Bureau of Energy Efficiency

सत्यमेव जयते
Government of India
Ministry of Power

german cooperation
DEUTSCHE ZUSAMMENARBEIT

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THIS PRESENTATION WAS SHARED BY

Prof. Uta Pottgiesser

Chair of Heritage & Technology Heritage & Technology, TU Delft, NL and Chair Building Construction & Materials, TH OWL, Detmold, Germany

FOR THE SESSION:

"Meeting Two Ends: Heritage and Indigenous Construction Practices"

DURING ANGAN 2019

Knowledge Partner

teri The Energy and Resources Institute
Creating Innovative Solutions for a Sustainable Future

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TEC INDIA
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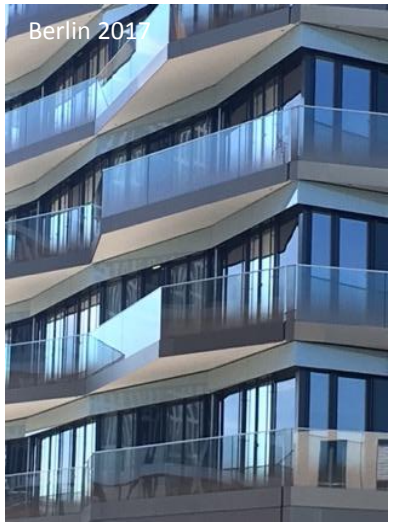
Heritage – Sustainability – Circularity

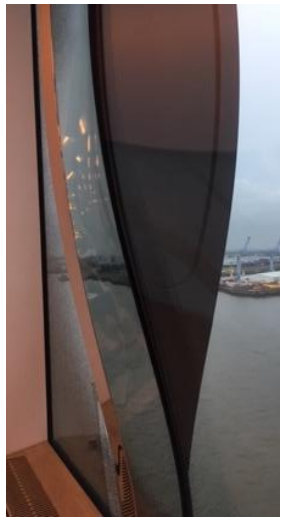
Prof. Dr.-Ing. Uta Pottgiesser
Chair of Heritage & Technology, TU Delft
University of Antwerp / TH OWL

ANGAN 2019, New Delhi, 9 September 2019

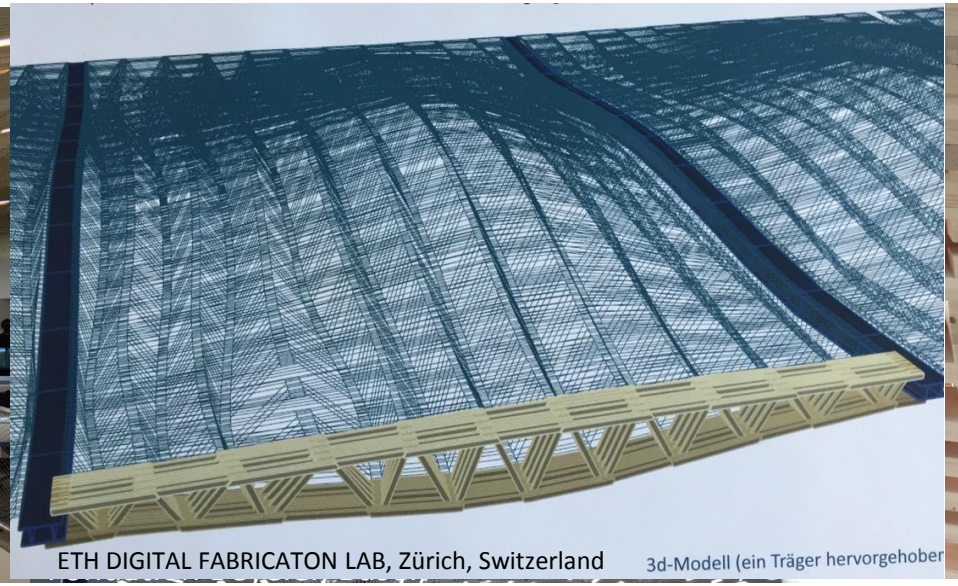
Global and Local Environmental and Societal Challenges



Building Envelope Trends. Superwindows and Superglasses



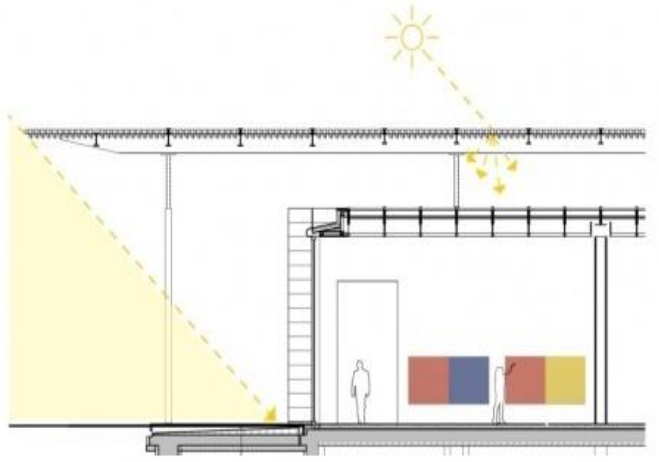

ETH DIGITAL FABRICATON LAB, Zürich,


ETH DIGITAL FABRICATON LAB, Zürich, Switzerland

3d-Modell (ein Träger hervorgehober

Adaptive Multifunctional and Robotic Roof Constructions


Museum Vorlinden, Niederlande



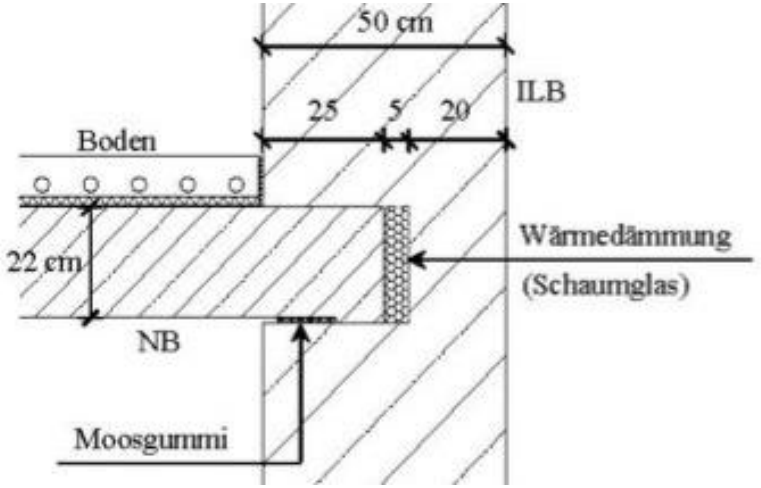

Museum Vorlinden, Niederlande

Masterhaus Gropius, Dessau, Germany: Lightweight Concrete as a monolithic material


Meisterhaus Gropius, Dessau @Uta Pottgiesser


Meisterhaus Gropius, Dessau @Uta Pottgiesser

Connection Wall-Roof-Facade (Vertical Section)



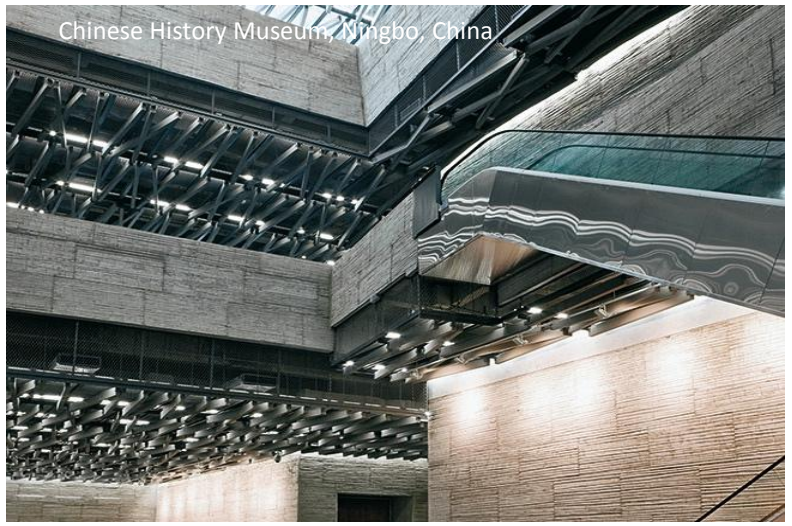
Circular Massivity - Monolitic Light Weight Constructions


