



ADE Energy Group Energy Systems

Hochschule
für Technik
Stuttgart



RWTHAACHEN
UNIVERSITY

SINER**GIS**
SUNSHINE

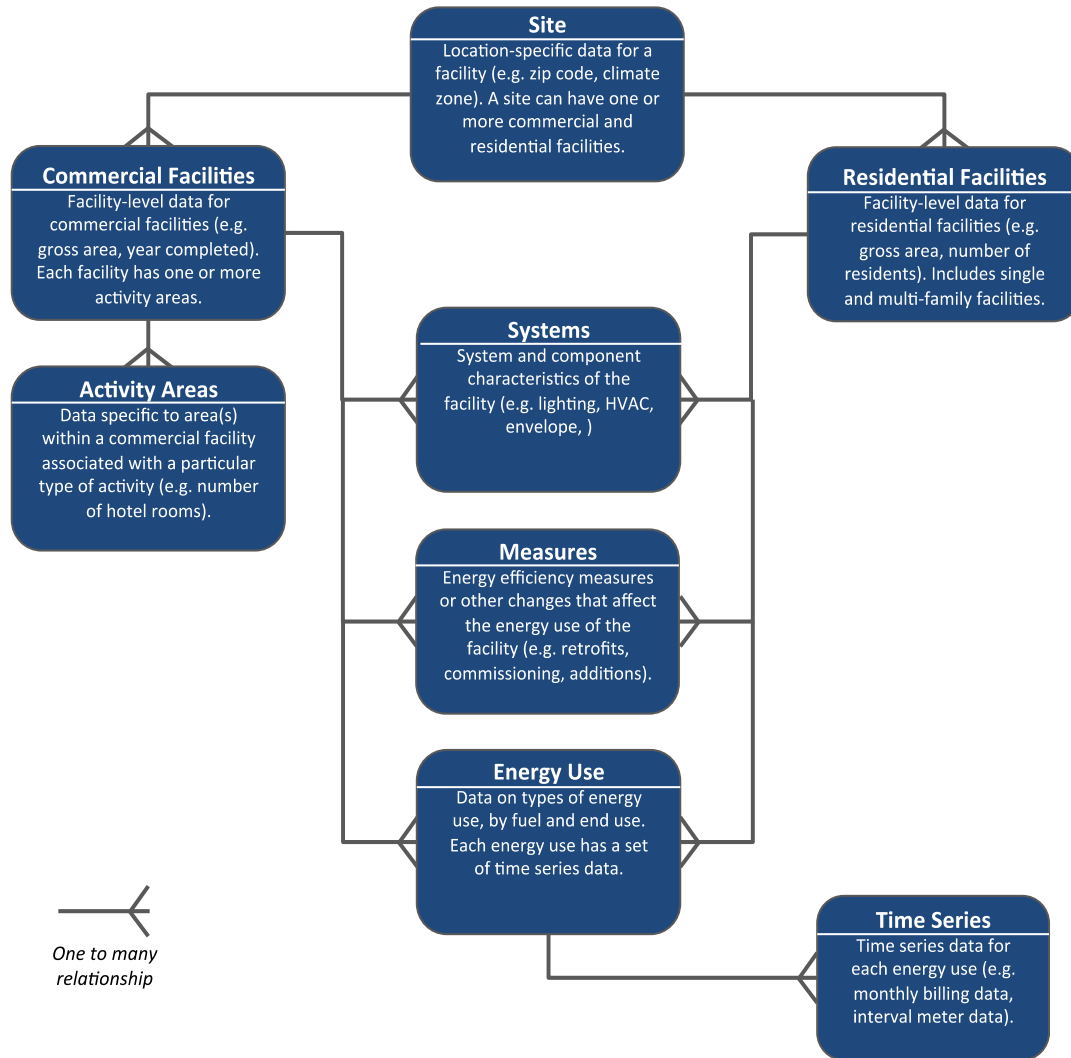
WHAT IS IT FOR?

- Provide a data set to model energy flows inside the buildings for urban scale calculation
- Share general information concerning the energy installations between different actors

WHAT IS IT **NOT** FOR?

