

CIL CITY
INTELLIGENCE
LAB

Integrated Urban Planning through AI

Making environmental simulations accessible with InFraReD

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Austrian Institute of Technology

Digital Resilient Cities

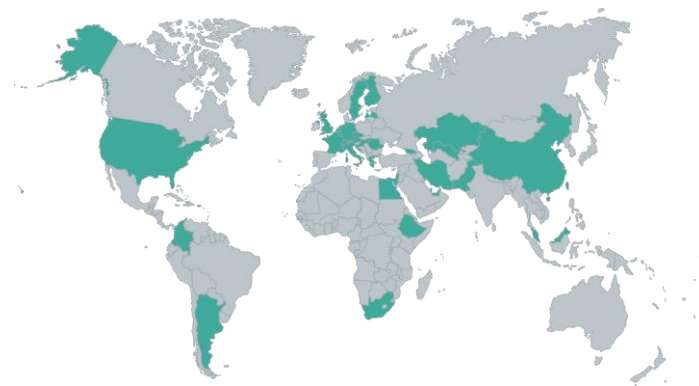
AIT Austrian Institute of Technology



AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

Research & Technology for the Industry,
Scientific Community & Public Authorities

Our mission is to drive **urban innovation**.



1,300+

overall AIT Employees

50+

Digital Resilient Cities Experts

7 Center

With different Research Focus

