

go2 change

THE ISLAND MISTIFIERS

Island Group

Final Presentation, April 25, 2026

Introduction to the proposal with overall concept and key objectives



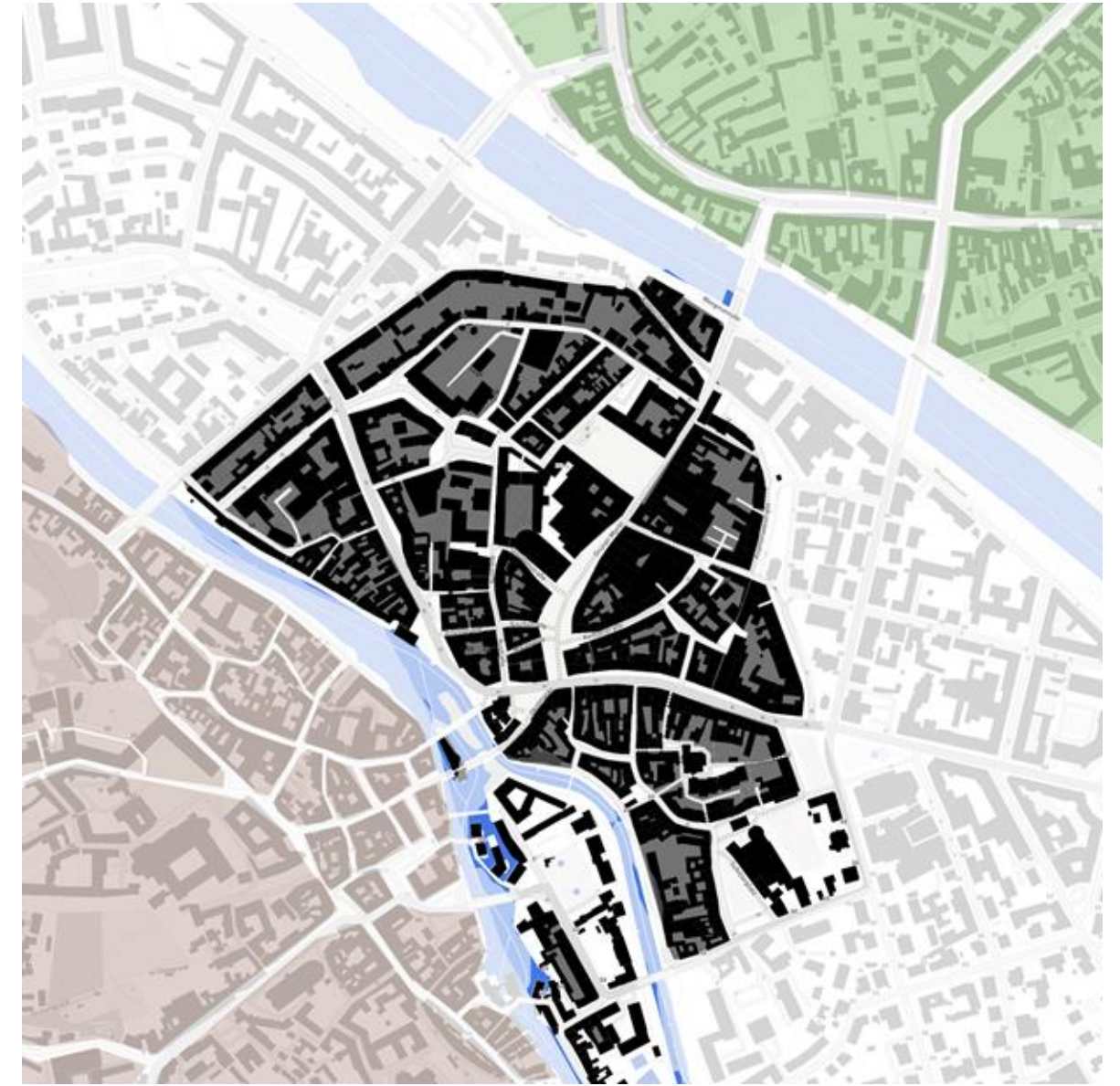
Introduction to case area



Island area urban fabric

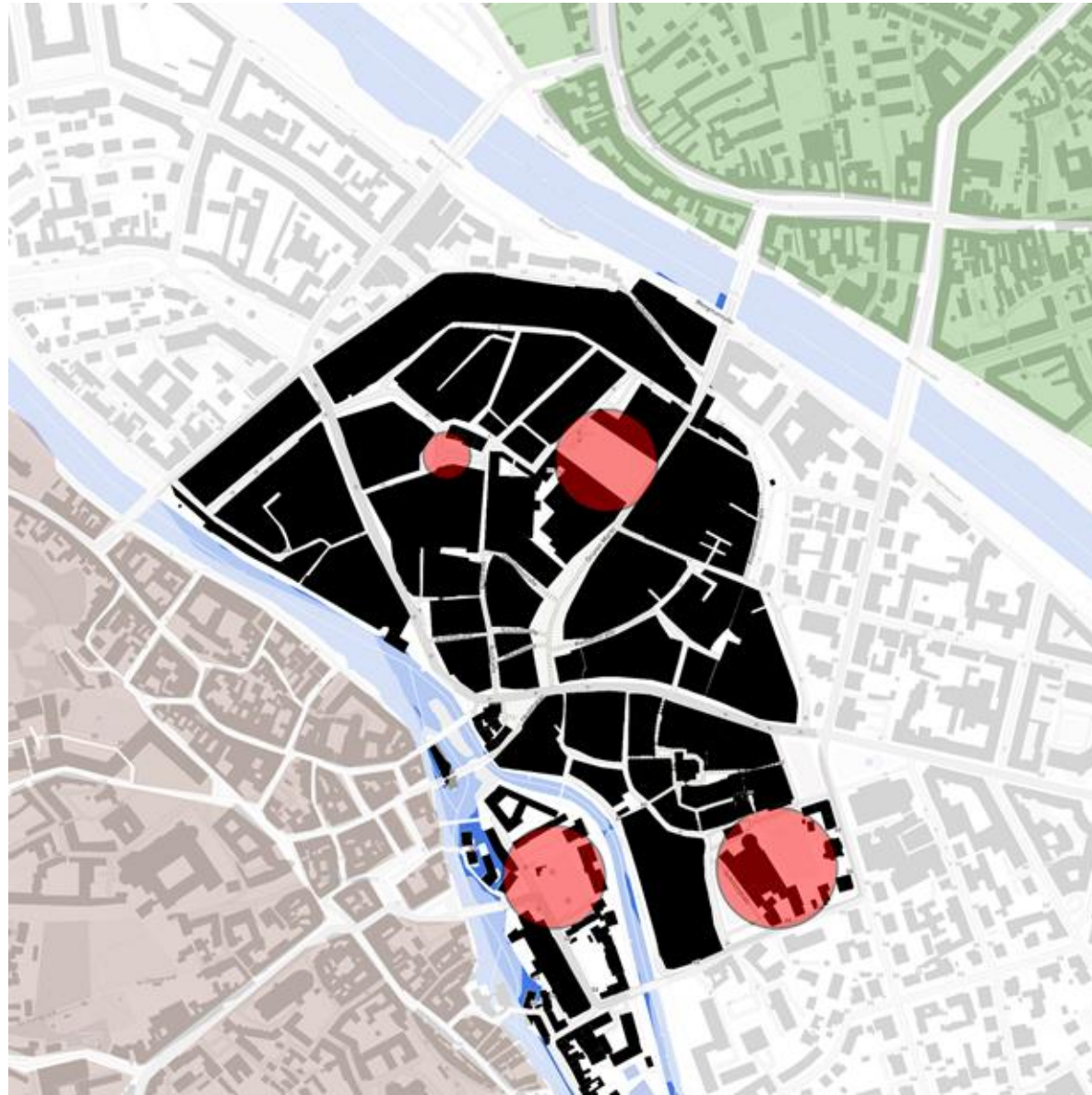


Free Spaces within urban fabric

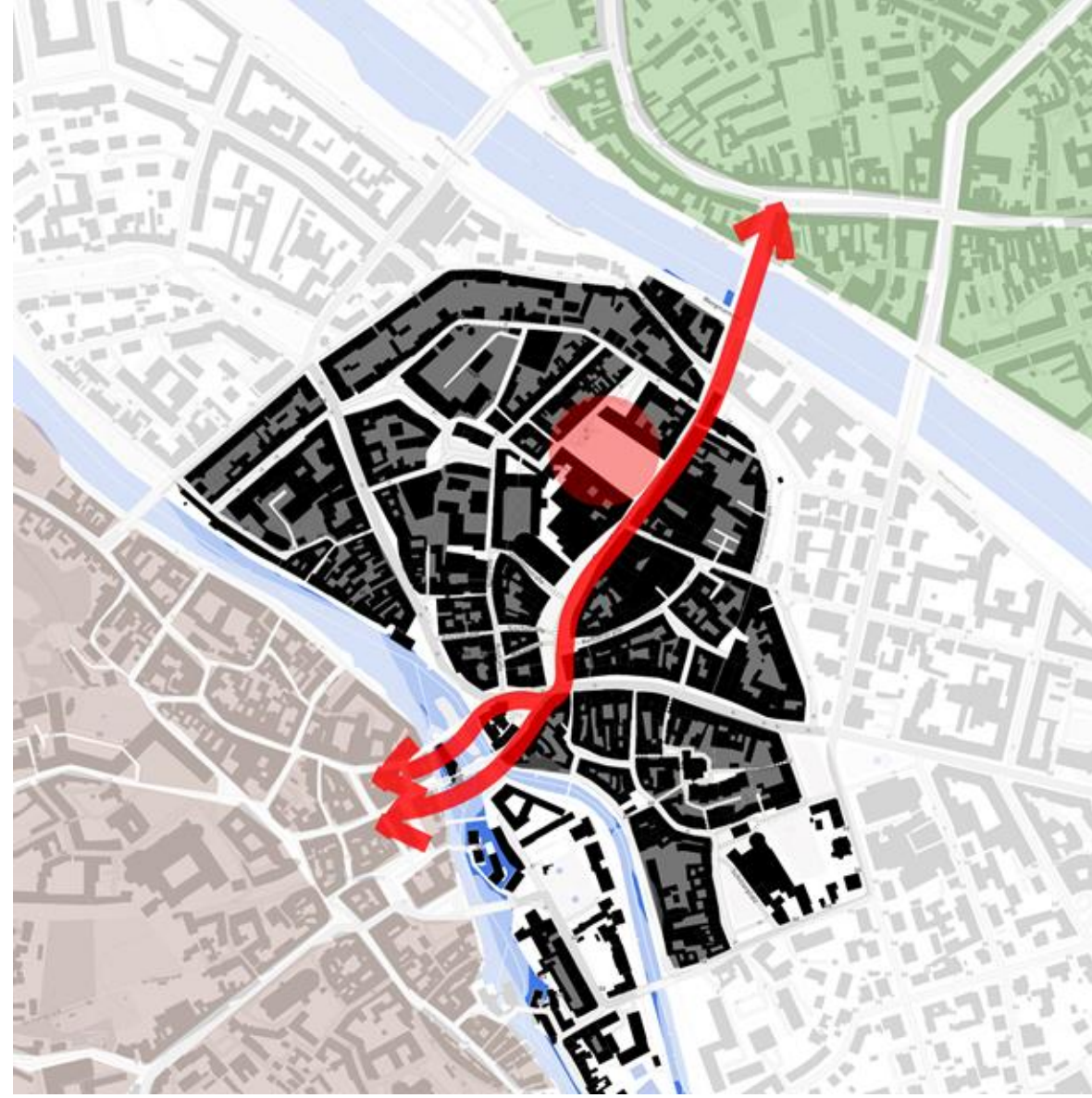


