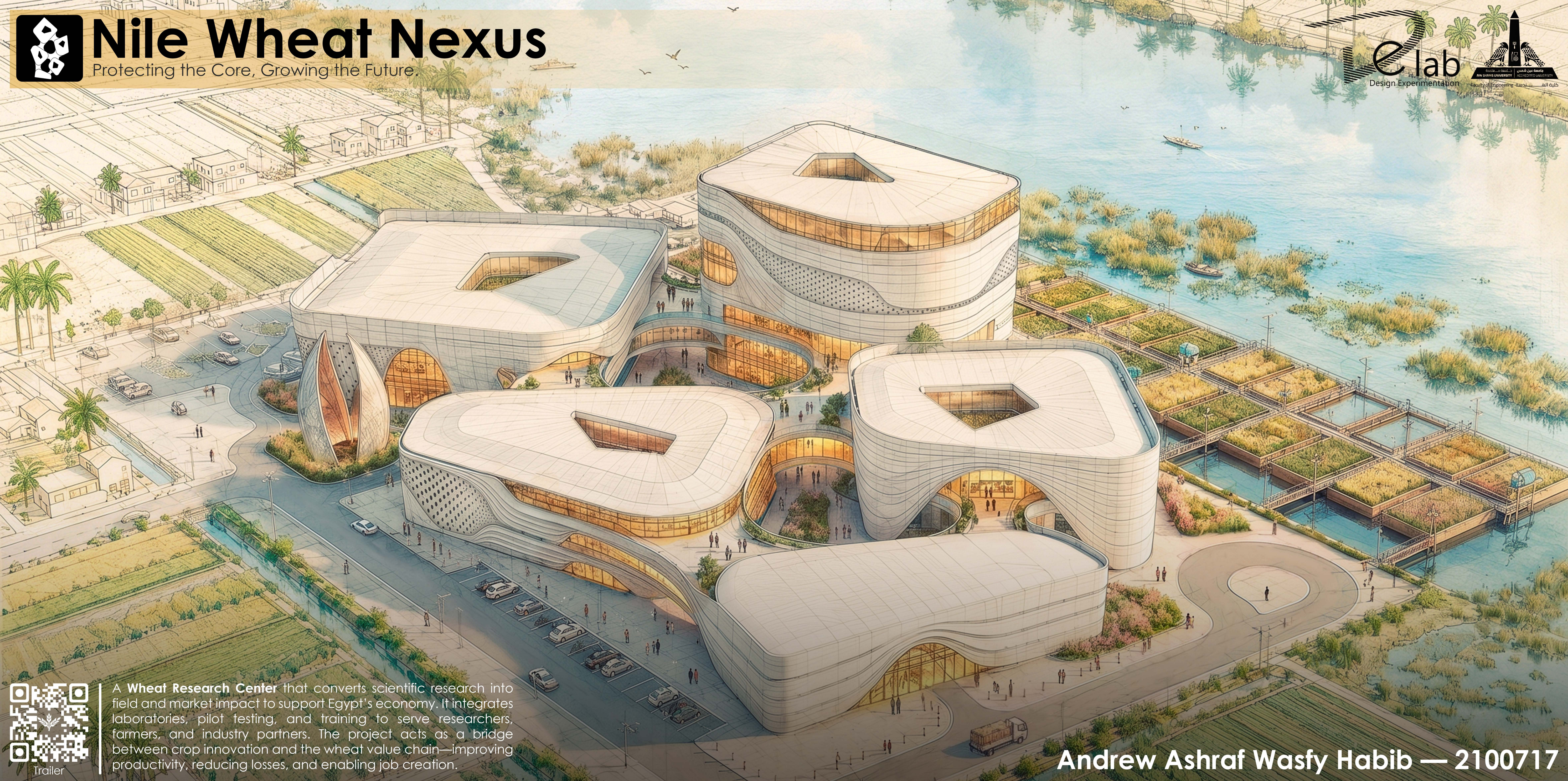


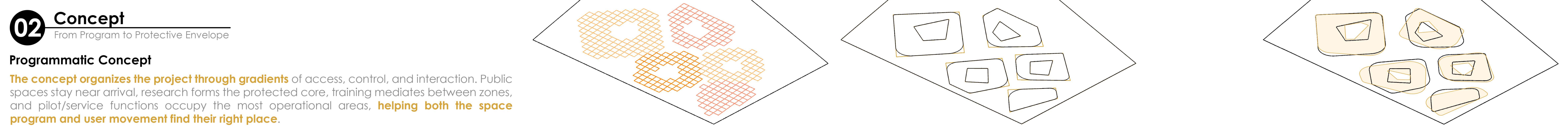
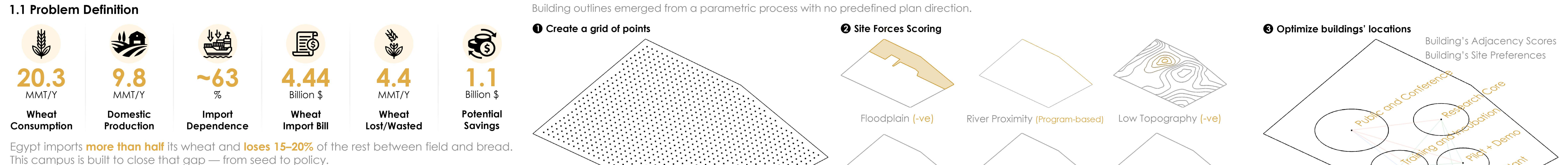


A **Wheat Research Center** that converts scientific research into field and market impact to support Egypt's economy. It integrates laboratories, pilot testing, and training to serve researchers, farmers, and industry partners. The project acts as a bridge between crop innovation and the wheat value chain—improving productivity, reducing losses, and enabling job creation.

