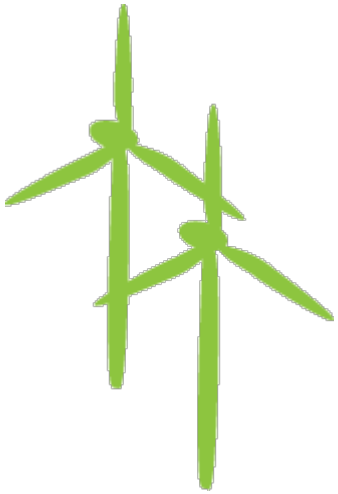
EnergyVille

Research
into sustainable energy
and smart energy systems

EnergyVille: energy framework

- Two markets
  - Commodity for large consumers
  - PRICE, PRICE, PRICE and reliability
  - Electricity and gas are products
  - Europe based
- Service for small consumers
  - Energy sources: do not care
  - Comfort, well being
  - SME: Sit back and relax
  - Local based (Flanders, ….)

Flemish energy research by



VITO
- Energy Technology
- Sustainable Cities

KU Leuven
- Electa
- Building Physics
- Mechanics

imec
- Photovoltaic Research

Flemish energy research by

EnergyVille

EnergyVille

Expertise in sustainable energy
and intelligent energy systems
in cities and their surroundings

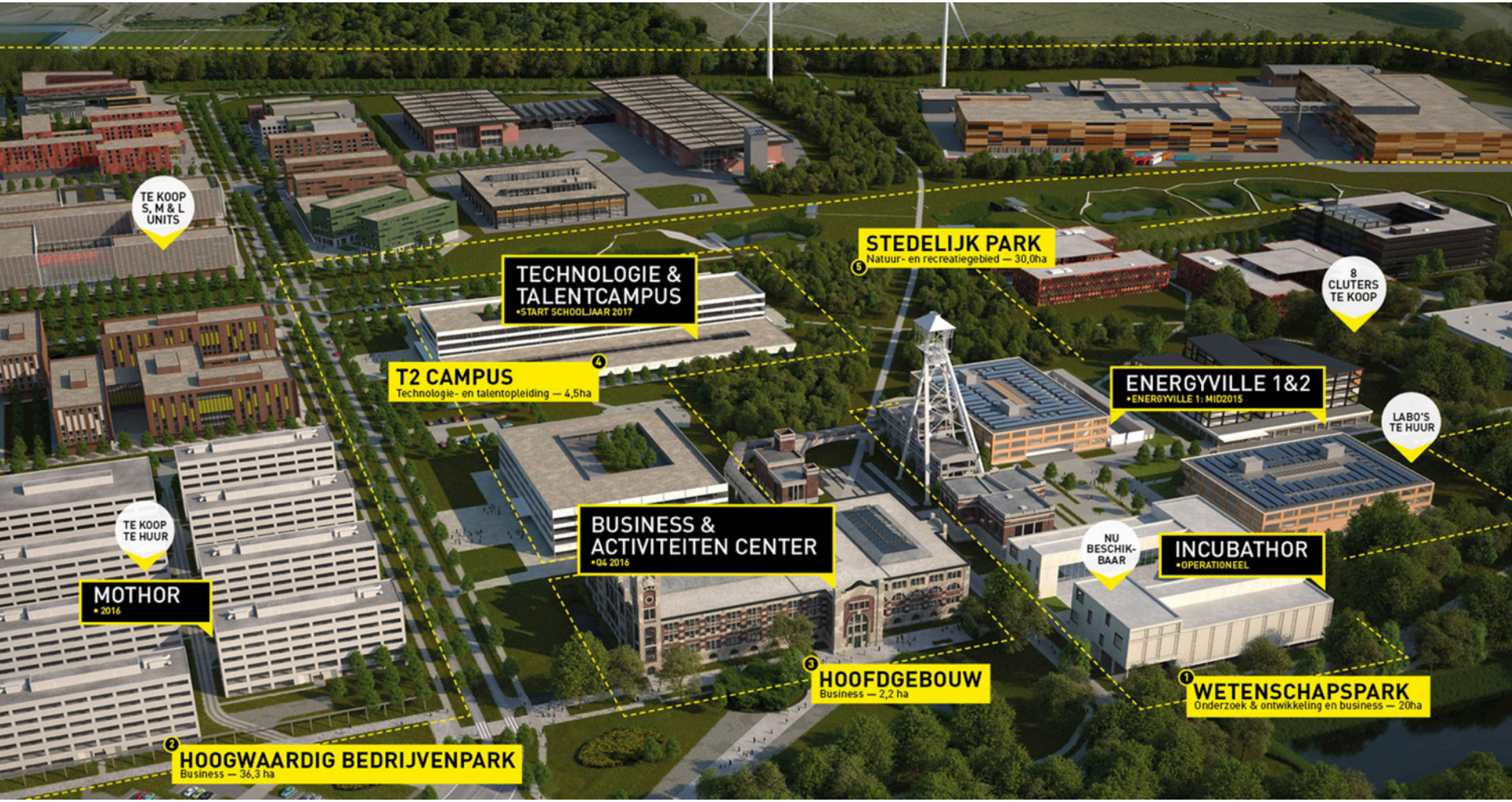
Research – Development – Training

- For:
  - Industry
  - Governments
- With:
  - Local partners
  - Regional partners
  - International partners

