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Energy & Location webinar
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Prediction of the heating energy demand in European Cities using 3D City Models

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ELISE Energy & Location Applications

ISA²

Motivation

General EU-wide goal:
→Establish Strategies to Reduce CO2 Emissions

This includes:

- Reduce Heating Energy Demand of Buildings

Our Approach:

- Method to predict heating energy demand on urban level
  → Simulation that calculates energy performance certificates and incorporates renovation scenarios

Actions in the Energy and Location Pilot Project:

- Development of a Heating Energy Demand prediction method based on 3D City Models
- Validation in Different Test Areas
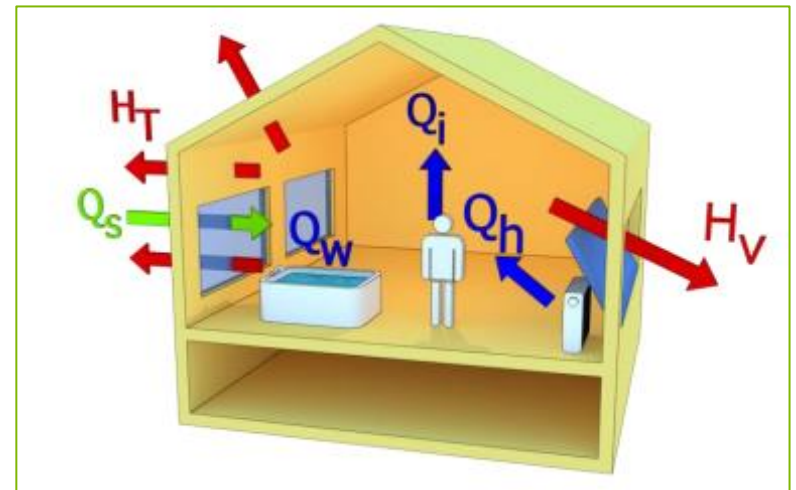- Comparison of different Energy Labelling Methods

Methodology using Simstadt

Simstadt:

• Predicts Energy demand based on DIN V 18599

• Output: Monthly Energy Balance per Building

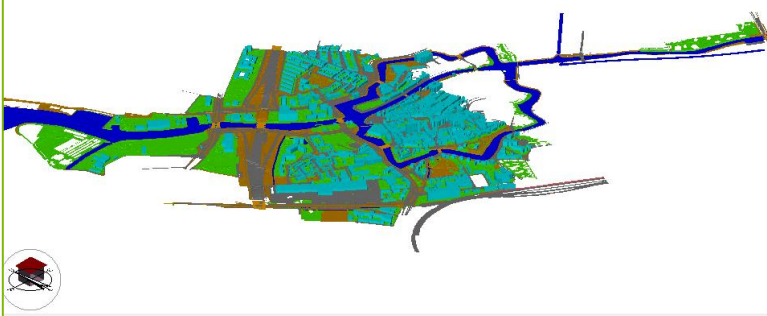• Year Of Construction and Function has to be given

Labelling Methods

• In Germany labels

based on Energy Demand

• In Netherlands

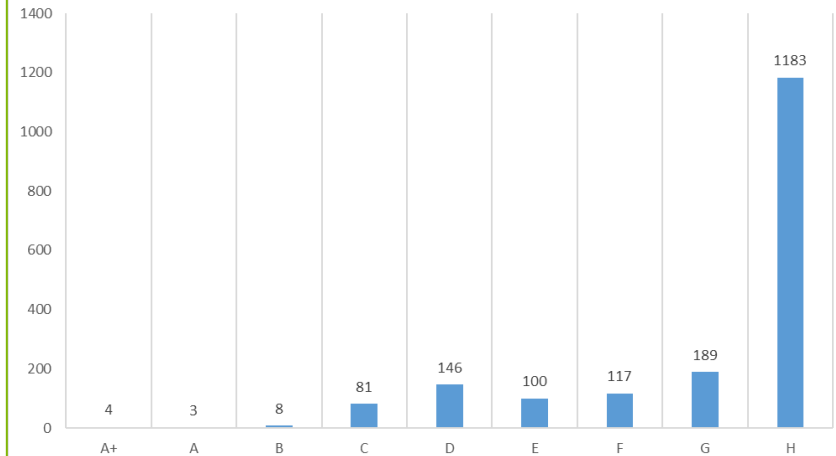based on Building type and year of construction

