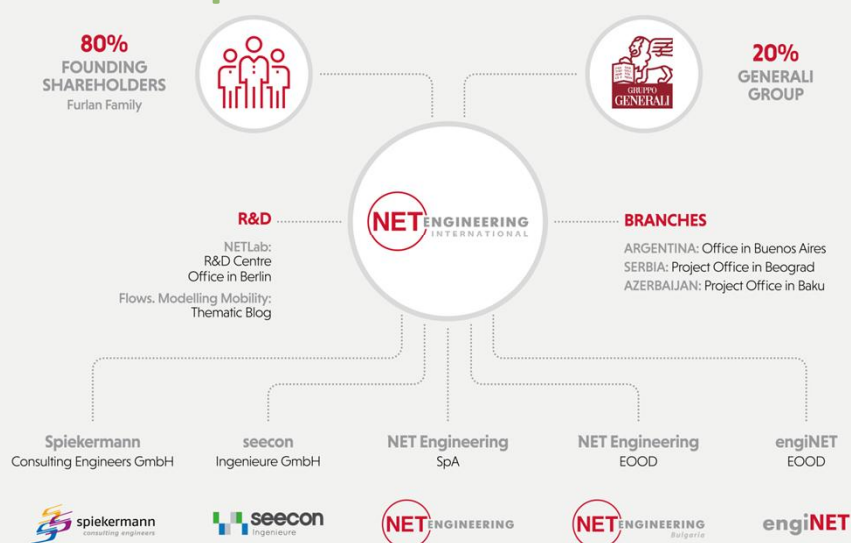


Who we are

## Our Group



## Our Vision

NET Group uses **“a responsible, sustainable and far-seeing approach”** while putting faith in the Vitruvian concepts of ‘firmitas, utilitas, venustas’ by adopting an innovative – **lean, smart & green** – design approach.

We believe that **smart and sustainable cities can only be reached through smart and sustainable infrastructure**. Being part of this movement is our passion and our goal.



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## We Do

We study, plan, design, model, supervise construction, manage commissioning, monitor operations in Real- Time, manage Big Data, create IT platforms.

Each element takes part in the “system”, is influenced by the project and, at the same time, influences the design process. This is what we mean by “system engineering”. **This is our method. This is our design approach.**

For large infrastructures as well as for local initiatives. **This is the only way to make projects effective, efficient, durable, sustainable.**

**to deliver the most complete solutions for you**

### Mobility Ecosystem

**Through**

Urban traffic planning & demand analysis.

Smart intermodal mobility (train, tram, metro, brt, sharing systems).

User/travel experience (ticketing, ITS systems, communication platforms).

Mobility-as-a-Service perspective to identify necessary improvements for an optimised infrastructure asset.



**to re-create the most advanced and trustable**

### Virtual Environment

**Through**

Building Information Modelling.

Capturing and digitalising existing infrastructure with mobile laser systems and creating digital models as data servers for operation and maintenance.

Digitalising Asset Management: asset big data treatment for life cycle planning.



**to bring to you the most efficient and up-to-date**

### Smart Infrastructure

**Through**

Real-time monitoring sensors.