12+

Countries with Projects

OUR EXPERTISE



Climate Resilience

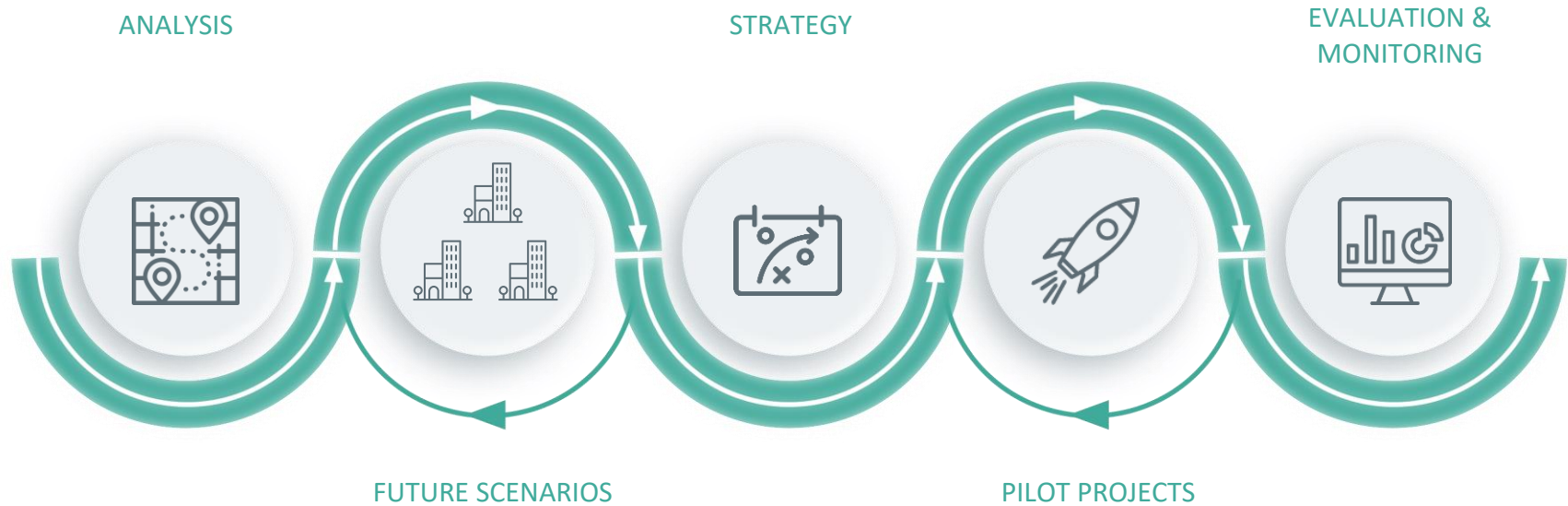


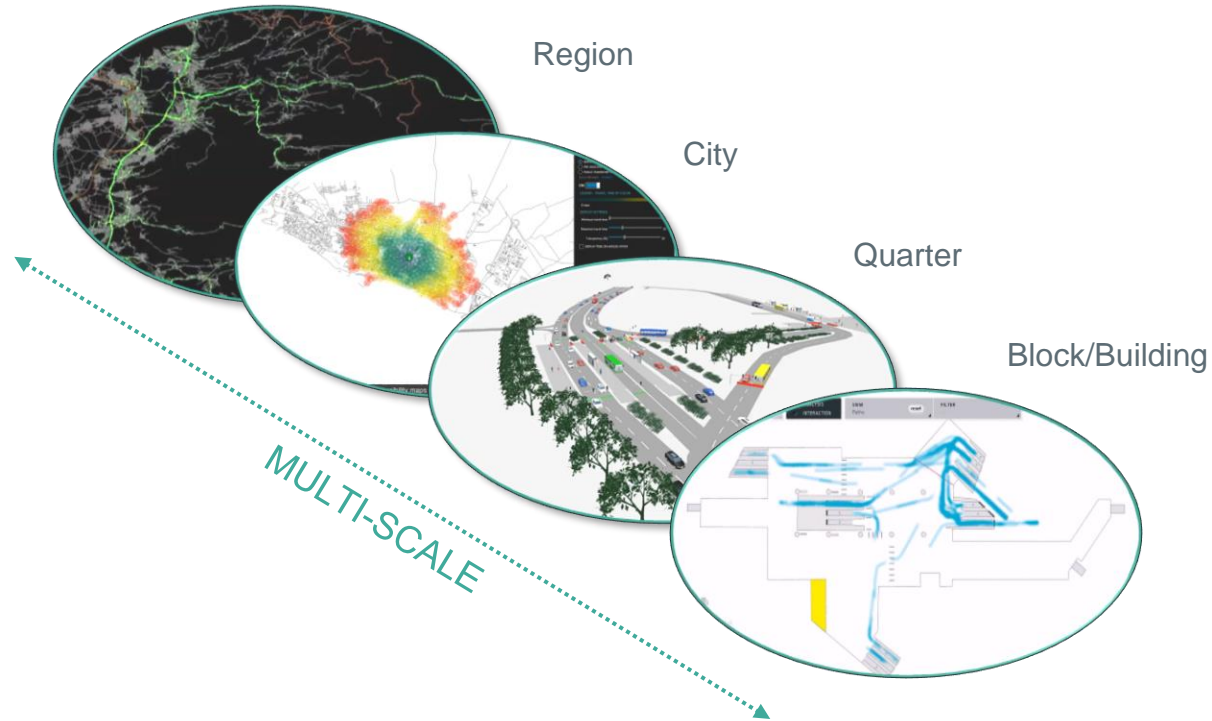
Carbon-neutrality

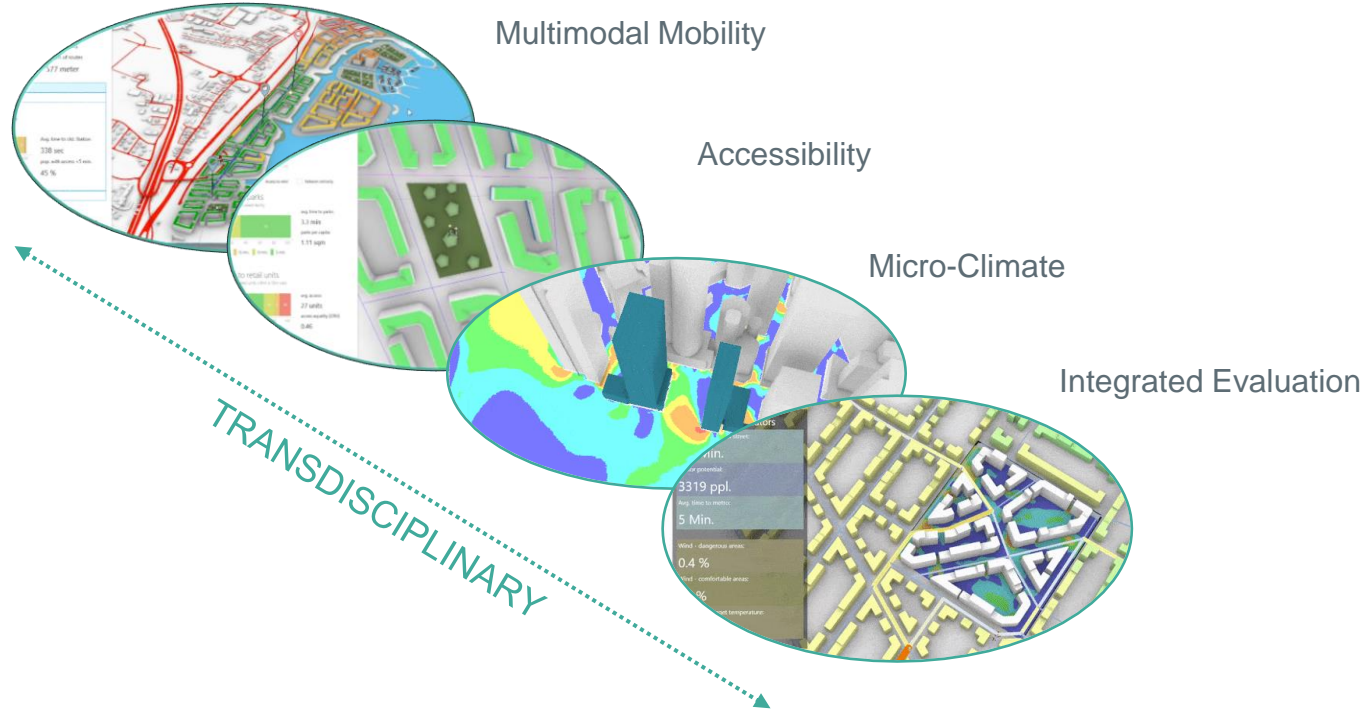


Integrated Urban
Systems

URBAN DEVELOPMENT INNOVATION



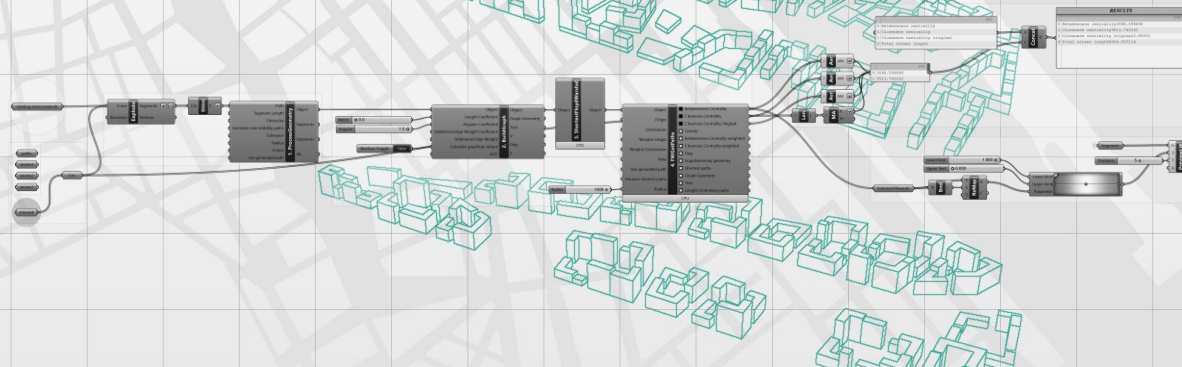






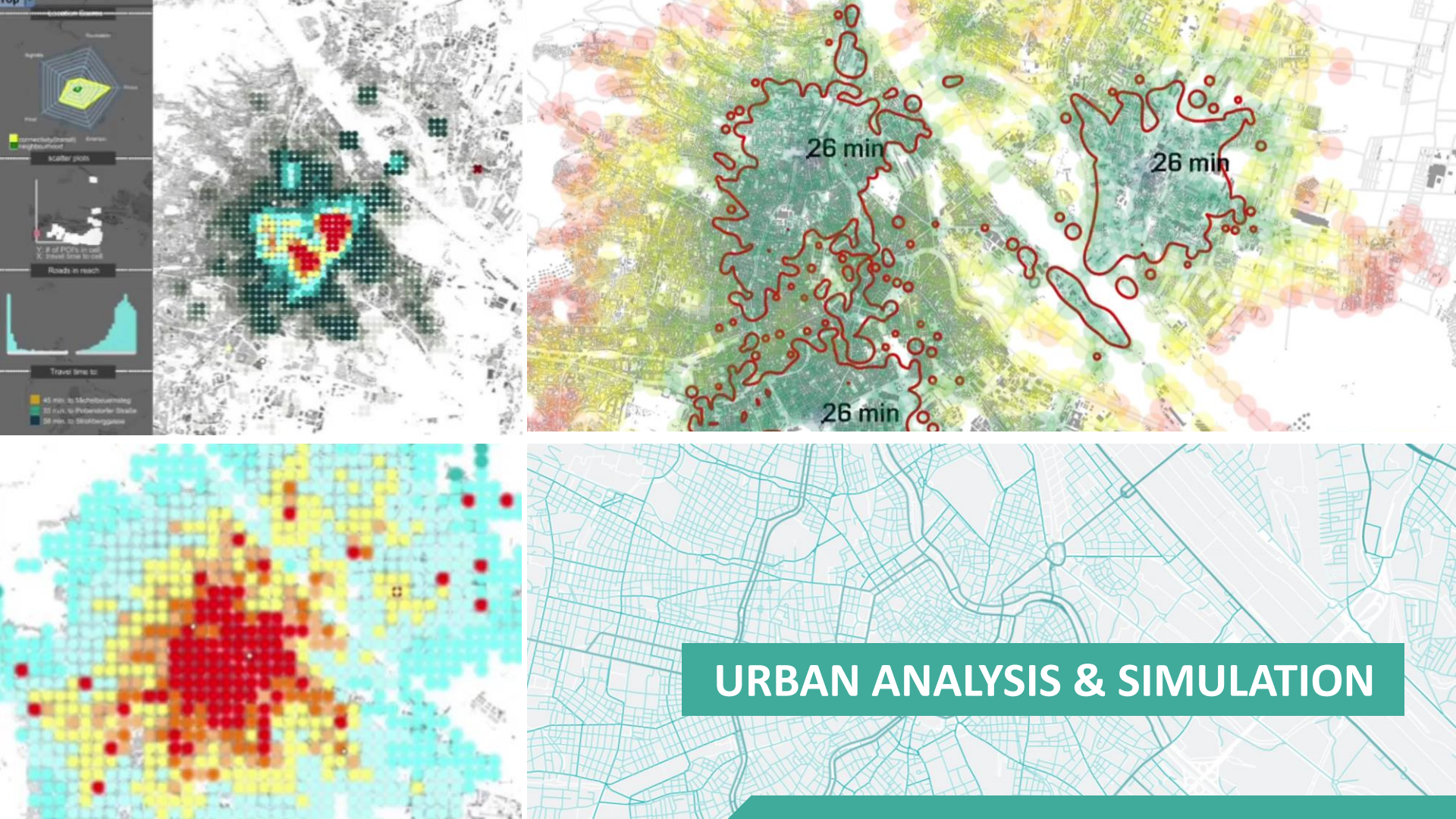
CITY INTELLIGENCE LAB

An interactive digital platform for urban planning
Fostering intelligent solutions for co-creation



COMPUTATIONAL URBAN DESIGN







- ☒ Higher LOD
- ☒ Shadow study
- ☐ SpaceSyntax
- ☐ Comments
- [Need Help?](#)

