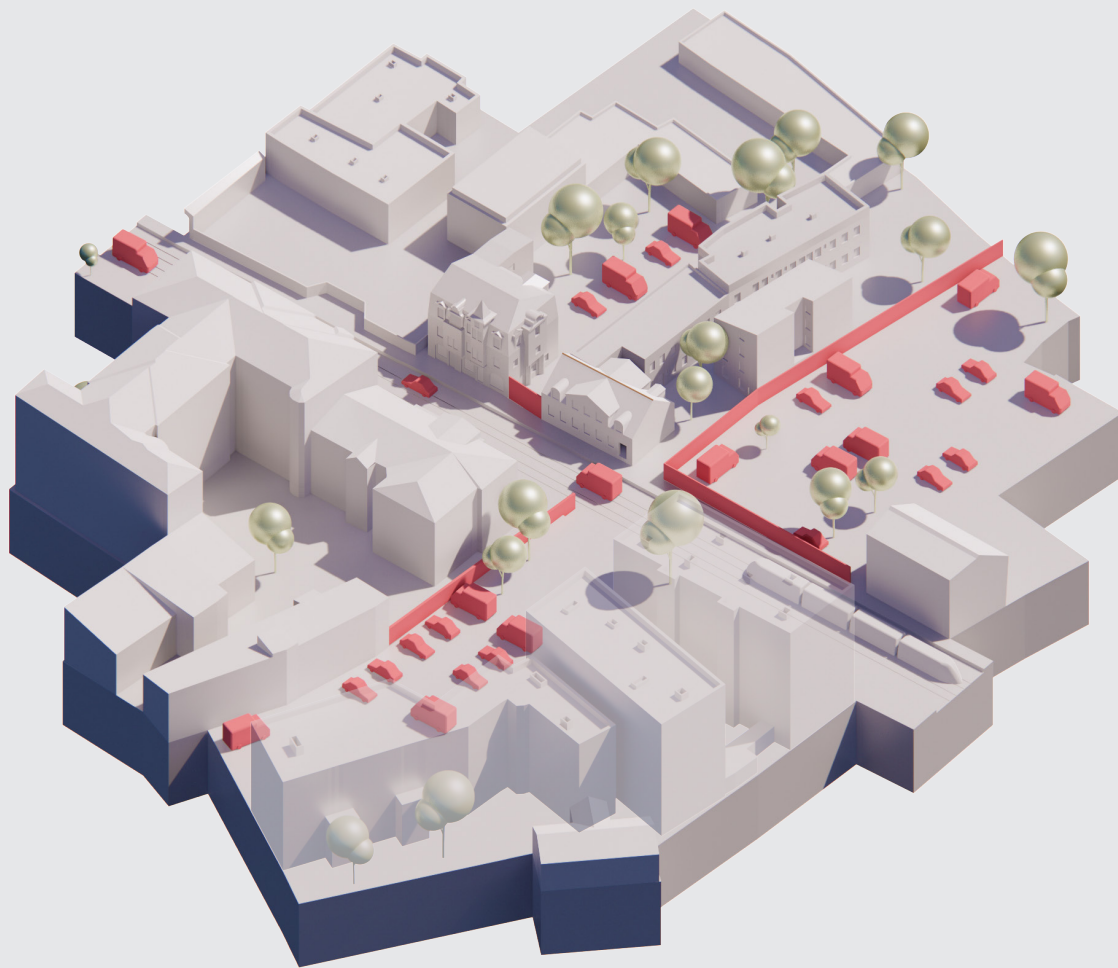
Canopy shaped by the sun path to create a comfortable microclimate through the site, yet harvest solar energy.



Civic Engagement

The campus is scattered with social spaces to promote belonging and civic engagement. Sometimes Latvians can be cold, yet they open up once gradually introduce with change.



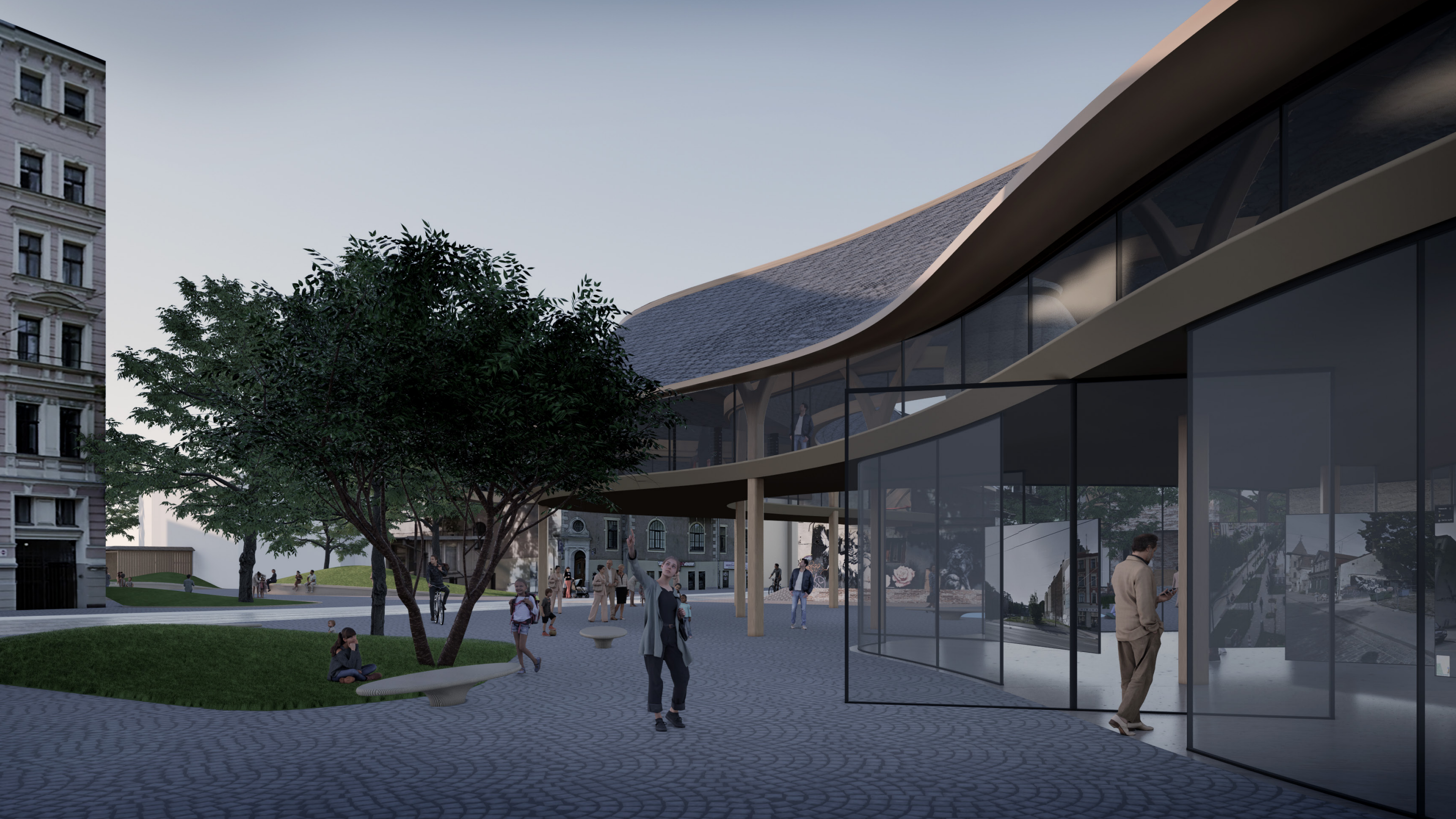


Living Duality

From a forgotten urban pocket to a functioning public campus, for citizens of Riga and the ... people who have left Latvia.