Andrew Ashraf Wasfy Habib — 2100717

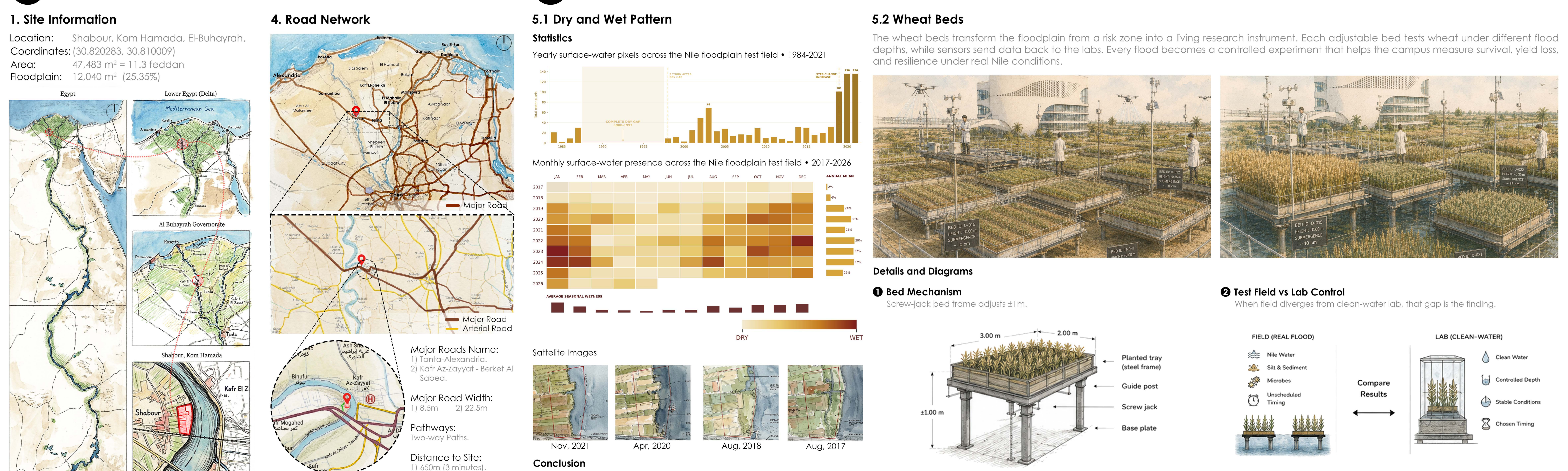
01 Problem Definition / Mission

From Wheat Dependency to Wheat Intelligence



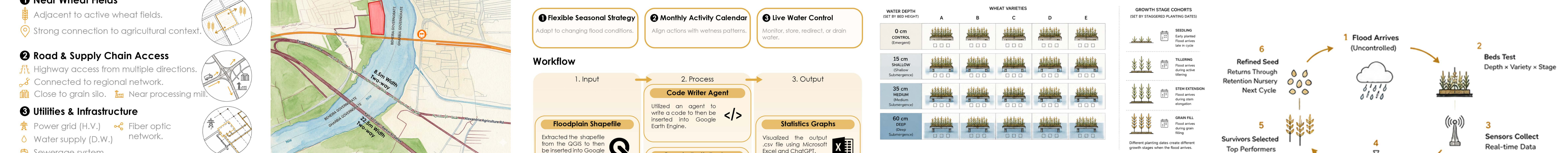