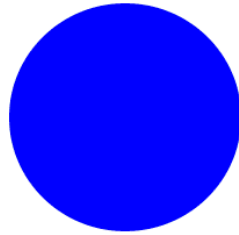
INTERACTIVE INTERFACES

500m



MIXED REALITY

Computational analysis and generation of
street networks, plots and buildings



DeCodingSpaces Toolbox

for Grasshopper

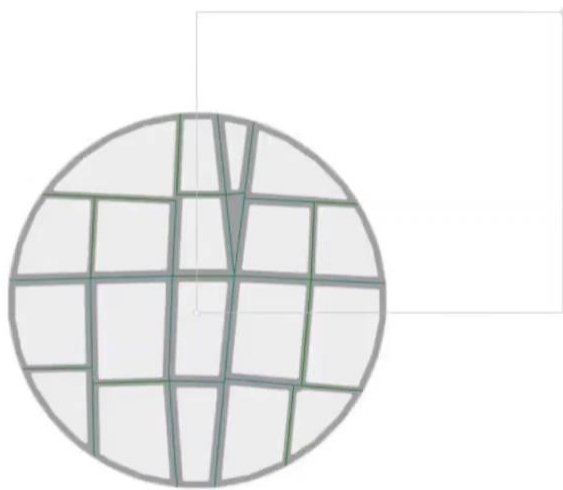


Bauhaus-
Universität
Weimar



ETH

(FCL) FUTURE
CITIES
LABORATORY

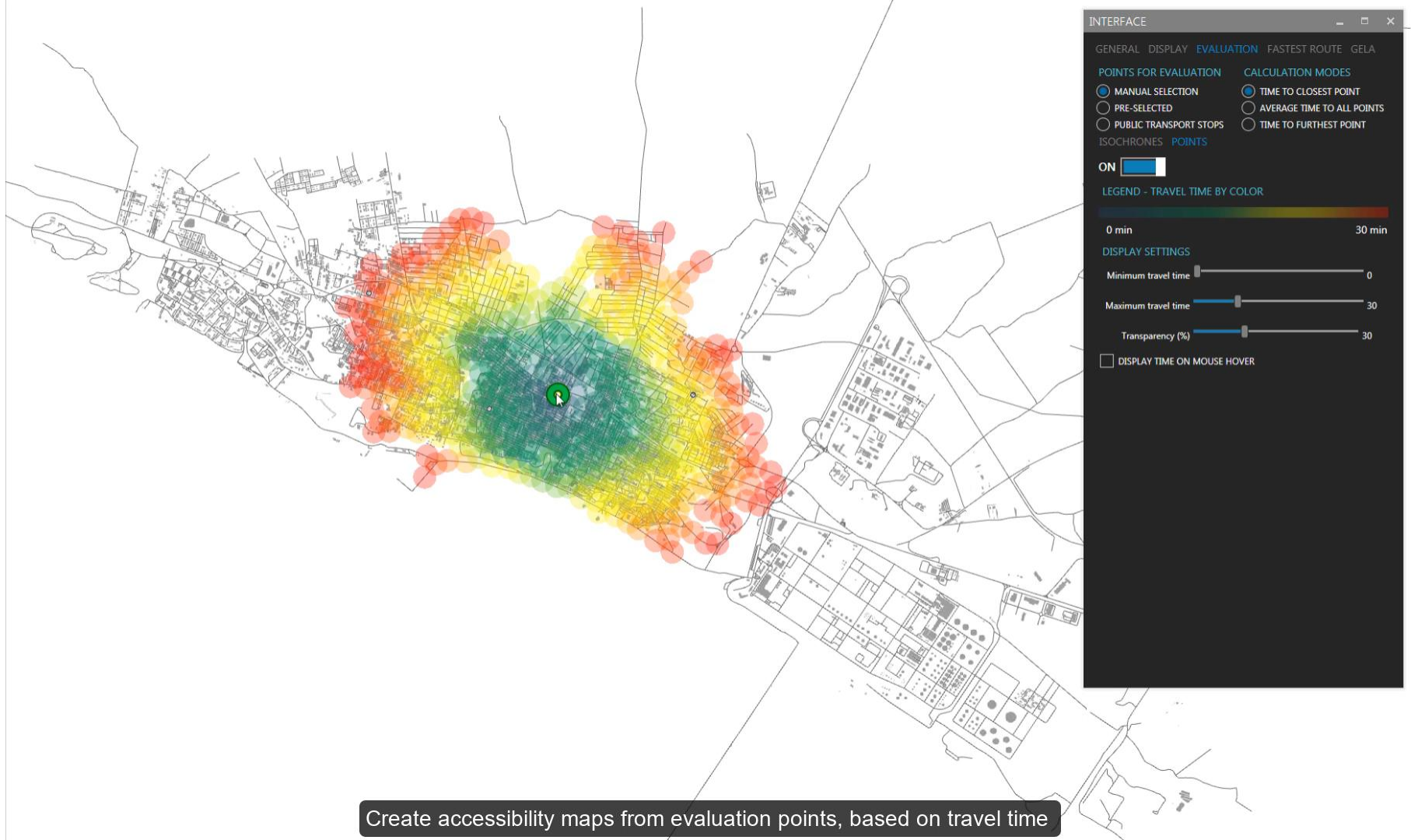


Boundary

Total GFA

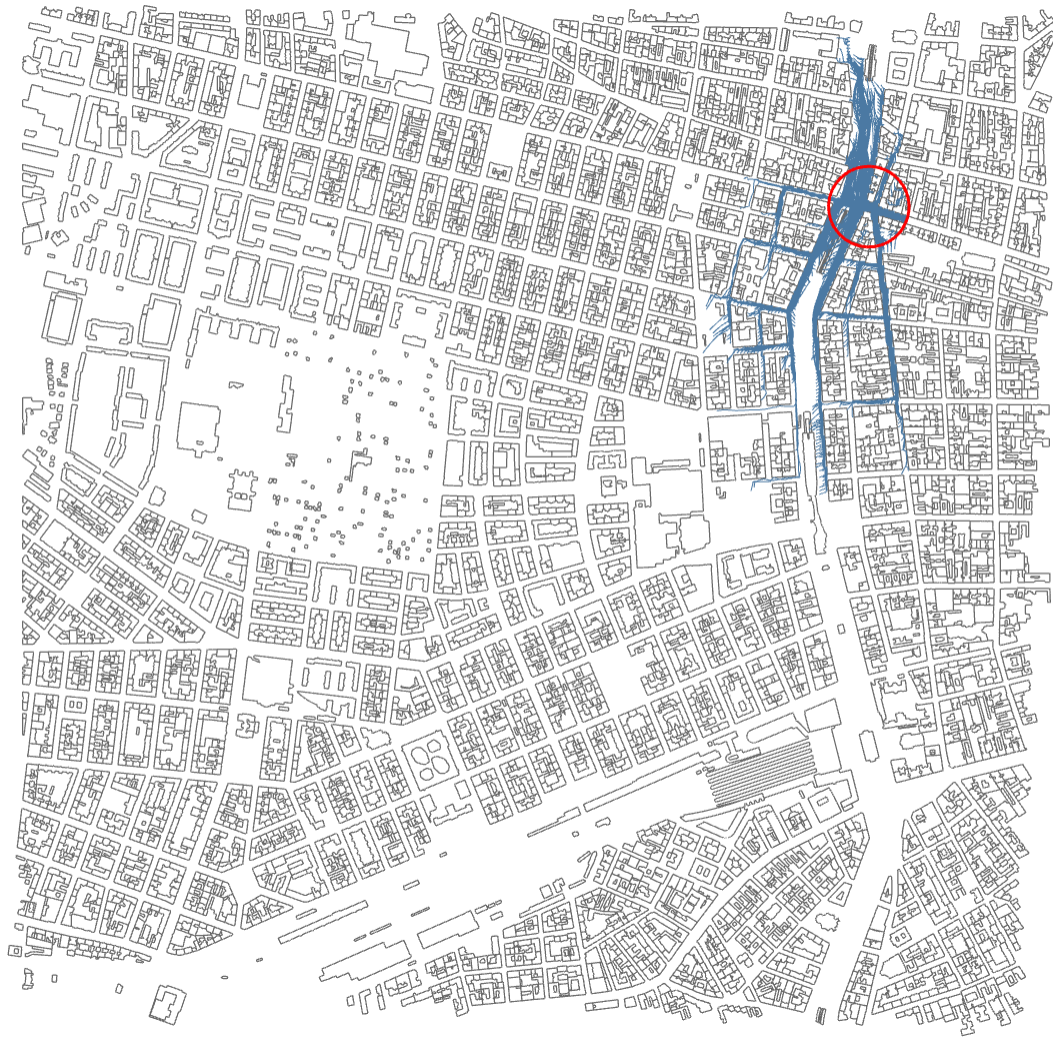
298678 m²