- Provide complete energy component models for simulation purpose

- Study of **existing data specification projects** concerning Energy Systems at urban scale
 - ✓ INSPIRE
 - ✓ U.S. DoE Building Energy Data Exchange Specification (BEDES)
- List of **Use cases** (simulation and modelling) from the different partners
- List of **requirements** enabling these Use cases
- Development of a class diagramm

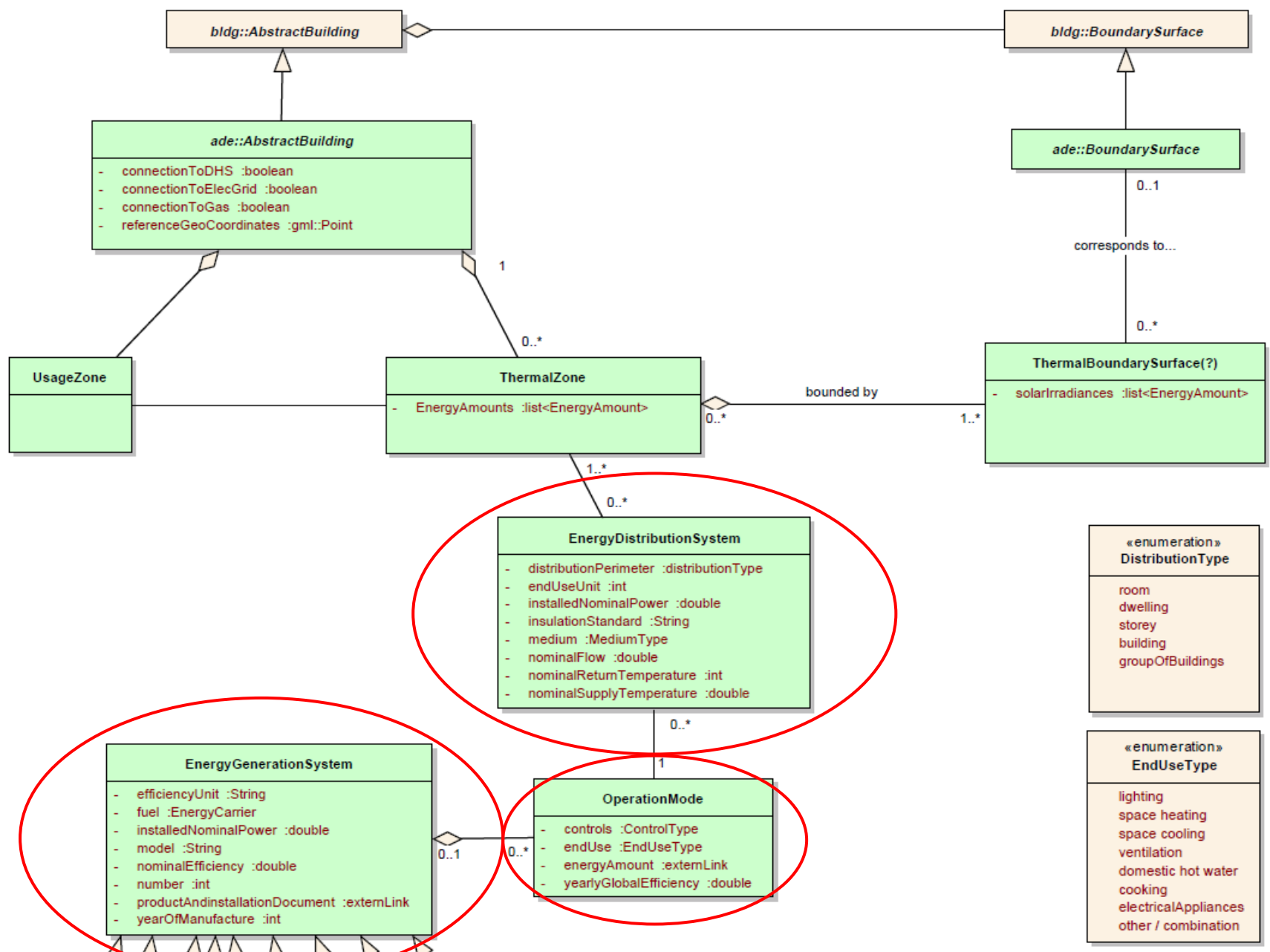


- Support a **wide range** of existing data sources (from manufacturers, installers, operators, measurements)
- Structure splitted between **residential** and **commercial** facilities
- Many **code lists** which may be reused in CityGML
- Actual version: 2.3 (feb. 2013)

