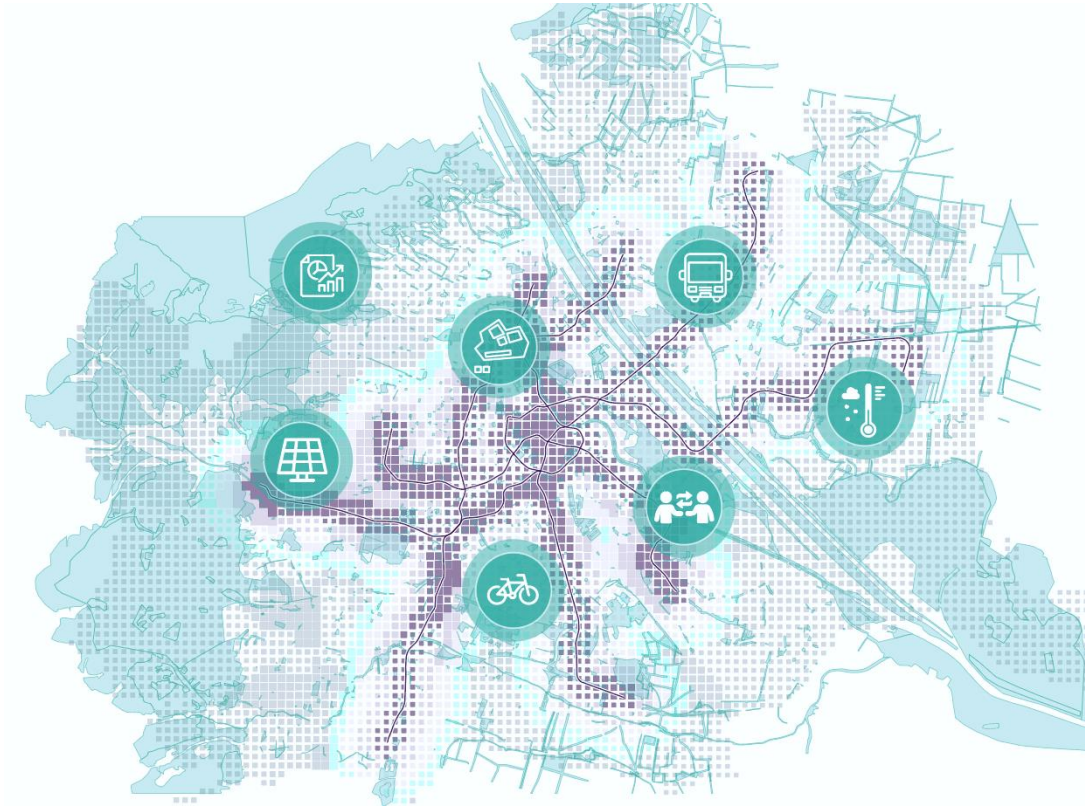
AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

Digital Resilient Cities

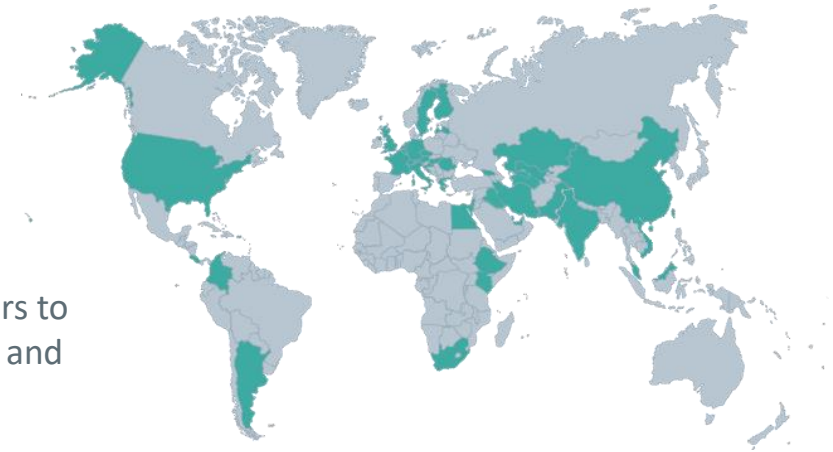


AIT Austrian Institute of Technology
Dr. Stefan Seer

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

Austria’s largest Research and Technology Organisation (RTO) based in Vienna.