Create accessibility maps from evaluation points, based on travel time







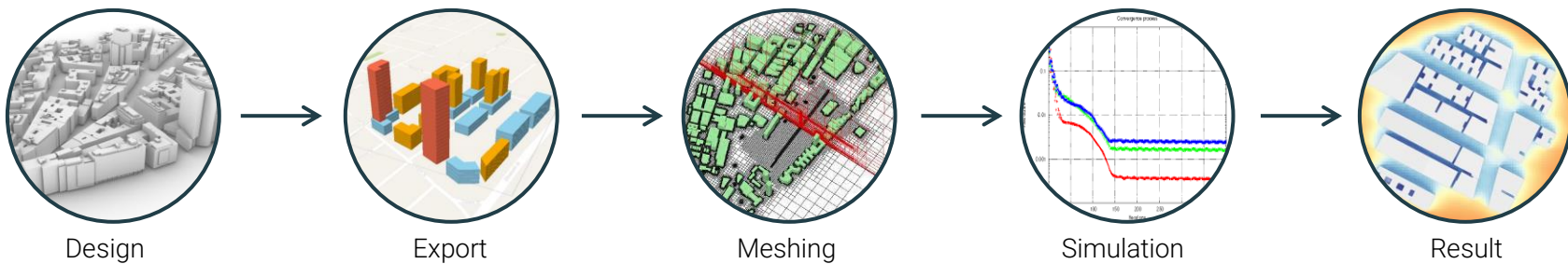
Integrated Urban Planning through AI

Real-time, accessible simulations

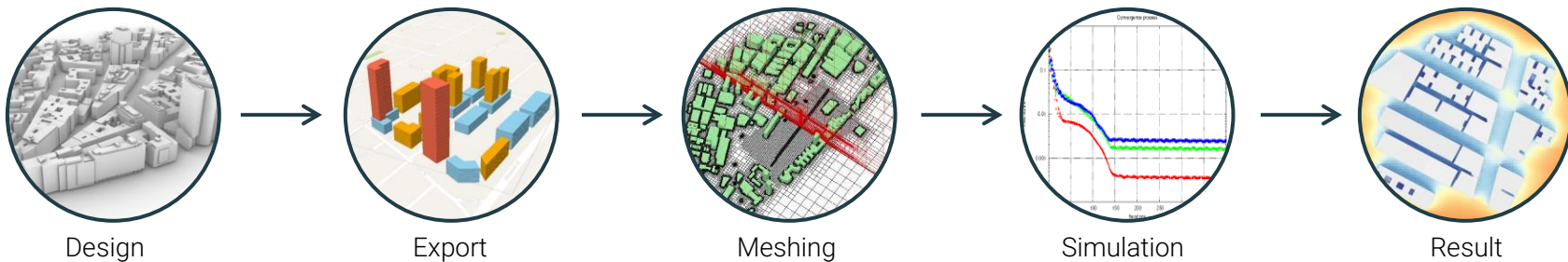


InFraReD

Intelligent Framework for Resilient Design

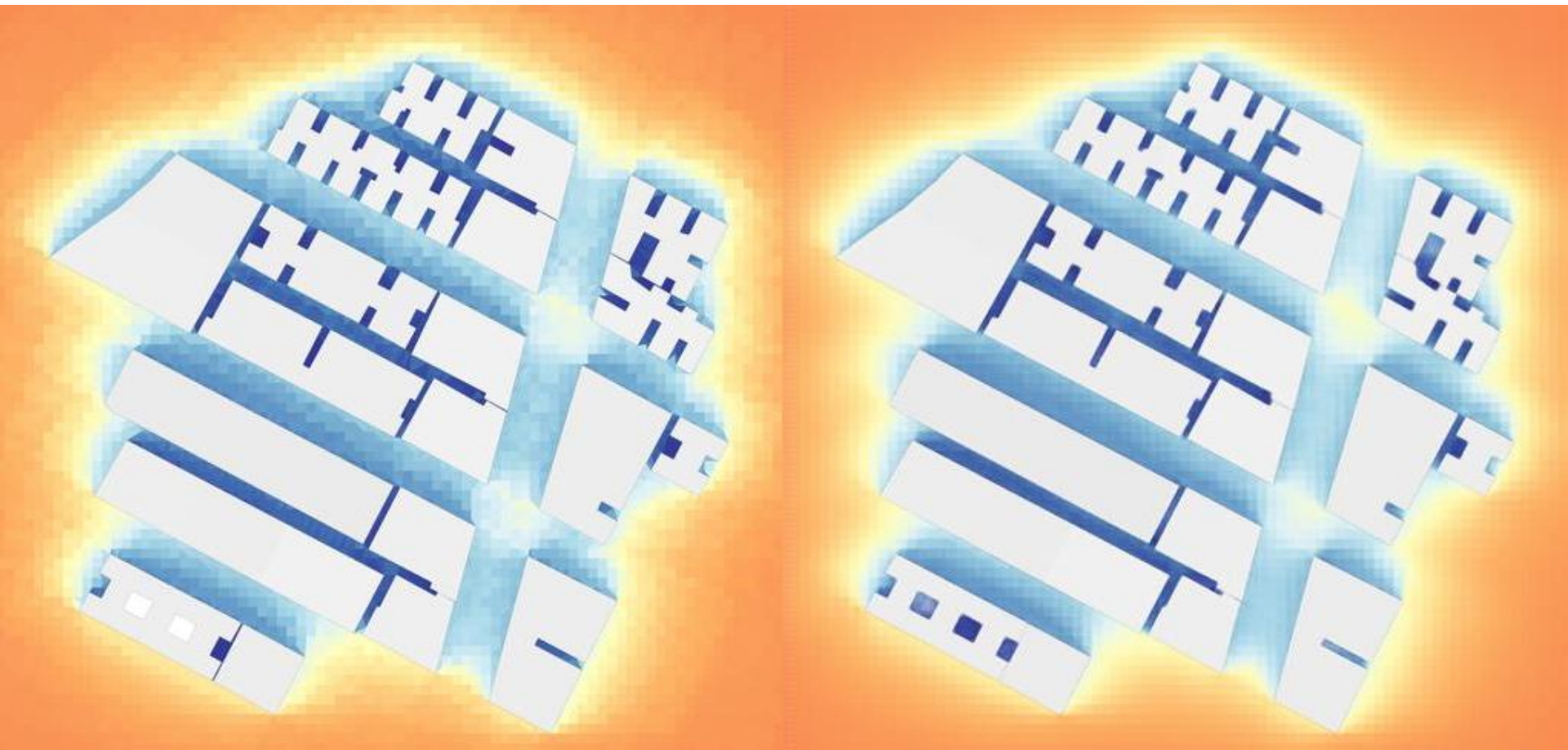


Wind Comfort Simulation: 1 expert, 2 days (prepare), 24 hours (run)



Wind Comfort Simulation: 1 expert, 2 days (prepare), 24 hours (run)