Alnatura Arbeitswelt, Darmstadt, Germany


Foto: Alnatura / Marc Doradzillo


Chinese History Museum, Ningbo, China


Chinese History Museum, Ningbo, China

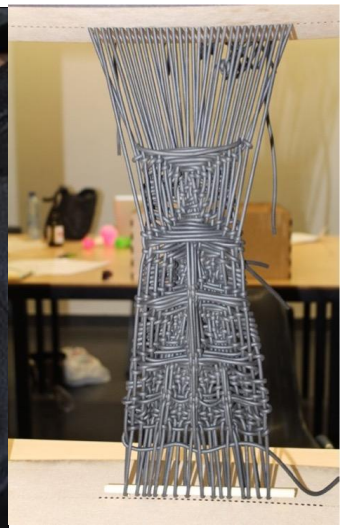

Chinese History Museum, Ningbo, China

Cultural Heritage - Collective Memory and Complementarity

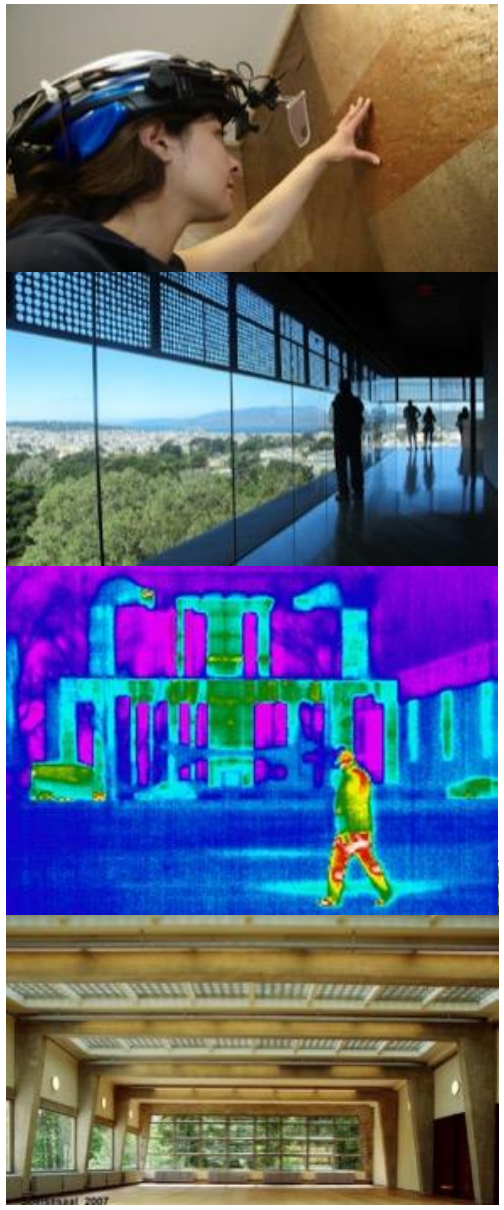

Mashambas Skyscraper 2017, eVolo, First Place,

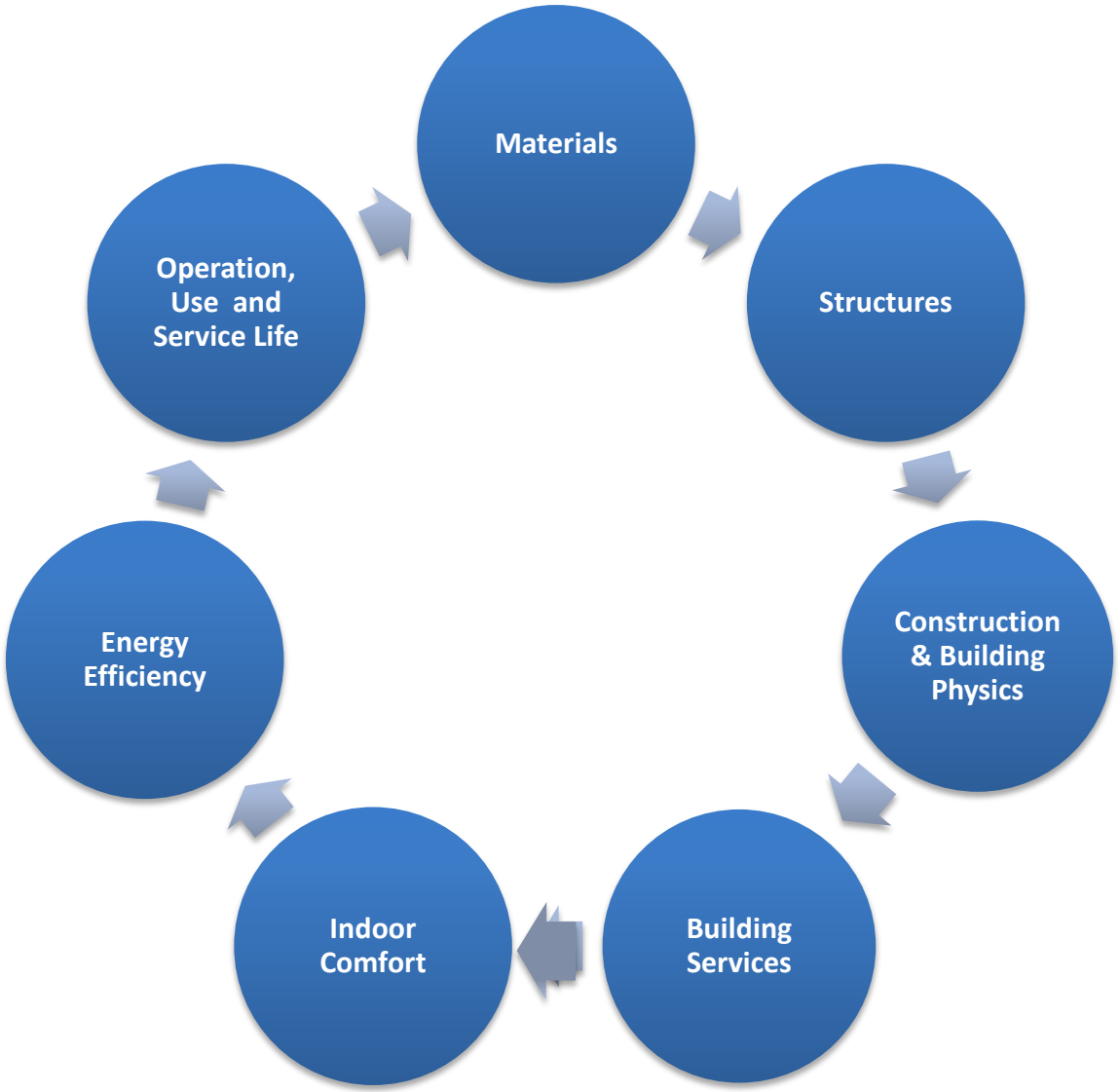

Pawel Lipiński, Mateusz Frankowski, Poland

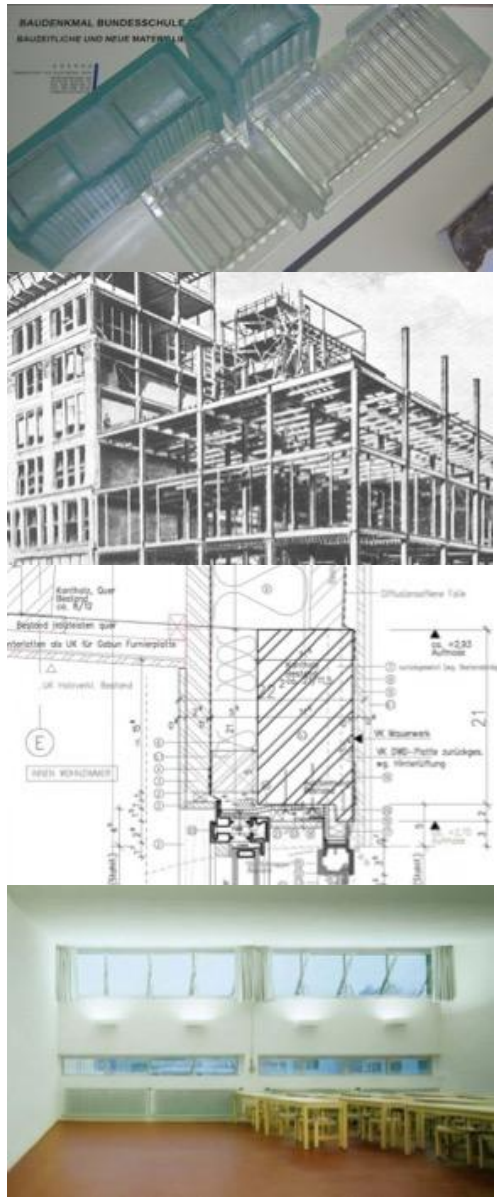

efmMOBILE 2017: Textile Building Skin
Antwerp: New Functionality due to smart



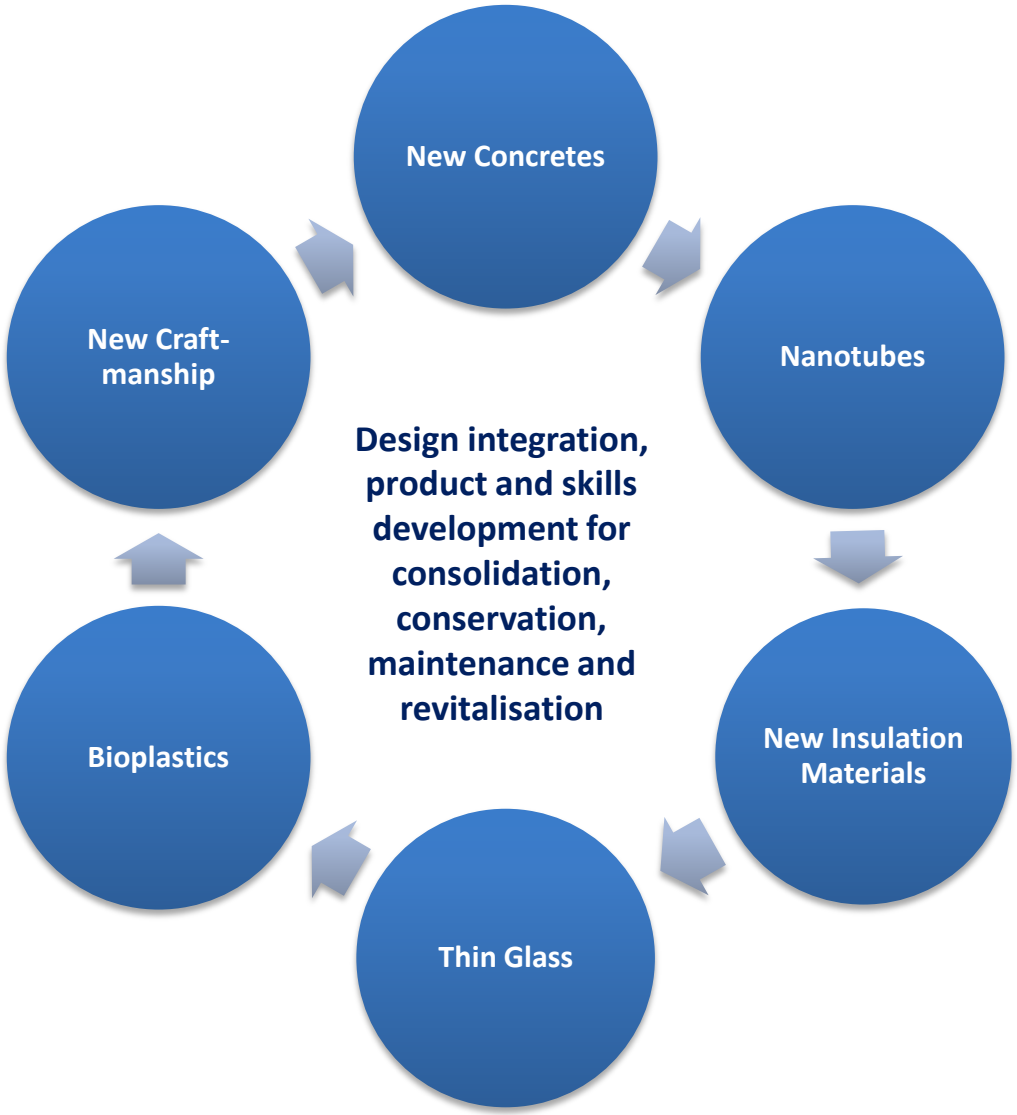