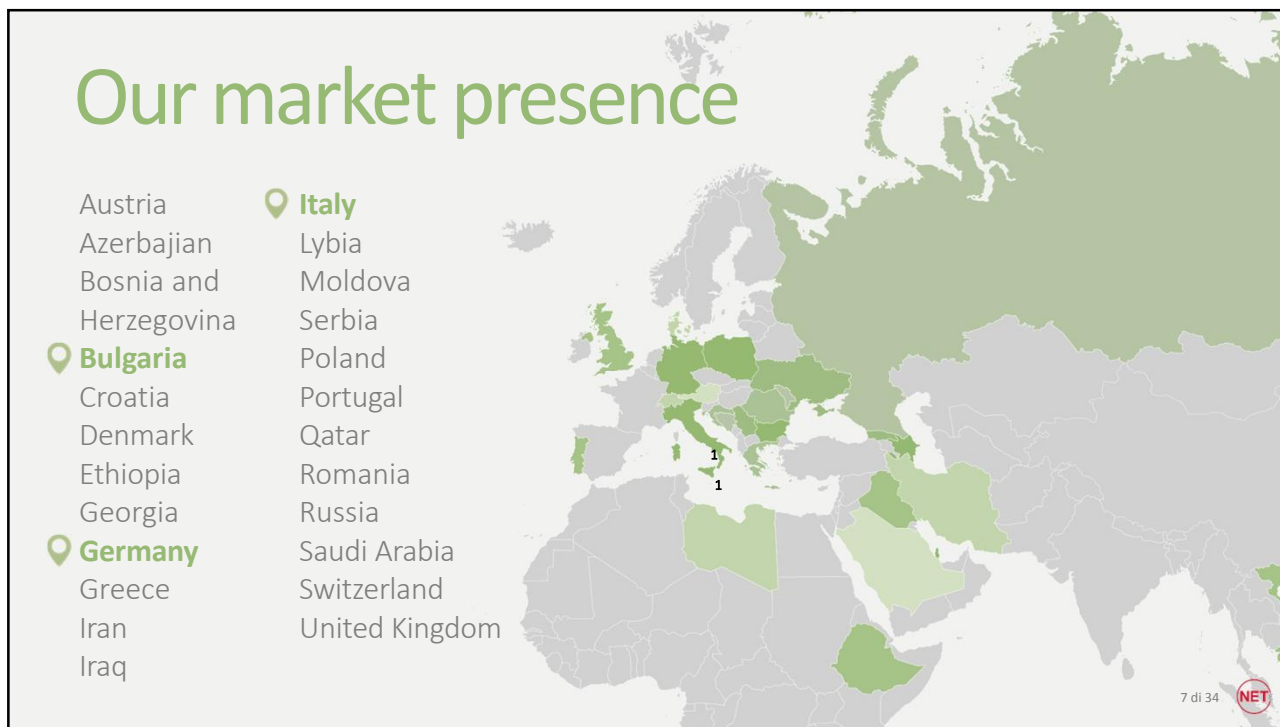
Lifecycle performance of buildings and infrastructure.

Energy efficiency vs. smart buildings and infrastructure.

Envision Harvard sustainability protocols for infrastructure.