DESIGN

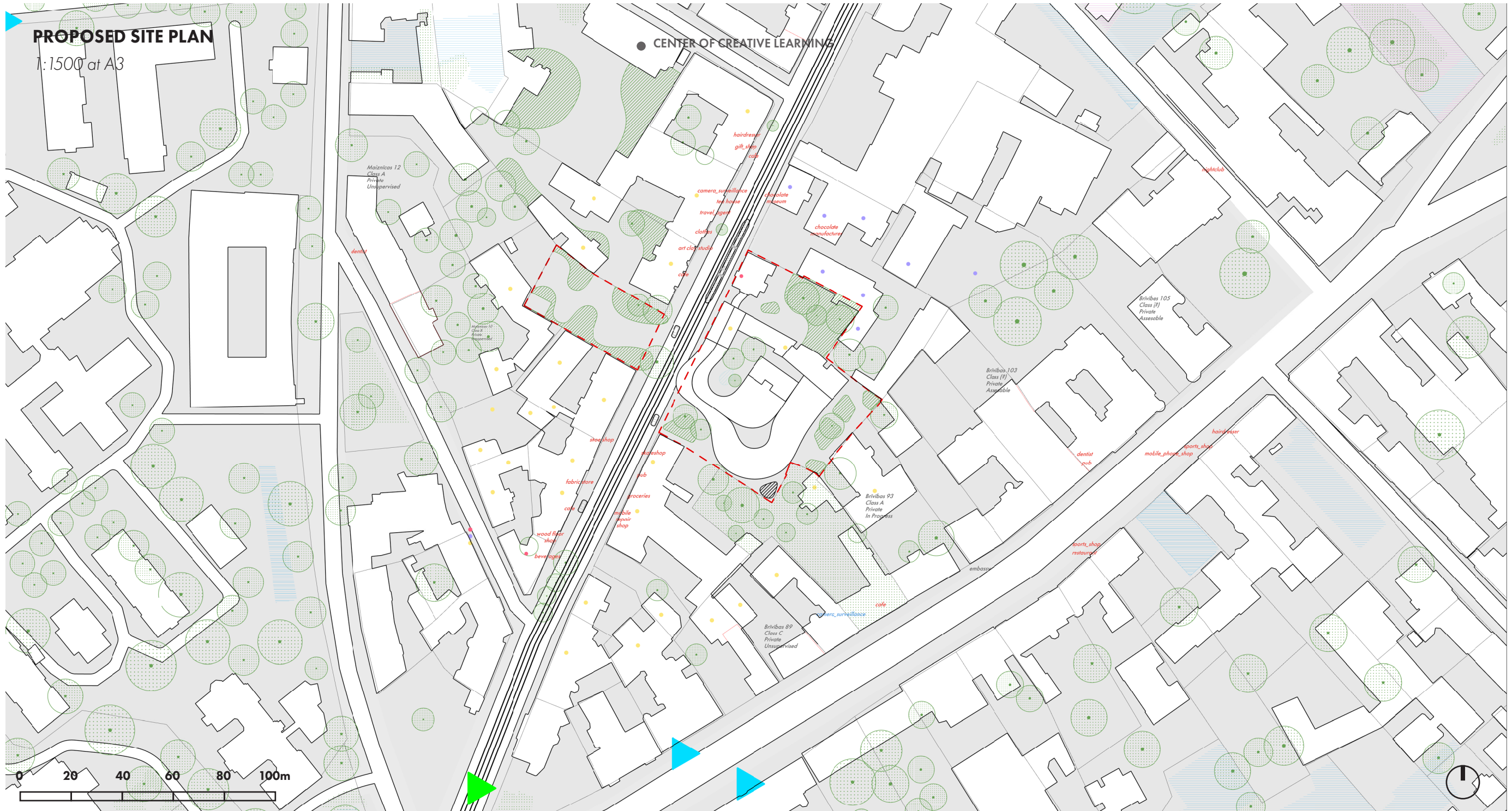
Strategy



PROPOSED SITE PLAN

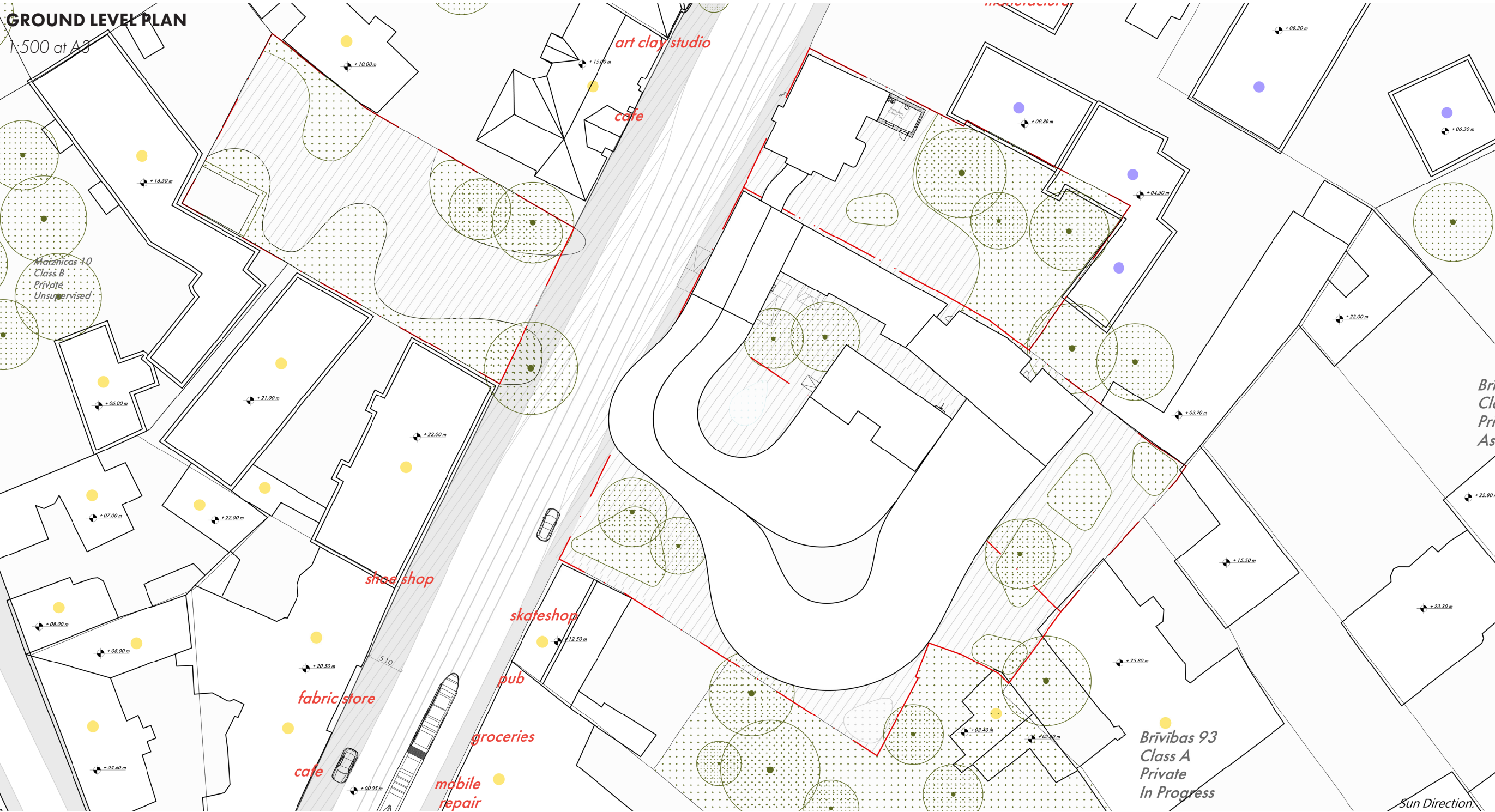
1:1500 at A3

● CENTER OF CREATIVE LEARNING



GROUND LEVEL PLAN

1:500 at A3

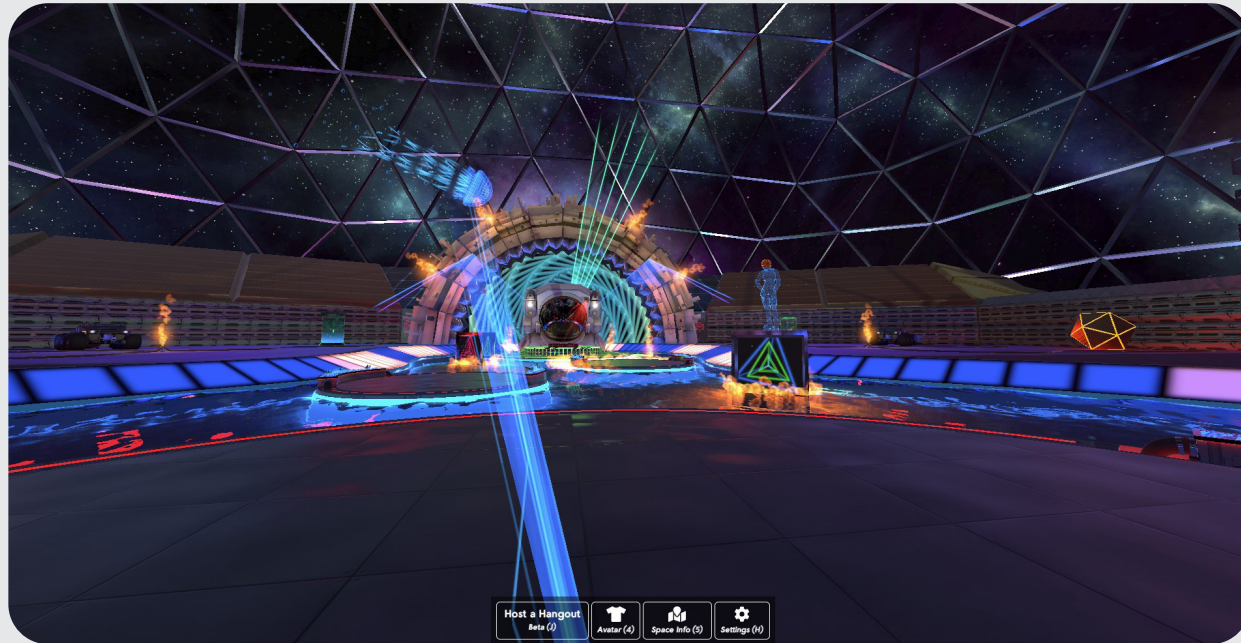


Sun Direction

1:1500 at A3

DESIGN FOR EXPERIENCE

mona.gallery



Source: <https://www.mona.gallery/>

VILLA SAVOYE



DESIGNING AS AN EXPERIENCE

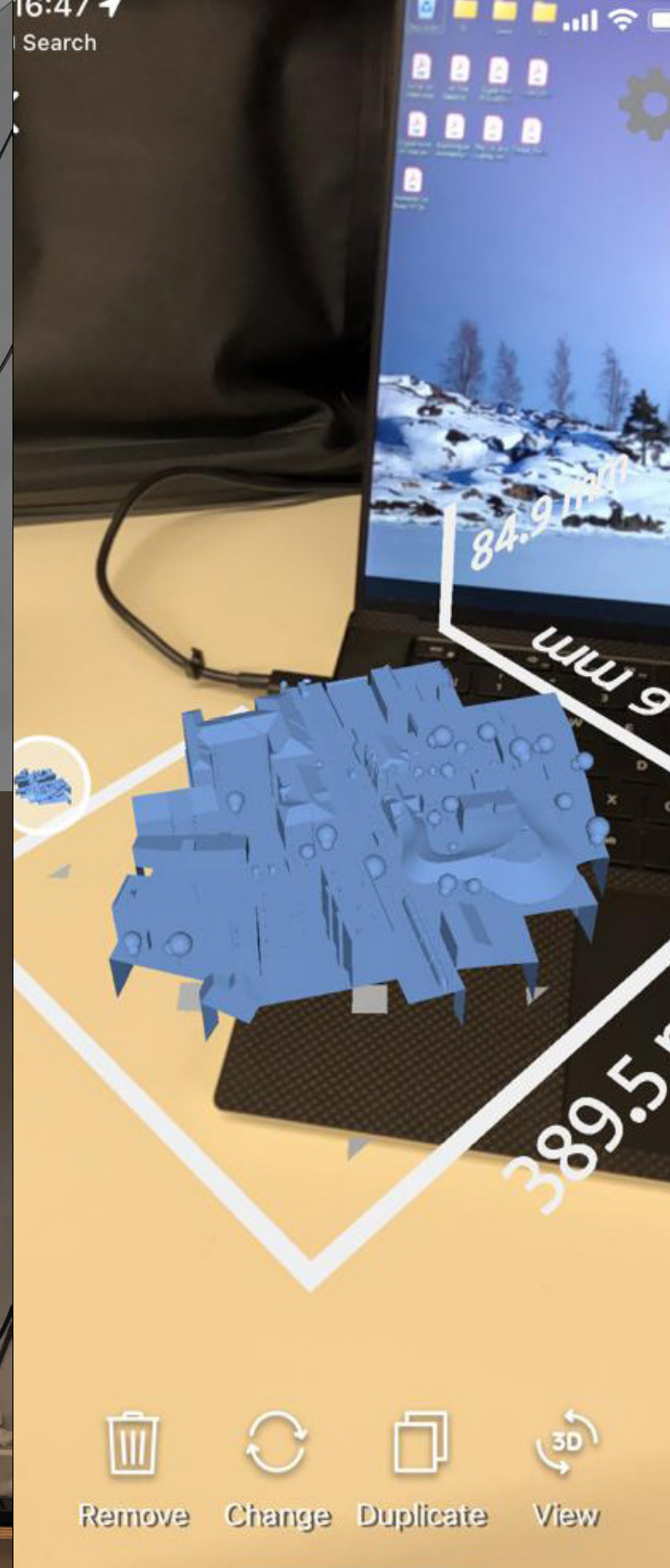
PLAN VOISIN



TOP DOWN MASTER

VR / AR

As A Design Methodology



EXPRESSION

Attention Seekers

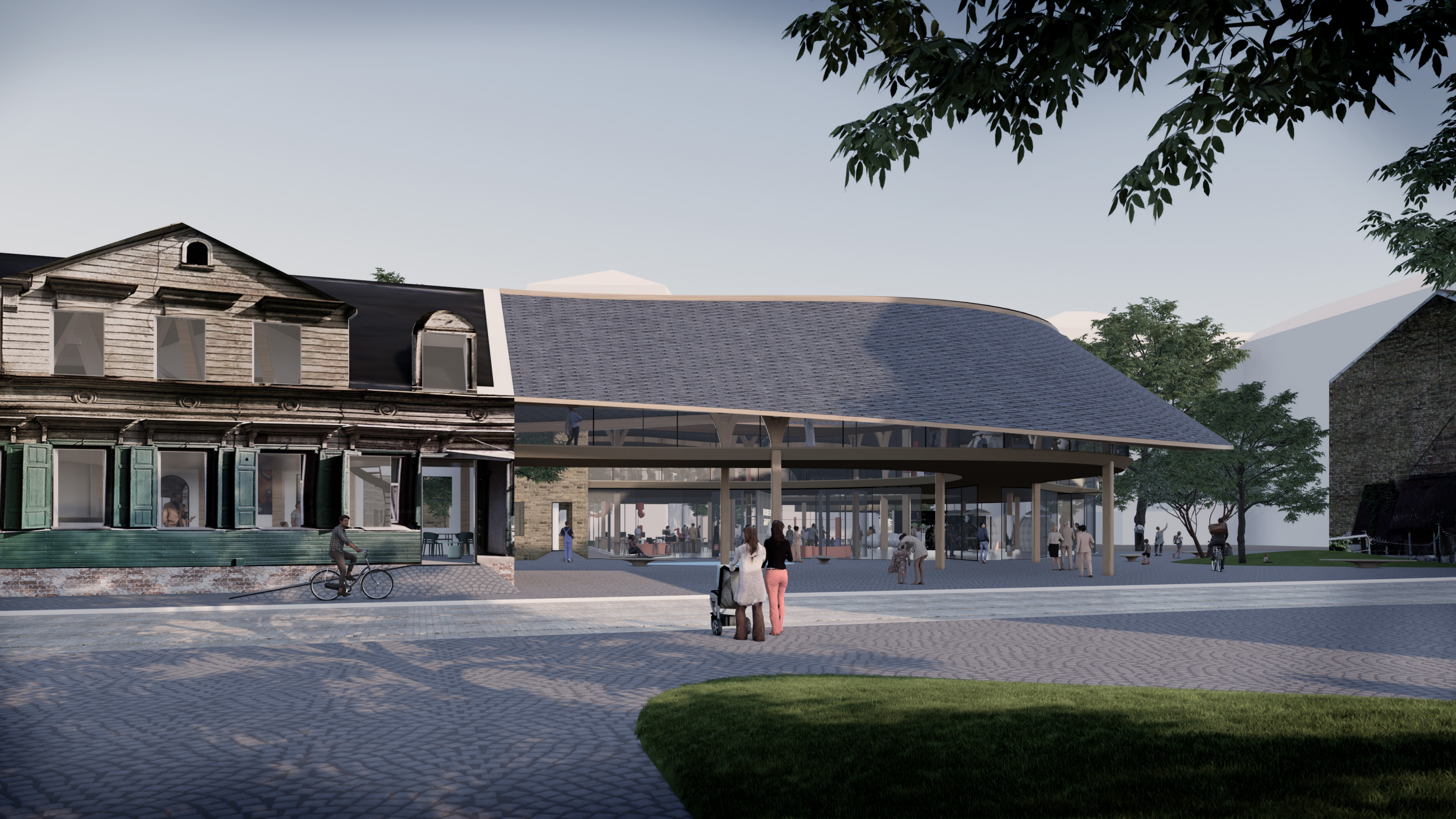


LOCAL QUALITIES

Art Nouveau Capital of Europe / Jugendstil

Take the heirloom, history of Riga and give it a second breath.
Inspired by Jugendstil, perhaps not the ornamentality but the fluidity
and smoothness of architecture.





EXISTING SITE ELEMENTS

Tactile and visual

Rounded penetrations



Rounded roof shingles

Excessive use of brick



Open glassfields



Cobblestone with tram line



Large and mature trees



Timber structure and facade with rough brick additions

PROPOSED ELEMENTS

Tactile and visual

*Rough and soft extension of the
cobblestone and landscape*



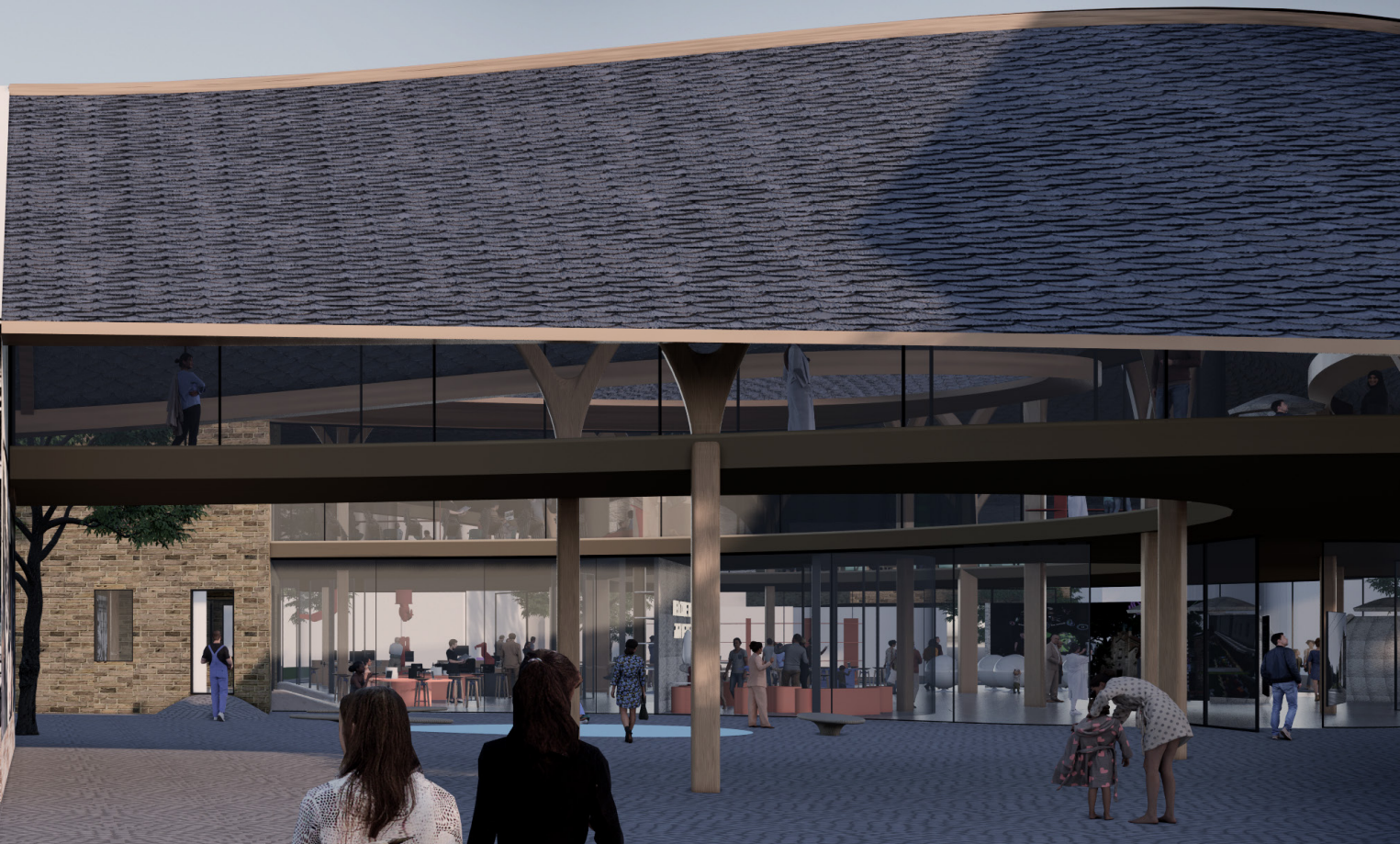
*Extension and modernization o
f the shingle roof*



*Collision of existing brick /
timber and shingles*



Timber as primary strucutral element



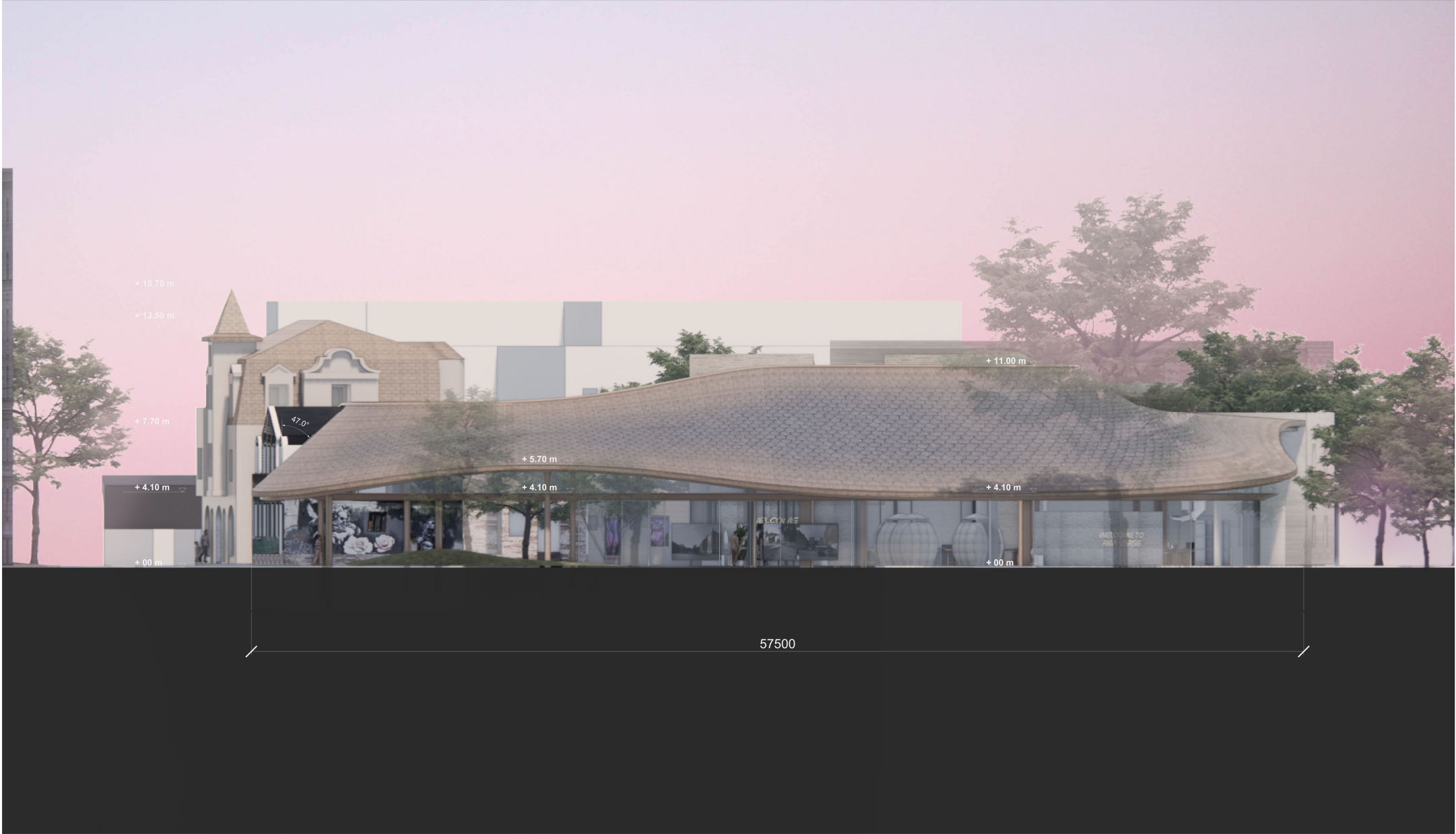
WEST ELEVATION

1:200 at A3



SOUTH ELEVATION

1:200 at A3



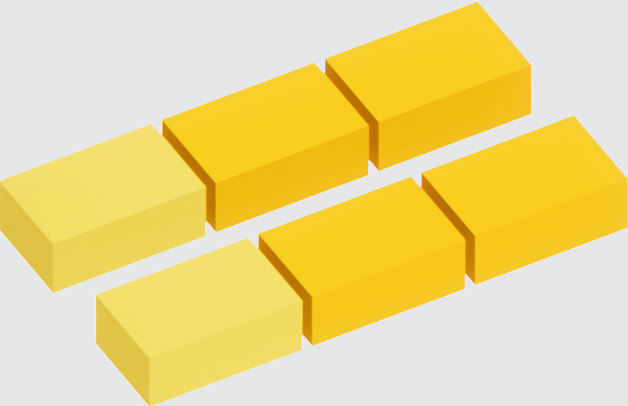
EAST ELEVATION

1:200 at A3

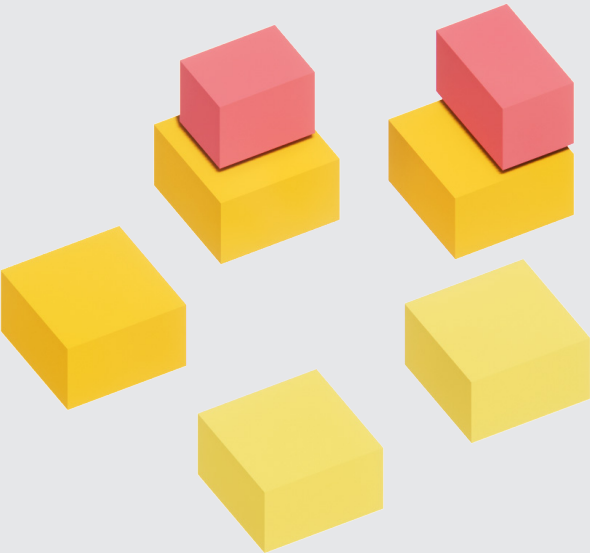


ORGANISATION APPROACH

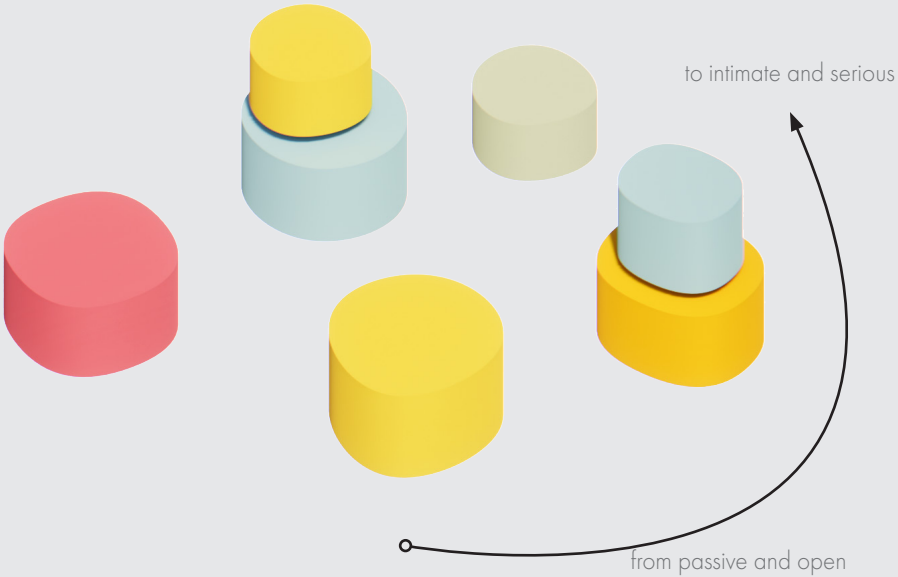
Flexibility Catalogue = Future Proof



**RIGID/LINEAR
LEARNING**



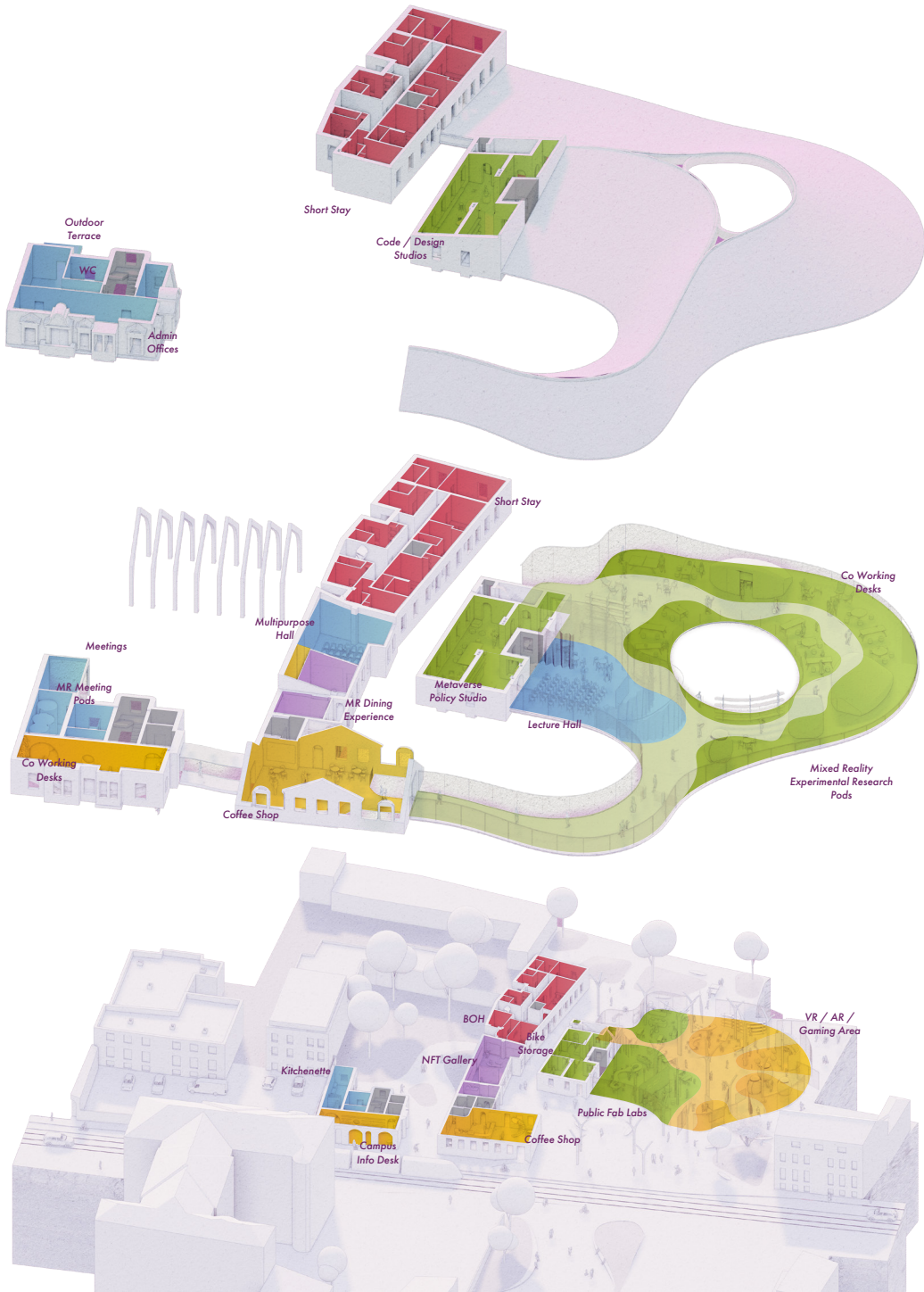
**'GOOGLE' STYLE
ACTIVE COLLABORATION**



**PASSIVE + ACTIVE
SERENDIPITOUS LEARNING**

PROGRAM DISTRIBUTION

- Administration
- Co Living
- Fabrication Labs
- Mixed Reality Lqbs
- Shared 'Play' Space
- Galleries