Building Technology Fields

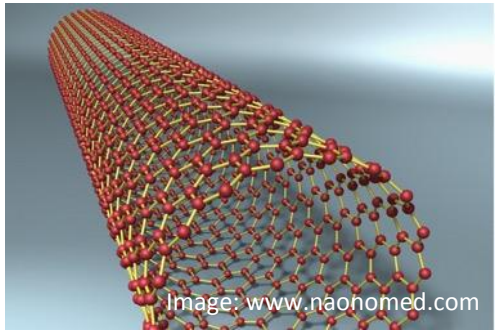


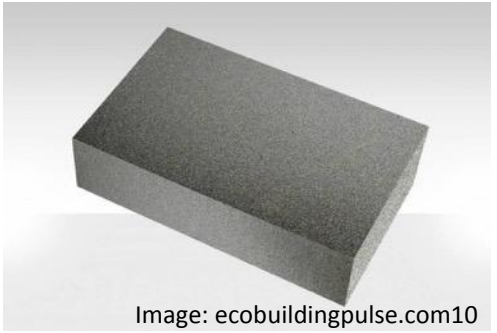




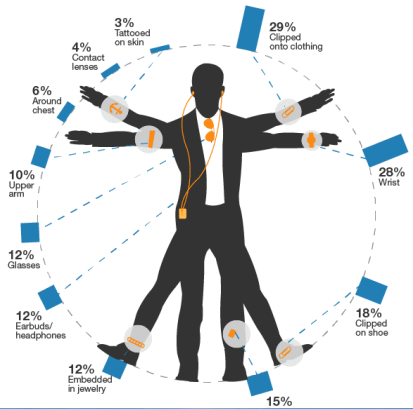
New Building Technology Fields

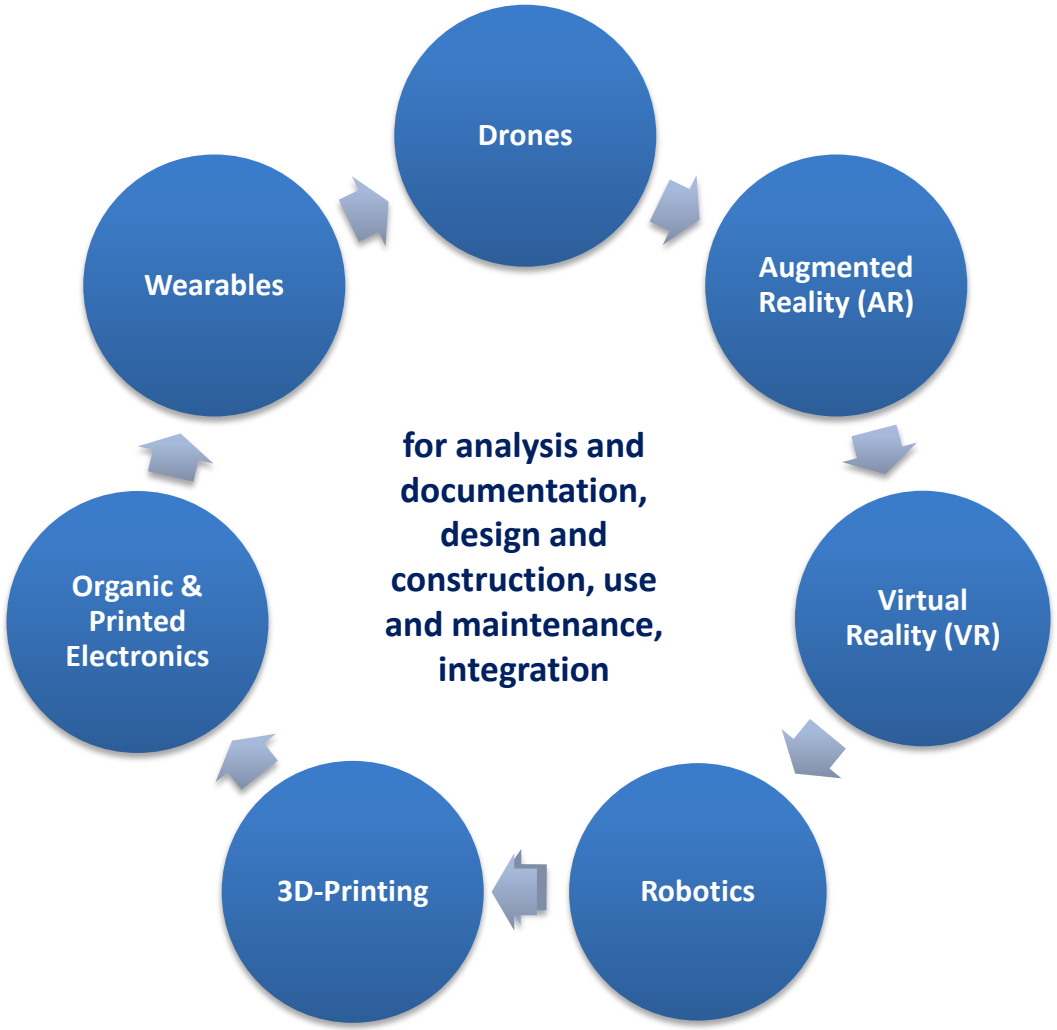


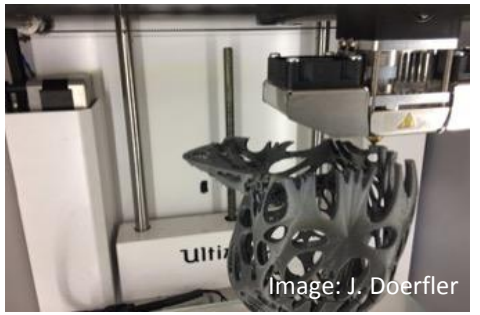




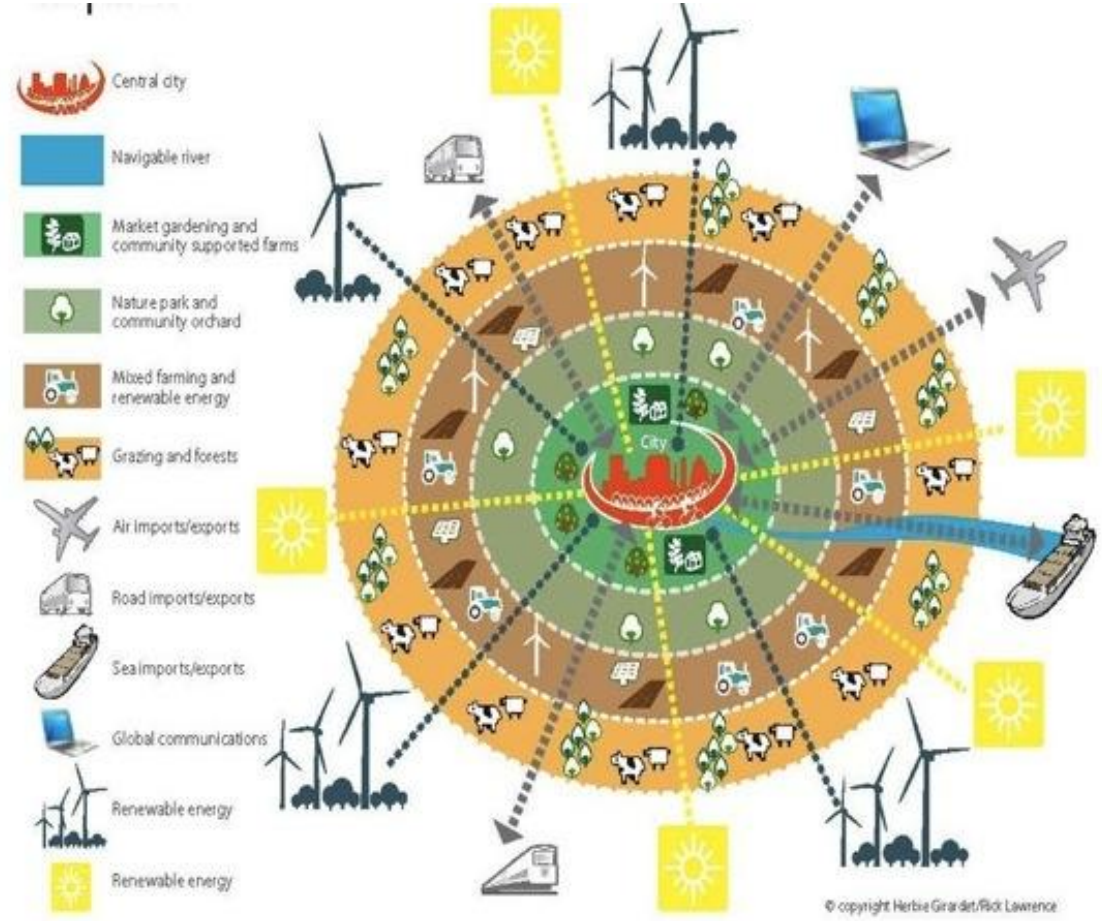
Innovative Technology Fields







Transition from Petropolis to Ecopolis



Source: The Future of Cities Forum 2013

Transition from Ecopolis to Circular City

Source: www.wbdg.org

What is a Circular City?

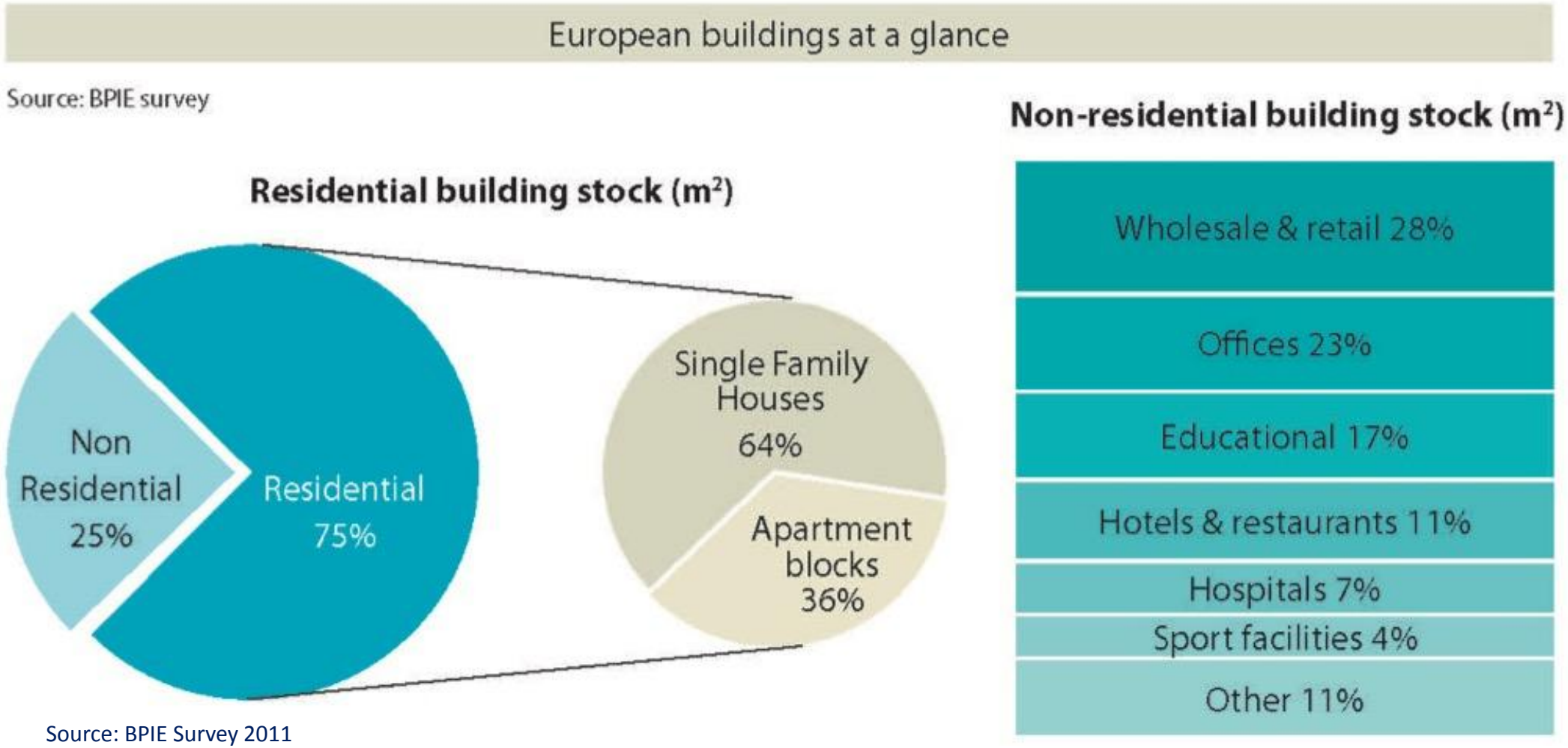
ELLEN MACARTHUR FOUNDATION

Vision Statement