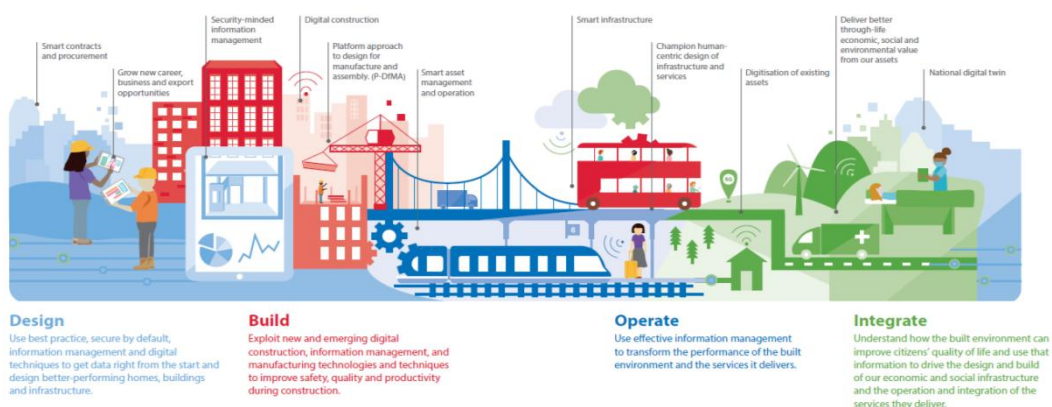
6 di 34 



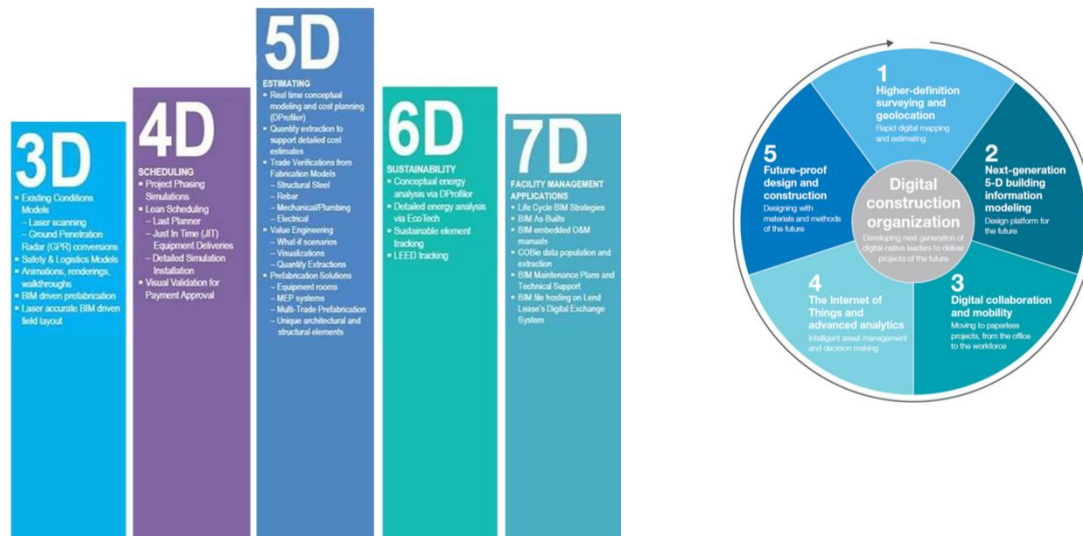
## Zofnass tools for planning cities

# 2

## Trends



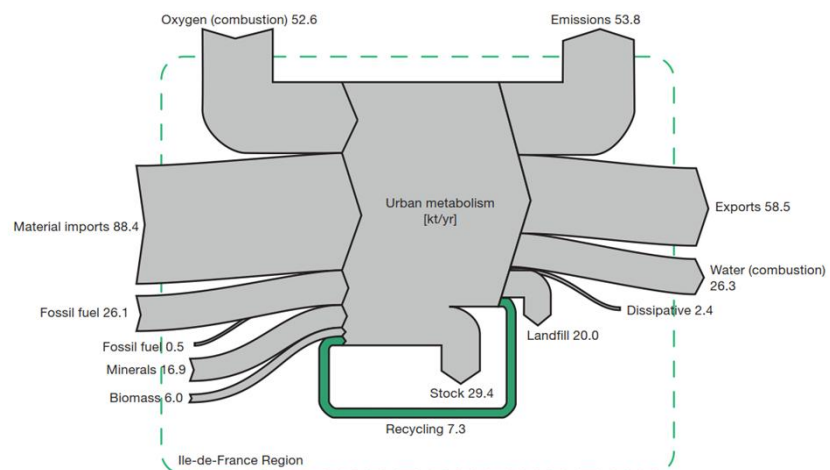
## Trends



## Metabolism of urban areas

Cities are **built and dynamic ecosystems** which constantly exchanges flows of energy and resources with the environment.

Currently **material flows in cities are mainly linear** in contrast to natural ecosystems with **closed loops and feedbacks**.



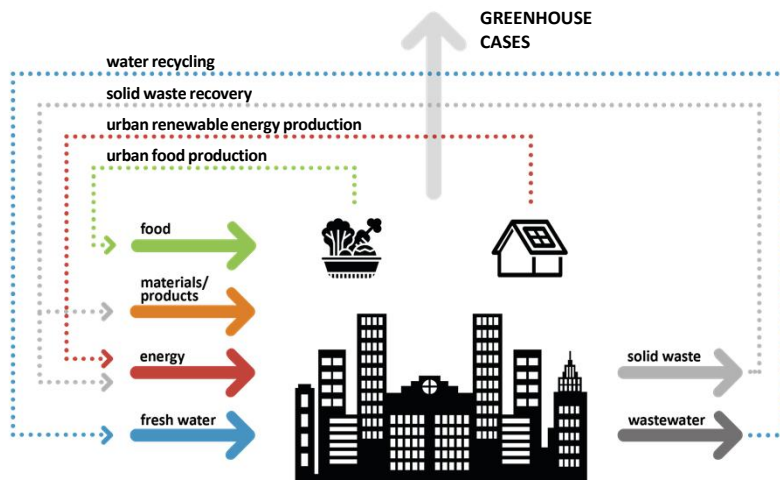
Urban Metabolism of Paris (WBGU 2016, 67)