GROUND LEVEL

Program

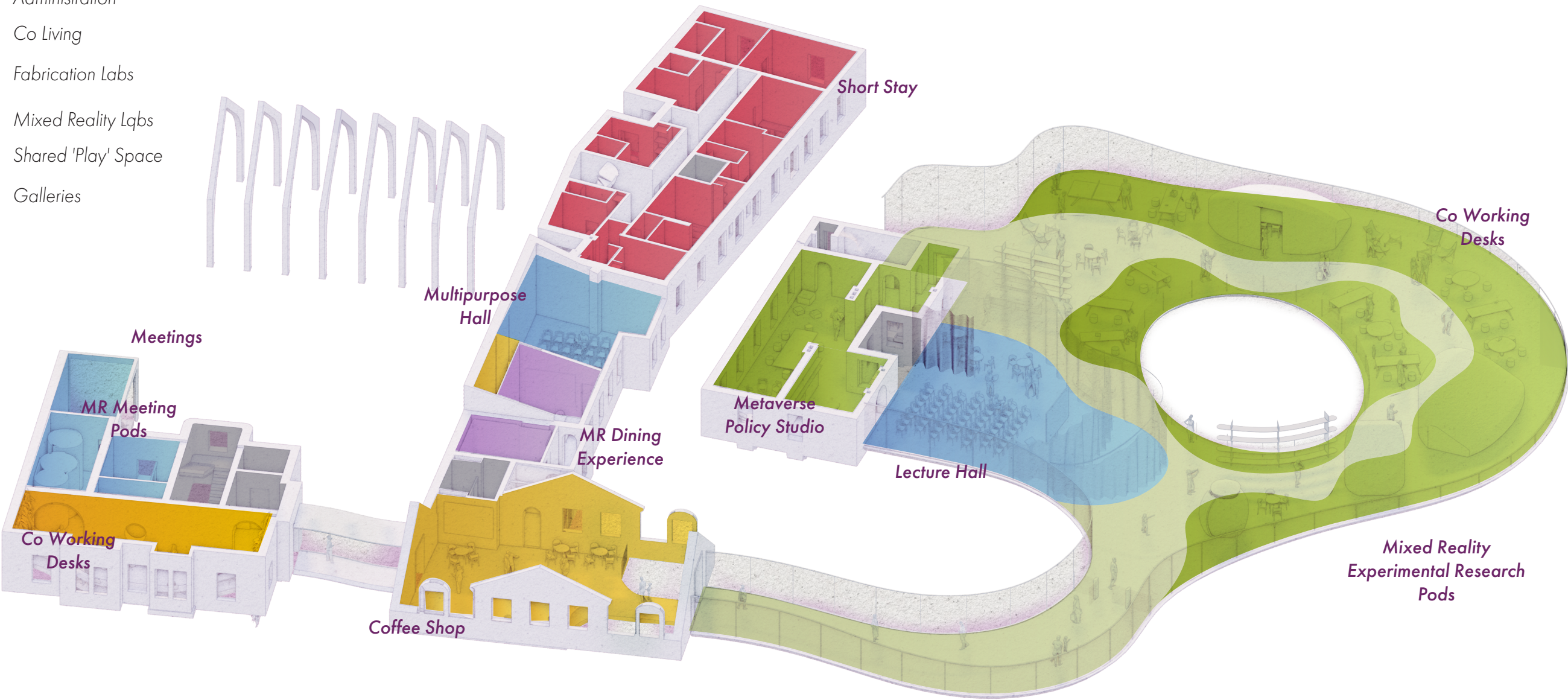
- Administration
- Co Living
- Fabrication Labs
- Mixed Reality Lqbs
- Shared 'Play' Space
- Galleries
- Traffic Stopper



FIRST LEVEL

Program

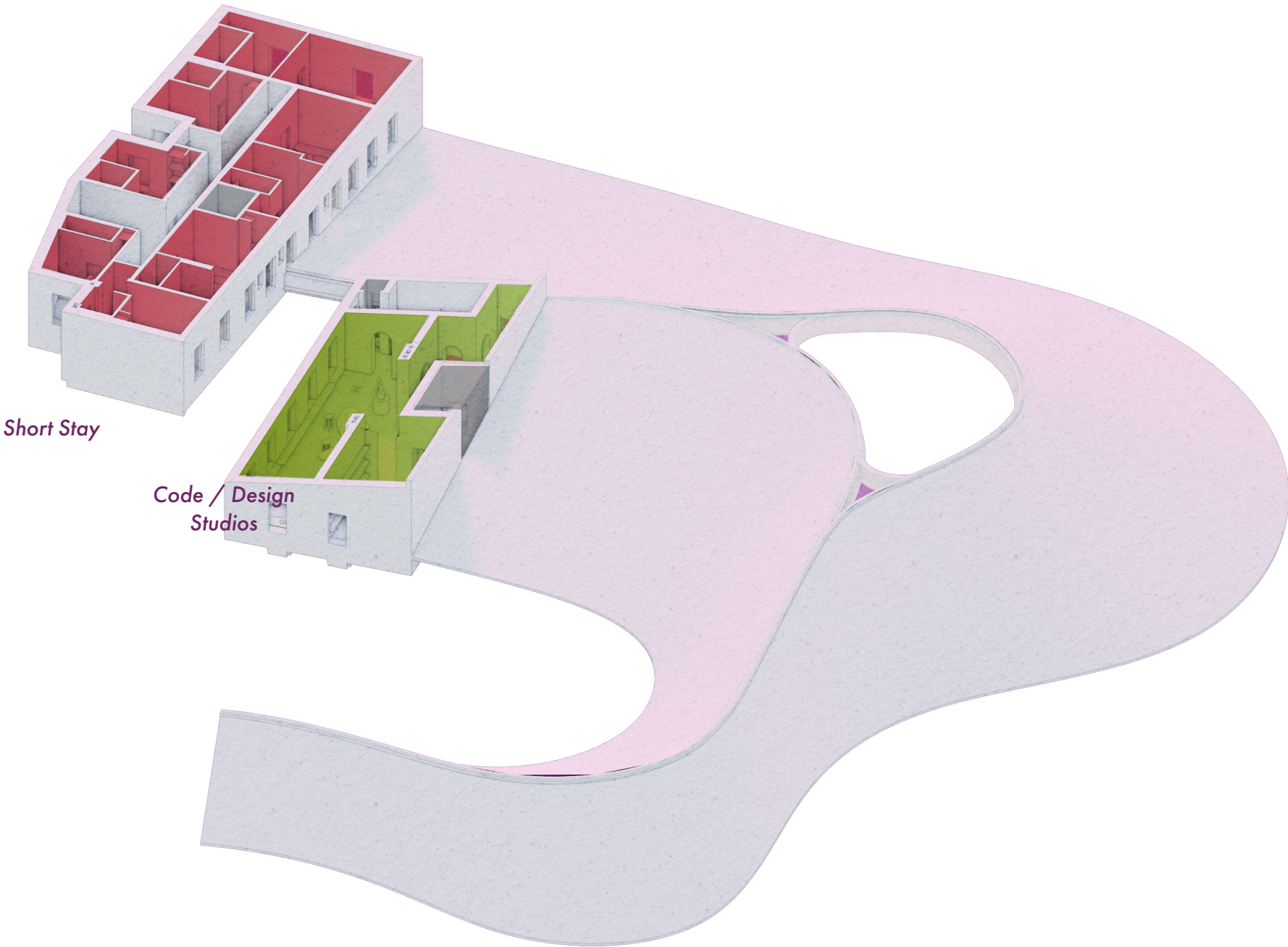
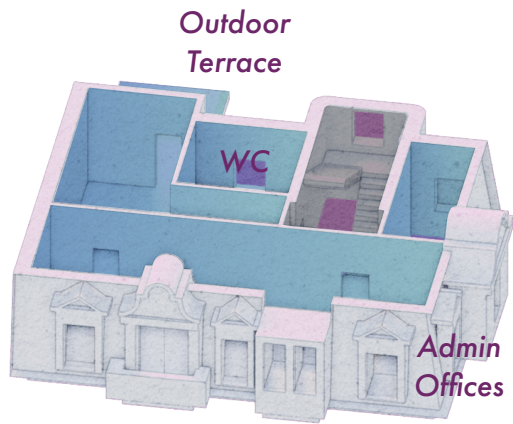
- Administration
- Co Living
- Fabrication Labs
- Mixed Reality Lqbs
- Shared 'Play' Space
- Galleries



FIRST LEVEL

Program

- Administration
- Co Living
- Fabrication Labs
- Mixed Reality Lqbs
- Shared 'Play' Space
- Galleries





