Korneuburg's „way2smart" – mobility concept, energy platform and social interaction

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Talking points

- Korneuburg masterplan 2036

- Way2Smart research project

- Energy (-autonomy web-) platform

- Social interaction

- Mobility hub

Korneuburg?

- 12 000 inhabitants
- To the north of Vienna
- 30 min by train

(source: google maps, 2017)
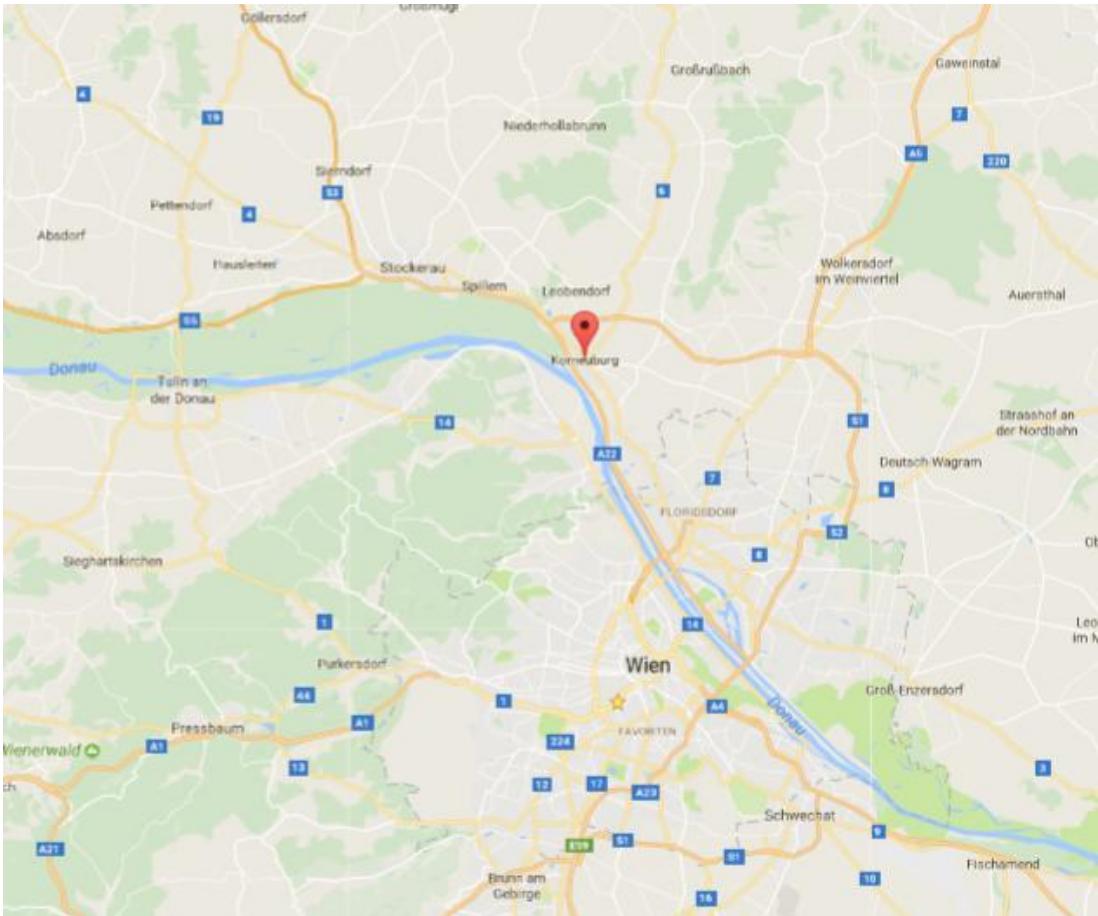
Korneuburg?

- 12 000 inhabitants
- North of Vienna
- 30 min by train
- Daily commutes
- Energy
  - 110 kt CO_2eq/a
  - 8,5 t CO_2eq/cap,a (austrian average: 9,0 t CO_2eq/cap,a)