03 Site Analysis

From River Edge to Research Ground



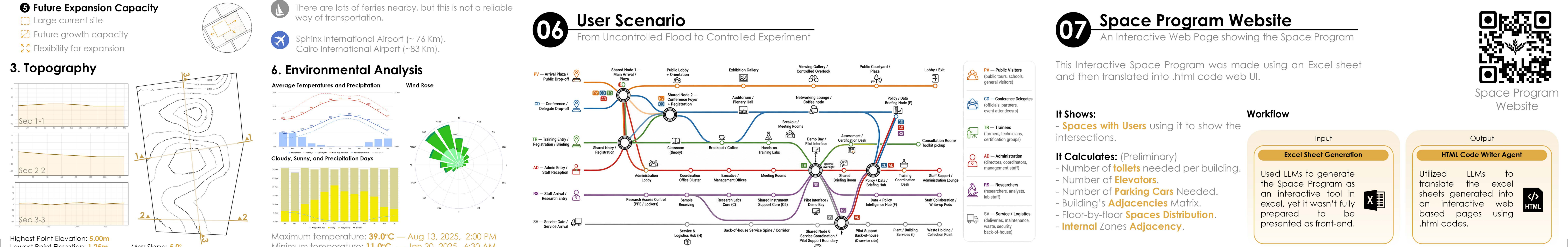
04 Parametric Approach

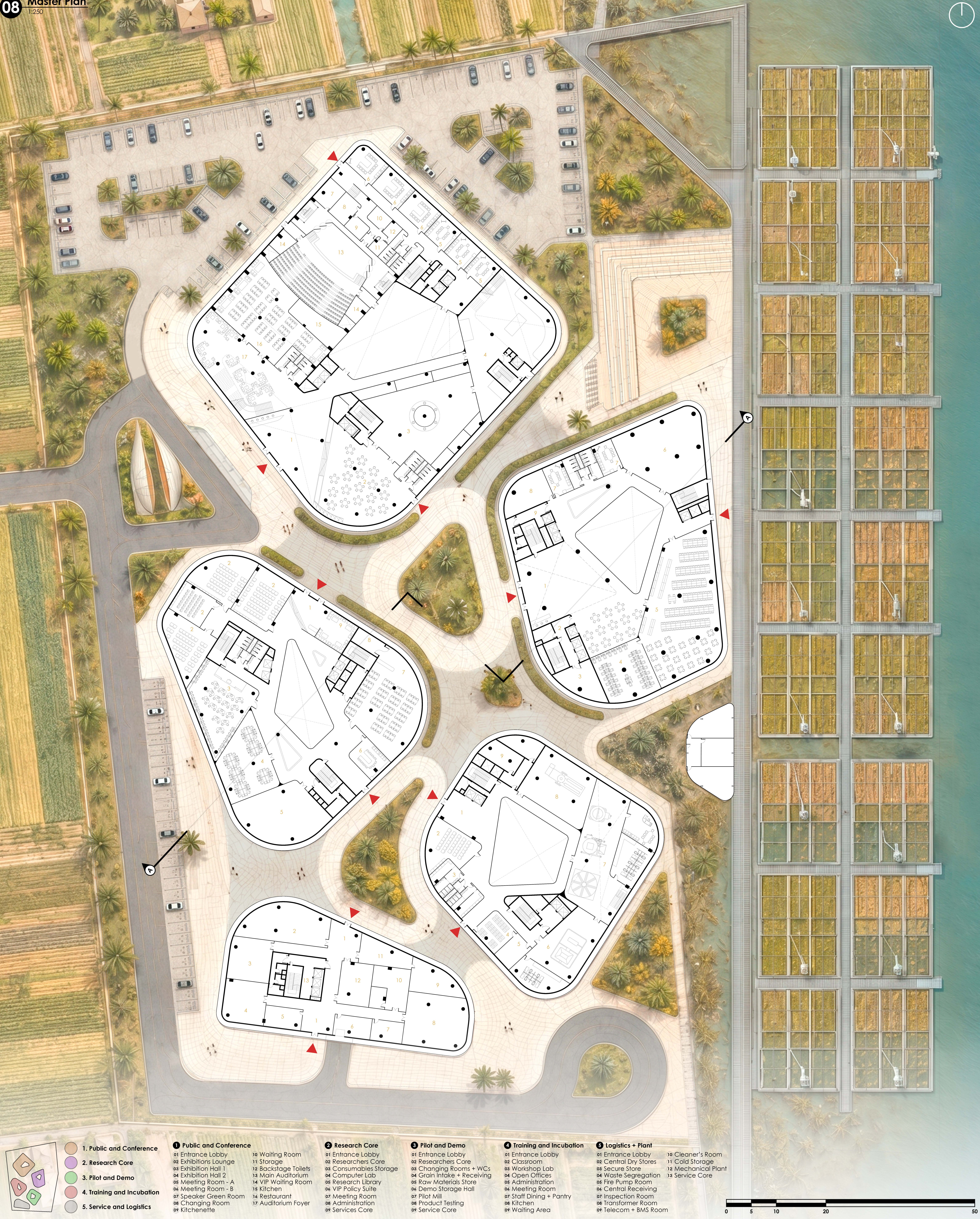
From Site Forces to Architectural Form