Location between Garden are and Hills

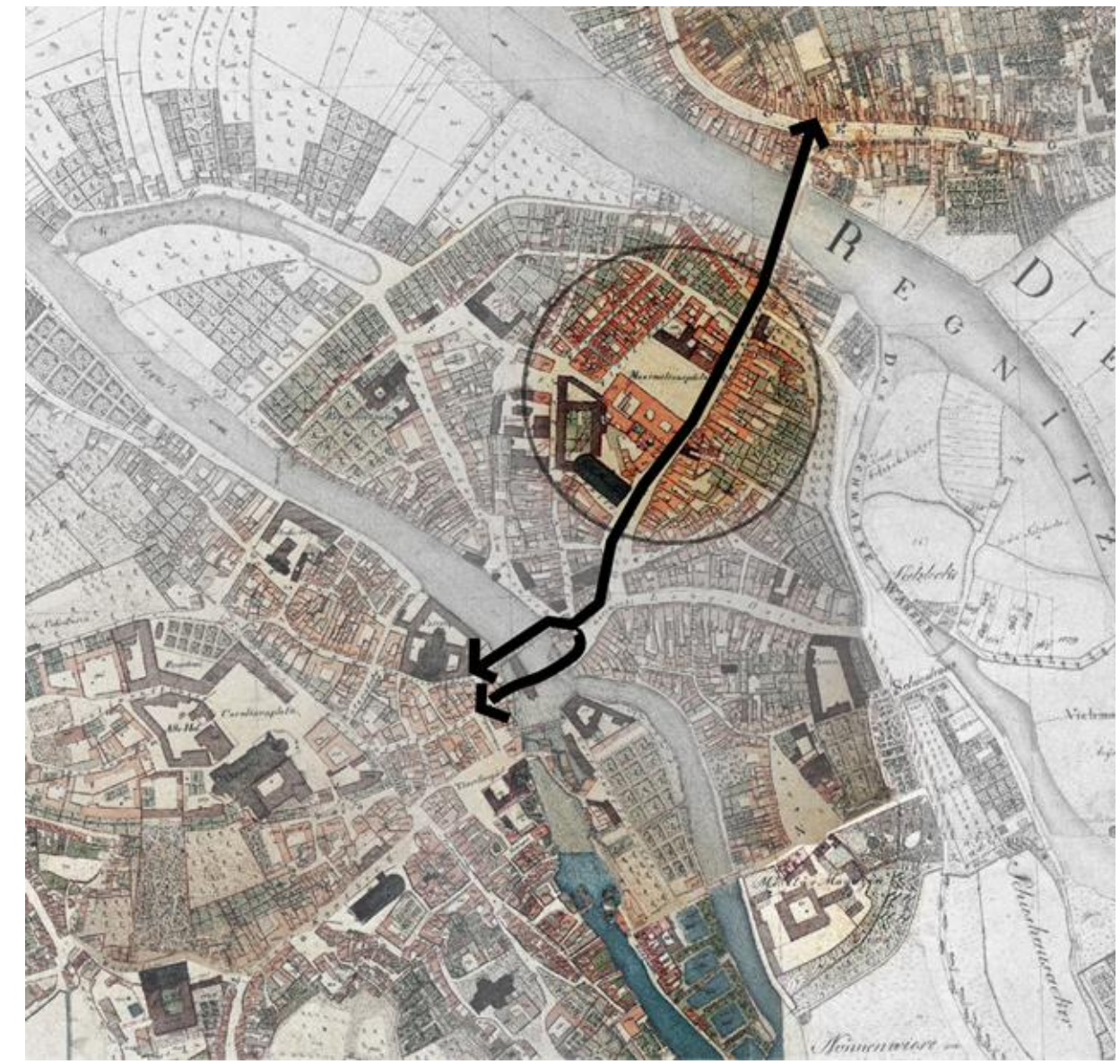
Introduction to case area



Public open spaces

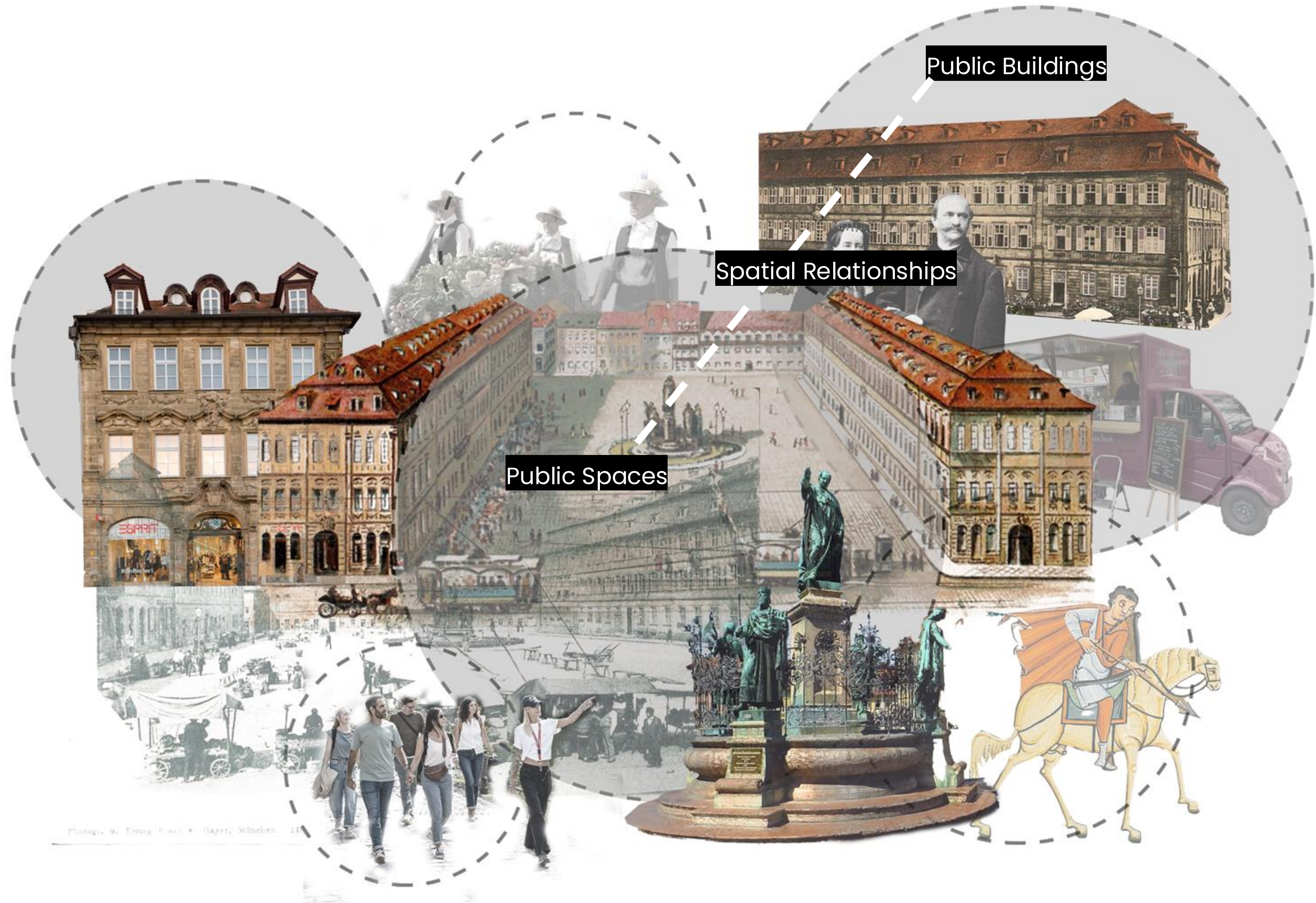


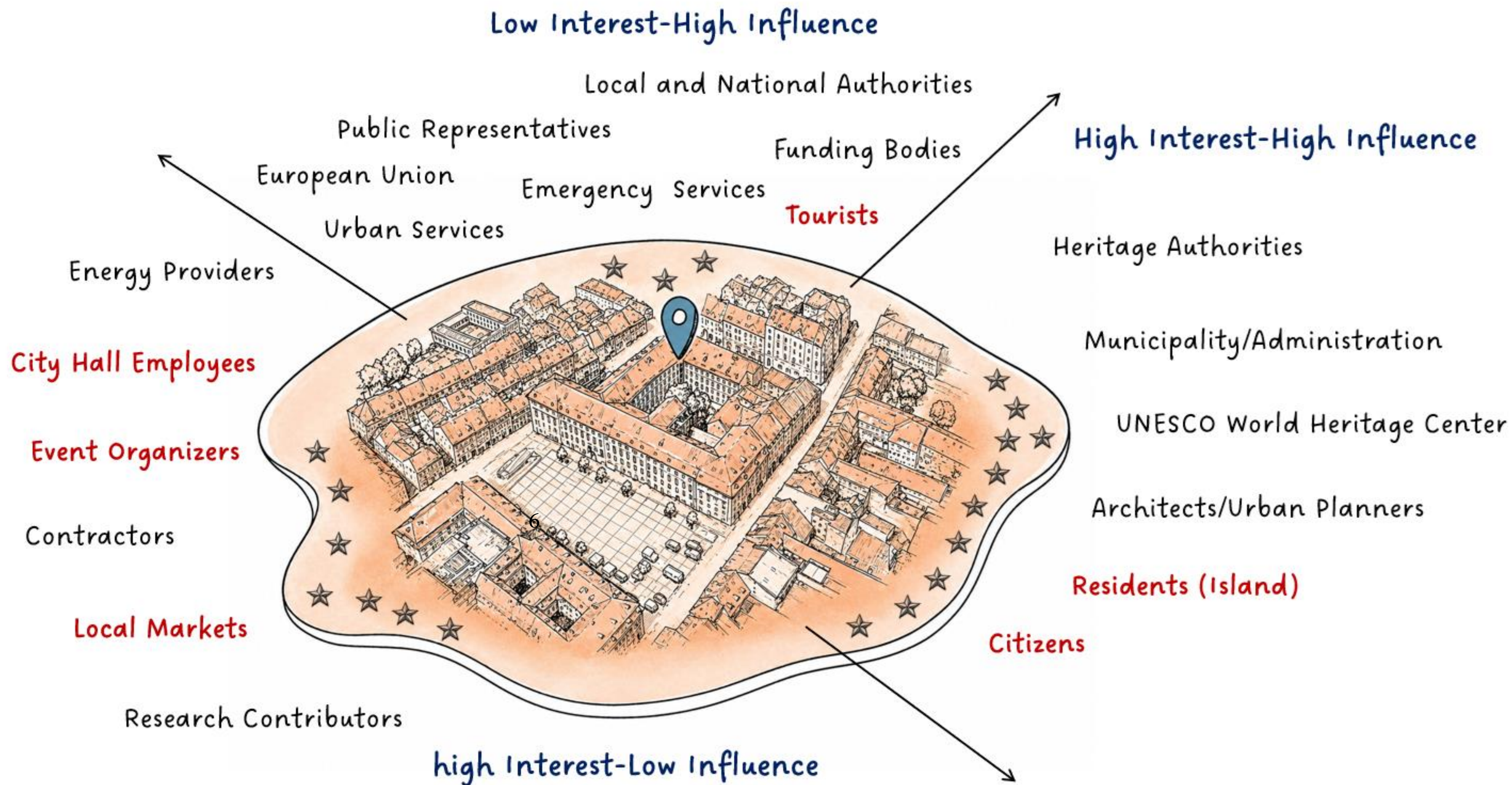
Maximilians platz as a node



Historic importance of area

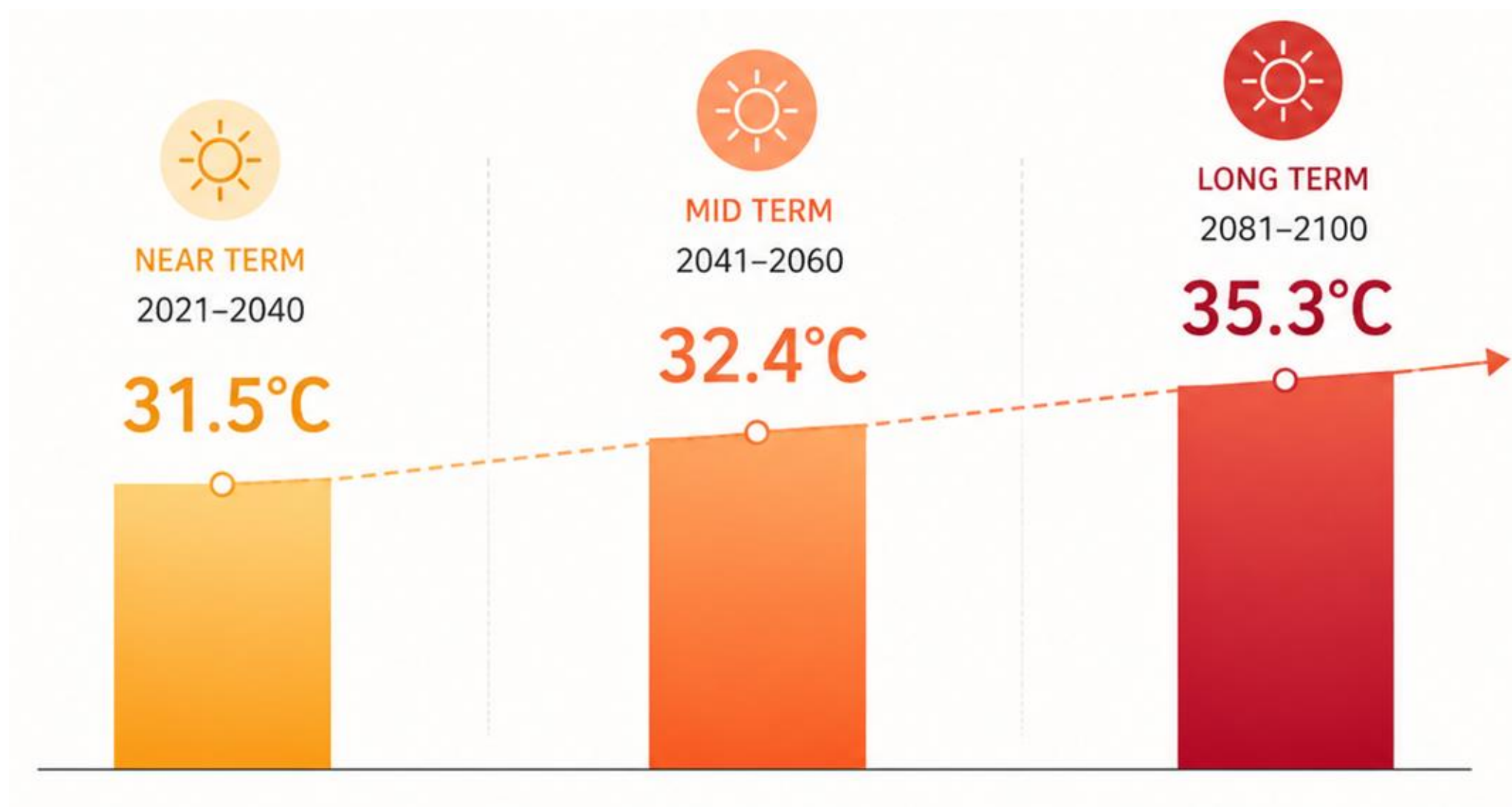
Attribute



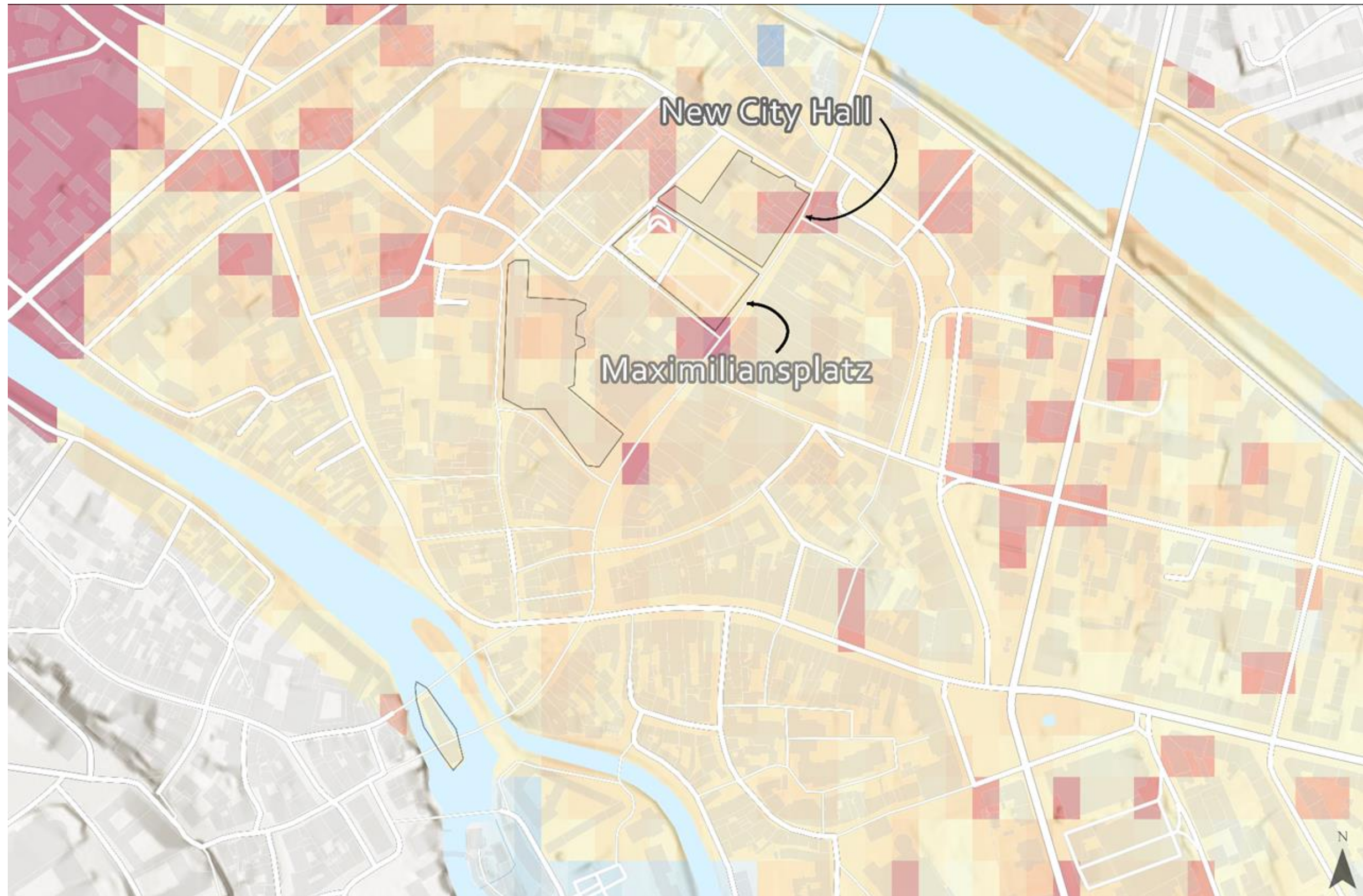


Climate Risk Statement

The Island District of Bamberg World Heritage Site faces growing climate risks from rising temperature extremes, projected to reach up to 35.3°C in the long term, driving heat stress, intensified precipitation, and freeze-thaw cycles that accelerate material decay. This directly affects the district's "well-preserved medieval town" character, particularly the New City Hall Bamberg, where high thermal exposure, sensitive historic materials, and dense urban form increase vulnerability. Without effective adaptation, these combined stresses threaten not only individual structures but also the spatial relationships and integrity that sustain the site's Outstanding Universal Value.