(source: master plan korneuburg, 2014)
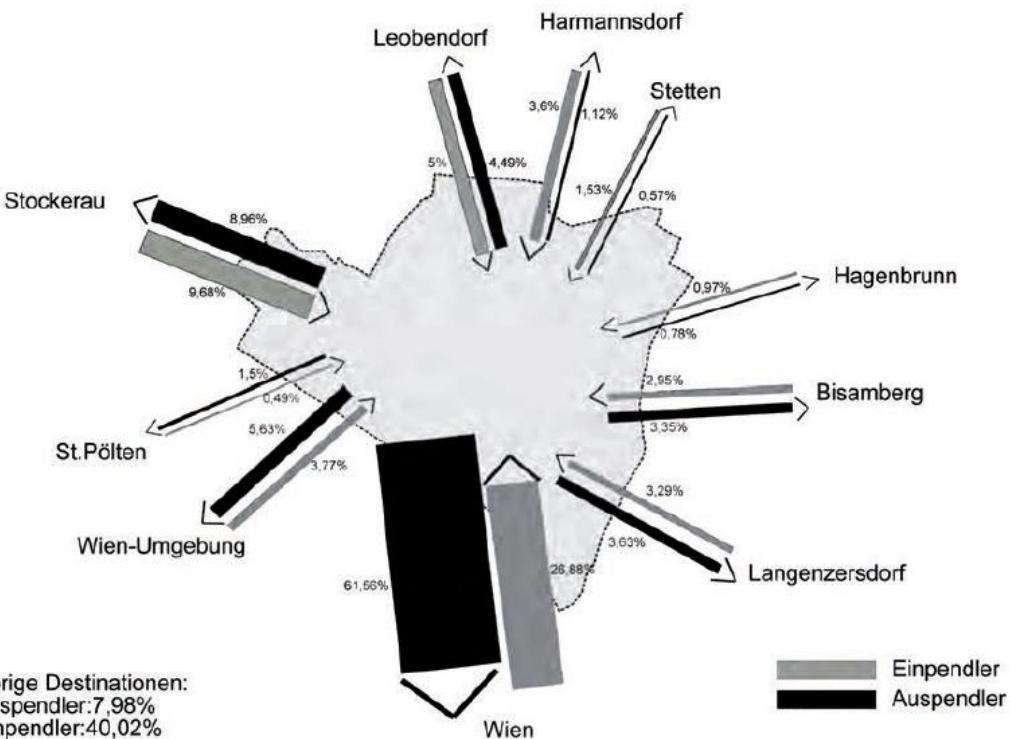
Korneuburg's vision

- 2012: Vision and guiding principles
   - Participative process

Korneuburg masterplan

- 2012: Vision and guiding principles

- 2014: masterplan: dynamic instrument for city development
  - Over 100 individual measures
  - In 9 areas of life

(source: master plan korneuburg, 2014)
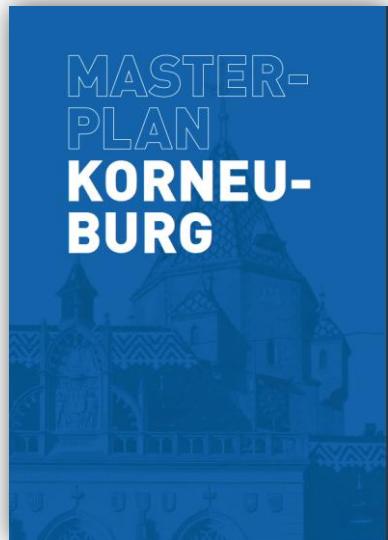
Korneuburg masterplan

- 2012: Vision and guiding principles

- 2014: masterplan: dynamic instrument for city development
  - Over 100 individual measures
  - In 9 areas of life

- By 2036
  - Achieve energy autonomy
  - Emission of -5,5 kt CO_2eq/a by 2036
  - From today's 110 kt CO_2eq/a
 - -5% per year
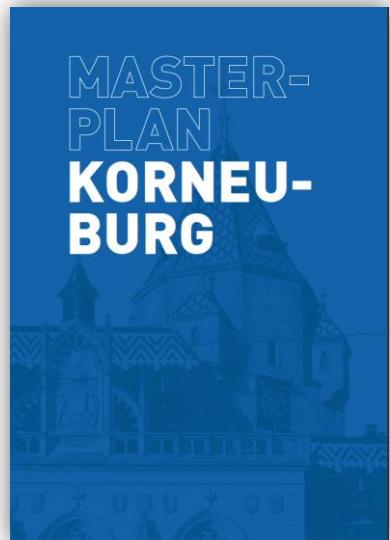
„Way2Smart" demonstration project

- Smart city demonstration project

- Collaboration of 11 partners

- Key features
    - Plus-energy building (PE)
    - Mobility hub
    - Social interaction concept
    - Energy autonomy platform
    - Performance monitoring

Way2Smart demonstration project

Energy database: situation and potentials	**Plusenergy densification (with solar active roofs)**	**Innovative energy concept, optimization of own coverage**
Social housing – affordable housing – citizien participation	**Tenant-buddy system „Starter" flats**	**Realization „Mini-settlement"**
Guiding principles measures & incentives for property develope	**Mobility hub**	**ICT Plattform**
	Evaluation - monitoring	

Way2Smart demonstration project

1. Multi-modal mobility hub
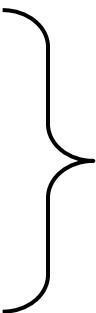
2. Social interaction

3. Energy autonomy platform →

Mobility Concept

- Situation
  - 12.000 Inhabitants, 18.000 by 2036 (+50%)
  - 1,3 cars per household
  - Over 50% of daily ways by car
  - Good train connection to vienna
  - Insufficient bus coverage to neighbouring regions
  - 1,5 car parking per housing unit legally required

- How to reduce the dependency on cars?

