



EIP-SCC

European Innovation Partnership
on Smart Cities and Communities

**smart
city
graz**



Smart City Graz - Lessons Learned since 2010

Christian Nussmueller
City of Graz / AT

Executive Office for Urban Planning, Development
and Construction

20th June 2017, Brussels
EIP SCC action cluster meeting
Integrated Planning & Policy Regulation Workshop



Presentation Content

- 1. City of Graz - Local Conditions and Challenges - Approach for establishing a Smart City Strategy**
- 2. First Smart City Demo Project - Lessons Learned so far**
- 3. Needs / perception as a SC Follower City**

Graz – Austria's second largest City

Graz: 320.500 Inhabitants

(primary and secondary residence; 01/2017)

- **Non-self-employed workers:**
171.600 (01/2017)
- **Overnight stays : 1.080.000**
(year 2016)
- **Number of companies: 17.400**
(01/2017)

Vienna: 4.000 /km²
Graz: 2.000 /km²

Vienna

UNESCO
World Heritage &
City of Design

Graz

8 Universities
2 Universities of Applied Sciences
2 Colleges

60.000 Students

(01/2017)

14 Scientific Centres
of Excellence



smart
city
graz

Statistical Key Figures:
www5.graz.at/dashboard

Graz – Local Conditions and Challenges

- **Primary residents: 286.686 (01/2017)**
+50.000 since 2003 → strong demand for housing space
whole functional urban region Graz: 0.5 m continually increasing
- **Superficial area of 127 km²**
thereof 50% zoned as green belt area
→ limited building land reserves
- **Local climate challenges because of adverse topographic basin situation**
→ Particulate Matter, Oxides of Nitrogen/NOx
from motorised traffic, industrial emissions and domestic heating (threat of legal action by EU)



SC Graz Strategy Development 2010-2013

Vision for Graz in 2050 – General Objectives:

Graz is a dynamic city with compact building structures, an ideal urban mix of usage, attractive public spaces and a high quality of living.

Consistent implementation of Smart City Strategy result in an energy-efficient, resource-conserving and low-emission city.

This environmental friendly approach should be achieved by implementing sustainable concepts for energy consumption, traffic, waste treatment and others.



smart
city
graz

Presentation Content

1. City of Graz - Local Conditions and Challenges – Approach for establishing a Smart City Strategy
- 2. First Smart City Demo Project – Lessons Learned so far**
3. Needs / perception as a SC Follower City

Smart City Graz – Implementation

1/2

- **2013: "Smart City Graz" was set as the most important Development Principle** to achieve within the **Urban Development Concept 4.0** (most important legal binding instrument for the local development planning)
- **07/2012 – 06/2017: Smart City Pilot Project – Graz Waagner-Biro**
First implementation of a „Smart City District“ using innovative energy and building technologies following an integrated strategic approach
 - **First Austrian SC pilot project**, which received **EUR 4.2m** of national funding (total investment in district development until 2024: **EUR 330m**)
 - **Interdisciplinary project strategy – strong inclusion of local actors** (property owners, investors, stakeholders of the general public via a **specific district management team**)
 - Implementing the Smart City Graz objectives by **conclusion of civil PPP Urban Development Contracts** with investors/land owners (private side co-finances innovative measures of energy, mobility, qualities of buildings and public space)




**smart
city
graz**

**REASONS: Municipality is not the land owner.
No obligations for private investments in
public infrastructure by national law.**

Smart City Graz – Implementation

2/2

- **2015-2019: Follower City of H2020-SCC-Project** 
 - integrated approach to roll out of 12 ‘smart solutions’ - to create business cases to initiate market roll out in the Follower Cities and the rest of Europe
 - replication status in Graz: currently no concrete replication projects
 - Information needs from LHCs and industry partners: information on feasible business cases and cost-benefit evaluations to propose measures to local decision makers
- **02/2017: unsuccessful application in the “Horizon 2020 Smart Cities and Communities SCC Call 1 2016” together with Amsterdam and Berlin – Project Title “ValUse” (Focus: User centric demand; Interlinkages of Smart Homes, Smart Energy, ICT-systems and E-Mobility/Charging Infrastructure)**

Positive side effects:

- Constitution of a strategy group for establishing a Digital Agenda / Data Guidelines for municipal projects (until autumn 2017)
- Transition of our local climate strategy into a SEAP - Sustainable Energy Action Plan