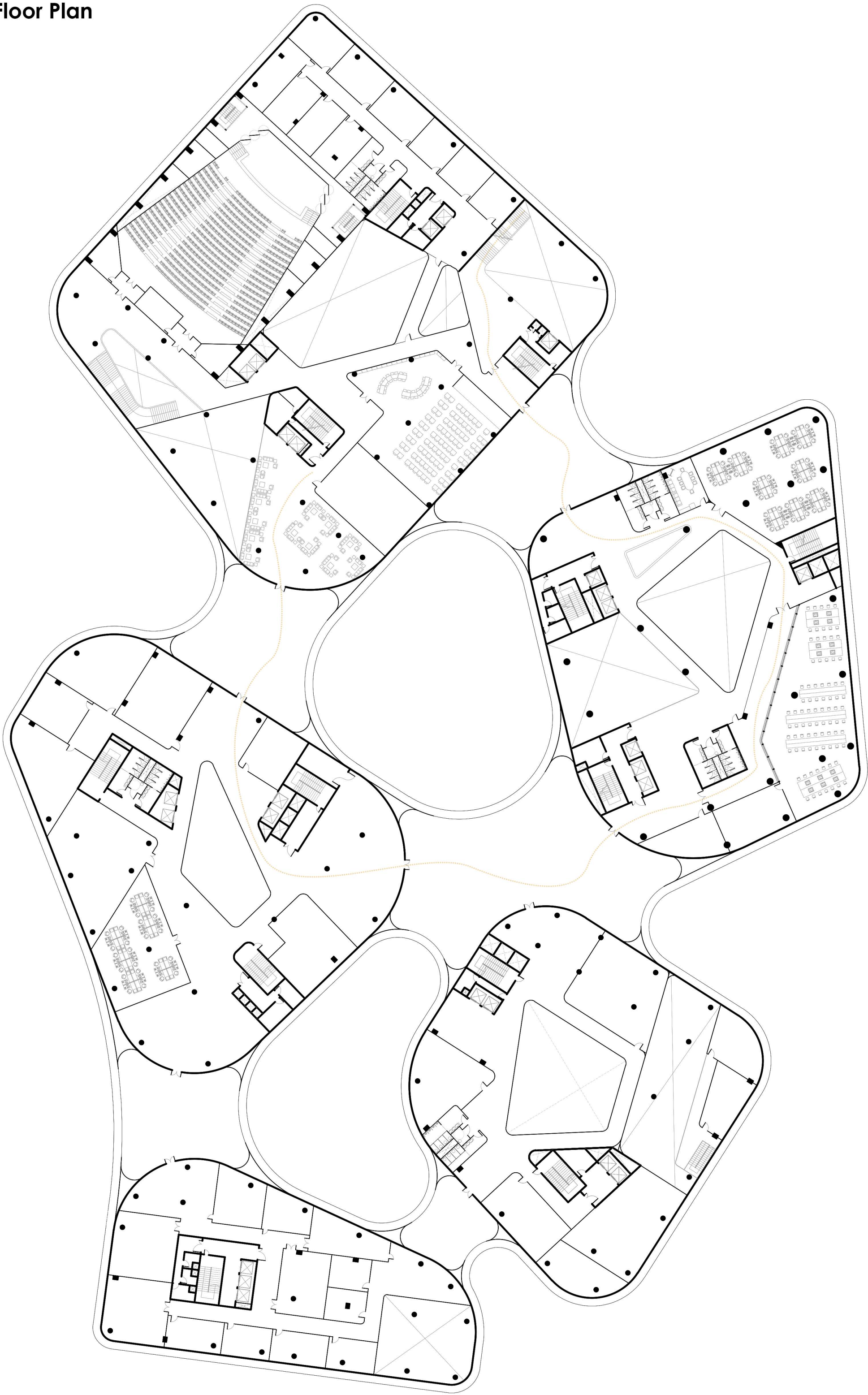
05 Floodplain and Wheat Beds

From Uncontrolled Flood to Controlled Experiment

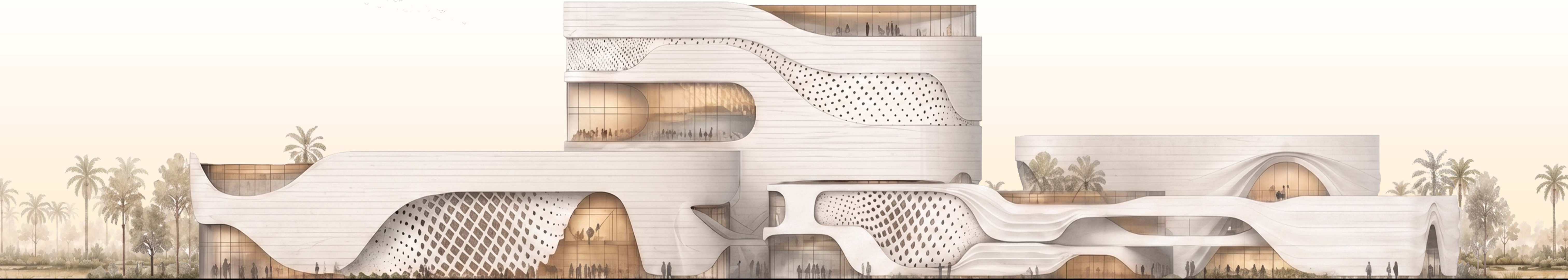
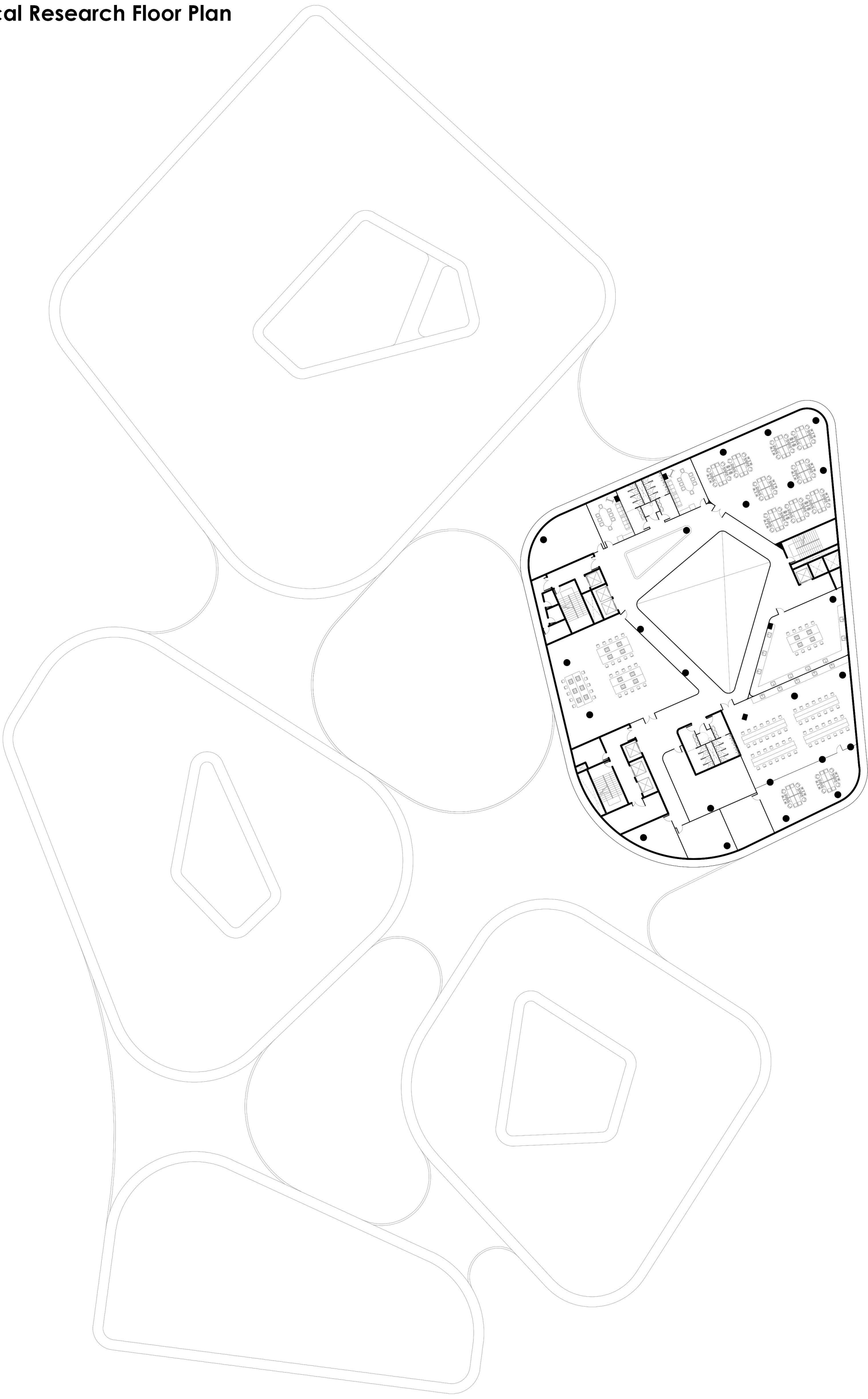