EnergyVille

Connected in
an interconnected world

EnergyVille – embedded in a local context


TE KOOP S, M & L UNITS
TECHNOLOGIE & TALENTCAMPUS
•START SCHOOLJAAR 2017
STEDELIJK PARK
Natuur- en recreatiegebied — 30,0ha
8 CLUTERS TE KOOP
T2 CAMPUS
Technologie- en talentopleiding — 4,5ha
ENERGYVILLE 1&2
•ENERGYVILLE 1: MID2015
LABO'S TE HUUR
TE KOOP TE HUUR
BUSINESS & ACTIVITEITEN CENTER
•Q4 2016
NU BESCHIK-BAAR
INCUBATHOR
•OPERATIONEEL
MOTHOR
• 2016
HOOFDGEBOUW
Business — 2,2 ha
WETENSCHAPSPARK
Onderzoek & ontwikkeling en business — 20ha
HOOGWAARDIG BEDRIJVENPARK
Business — 36,3 ha

Program @Thor

MenThor

Setup an ecosystem:
- bring stakeholders together
- translate visions on energy, to roadmaps and experiments
- integrate research, education

Technology & Talent Campus
and entrepreneurship

AcceleraThor

Stimulate start-ups
in energy services and technology
- L1: boost entrepreneurship (FBS)
- L2: idea > validated business plan (KIC)
- L3: upscaling (LRM/Numha)

Regulation Free Area

DemonstraThor

Integrate technology and research, offer a Living Lab:
- EnergyVille HomeLab
- EnergyVille BatteryLab
- EnergyVille MatrixLab
- EnergyVille ThermalLab
- EnergyVille CarLab
- EnergyVille SolarLab
- Thor Block of Buildings
- Thor Smart Grid
- Thor 4G Heat Network

INCUBATHOR

Facilitate developing your business from Thor

MOTHOR

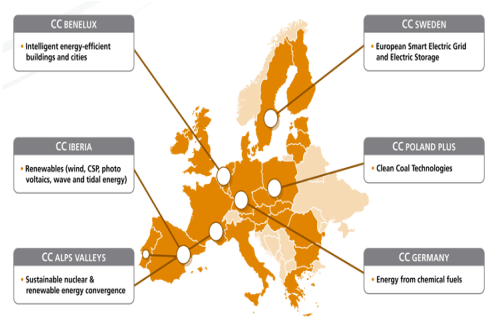
Host teams @Thor

EnergyVille – Embedded in a broad context

Flanders

SMART GRIDS FLANDERS

Europe



eit Knowledge & Innovation Community
KIC InnoEnergy

Europe

DERlab

Inter-national

GSGF
Global Smart Grid Federation

SGF brings together industry and knowledge centers on **intelligent energy networks** to make them a reality

EIT stimulates the knowledge triangle research, innovation, education for and together with industry

DERlab develops criteria for the operation of **distributed energy resources** in the grid

GSGF brings together industry on smart grids accross the globe (secretariat and technical knowledge hosted by EnergyVille)