The experts of Digital Resilient Cities empower decision-makers to transform cities and regions into climate-neutral, competitive and sustainable living spaces.



~1,450
AIT employees

50+
Digital Resilient Cities (DRC) experts

7 Center
with different research topics

12+
countries with DRC projects

CIL CITY INTELLIGENCE LAB

OUR VISION

We create **holistic solutions** addressing climate change, urban energy and mobility transformation in an **interdisciplinary** way.

TEAM

- Shareholders
  - The Republic of Austria (through the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology) has a share of 50.46%, while the Federation of Austrian Industries owns 49.54% of the AIT Austrian Institute of Technology.

- Managing Directors
  - Brigitte Bach, Managing Director, Spokesperson of the Management Board
  - Andreas Kugi, Scientific Director
  - Alexander Svejkovsky, Managing Director Finance, Processes & Administration

- Strategic Research Advisory Board (SRAB)
  - The Strategic Research Advisory Board (SRAB) is a panel advising the AIT Supervisory Board. Its main responsibilities include providing comments, statements and recommendations concerning AIT's strategic orientation and its 4-year research programme as well as formulating recommendations to the Supervisory Board.

PROBLEM

Climate change puts high pressure on decision-makers
(SDGs, climate and urban goals, EU taxonomy etc.)

What are the most reliable and efficient urban pathways against climate change?

How to adapt cities to inevitable climate impacts (e.g., with Nature-based Solutions)?

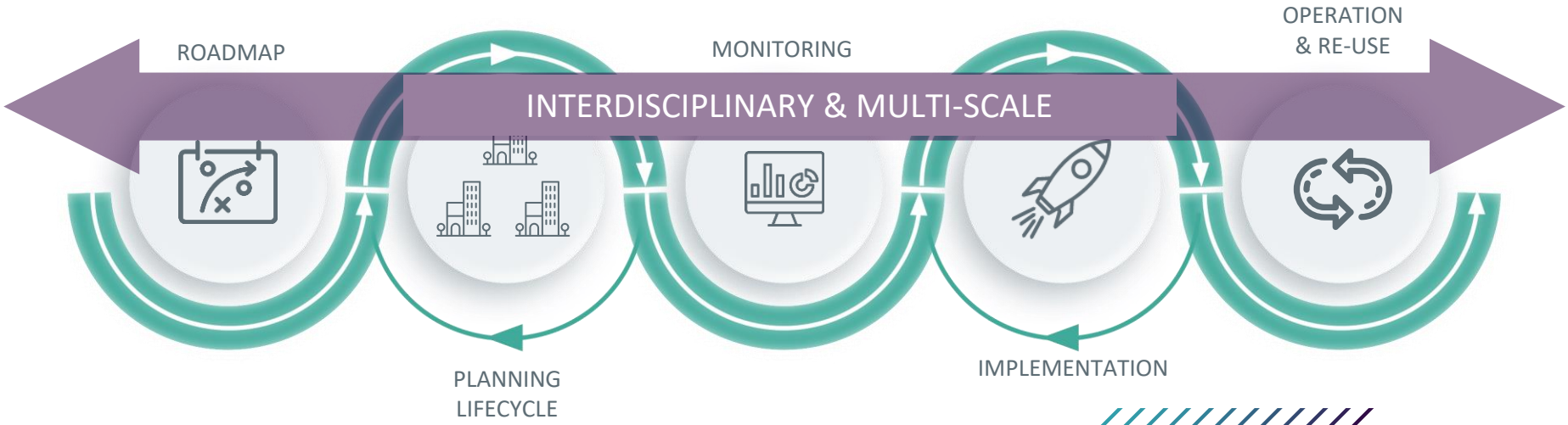
How to increase the resource efficiency of buildings and neighborhoods (e.g. circular economy)?