First Floor Plan

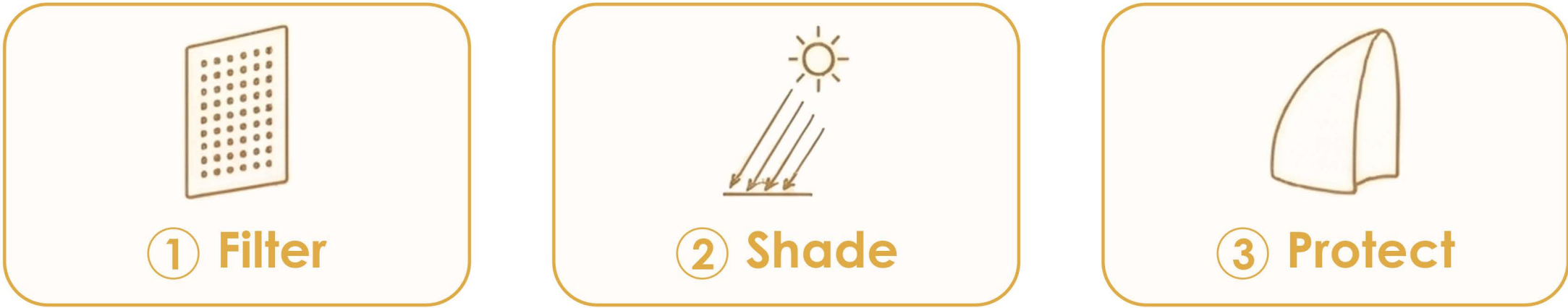


Typical Research Floor Plan

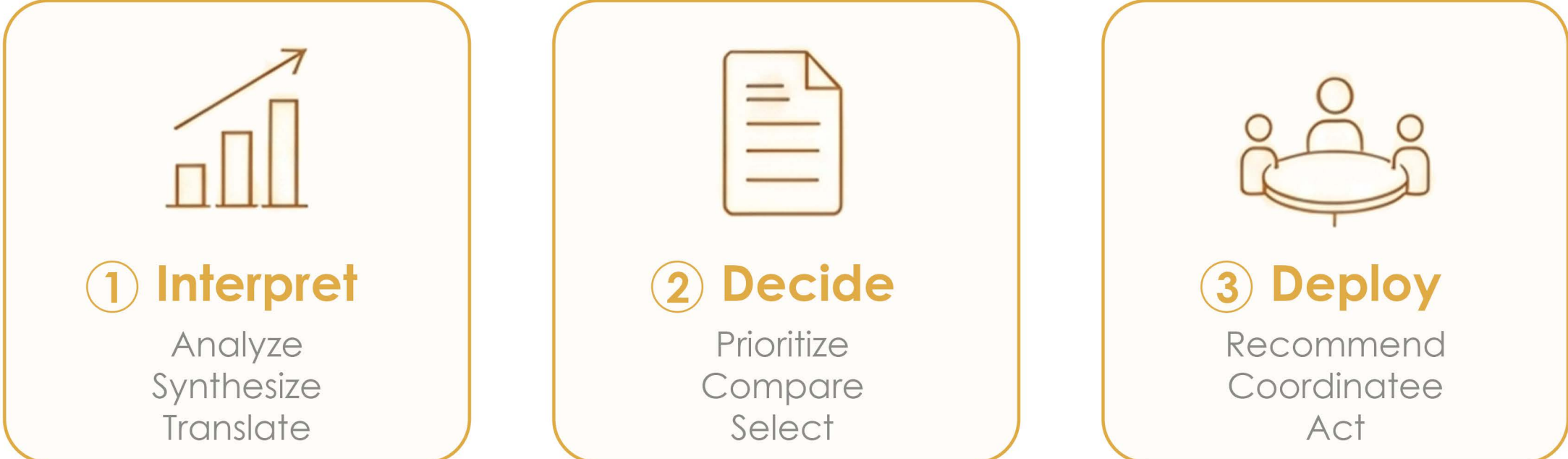


4 Layer 4: Outer Skin

A continuous outer shell protects the scientific core while giving it a clear public identity. Recessed glazing, perforated shading zones, and deep façade layers reduce heat gain while allowing controlled daylight into laboratories, workspaces, and the central atrium.



3 Layer 3: Package F (Policy, Economics & Data Intelligence)



Package F transforms laboratory findings into national wheat intelligence. Economic, market, policy, and scientific data are combined to create scenarios, standards, reports, and decision-support tools for farms, silos, mills, bakeries, and public institutions.