A circular city embeds the principles of a circular economy across all its functions, establishing an urban system that is **regenerative, accessible** and **abundant by design.** These cities aim to eliminate the **concept of waste, keep assets at their highest value at all times, and are enabled by digital technology.** A circular city seeks to generate prosperity, increase livability, and improve resilience for the city and its citizens while aiming to decouple the creation of value from the consumption of finite resources.

Source: Ellen MacArthur Foundation

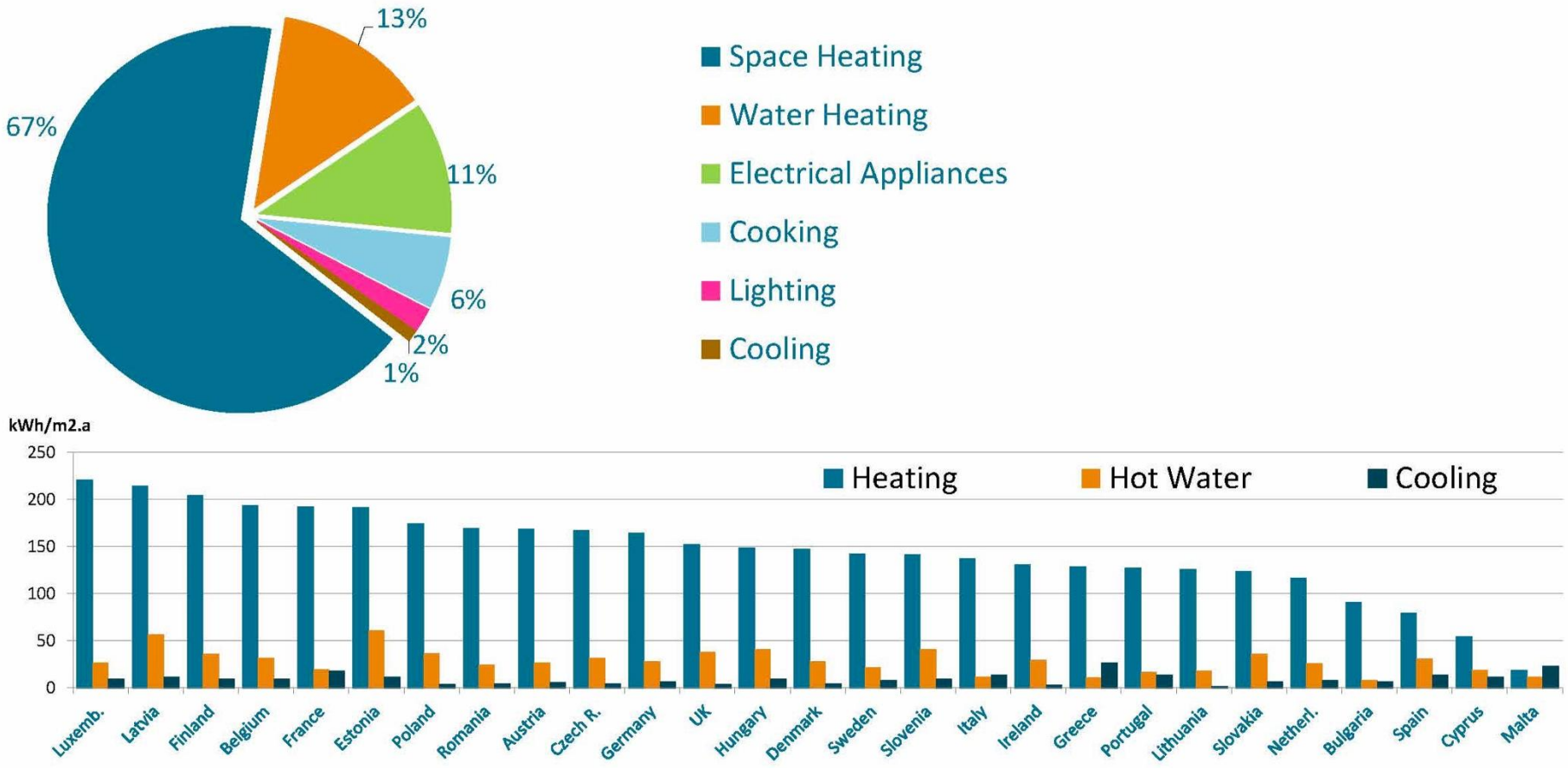
Renovating private Building Stock in Europe - Challenges