*Riga Metaverse
Dashboard*

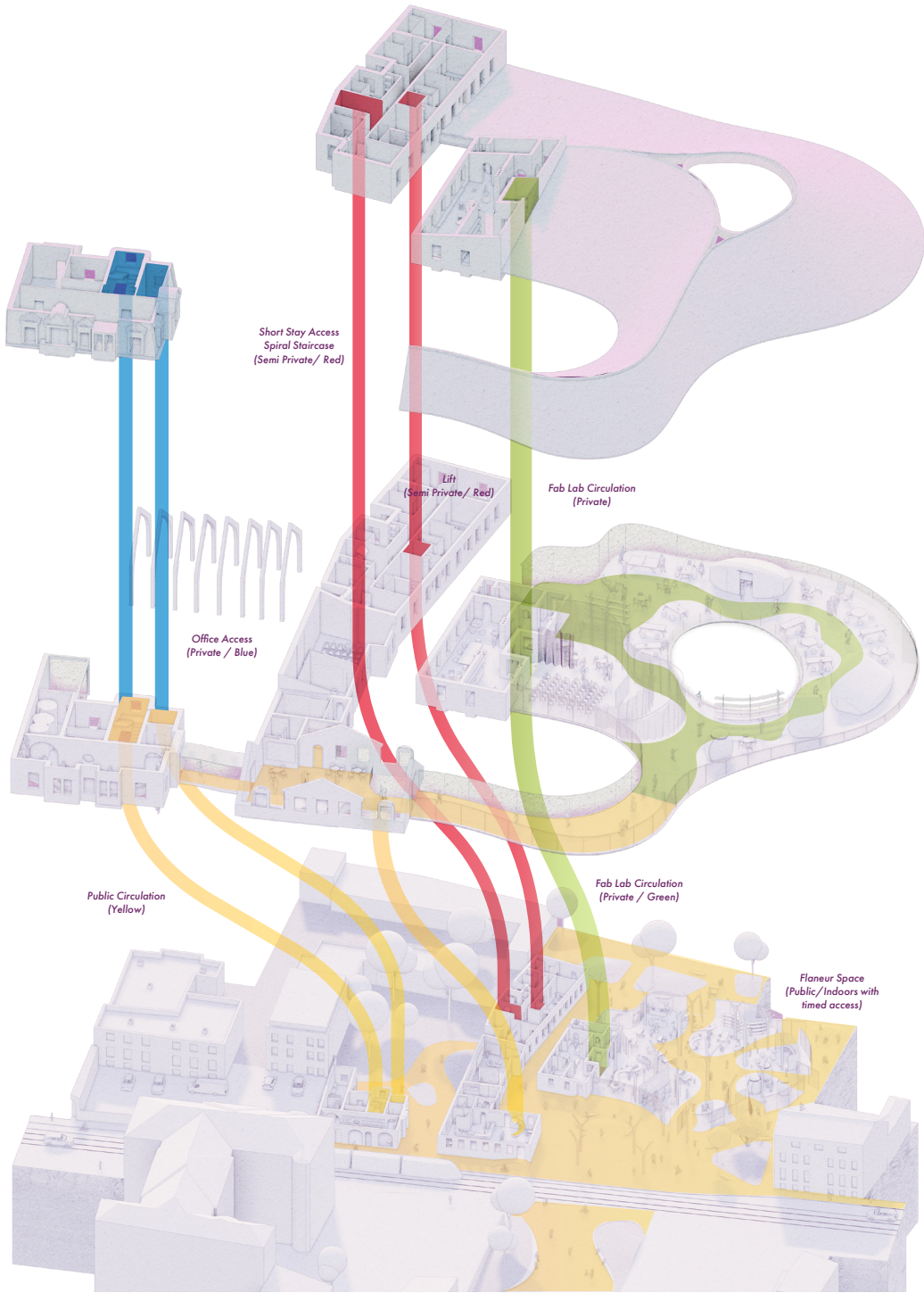
*Lecture Starts in
10 minutes*

RESEARCH LEVELS

AR HEADSET

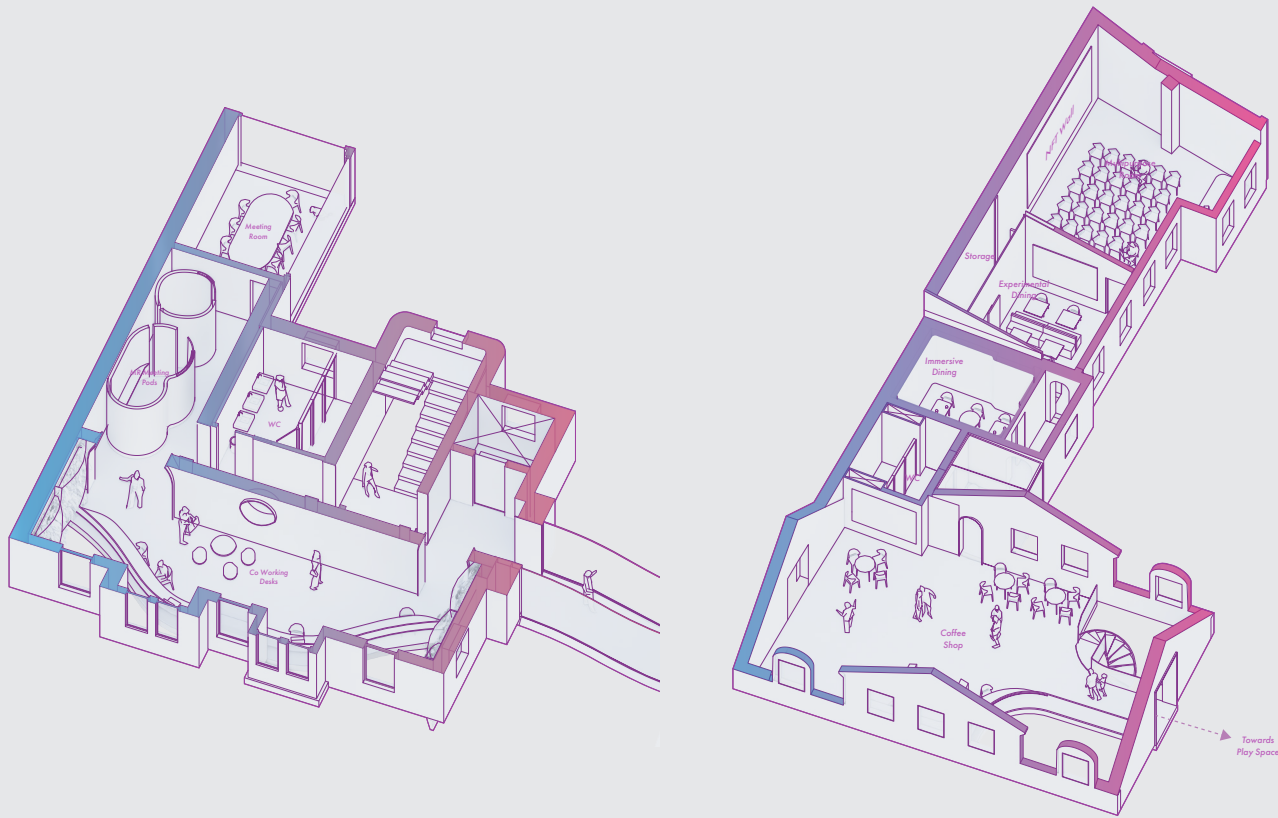
CIRCULATION

- Public Access
- Semi Public
- Semi Private
- Private



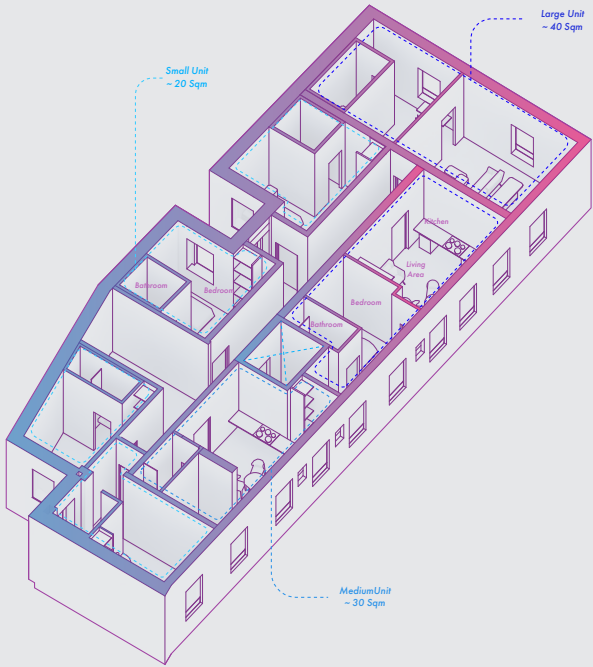
TYPICAL FLOOR ARRANGMENT

Overview

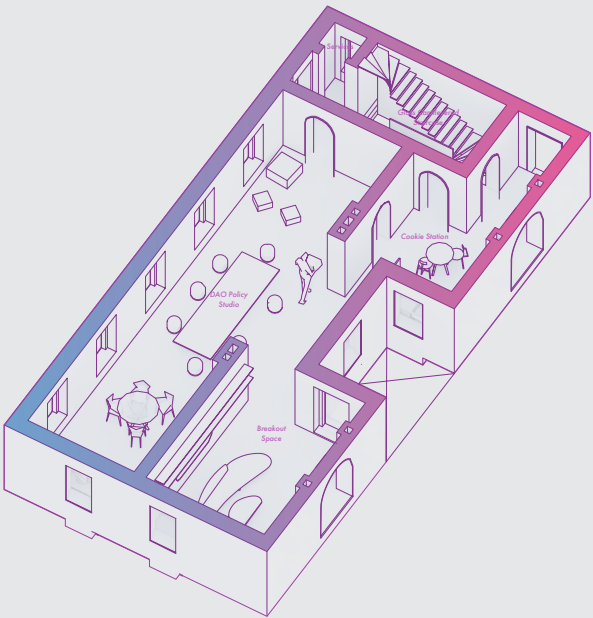


Typical Admin Level

Typical Co Working Level



Typical Short Stay

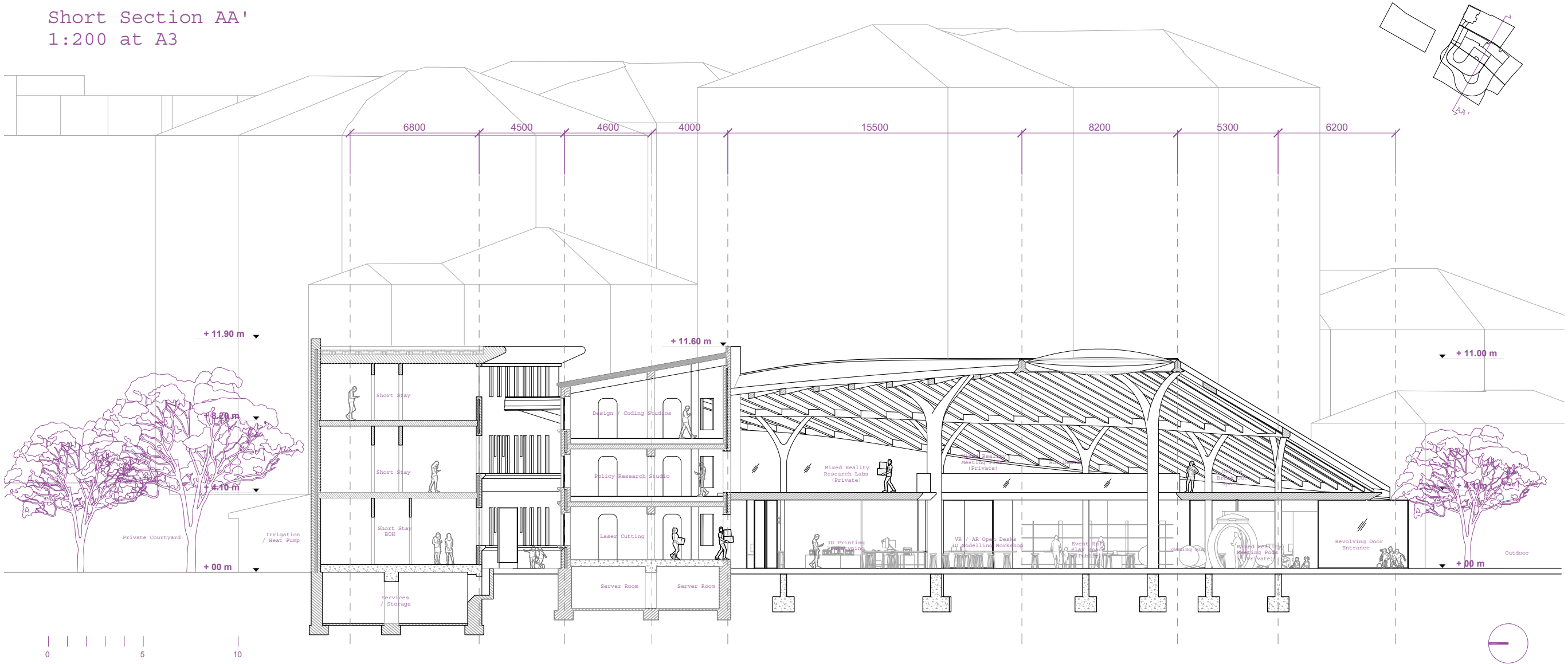


Typical Policy Studio

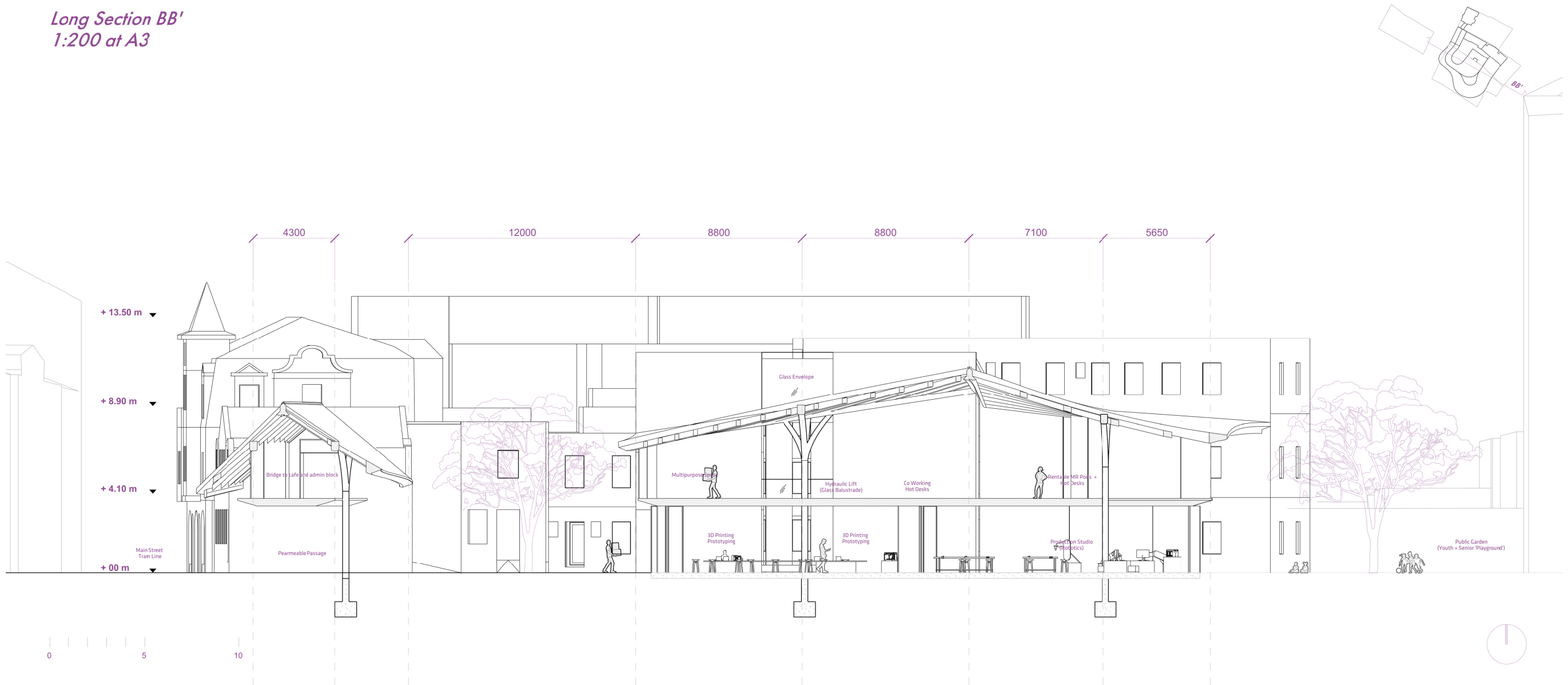


MIXED REALITY DINING

Short Section AA'
1:200 at A3



Long Section BB'
1:200 at A3



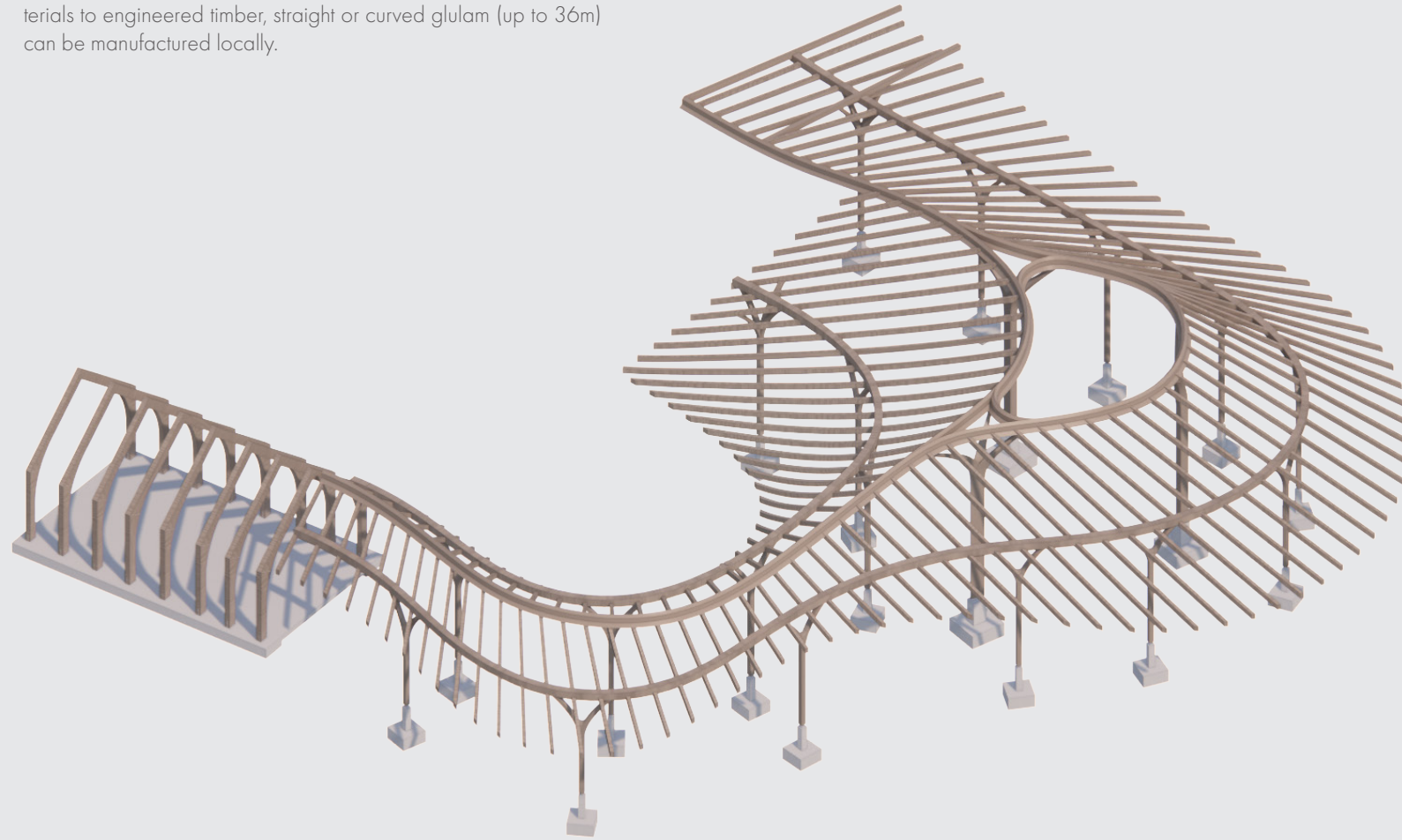
STRUCTURE AND CLIMATE

Strategy

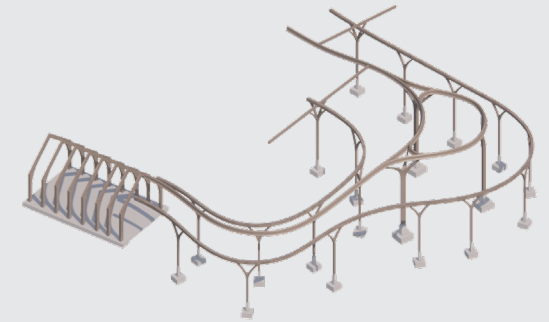
LOAD BEARING STRUCTURE

Primary And Secondary Elements

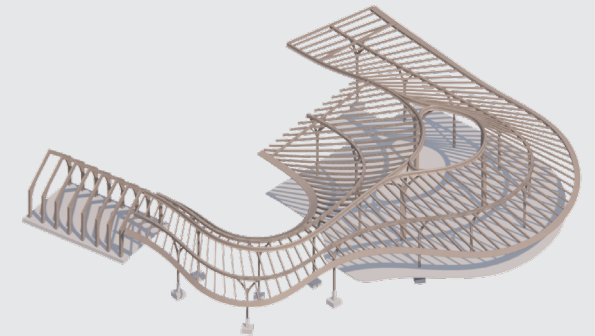
In Latvia timber is the most popular export product. From raw materials to engineered timber, straight or curved glulam (up to 36m) can be manufactured locally.



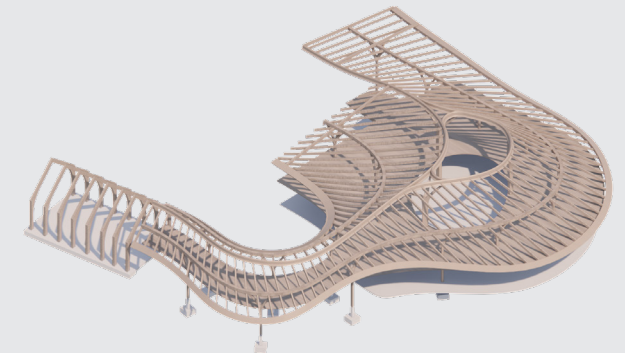
Primary Structure
(Singular system of Glulam Columns +
Glulam Structural Ring)



Secondary Structure
(Glulam ribs operate as catenary
beams, reducing stresses and increasing
tension to stabilize the building from all
sides. Reduces wind load)



CLT Slabs
(Freestanding columns allow clt
slab placement with concealed
steel hooks)



Structural Plywood Skin
(In-situ applied 35mm plywood acts as
a lateral restraint, creating a continous
structural support for timber ribs.)



Local Capacity

(On left, Zaza Timber is one of the
largest timber product manufacturers,
located around 100km from the site)

ASSEMBLAGE OF A SEGMENT

Material + Structural Composition

Glass Fins

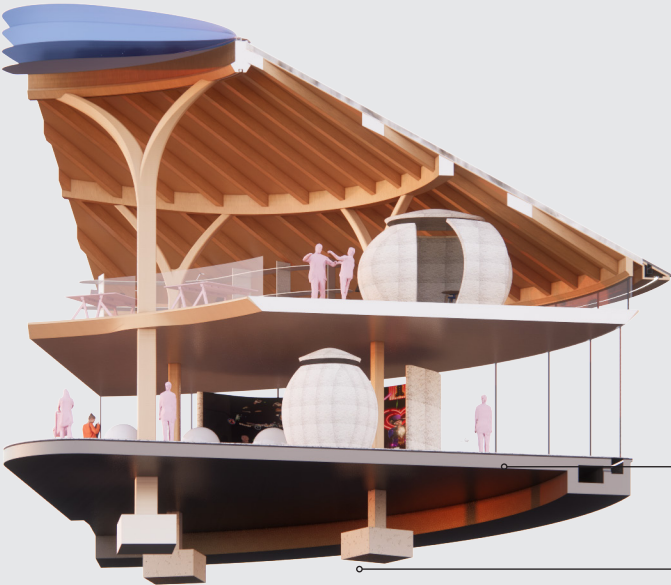


Locally Sourced
Wood Ribs

Shingle Composition

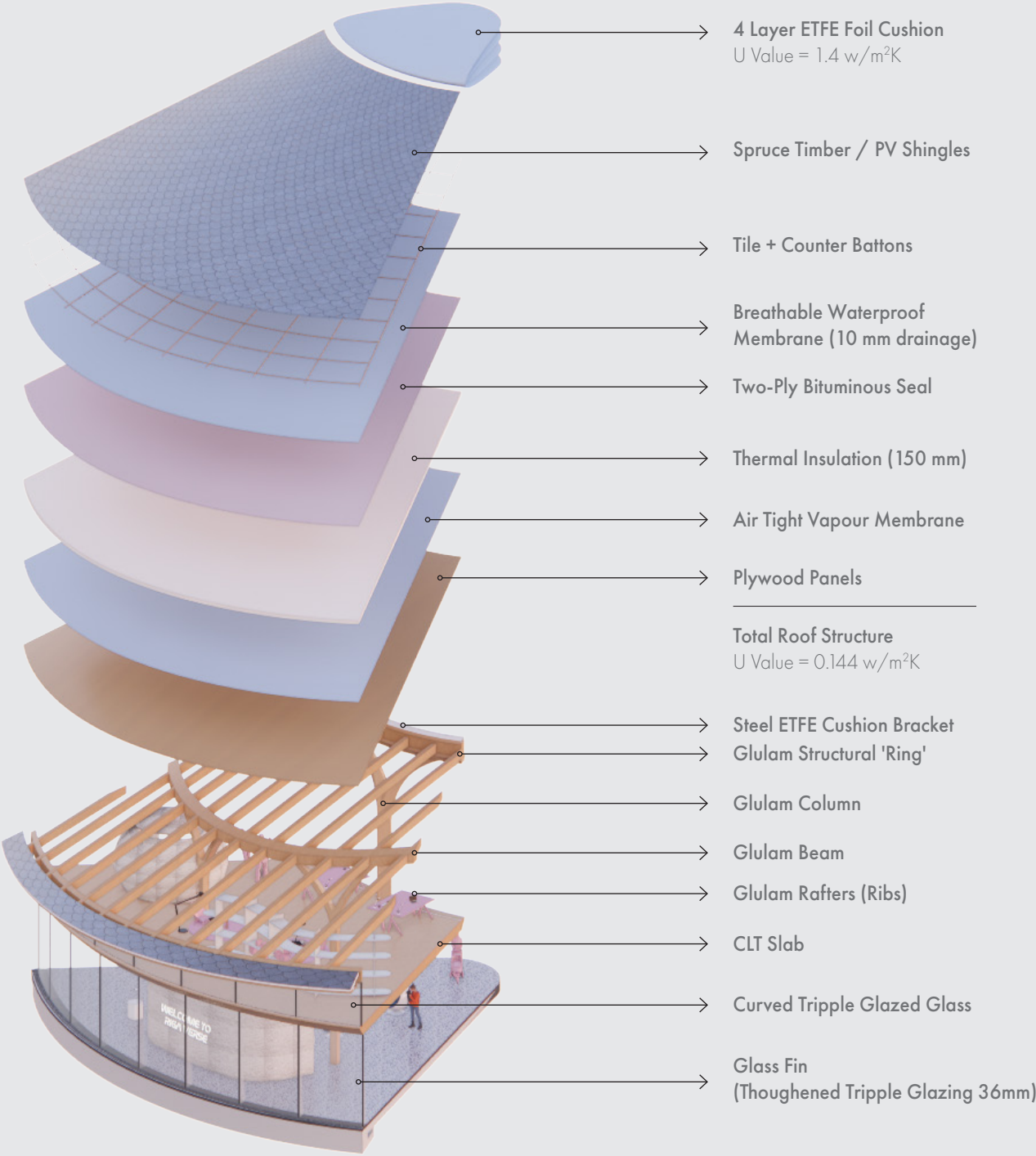


Roof Shingles



Concrete Slab

Pad Foundation



STRUCTURAL RING FRAGMENT

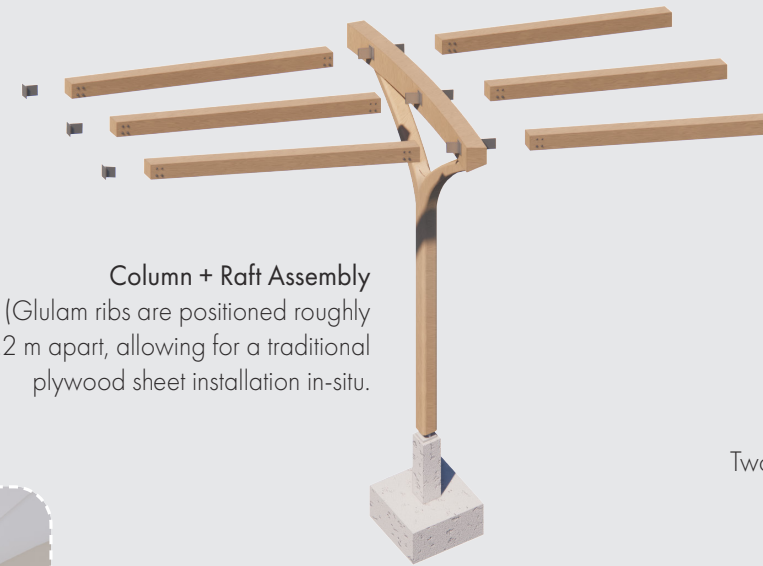
Segment Principle + ETFE Foil Lid

Structural Principle

Columns are positioned 6m apart, and sits on top of Pad foundation, due to natural curvature of the structure, the structure acts as a 'table', that does not require a core stabilizer.