- Awareness and education -> Social Interaction

- „Way2Smart" Resident offers :Multi-modal mobility-point

„multi-modal-mobility-points"

- **1: Public Transport stop**
  - Bus stop
  - Pooling taxi
  - Hitchhiking station

- **2: Bicycles**
  - E-bike and cargo bike rentals
  - Charging stations

- **3: E-cars**
  - E-car sharing
  - 2 charging stations

- **4: Services and information**
  - Integration of online-platforms and external online services
  - Accessible presentation

Social Interaction and Communication

- „Buddy Program" – tenants information at eye-level
  - Information and education on handling of technical equipment, self-organization
  - Eye level: better acceptance, trust

- Time-limited „Starter Flats": spread newly aquired livestyle

- Early communication with neighbours and tenants

- Workshop with and for property developers
  - Exchange experiences of innovative, renewable construction projects
  - Information on innovative mobility measures and participation process

energy autonomy platform

Visualize current energy situation

Highlight Energy Potentials

Purpose

Provide examples of „best practice" building solutions

Accumulate detailed building data

Energy database

Data sources

Calculations / Estimations

Measurements

Energy performance certificates

Energy simulation

Utility bills

High-res measurements

- Various stakeholders
  - Power supply comanpanies
  - Residents
  - Research
  - …
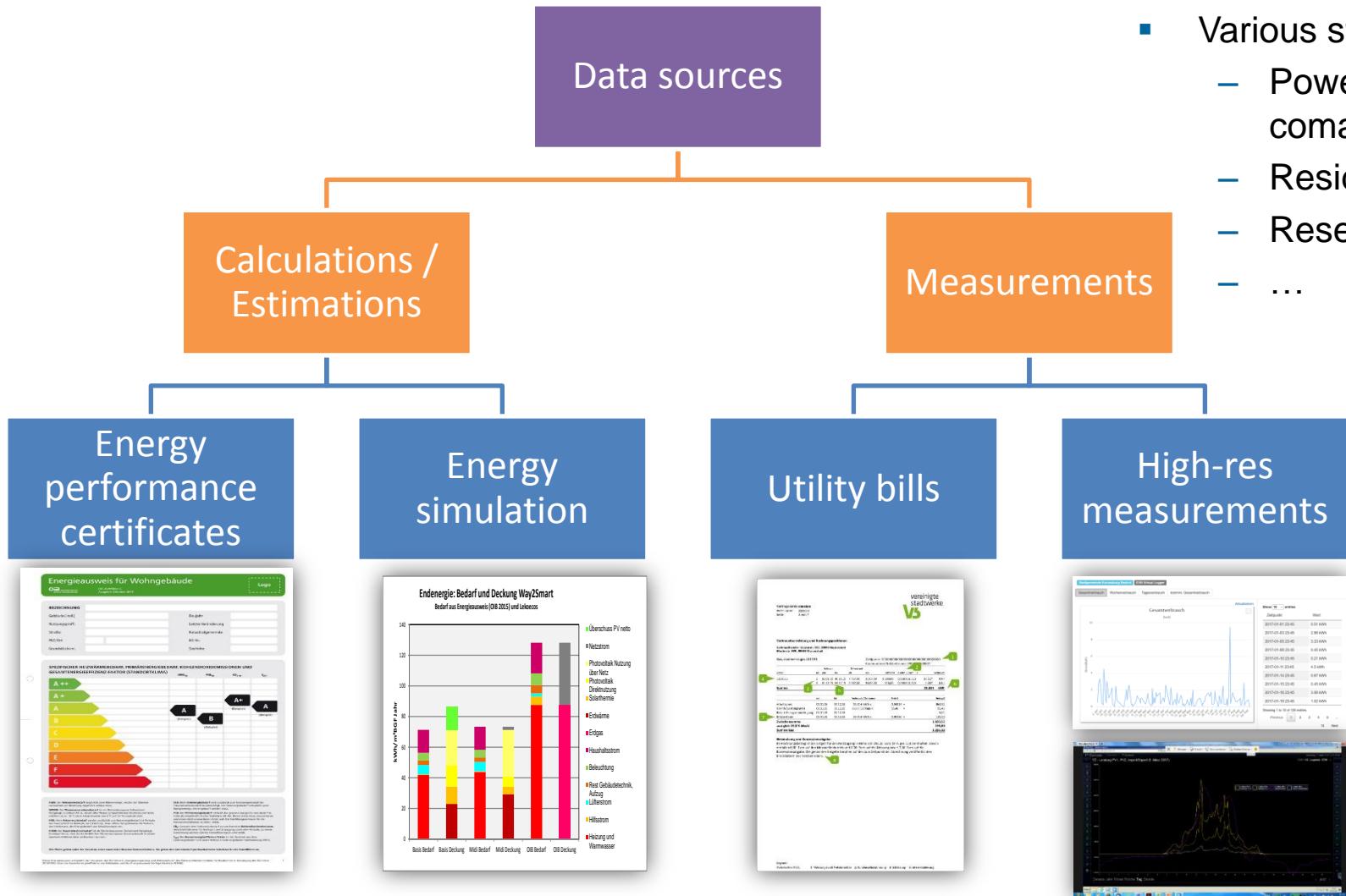
energy autonomy platform