12 di 34 **NET**



# Integrated infrastructure planning

The challenge is to **get as close as possible to a cyclical mode of metabolism** in which all kinds of waste are minimized, reused, or recycled.



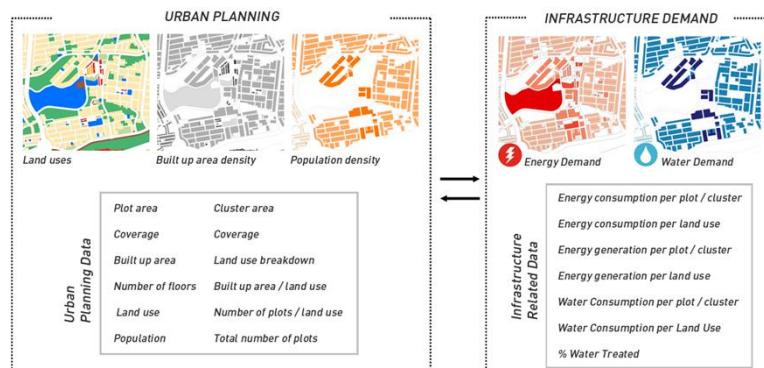
This is what we mean with the definition:

**Urban Circular Economy.**

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# Morphology of the urban fabric

**Urban planning and technical infrastructure development must proceed in parallel** as nodes and networks heavily influence the mix and distribution of land uses and the degree of density versus open space.

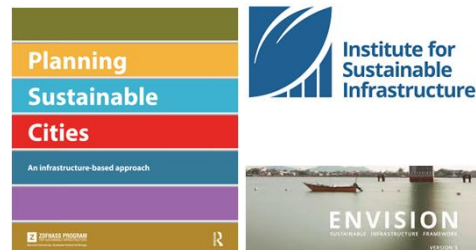


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## Zofnass tools

Zofnass tools **translate the principles of sustainability into day to day decision making** in order to provide

- 1) **Objectivity** in assessing sustainability
- 2) **Common ground** for stakeholders collaborations
- 3) **Guidance** in the decision making process
- 4) **Education** and innovative thinking
- 5) **Improved** competitiveness and **recognition**



City scale:  
**Planning Guidelines**

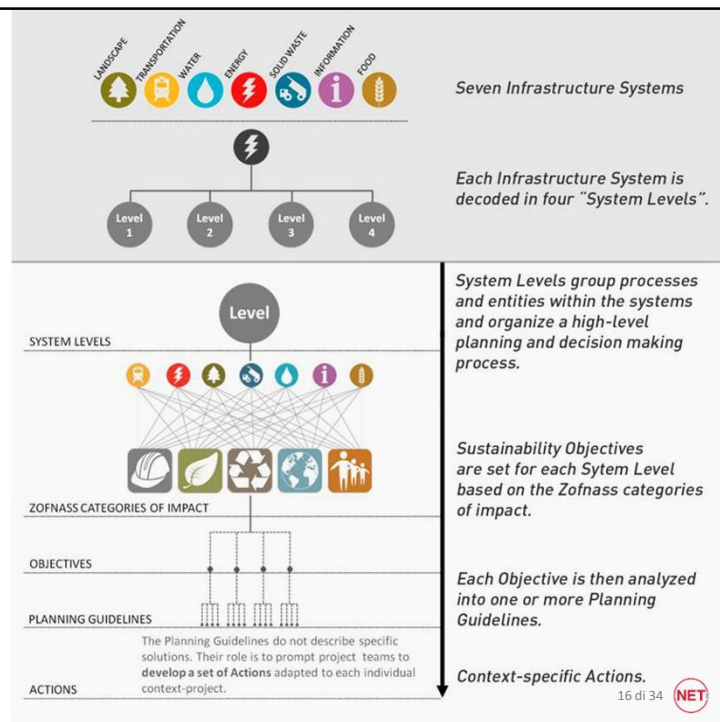
Project scale:  
**Envision framework**

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## From systems to actions

The Zofnass program considers **the city as a meta project** (sum of projects) and stimulates system thinking.

