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Past Experiences
Future Plans

1. Socio-Demographic Changes in Housing

Title of Thesis: Designing Supplementary Space in Multi-Family Housing

Research Background

- Socio-demographic changes in housing design
- Applying a research through design (RtD) methodology (User-centered design)

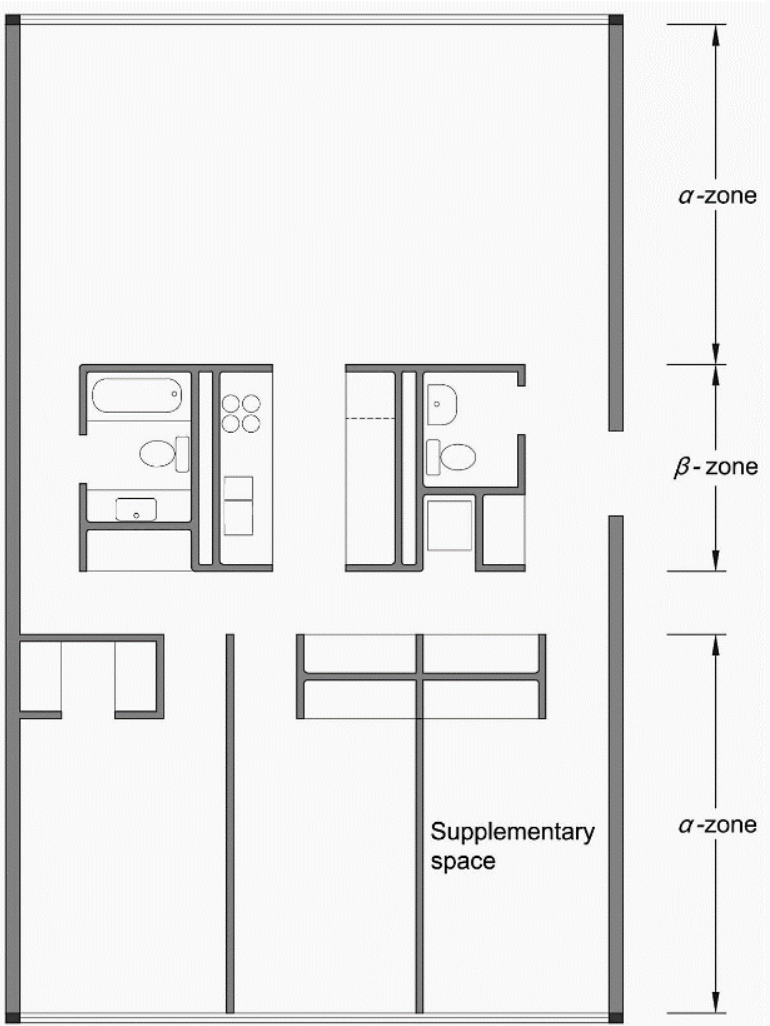
Socio -Demographic Changes

- Population increase + New lifecycle +New lifestyle= **Emerging Needs:** additional **spatial needs** due to additional activities brought to the traditional housing premises i.e. not present in traditional multi - family residential design.

NEXT21, Osaka, Japan

Features of Supplementary Space

- Accommodate the emerging needs = an area in the unit that the occupants can use **dynamically**
- This space must be **distinct** from the dwelling, has different **characteristics** the traditional spaces
- Should have potential for further **customization** in future



Publication in the Area of Housing

List of papers published in the area of housing:

- Redesigning terraced social housing in the UK for flexibility using building energy simulation with consideration of passive design
- A knowledge model to implement home working in multi -tenant housing
- Flexible housing: incorporating working space whthtin living space
- Implementing supplementary space as a design strategy into multi -family adaptable housing
- Expanding affordable housing through inclusionary zooming in the city of Toronto
- Implementing inclusionary zooming Canada’s market -value housing

Open Building Implementation

- Sustainable building design - Open Building Implementation (OB). CIB W104 conference reviewer