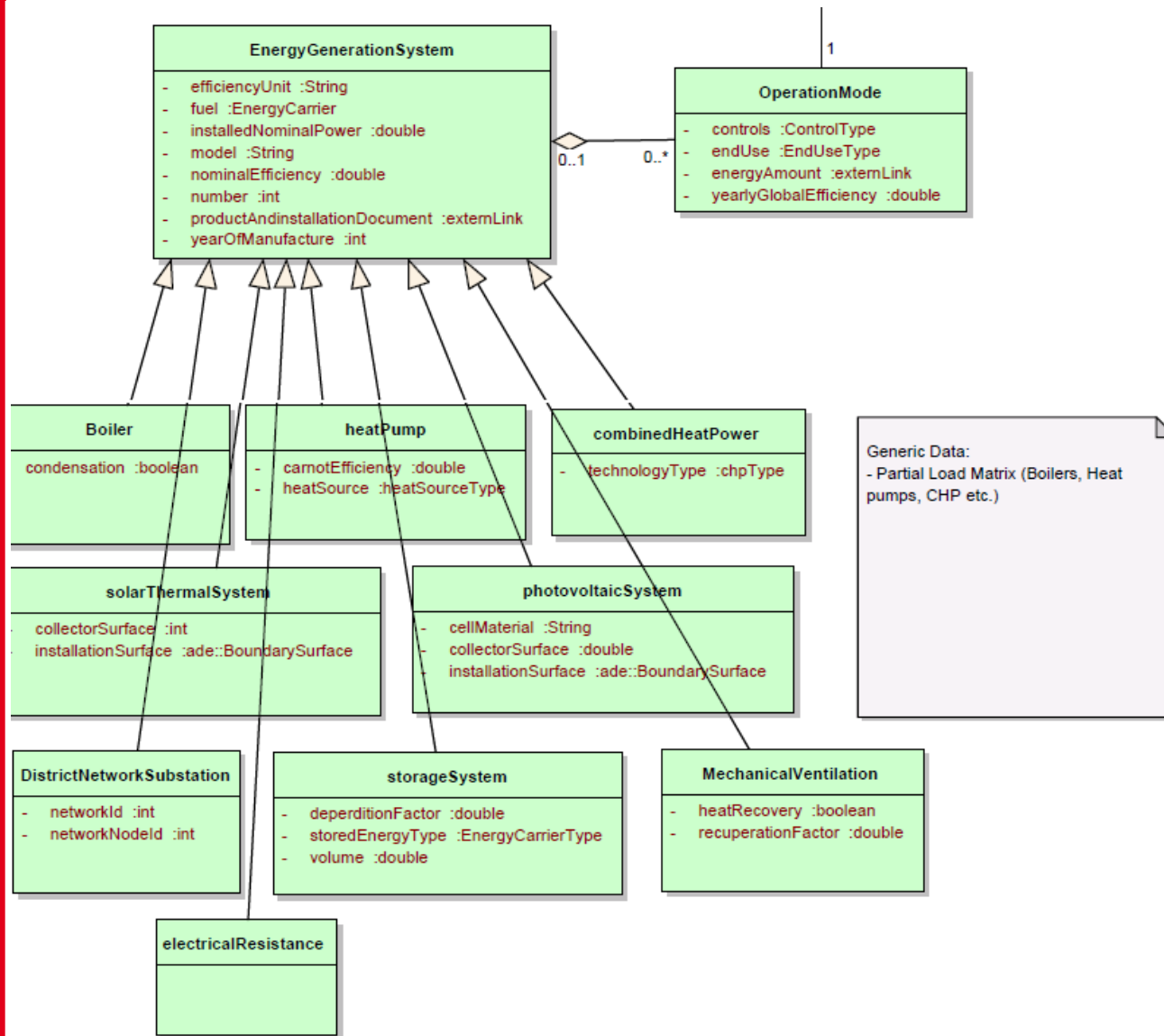
- Energy Systems split in 2 categories: **EnergyGenerationSystem** and **EnergyDistributionSystem**
- Energy System objects only include parameters intrinsic to the systems (no operating information)
- Operating information are included in an object **OperationMode** linking **EnergyGenerationSystem** and **EnergyDistributionSystem**
- Energy time-depending data are modelled with the object **EnergyAmount**