2 Layer 2: Package C (Research Core Laboratories)



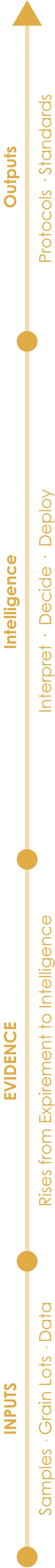
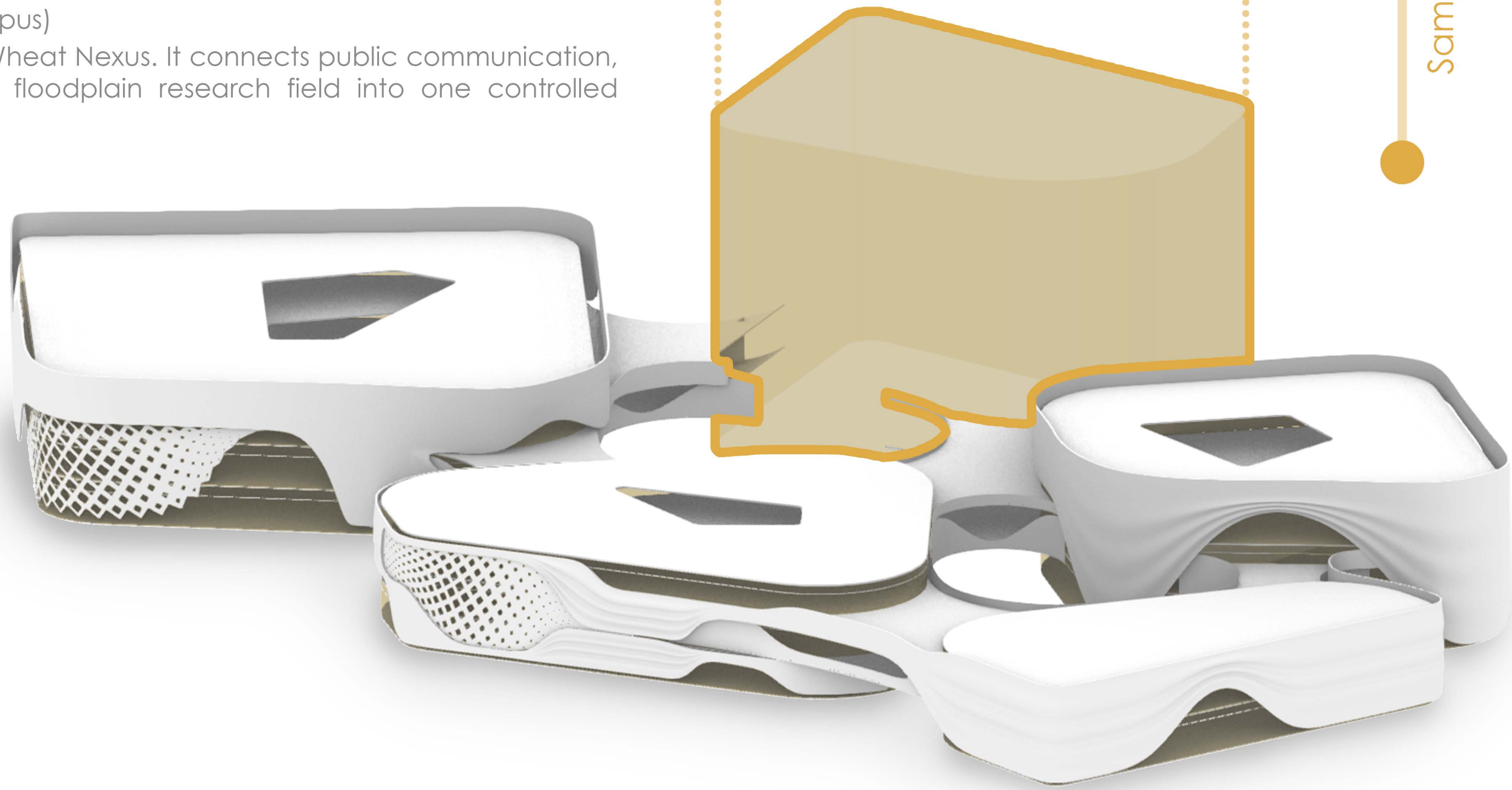
1 Layer 1: Ground Floor

The Ground Floor is the gateway to the scientific system. Field samples, grain lots, storage-failure cases, flour defects, and operational data are received here before entering controlled laboratory environments. It combines research arrival, coordination, shared support, and secure links to the wider campus.



0 Layer 0: Base Model (The Complete Campus)

B2 operates as the scientific engine of Nile Wheat Nexus. It connects public communication, pilot validation, training, logistics, and the floodplain research field into one controlled field-to-decision system.





13 3D Structure

Exploded Diagram for the Structure

The building is conceived as a rational structural framework that enables flexible planning, efficient long spans, and adaptable research environments. Reinforced concrete cores, columns, and slabs establish a stable and serviceable base, while the external envelope operates as a responsive environmental layer. A high-performance glazed façade maximizes daylight and visual connection, while the perforated outer skin filters solar exposure, reduces glare, and gives the campus a distinctive architectural identity inspired by the porous texture of wheat grain.

01
CORE & FOUNDATION

- Reinforced concrete cores
- Shear walls for lateral resistance
- Deep foundations / piles for Nile floodplain soils

02
STRUCTURAL FRAME

- Reinforced concrete columns & beams
- Double-height transfer zones
- Lateral stability through cores