International Council
for Research and Innovation
in Building and Construction

2. Research Methodology in Architecture and Interior Design

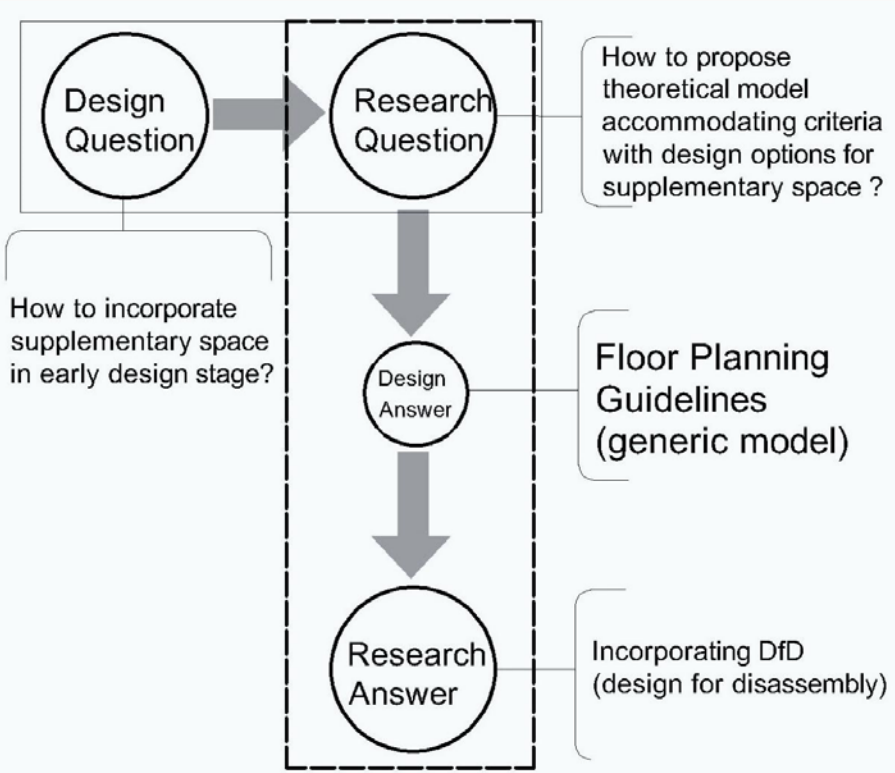
Research through Design(RtD) Area

- “Design research is a systematic search and production of knowledge related to general human ecology considered from a designer way of thinking, i. e. a project -oriented perspective” Alan Findeli
- Interplay of **practice** and **theory** as well as the interplay of **design** and **research**
- Designing is often considered to be the **central activity** within such research activity
- Originally used in product design, can be used in interior architecture , interior design and architecture

Methodology of Research

Based on a design inquiry discourse, the methodology will use a research through design (RTD) model, a deductive method (systems approach) and an intuitive method (scenario planning).

RtD objective is not design of a building but an issue investigated scientifically by means of designing - and somehow related to it. (Nilsson, Dunin -Woyseth , & Janssens , 2017, p.58



Research framework based on Findeli approach

Publications in the Area of Design Methodology

List of papers published in the area of flexible housing:

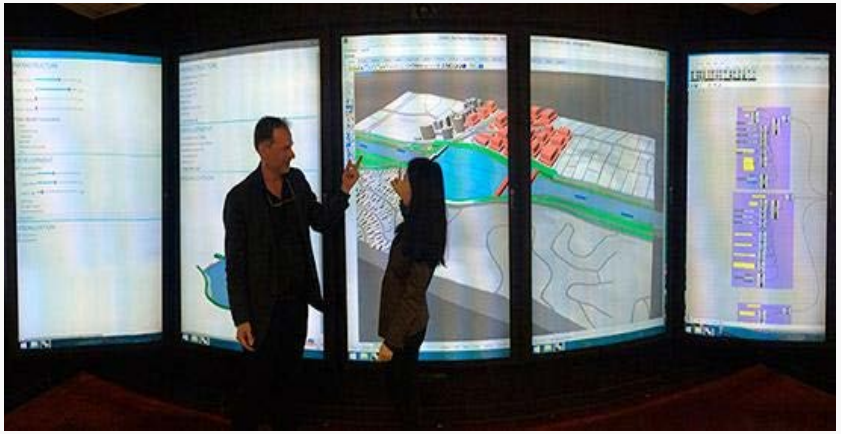
- Methodological application of research through design in Fleixble Housing
- Implementing inclusionary zooming Canada’s market -value housing
- Application of 3D -Conceptual Domain Models to Architecture and Interior Design Research Problems
- Application of 3D -Conceptual Domain Models to Generate User - Centered Design for Interior Design Projects