Connection Principle

As part of the projects concept, I am using a concealed bracket (Alumidi bracket). For secondary structure, a Self-drilling dowels are used to allow in-situ assembly.



Column + Raft Assembly
(Glulam ribs are positioned roughly 1.2 m apart, allowing for a traditional plywood sheet installation in-situ.

Primary Columns

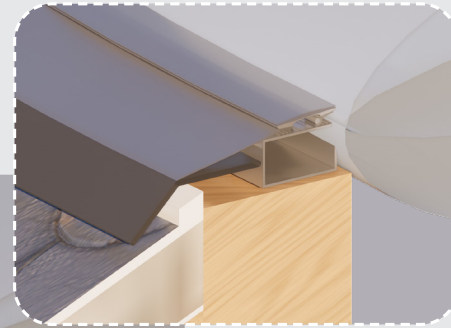
3 Primary columns are supporting the central space, due to the unique shape of the roof, columns branch out at the top, referencing Jugenstil.

Secondary Columns

Two fold column carries the the ribs

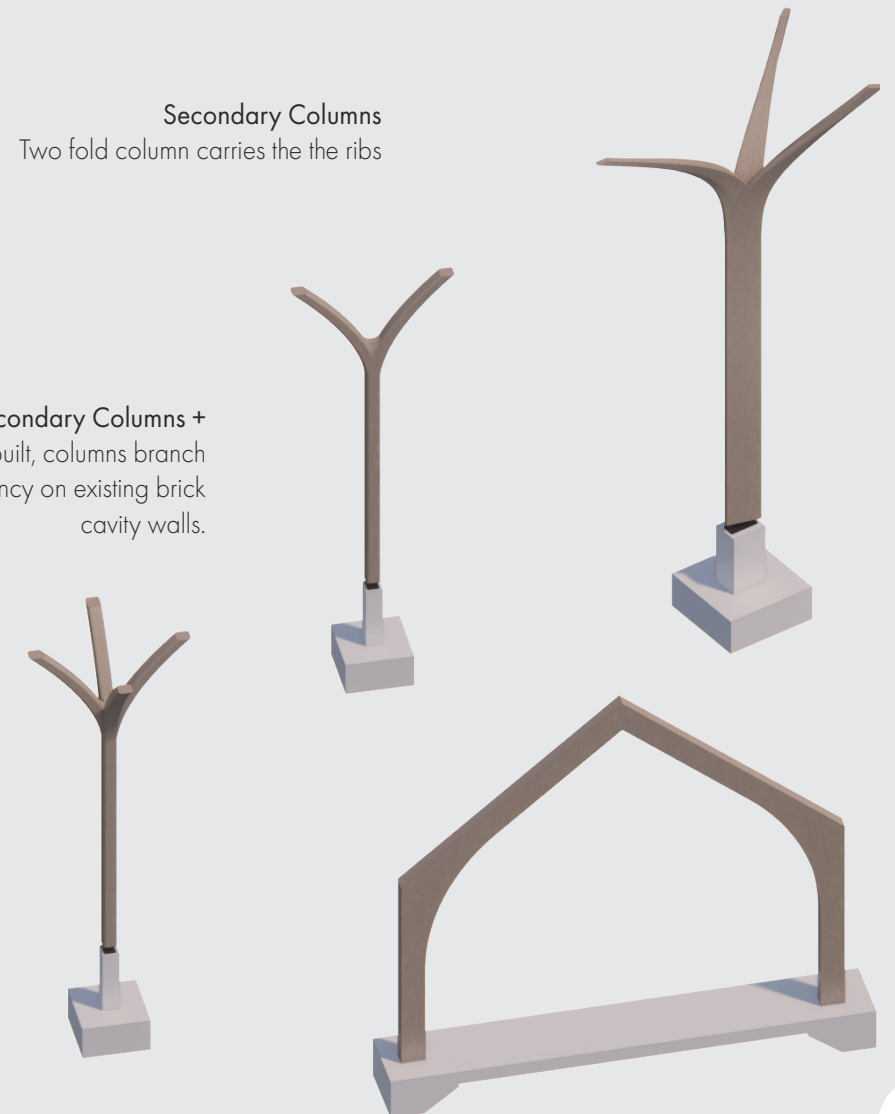
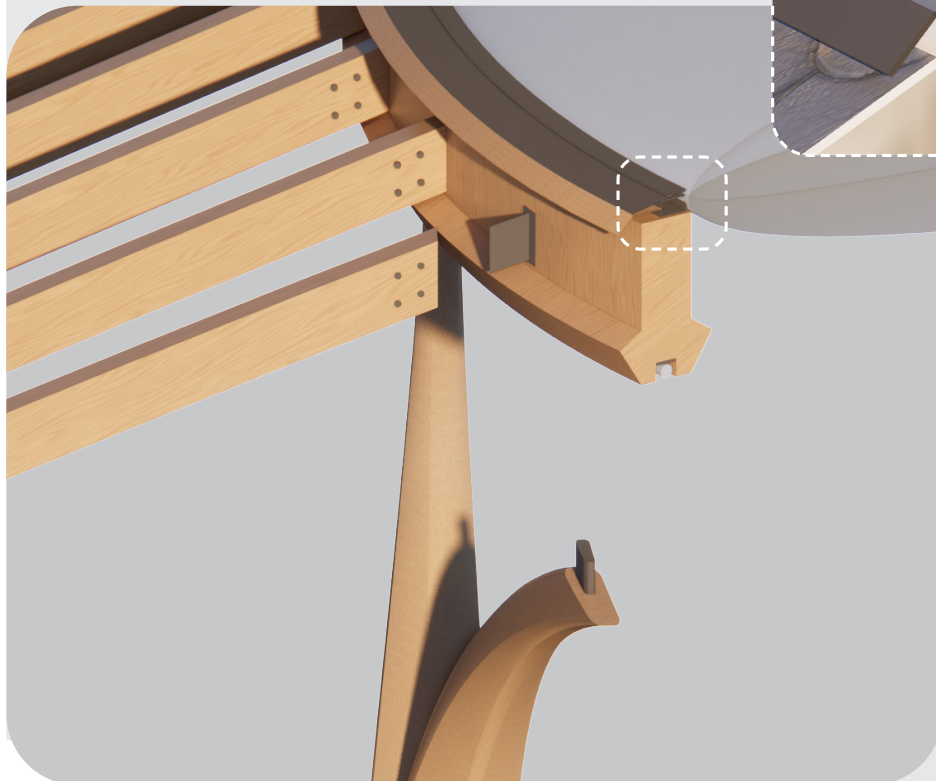
Secondary Columns +

Towards the end os the new built, columns branch out into four, to reduce dependancy on existing brick cavity walls.



ETFE Cushion

Structurally and practicaly ETFE cushions are better than glass in this instance. It is relatively low-weight, self-cleaning and with further research, PV panels can be incorporated into the cushion. Acting as a shader and energy harvet. A simple and universal clamping system can be used with as it is attached from a single side.

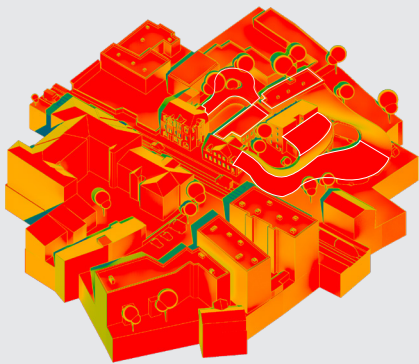
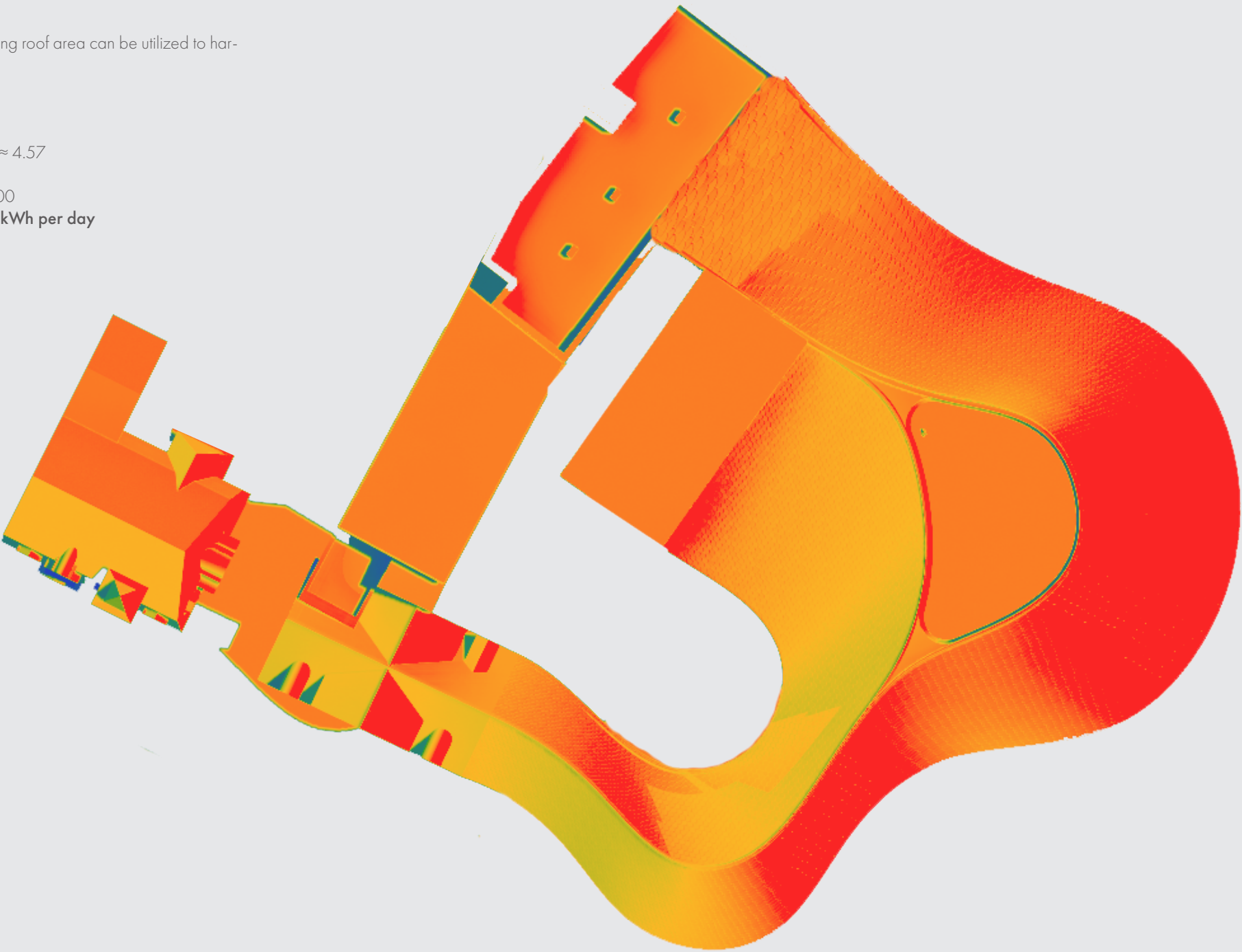


SOLAR CATCHMENT

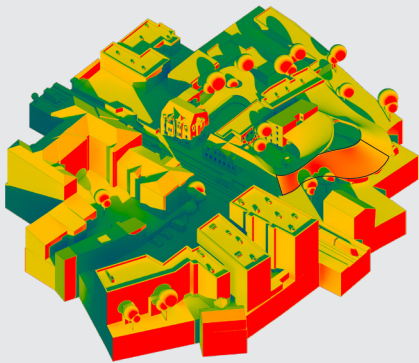
Photovoltaic Gains

Roughly 1300 sqm of south facing roof area can be utilized to harvest solar power.

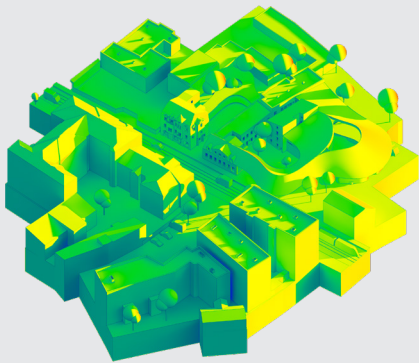
PV Roof Area ≈ 1300 sqm
Estimated Efficiency ≈ 20 %
Avg. sun hours per day in Riga ≈ 4.57
Formula:
 $1300 \times 1000 \times 20\% \times 4.57 / 100$
Total electricity output: 1,188 kWh per day



15th June 4 PM



15th March 4 PM



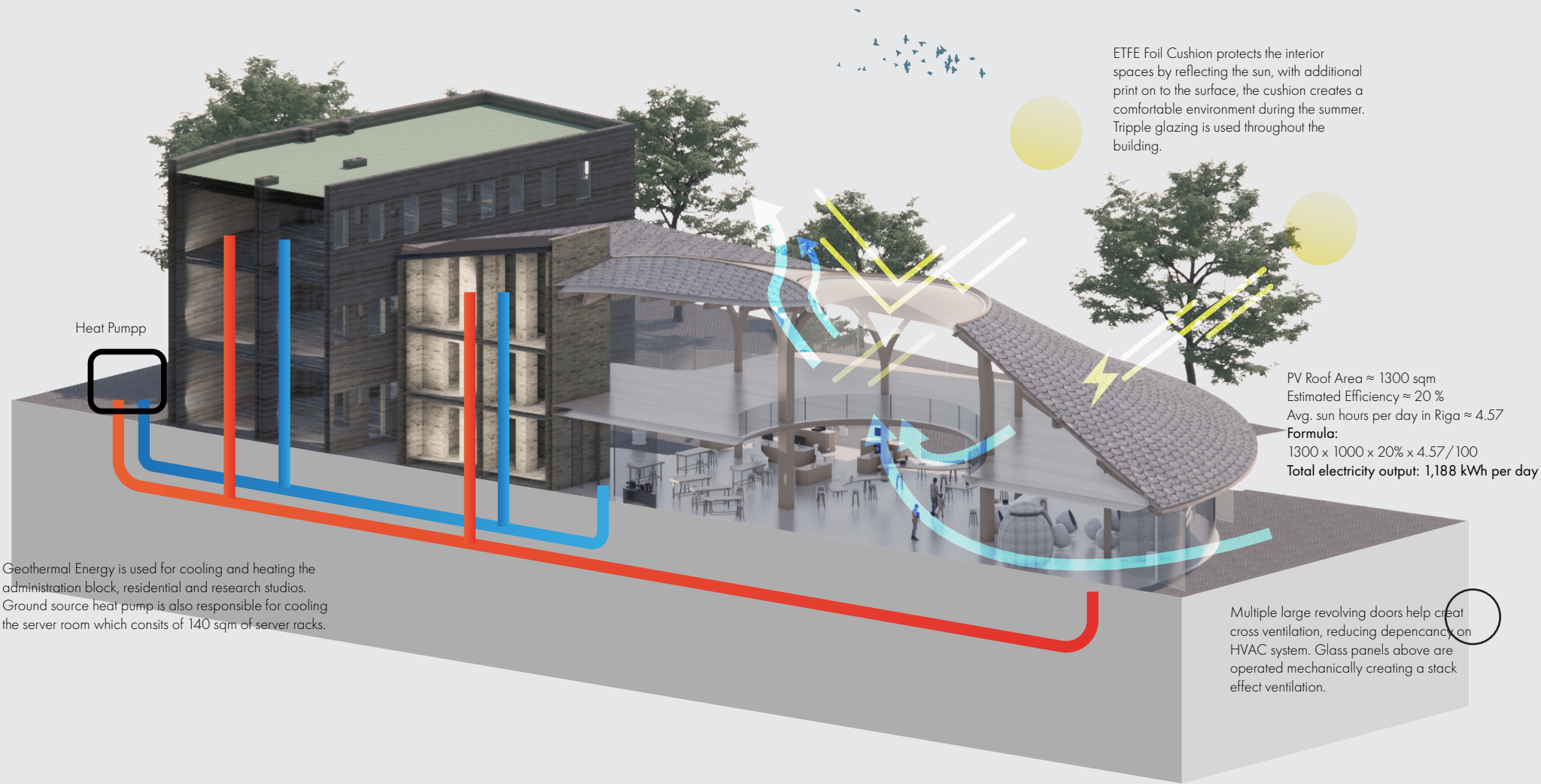
15th December 10 AM

CLIMATE DIAGRAM

Ground Level Cooling / Heating

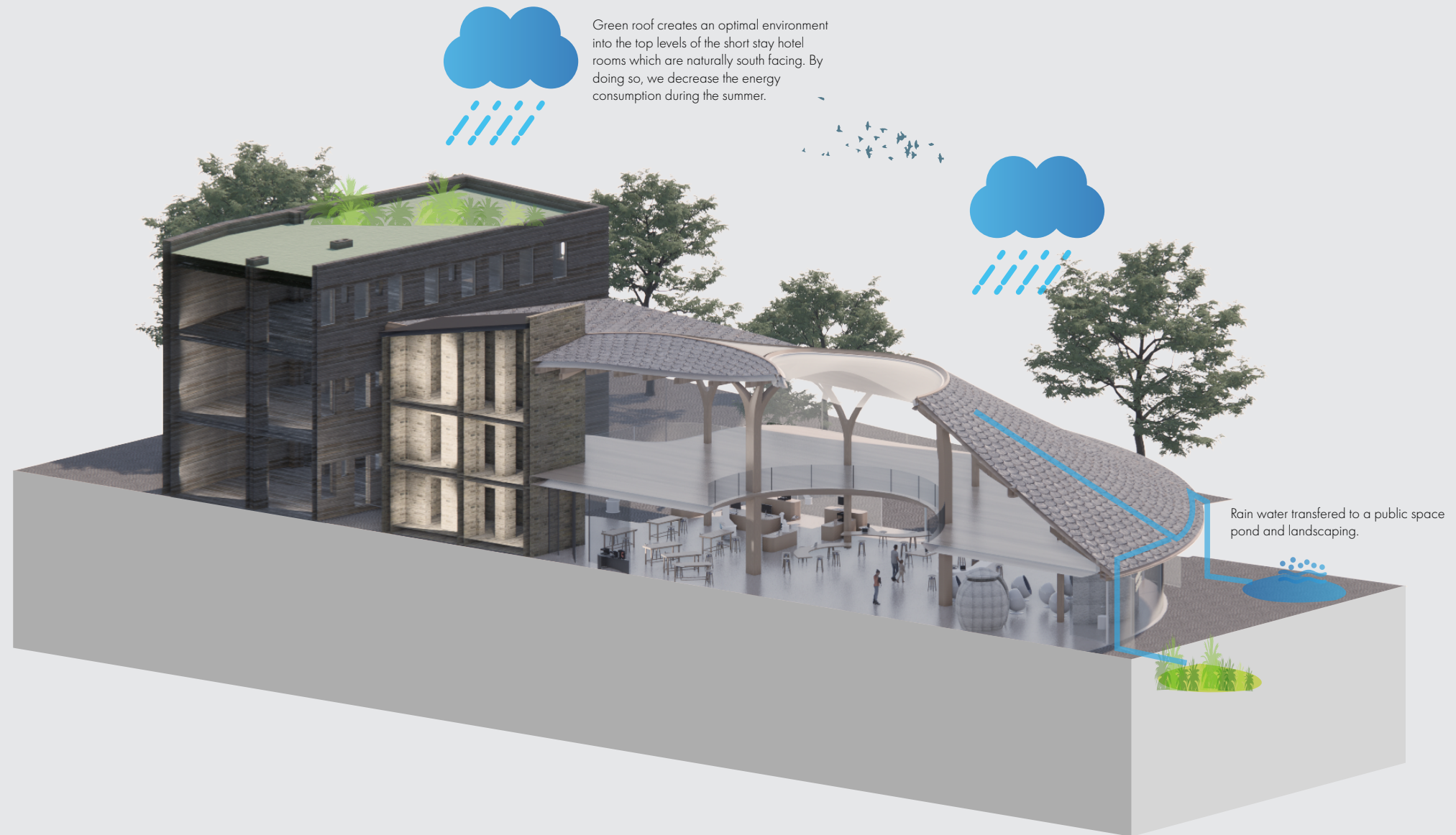
xx

Cavity Wall
The two halves of the wall were tied at regular intervals with steel or wrought iron wall ties