Source: BPIE Survey 2011

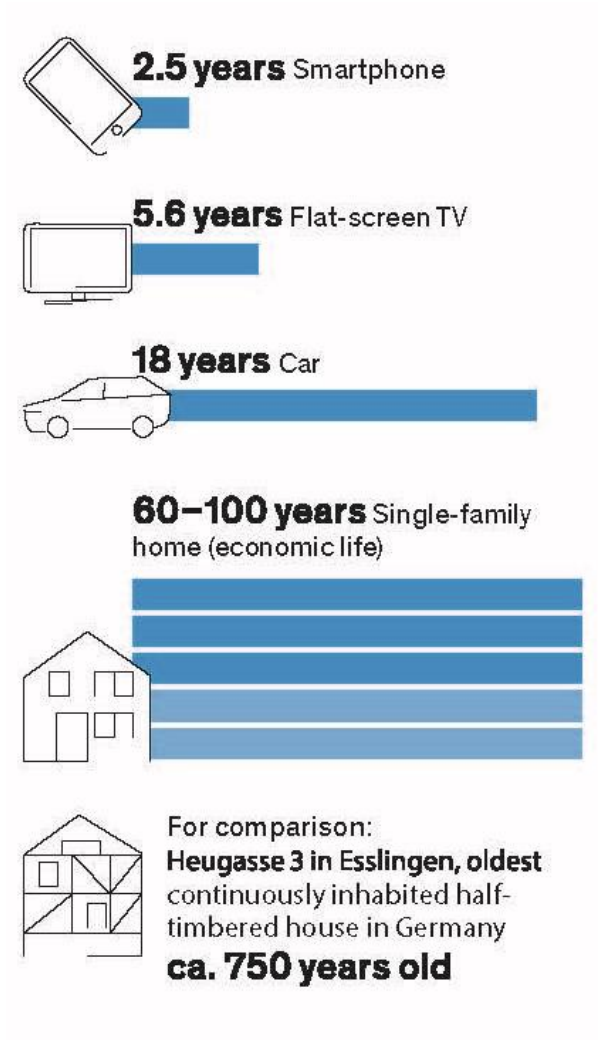
Building Stock and Heritage in Europe – Energy Consumption

European household energy consumption by end use



Source: BPIE 2018 Maarten van Groote

Building Stock and Building Culture in Europe and Germany

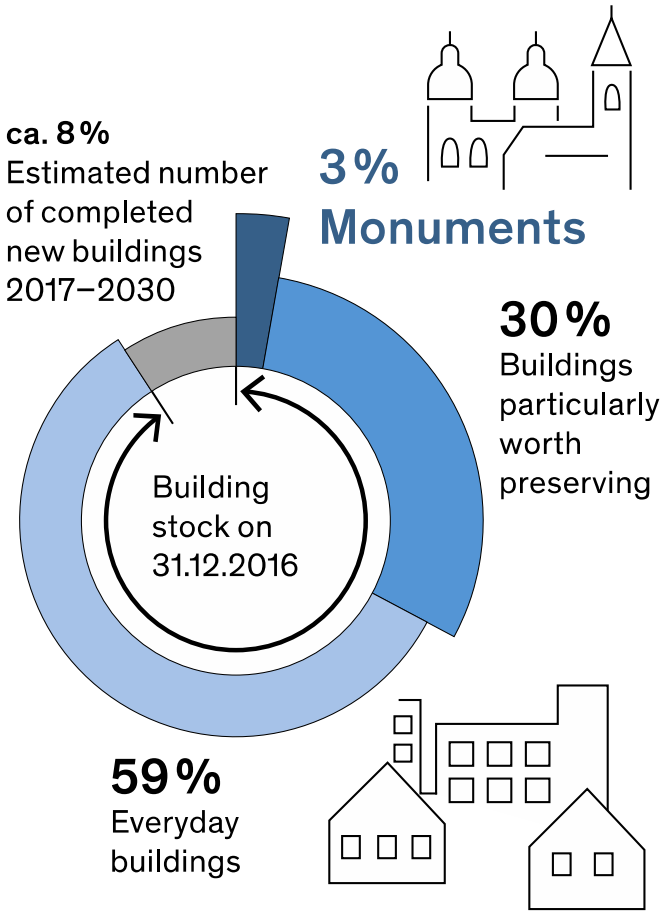


baukultur
BUNDESSTIFTUNG

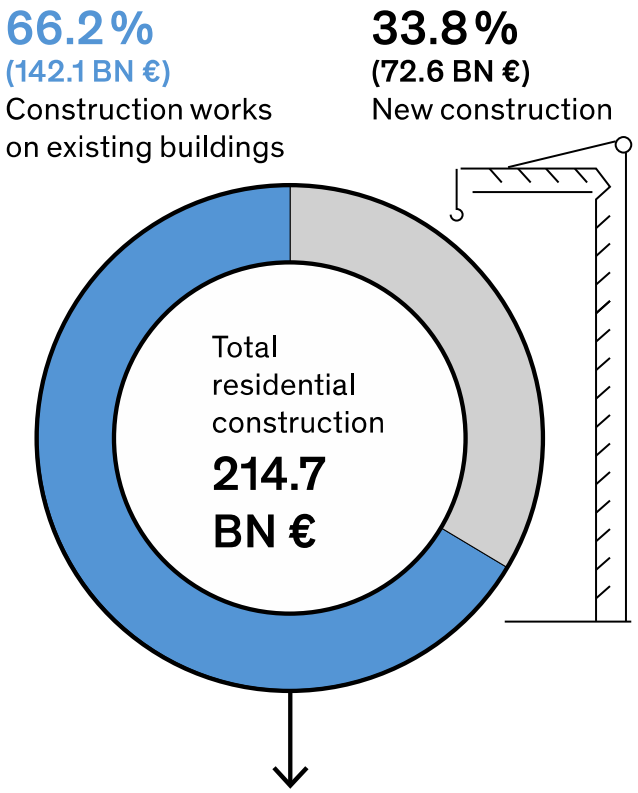
Source: Federal Foundation of Baukultur.
Building Culture Report 2018-19.
Design: Erfurth Kluger Infografik