How to support decarbonization of Mobility & Energy sectors?

How to achieve more resilient and livable built environments?

SOLUTION

- Integrated workflows - strategies, planning, simulations and engagement
  - On different levels of scale (city to the building)
  - Cross urban planning, mobility, energy and climate
- Digital co-creation and evidence-based decision making in our City Intelligence Lab (CIL)

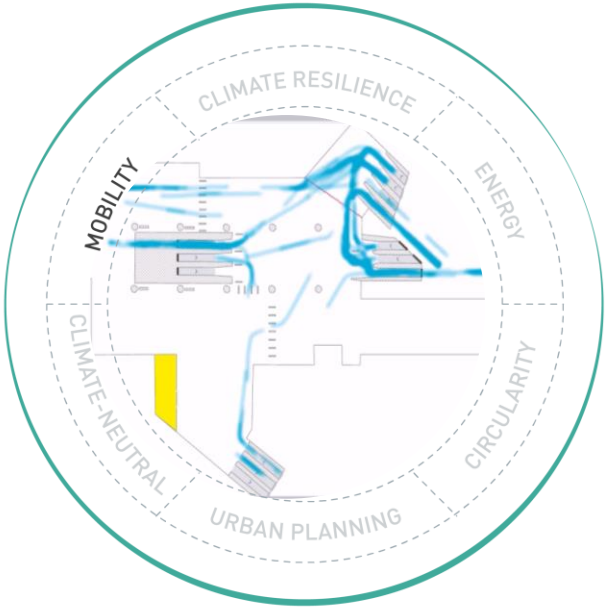


Mobility

INTEGRATED URBAN MOBILITY

PAIN

- Urban densification and transformation
- Overcrowding
- Mobility shift & modal split
- Availability & quality of data



INTEGRATED URBAN MOBILITY

PAIN

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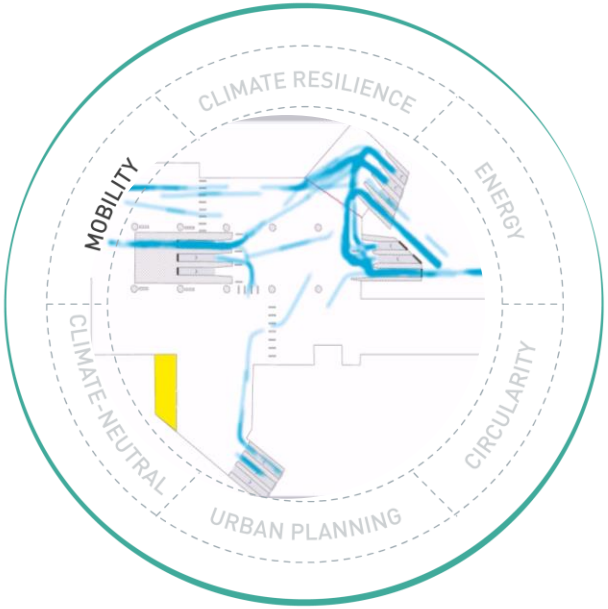
Overcrowding
Mobility shift & modal split
Availability & quality of data

SERVICES

- Sustainable Urban Mobility Plans (SUMPs)
- Optioneering of Mobility Solutions (MaaS, etc.)
- Pedestrian simulation and evaluation
- Impact Assessment of planned solutions