CLIMATE DIAGRAM

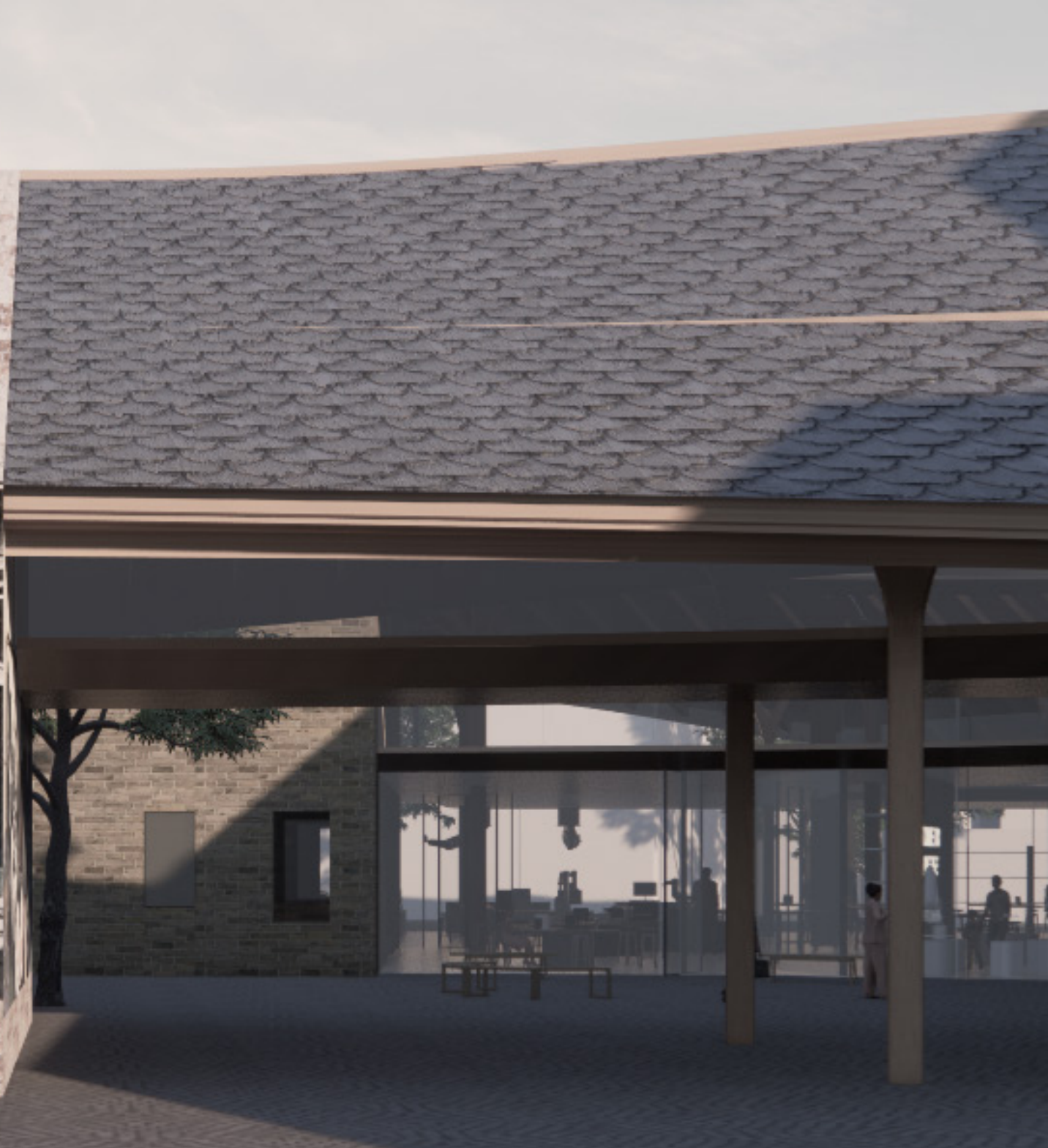
Water Collection





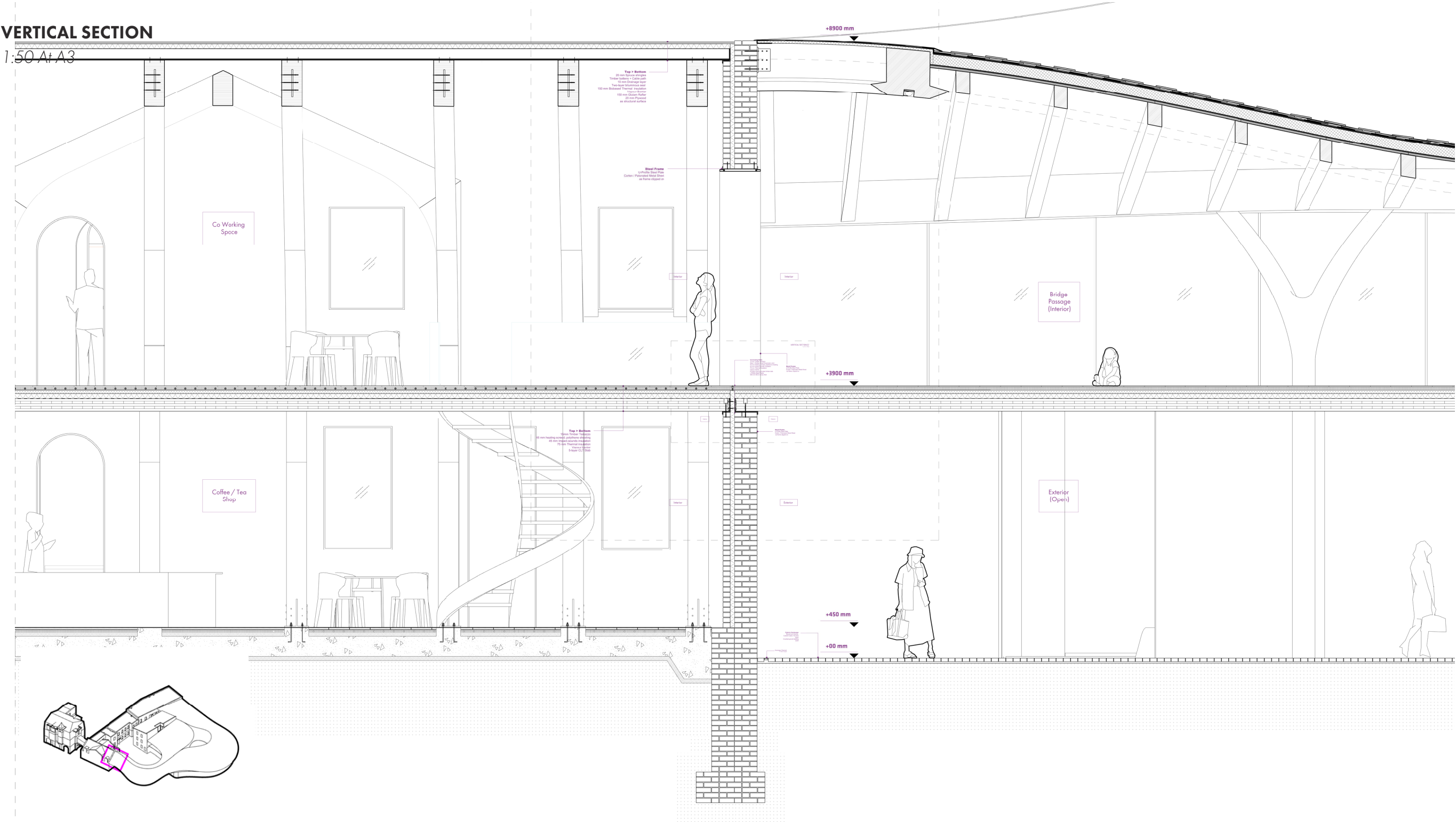
TECHNICAL DRAWINGS

Details



VERTICAL SECTION

1:50 A+ A3

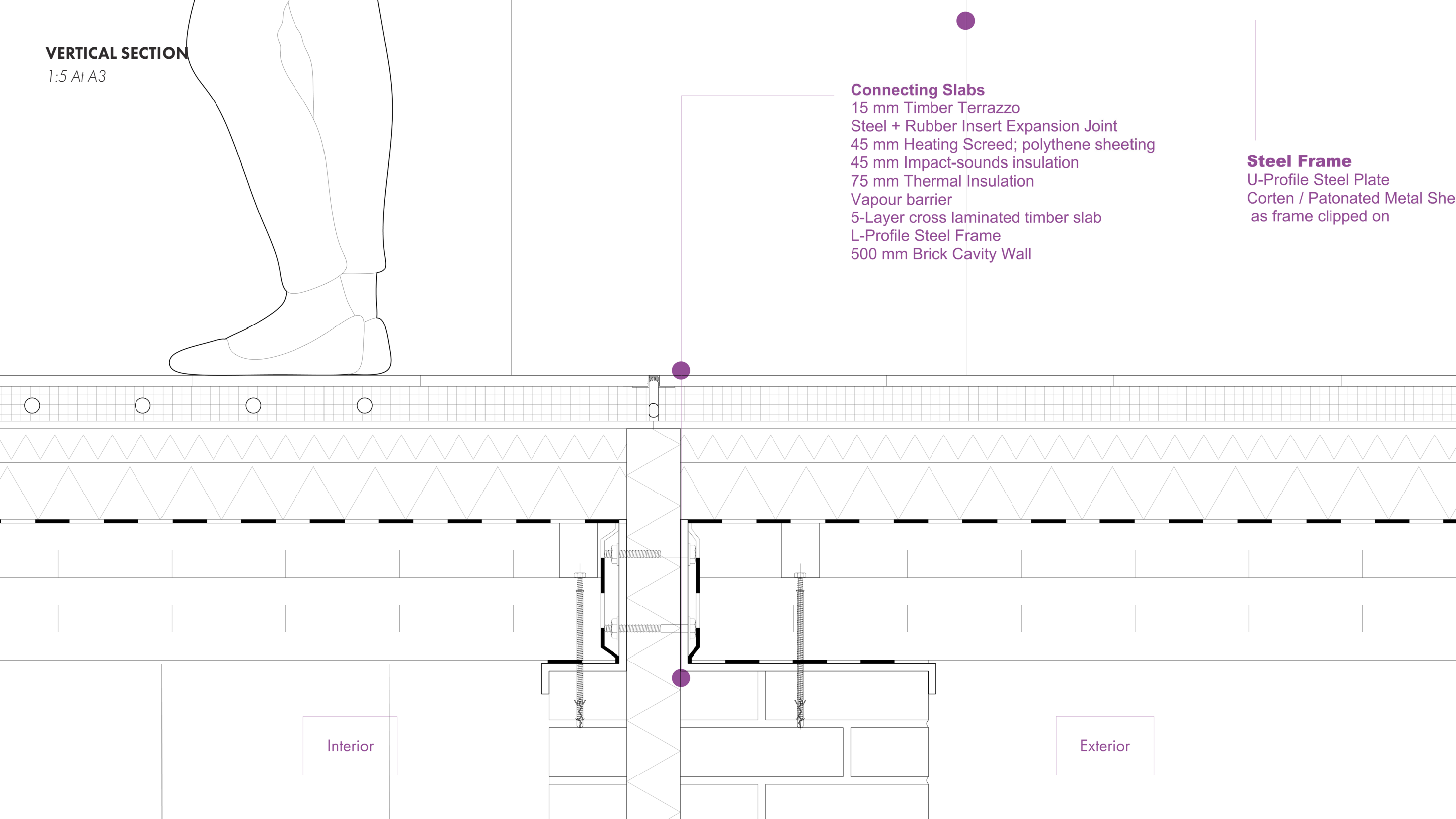


1:20 At A3



VERTICAL SECTION

1:5 At A3



Connecting Slabs

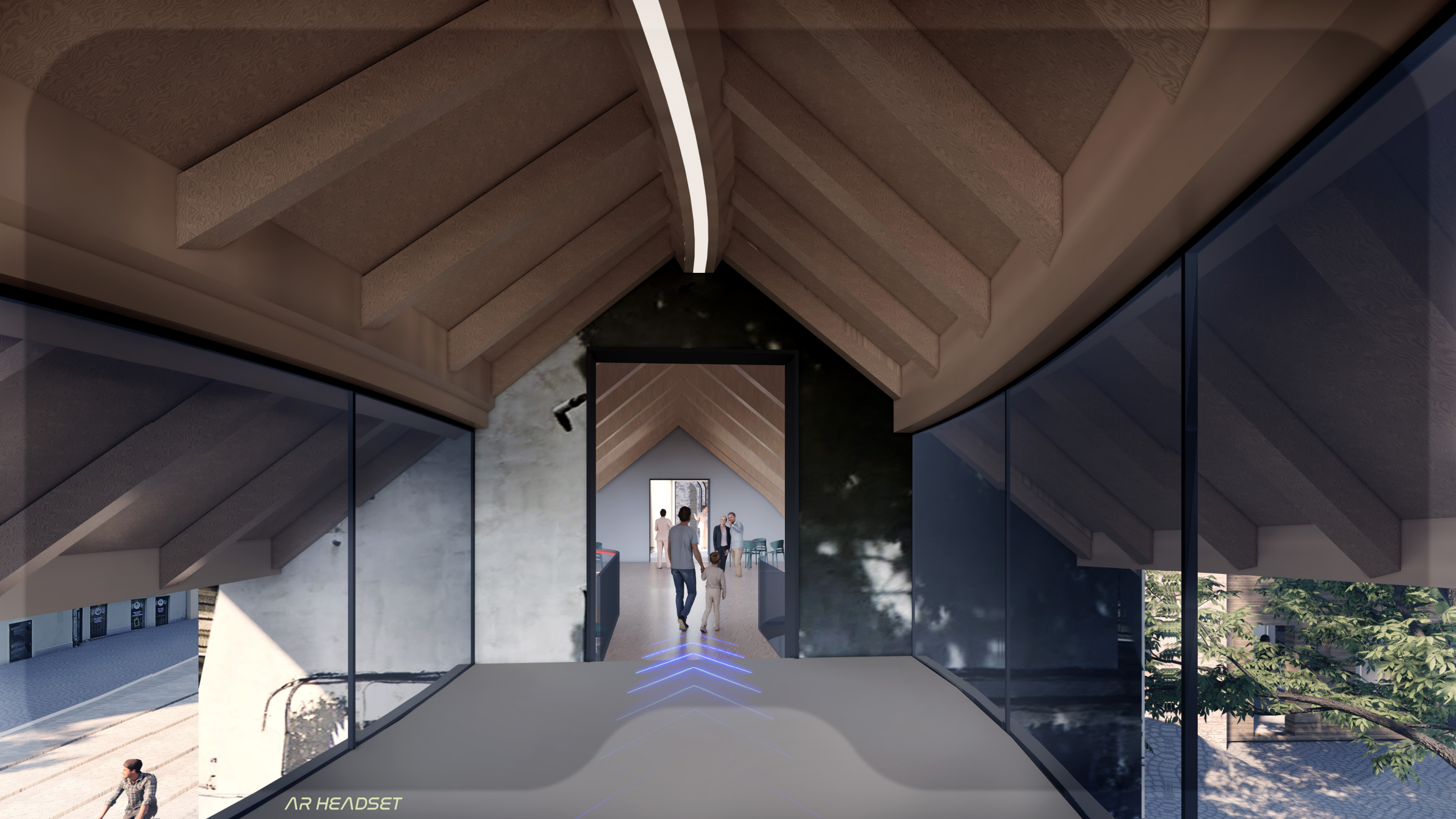
- 15 mm Timber Terrazzo
- Steel + Rubber Insert Expansion Joint
- 45 mm Heating Screed; polythene sheeting
- 45 mm Impact-sounds insulation
- 75 mm Thermal Insulation
- Vapour barrier
- 5-Layer cross laminated timber slab
- L-Profile Steel Frame
- 500 mm Brick Cavity Wall

Steel Frame

- U-Profile Steel Plate
- Corten / Patonated Metal She
- as frame clipped on

Interior

Exterior



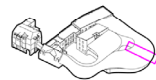
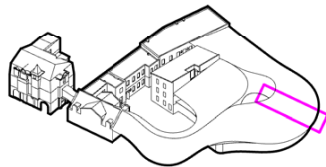
AR HEADSET