03
FLOOR SLABS

- Flat slab / post-tensioned system
- Long spans
- Integrated MEP distribution

04
INNER GLAZED ENVELOPE

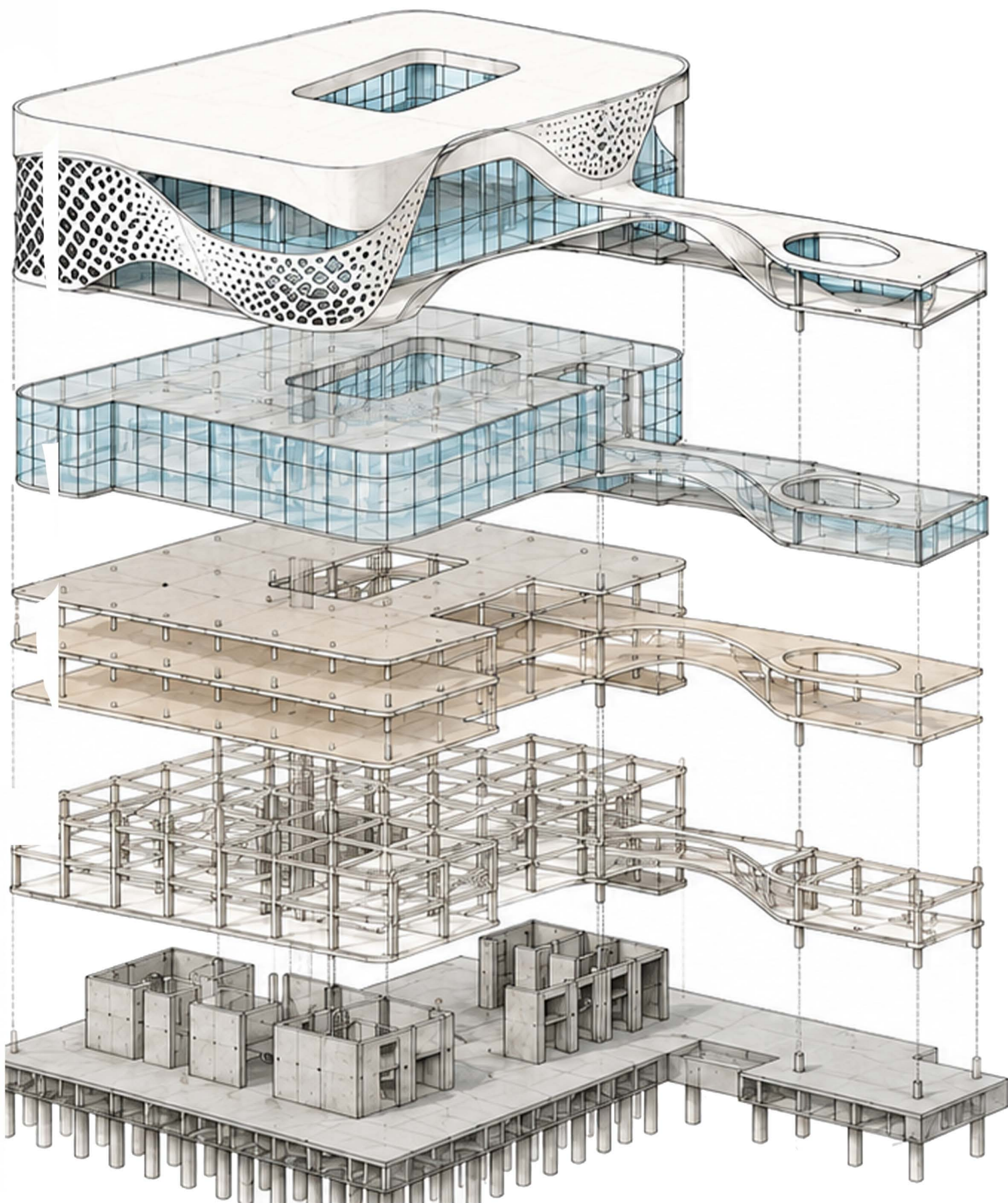
- High-performance curtain wall panels
- Airtight & weather-tight
- Thermal & acoustic comfort

05
EXTERNAL PROTECTIVE SKIN

- Perforated GRC / metal panels
- Reduces solar gain & glare
- Creates a unifying identity

MATERIAL PALETTE

- Reinforced Concrete
- Structural Steel
- Low-iron Glass
- Perforated GRC Panel
- Aluminum Framing
- Timber Accents
- High-performance Insulation
- Stone / Local Finishes