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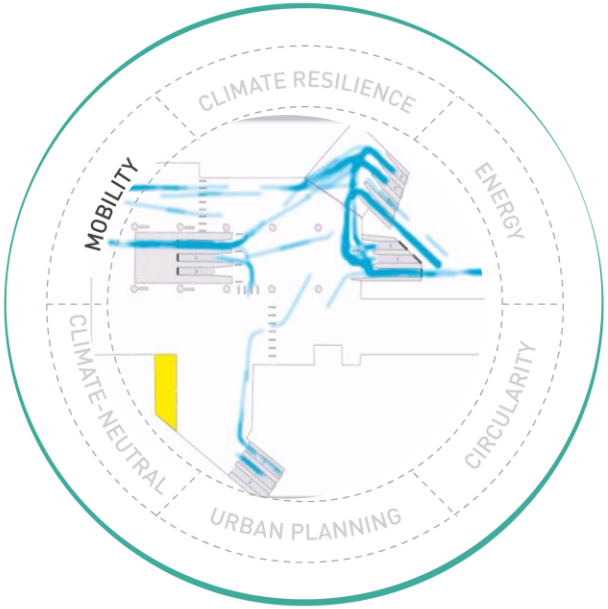
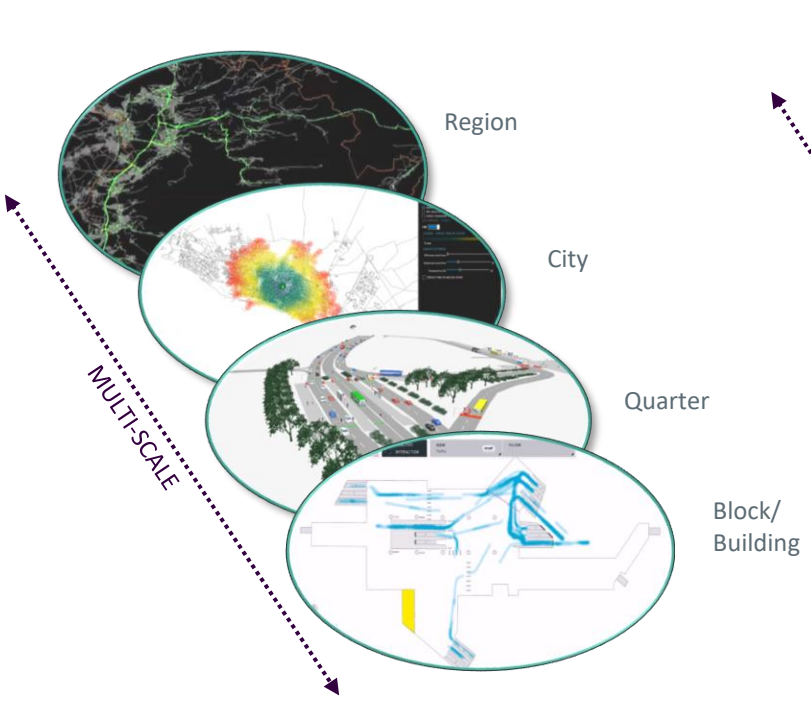
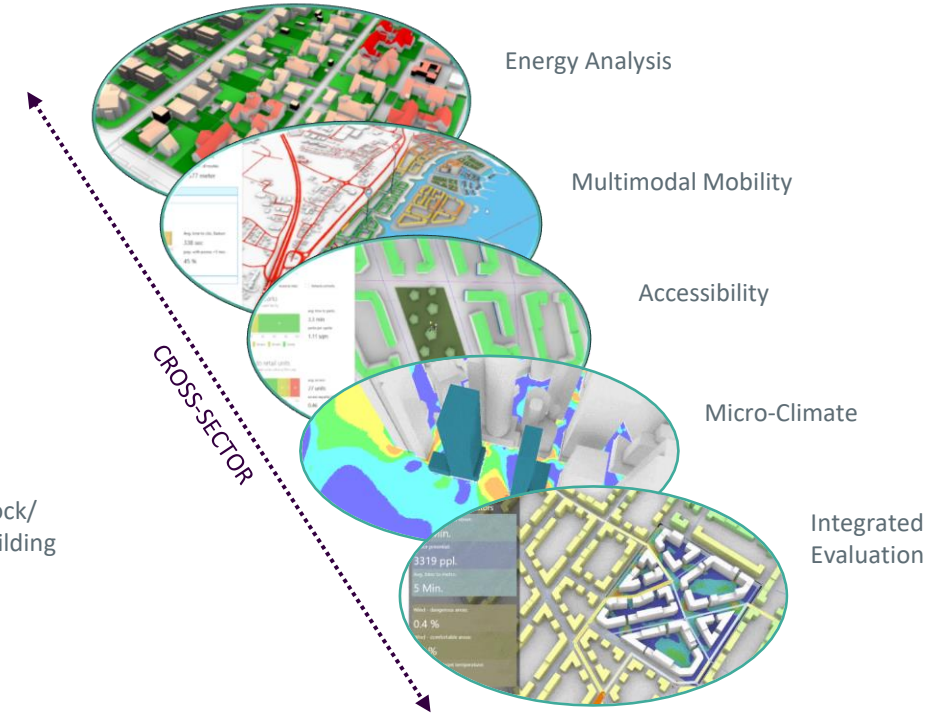