✓ Energy database framework

▪ Detailed energy estimates for individiual buildings

Typical buildings in Korneuburg
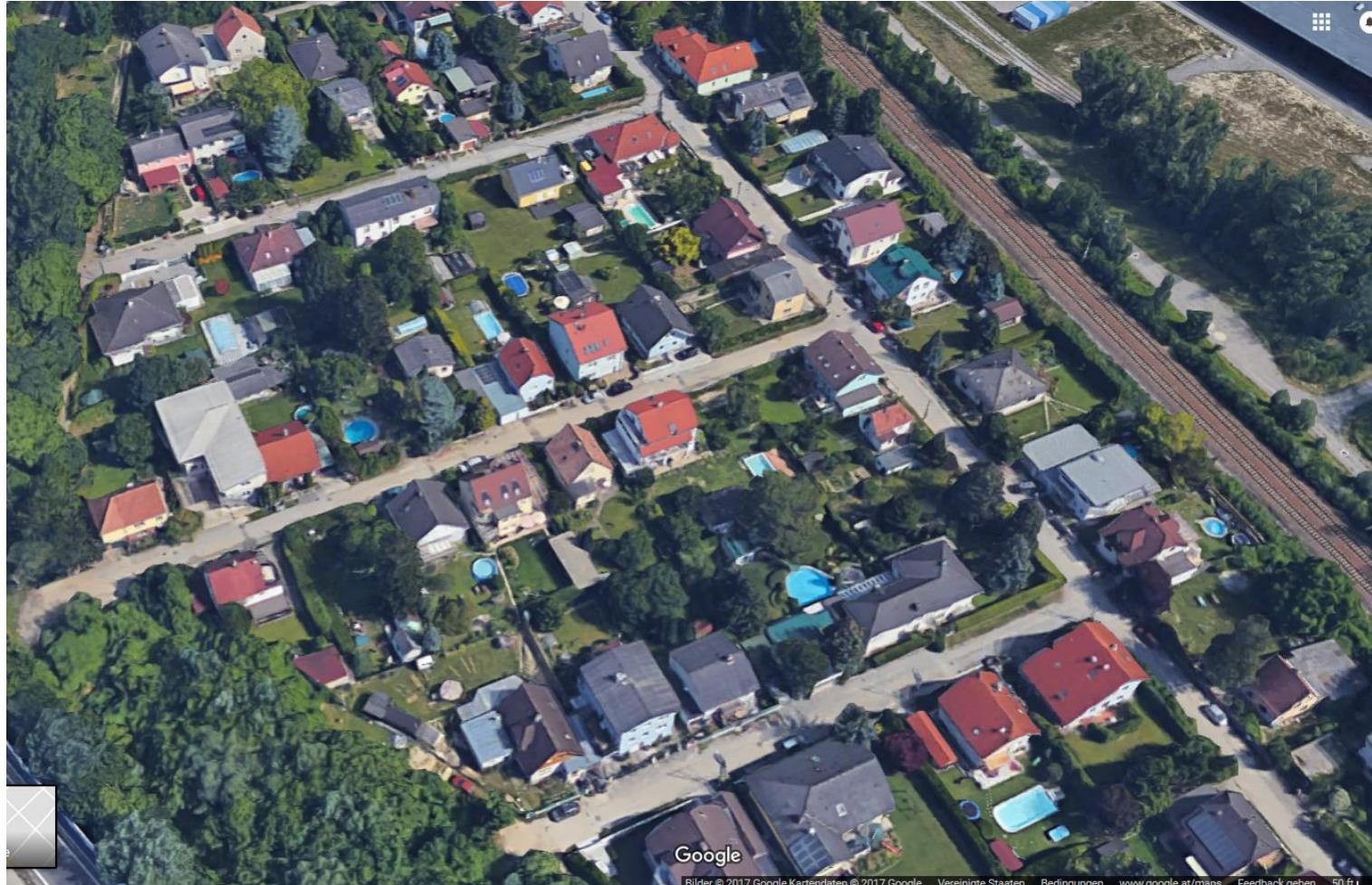
(source: google maps 2017)

