

SADD - UN Environmental Council- Communicate!  
P5 Kuno Jacobs 7 November



# Content

## United Nations

What/why/where

## Masterplan

East Manhattan and UN site

## UNEC Design

Ambitions

Concept

Situation

Program

Structure

Architectural Routing

Facade design

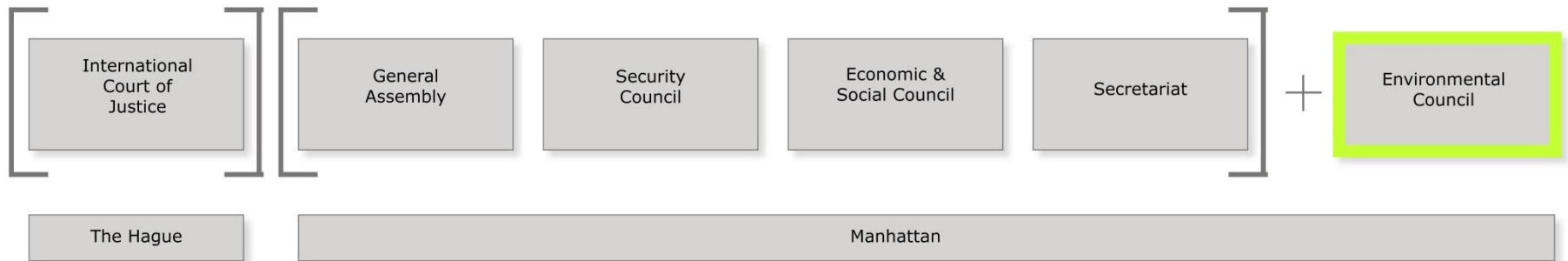
Climate design

Sustainability

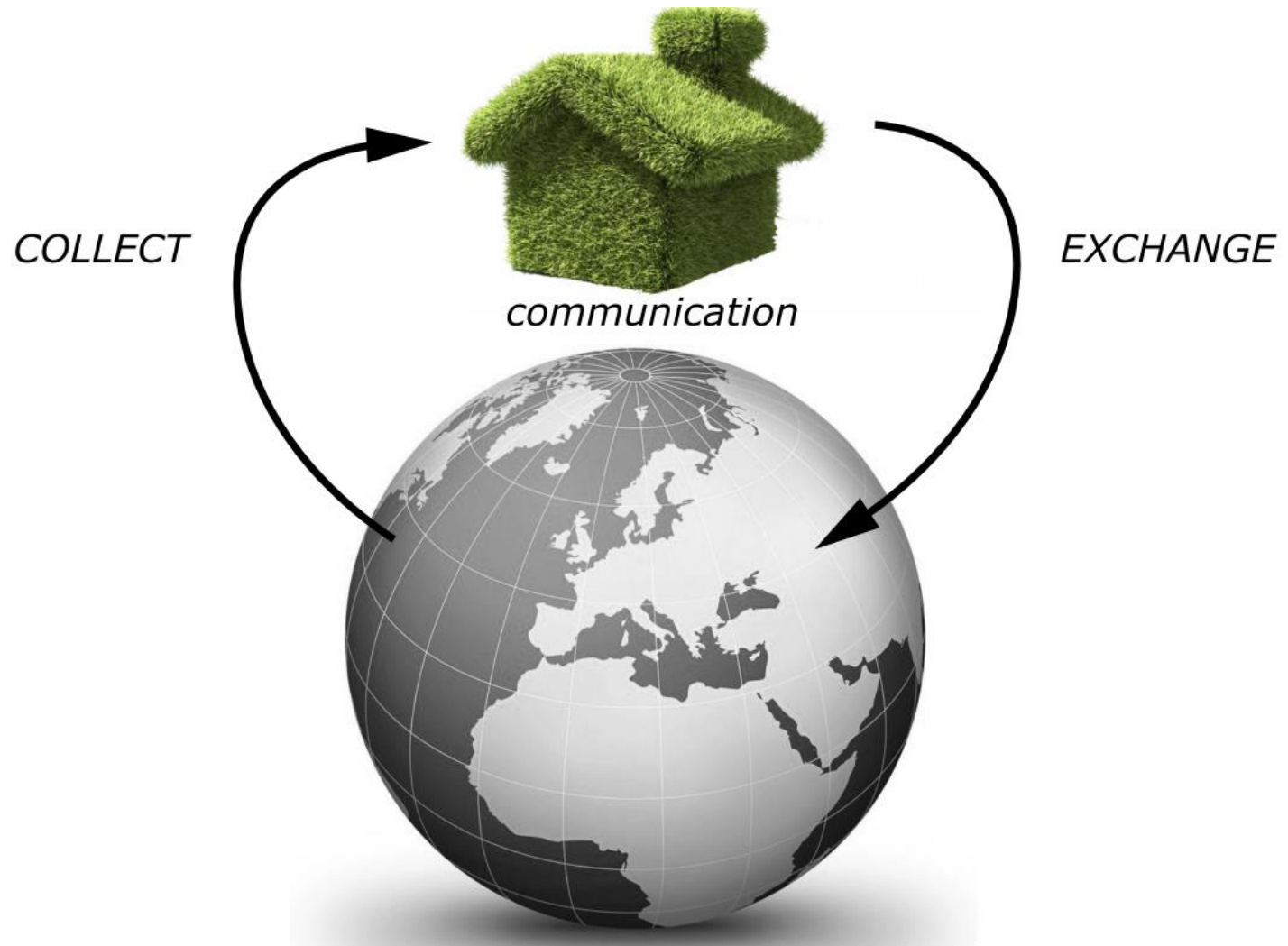
# **United Nations**

What/why/where

# What



# Why



# Where



# Where



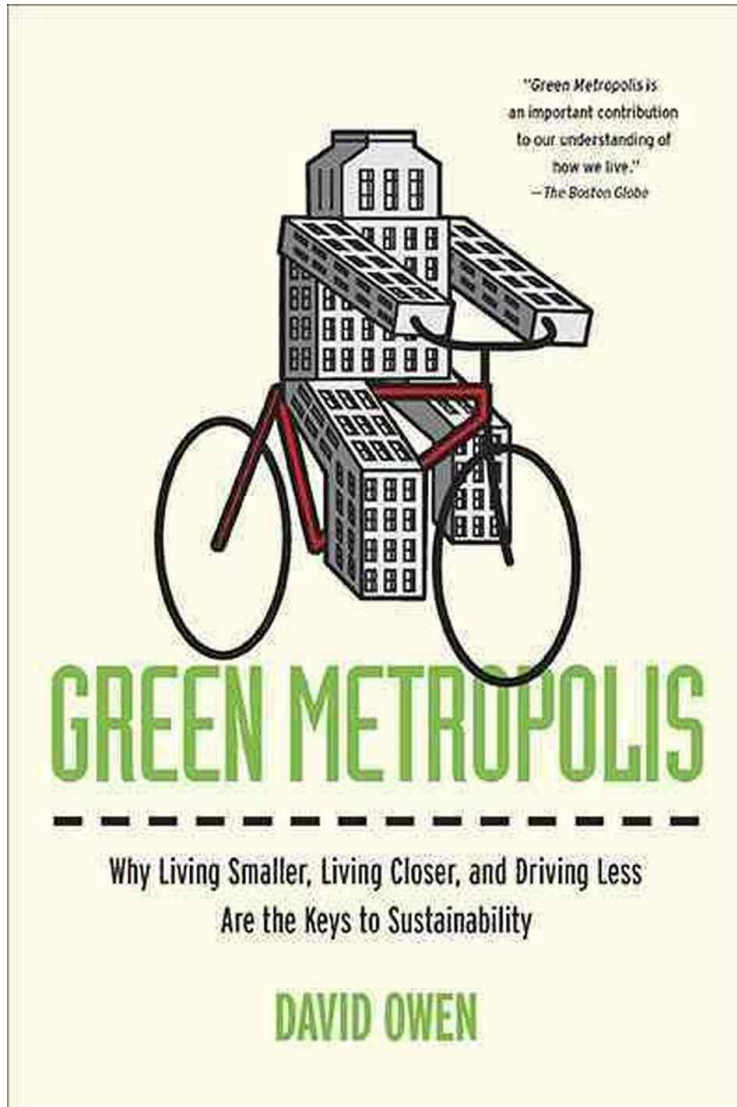
**United Nations** - Masterplan - UNEC Design

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Teachers: Henri van Bennekom and Maarten Meijs

# **Masterplan**

East Manhattan and UN site

# Masterplan East Manhattan



While the conventional wisdom condemns it as an environmental nightmare, Manhattan is by far the greenest place in America according to Owen (*Sheetrock and Shellac*).

- Horrifically congested traffic encourage a carfree lifestyle centered on walking and public transit
- Its massive apartment buildings use the heat escaping from one dwelling to warm the ones adjoining it



**Biggest quest: how to stay resilient?**

# Masterplan East Manhattan

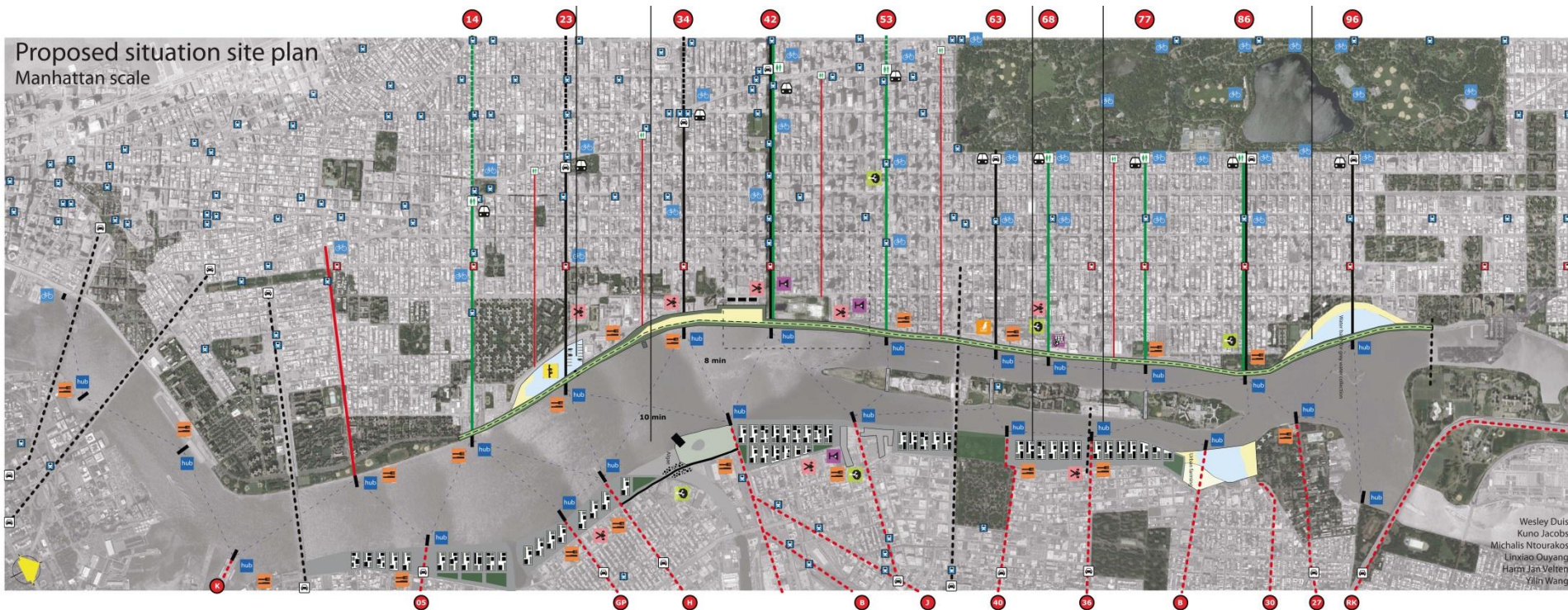
Research defined the following problems:

- Travel time is growing; because of sprawl and overcharging transit systems
- Safety concerns are discouraging people to take the bike
- Green and public spaces are lacking. Green is not accesible within 500 meters.
- Water and air pollution, because of old heating-water systems and traffic jams
- Empty offices, because of oversupply
- Urban Heat Island is growing, causing more health problems and energy demand



# Masterplan East Manhattan

## Vision plan



## Learning from the masterplan:

- 1) Urban (sustainable) design has a direct link with flows (people, waste, energy, water)
- 2) Buildings should accommodate the possibility of housing the infrastructural needs to become sustainable (Energy/water/waste/food/people); therefore
- 3) Integrating the architectural and urban design is an necessity

# Masterplan UN Site

## Proposal



United Nations - **Masterplan** - UNEC Design

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Teachers: Henri van Bennekom and Maarten Meijs

## Proposal



# UNEC Design

Ambitions

Concept

Situation

Program

Structure

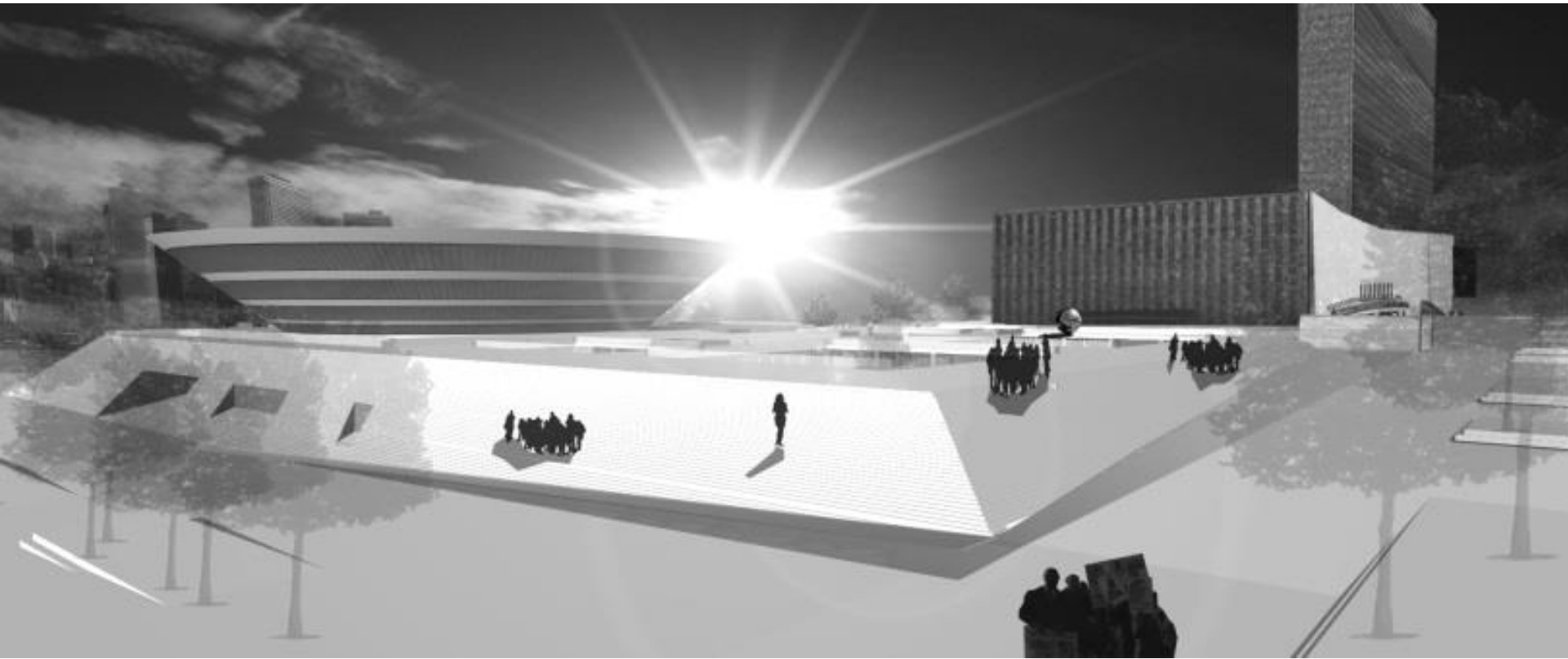
Route Architecturale

Facade design

Climate design

Sustainability

# UNEC Design



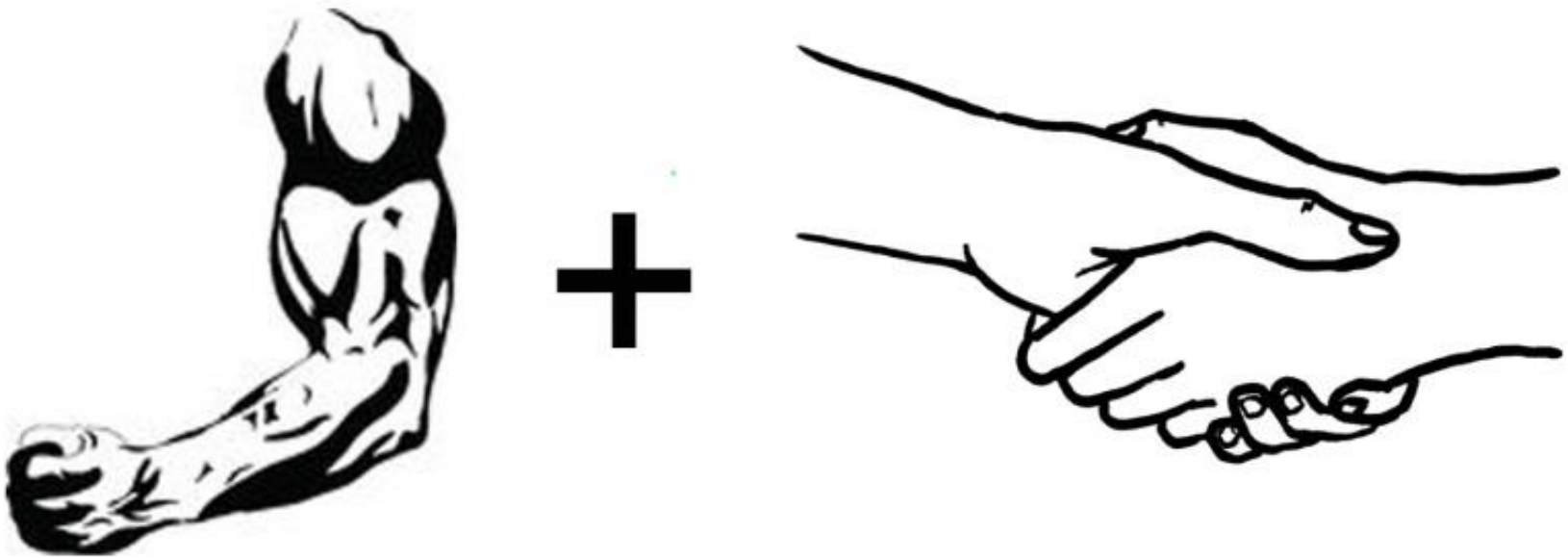
# Ambitions

# UNEC Design

Ambitions

Communicate a strong and harmonic signal

Conclusion: search for a building that is iconic and sensitive to its environment