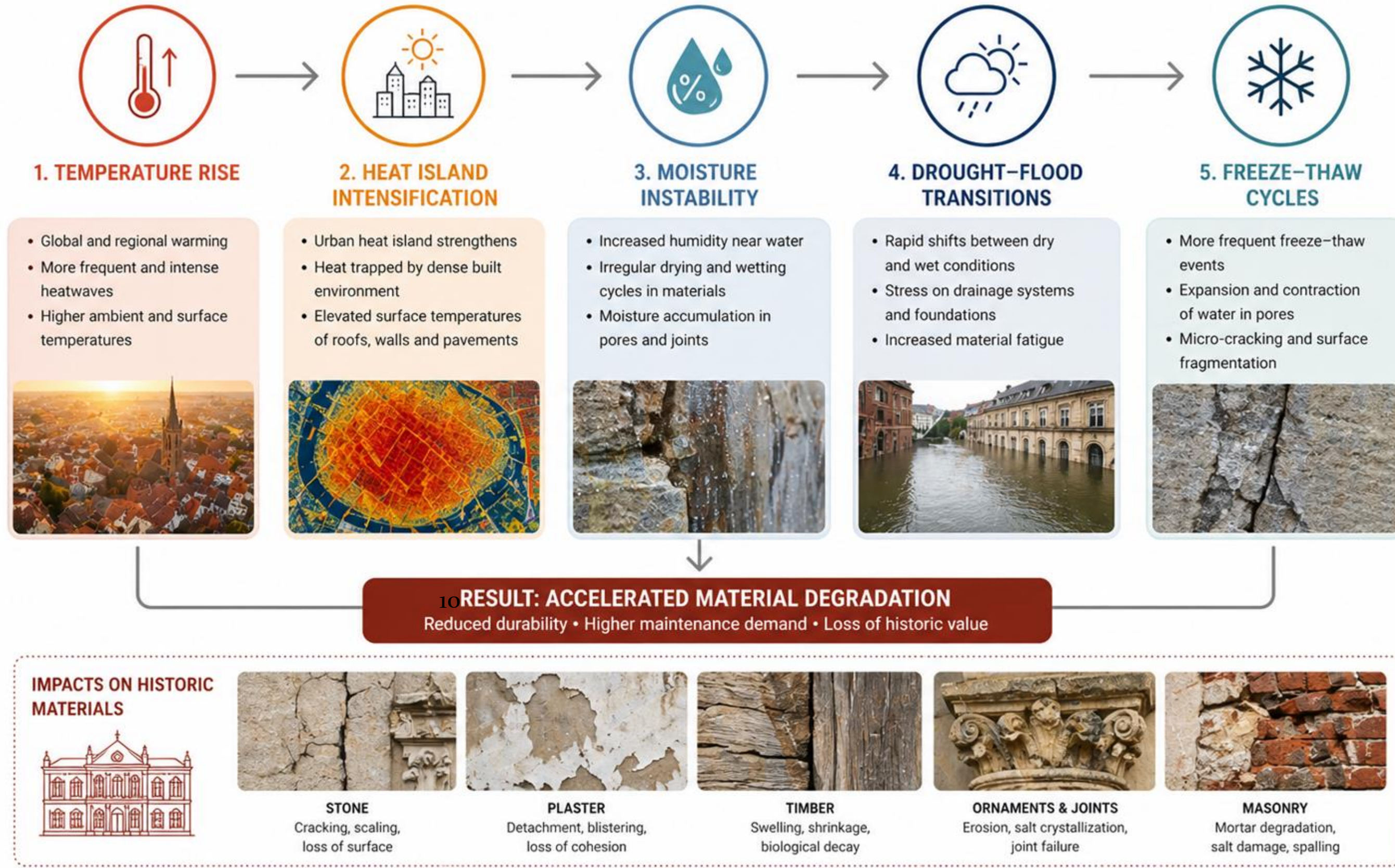


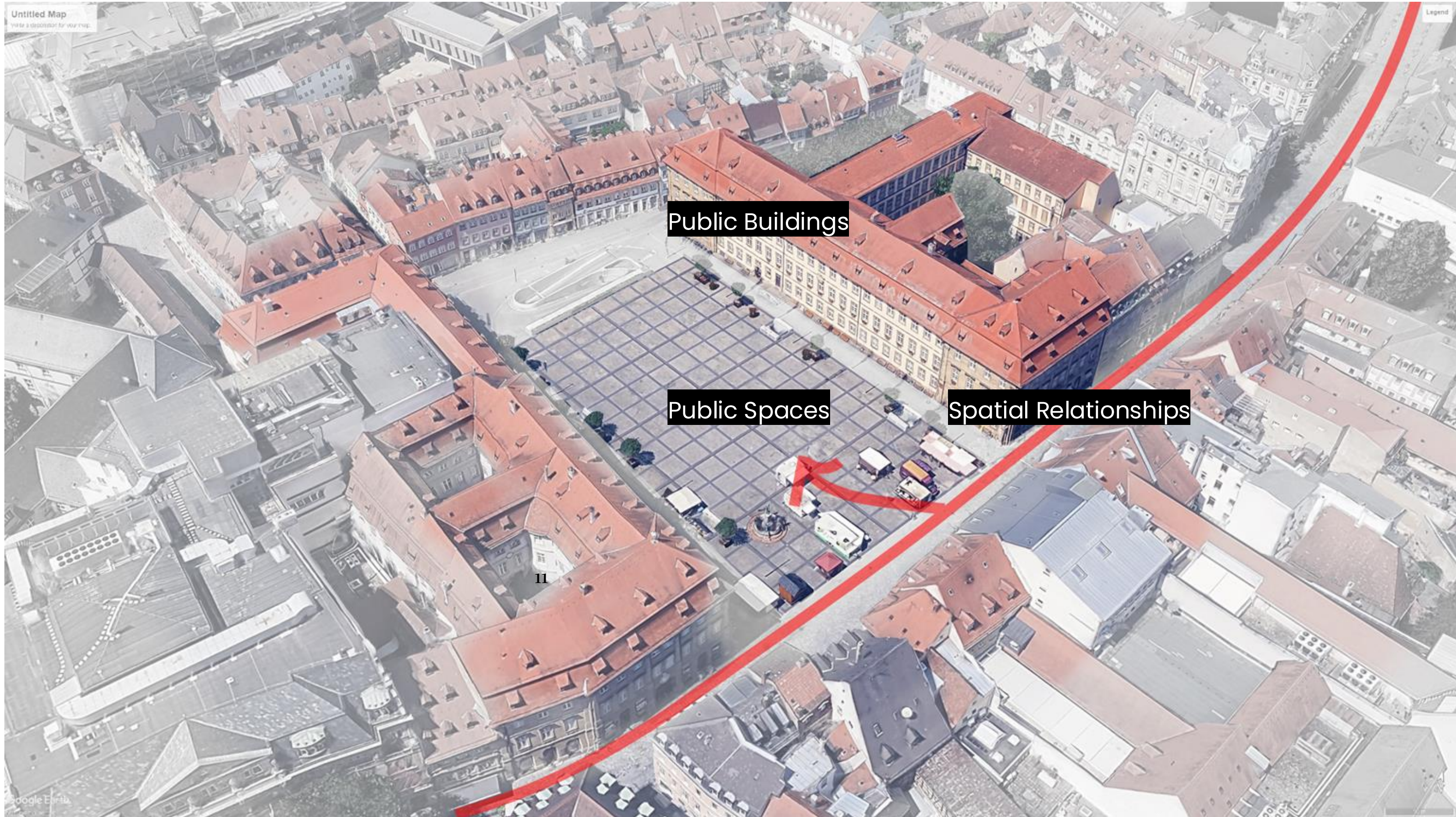
Multi-criteria Analysis Summer 2014 to 2025



CASCADING EFFECTS OF RISING TEMPERATURE

Impacts on Historic Buildings and Urban Heritage



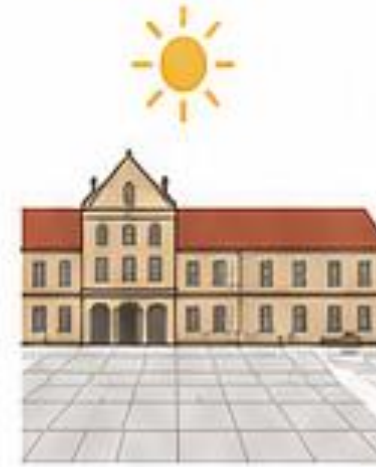


KEY APPROACH: LESS IS MORE

- Ludwig Mies van der Rohe

1

Historic Urban Landscape Analysis



Maxplatz



New City Hall



High solar exposure
& heat accumulation



Limited shading & vegetation
high evaporation



Visual & cultural significance
restricting interventions

2

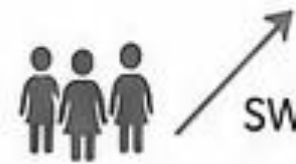
Local Climate Risk and Sensitivity Assessment

Hazard



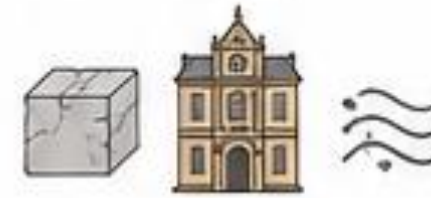
Increasing
temperatures &
heat stress

Exposure



High pedestrian density
Peak tourist hours
SW orientation

Sensitivity



Stone pavements
Stone facades
Lack of airflow



Hazard: increasing
temperatures



Exposure: high pedestrian
density, SW orientation



Sensitivity: materials
& lack of airflow

3

Multi Scale Strategy: Building + Plaza

Building Scale
(New City Hall)



- Hidden PV on non-visible roofs
- Envelope improvements (internal)

Urban Scale
(Maxplatz)