Typical buildings in Korneuburg

(source: google maps 2017)
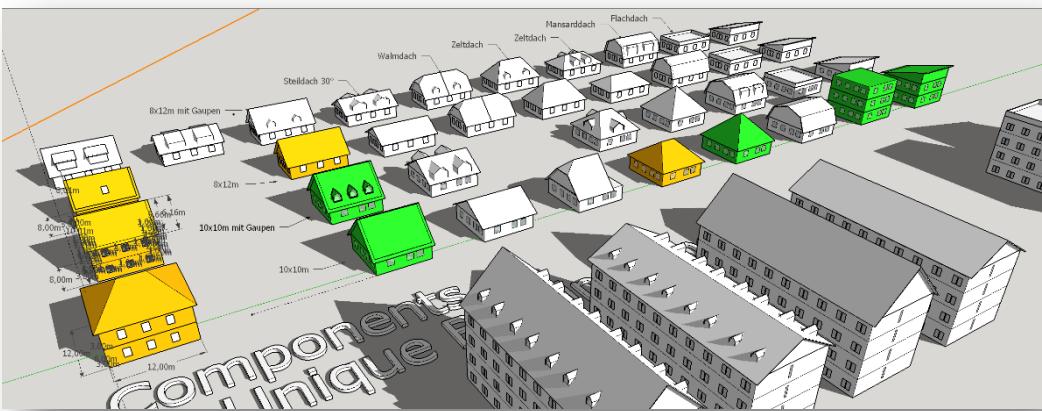
From typical buildings to building types

- Variation analysis

From typical buildings to building types
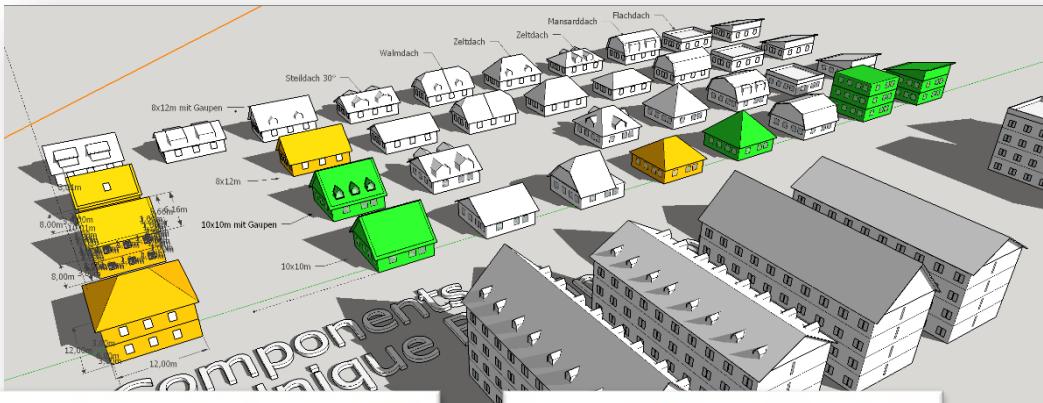
- Variation analysis

- Building types:

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From typical buildings to building types

(source: google maps 2017)

From typical buildings to building types

(source: google maps 2017)