The guidelines enable to link infrastructure development to city scale planning by **building up infrastructure projects and items to the infrastructure system of the city.**





## Diapositiva 15

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**TM9** Is that too much information on the slide? Some of the info might be good to be said, only. I redesigned it and left other text in the section for notes to be said

Tobias Moeller; 03/05/2019

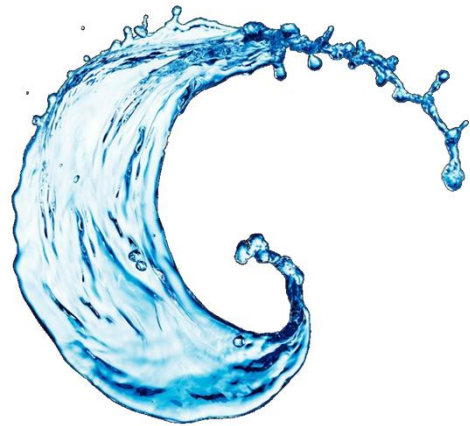
**TM10** Might this with additional remarks actually nice to be said on the first slide ("trends") which sets the scene for this chapter.

Tobias Moeller; 03/05/2019

## Example: Water Systems

Strategies towards a sustainable water systems with the purpose to enable reliable access to water:

- 1) **Watershed management:** Preserve long-term renewability and quality of water resources
- 2) **Water saving:** Reduce water consumption
- 3) **Water recovery:** Reuse water with fit-for-purpose treatment
- 4) **System Efficiency:** Minimize leakages