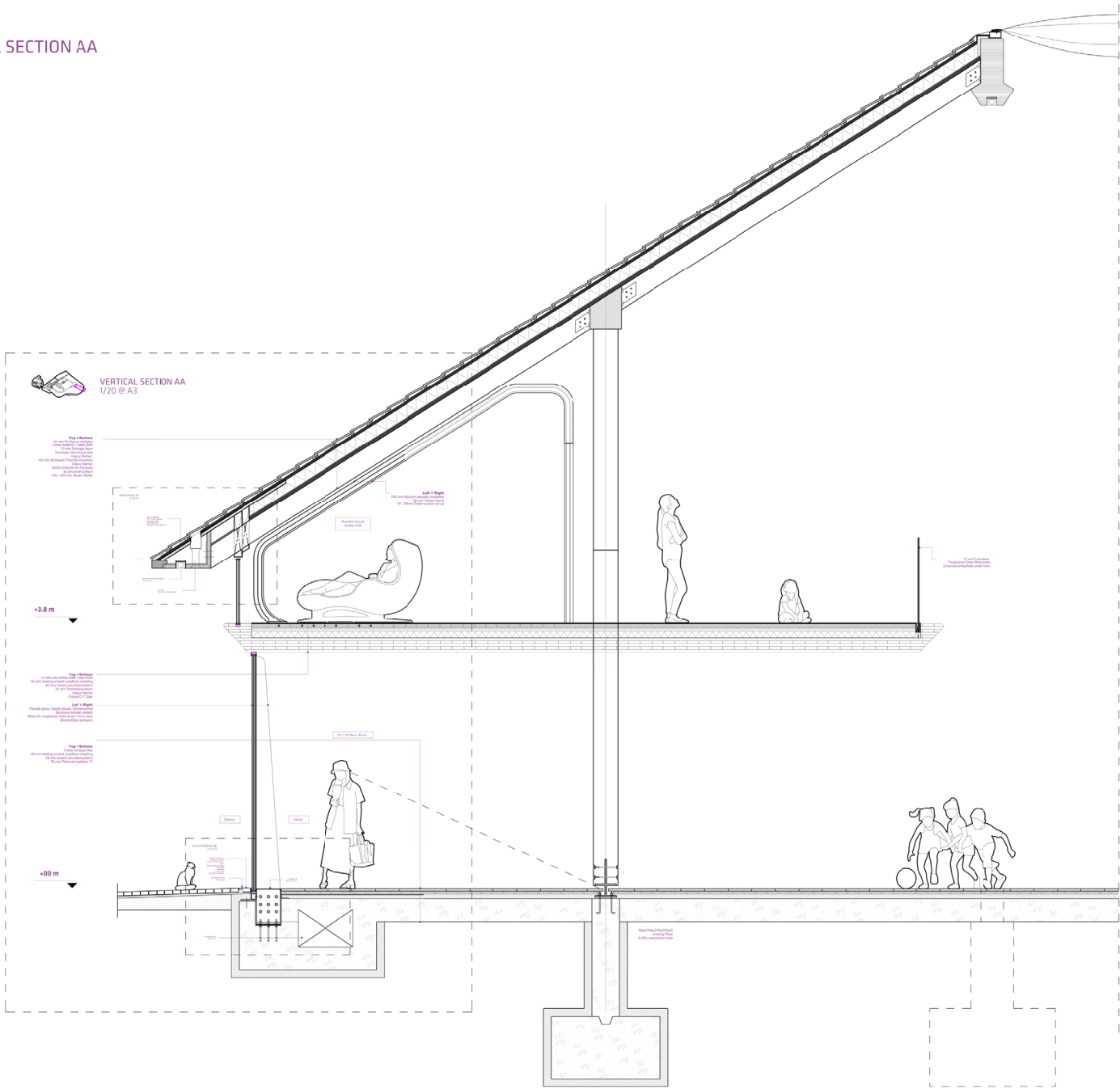
AR HEADSET

VERTICAL SECTION AA

1:50 At A3

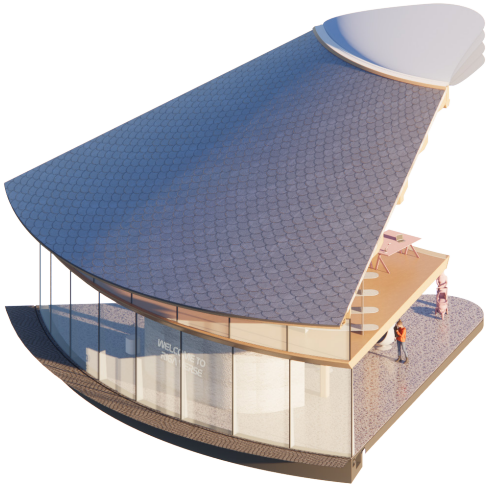
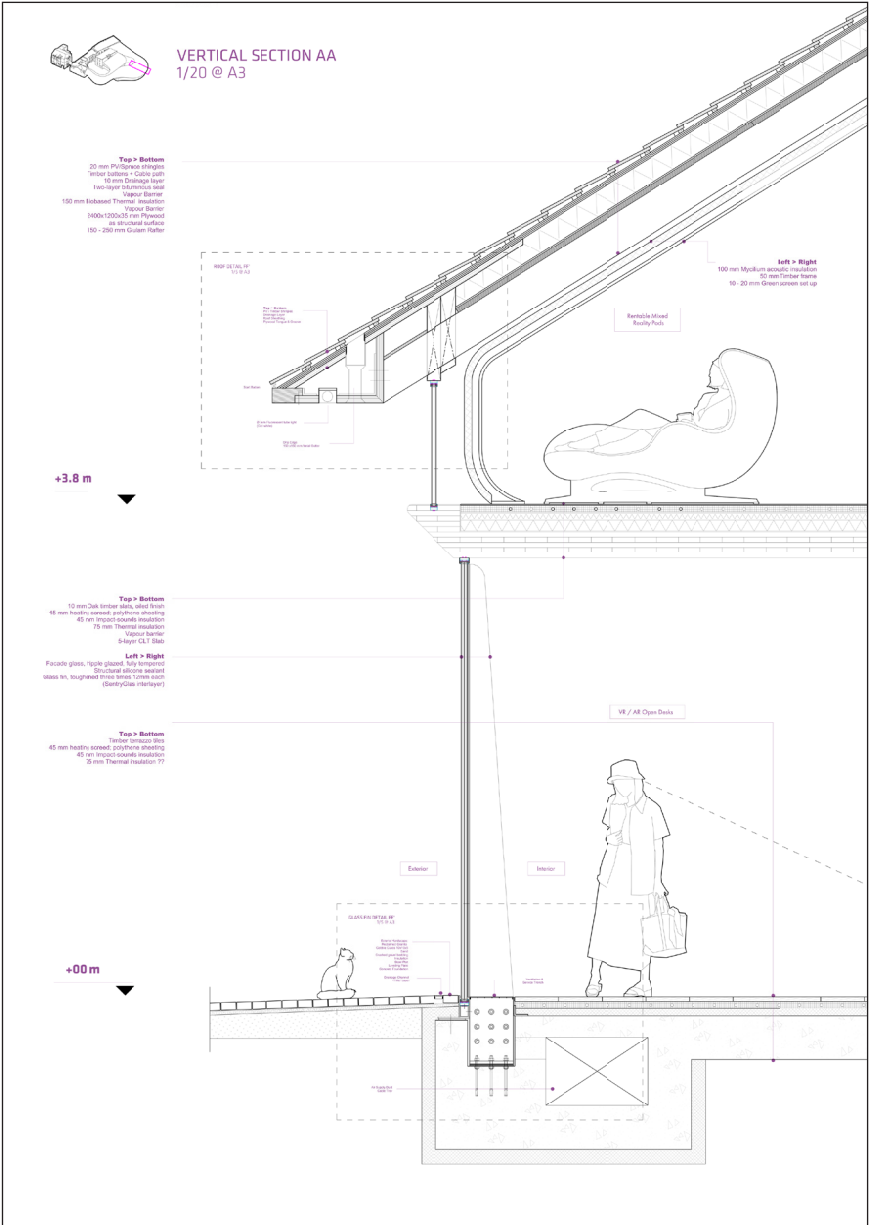


VERTICAL SECTION AA
1/50 @ A3



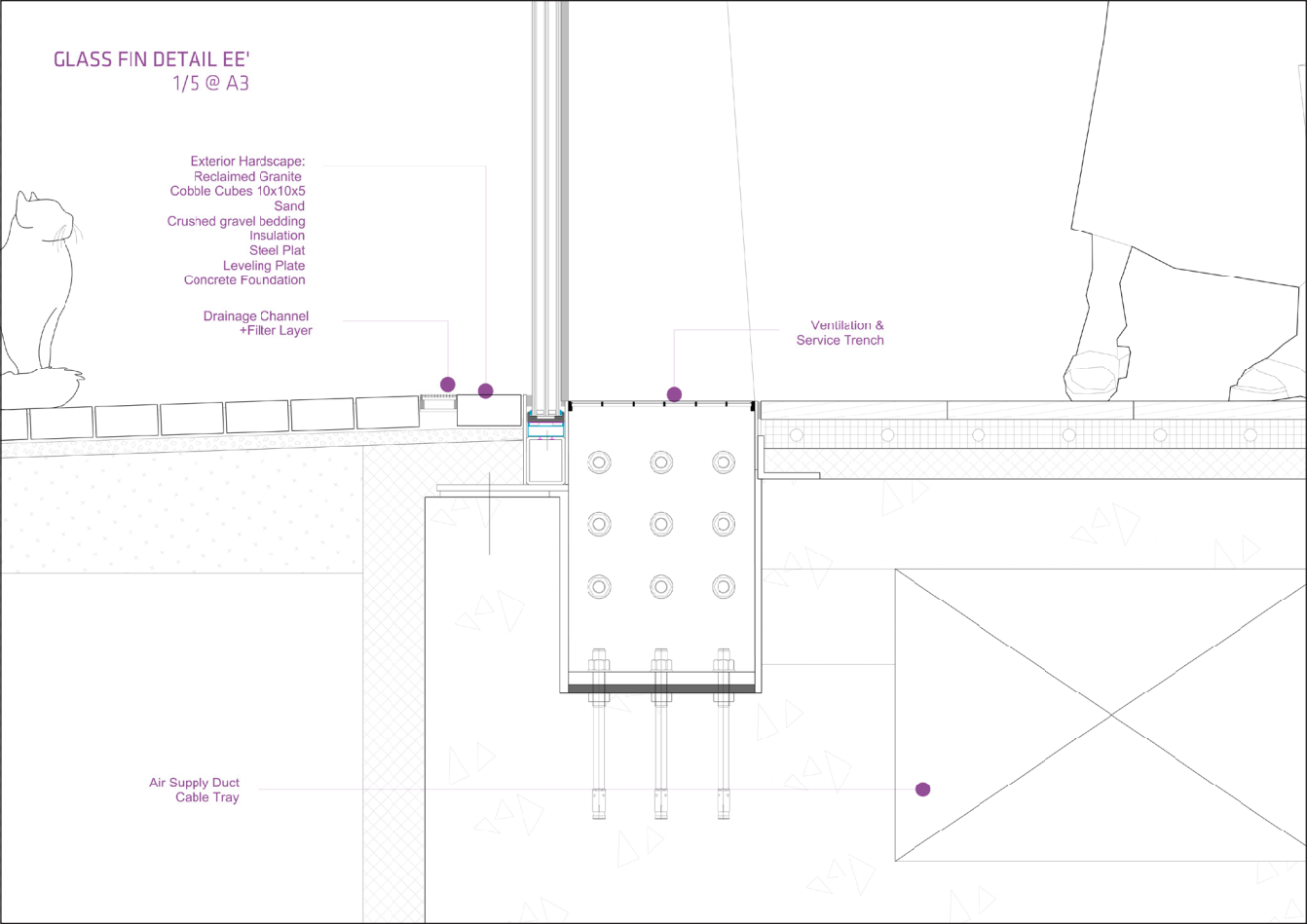
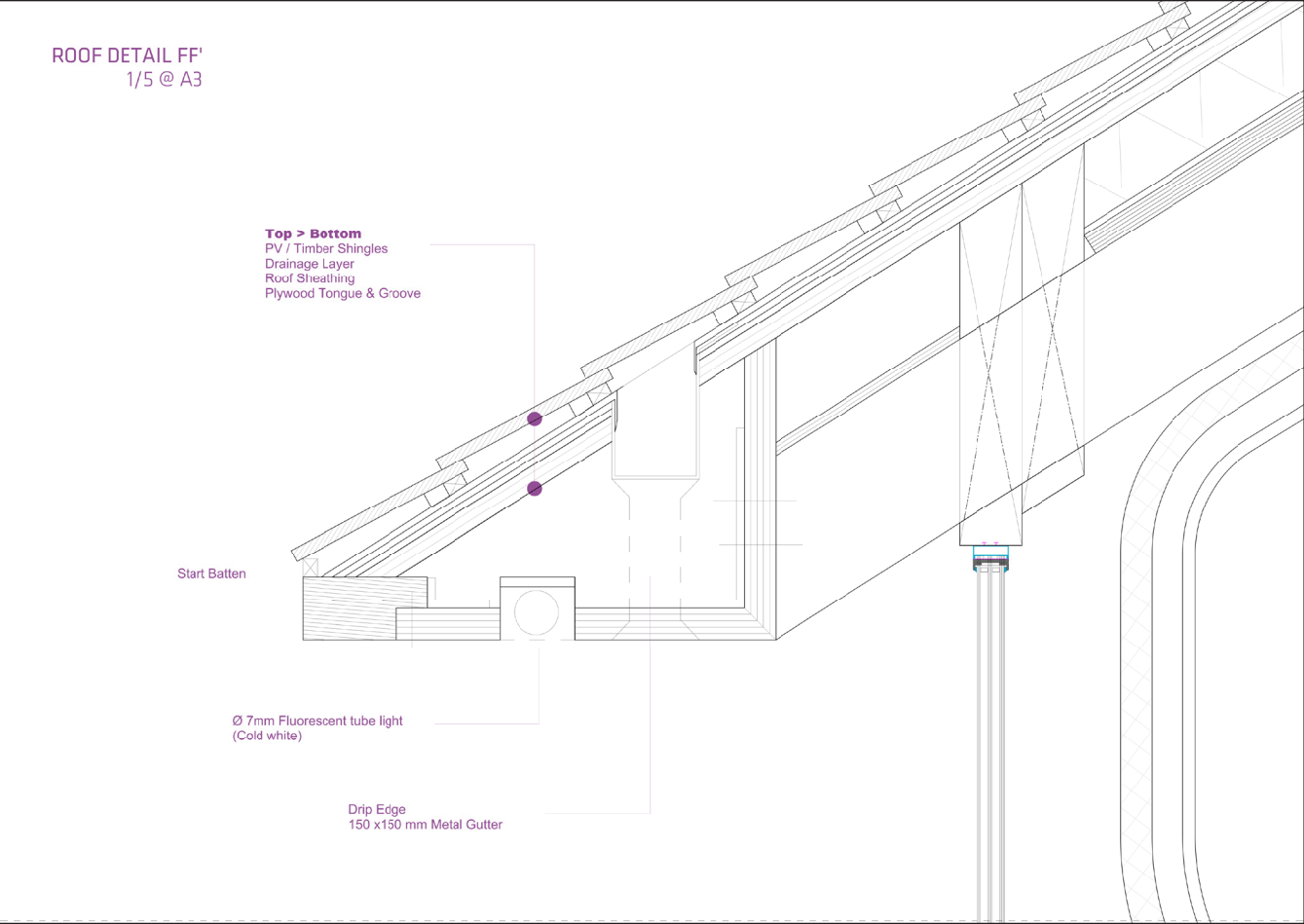
VERTICAL SECTION

1:20 At A3



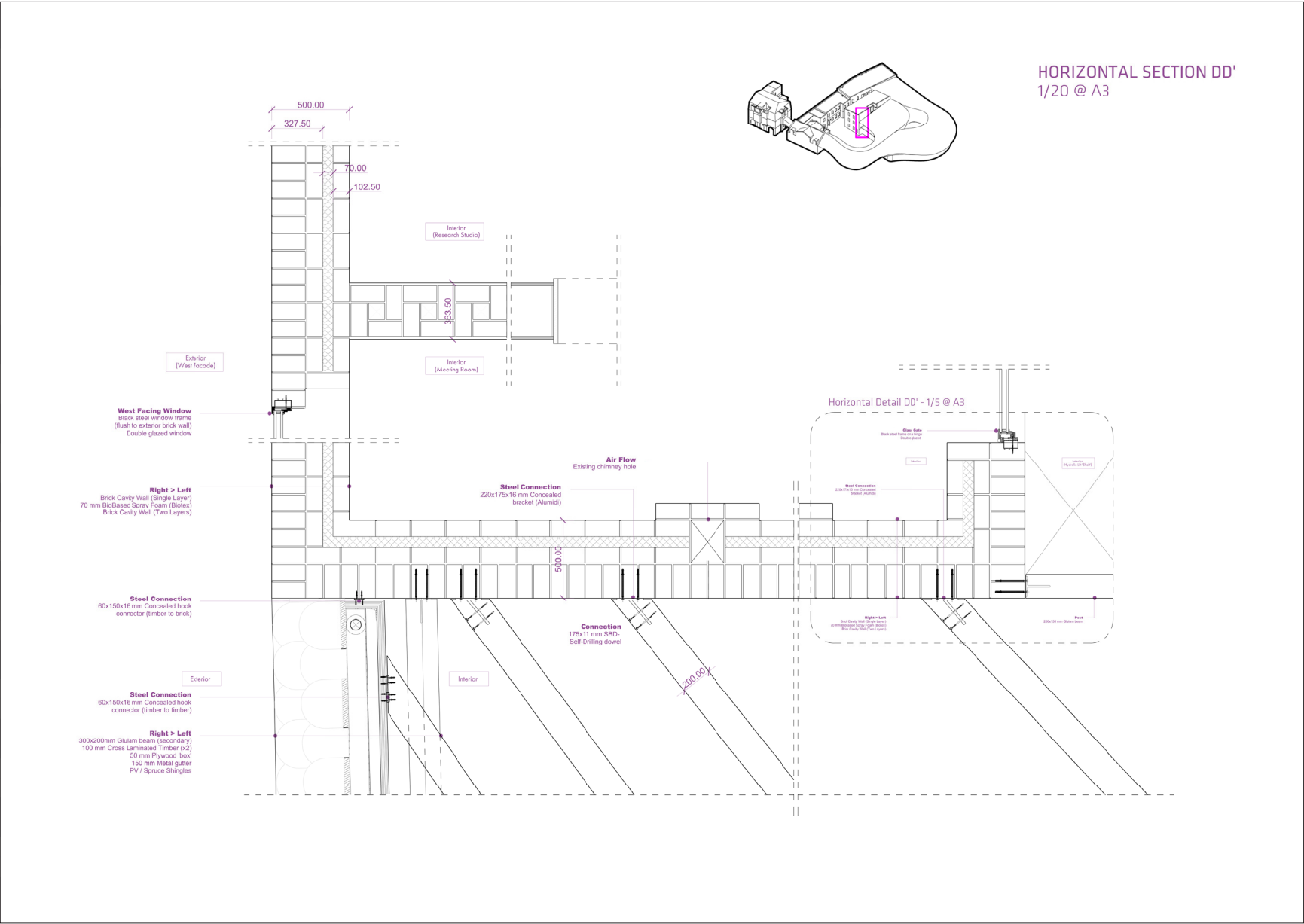
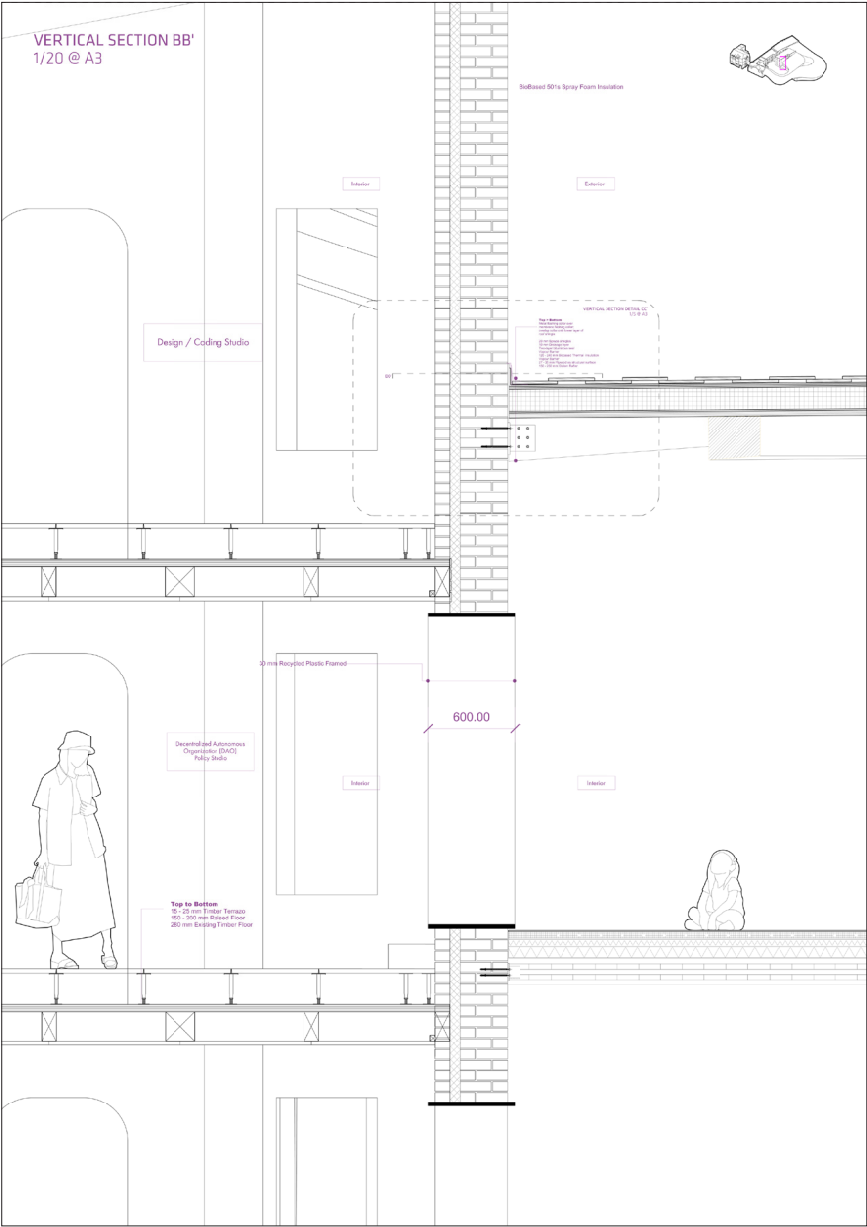
DETAILS