- Primary focus of intervention
- NbS & shading systems
- Water-based cooling



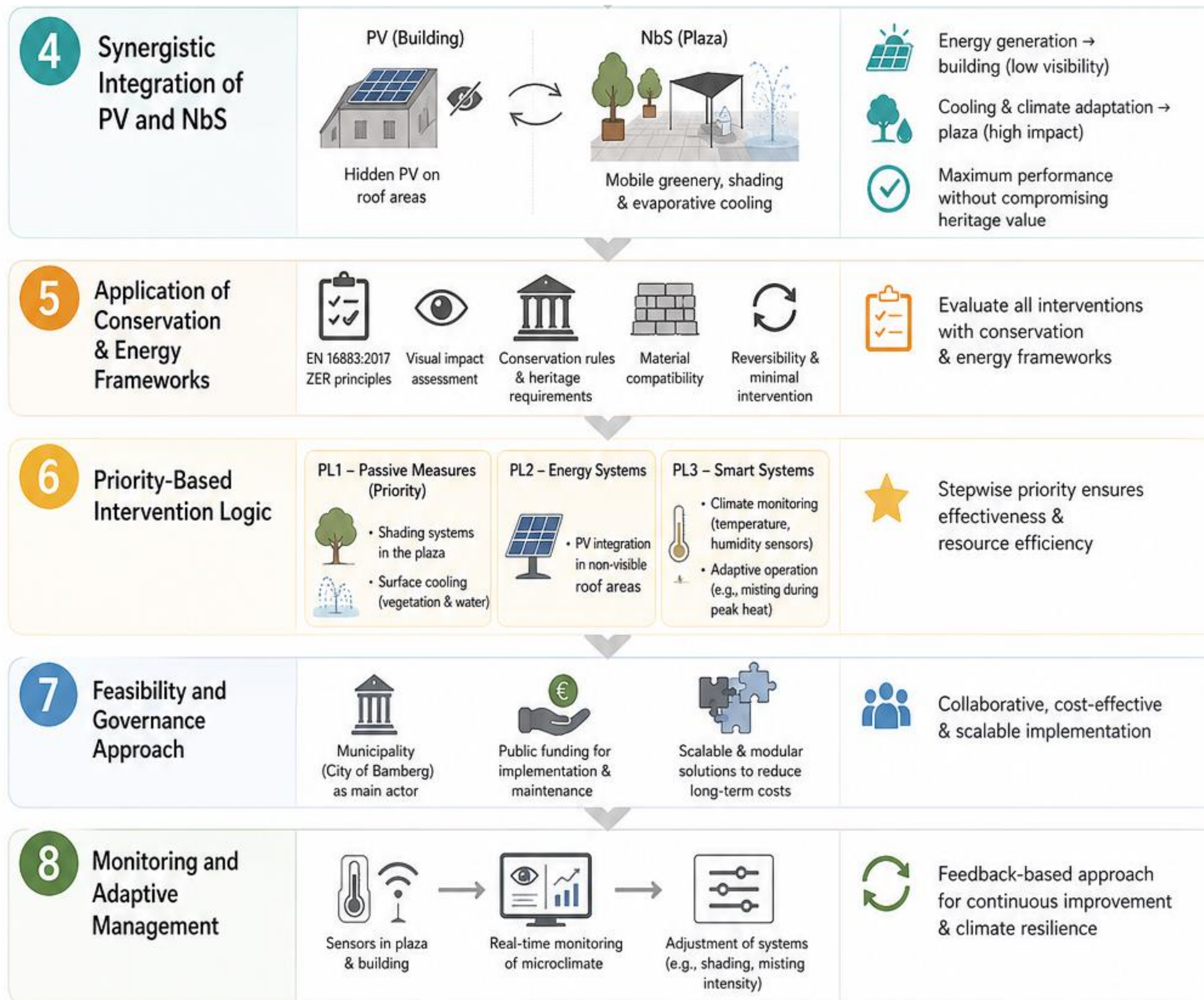
Building: minimal &
reversible interventions



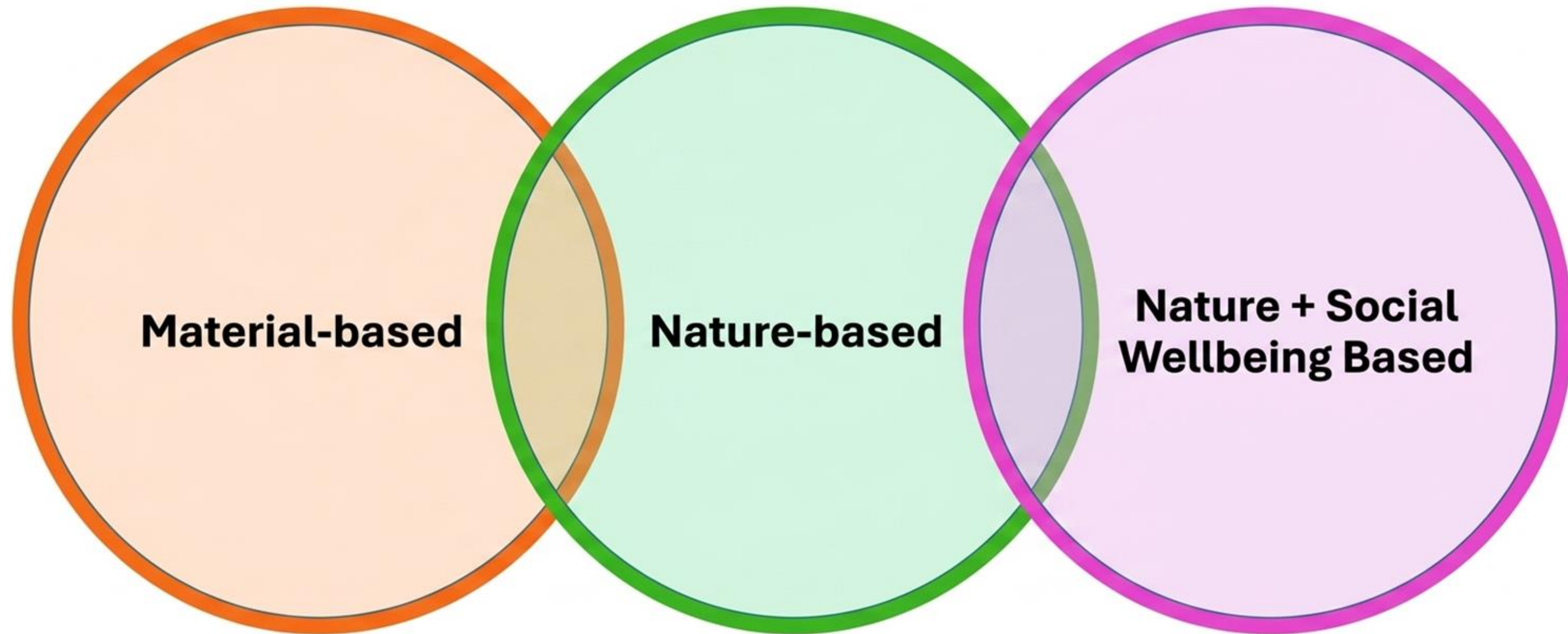
Plaza: NbS, shading
& water cooling



Multi-scale &
complementary approach



Effective adaptation: Risk Mitigation



1. Material-based

- Reduce temperature stresses
 - Layers of Bio-based limewash coatings to:
 - Reduce heat stress by absorption and increase solar radiation reflection.
 - Decrease freeze-thaw risks.

Reduction of up to 134 times of the thermal fluxes in summertime is achieved by applying mineral mortars and coatings (Barrera et.al, 2014).

- Controlling moisture:
 - Use of breathable plaster (e.g. lime-based) to allow evaporation (Bowler et.al.2010).
 - Ensure proper ground drainage to avoid rising damp.
- Continuous Monitoring and Maintenance:
 - Repair cracks early to prevent water ingress
 - Improve details around joints, windows, and ledges.



2. Nature-based

Large mobile canopy trees which combines:

- Shade-providing trees,
- Climate-resilient species,
- Low-impact planting systems.

Benefits

- Enhance cooling surfaces, buffer temperature swings, and regulate moisture.
- Reduces reflected heat onto façades
- **Demand minimal interventions to the historic buildings and the square fabric and respect the square's heritage character.**



3. Nature+ Well being Based: The Island Mistifier



Credits: ArchiExpo



Credits: Uni. of Melbourne

ISLAND MISTIFIER

Benefits of the Island Mistifier:

1. Social Well being Benefits

(Skin temperature-0.53 degrees, seating, identity creation)

1. Reduce maximum urban canyon air temperature (up to 17.5 °C).

2. Preventive Conservation of Heritage Attributes by reducing maintenance frequency (Must be quantified)

Black-Ingersoll, F., de Lange, J., Heidari, L., Negassa, A., Botana, P., Fabian, M. P., & Scammell, M. K. (2022). A Literature Review of Cooling Center, Misting Station, Cool Pavement, and Cool Roof Intervention Evaluations. *Atmosphere*, 13(7), 1103. <https://doi.org/10.3390/atmos13071103>

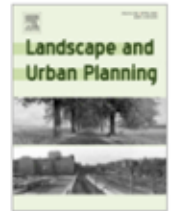
University of Melbourne. (2023, June 21). *MIST demonstrates a context-aware outdoor urban cooling system*. <https://research.unimelb.edu.au/strengths/updates/impact/mist-demonstrates-a-context-aware-outdoor-urban-cooling-system>

Huang, X., Bou-Zeid, E., Vanos, J. K., Middel, A., & Prathap, R. (2024). *Urban heat mitigation through misting, and its role in broader blue infrastructure portfolios*. *Landscape and Urban Planning*. <https://doi.org/10.1016/j.landurbplan.2024.105290>



Landscape and Urban Planning

Volume 256, April 2025, 105290



Urban heat mitigation through misting, and its role in broader blue infrastructure portfolios