ADDED VALUE

Evidence-based decision making

Safety and efficiency evaluations of public spaces and large infrastructures


Region
City
Quarter
Block/
Building
MULTI-SCALE


Energy Analysis
Multimodal Mobility
Accessibility
Micro-Climate
Integrated
Evaluation
CROSS-SECTOR
3319 ppl.
5 Min.
0.4 %

SERVICE

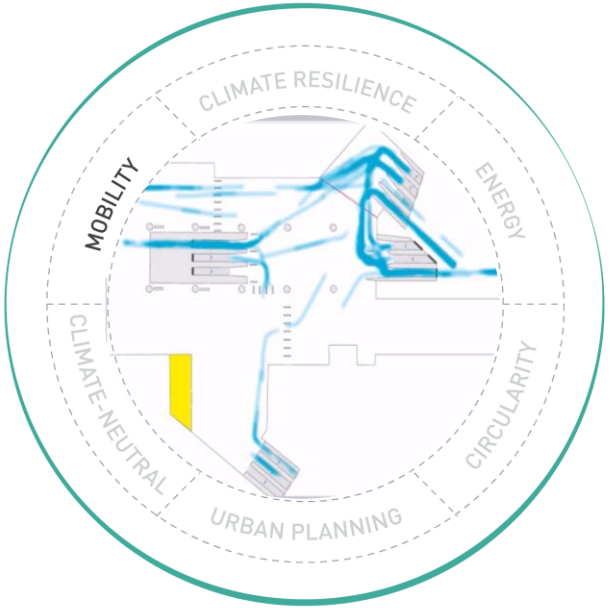
IMPACT ASSESSMENT AND MULTIMODAL TRAFFIC PLANNING

- Impact assessment of measures in the traffic demand and supply
- Integration of all different modes of transport (walking, cycling, car, PT, MaaS, UAM, etc.)
- Future trends towards mobility behavior, changing demand, emissions and noise
- Includes “hard” and “soft” control methods (e.g. provide information users)
- Monitoring of set measures