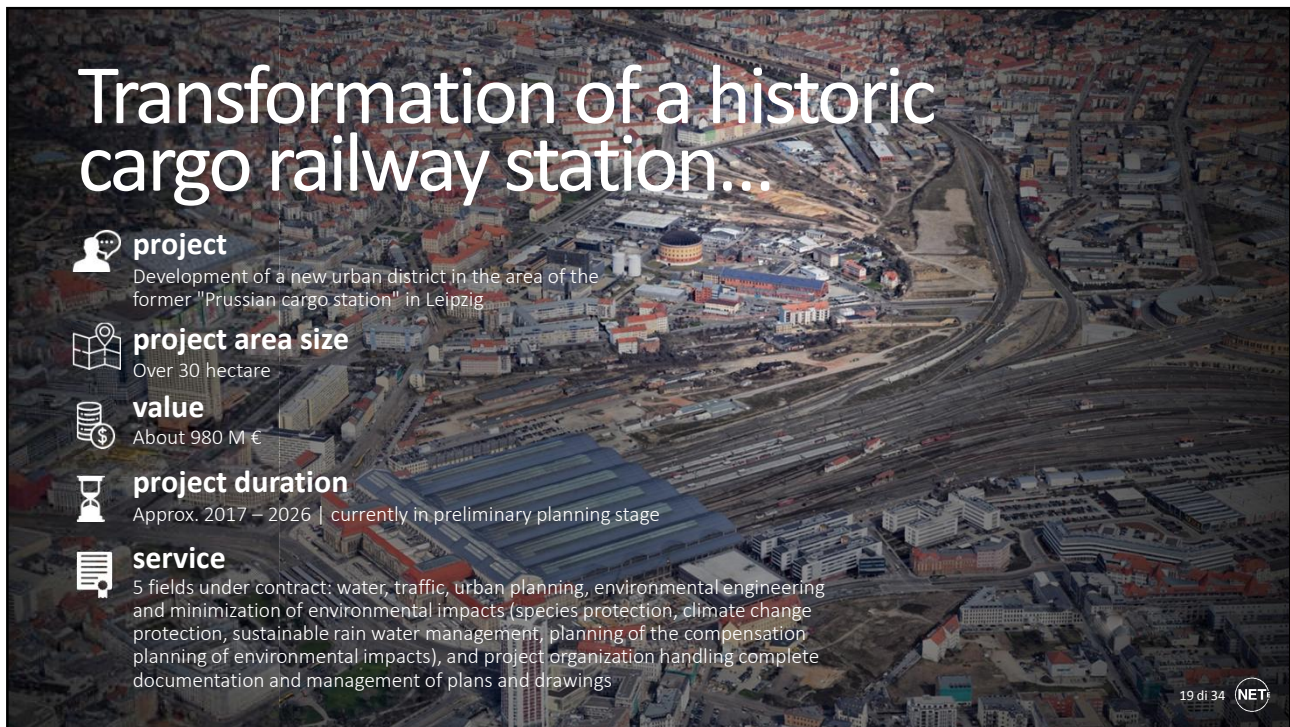


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# 3

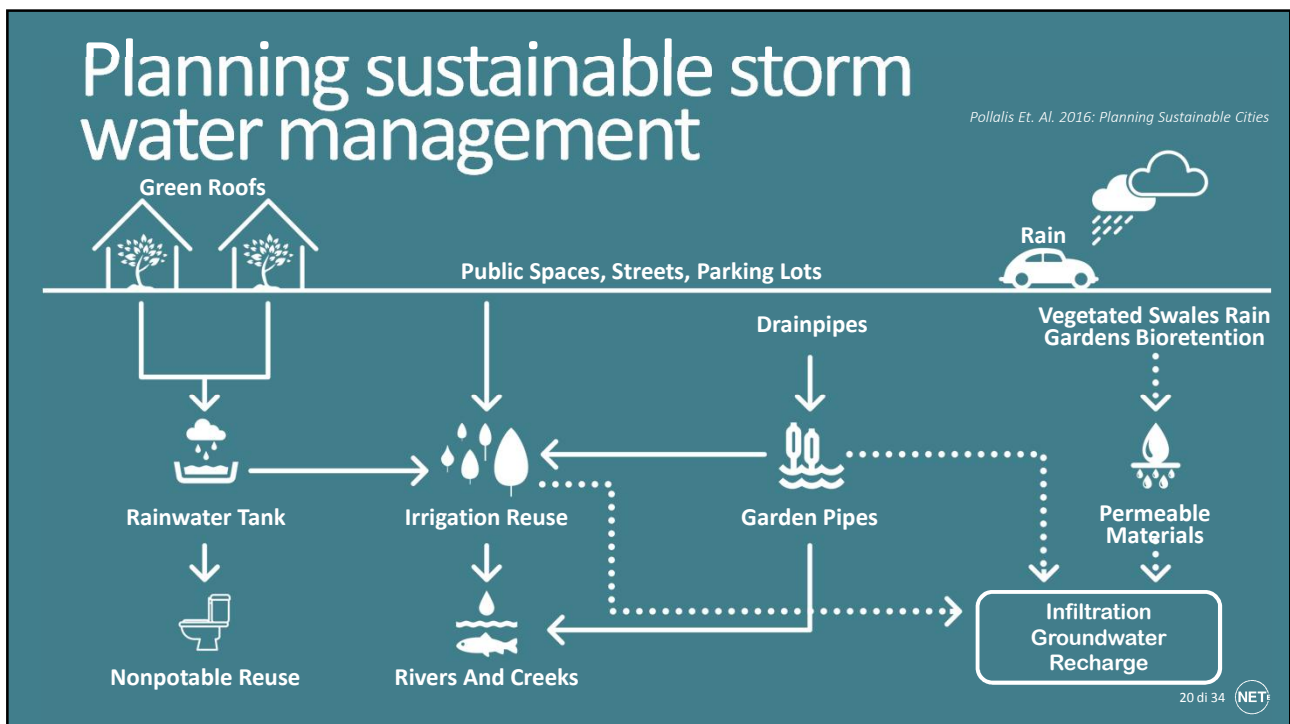
The Leipzig Project

# Transformation of a historic cargo railway station...



- project**  
Development of a new urban district in the area of the former "Prussian cargo station" in Leipzig
- project area size**  
Over 30 hectare
- value**  
About 980 M €
- project duration**  
Approx. 2017 – 2026 | currently in preliminary planning stage
- service**  
5 fields under contract: water, traffic, urban planning, environmental engineering and minimization of environmental impacts (species protection, climate change protection, sustainable rain water management, planning of the compensation planning of environmental impacts), and project organization handling complete documentation and management of plans and drawings