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Open Access

Editor's Choice

Review

A Literature Review of Cooling Center, Misting Station, Cool Pavement, and Cool Roof Intervention Evaluations

by Flannery Black-Ingersoll ^{*} , Julie de Lange , Leila Heidari  , Abgel Negassa , Pilar Botana , M. Patricia Fabian  , and Madeleine K. Scammell  

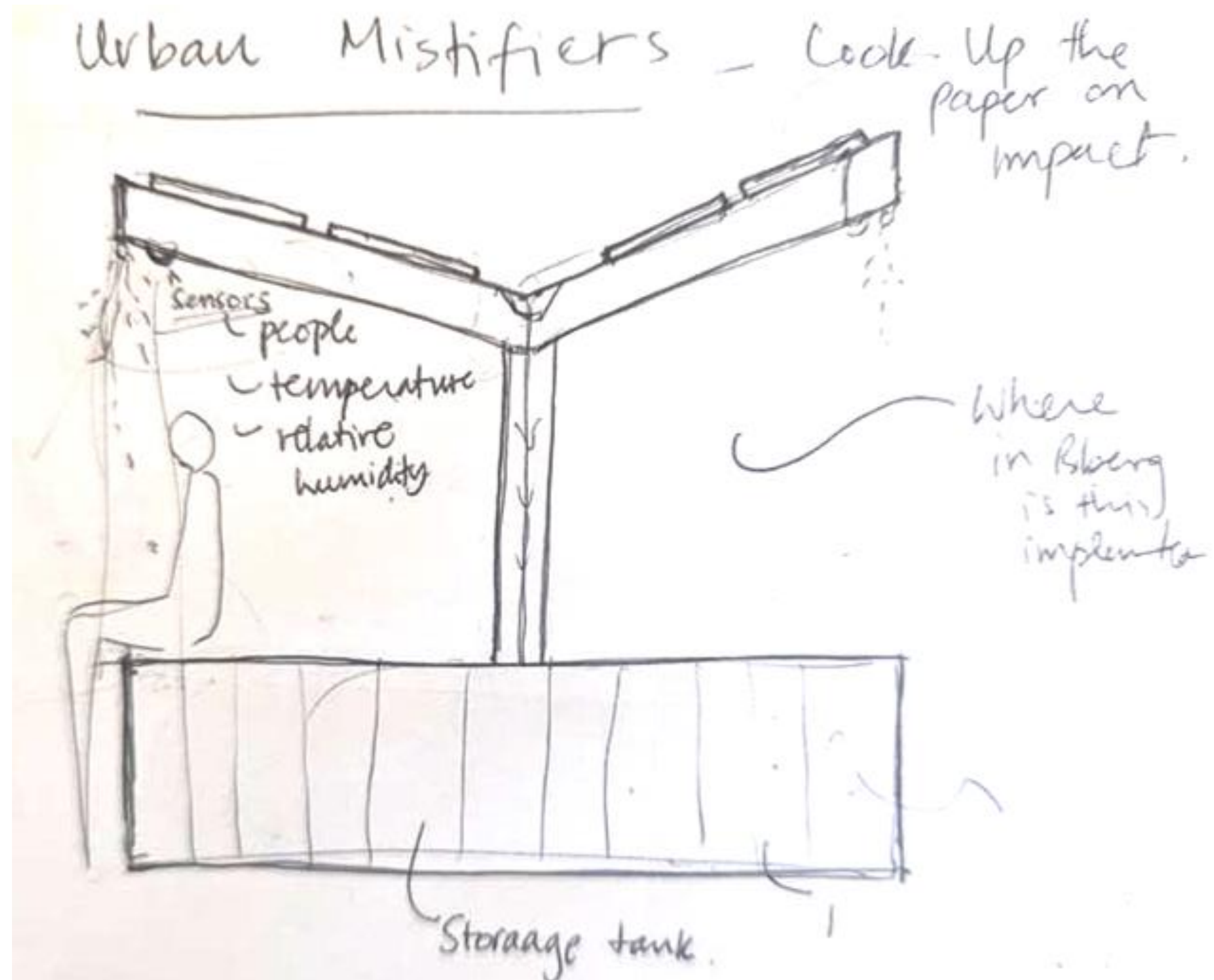
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Atmosphere 2022, 13(7), 1103; <https://doi.org/10.3390/atmos13071103>

TECHNICAL IMPLEMENTATION



AI generated mock-up of design

CLIMATE MITIGATION

Climate Mitigation (Long Term):

1. CO₂ equivalent of each installation must be calculated based on energy, material and water requirement

Impacts that will result in mitigation

1. Reduced Maintenance of buildings
2. Reduced Heat Stress
3. Reduced Load on Infrastructure.

We recommend further research and simulation.



Stakeholders

PHASE 1 FEASIBILITY STUDY & DESIGN

Municipality / Administration → Regulatory framework & approvals
Architects / Urban Planners → Design & feasibility development
Residents (Island) → Local needs & user input
Citizens → Public feedback & inclusivity
Infrastructure Services → Technical assessment
Event Organizers → Use scenarios & programming
Local Markets → Economic integration needs
City Hall Employees → Internal coordination
Students → Innovative design ideas
Funded Researchers → Analysis

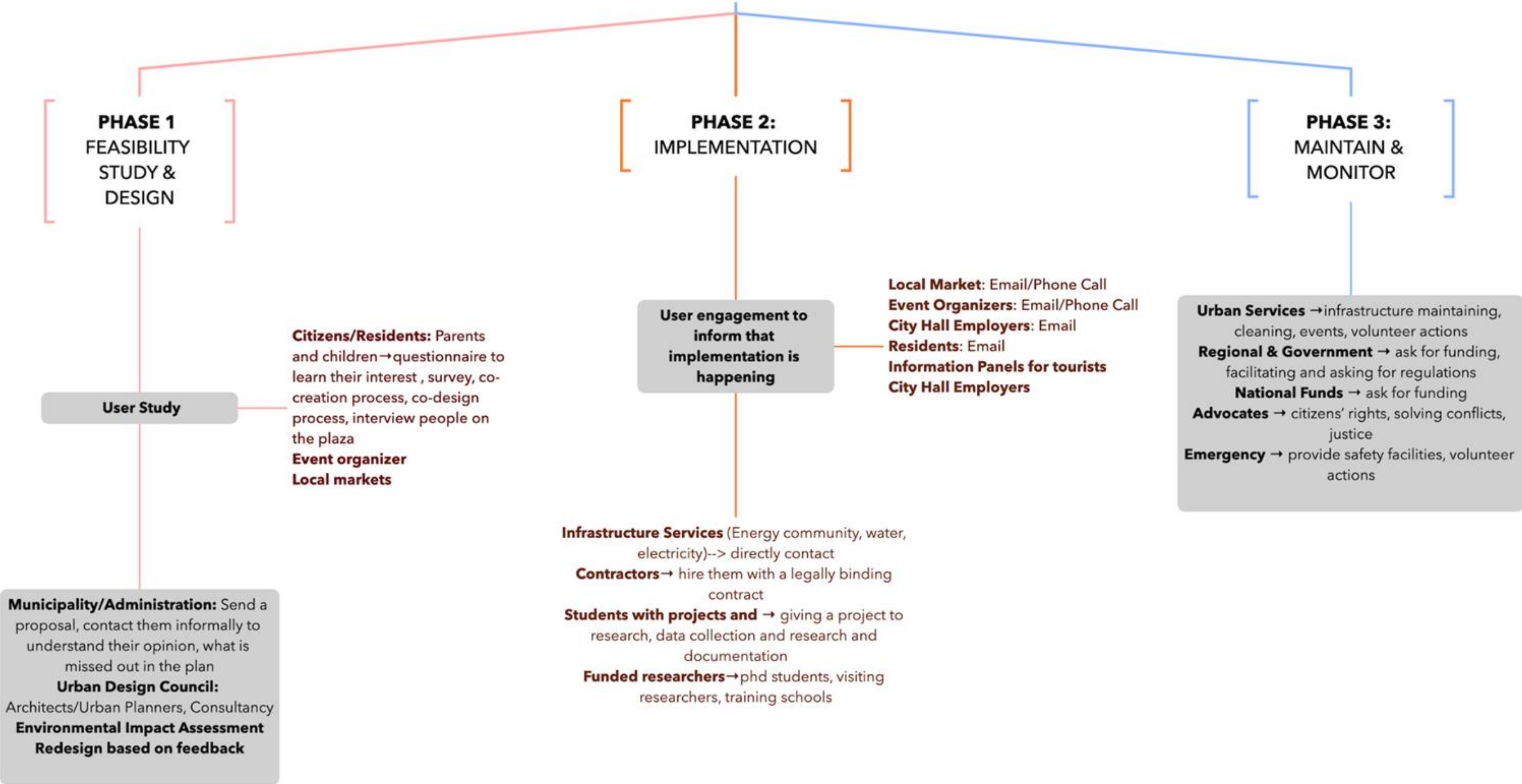
PHASE 2: IMPLEMENTATION

Contractors → Construction & execution
Infrastructure Services → System installation & operation
City Hall Employees → Process coordination
Local Market → Economic activation
Event Organizers → Public engagement through events
Residents → Feedback & adaptation (communication)
Students → Pilot interventions
Funded Researchers → Monitoring & evaluation