Test Area Zwolle, NL

- Provided by Dutch Cadastre Authority

- Semantic transformation of input information has to be done

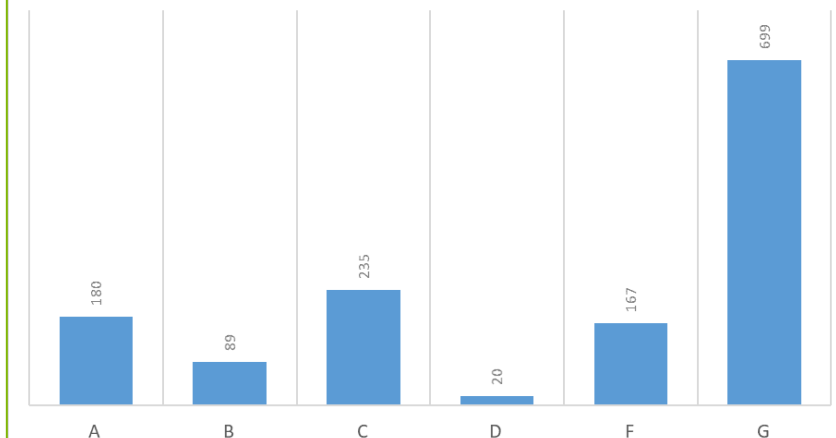- Accuracy can be increased with NL Specific parameters

Dataset (1923 Buildings):

NUMBER OF BUILDINGS PER "ENERGIEAUSWEIS"-LABEL - CALCULATION VIA SIMSTADT

A+	A	B	C	D	E	F	G	H
4	3	8	81	146	100	117	189	1183

DISTRIBUTION OF THE ENERGY LABELS ACCORDING TO THE METHOD OF THE DUTCH CADASTRE AUTHORITY

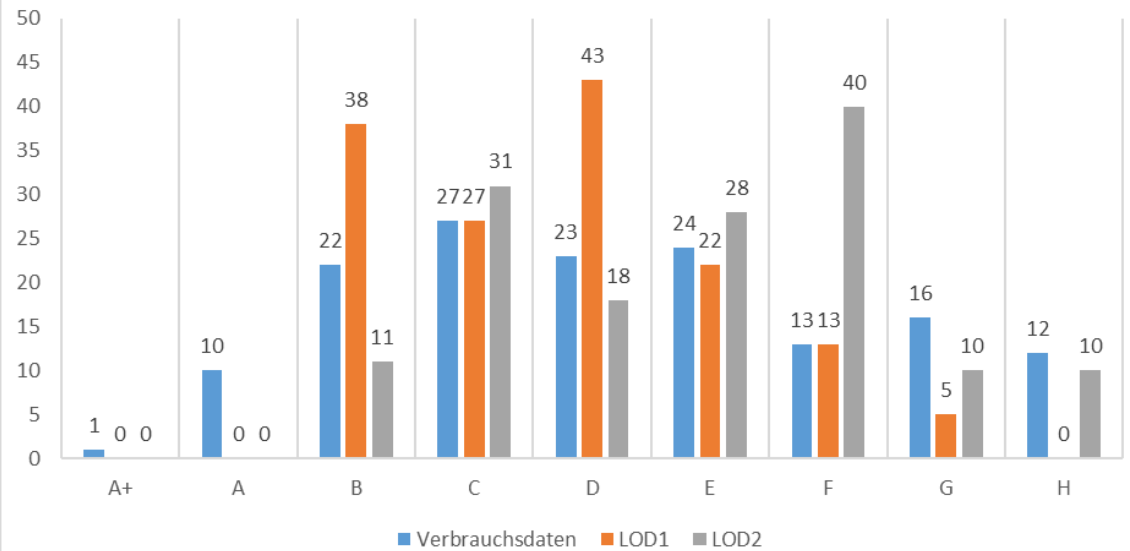| A	B	C	D	F	G
180	89	235	20	167	699

Test Area Essen, DE

- Given In LOD1 and LOD2

Dataset LOD2 (323 Buildings):

Comparison Labels Consumption data and Simstadt results of LOD1 and LOD2

Conclusions

- Prediction of Energy demand possible
  - Successful adaptation of the methodology to different Situations in Member states
  - INSPIRE-Directive helps with standardized input information
- Labelling Methods difficult to compare
  - Different amount of Labels
  - Designed for different Building stocks/Different Construction patterns

Questions?

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Run by the ISA Unit at DIGIT (European Commission) with 131€M budget, the ISA² programme provides public administrations, businesses and citizens with specifications and standards, software and services to reduce administrative burdens.