SERVICE

PEDESTRIAN SIMULATION

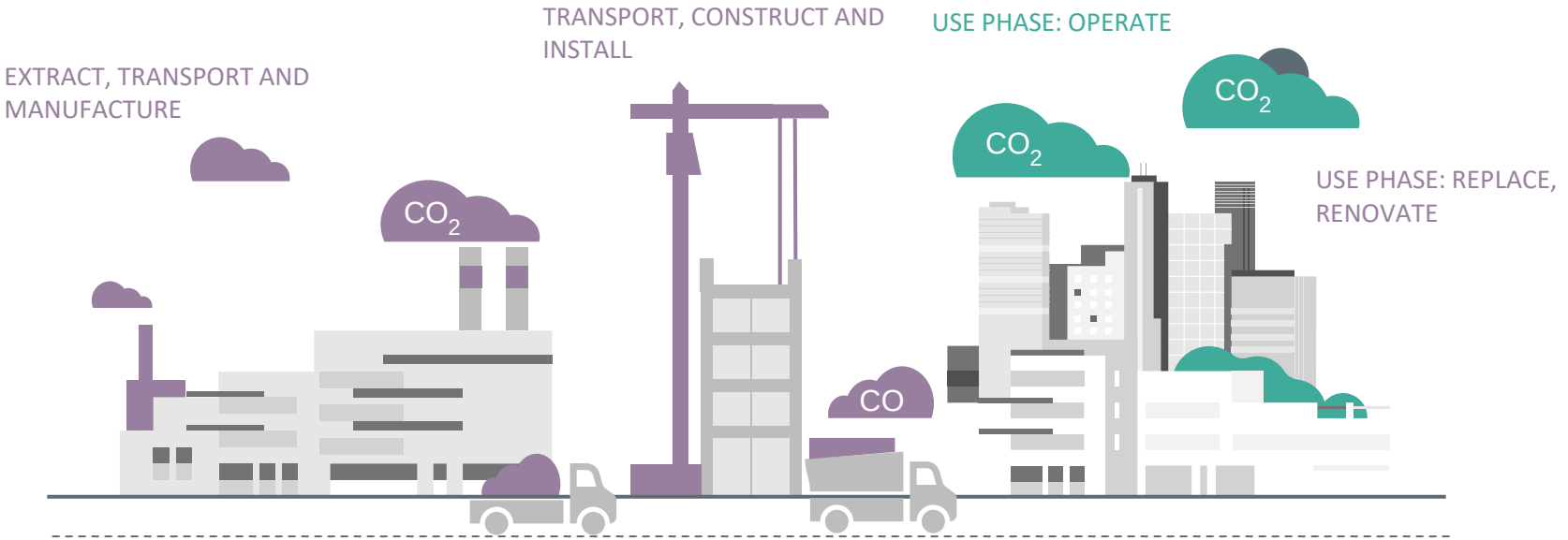
- Evaluate and compare various designs for public realm and transport infrastructures
- Transformation of urban space (e.g. curbside management)
- Infrastructure and usage characteristics: type and dimension, type of use and connection
- Evaluate effects of visitor demand: peak vs. non-peak, emergency evacuation, efficiency analysis
- Assess the effects on dwell times and overcrowding



Construction / Digital Building

PROBLEM

Types of carbon in buildings



EMBODIED CARBON

EMISSION FROM MATERIAL PRODUCTION AND PROCESSING TRANSPORT

OPERATIONAL CARBON

EMISSIONS FROM ENERGY, WATER USE, MOBILITY

SOLUTION

Energy Design & Management

- Renewable energy integration
- Developing concepts for energy generation, distribution, and storage.
- Decarbonization of the building stock

Digital Processes & BIM

- Standardization
- AI for BIM model analysis
- AI-based operation data analytics

Circular Processes

- Consulting for implementing circular processes in all life phases
- Support in design concepts with CO2-reduced materials and components
- Sustainability strategy and circular business model development

Work with architecture, engineering, and construction industry.
Consulting, research projects and studies. Our mission is to drive innovation in the AEC industry.

MARKET & RISKS

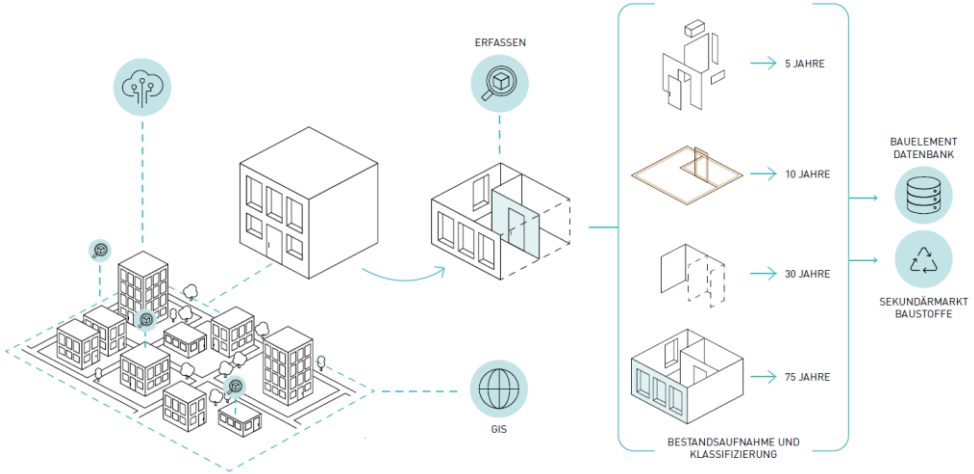
- Target market:
  - Building Owners (Retail, Housing)
  - Public and Legal Bodies (Office, Schools, Multiuse Buildings, etc.)
  - Facility Management
  - Construction Industry
  - Planner Architects, HVAC