Building Stock and Heritage in Europe - Market Shares

Source: BDA NRW 2016; BBSR 2016;
Wuppertal Institut 2017; Destatis 2017



Source: DIW Berlin 2018

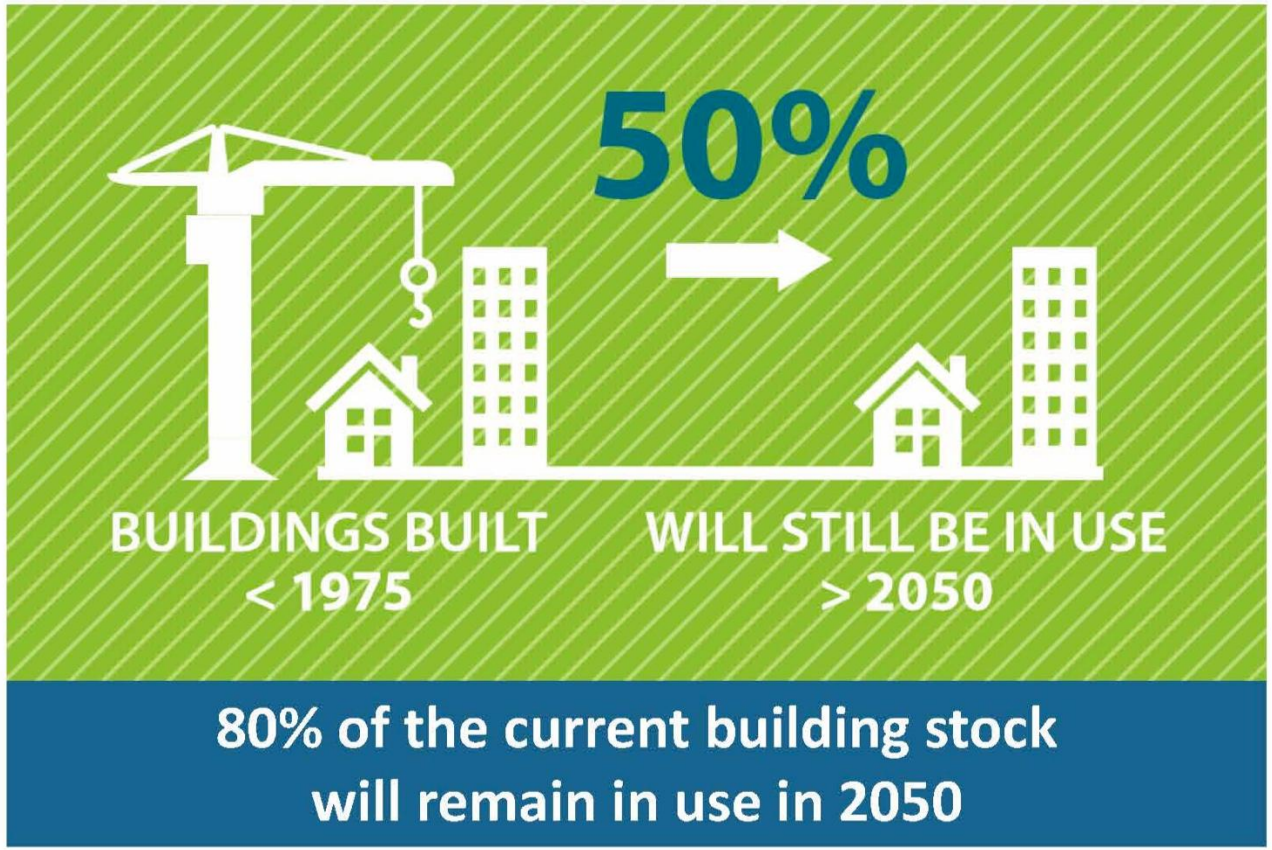


Forecast investments in existing residential construction
Construction work and change in %

Source: Federal Foundation of Baukultur.
Building Culture Report 2018-19.
Design: Erfurth Kluger Infografik

Building Stock and Heritage in Europe - Deep Renovation

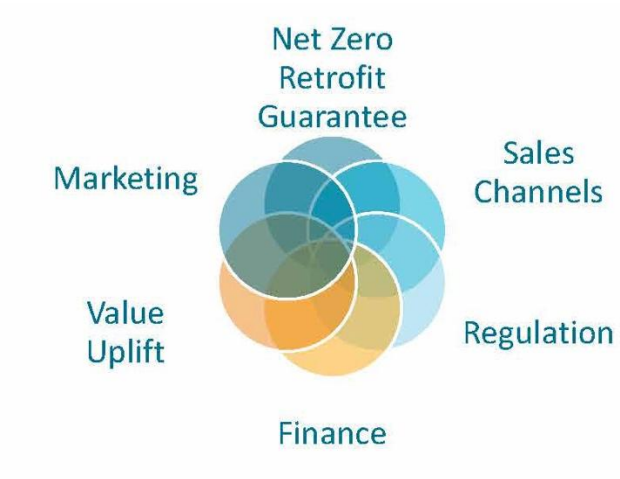
Highly efficient and decarbonised building stock by 2050



Renovation is the main challenge!

Source: BPIE 2018 Maarten van Groote

Building Stock and Heritage in Europe - Deep Renovation



Building Stock and Heritage in Europe - Strategies

Opportunties ahead?

Source: BPIE 2018 Maarten van Groote

Recommendations for national policies

- Ambitious and real implemented national renovation strategies
- Energy performance requirements for renovations demanding high insulation levels

Develop pilot cases

- Use available EU funding and financing
- Disseminate experience
- Develop handbooks, guidelines, training etc.
- Join forces with other industries (e.g. BetterHome)

Focus on the end-user

- Focus on comfort, health and wellbeing
- Provide service and system solutions, not construction materials
- Develop business models, including financial services

H2020 SMART AND SUSTAINABLE CITIES. WINNING PROJECTS 2017

NATURE-BASED SOLUTIONS FOR INCLUSIVE URBAN REGENERATION

URBiNAT - Healthy corridors as drivers of social housing neighbourhoods for the co-creation of social, environmental and marketable NBS
Coordination: CENTRE FOR SOCIAL STUDIES

CLEVER Cities - Co-designing Locally tailored Ecological solutions for Value added, socially inclusivE Regeneration in Cities
Coordination: FREIE UND HANSESTADT HAMBURG

Edible Cities Network - Integrating Edible City Solutions for social resilient and sustainably productive cities
Coordination: TECHNISCHE UNIVERSITAET BERLIN

proGIreg - productive Green Infrastructure for post-industrial urban regeneration
Coordination: RWTH AACHEN

URBiNAT

URBAN inclusive innovative NATURE

HEALTHY CORRIDORS TO REGENERATE URBAN AREAS

Coordination: CENTRE FOR SOCIAL STUDIES (CES), Coimbra, Portugal

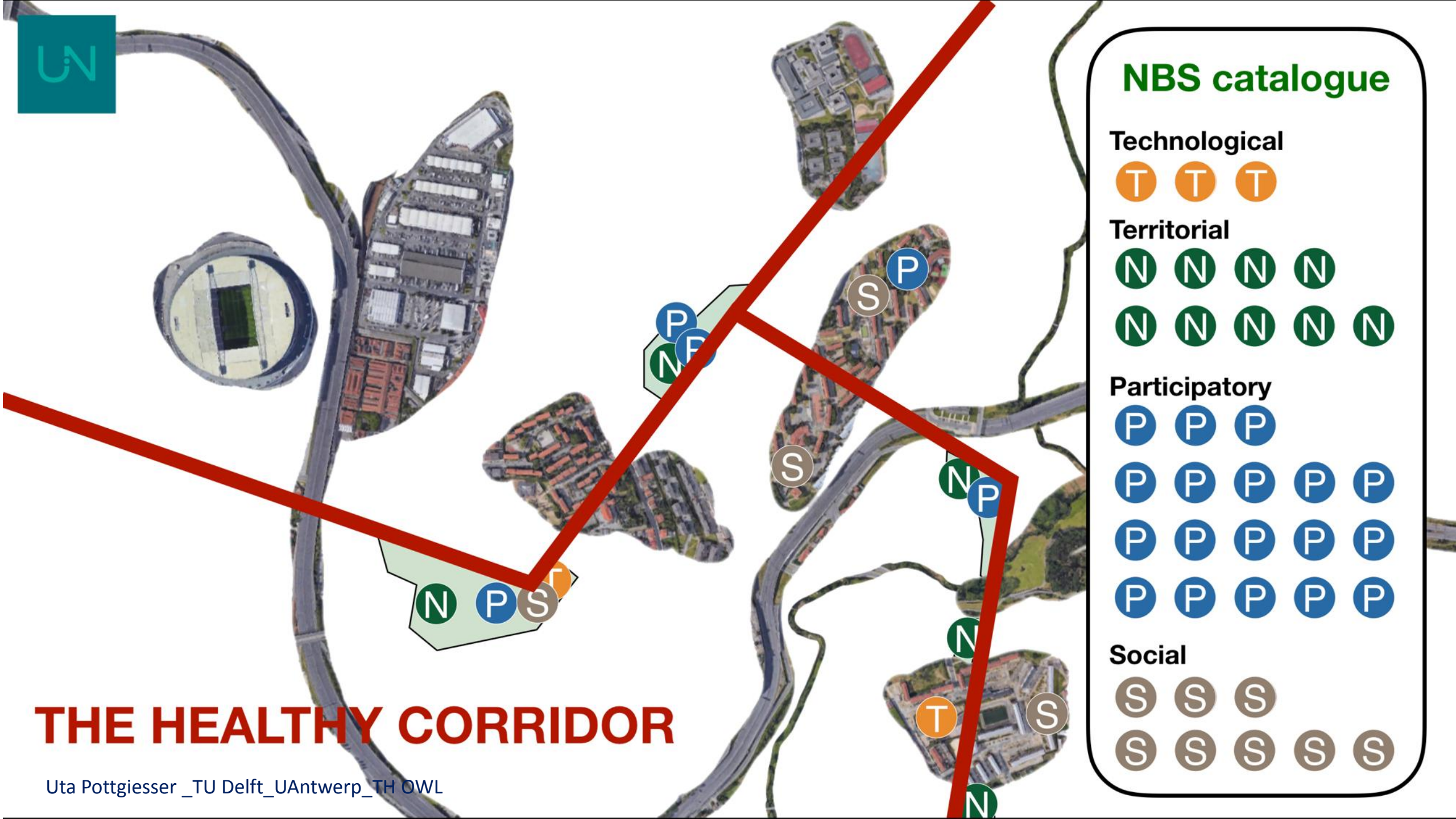
urbinat@ces.uc.pt @URBi_NAT

URBiNAT

Healthy corridors as drivers of social housing neighbourhoods for the co-creation of social, environmental and marketable NBS