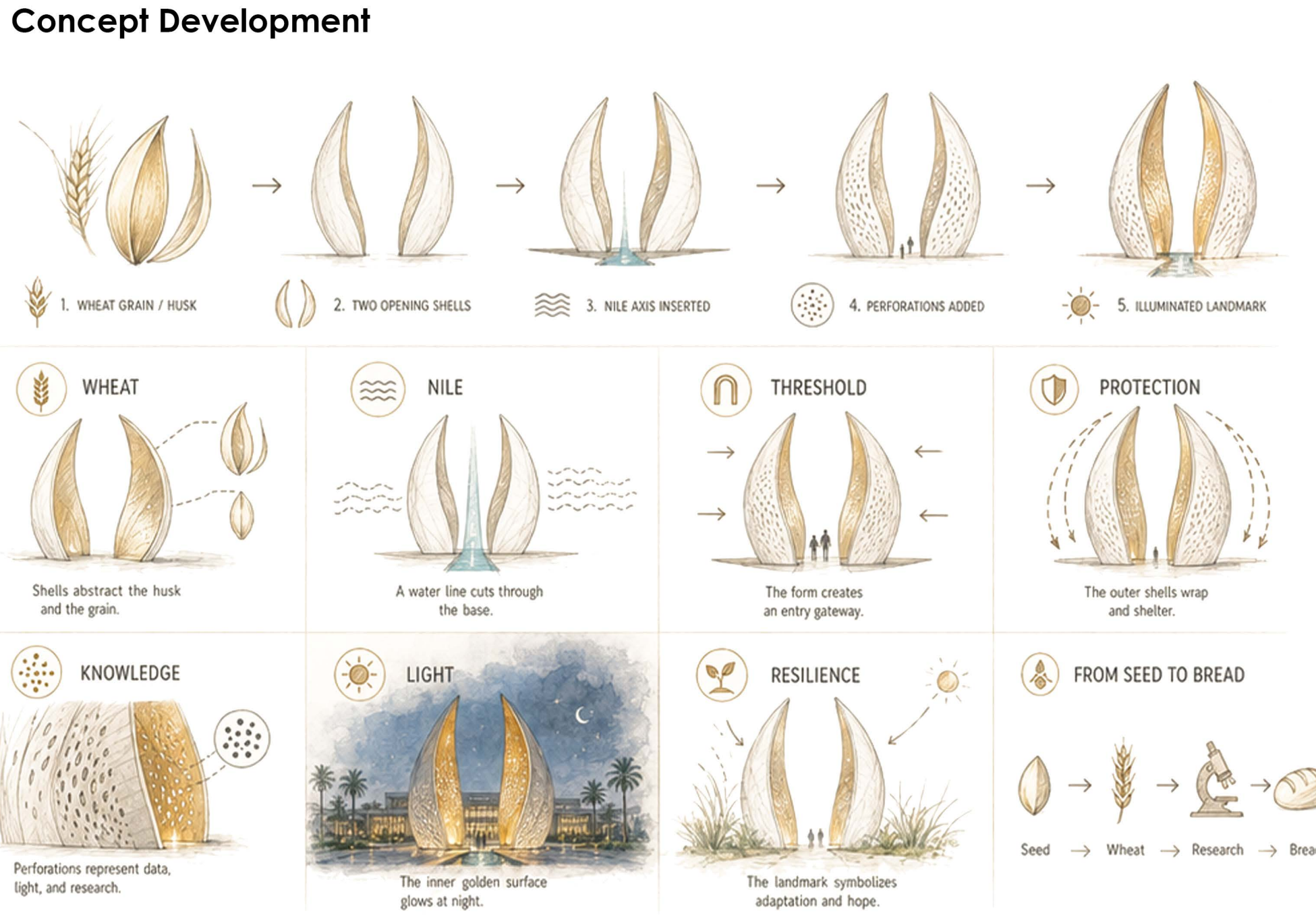
14 Labs-to-Mission Matrix

From Research spaces to Deployable Outputs

LAB CLUSTERS	OUTPUT TYPES				
	 PROTOCOLS Tested methods & operational guides	 STANDARDS Performance benchmarks	 TRAINING Curricula & capacity building	 DASHBOARDS Data products & decision tools	 POLICY Policy briefs & recommendations
 Grain Quality Lab Quality, nutrition & grain characterization	●	●	●		
 Soil & Water Lab Soil fertility, water chemistry & salinity	●		●	●	
 Flood Resilience Lab Submergence tolerance, genetics & adaptive traits	●	●		●	●
 Storage & Handling Lab Post-harvest, storage losses & handling	●	●	●		
 Milling & Baking Lab Milling performance, flour quality & baking	●	●	●		
 Data Intelligence Lab Data science, analytics & decision support				●	●
 Matched Flood-Control Chambers Controlled environment testing & simulation	●			●	●
 MISSION IMPACT — From lab work to national resilience and food security	 Evidence-based protocols	 National & regional standards	 Skilled people & certified capacity	 Real-time intelligence & transparency	 Stronger policy & resilient food systems

15 Landmark

Marker that makes the campus Remembered



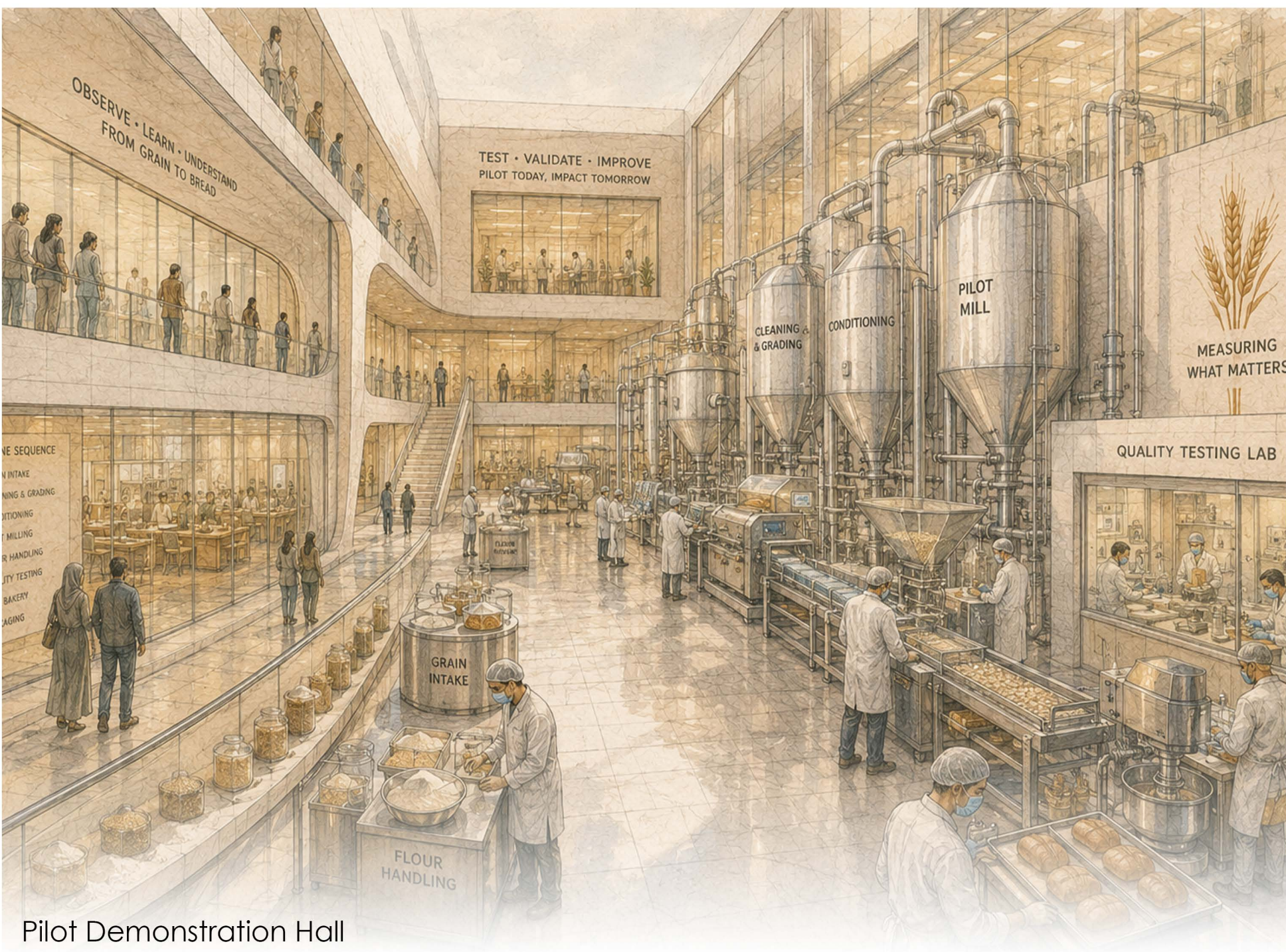
Auditorium Foyer



Exhibition Hall 1 — The Loss Hall



Research Building Entrance



Pilot Demonstration Hall



Laboratories — Grain Quality Lab

16 Section A-A

1:250

Inside the Laboratories

Facade Fixation Detail Callout

Wheat Beds Callout