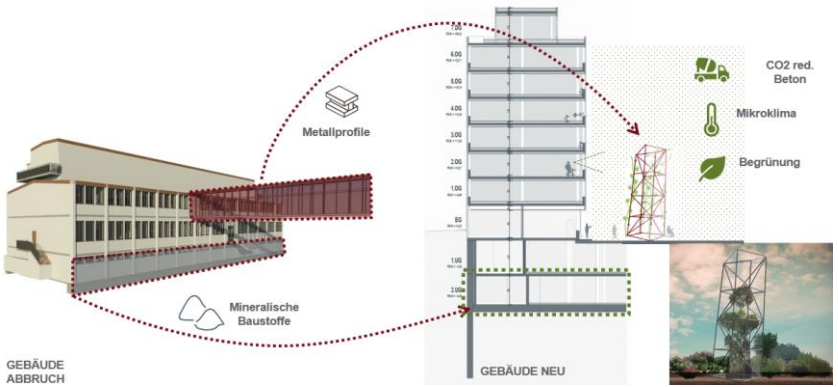
- Potential risks:
  - Financial Risks
  - Regulatory Risks
  - Technology Adoption Risks

SERVICE

CIRCULAR BY DESIGN FOR CITIES, BUILDINGS AND PRODUCTS

- We offer process development for modular designs for products and buildings, emphasizing circular product design, construction and material systems, and design for assembly and disassembly.
- Circular dismantling and value creation concepts for the reuse of materials - We utilize computational and generative design tools to address manufacturing processes and modular construction
- Development and creation of material building passes