Uta Pottgiesser _TU Delft_UAntwerp_TH OWL

ces Centre for Social Studies University of Coimbra
UNIVERSIDADE DE COIMBRA
Organização das Nações Unidas para a Educação, a Ciência e a Cultura
Universidade de Coimbra – Alta e Sofia inscrita na Lista do Património Mundial em 2013



Uta Pottgiesser _TU Delft_UAntwerp_TH OWL

URBiNAT

URBiNAT Community of Practice CoP

Denmark
- Høje Taastrup City
- DTI
- SLA
- City Facilitators

Sweden
- IKED

Belgium
- Bruxeles City
- U. Antwerpen

Germany
- Hochschule OWL

China
- Shenyang City
- NSCJL

France
- Nantes City
- CNRS - IRSTV
- ITEMS

Slovenia
- Nova Gorica City
- U. Gorica

Japan
- U. Setsunan

Portugal
- Porto City
- Domus Social
- CIBIO
- CES
- U. Coimbra
- GUDA

Spain
- IAAC
- NGS

Italy
- Siena City
- IULM
- Fond. Feltrineli

Bulgaria
- Sofia City
- UACEG

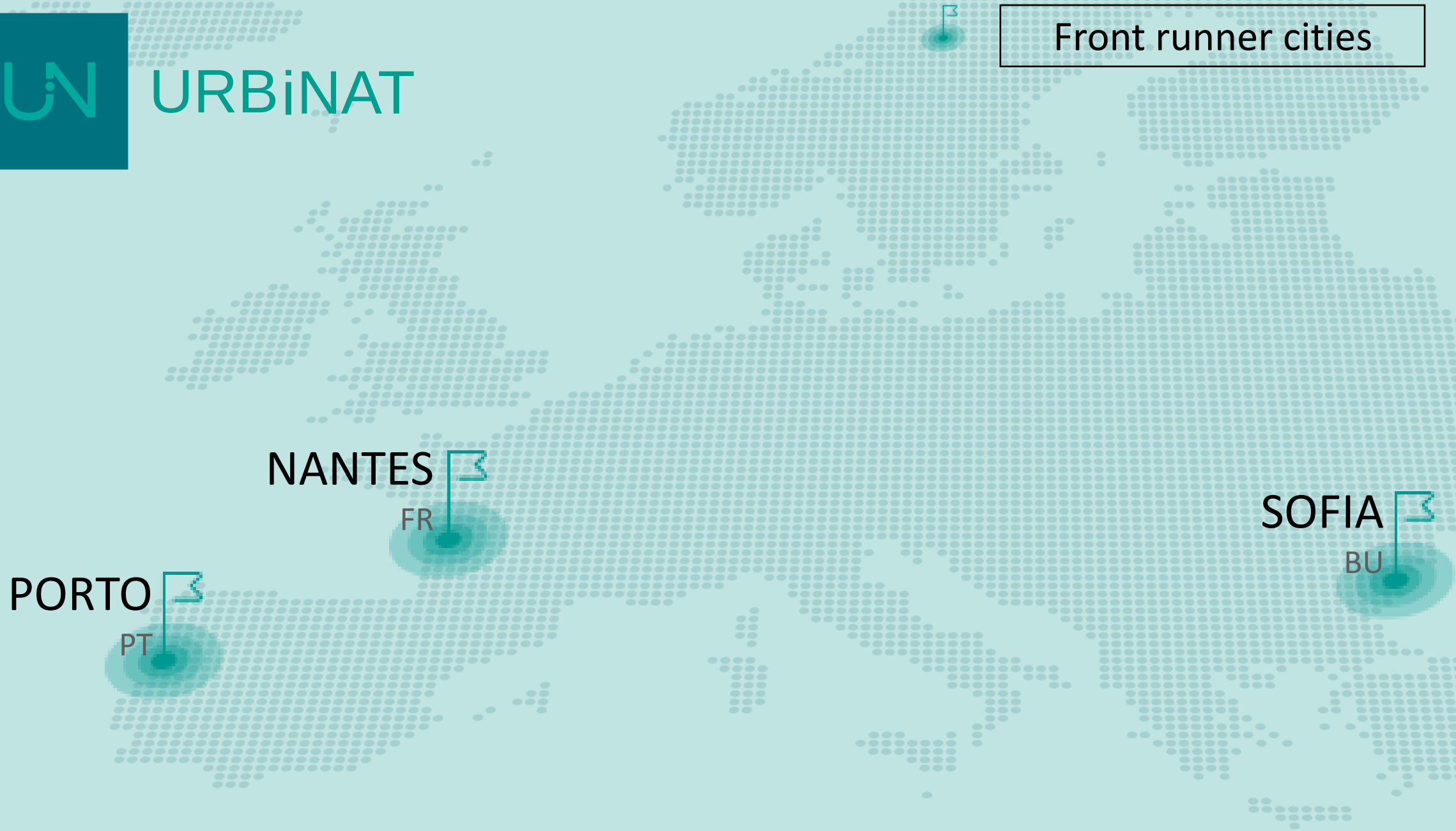
Iran
- Khorramabad City
- ICC

Oman
- PEIE

Brazil
- URBEM

URBiNAT

Front runner cities



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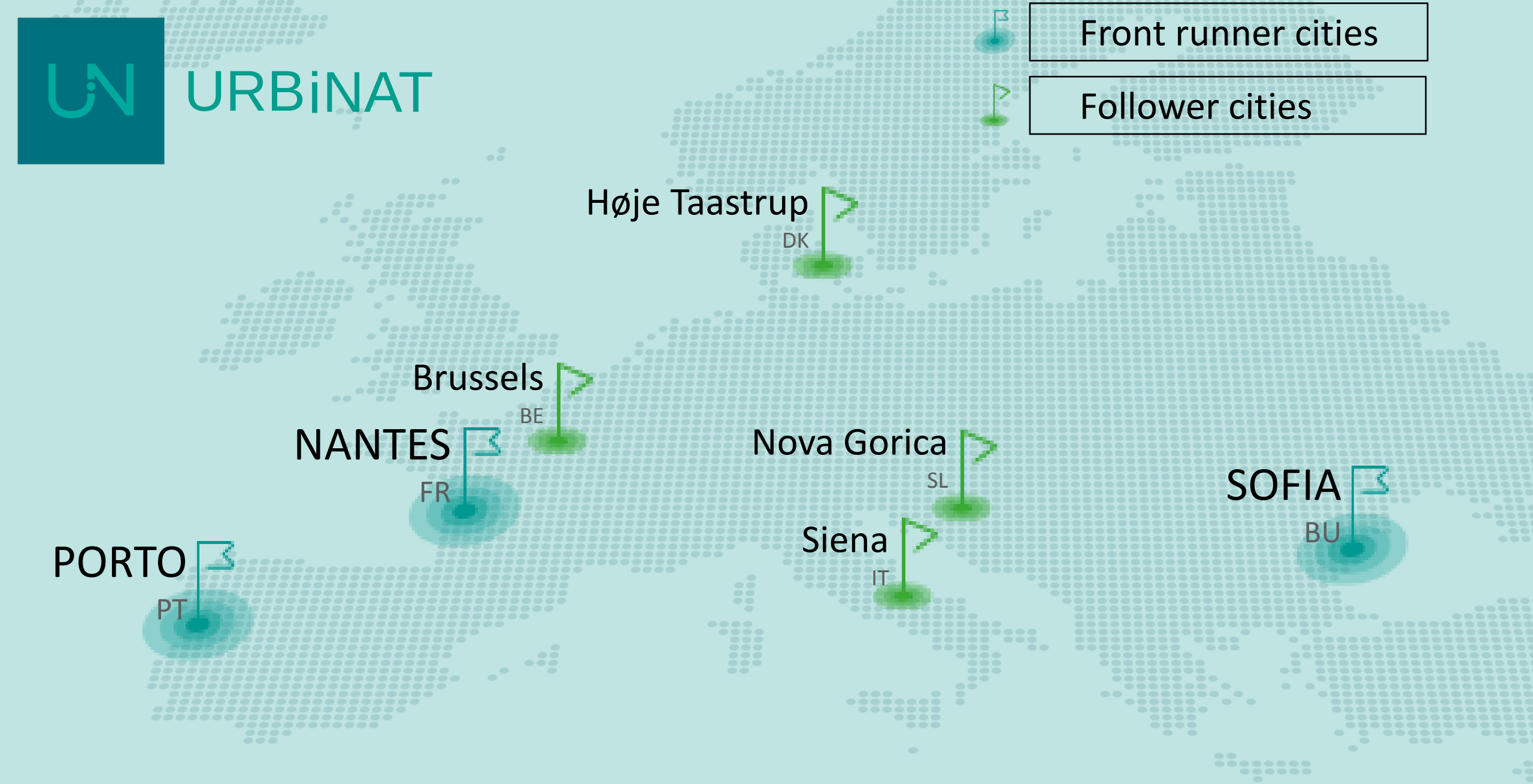
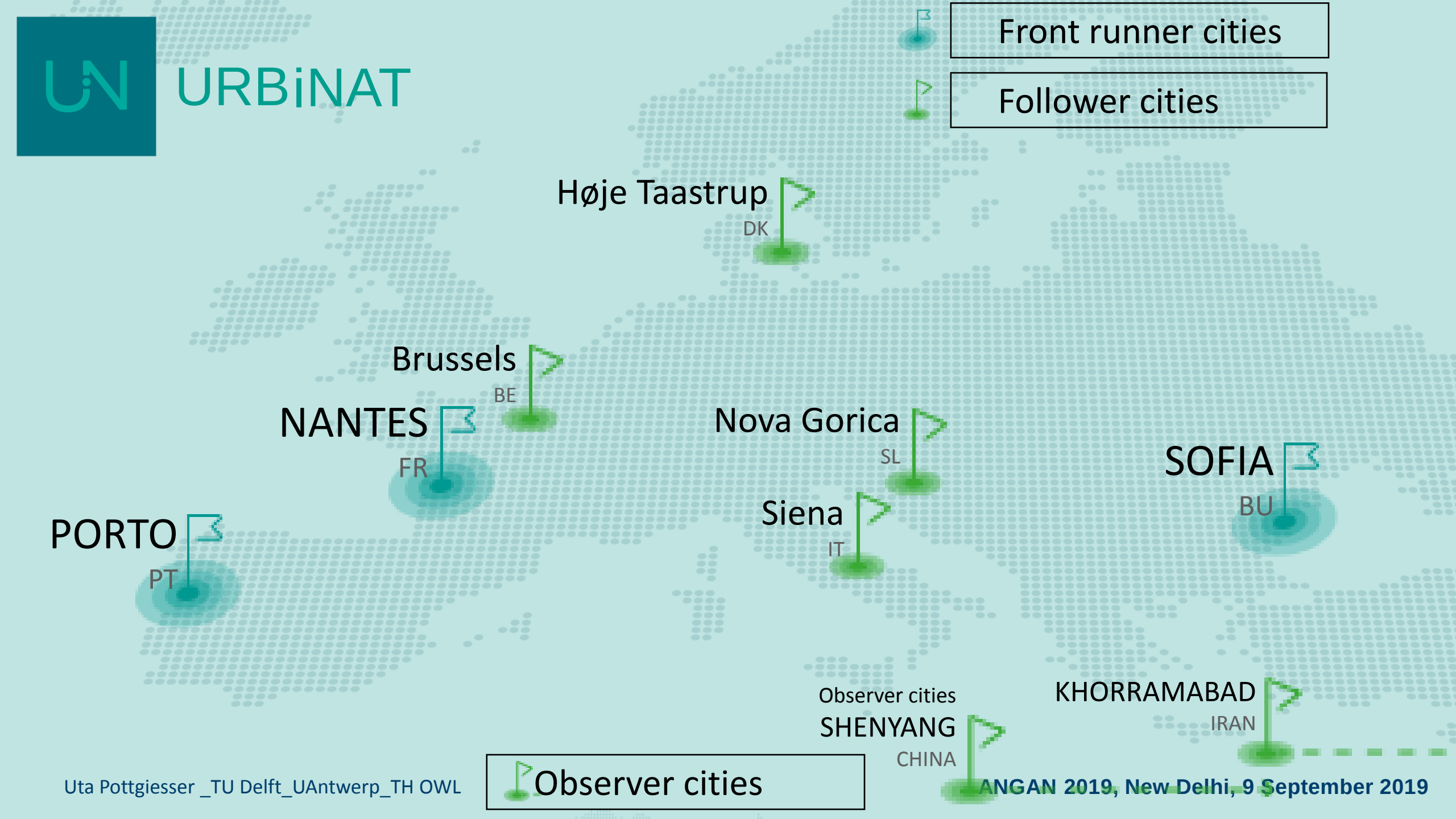

Front runner cities
Follower cities
Høje Taastrup
DK
Brussels
BE
NANTES
FR
Nova Gorica
SL
SOFIA
BU
Siena
IT
PORTO
PT


URBiNAT
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Siena