From typical buildings to building types

- Building type distribution per subzone

Bottom-up simulation

Development plan

Plot and constructed areas

ArcMap, matlab

Energy Survey Zones

Usage data
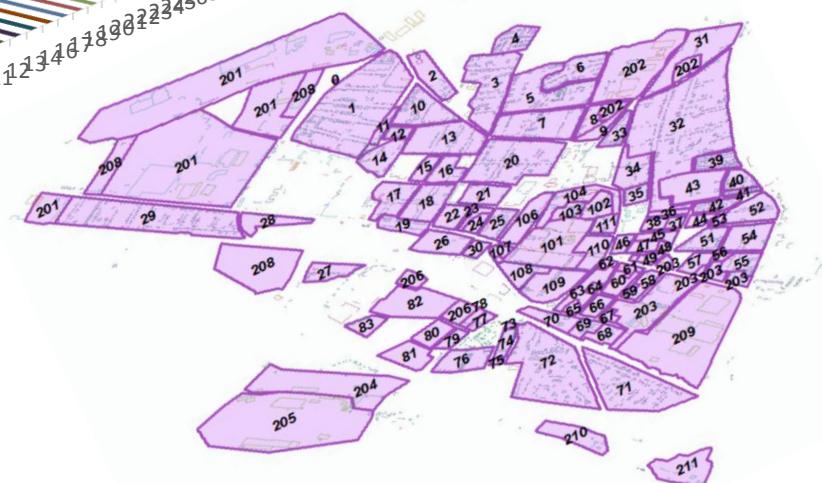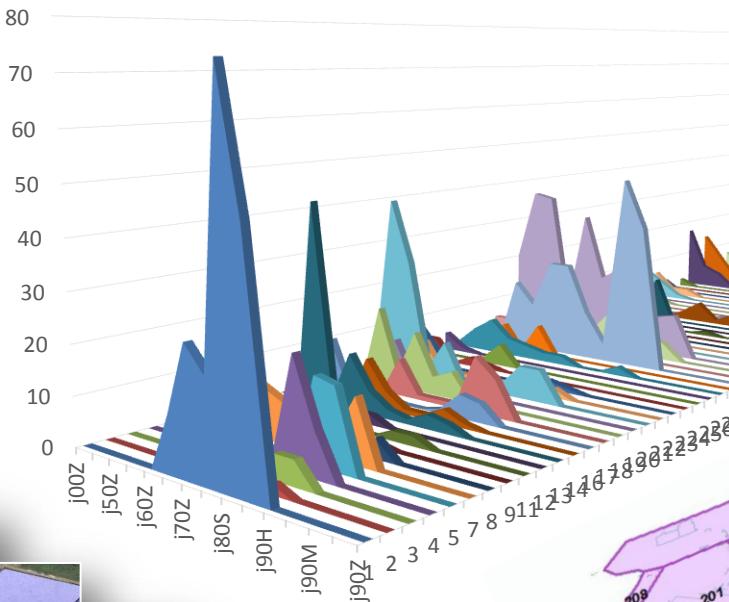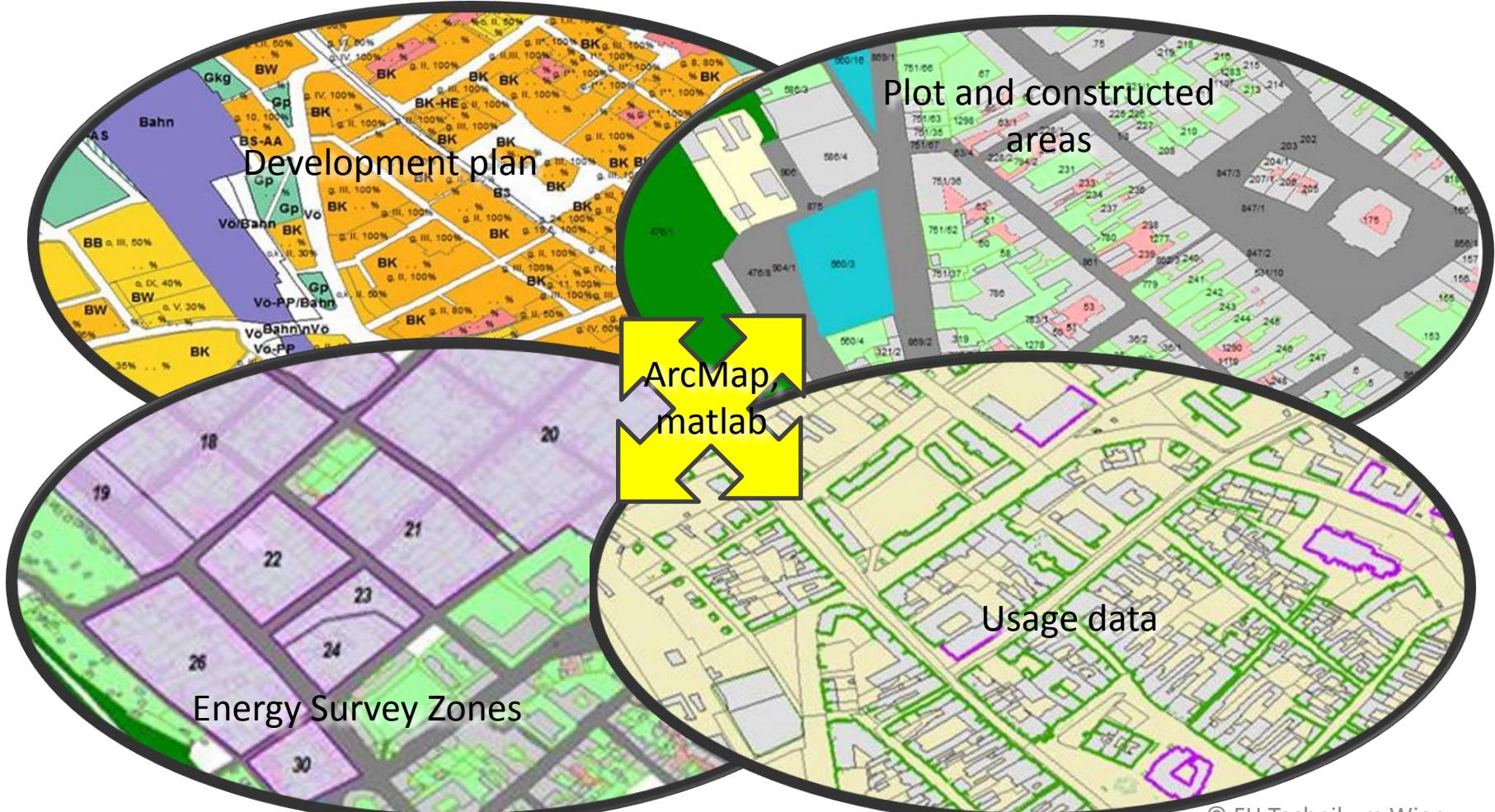
energy autonomy platform

