

WP2.1: Some useful urban toys

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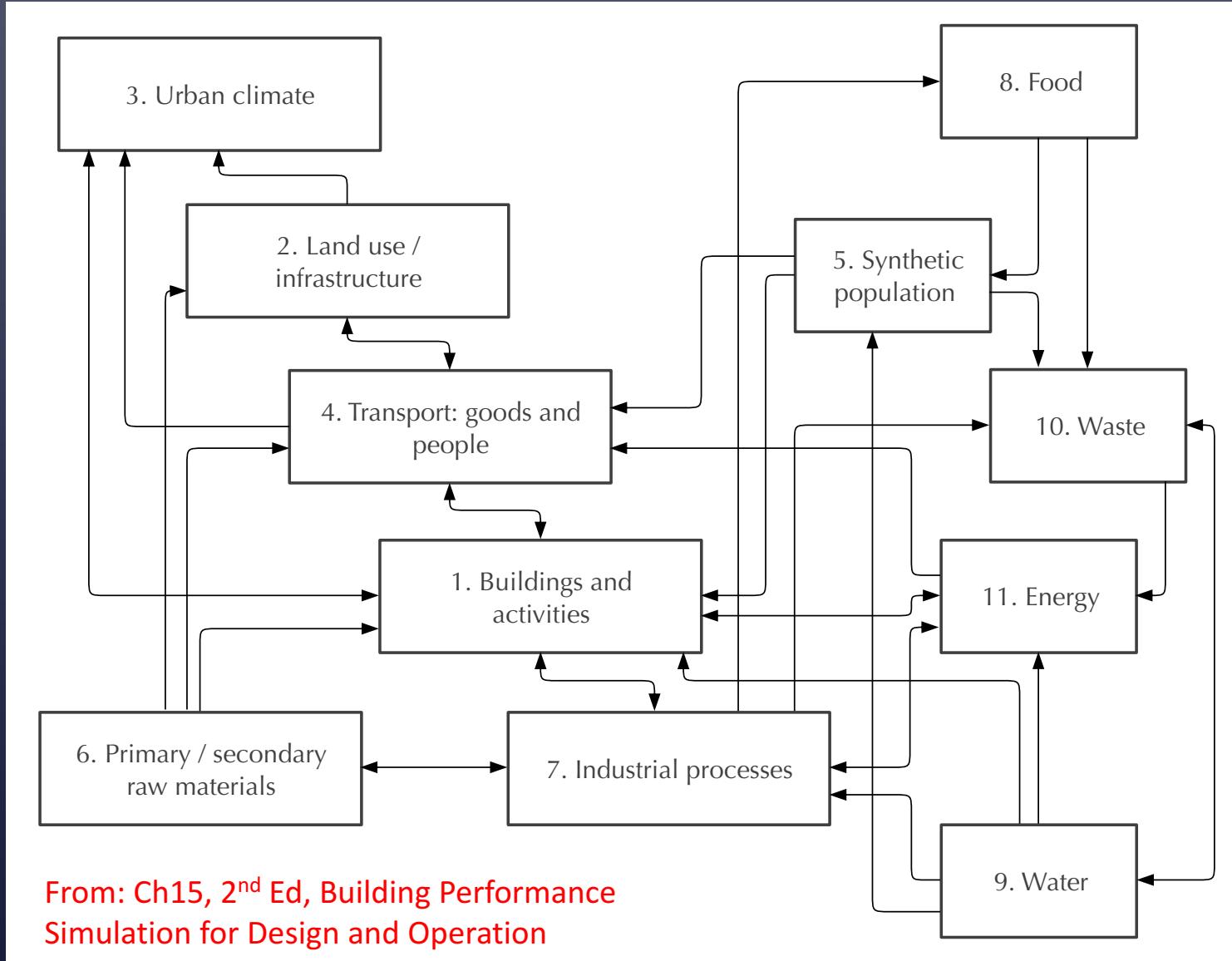
Current status of UBEM

- Three core strategies: macrosimulation; typological sampling; **microsimulation** (e.g. SUNtool→CitySim; ...CityBES, UMI, SIMStadt...).
- Majority of human resource is consumed in **simulation workflow**: expensive and error prone.
- Inputs are **uncertain** and phenomena are subject to **stochasticity**.
- **Dichotomy** between data existence and availability (especially for calibration).
- **Inconsistency** in availability.
- **We need to improve the consistency and automation of the simulation workflow lifecycle; and to rigorously manage uncertainties.**