IT
PORTO
PT
Observer cities
SHENYANG
CHINA
KHORRAMABAD
IRAN
Observer cities

URBiNAT

HEALTHY CORRIDORS Front Runner

co-design, co-develop, co-implement with an urban plan to built NBS

PORTO

NANTES

SOFIA

URBiNAT

HEALTHY CORRIDORS

Follower Cities co-creation and co-development, to replicate and adapt NBS to other urban contexts within an urban plan

HØJE-TAASTRUP

BRUXELLES

NOVA GORICA

SIENA

Uta Pottgiesser _TU Delft_UAntwerp_TH OWL

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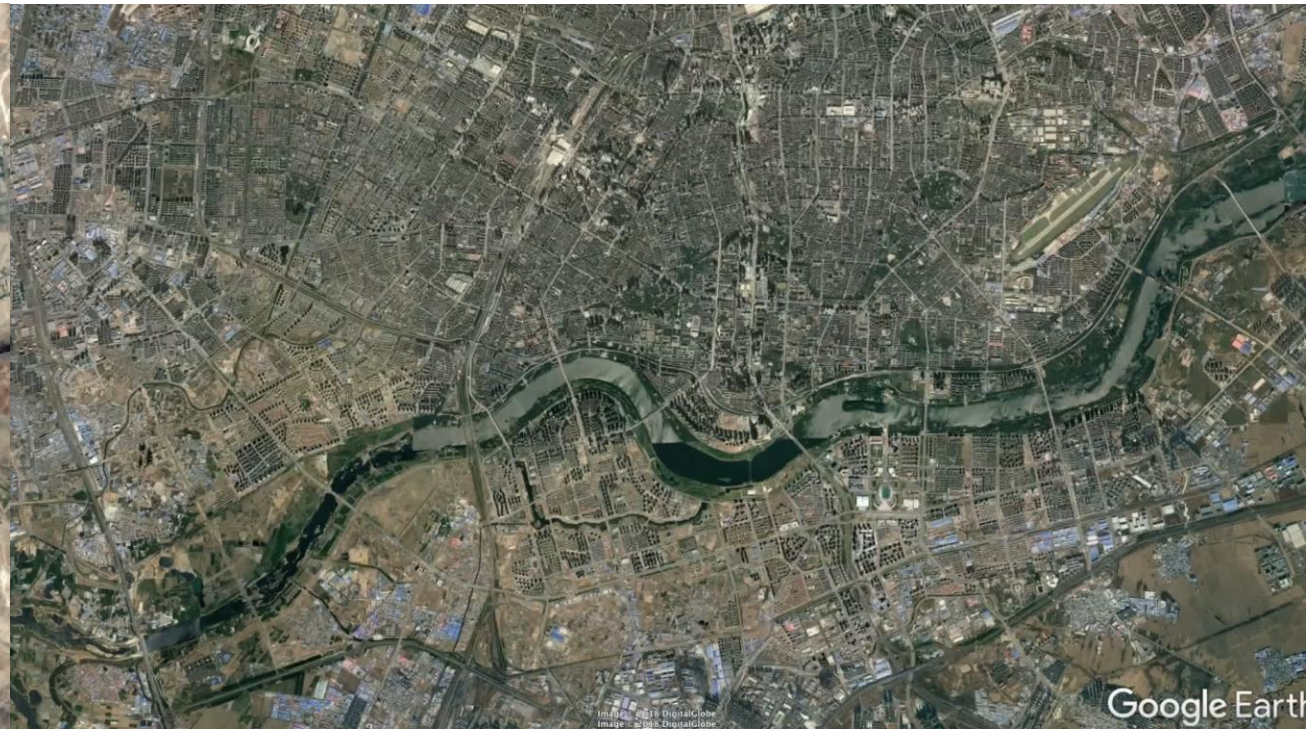
HEALTHY CORRIDORS Observer Cities



KHORRAMABAD

LOCAL PARTNER:

IRAN CHAMBER OF COMMERCE, INDUSTRIES, MINES AND AGRICULTURE (ICCIMA),

SHENYANG

LOCAL PARTNER:

NATIONAL SMART CITY JOINT LAB

URBiNAT

HEALTHY CORRIDORS Objectives

The public space for urban, social and nature-based solutions

Territorial Effects
Multifunctionality

The plurality of economic principles and practices

Local Governance
Participation
Uses and users

URBAN REGENERATION

Solidarity
Reciprocity
Autonomy

The citizen engagement as a innovative perspective for co-creation

Citizenship
Inclusion

The rights-based approach for equity in the public space

Source: Transsolar + Anja Thierfelder, Biennale 2016