3. Computational Projects

2.3 Why Computational

Digital technology moved from mass -production to mass - customization

affordability + personalization = Computational Mass - Customization



Context sensitive office, Kyiv
Aranchii Architects

Gaming

First-year project- Purdue
Transformational Living Space
Designed in smartphone

Baylee Florence

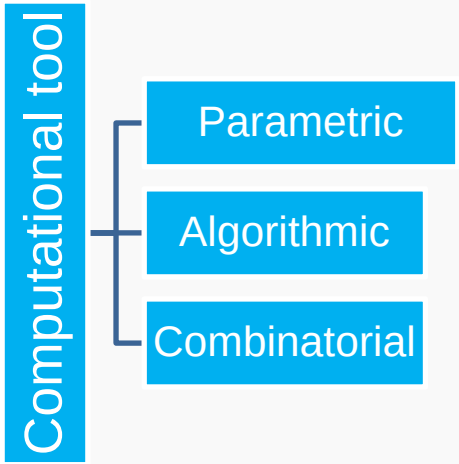
Computational Housing

through Design Research **Computational design + RtD**

Application of RtD as a methodology with parametric design as tool

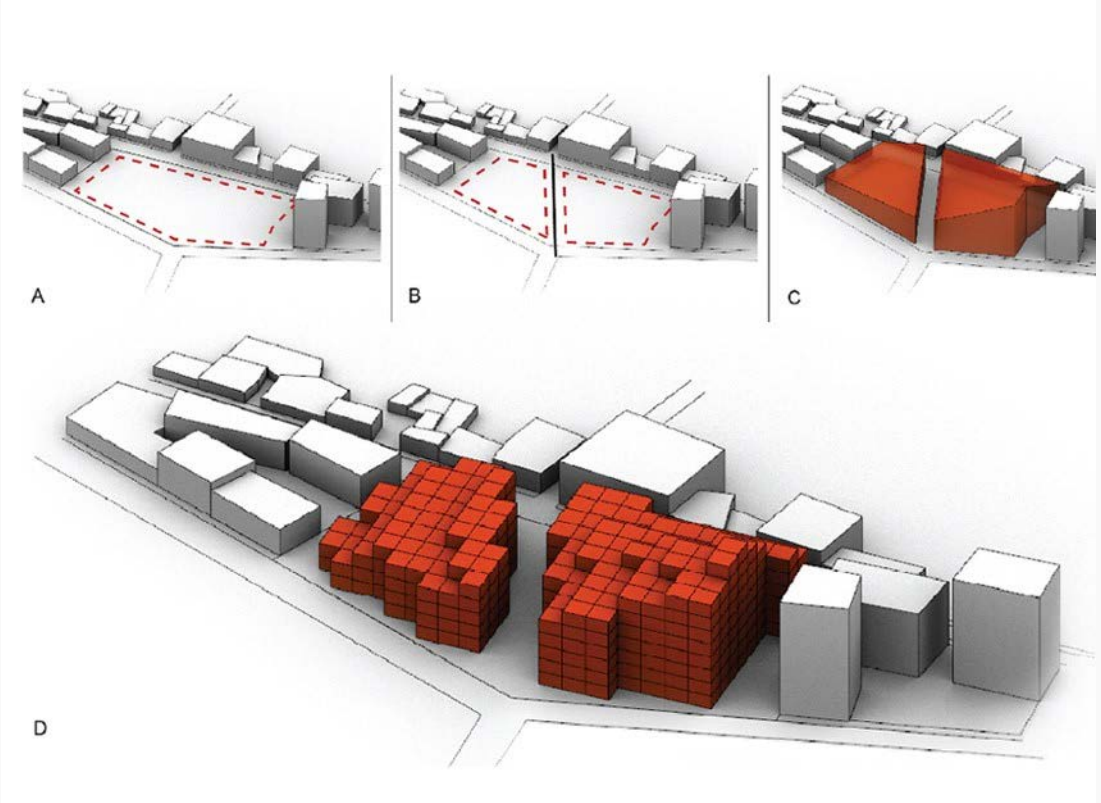
Social Science Themes (Problematic)