- Connection with **Utility Network ADE** (at least in case of District Heating/Cooling Systems)
- Use of **TimeSeriesML** for EnergyAmount?
- Use of **Metadata** (source of the energy consumption and operation data)

Schema - overview

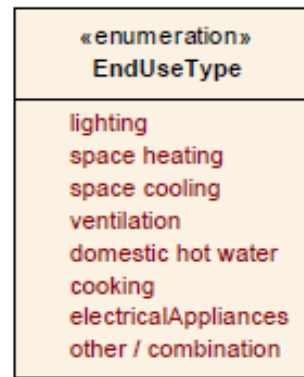
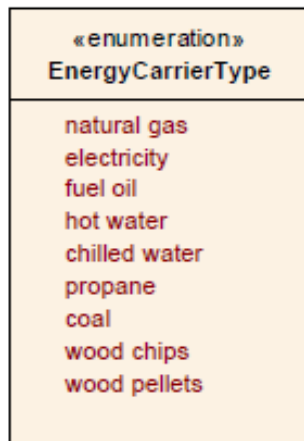
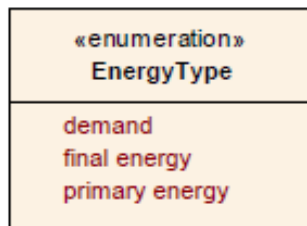
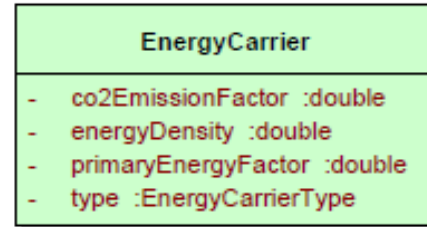
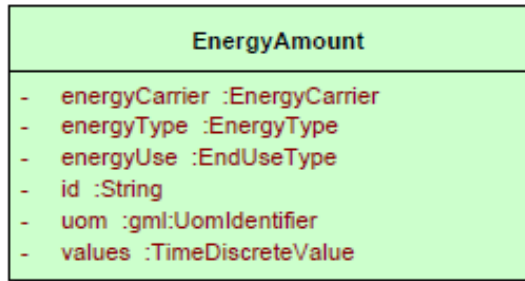


Schema – energy generation systems

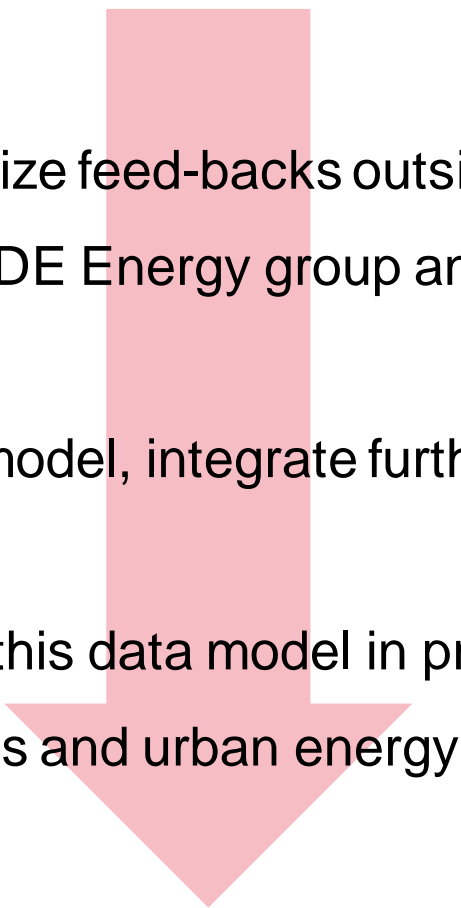


- Energy Generation Systems are **specified depending on the system type**
- Some **standardized** and some **generic** parameters
- **Storage systems** are Energy Generation Systems

EnergyAmount



- Identity used for **energy flow study**
- May be **energy demand**, **energy consumption (final)** or **primary energy**
- Include **time-dependent data**
- May be **monitored** or **calculated** data
- May be stored in the CityGML file or in an annex database⁹



Collect and synthesize feed-backs outside the working group
(rest of ADE Energy group and beyond)

Refine the data model, integrate further HVAC systems

Test this data model in practice
(Use cases and urban energy simulation)