1:5 At A3



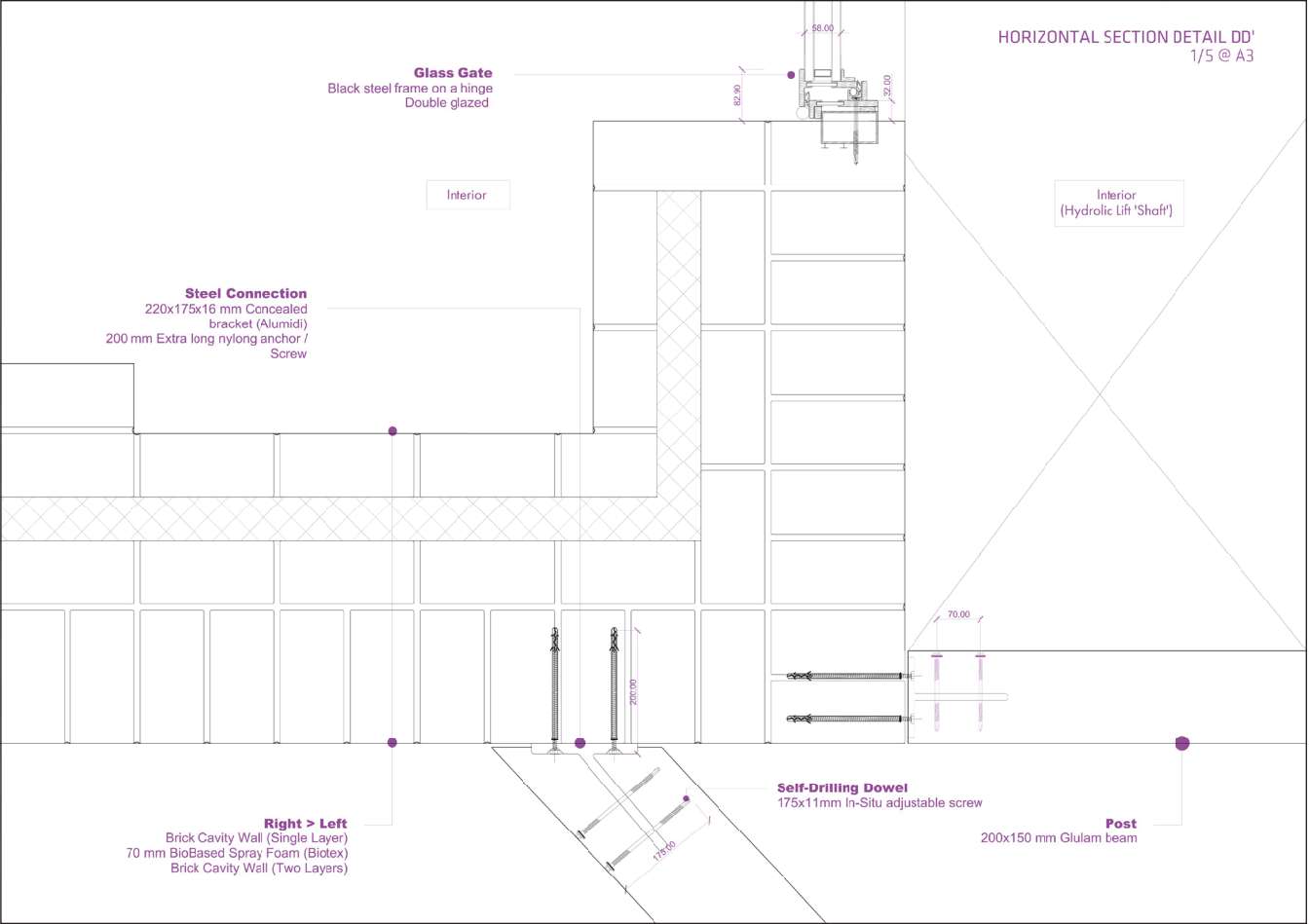
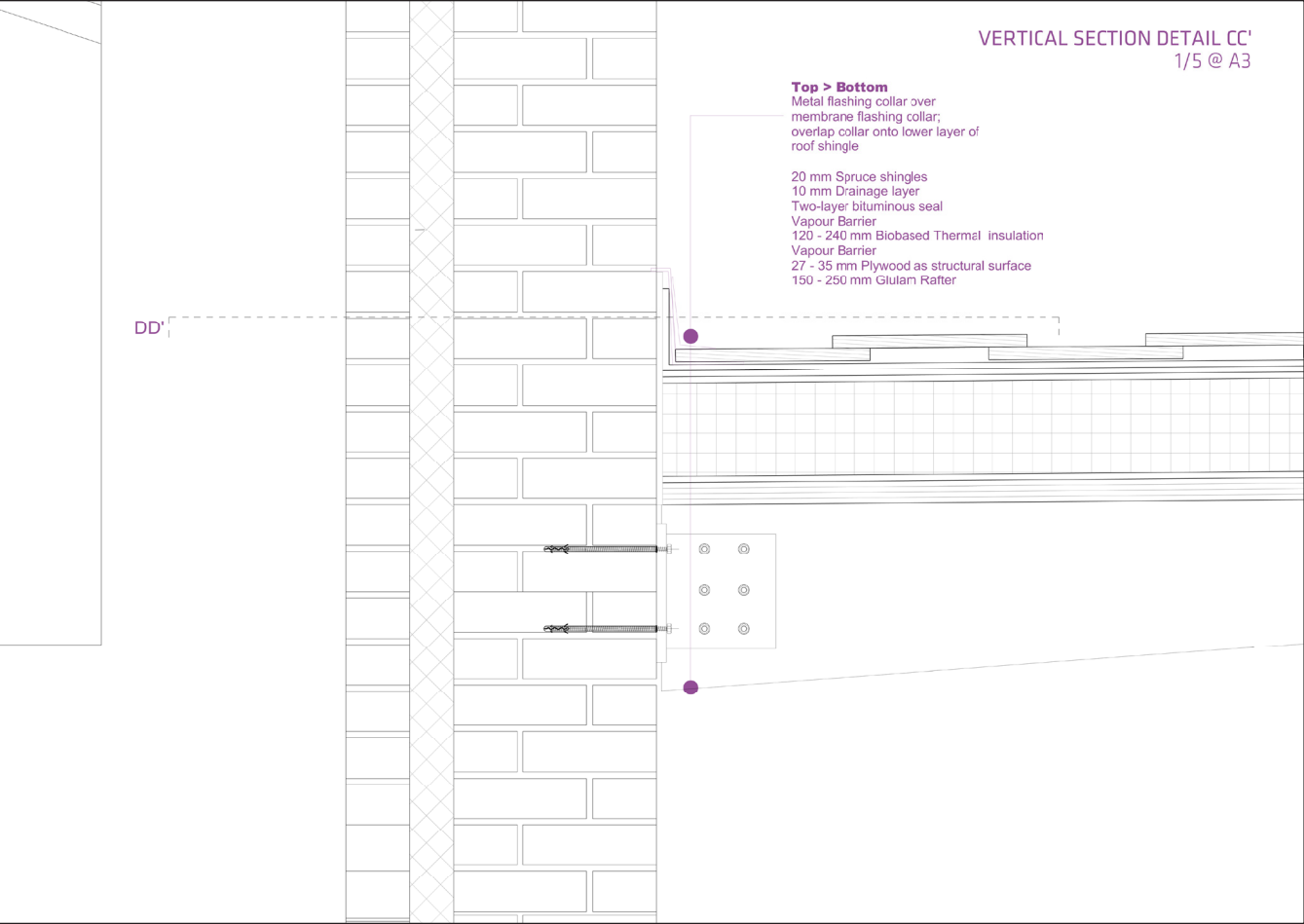
VERTICAL + HORIZONTAL SECTION

1:20 At A3



DETAILS

1:5 At A3



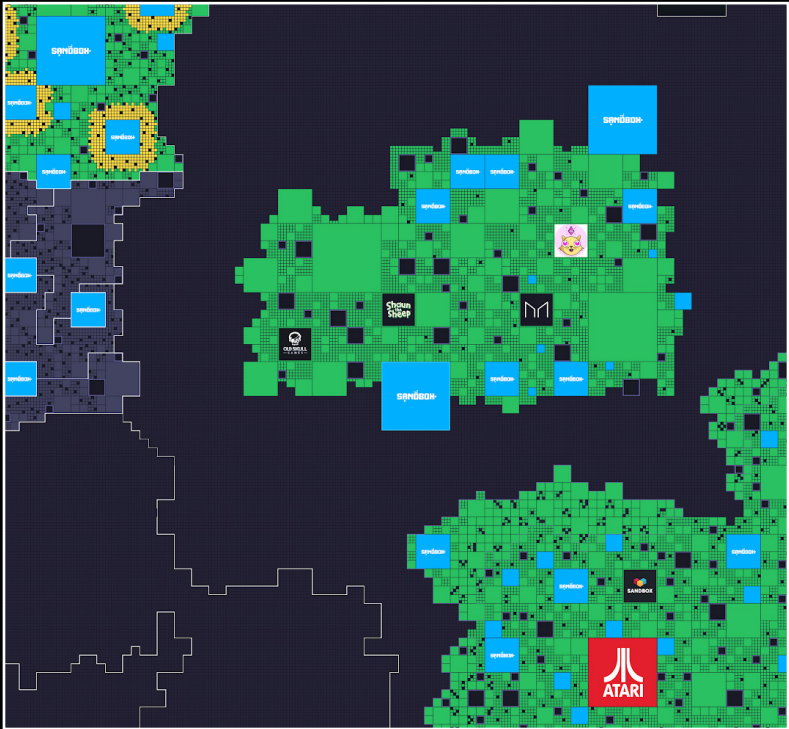
CITY OF THE FUTURE

Working toward transition

DIGITAL VS PHYSICAL PLOT

Virtual Real Estate Is The Future

Metaverse is widely explored in the gaming industry, as it creates a clean canvas for exploration and technology testing. As Lee, et al., suggests, the metaverse, eventually will consist of real world digital twins. Currently the technology needs time to advance, although we can learn the key principles of gaming land distribution. We need to think of real-world cities as licences and codes to proceed.



Digital Islands

Metaverse will take many different forms. From a small meeting room experiences to a city wide first person exploration. Currently decentralized metaverse run by The Sandbox and Decentraland (key players), lets individuals buy virtual land using Crypto. The land has an NFT and a verification code. Similar as to when we buy physical realstate.



Neighbourhoods

Quite often digital cities also have a tradiitiional zoning. Some districts are popular for retail, entertainment and even official embassies. Barbados announced its commitment to metaverse with a diplomatic embassy in Decentraland.

Barbados Decentraland Source: <https://www.bloomberg.com/news/articles/2021-12-14/barbados-tries-digital-diplomacy-with-planned-metaverse-embassy>



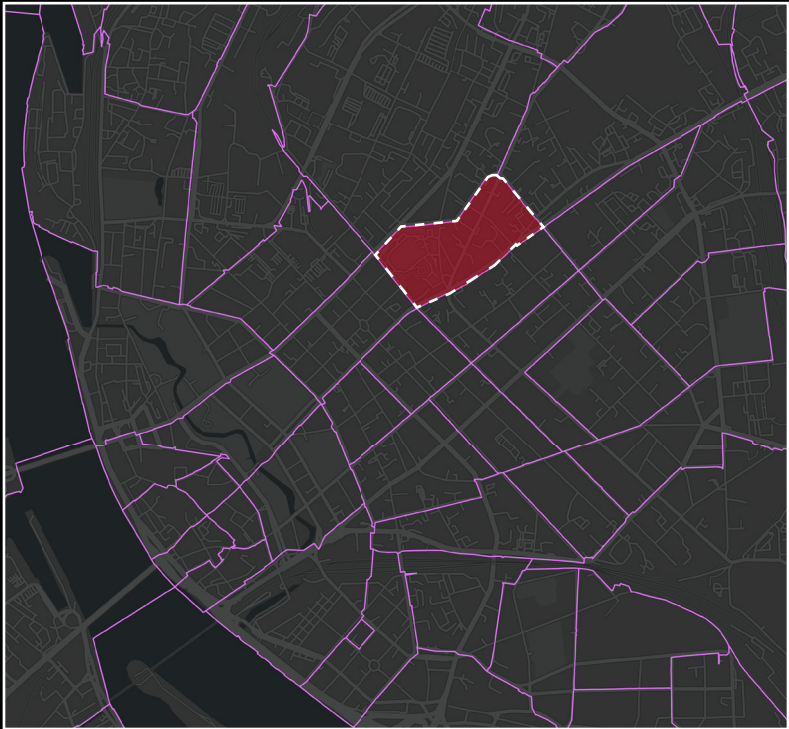
Plots

Businesses and private individuals can buy pieces of land, which is required to build a virtual archietecture on their platform. Each building can be populated per individuals desires, no planning permits and so on, maybe this could be the future of architecture? If the land purchasing, surveying and planning application process could be synchronized and automatically generated. Blockchain and Smart Contract application should be further explored.

DIGITAL VS PHYSICAL PLOT

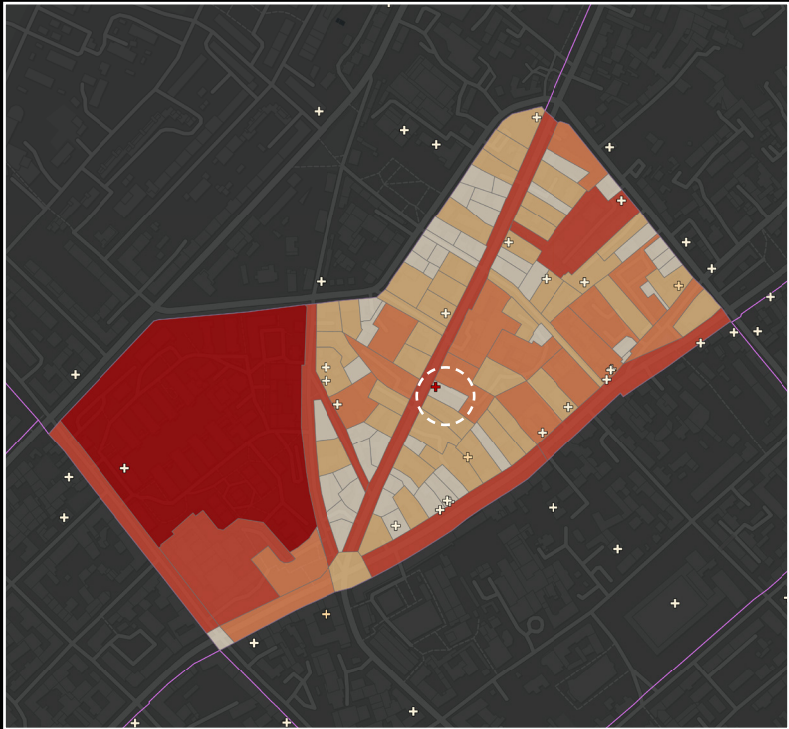
Real World Metaverse

The new chapter can be highly beneficial for the real world AEC industry. Just like the metaverse lands, Cadestral Codes are used to identify, sell and upgrade (or downgrade) our cities. I had to search for many hours, maybe days, to find such information, but the metaverse could help localize this information, and even much more. A breathing digital twin. Similar to Virtual Singapore, but with an ability to experience cities from street level and interact with it on the spot or remotely.



Neighbourhood Cadestral Code - 0100023

Red Area.
I am focusing on the neighbourhood 0100023, as there are multiple urban voids that are screaming for attenion while this gives me a base to have a referenced reald world metaverse.



Plot Cadestral Code - 01000230066

As the metaverse will consist of worlds, Riga .23 can be a world on its own. Within the bigger area, cadestral codes can are divided accorging to land ownership and use. 20+ urban voids can be found within this area, allowing me to create each as a seperate entity which residents can interact with.



Building Cadestral Code - 01000230066001

Each plot has several buildings that needs attention. As a starting site I will focus on the site ...66001, which has 9 smaller buildings. This will be the 'home' point for the metaverse placemaking game. Other plots near by will be connected with a proposed masterplan as several empty plots are goverment owned.

PLATFORM MOCK UP

Mobile Device Interaction

Metaverse can be accessed through a physical hand-held device with built-in features to help re-imagine urban voids. The Toolbox is still under development but it is based on tactical urbanism assets and gaming assets.



There is a place for growth in the metaverse platform sphere. This platform will require a lot of further research, involve a lot of professionals, scientists, children, elderly and gamers. Metaverse itself will create many new jobs.



Augmented Reality Experience (Draft)
PLATFORM MOCK UP

1:2000 at A3



METaverse

Transitioning (to) Future Cities

*Transdisciplinary platforms as instruments to
democratise technology for participatory use in
building back neglected urban voids of Riga*