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# Water treatment & networks

in conjunction with transportation  
networks & landscape entities

## Leadership

develop a decentralized water treatment system and provide environmental regulations for water treatment; consider the risk of flooding (100-year-events); find solutions for integrated infrastructure by breaking through traditional silos of operation & maintenance

## Quality of Life

Promote community wellbeing by pre-treating rainwater and stormwater before infiltration in spaces underground and in a central hollow, also used for recreation



graphics by LOIDL/ Octagon

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# Water treatment & networks

in conjunction with transportation  
networks & landscape entities

## Ressource Allocation

landscape and traffic planning to configure water networks in a way that slopes of streets are directing rain- and stormwater to spaces dedicated for bioretention & maintenance

## Climate and Risk

design of infrastructure networks to infiltrate occurring rain- and stormwater of a 100-year event; refill groundwater levels in times of climate change



graphics by LOIDL/ Octagon

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## ... through the eyes of ENVISION®

### QL1.1 **Improve Community's QoL**

series of public workshops to assess needs and preferences of surrounding community; urban concept rated and selected by public forum; regular updates about progress and development

### QL2.1 **Improve Community Mobility**

low car-traffic, pedestrian- and cyclist-friendly district including new connections to neighboring districts;

### QL2.2 **Encourage Sustainable Transportation**

new stations for public transport and modern ways of mobility with electric vehicle and car-sharing stations

### QL3.2 **Preserve Historic Resources**

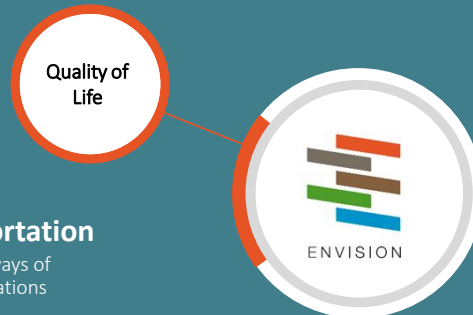
Memorial-protected warehouses, loading ramps and paving stones are renovated, or dissembled and reused

### QL3.3 **Enhance Views & Local Character**

Cultural entities can stay in memorial-protected buildings to continue being a marker of local character

### QL3.4 **Enhance Public Space & Amenities**

Parks, city squares, and playgrounds are created, which did not exist previously



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## ... through the eyes of ENVISION®

### LD1.1 **Leadership & Commitment**

Public administration of Leipzig and developers have strong commitment to address social, environmental, and economic aspects

### LD1.2 **Foster Collaboration & Teamwork**

Draft documents for the urban concept award called for a economically efficient, environmentally friendly, and socially inclusive design

### LD1.3 **Provide for Stakeholder Involvement**

Public forums ensured that surrounding communities and other stakeholders were involved early on; their input influenced the project greatly as previously mapped groups and selected individuals with high diversity chose the award-winning urban concept



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## ... through the eyes of ENVISION®

### RA1.2 Use Recycled Materials

old material from historic venue such as ramps and cobbler stones are reused and placed in new pathways and public spaces

### RA2.4 Commission & Monitor Energy Systems

modern and innovative facilities and networks on site are integrated into integrated energy management systems including holistic commissioning and monitoring systems

### RA3.4 Monitor Water Systems

water systems are monitored during their operations securing a long life



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## ... through the eyes of ENVISION®

### NW1.1 Preserve Sites

from historic venue such as ramps and cobbler stones are reused and placed in new pathways and public spaces

### NW1.4 Preserve Undeveloped Land

100% of the area was previously developed; almost 30 % are returned to open space as parks with natural hydrology