Research through design (RtD)- building the criteria



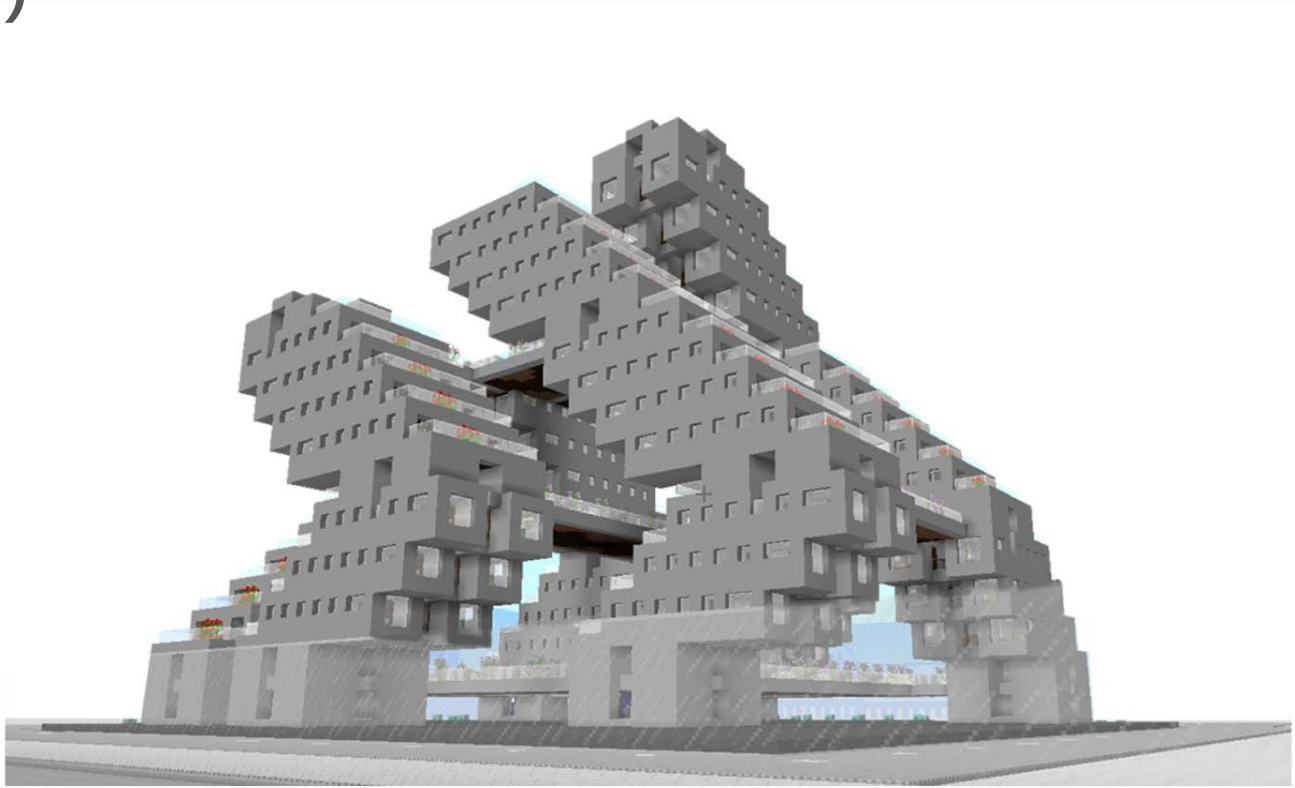
Research through Design Computational Housing Ryerson University)

Mass housing design
In Nairobi.
Based on **research criteria** : urban context, Closed/open space relation, flexibility, daylighting, density, and cost efficiency
Affordability & speed & precision



Research through Design (Computational Housing Ryerson University)

Mass housing design
In Toronto
Based on the **sustainable principles -passive design - natural lighting, ventilation**

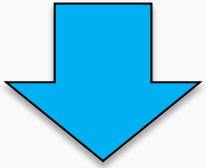


Alex Giovanni

Augmented Computational Studio (Co -Instructor)

Augmented computational design: from representation to interaction to design simulation

Mobile augmented reality (MAR), computational design,



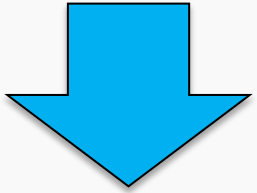
Immersive experience, interactive design, new design interfaces

Computational Design mmersive Design

Augmented Computational Studio (Co -Instructor)

Augmented computational design: from representation to interaction to design simulation

3D modeling Rhino
Grasshopper and visual scripting basics



towards immersive

The Basics of Unity or Blender
The 3D scan software Meshroom applying into smart phone