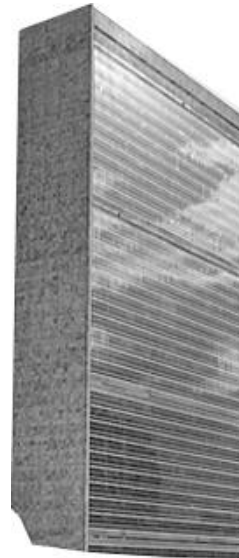


# UNEC Design

Ambitions

Communicate function and adapt to the local climate

Conclusion: Choose one volume that responds on its environment and function



Secretary  
building



General  
Assembly



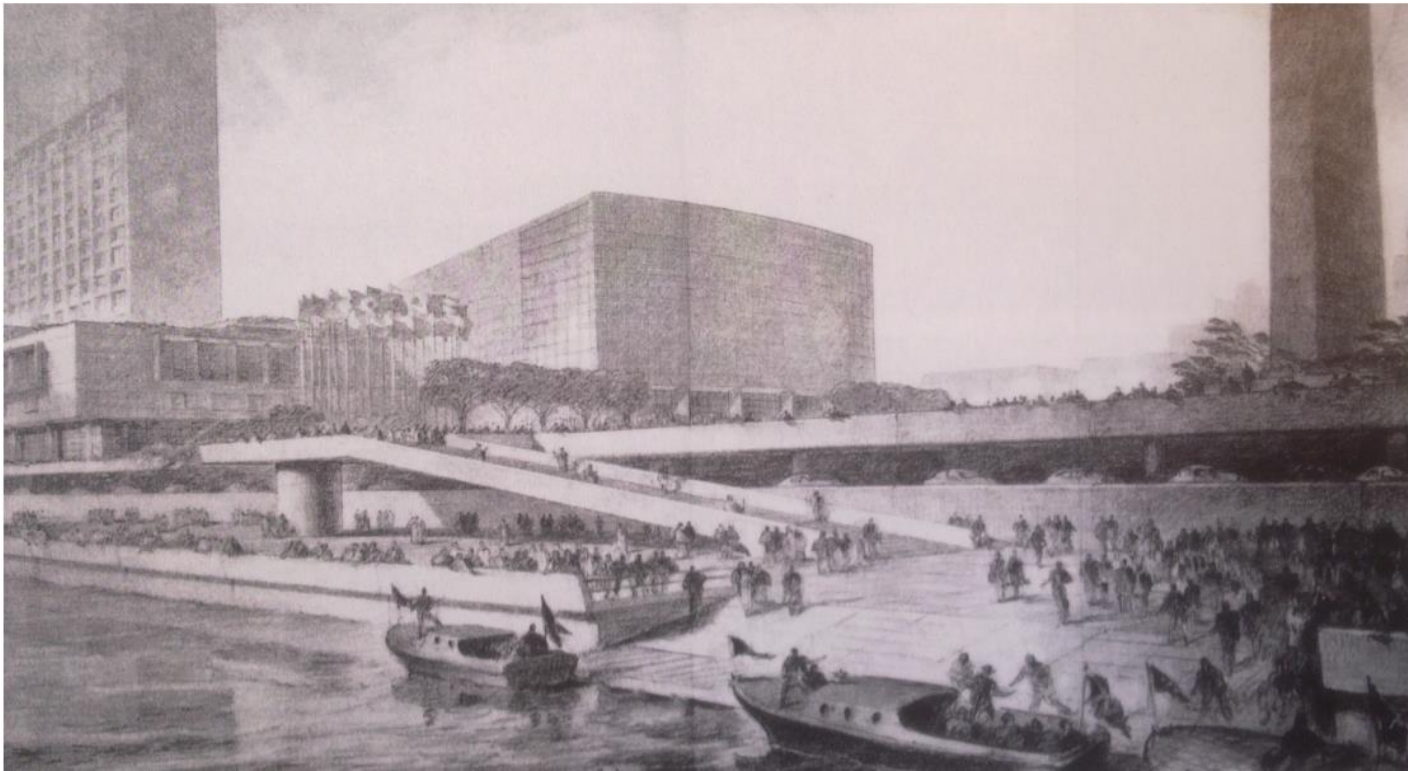
Security  
council

# UNEC Design

Ambitions

## Bring back relation with the East-River

Conclusion: Place volume near the waterfront and connect it to the new boulevard



Original sketch, UN design team 1945

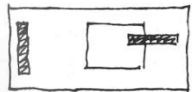
# UNEC Design

## Ambitions

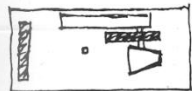
### Restore ambition of UN Freedom Square

**Conclusion:** place the volume at the border of the platform to create a square and make the platform public accesible

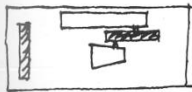
121, 122, 123, 124. Niemeyer,  
**sketched plans for the United Nations,**  
New York, 1947, Le Corbusier's Scheme No. 23A  
(top), Scheme No. 32 (upper middle), collaborative  
Scheme No. 23A-32 (lower middle), and Scheme  
No. 32 (bottom)



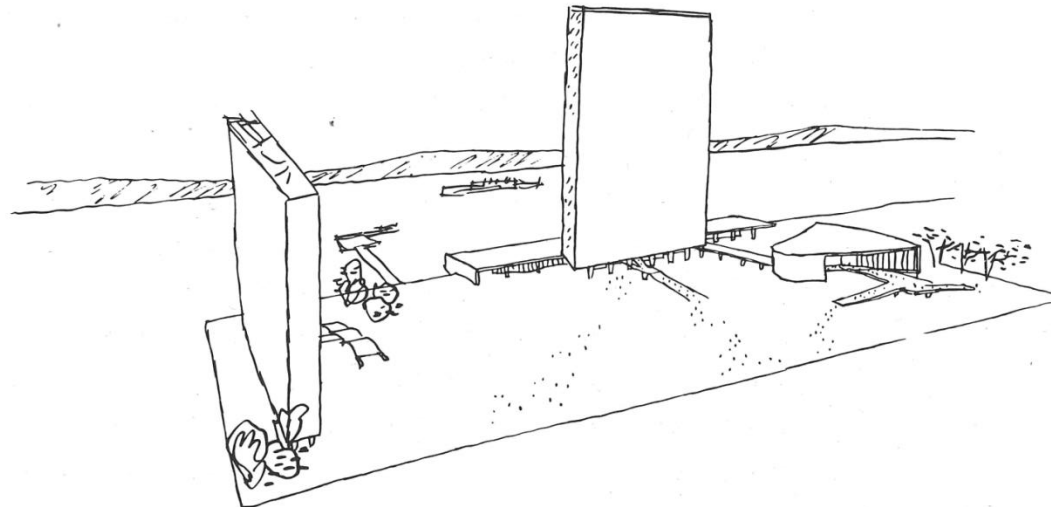
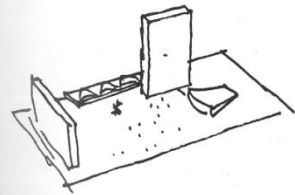
23



32



23-32

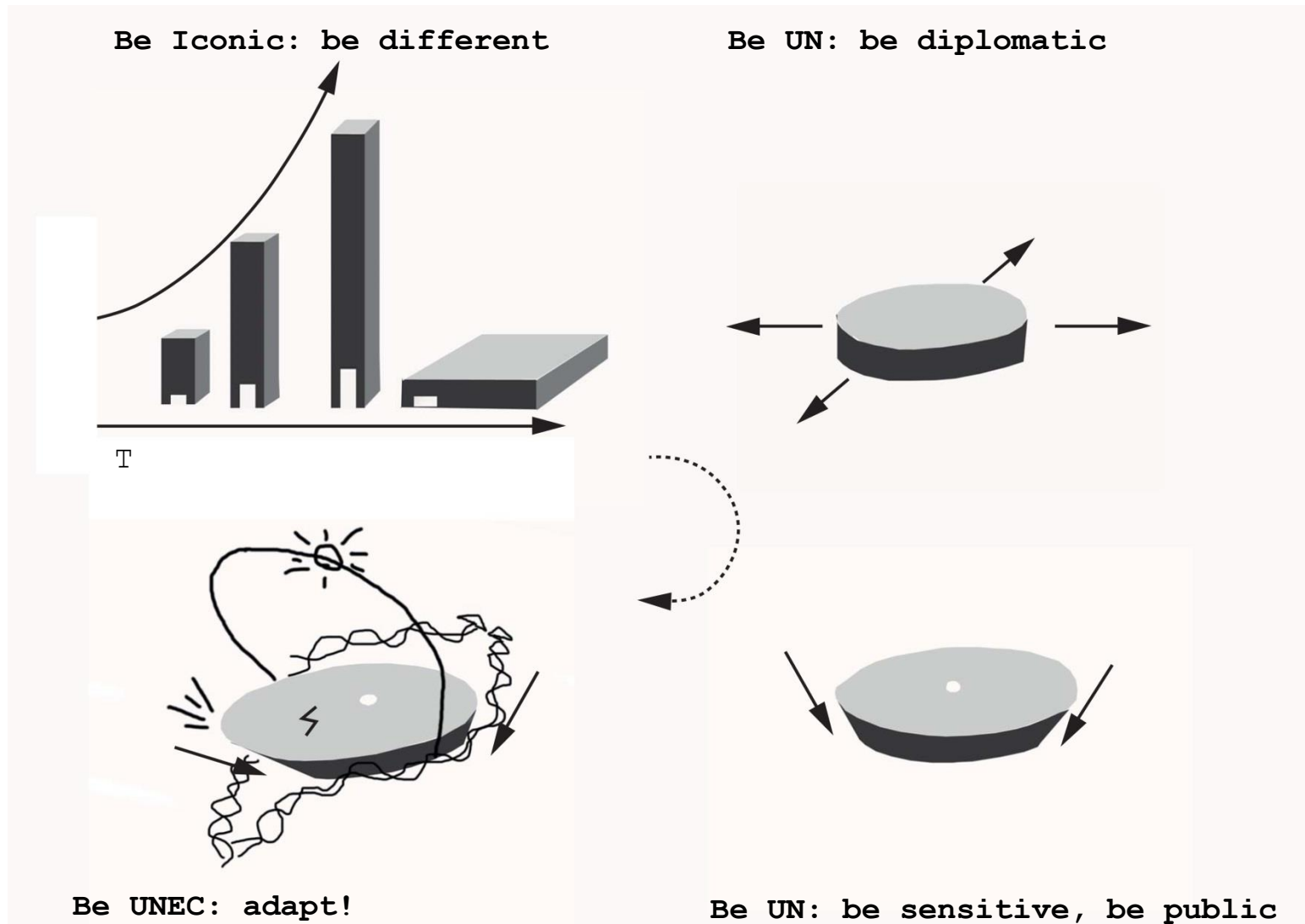


Original sketch of Oscar Niemeyer

# Concept

# UNEC Design

Form



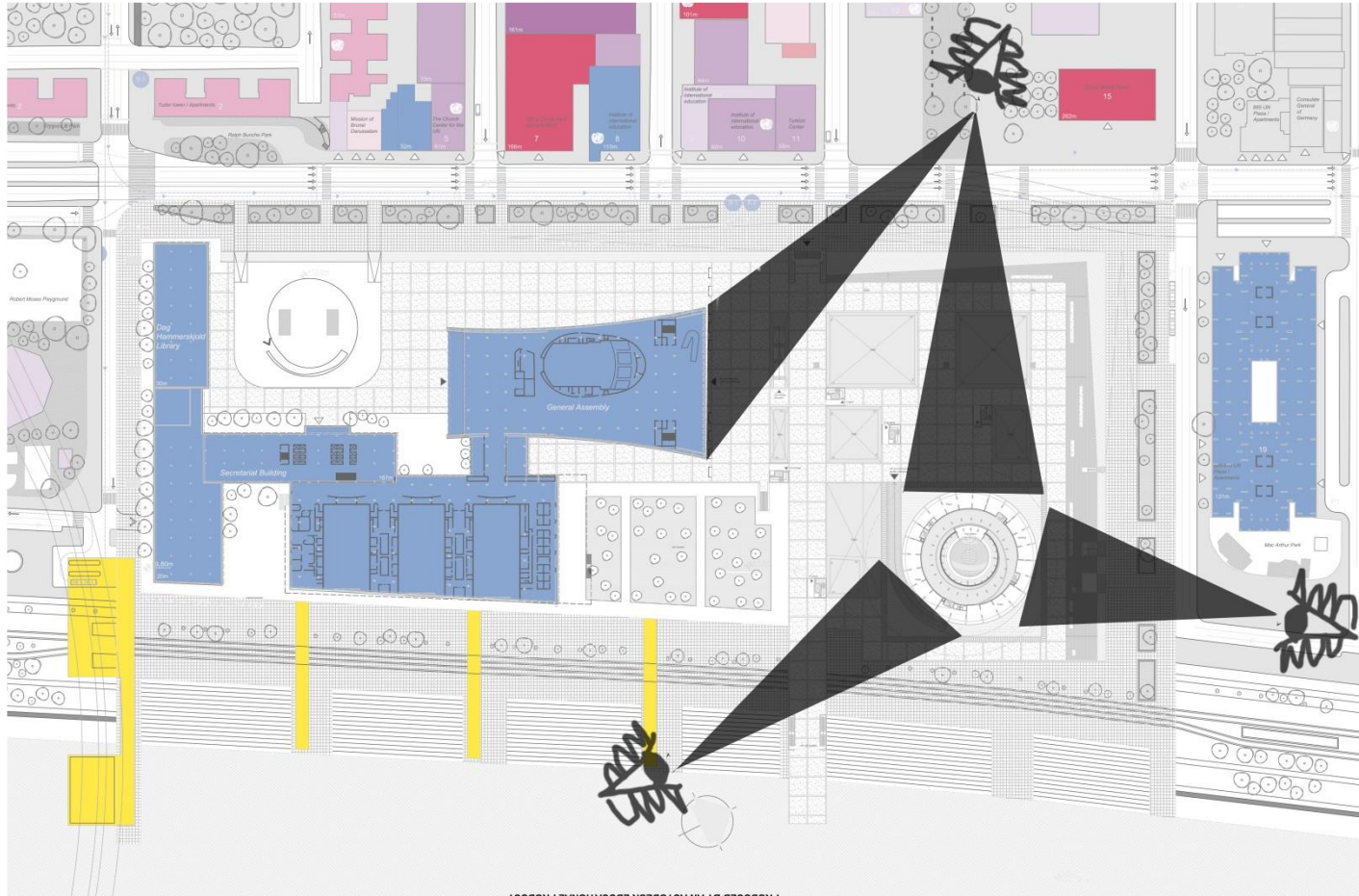
## Situation

- Placement volume
  - Security
  - Platform
  - Entrances

# UNEC Design

## Situation-placement volume

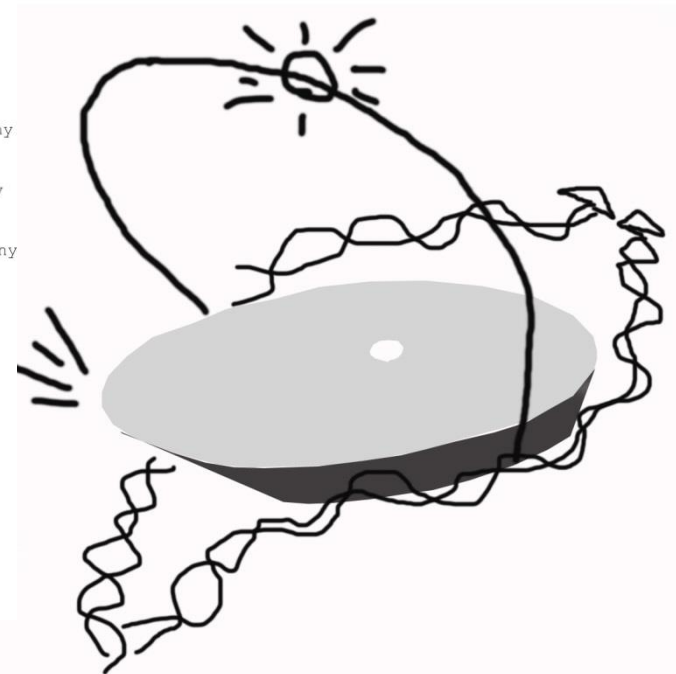
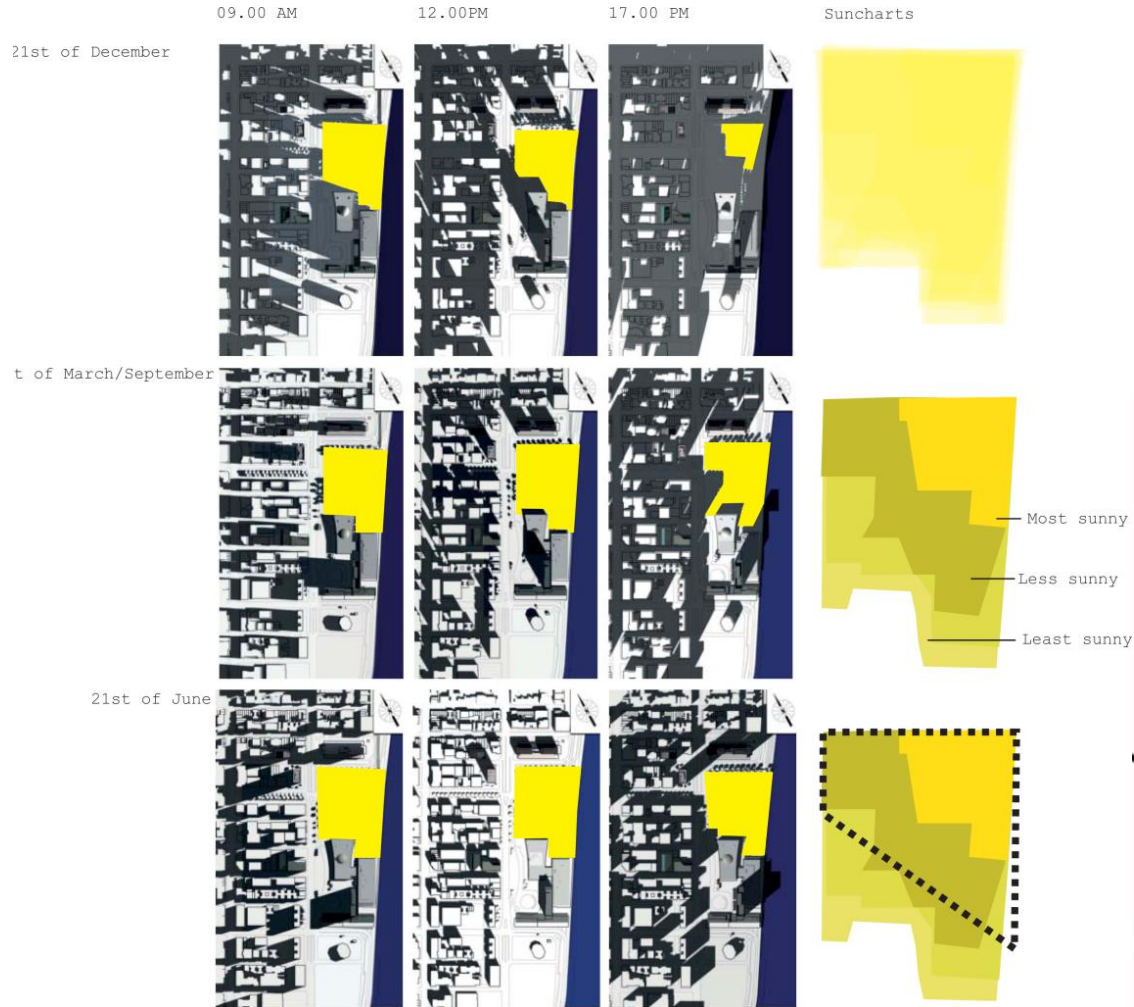
Create space for General Assembly and choose side of change! (water and the new developments). Visible from different angles.



PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

# UNEC Design

## Situation-placement volume



# UNEC Design

Situation- security



Existing entrance

UN worthy?

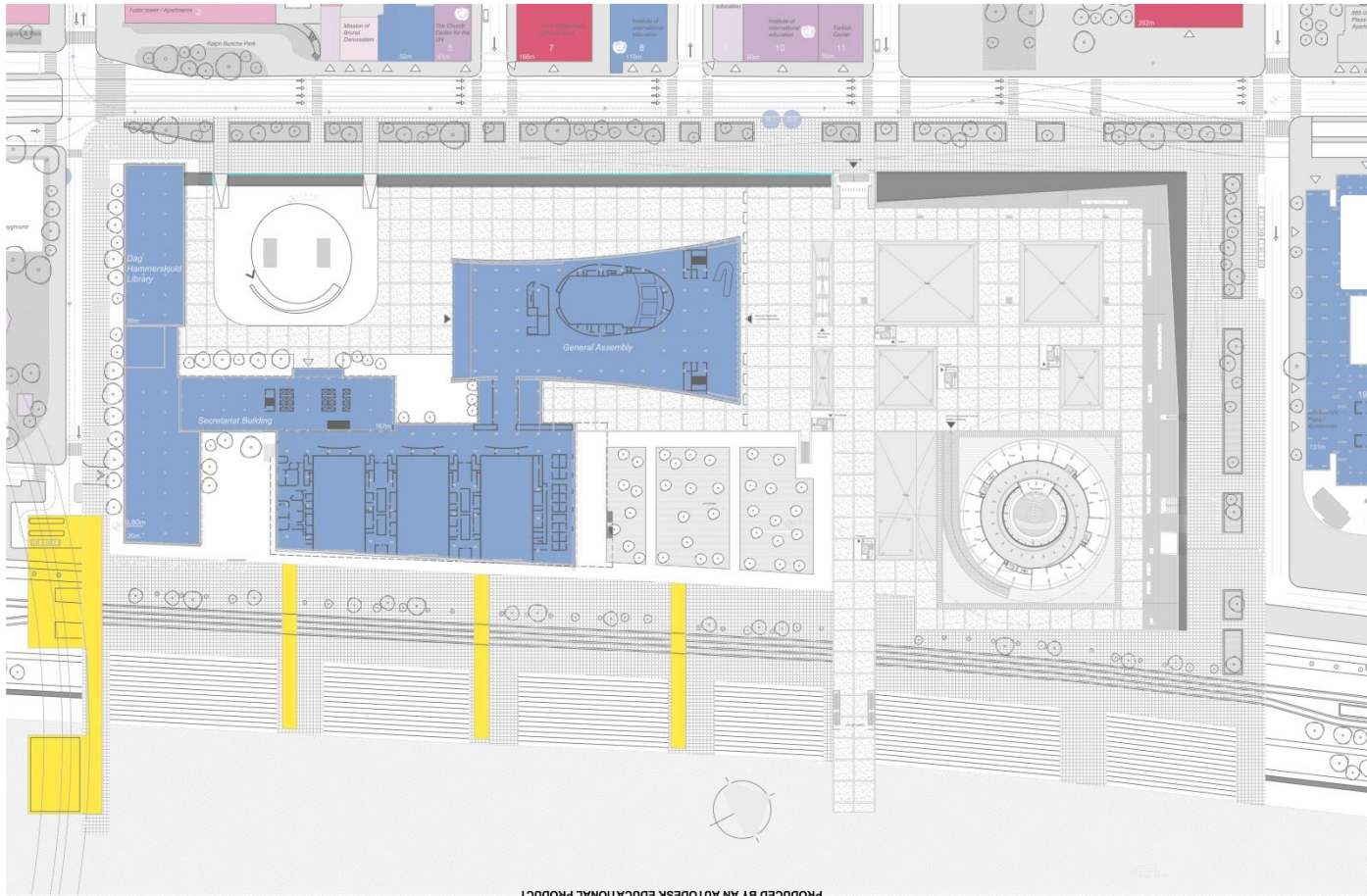
United Nations - Masterplan - **UNEC Design**

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

# UNEC Design

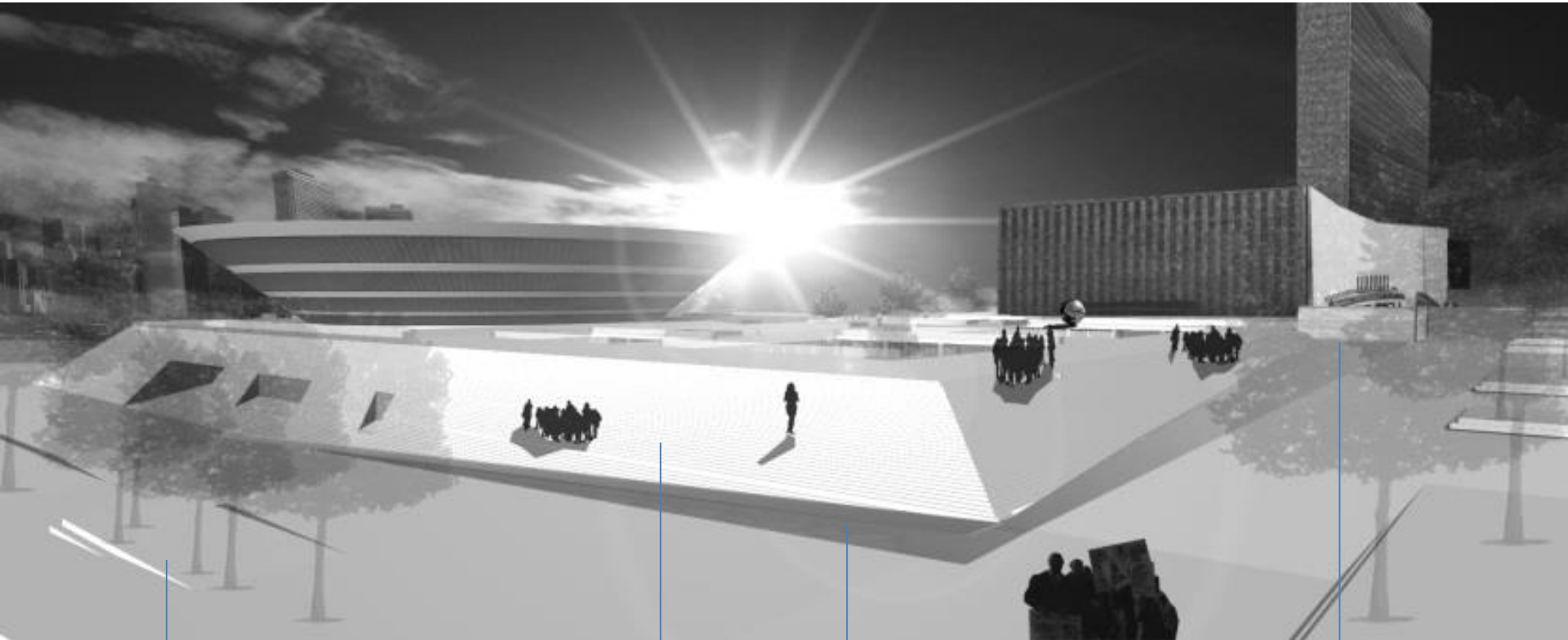
## Situation- security

Create clear entrance and exit for the platform with security checks.  
Water and esplanade protect against car bombing and suicide bombers.



# UNEC Design

Situation - security



Plant containers with trees

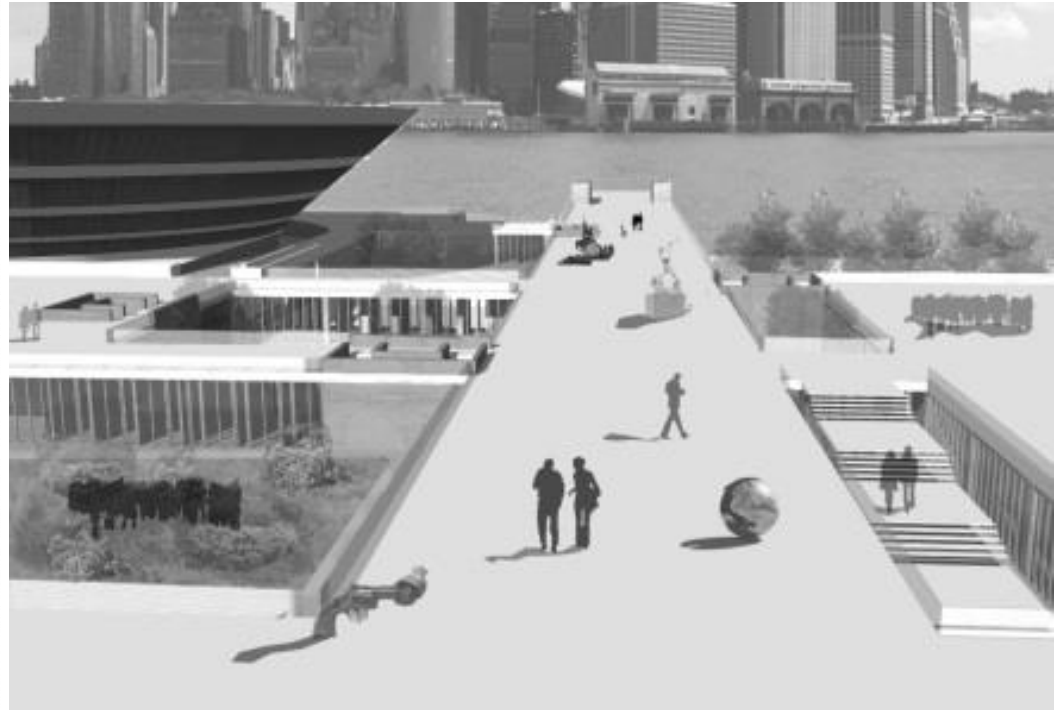
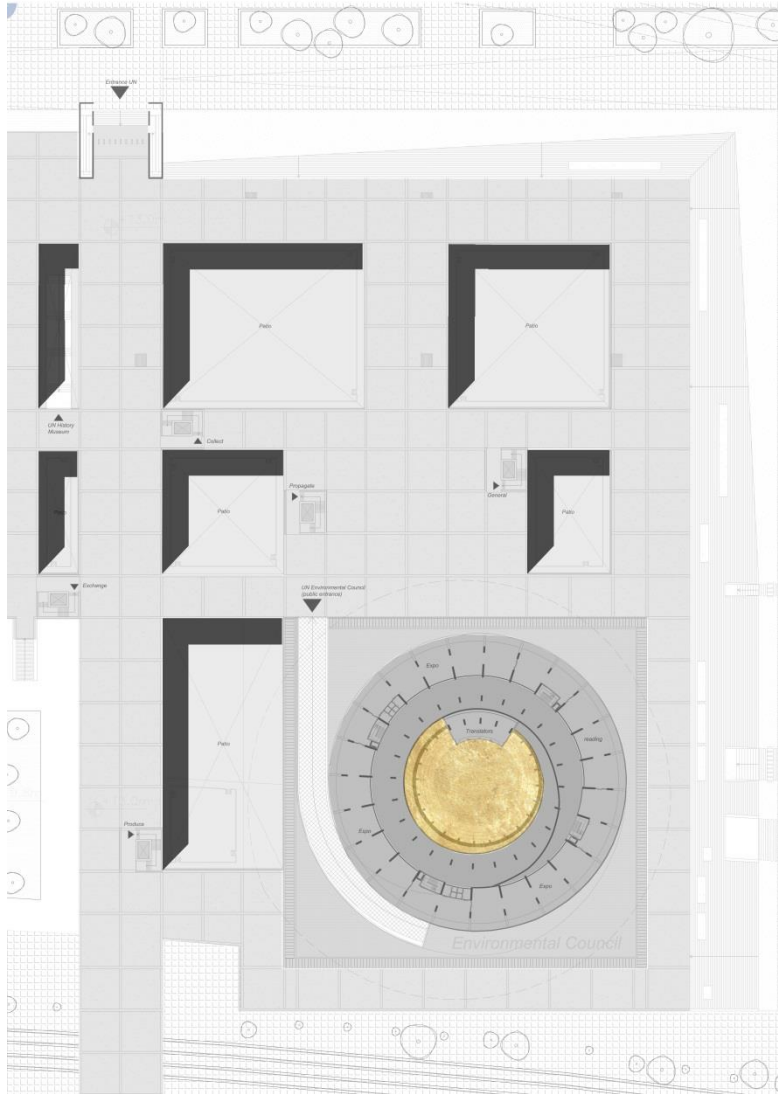
stairs

water

Security  
check

# UNEC Design

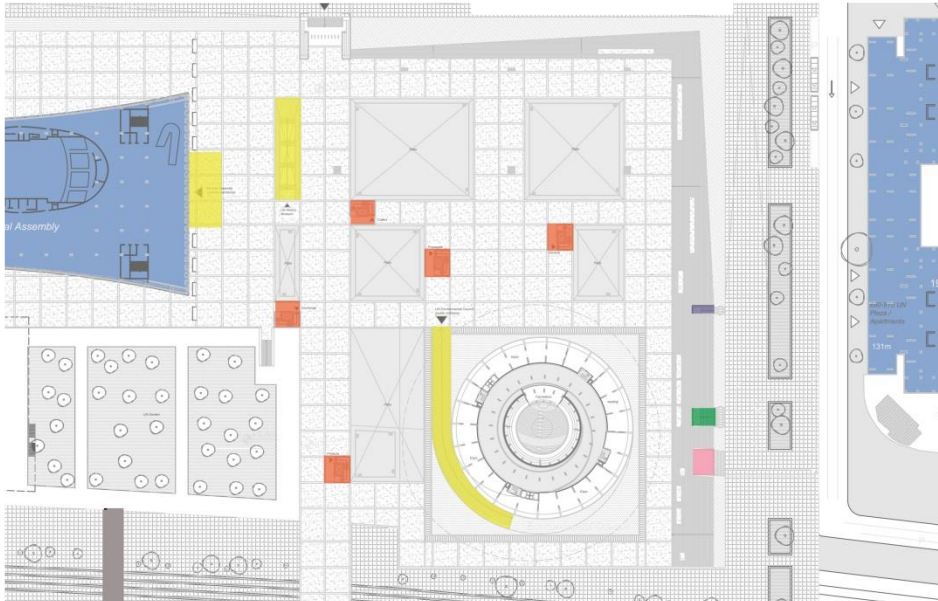
Situation - platform



Freedom square

# UNEC Design

Situation- entrances



Employees



Delegates



Press



Public

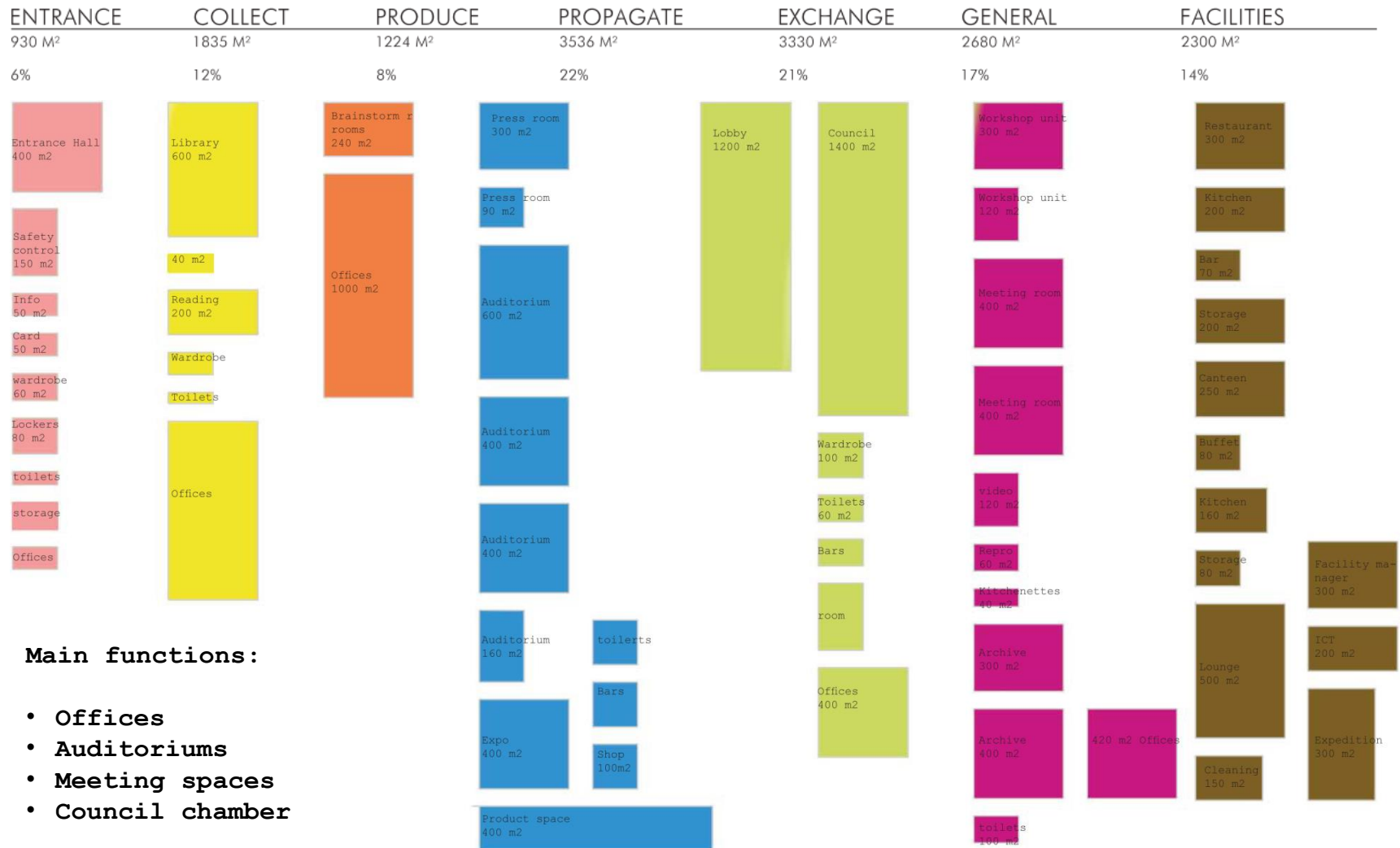
United Nations - Masterplan - **UNEC Design**