**smart
city
graz**

- World's 1st energy glass tower
- First building worldwide to incorporate panes of transparent energy glass for energy harvesting into the façade (Grätzel cells = organic photovoltaics)
- Energy-Plus-Building (positive energy balance)
- Roof terrace for urban gardening research initiatives
- Location for innovation, research and development

SCIENCE TOWER

THE SMART CITY PLACE TO BE

HÖHE

60 m Gesamthöhe, 45 m Bürogeschosse, darüber Seminarraum und Smart Urban Gardening

HEIGHT

60 m overall height, 45 m office floors, above high end seminar room and Smart Urban Gardening

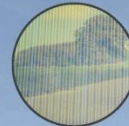


LAGE

nördlich der Helmut Lutz Halle, ehemalige Wagner-Biro Gründe

SITUATION

north of Helmut Lutz Concert Hall within the former Wagner-Biro Industrial area



AUSSENFASSADE

transparente Farbstoff-Energie-Gläser (FEG, Dye Sensitized Solar Cell DSSC) mit Grätzel-Technologie

OUTER SKIN

green transparent semi-organic dye-sensitized energy glass (DEG, Dye Sensitized Solar Cell DSSC) based on Grätzel-technology

INNENFASSADE

Metallfassade

INNER SKIN

metal curtain wall

HEIZUNG

Erdwärmesonden mit Wärmepumpen

HEATING

borehole heat exchangers with heat pumps

KÜHLUNG

Erdwärmesonden mit Wärmepumpen, kleine Kompressionskältemaschine

COOLING

borehole heat exchangers with heat pumps, small compression refrigeration machine



SMART URBAN GARDENING

ca. 170 m² Dachgarten

SMART URBAN GARDENING

appr. 170 m² roof top garden



NUTZUNG

Bürogebäude für Urban und Green Technologies

UTILISATION

office building for Urban and Green Technologies

NUTZFLÄCHE

ca. 2.500 m² Büro Nutzfläche, ca. 215 m² Seminar- und Besprechungsräume

FLOOR SPACE

appr. 2.500 m² office area, appr. 215 m² seminar and conference area

STROM

Eigenbedarfdeckung über Farbstoff-Energie-Gläser, Anbindung an SFL energienet

ELECTRICITY

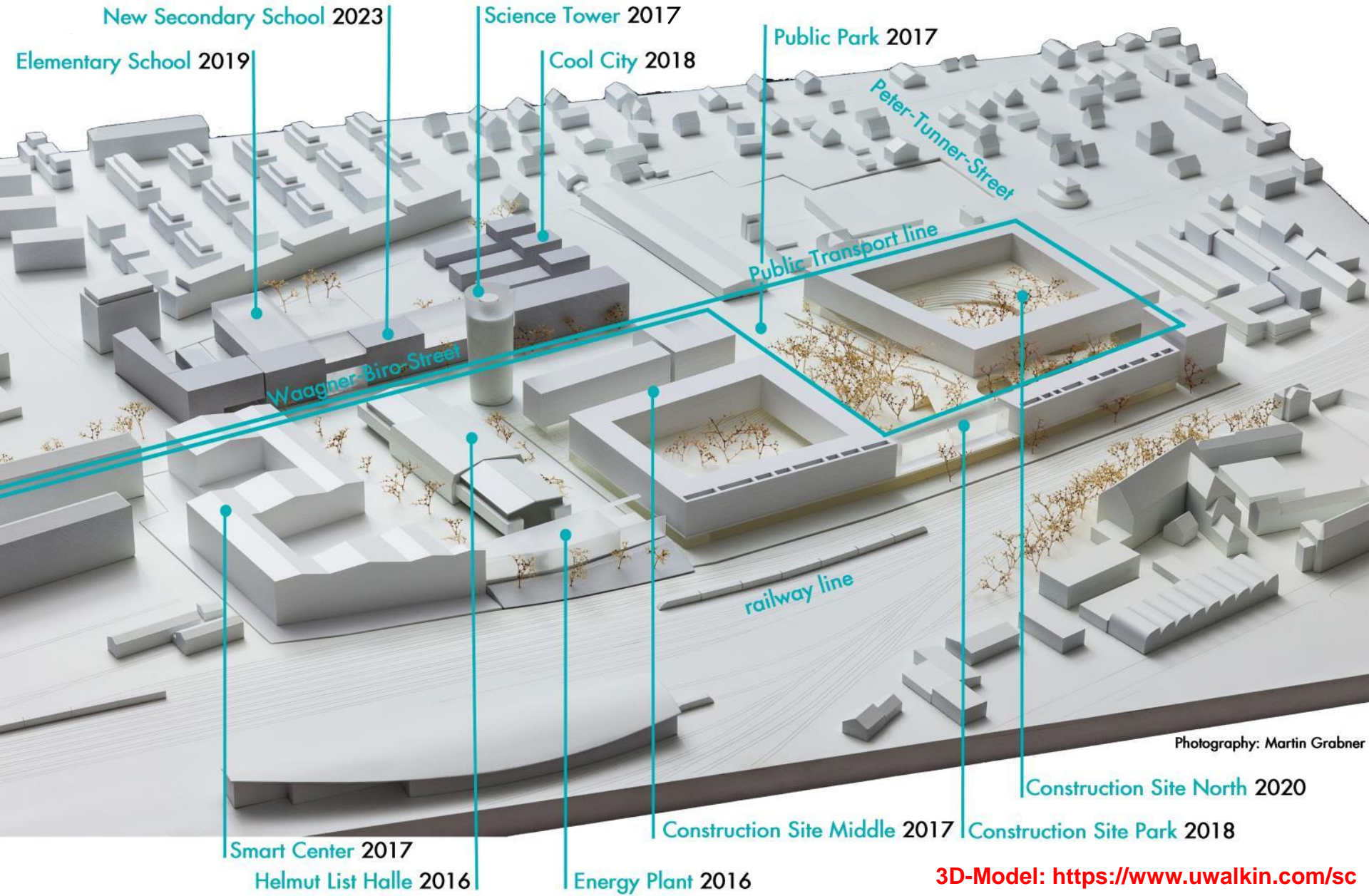
on-site power by dye-sensitized energy glass, connection to SFL energid