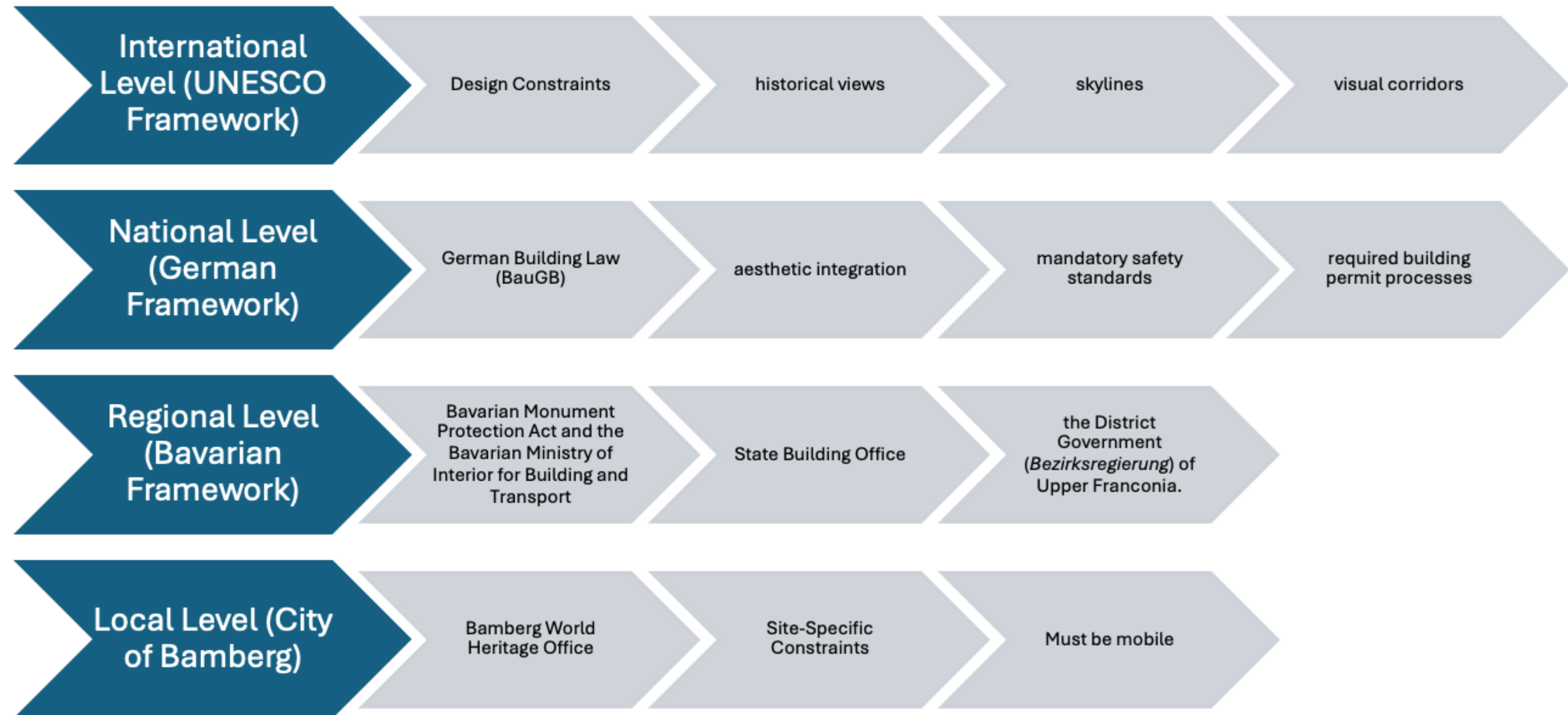
PHASE 3: MAINTAIN & MONITOR

Urban Services → Maintenance & daily operation
Regional Authorities & Government → Policy & governance
National Funds → Financial sustainability
Advocates → Awareness & public support
Emergency Services → Safety & risk response

Stakeholders



Analysis of Bamberg's Governance Structure and Cultural Heritage Management Framework



Blended Finance Model for Sustainable Development

Public & Institutional Funding

Municipal (10-25%)
Regional (Bavaria) (30-50%)
National (5-15%)

European Union Funding

Horizon Europe & New European Bauhaus
(NEB) (20-70%)

Local and Private Stakeholders (Flexible & Community-Based)

Small-scale private & community investments (5-15%)
Sponsorships and local businesses (1-10%)

Knowledge-Based Funding (Academic & Research Input)

Academic & Research Inputs (5-15%)

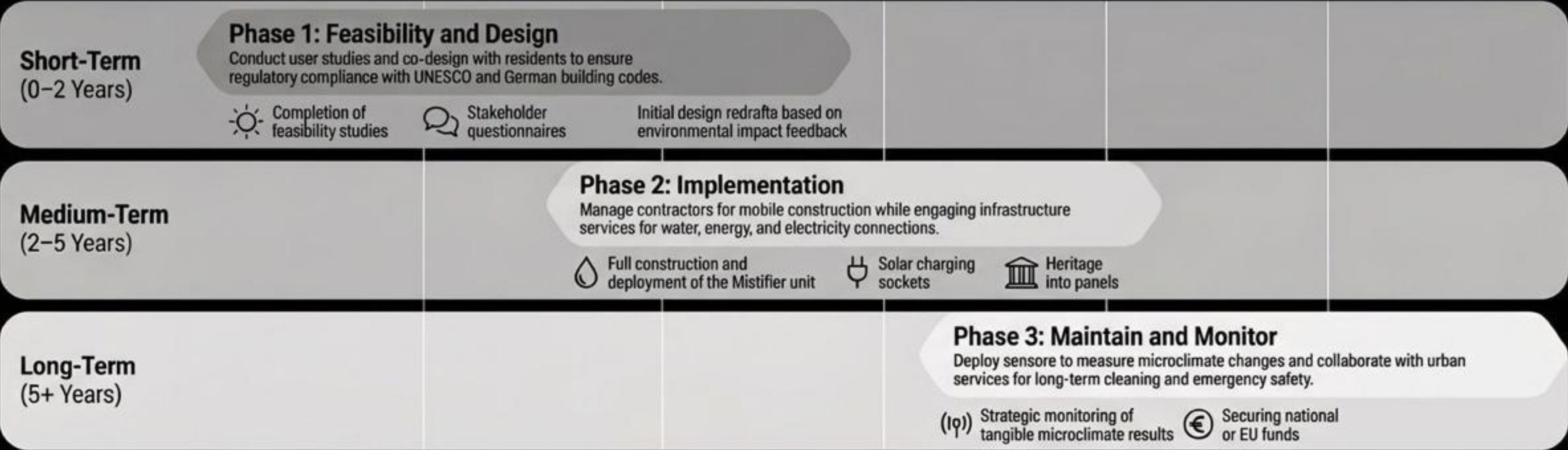
Infrastructure & Construction Investments

Smart infrastructures with co-investors (5-20%)

Average Funding Structure



Project Implementation Procedures and Timeline



Mistifier Features and Compliance Mapping

Feature Category	Components	Legal Requirement
Sustainable Tech	Solar PV & Rainwater Collector	Low to no visual impact on core zones
Urban Utility	Charging Sockets & Lighting	Compliance with construction safety standards
Heritage Integration	Prints of past memories & Greenery	Preserve visual corridors and skylines

SUMMARY

1. High Temperature – High Heat Stress
2. This Impacts the Public Building, Urban Spaces, and Spatial Relationships Attributes of the New City Hall and Maximillianplatz.
3. We aim to mitigate the heat stress via material based, nature based and social wellbeing based solutions.
4. One solution: City Hall to test the Island Mistifier.
5. It is a Preventative Conservation measure.
6. We recommend the city to own the solution.
7. Incremental implementation across other heat zones after initial testing.
8. We recommend the Blended Finance Model to fund the solutions.



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