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

# Program

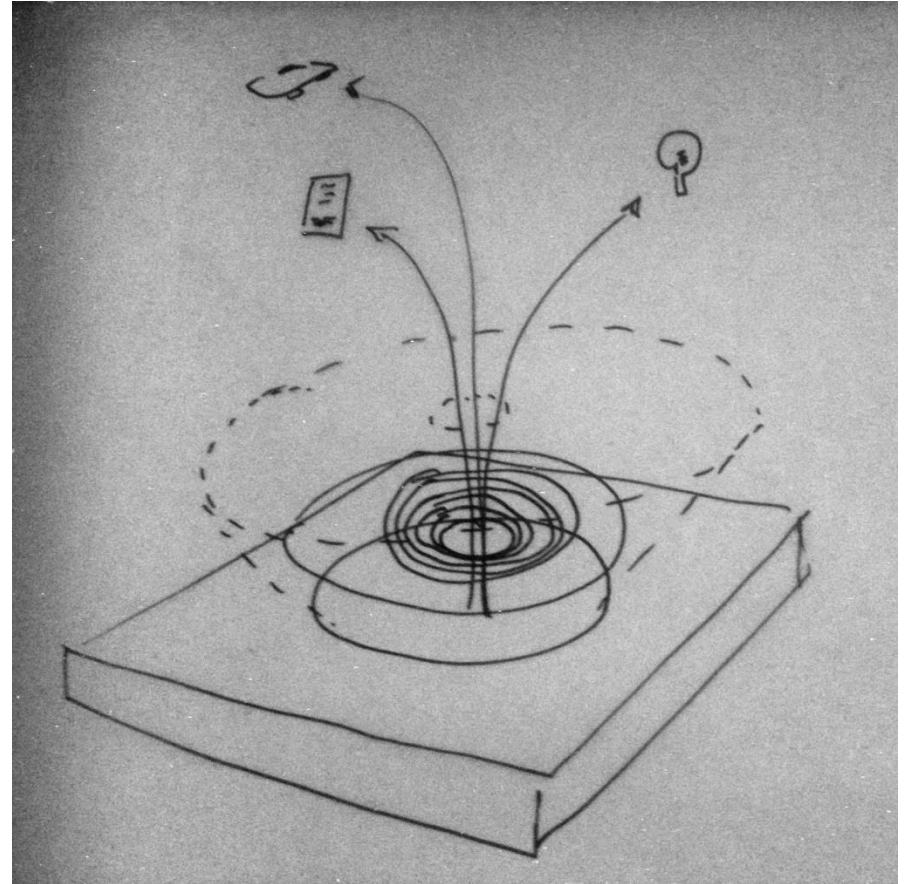
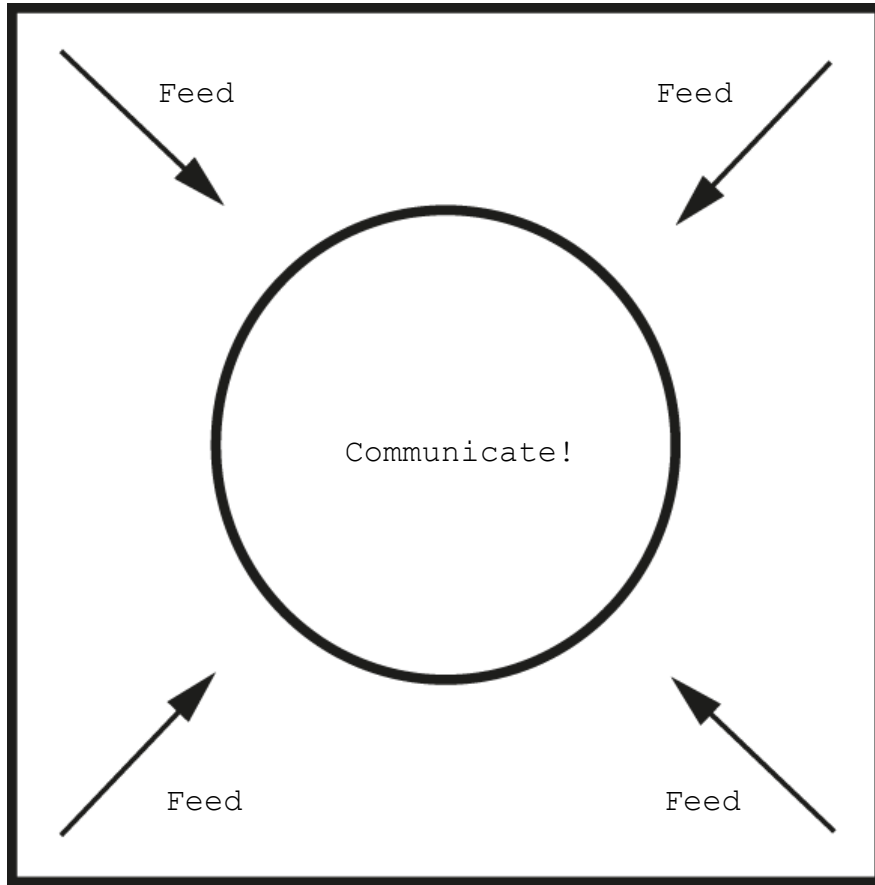
# UNEC Design

## Program



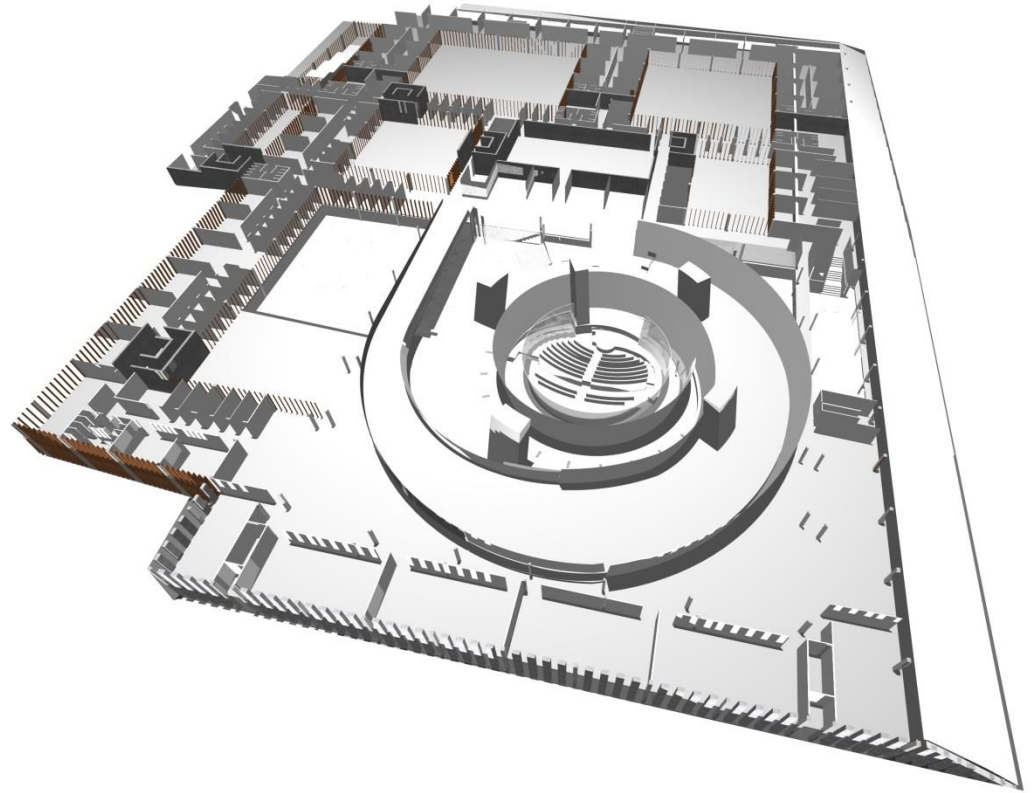
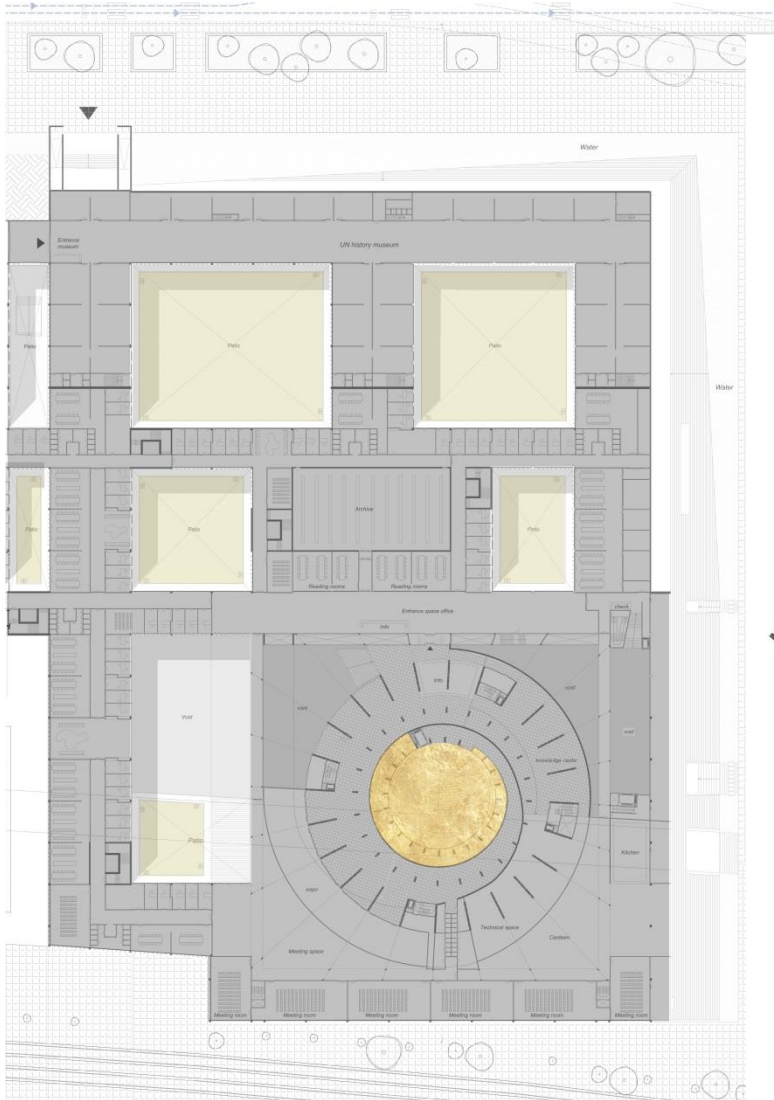
# UNEC Design

Program concept



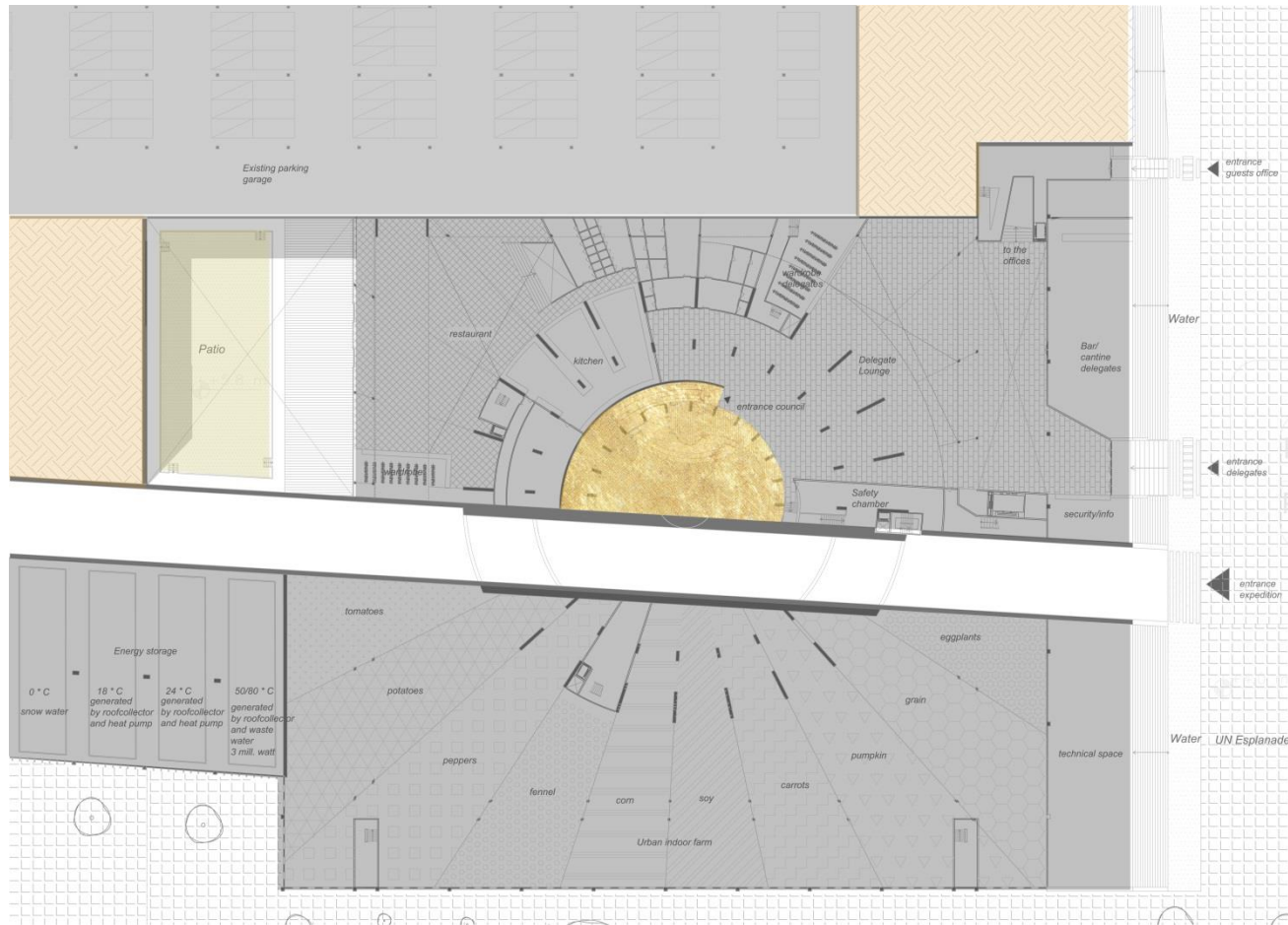
# UNEC Design

Program -1, offices and knowledge center



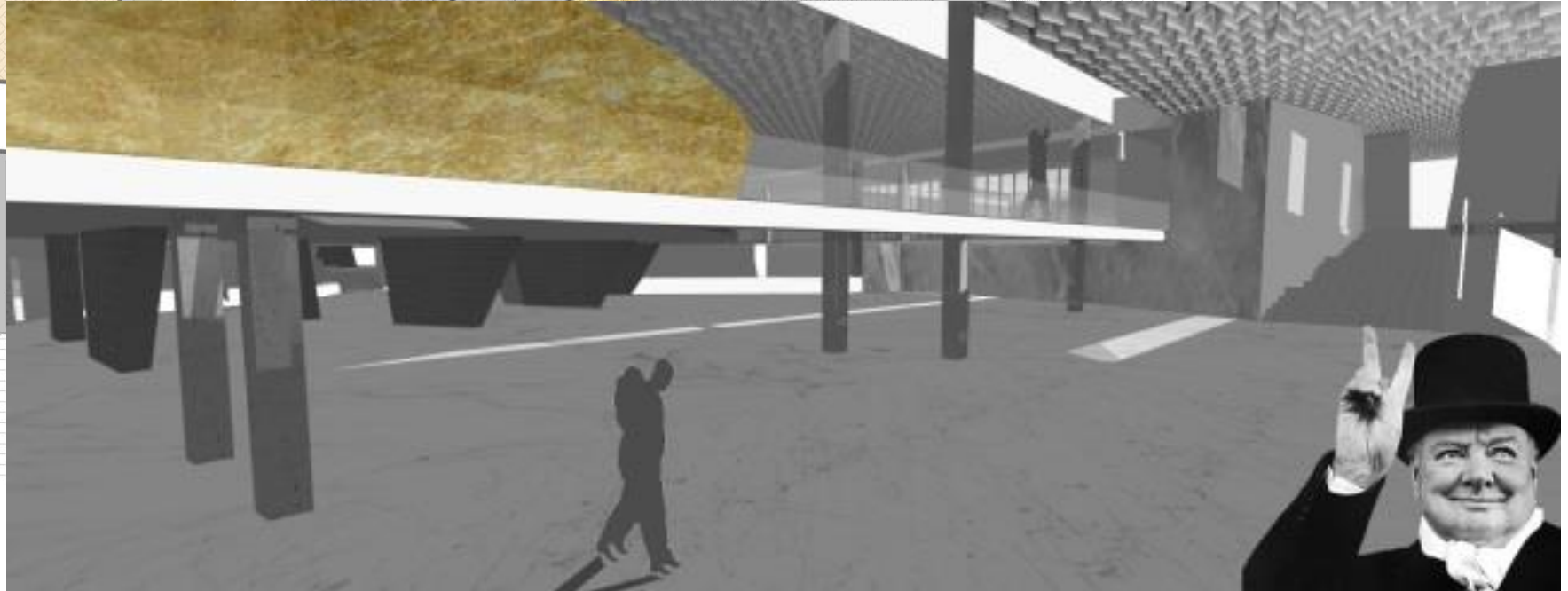
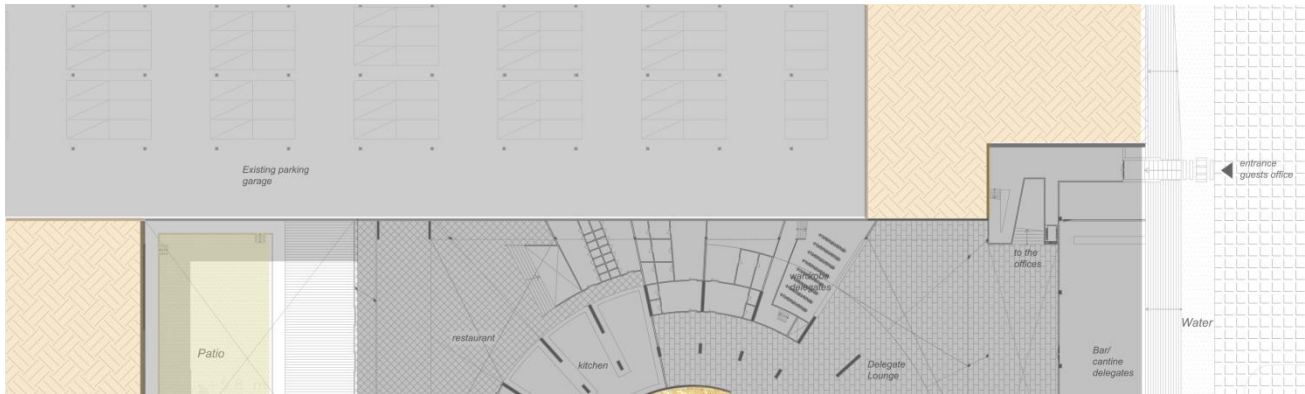
# UNEC Design