Karte verkleinern



Karte

Karte s/w

Luftbild

Adressen



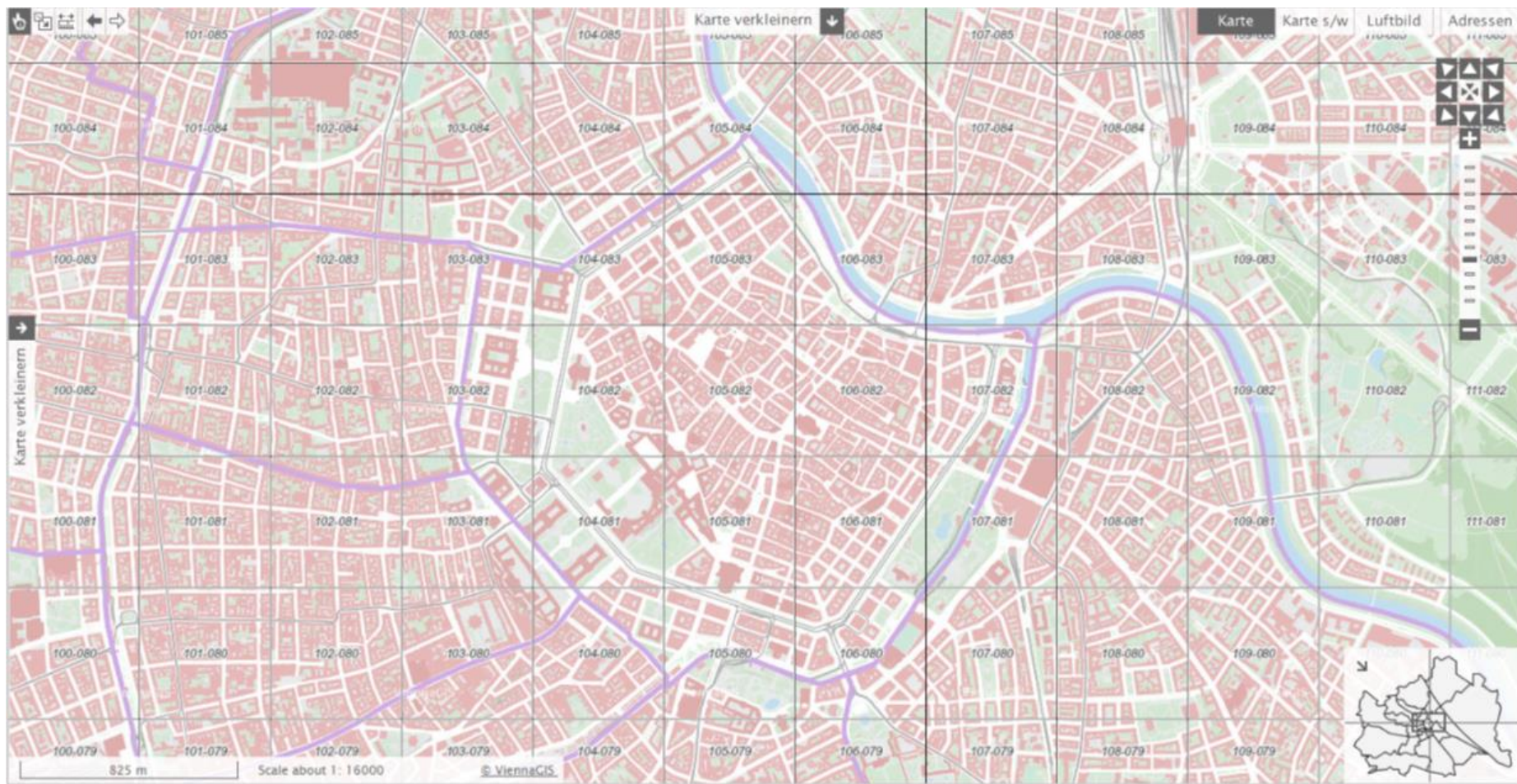
Karte verkleinern

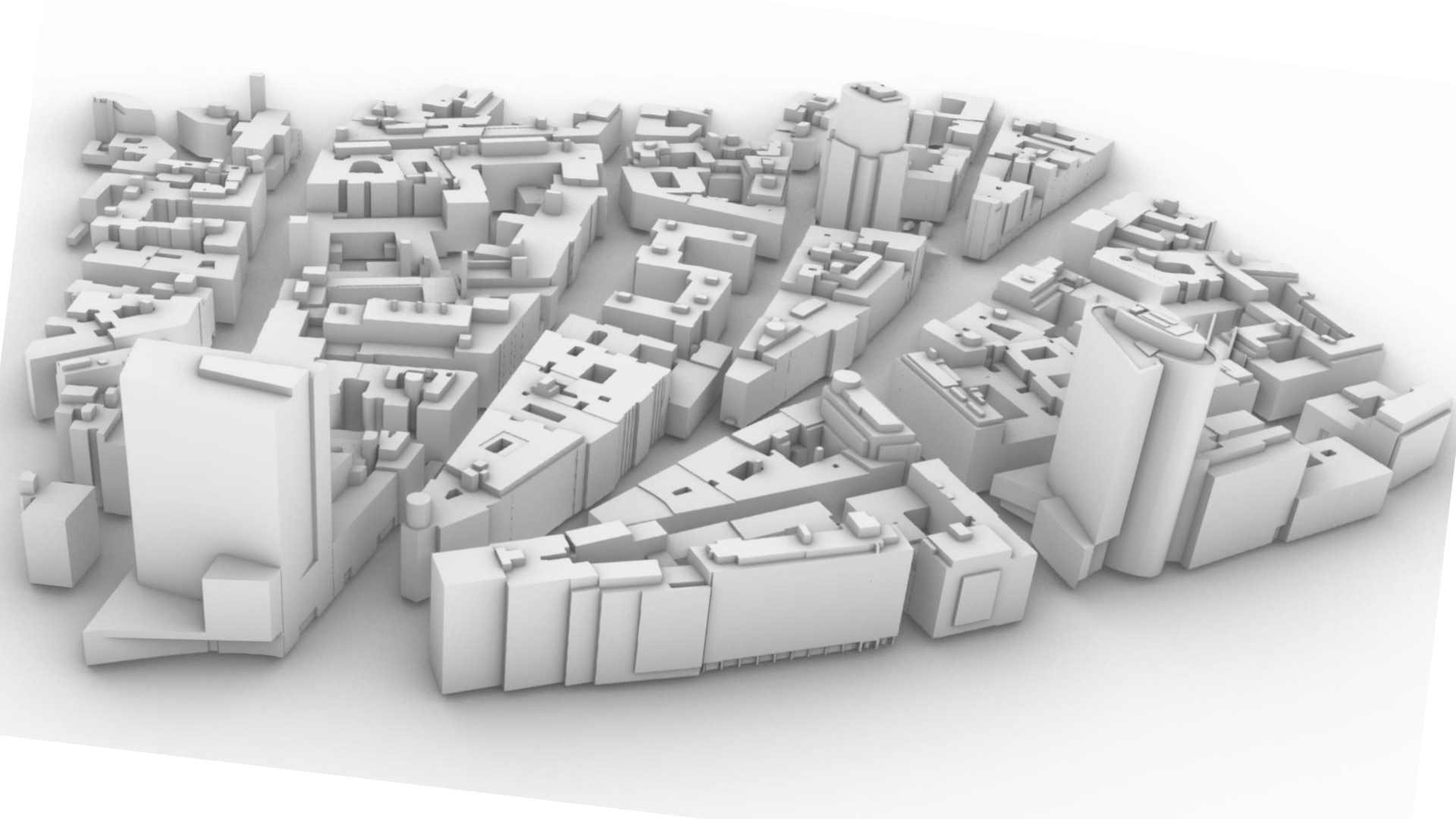
6.4 km

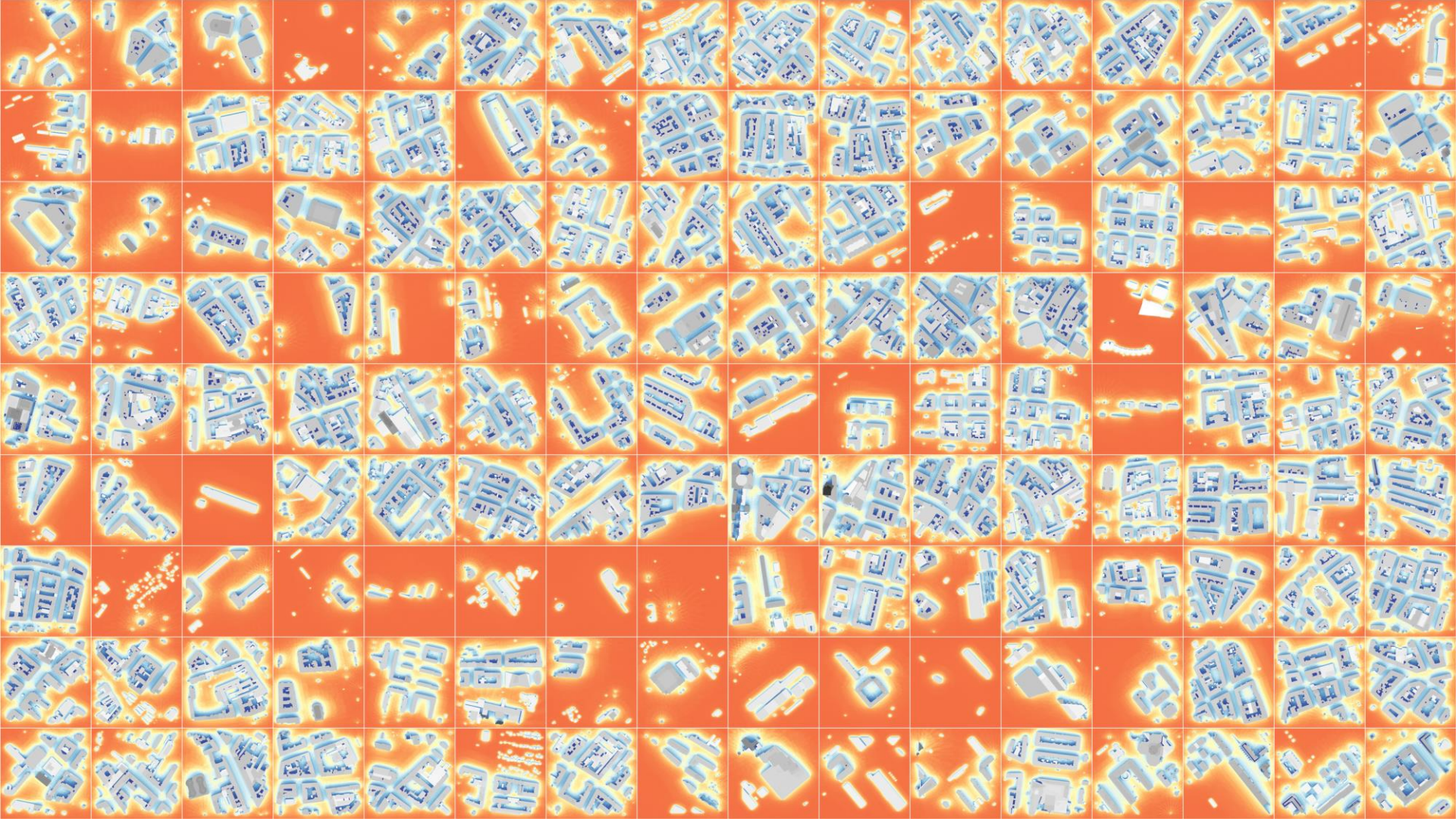
Scale approx. 1: 125000

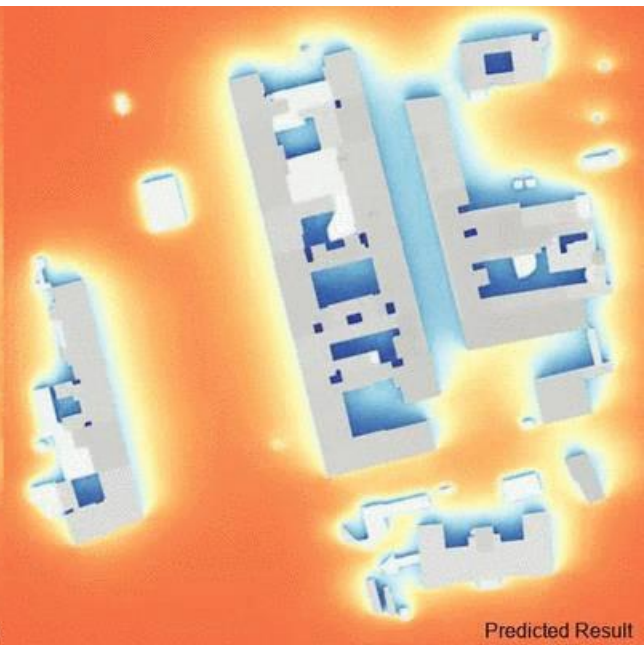
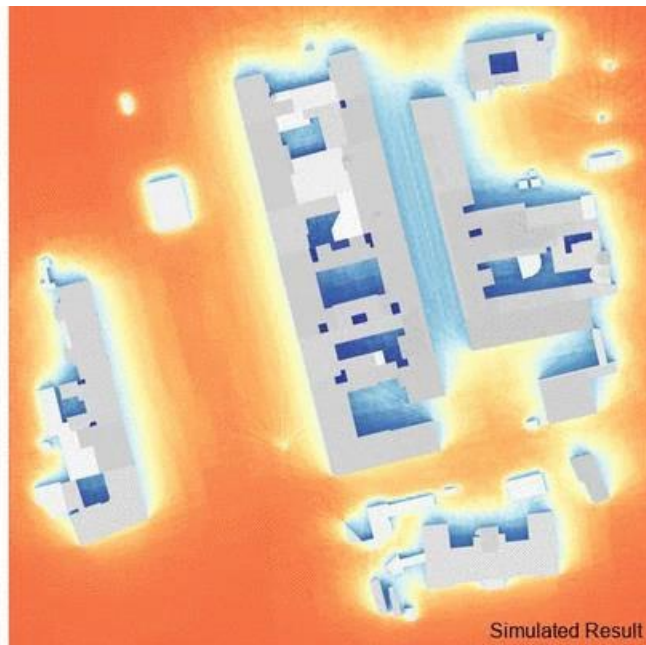
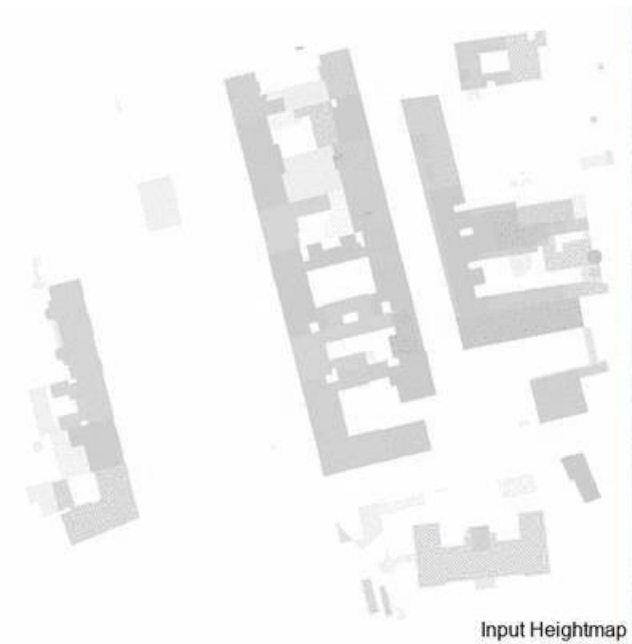
© ViennaGIS

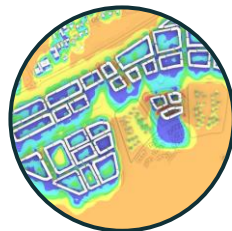




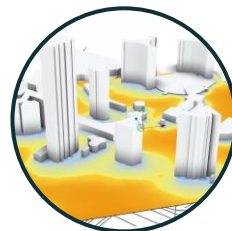








Wind



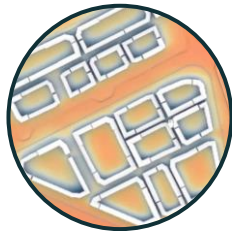
Radiation



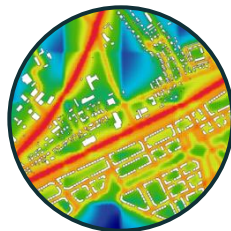
Traffic



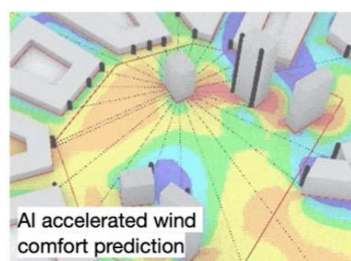