4. Future plans

Research Lab

ISCO, Immersive Student Collaboratory Lab

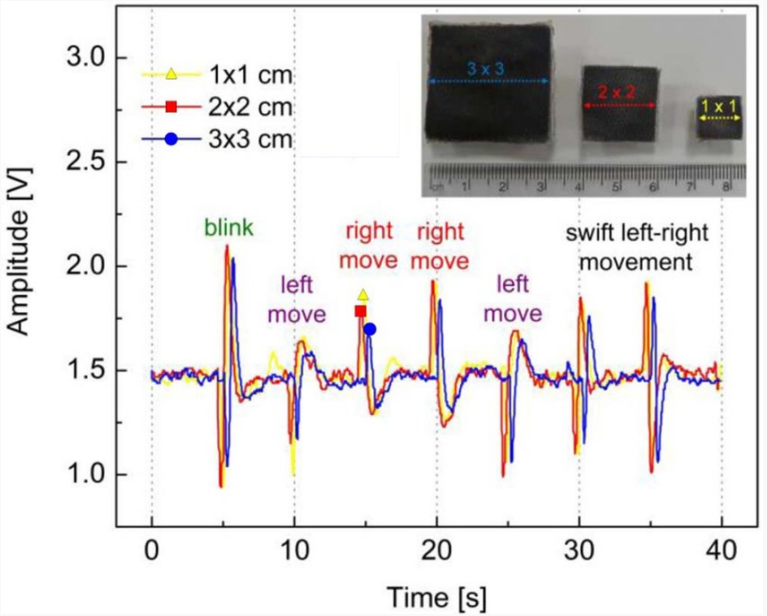
- Integrating health and design research into design practice and education to make informed decisions about building design such that it results in improved health outcomes .
- Physical healthcare environments and clinical outcomes
- Family and staff satisfaction

Visualization Observation + Movement Tracking + Neurophysiology

Immersive Experience

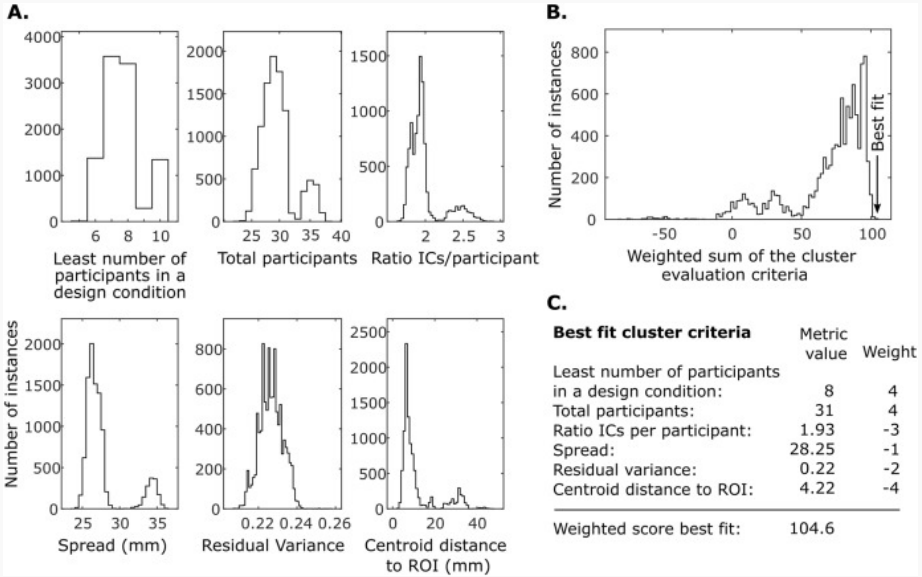
ISCO, Immersive Student Collaboratory Lab

- Physical model experiment solution + Observation measurements = Improved health outcome