Program -2, Delegate Lounge, restaurant and



# UNEC Design

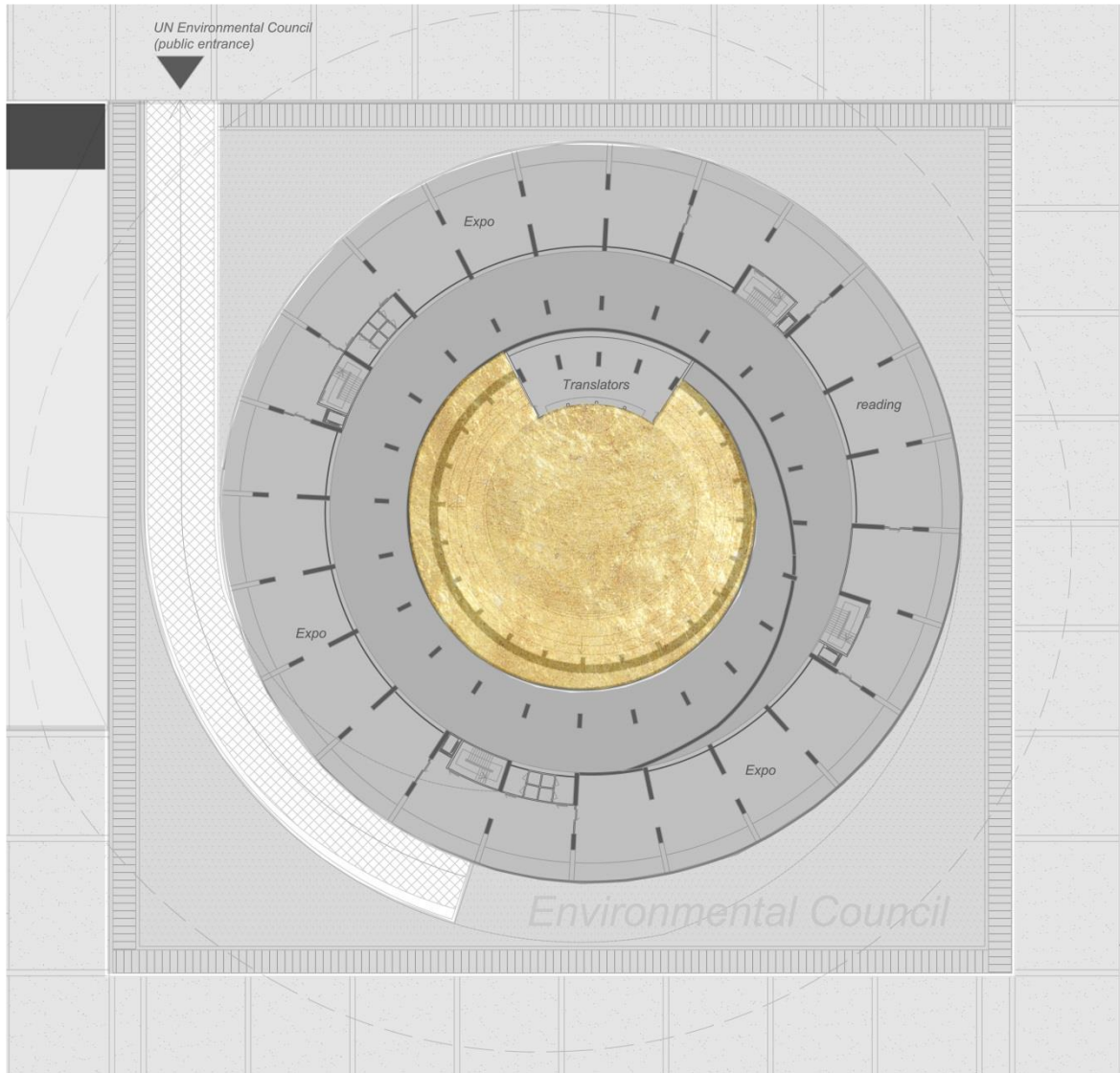
Program -2, Delegate Lounge, restaurant and



Delegate lounge

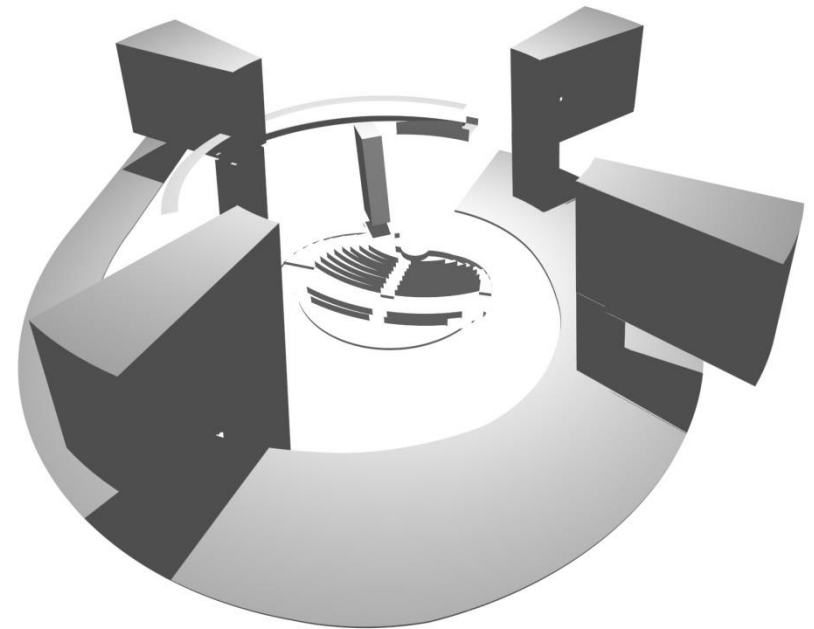
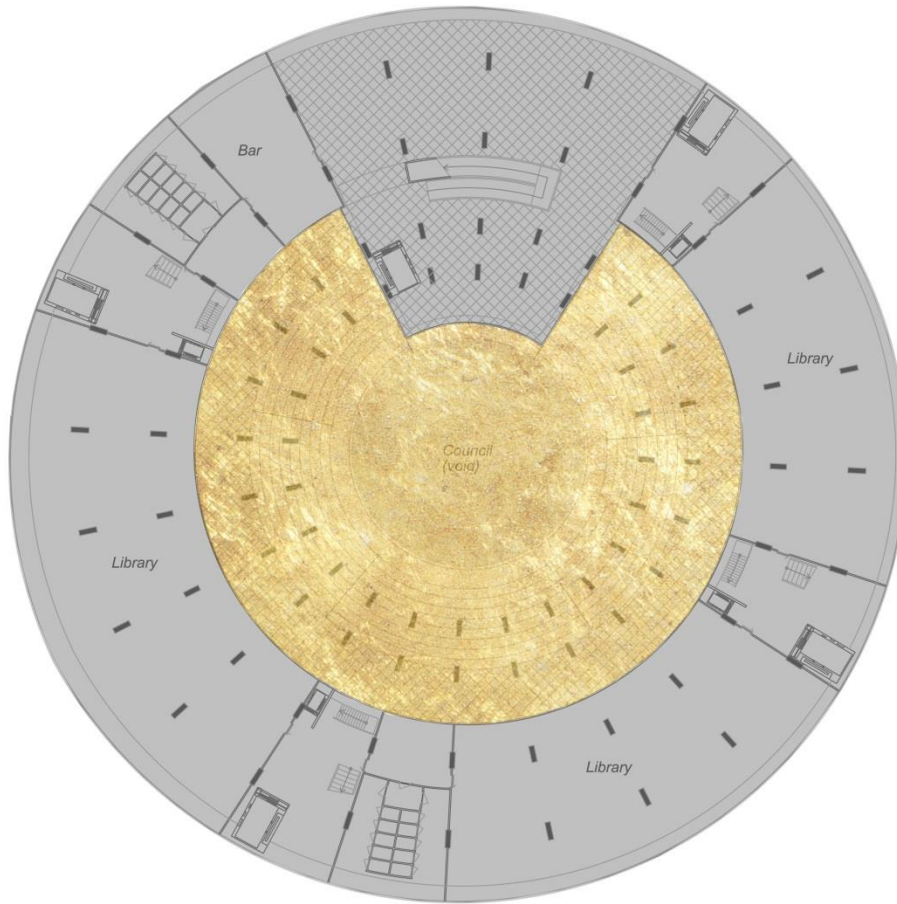
# UNEC Design

## Program Groundfloor, Library



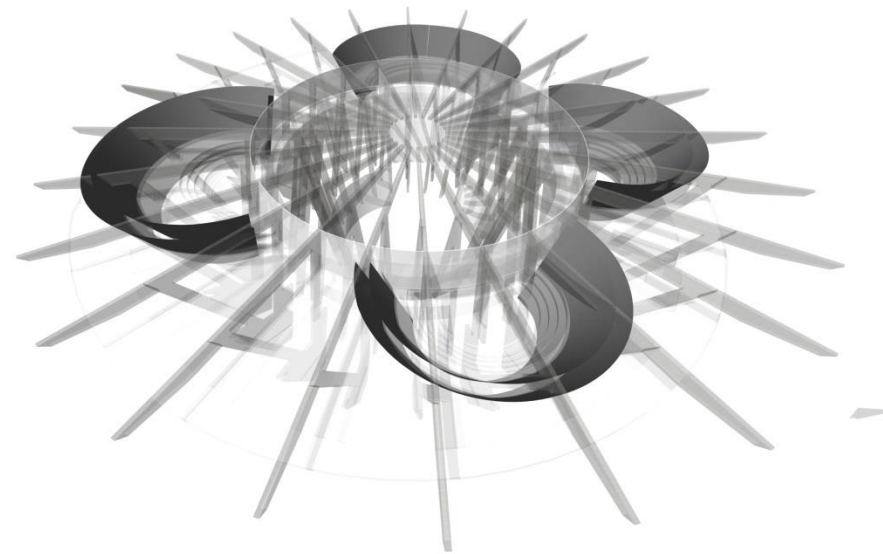
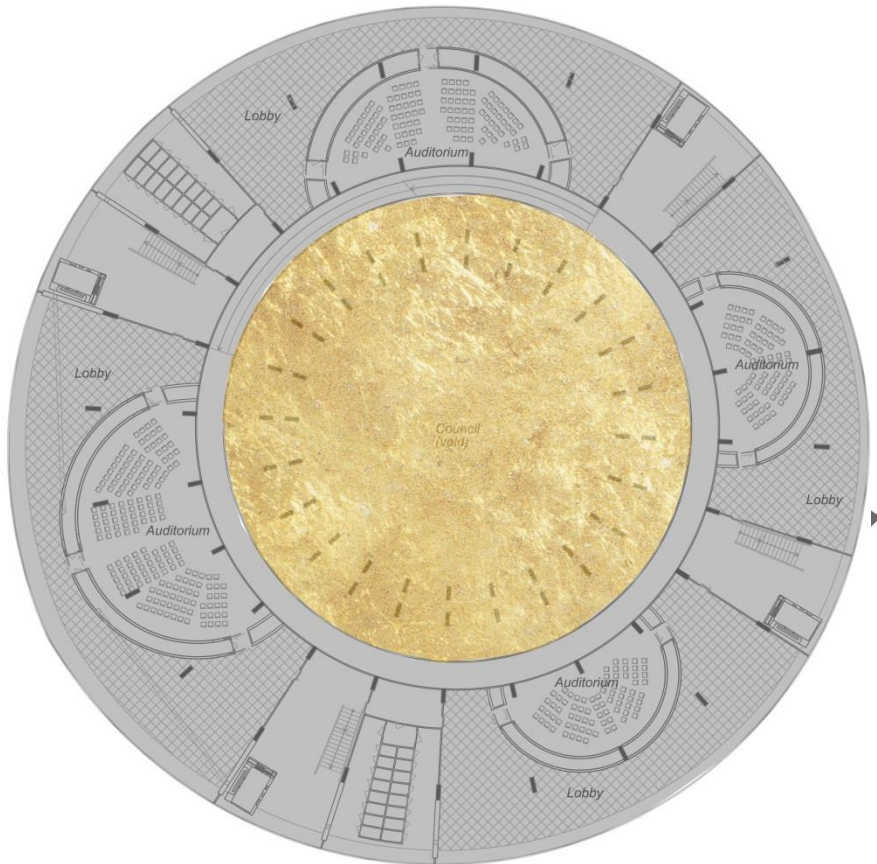
# UNEC Design

Program +1, Library+ public stage



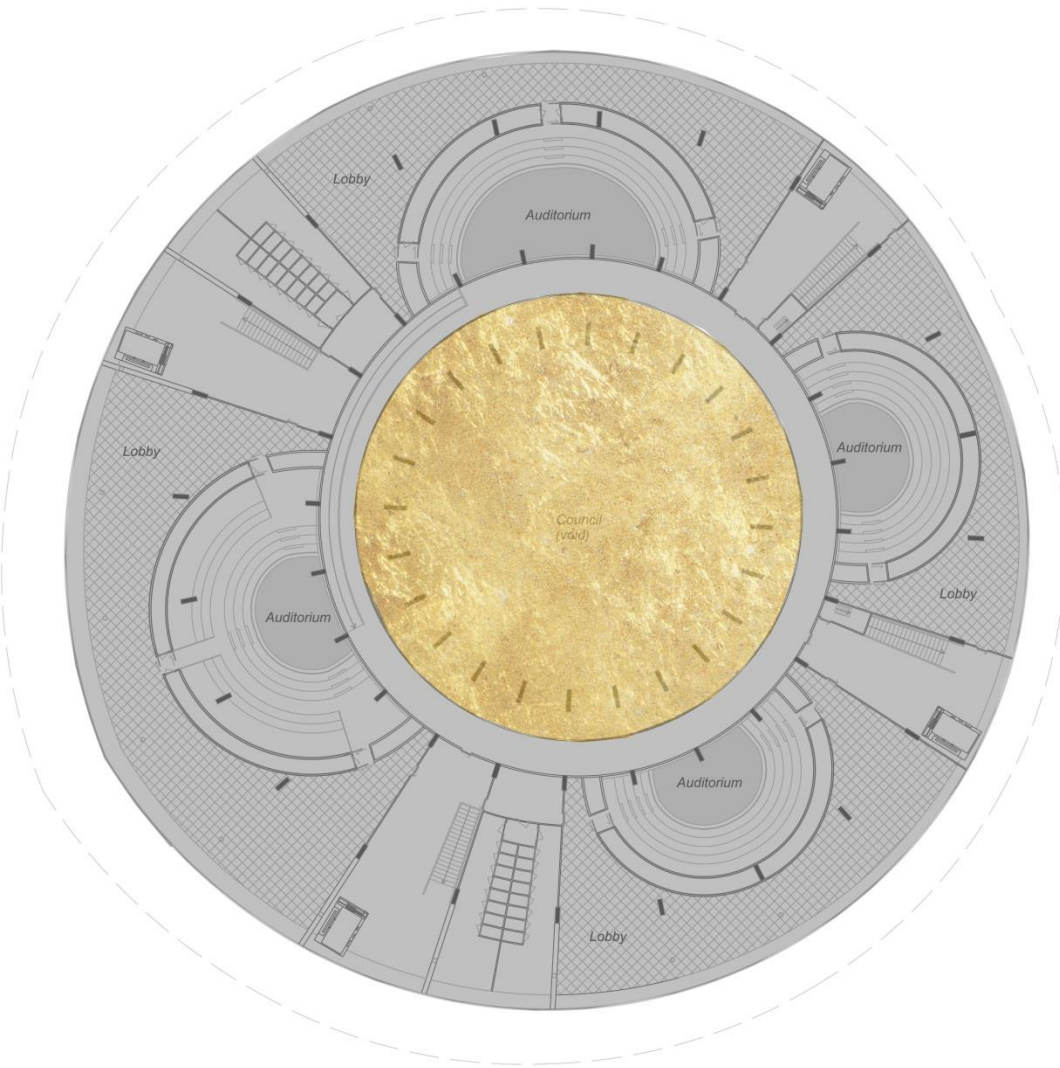
# UNEC Design

Program +2, Auditoriums + Lobbies



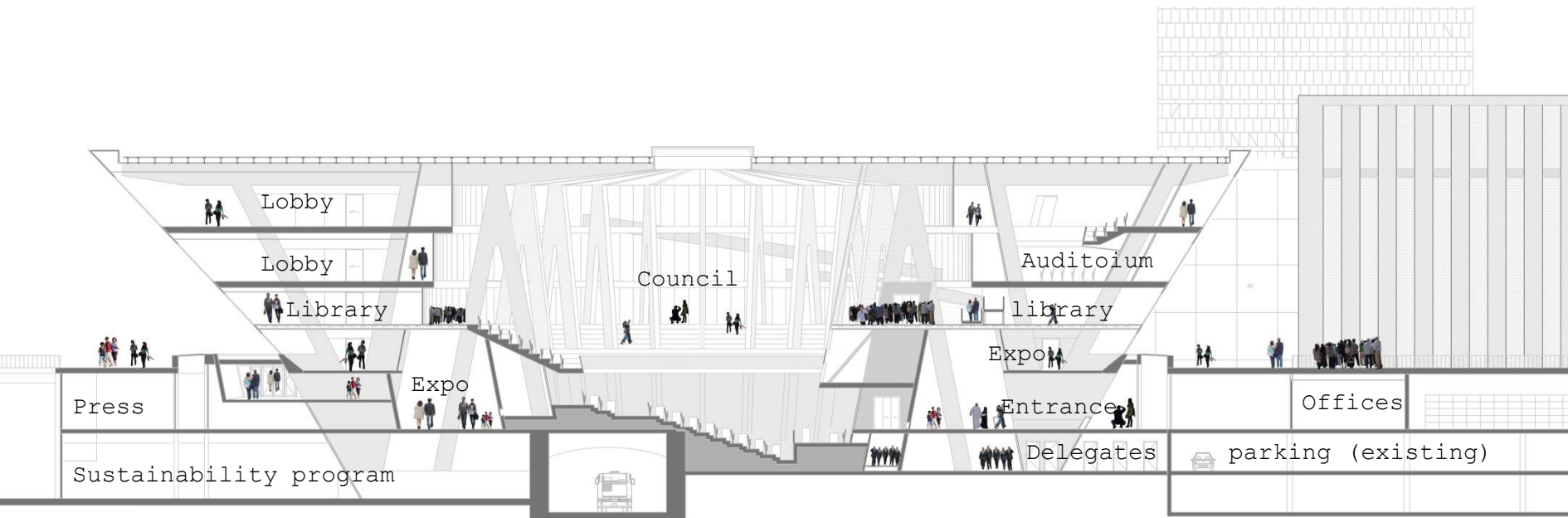
# UNEC Design

Program +3, Auditoriums + Lobbies



# UNEC Design

Section A-A'