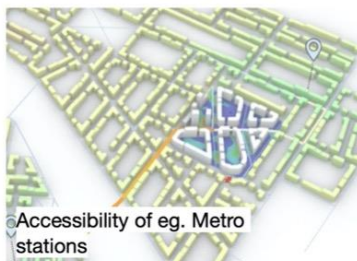
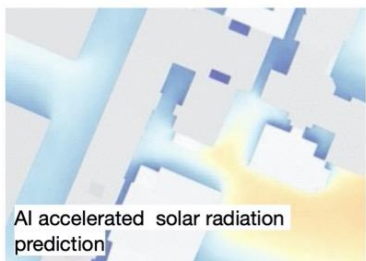
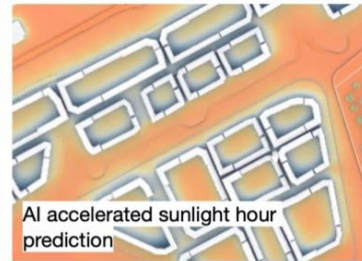
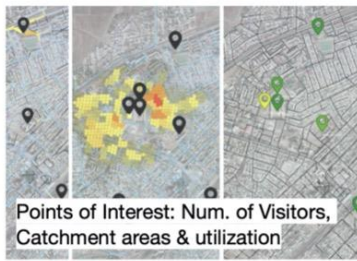
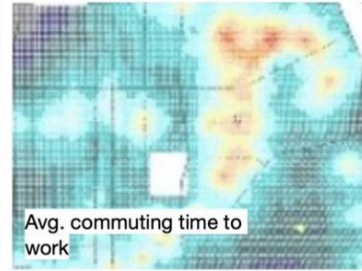
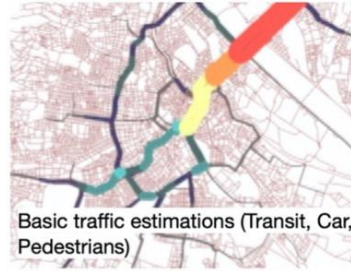
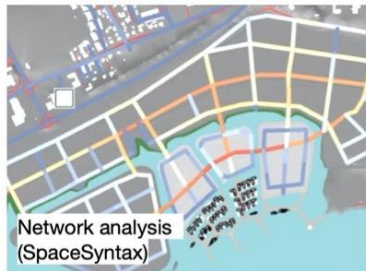
Rain



Heat



Noise



The background of the slide is a detailed, light-colored map of a city street grid, overlaid on a dark teal background. The map shows a complex network of streets, including a prominent river or canal winding through the center. The text is centered within a dark rectangular box.