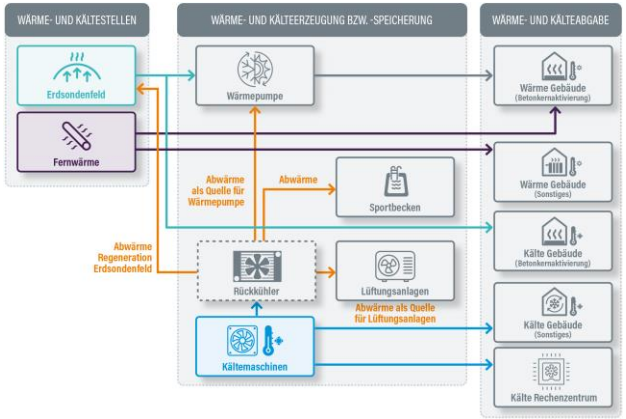


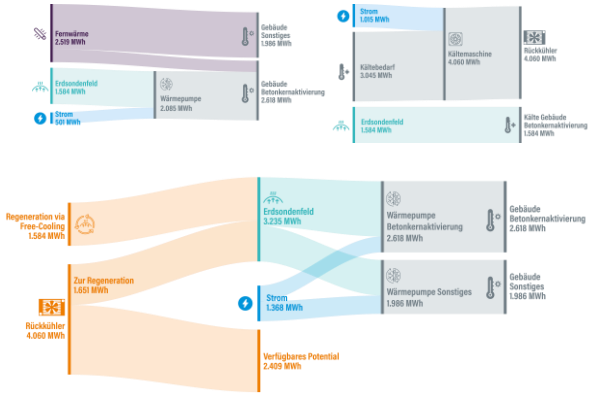


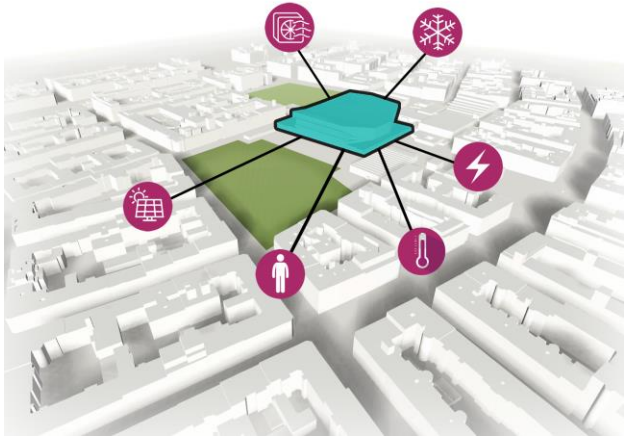
SERVICE

INNOVATIVE ENERGY DESIGN AND OPERATIONAL OPTIMIZATION

- We facilitate the cost- and energy-efficient implementation of renewable energy sources for individual buildings.
- Efficient Refurbishment Pathways
- Monitoring and Operational Optimization



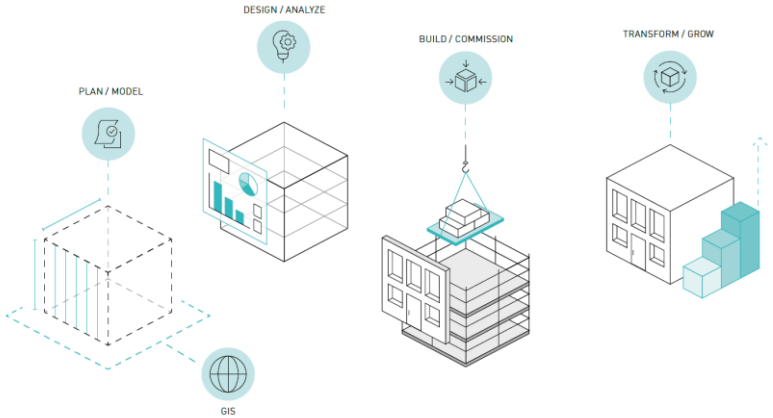


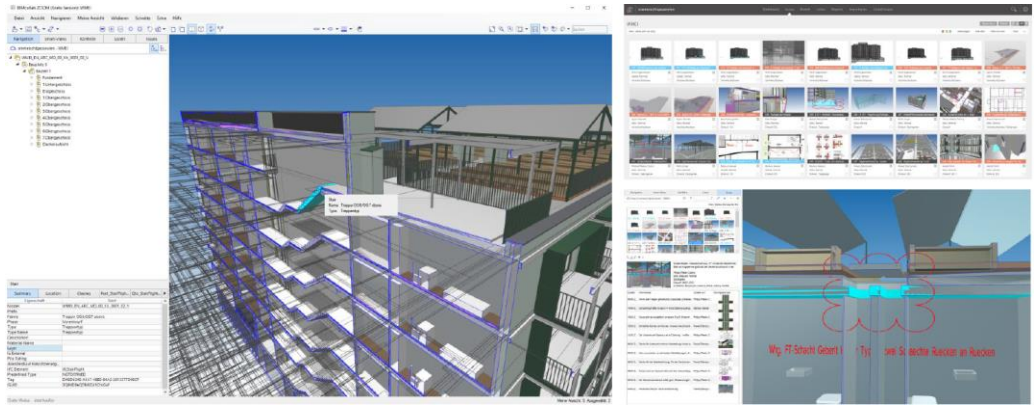


SERVICE

BIM PRE- STANDARDIZATION AND CONSULTING

- We offer BIM pre-standardization services (openBIM) to support better data exchange and collaboration in construction projects. The overall goal is Better Information Management (BIM)
- Specializing in BIM consulting services, we provide comprehensive support throughout a building's lifecycle with model-based project assistance (EIR & BEP).
- Our BIM Consulting assists in implementing a model-based approach and collaboration. It serves as the foundation for use cases in energy-efficient and circular building modeling.





THANK YOU!

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