# Structure

# UNEC Design

Structure, concept



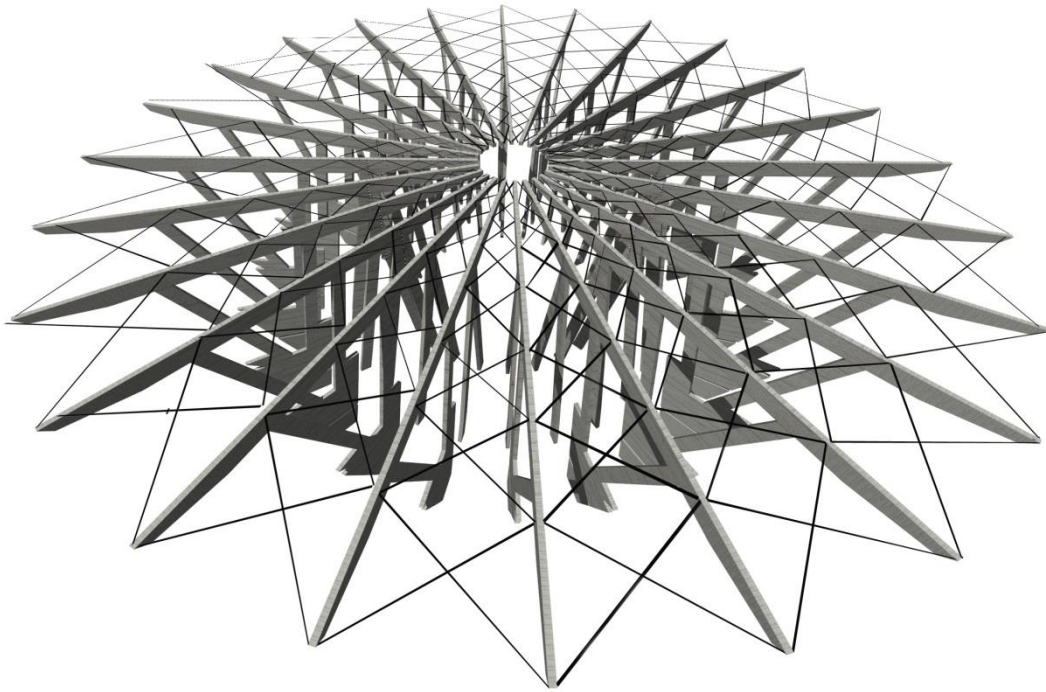
Pylons create space

United Nations - Masterplan - **UNEC Design**

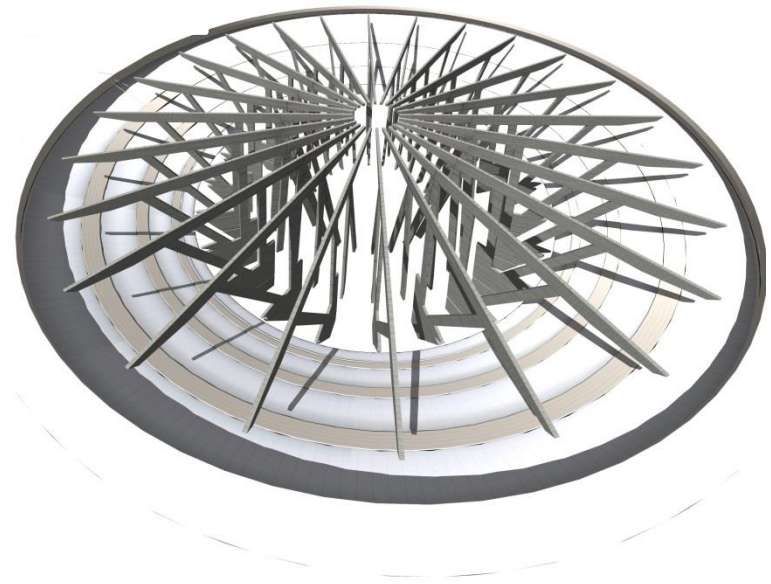
SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

# UNEC Design

Structure,



24 pylons, stabilized with steel cables



Structure follows form

# Route Architecturale

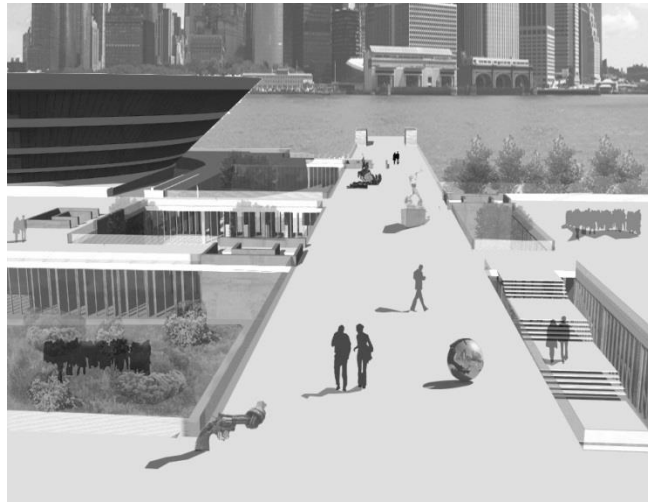
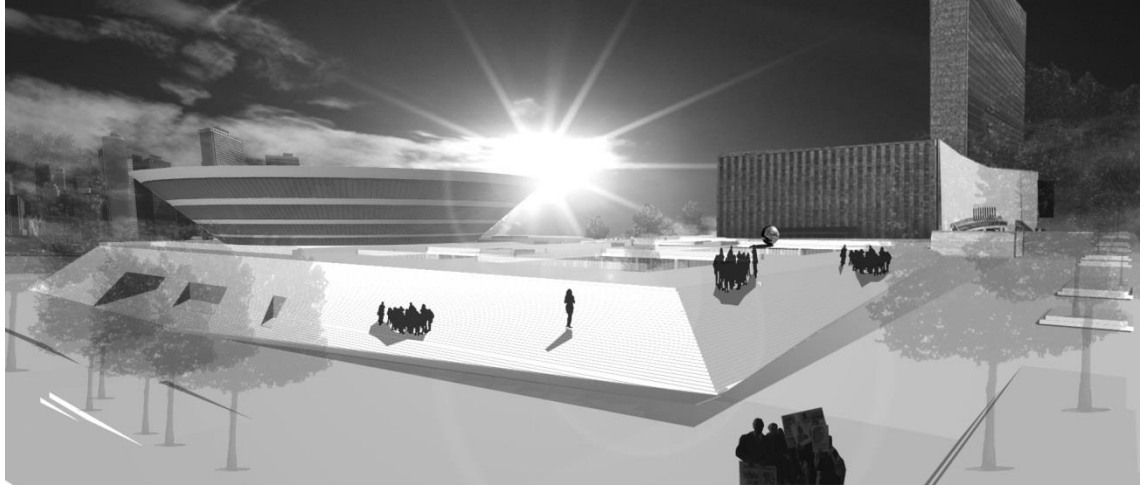
# UNEC Design

## Route Architectural

1) City



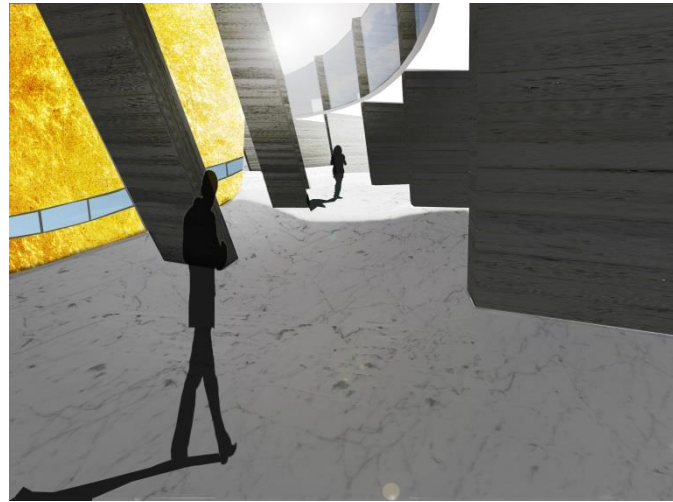
2) UN plot



3) UN Platform



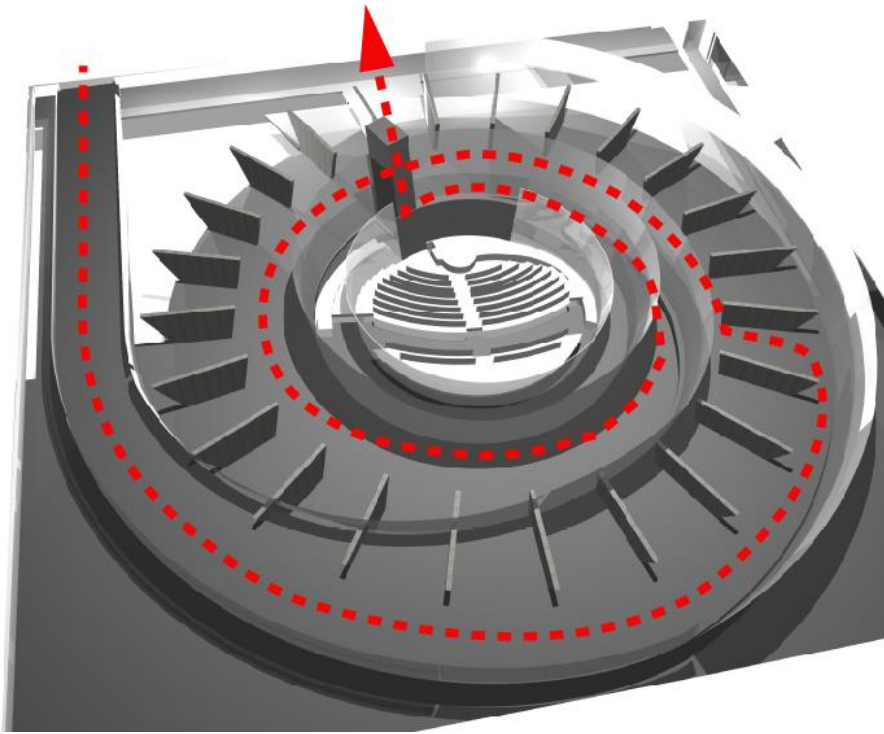
4) Sloping down



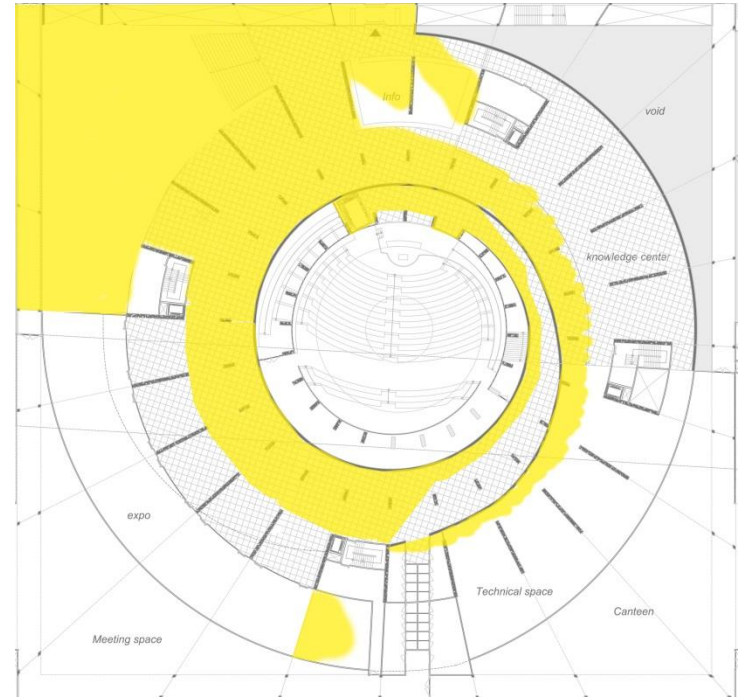
5) Following the light

# UNEC Design

Route Architectural



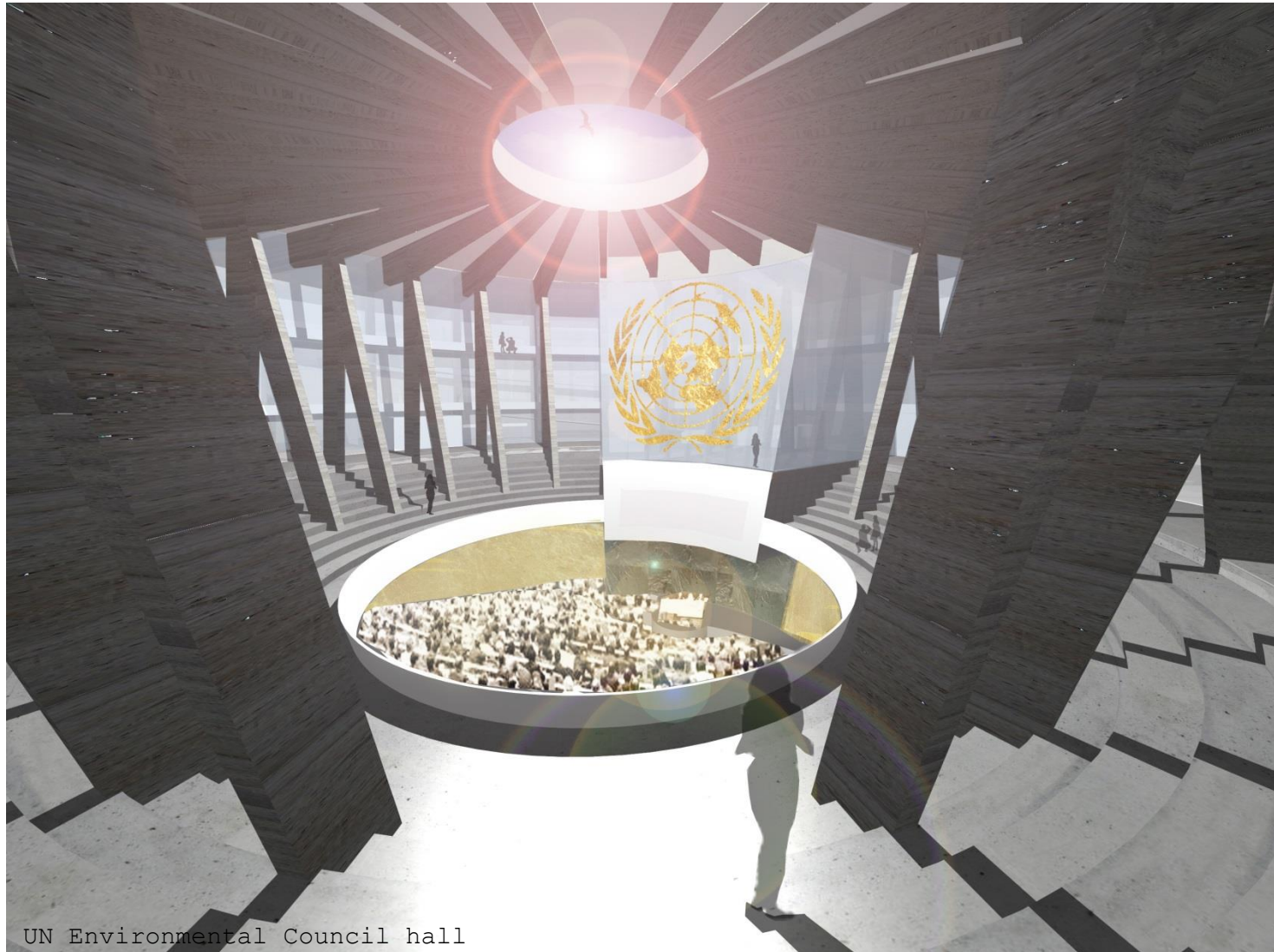
Route Architectural



Natural light scheme

# UNEC Design

Route architecturale



UN Environmental Council hall

United Nations - Masterplan - **UNEC Design**

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

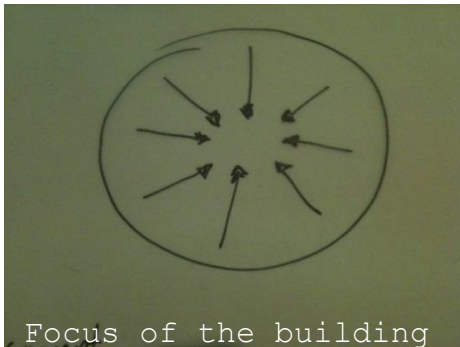
# Facade design

# UNEC Design

Facade concept main volume, architectural and climate concept



Avoiding overheating



Focus of the building



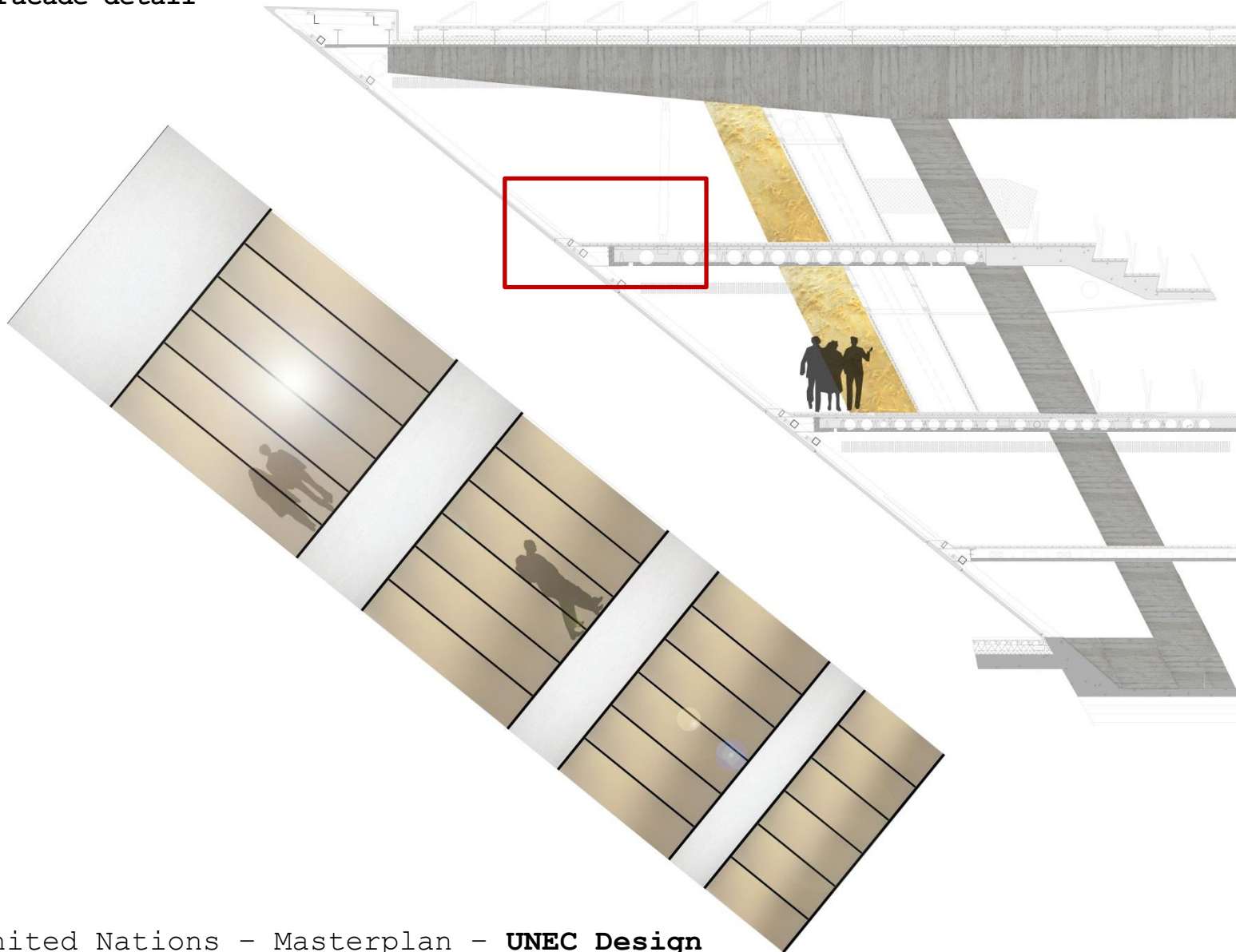
Largest spaces have largest windows

United Nations - Masterplan - **UNEC Design**

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

# UNEC Design

Facade detail



# UNEC Design

Facade image - main volume



Reference etched glass. Peter Zumthor's Kunsthaus in Bregenz

Reference plastic composite facade  
Bentham Crouwel's Stedelijk museum  
in A'dam