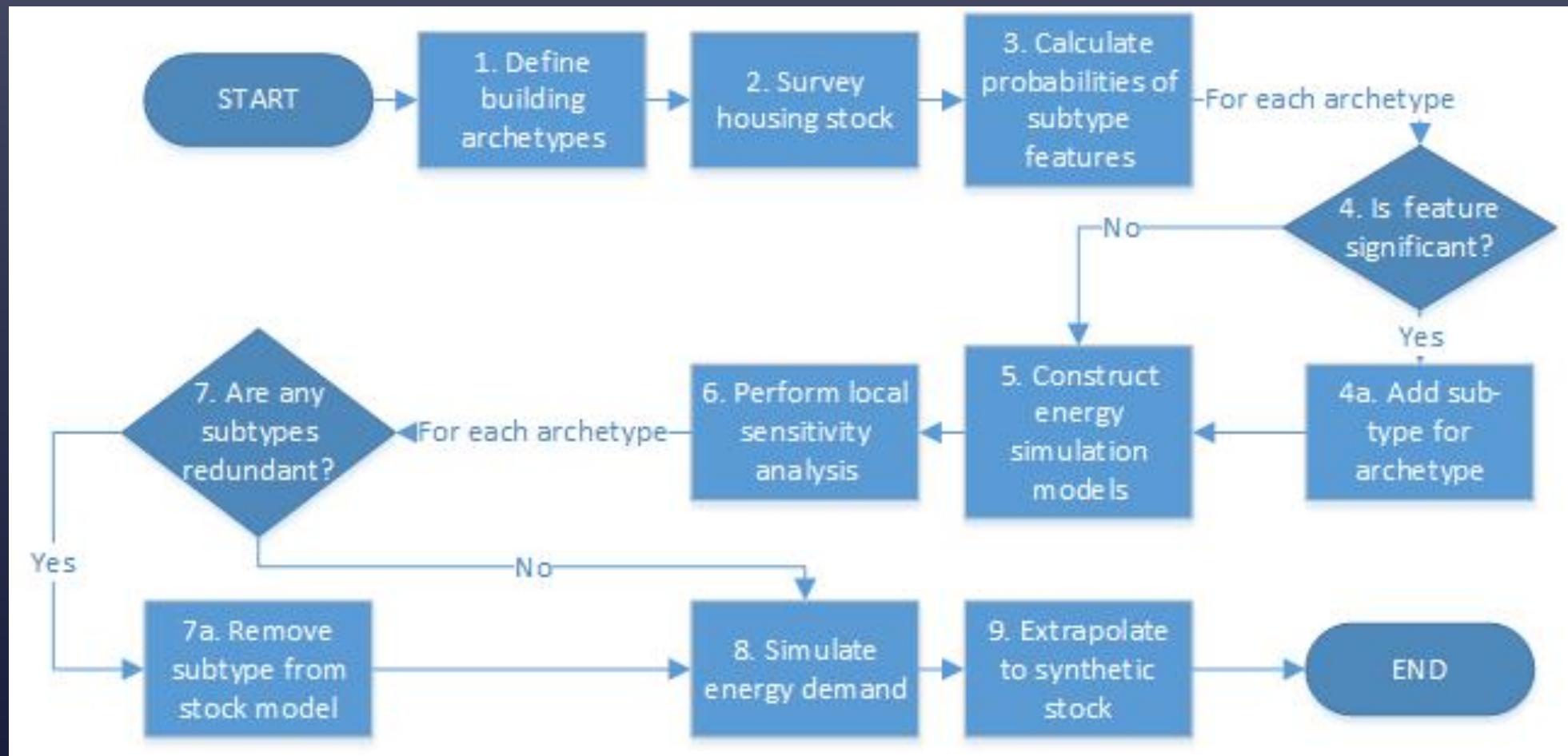
Potential foci of WP2.1

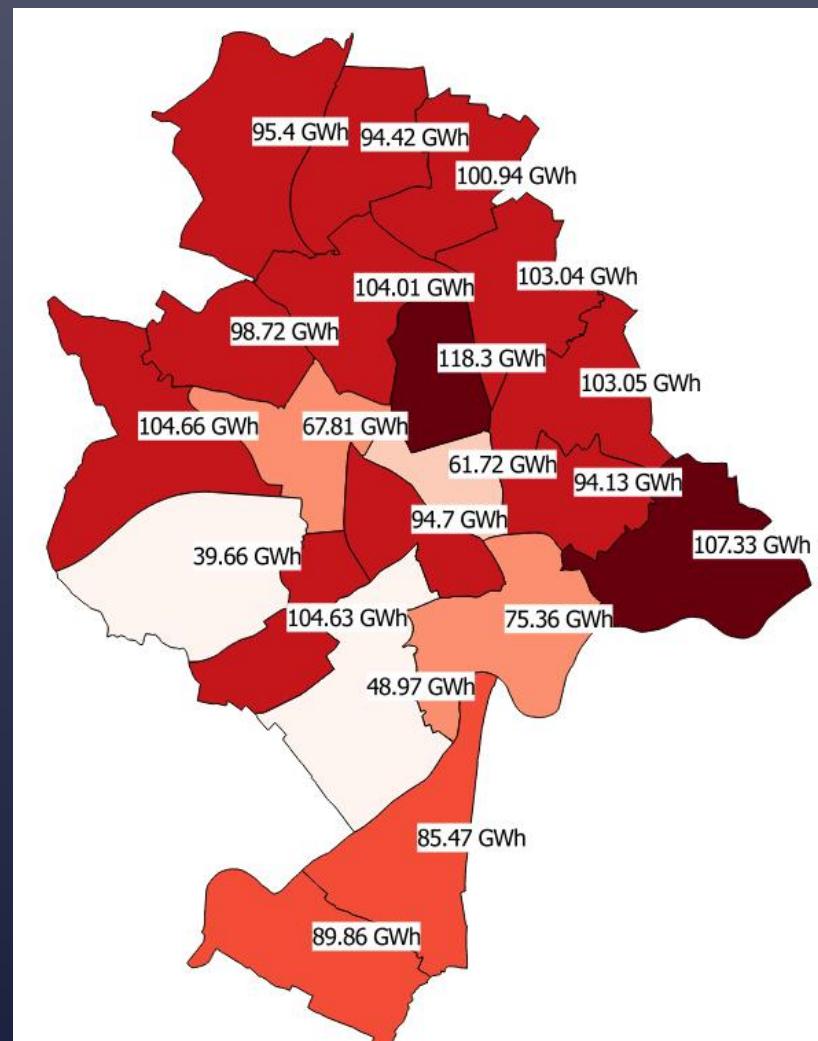
- **Lobbying / advocacy** to reduce the gap between data existence and availability; and the consistency with which data is made available.
- **Mapping**: mapping data availability and its level of aggregation
- **Processing workflows**: fit-for-purpose semantically attributed 3D models, incl. sanitation and mappings from data available to needed.
- **Exchange standards**: Further enrichment of CityGML and its ADEs; BIM/CityGML integration.
- **Co-simulation and distribution**: standards and tools for co-simulation and distribution (e.g. FMI and HLA)
- **Calibration, scenario modelling and visualisation**: rapid model calibration; rapid scene adjustment for scenario modelling; qual / quant analysis and performance metrics.