InFraReD

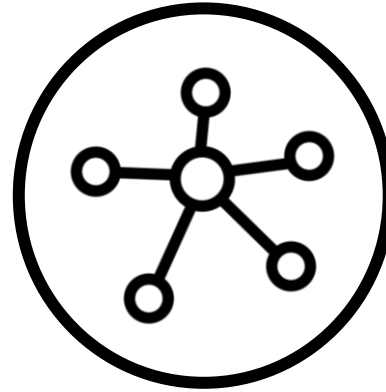
Intelligent Framework for Resilient Design

CIL InFraReD

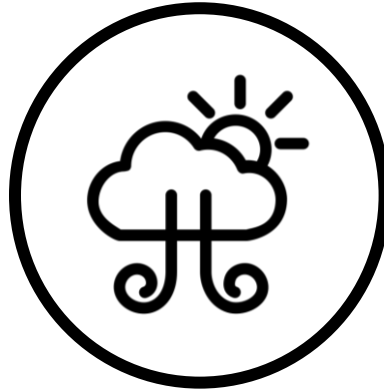
Generation + Simulation + Prediction



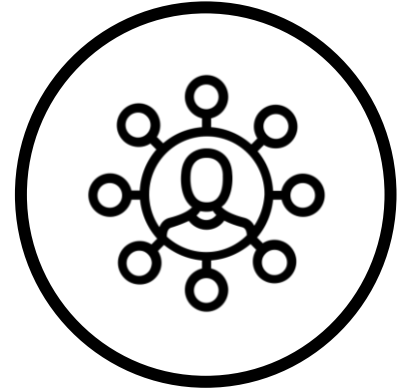
DESIGN



ACCESSIBILITY

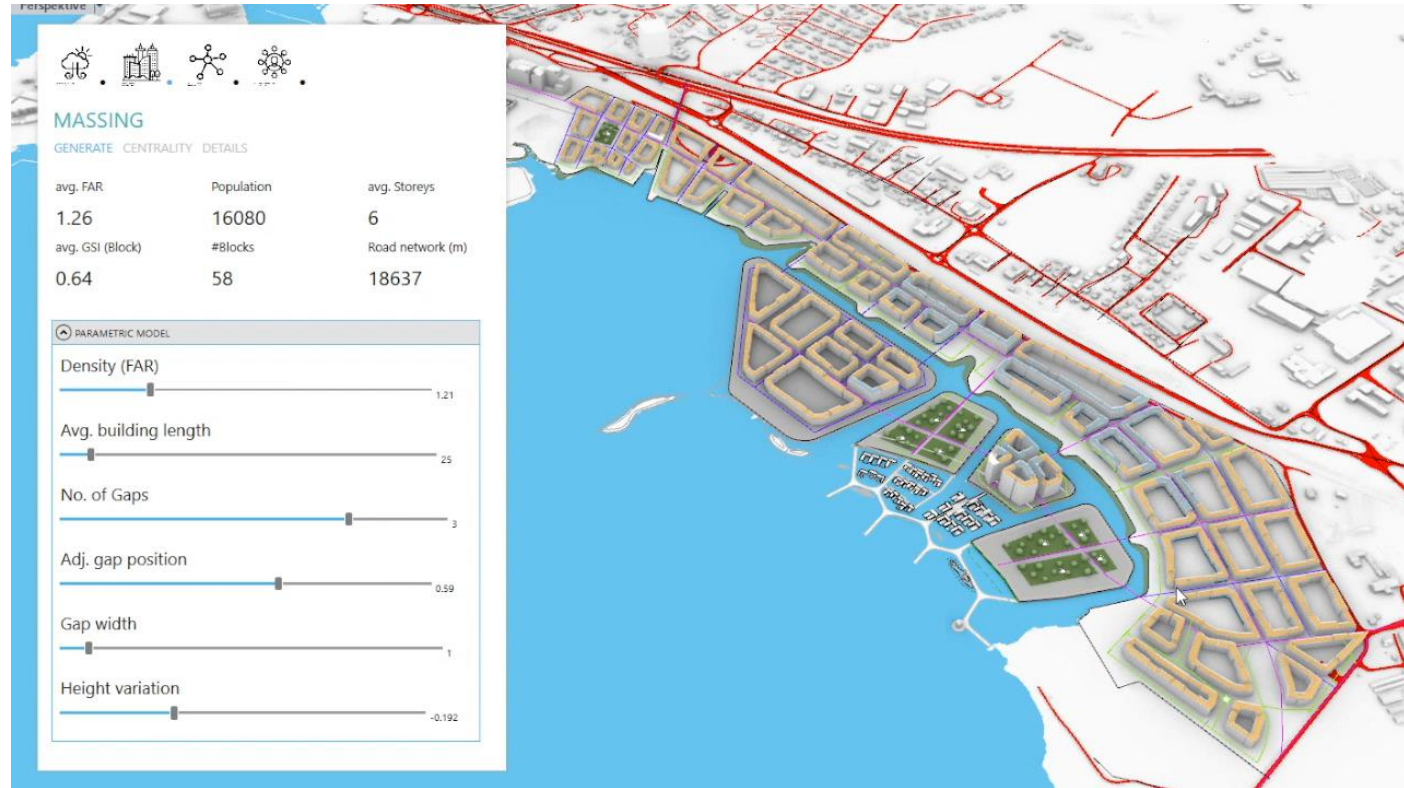


MICROCLIMATE



ENVIRONMENT

Design



Climate

Microclimate studies





CLIMATE RESILIENCE

[Stop ML Engine](#)

[Wind Comfort](#) [Solar Radiation](#) [Sunlight Hours](#)

Options

Visualisation Type: ☐ Wind Flow ☒ Wind Comfort ☐ Unsafe Areas

Wind Directions: -180 180 0

Wind Speed: ☒ Storm Day ☐ Average Day ☐ Custom

Legend



Chart

Wind comfort on a storm day.



■ sitting long ■ sitting short ■ walking slow ■ walking fast
■ uncomfortable ■ dangerous

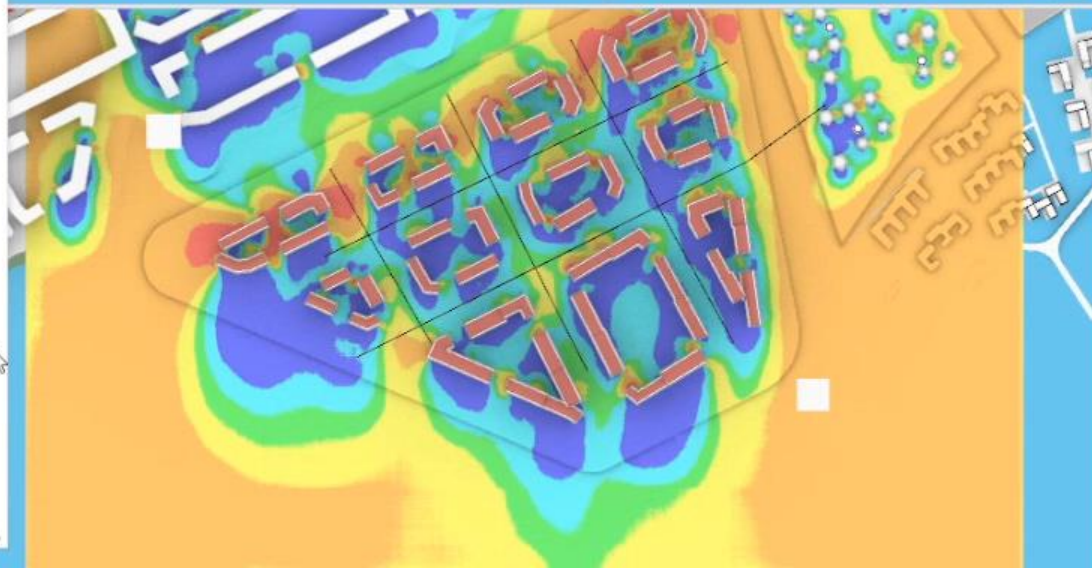
[Open Report](#)

% of safe areas:

56.3%

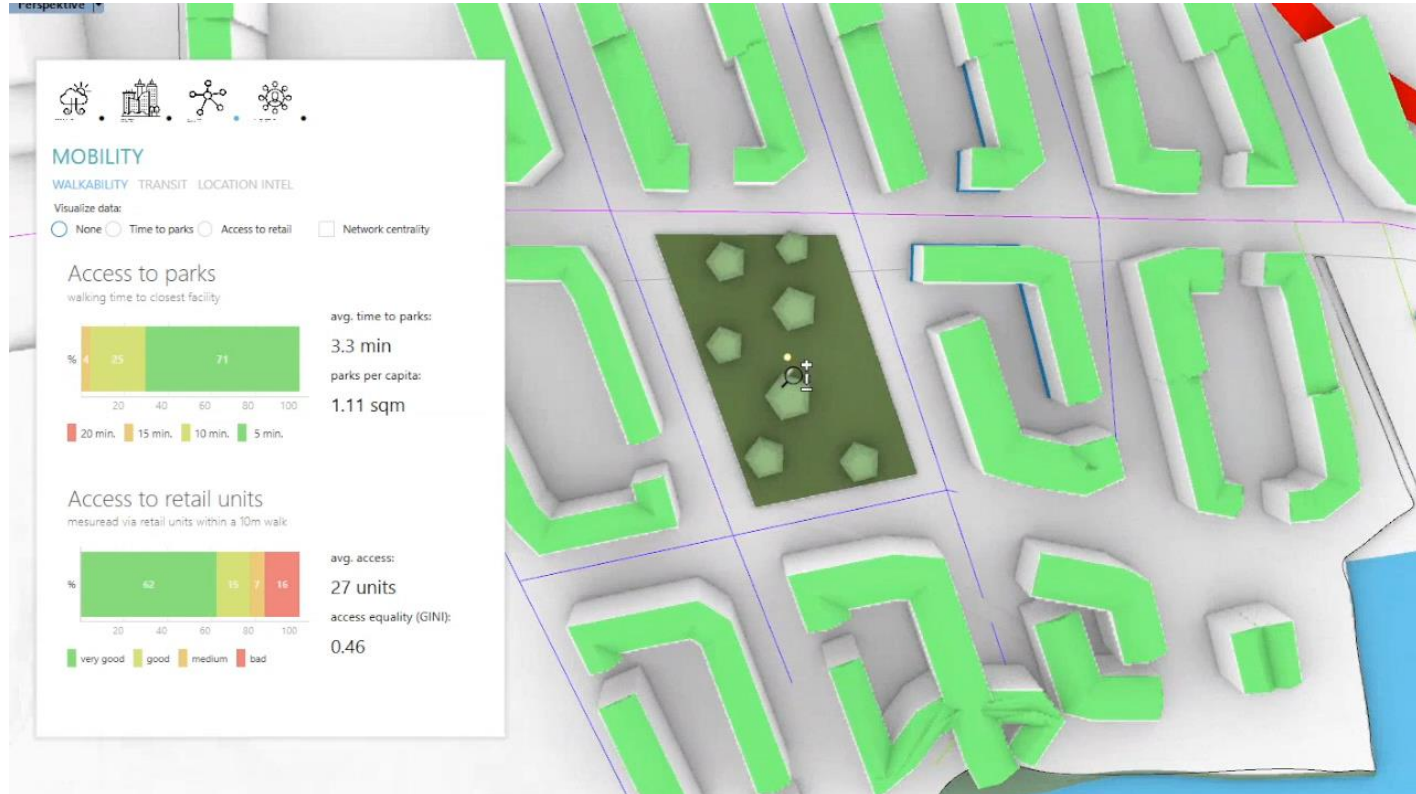
% of unsafe areas:

43.7%



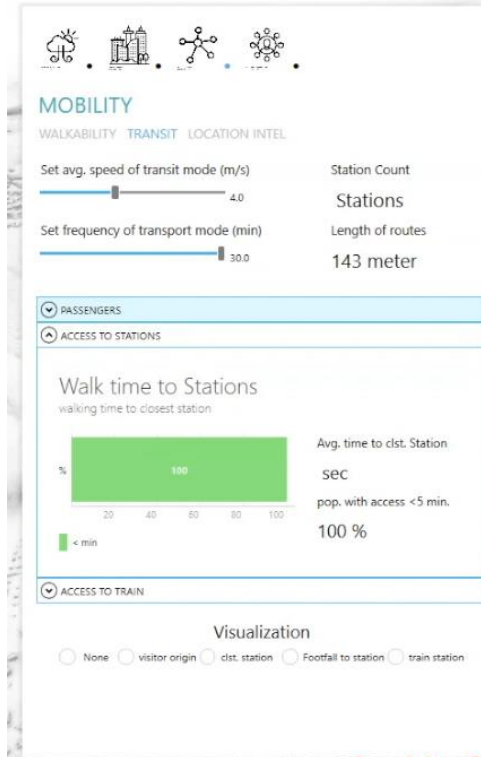
Accessibility

Walkability



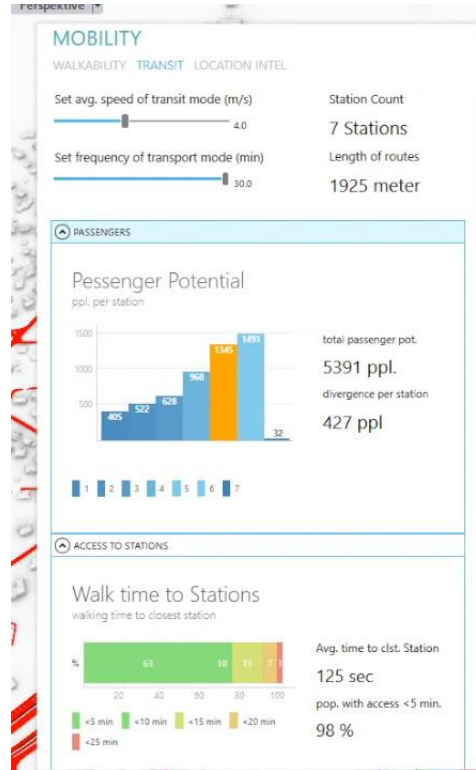
Accessibility

Public Transportation



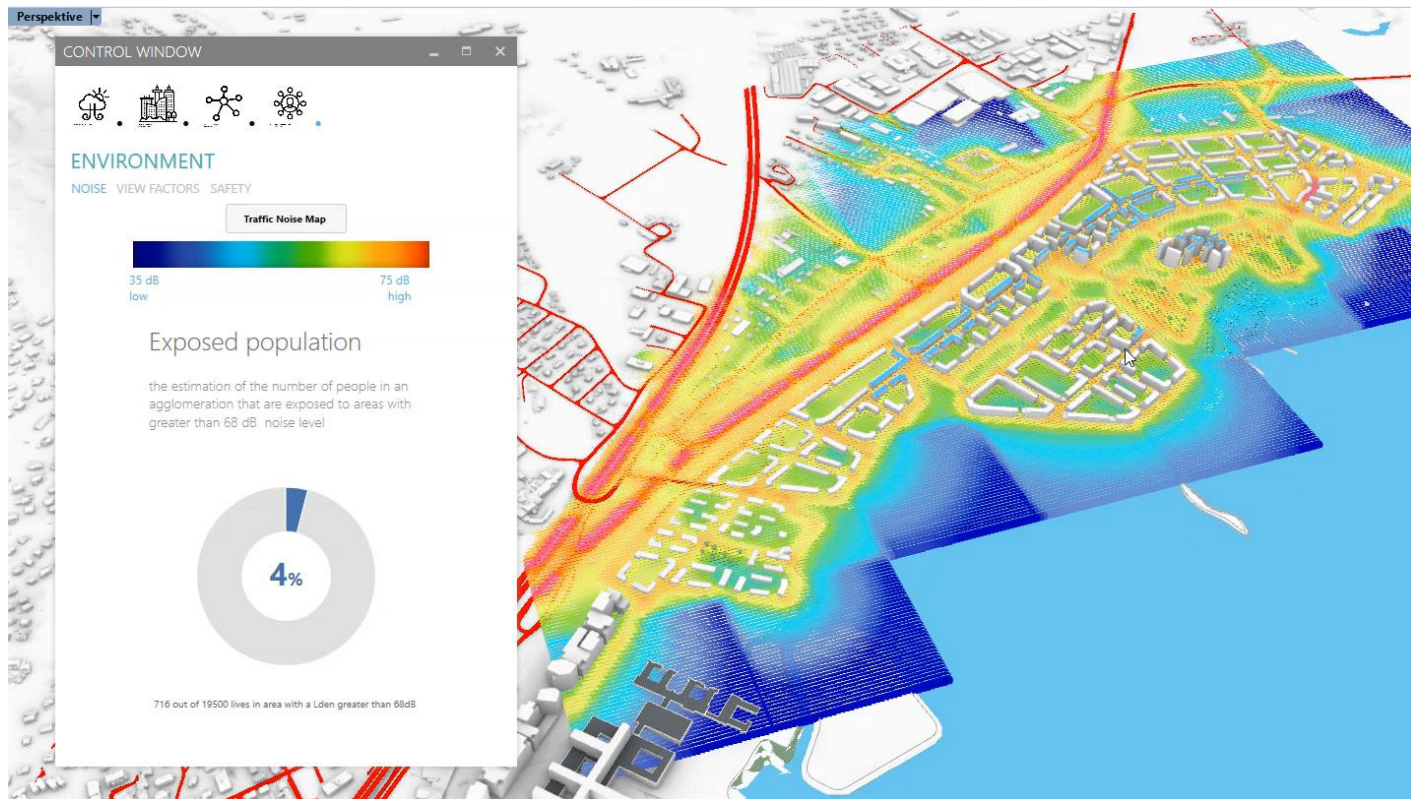
Accessibility

Public Transportation



Environment

Noise Pollution



Integrated Urban Planning through AI

Accessible optimization and co-creation

Performance indicators

Avg. time to central street:

9.4 Min.

Visitor potential:

3154 ppl.

Avg. time to metro:

5 Min.

Wind - dangerous areas:

0.4 %

Wind - comfortable areas:

87.8 %

Avg. diff. to target temperature:

1.88C°