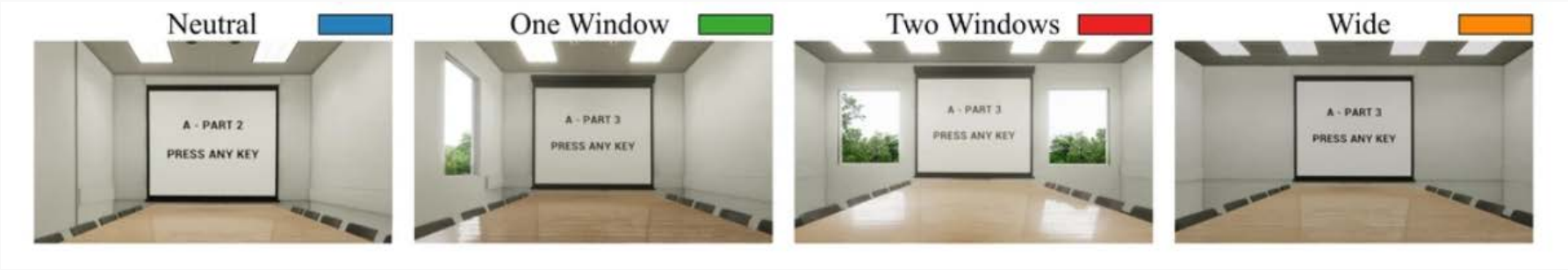
ISCO, Immersive Student Collaboratory Lab

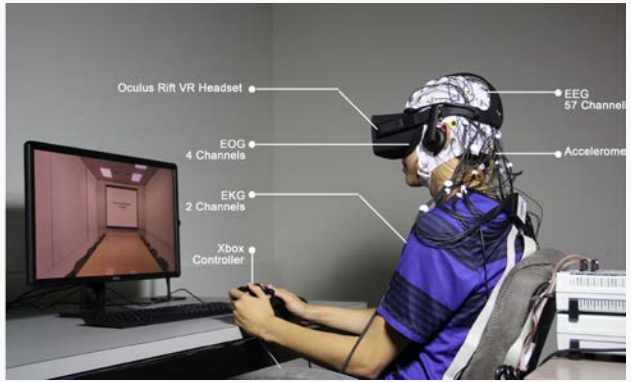
- Virtual model experiment solution + Observation measurements = Improved health outcome



ISCO, Immersive Student Collaboratory Lab

- Virtual model experiment simulation + Observation measurements = Condition -based physical





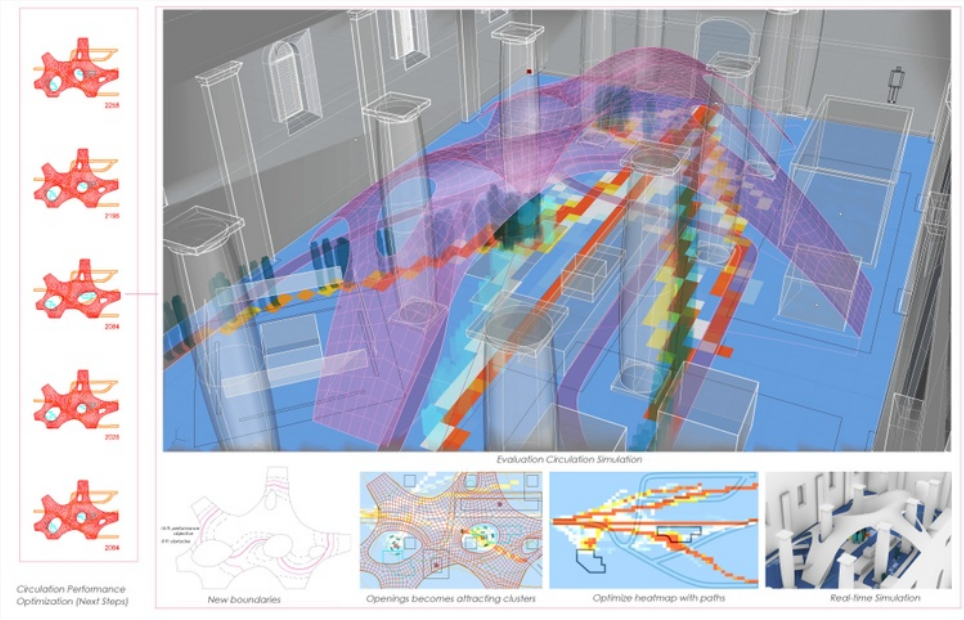
DAIL - Cornell University

ISCO, Immersive Student Collaboratory Lab

- Metaverse environment projects through Augmented Reality simulation

Housing Lab - Collaborating with ISCO and I -CAVE

- Housing research with respect to well -being
- Simulating of well -being through ISCO and ICAVE environment
- Computational analysis of privacy, spatial comfort, natural light, adaptability, etc.



Thank You