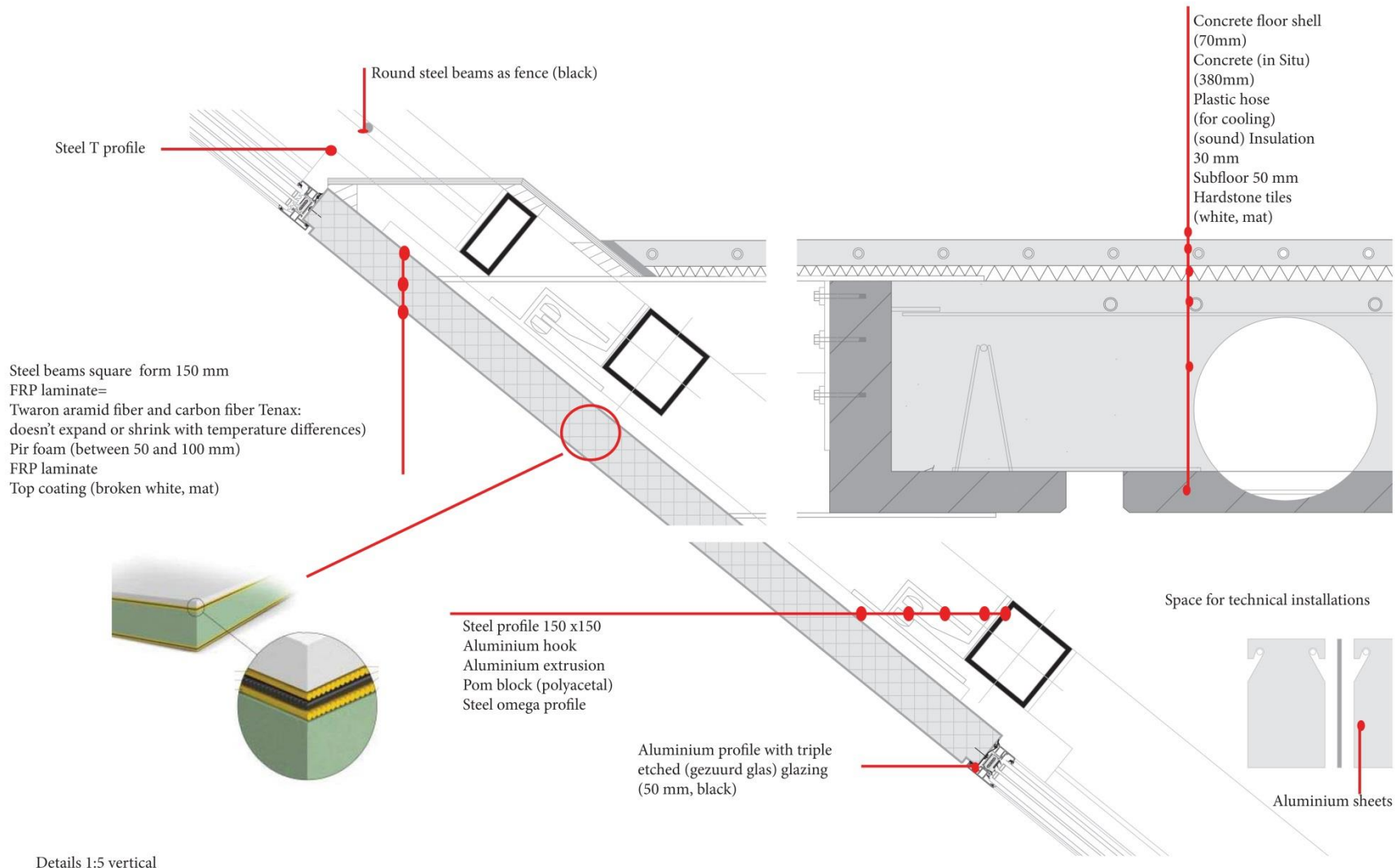
North facade

United Nations - Masterplan - **UNEC Design**

SADD Materialisation - UN Environmental Council - Kuno Jacobs - 1365673 - Tutors: Henri van Bennekom and Maarten Meijs

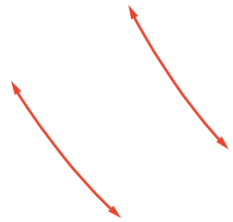
# UNEC Design

## Facade detail - main volume

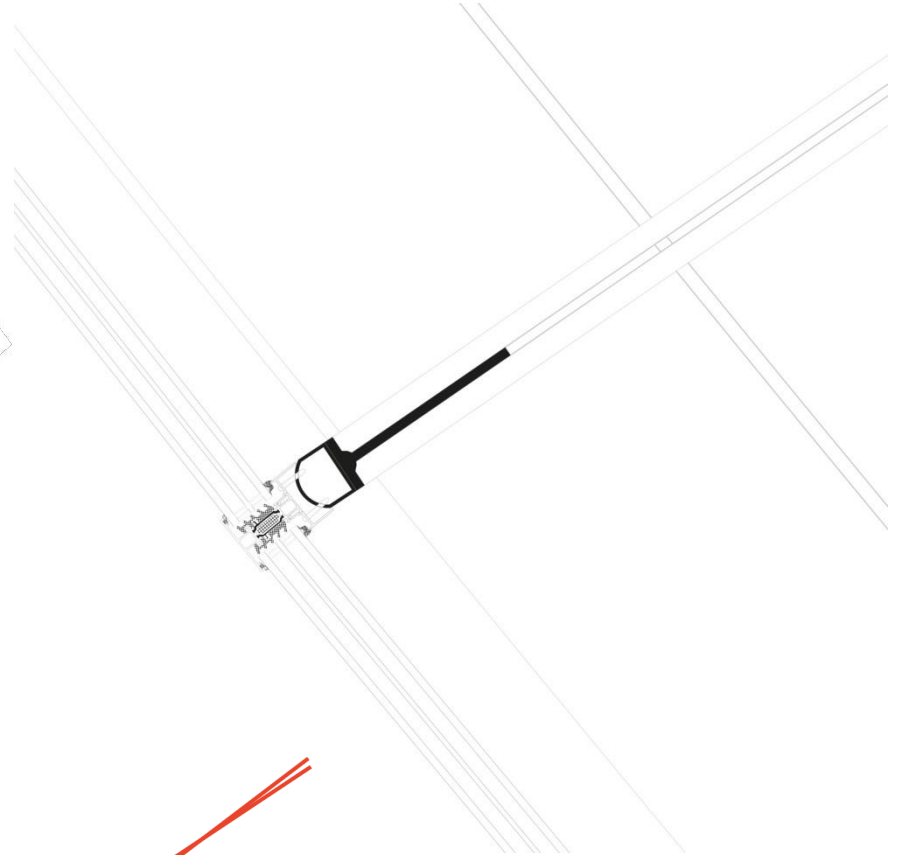


# UNEC Design

Facade detail - main volume



Oval vs. round



Glass facade is not right-angled  
to its structure

# UNEC Design

Facade details- office



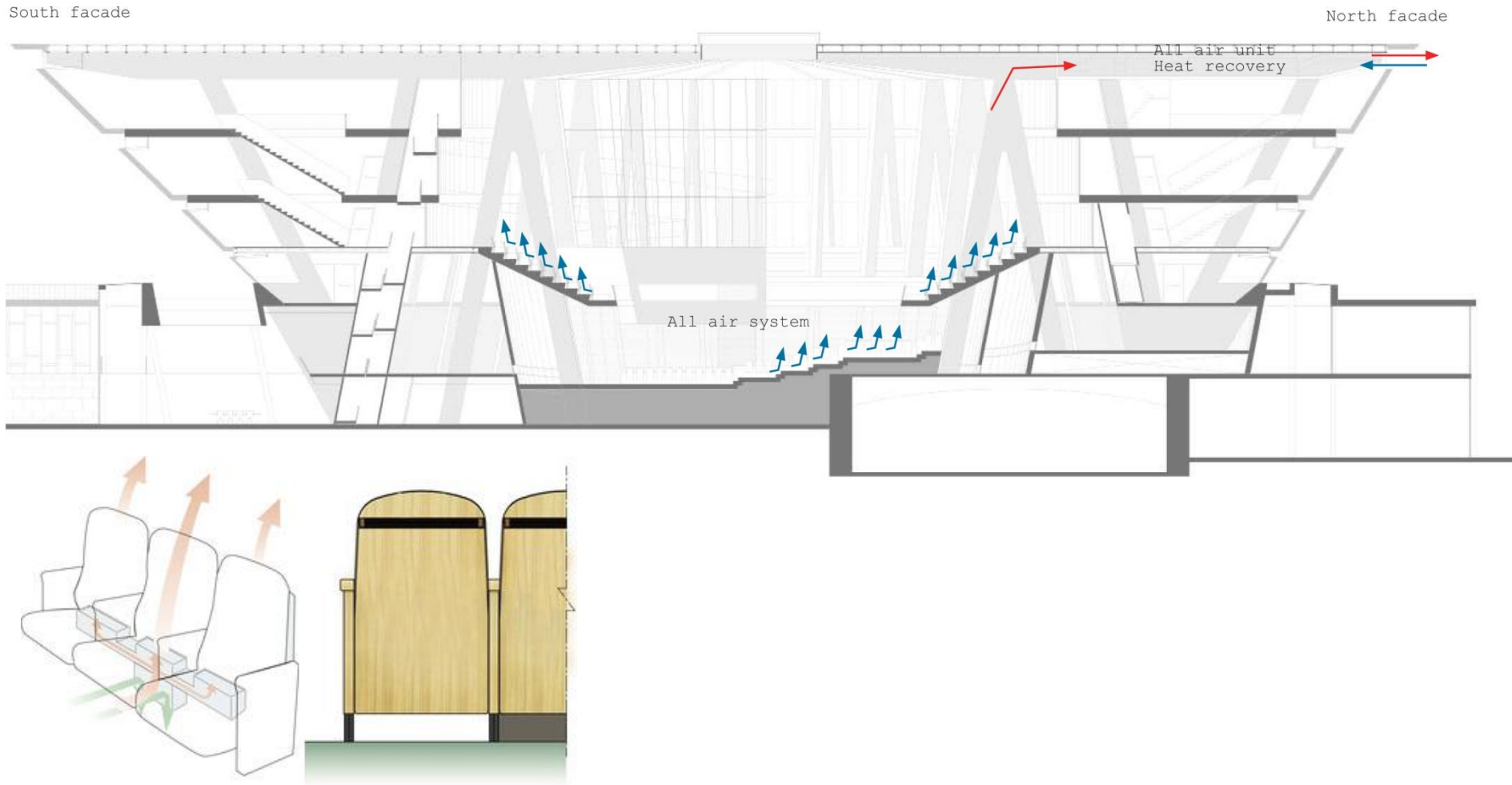
Facade materials:

- Concrete with Norwegian marble
- Windowframes are made of oak
- Insulated glass
- Roof: Op-deck floor with Norwegian marble (RC-value of 2,5 and 15dB soundinsulation. Poored in one time, in Situ)