First Austrian Smart City Demo Project Graz Waagner-Biro

Selected Key Figures for the Smart City district:

- New inhabitants (up to 2024): **3.860**
- Persons employed on site: **1.690**
- New Housing units: **1.430**
- Total investment costs (private and public): **330 Mio. EUR**
- Pupils in new schools: **600**

Time schedule for building construction until 2023



Key Results of the work of the PPP-consortium

- Establishment of civil PPP-urban development contracts (basic agreements, implementation agreements) - novelty for Graz!
- Development of calculation method of the economic effects of urban development (Alfen Calculation Model)
- District Management VorOrt instituted since project start
Results: wide acceptance of district development, no objections to the official legally binding development plan!
- Positive national and international feedback on the Smart City Graz project approach: Focus on people and quality of life - not only technology driven approach
- Establishment of „Municipal Steering Group Digitalisation“: Digital Agenda for the City of Graz



smart
city
graz

Presentation Content

1. City of Graz - Local Conditions and Challenges – Approach for establishing a Smart City Strategy
2. First Smart City Demo Project – Lessons Learned so far
- 3. Needs / perception as a SC Follower City**

Needs / perception as a SC Follower City 1/2

- Integrated / interdisciplinary urban development approach is still not a standard in local public administrations (structural obstacles, limiting effect of the silo mentality)
- Funding projects: important motor/lever for innovative urban development projects – funding tips the scales towards a non-standard approach in administrative system (more experimental funding schemes would be appreciated)
- Strained financial situation in (medium sized) European Cities.
How to finance public infrastructure/maintenance at all – innovative & standard ones?

Needs / perception as a SC Follower City

2/2

- Municipal cautiousness towards technological providers (many open questions regarding standards, data ownership ... more know-how for bilateral contracts needed)
- H2020-SCC-Initiatives: information on feasible business cases and cost-benefit evaluations needed first from LHCs and industry partners to propose measures to local decision makers of Follower Cities
- Comparability: local/national framework conditions differ a lot. e.g. building standards, land ownership, national funding possibilities for urban development, financial / staff resources ...

Thank you for your kind attention!

City of Graz
**Executive Office for Urban Planning,
Development and Construction**

EU-Unit / Smart City Funding Coordination:
Mr Christian Nussmueller
christian.nussmueller@stadt.graz.at



GER

www.smartcitygraz.at



Bilingual Smart City Graz-Folder

Image Video Graz - Tourism

Image Video Graz - Business Location

Graz Dashboard^{GER}