### NW2.1 Reclaim Brownfields

vast amounts of earth must be replaced to reclaim the classified brown field

### NW2.2 Manage Stormwater

rainwater will seep away on site or is directed into local processing facilities avoiding the discharge of potentially polluted rainwater into urban waster infrastructure or water streams nearby

### NW2.4 Surface & Groundwater Quality

avoiding discharge into streams close by protecting water quality of ecosystems downstream



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## ... through the eyes of ENVISION®

### CR1.2 **Reduce Greenhouse Gas Emissions**

City of Leipzig being a winner of the European Energy Award (eea) Gold, high standards for energy efficiency and climate protection are set, aiming for energy efficient district heating with optimized heat utilization combined with local heating networks with low temperature and more than 50% renewable energies



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# 4

NET's outlook

(NET)

# Trends

The **digital challenge** for the infrastructure market



when the **building**  
becomes the **service**

**Construction as a service (CAAS):**  
cut the supply chain



**AR/VR Vs BIM**  
**Bim 1d To 7d**

**Digital asset database**  
**Driven by augmented reality**  
Everybody will need an  
augmented reality strategy!



**Social**  
**Effect**

**Stakeholder & public**  
**engagement**  
Envision and participated  
design



**Engineering**



**Big Data**  
**Management**



**Augmented**  
**Reality**

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## seecon DataHub

energy efficiency management for buildings

User management

Database structure

Automatic reporting

Energy efficient  
buildings

Details: Rathaus Musterhausen

Adresse	Gebäudetyp	Fläche	Baujahr	Denkmalschutz
04275, Musterstr. 66	Verwaltungsgebäude	4590 m² (BGF)	1984	Nein

Gebäude Zähler Abrechnungen

Verbrauchsabrechnungen

Neue Verbrauchsabrechnung Upload Verbrauchsdaten

Heizkosten

Rechnung	Abrechnungszeit	Verbrauch	Kosten	Zähler	
Erddgas H (DY-11587)	30.04.2014 bis 01.04.2015	230879 kWh	13110 €	PQ-56456-OL-65689	<a href="#">Bearbeiten</a>
Erddgas H (DY-13245)	16.04.2013 bis 29.04.2014	239547 kWh	13689 €	PQ-56456-OL-65689	<a href="#">Bearbeiten</a>

Stromkosten

Rechnung	Abrechnungszeit	Verbrauch	Kosten	Zähler	
Strom (St-5687)	07.01.2013 bis 06.01.2014	58000 kWh	12587 €	STR-645876-524	<a href="#">Bearbeiten</a>

Wasserkosten

Rechnung	Abrechnungszeit	Verbrauch	Kosten	Zähler

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## seecon DataHub

energy efficiency management for buildings



### user management

- Individual user groups
- Authorisation
  - Read only
  - Write
  - Administration



### data collection

- Building data
- User data
  - Heating
  - Electricity
  - Water
- Counter / meter
- Values



### automatic reports

- Property
- Function group
- Single building
- Benchmarking

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## seecon DataHub

From data to strategy

Hybrid cadaster/datahub calculation of solar energy capability

parameter	value
orientation	200°
tilt	40°
installable capability	14,5 kW <sub>p</sub>
yield (spec.)	892 kWh/kW <sub>p</sub> a
yield (abs. per year)	12.900 kWh/a
invest	18.000 €
gratuity	1.530 €/a
marge	3 %/a
avoided CO <sub>2</sub>	8 t/a



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## seecon DataHub

From data to strategy

Hybrid cadaster/datahub calculation of solar energy capability



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find us in...



**ITALY** | MONSELICE (PADUA) | MILAN | ROME | **GERMANY** | DÜSSELDORF  
BERLIN | DRESDEN | DUISBURG | FRANKFURT AM MAIN | HAMBURG  
HANNOVER | LEIPZIG | MAGDEBURG | HALLE | STUTTGART | **BULGARIA** | SOFIA  
**ARGENTINA** | BUENOS AIRES | **SERBIA** | BEOGRAD | **AZERBAIJAN** | BAKU

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