Urban energy-related systems

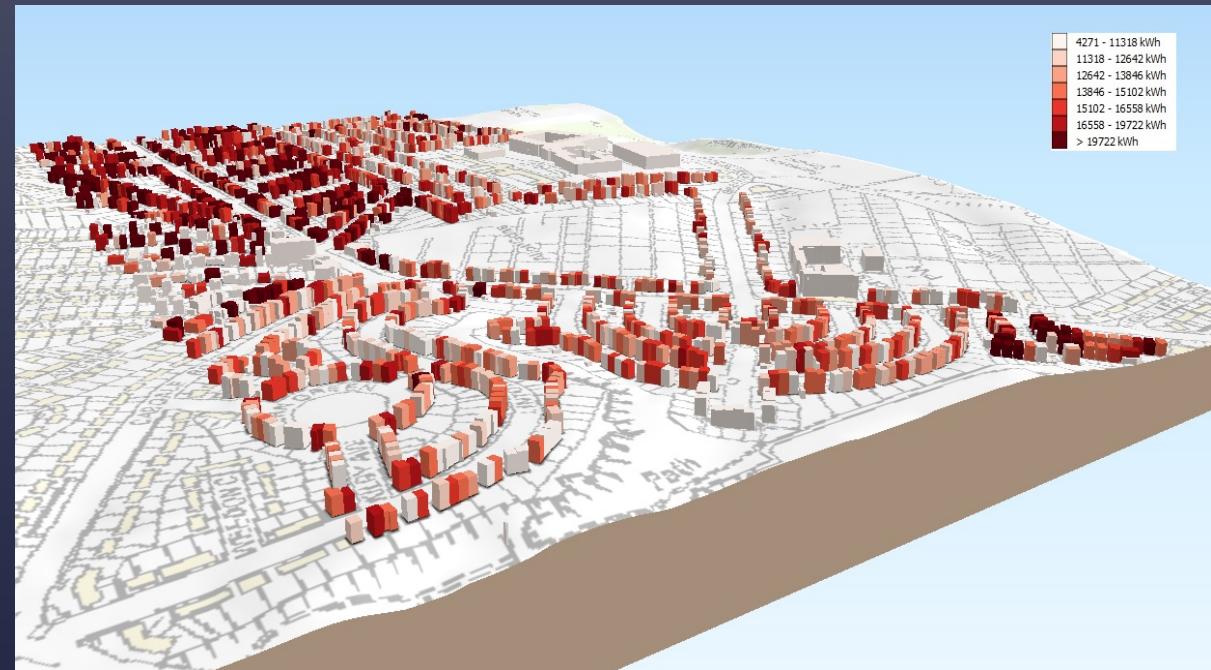


InSmart: typological sampling



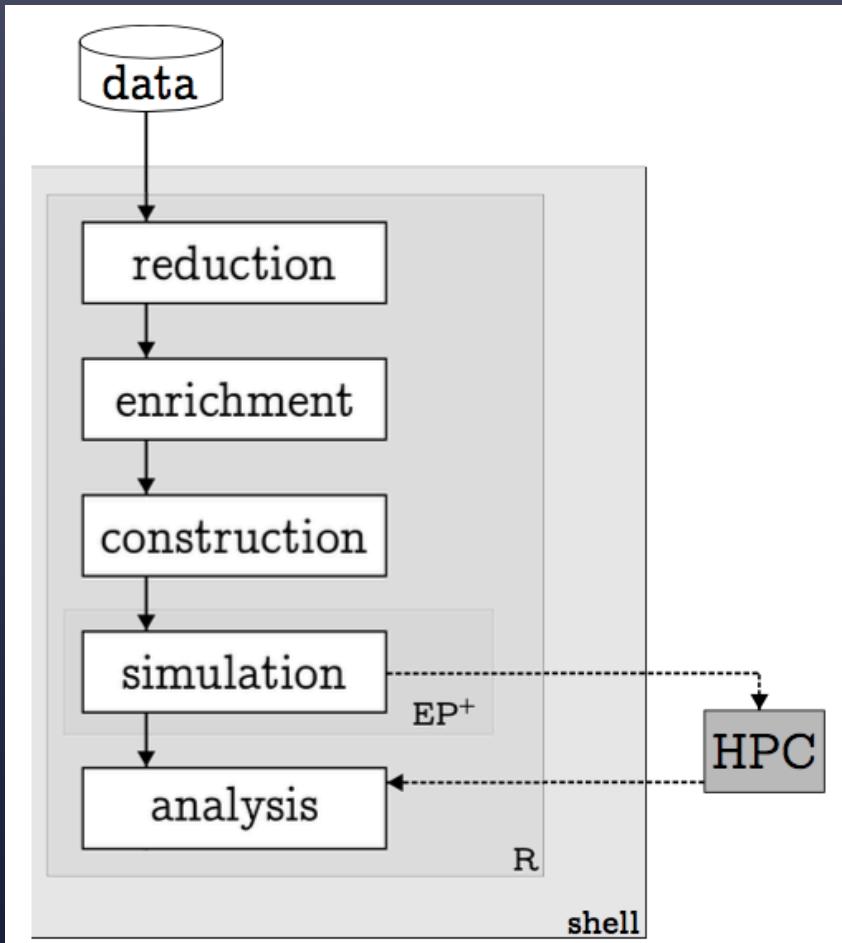


Total energy demand (Ward)



Total energy demand (Building)

Generalisation: Housing Stock Energy Hub (EnHub)



Main Attributes:

- Open-source modular platform
- Standardisation of data sources, data modelling and energy simulation techniques
- Generation and attribution of explicit volumetric archetypes
- Evaluation using dynamic simulation: energy and comfort