- ✓ Energy database framework

- ✓ Bottom-up simulation of detailed energy estimates for individiual buildings

- ▪ Presentation and user interaction

Web application front-end

- Citizen interaction
  - Own building, Possibilities, „big-picture"
- Planning instrument for city developers
- Forecast of development scenarios
- Result presentation and visualization
  - Interactive
  - Time series
  - Geocoded (map)

Densification strategies
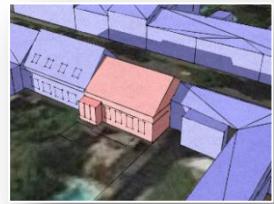
Types   Densification possibilites

Densification strategies

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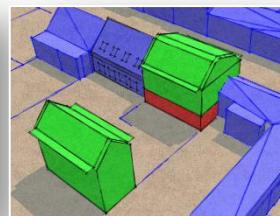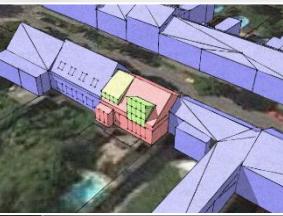
Densification strategies
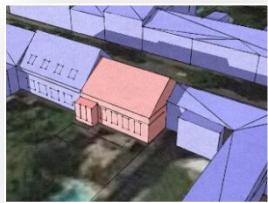
Types   Densification possibilites
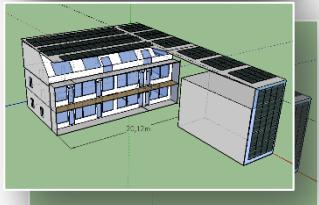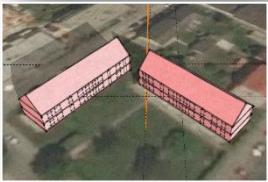
# Densification strategies

Types
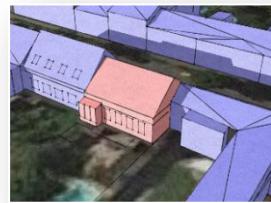
Densification possibilites
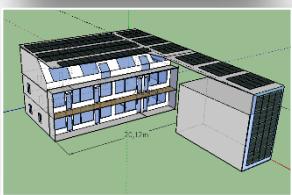
Solar potentials
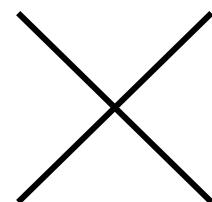
Results & Visualizations
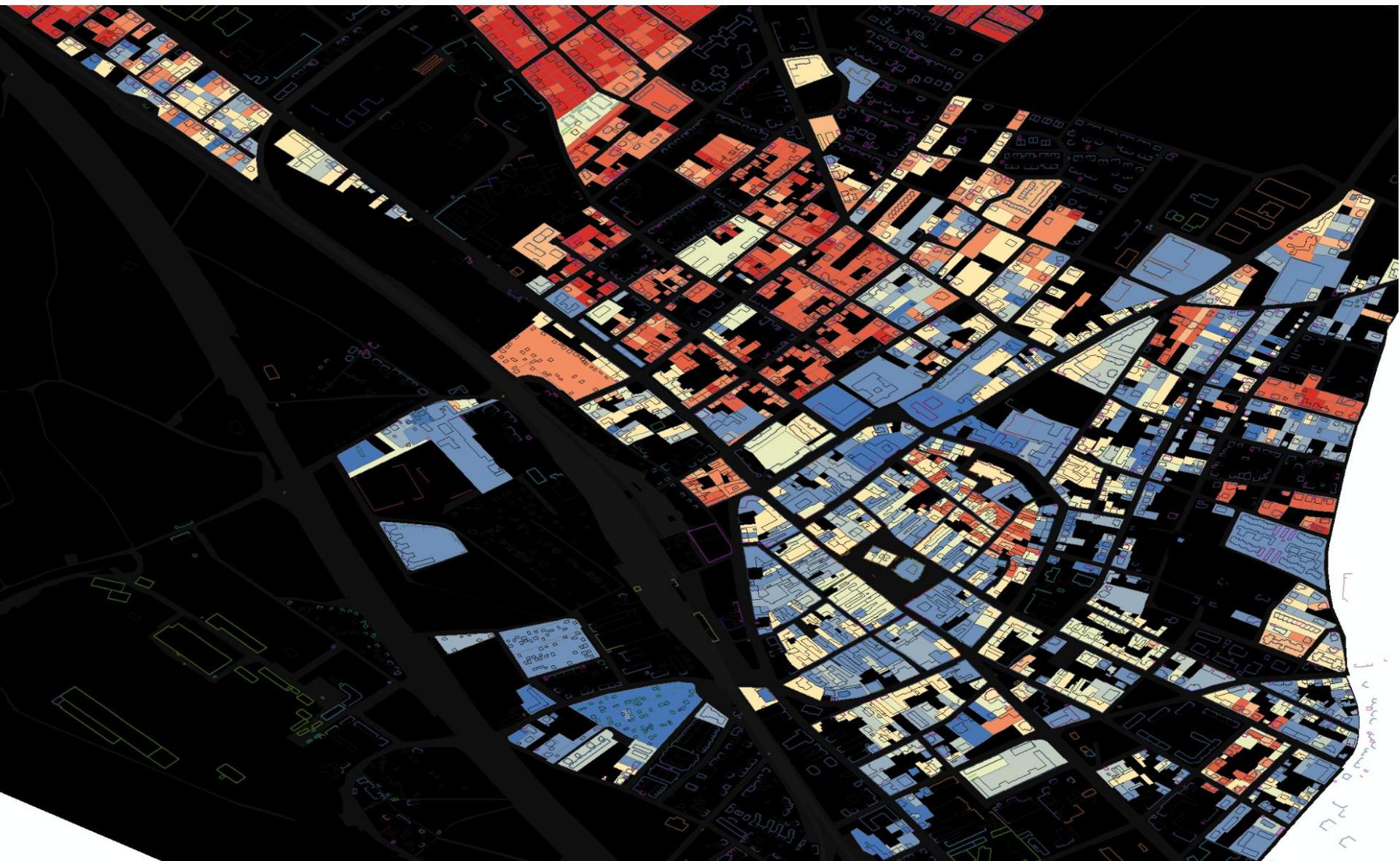
Conclusion