# Climate design

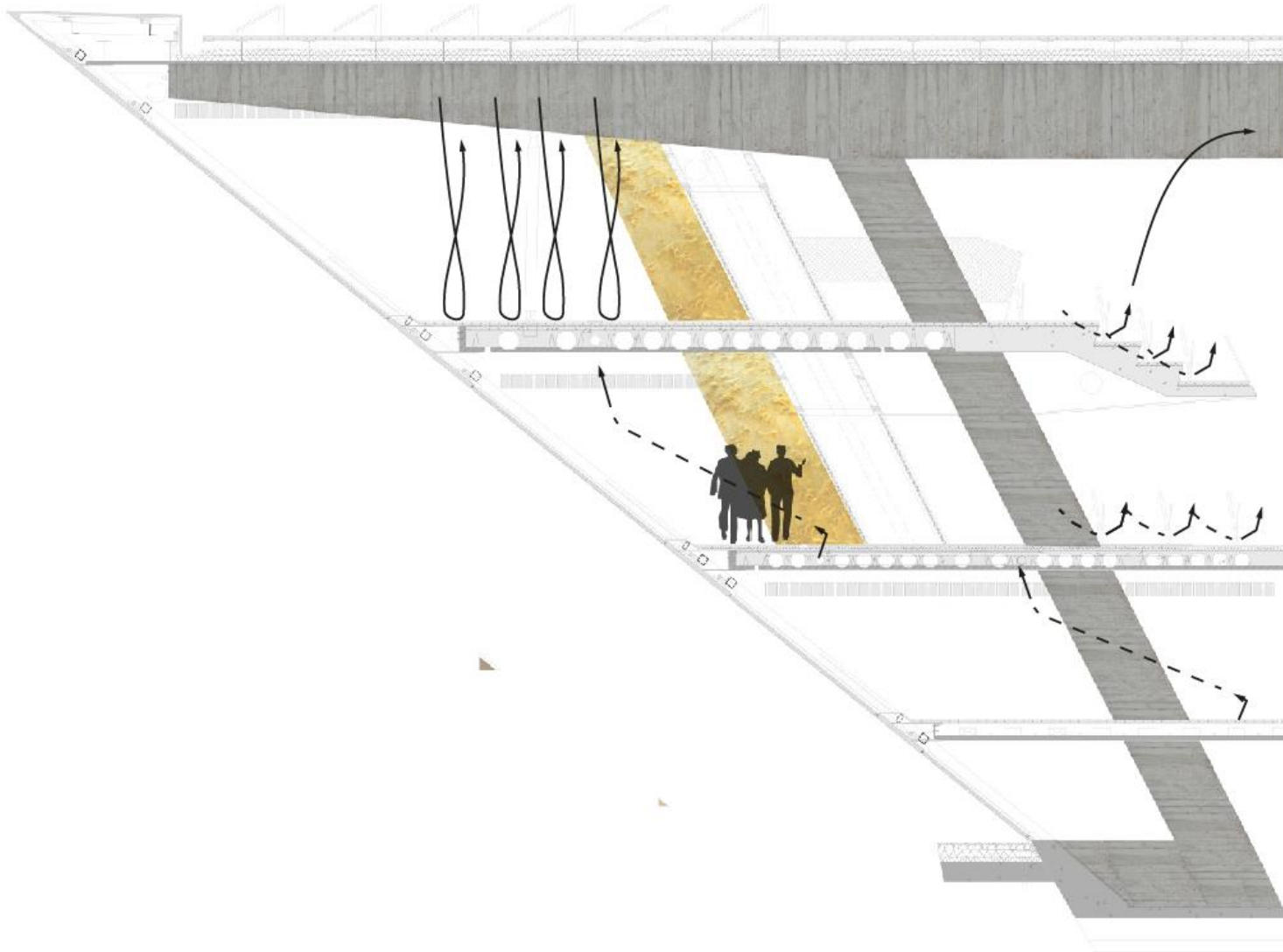
# UNEC Design

## Ventilation schemes



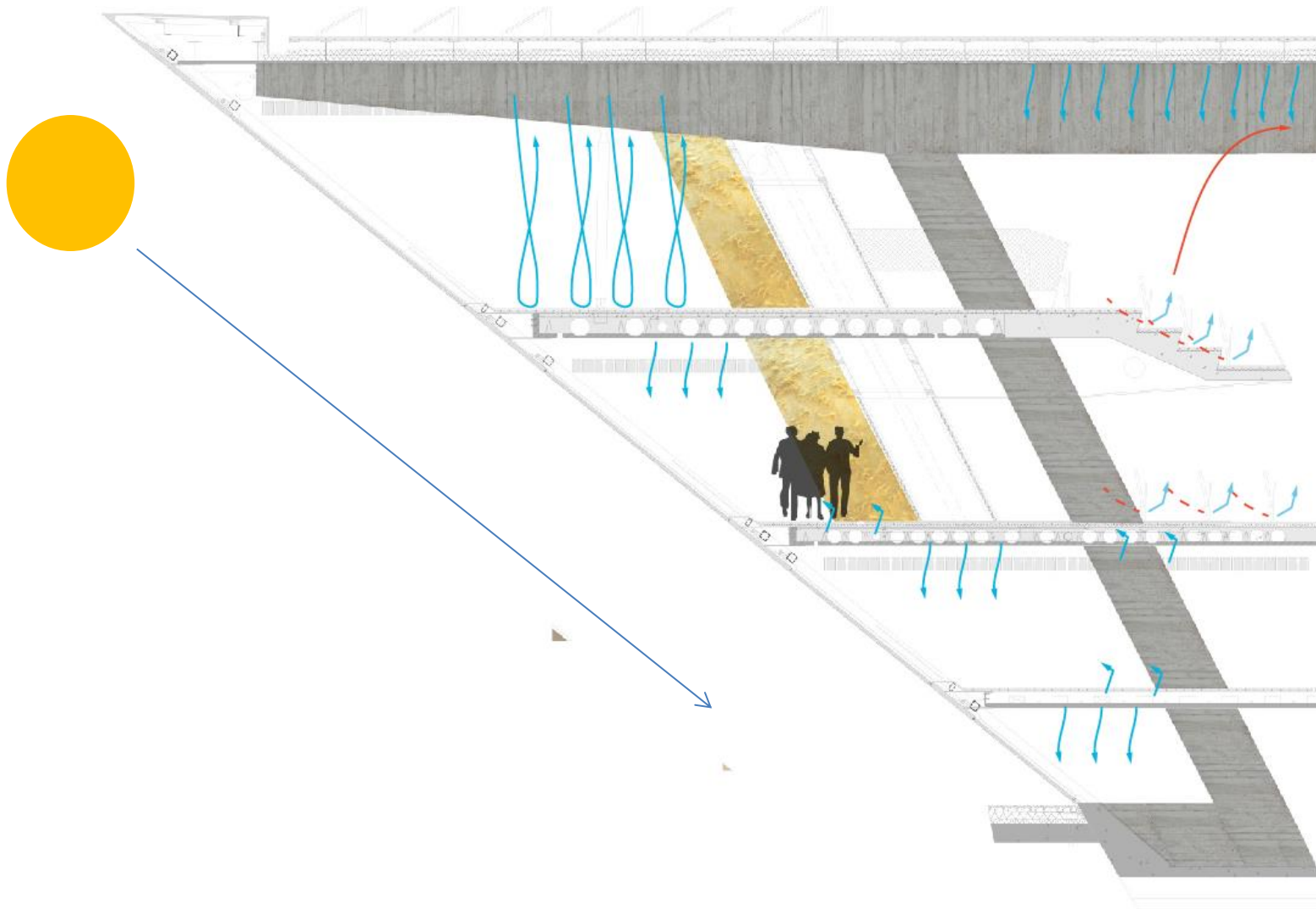
# UNEC Design

## Ventilation schemes



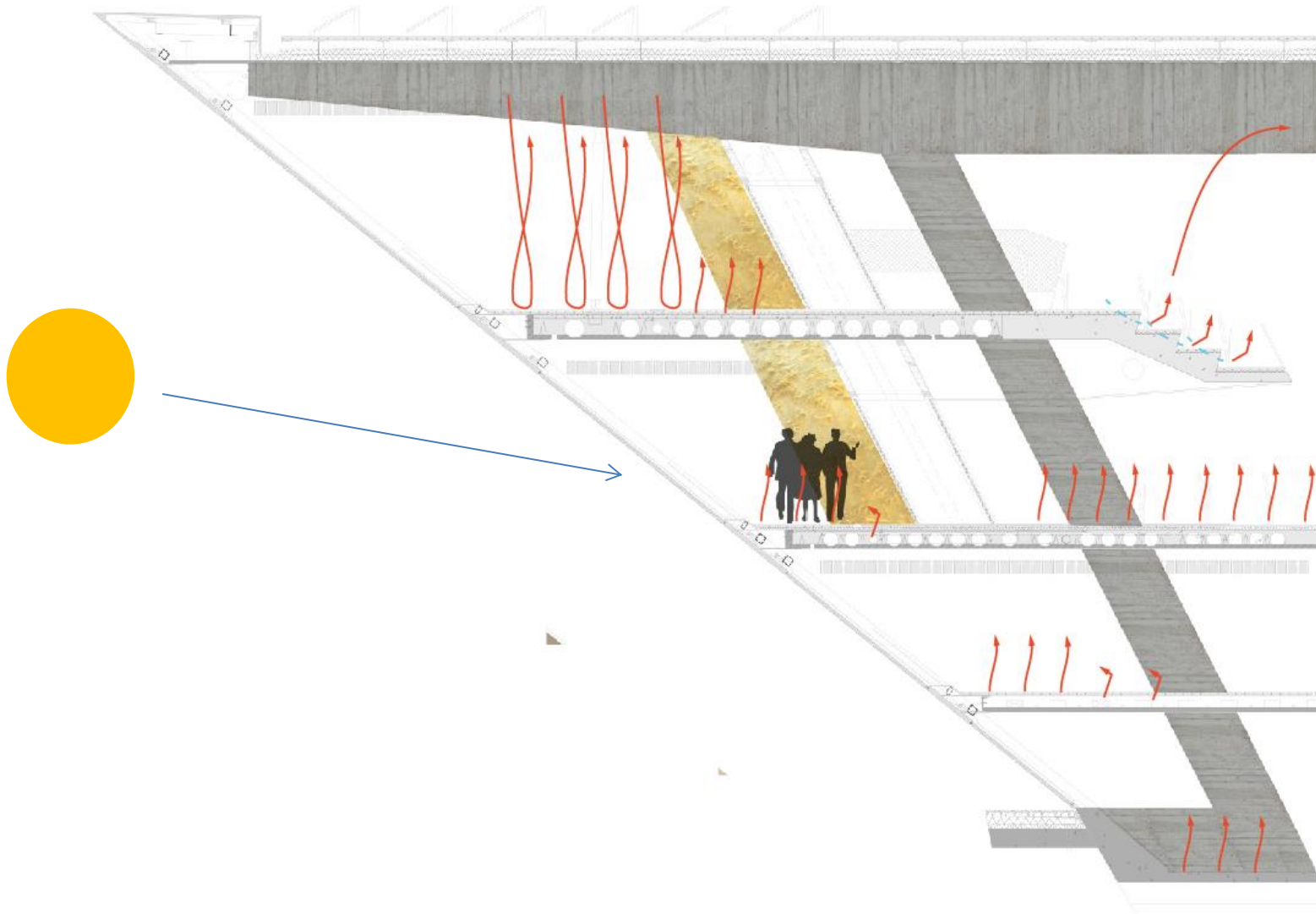
# UNEC Design

Heating and cooling schemes - summer



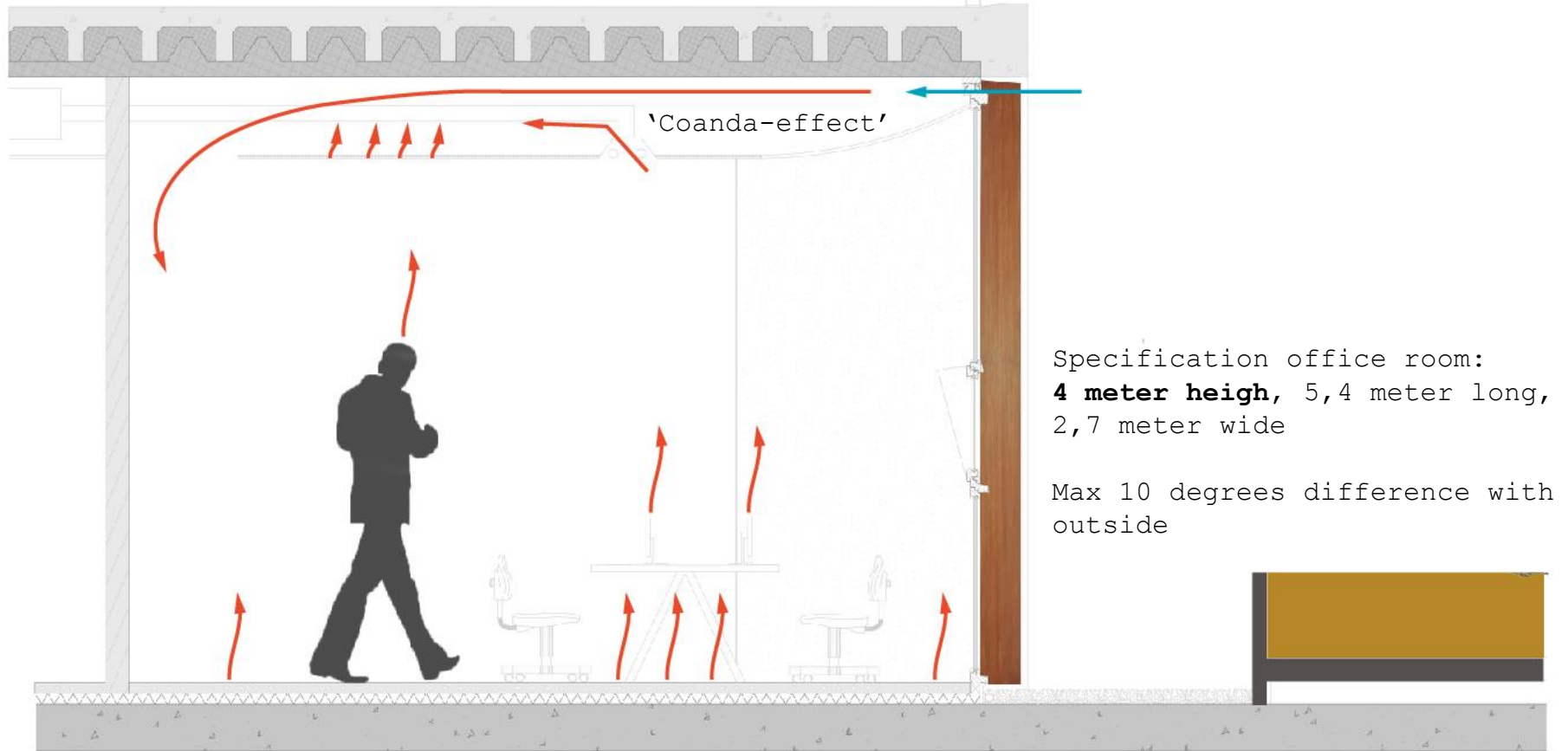
# UNEC Design

Heating and cooling schemes - winter



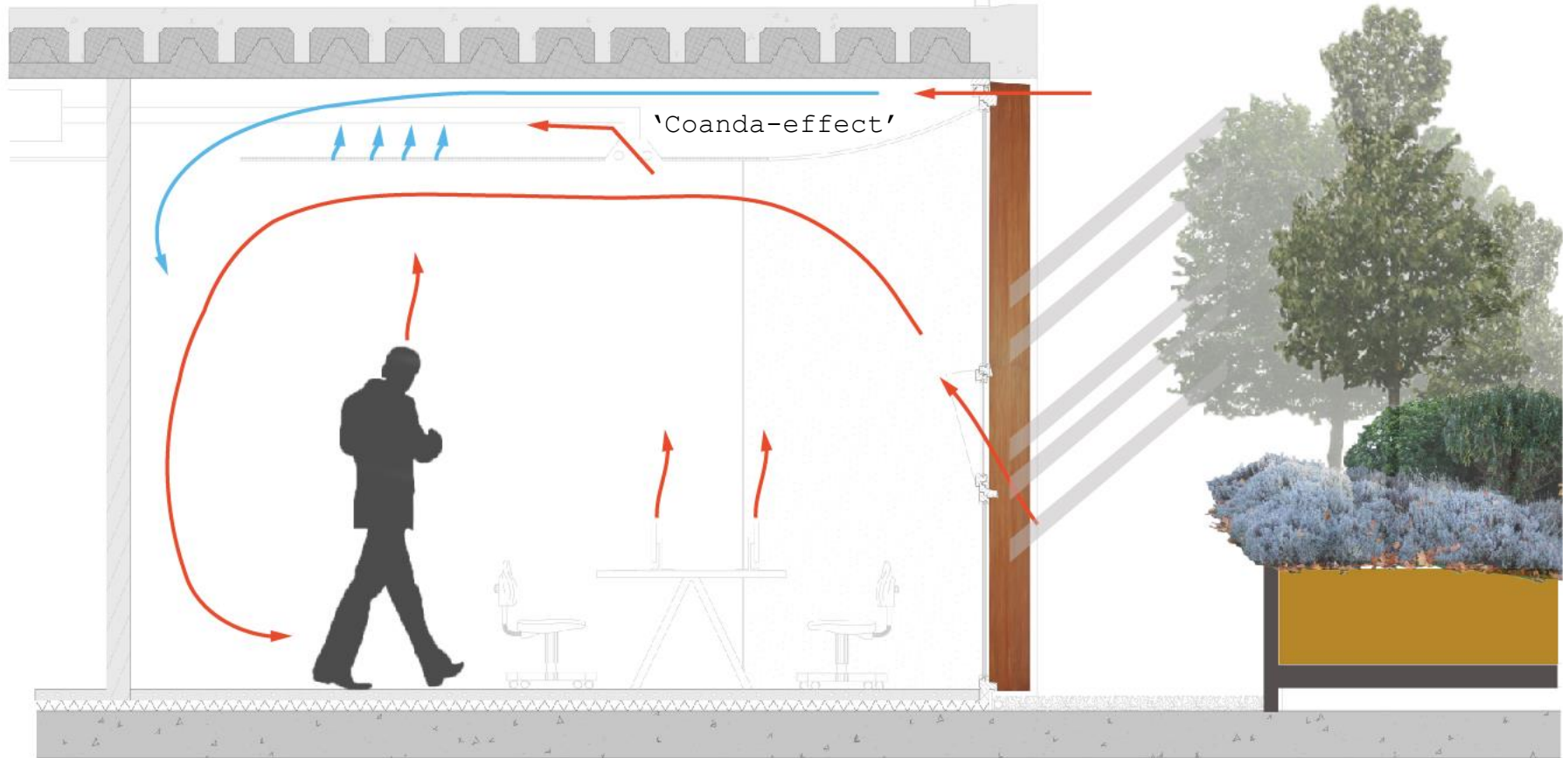
# UNEC Design

Heating and cooling schemes - office - winter



# UNEC Design

Heating and cooling schemes - office - winter



# Sustainability

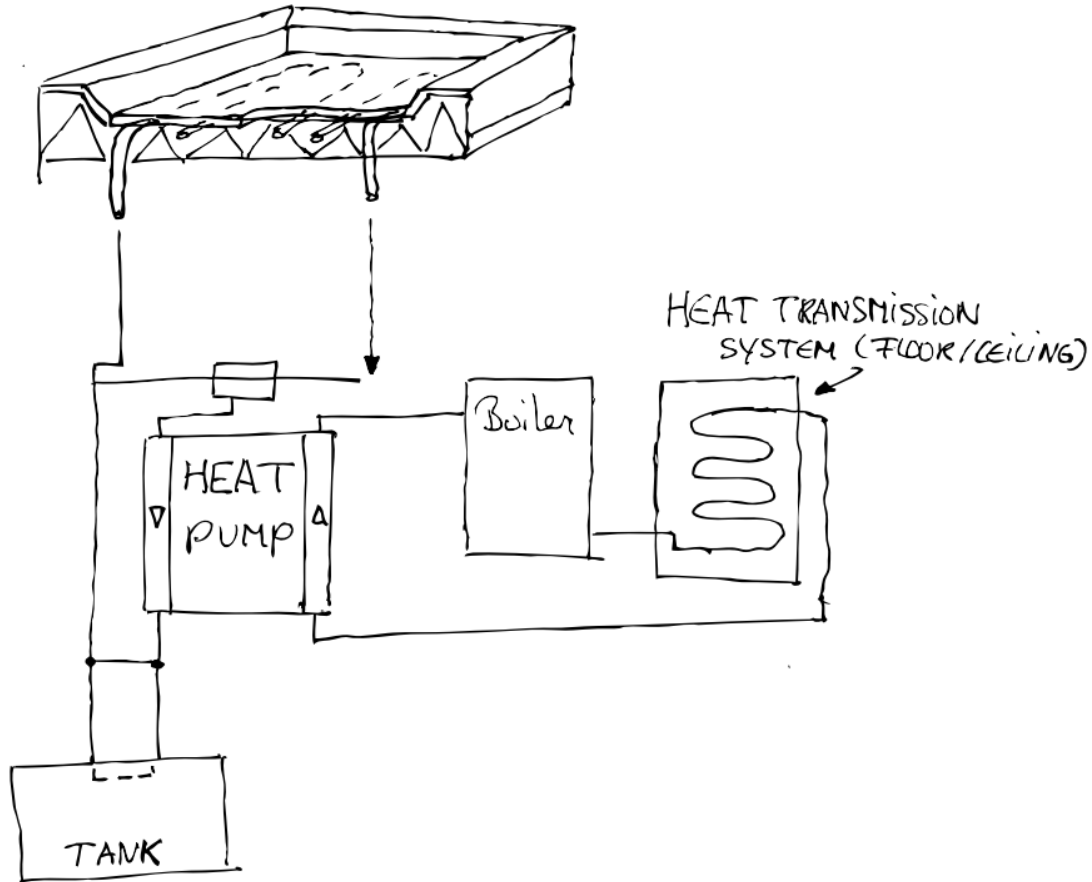
# UNEC Design

Concept main building



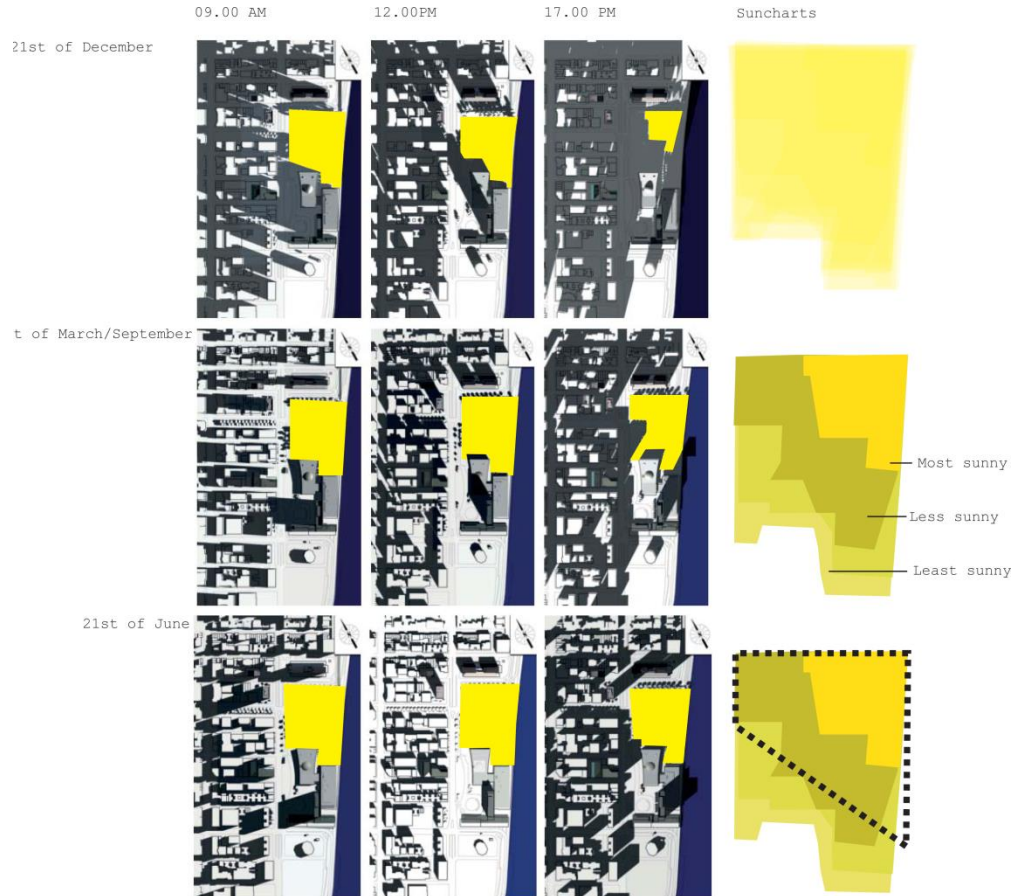
# UNEC Design

## Heat and cooling system



# UNEC Design

## Facade technology, roof specifications



Non-integrated PV cells because it can grow with PV innovations

### Roof specifications:

|                     |                     |
|---------------------|---------------------|
| Energy roof         | PV cells            |
| 6000 m <sup>2</sup> | 2500 m <sup>2</sup> |
| 2417 MWh (hot)      | 450 MWh             |
| 482 MWh (cold)      |                     |

# UNEC Design

Non mentioned sustainable measures:

## **Social sustainability**

- New public domain
- More space to gather and demonstrate
- Free accesible
- Besides attraction it delivers knowledge
- (knowledge center, history museum, library, lecture space, expo)
- People can attend Council meetings (free)
- A humain way of dealing with safety concerns
- More green space and better connection with water

## **Water (pollution)**

- Rain water collected for flushing toilets
- Grey water re-used by aquifiers
- Seperation of pee and poo. Pee is used for fertilizing crops at urban farm
- Poo is processed in a bio gas tank
- Snow water is collected for cooling the building
- Outfall of sewage in East-Rver is solved

## **Materials**

- Building exists of materials that are longlasting. Because the UNEC has to survive many decades. Therefore the use of concrete can be explained. Concrete is used as minimal as possible.
- Urban Heat island effect is countered by the use of sun collectors and materials with a low albedo level;
- Therefore the UNEC helps to counter the heat problem and therefore indirect smog and health problems
- Green and water are helping to lower down the urban temperatures

Questions?