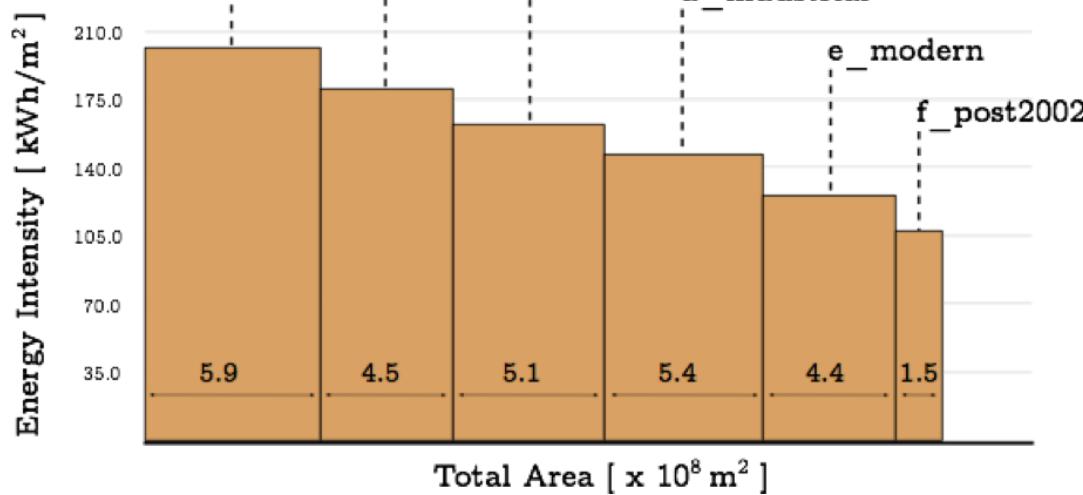
a _ pre1919
b _ interwar

c _ postwar

d _ industrial

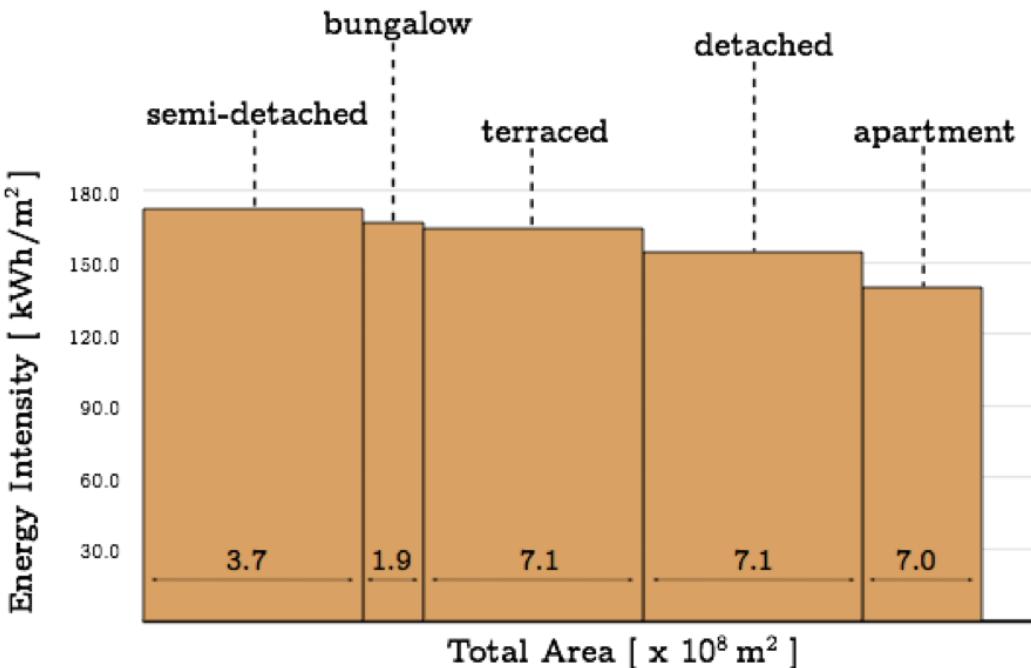
e _ modern

f _ post2002



bungalow
semi-detached
detached

terraced
apartment



Citysim: Microsimulation

- CityGML input
- ASCII output
- Solver coded in C++