Way2Smart demonstration project

- Multi-modal mobility-point

- Social interaction concept

- Energy autonomy platform

Thank you!

Further information:

Way2Smart @   way2smart.at/

FH Technikum   www.technikum-wien.at/forschung/forschungsschwerpunkte/

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Korneuburg

- Korneuburg =12832 (2017) / 8,75 mio Österreich
- Korneuburg = 1,5%o Österreich
- CO_2e Budget = 20,8 kt CO_2e /Jahr bis 2100

- Tatsächlich: (2012) 110 kt CO_2e /jahr
- **Geplant (2036) -5,5 kT CO_2e / jahr**
- Dh jährliche reduktion: 5-6 kt CO_2e /Jahr (4-5%)

Jährliche THG-Emissionen Varianten a, b, c, Mt CO_2e
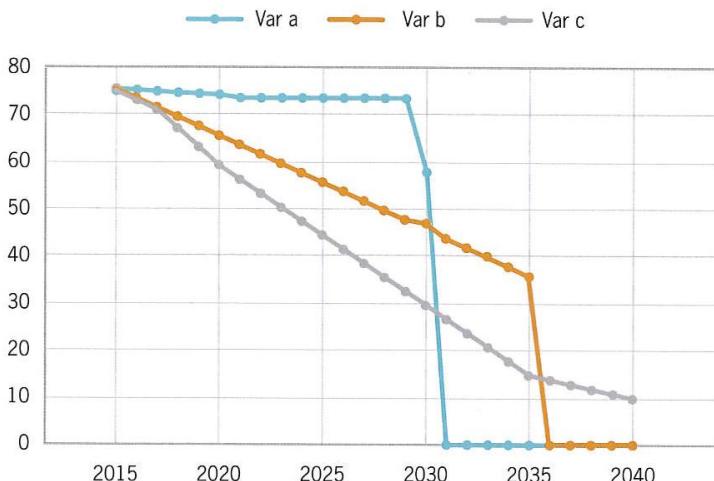
Paris 2050

- Worldwide warming < 2°C
- i.e. emissions 2016-2100 < 850 Gt CO2e
  - (initially 2010-2100 < 1000 Gt Co2, since then 30 Gt)
- Austria approx. 1,2 promill of world population
- -> ca. 1200 millionen tons until 2100
- -> pro jahr ca. 13,9 Mt „Budget"
- < 79,6 Mt CO2e 2013
- < 76,3 in 2014
- < 78,8 in 2015

(Quelle: Klimaschutzbericht 2017, Umweltbundesamt)

CO₂-Emissionen pro Kopf