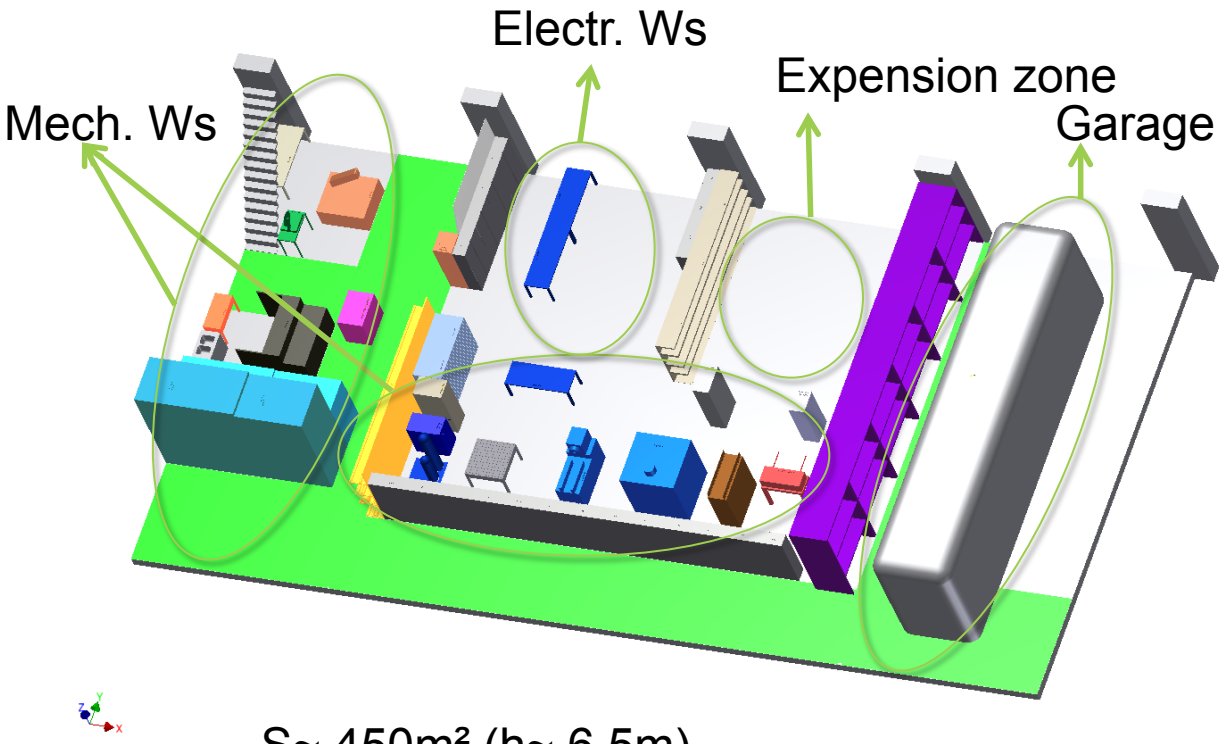
EnergyVille

- Driving force behind the transition towards sustainable energy supply
- Stimulus for research, business development and jobs in Genk
- Central position in the European knowledge triangle ELAt, Eindhoven, Leuven, Aken

Building: EnergyVille 1

- 15000 m² floor area
- 5000 m² lab infrastructure
- 200 desks
- Parking lot : electrical vehicles
- BREEAM excellence
- **LIVING LAB! And by extension "regulation free area"**

Workshop



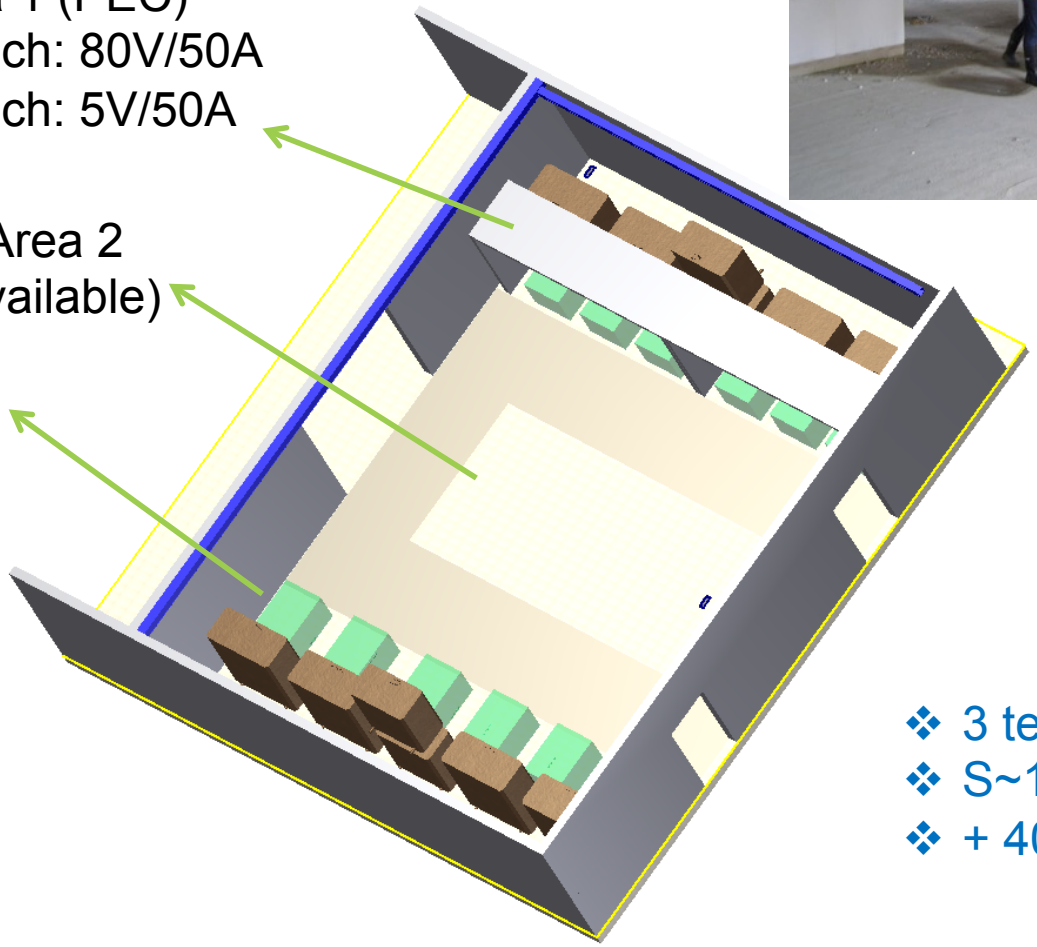
S~ 450m² (h~ 6,5m)

Battery lab

Area 1 (PEC)
2*24ch: 80V/50A
2*48ch: 5V/50A

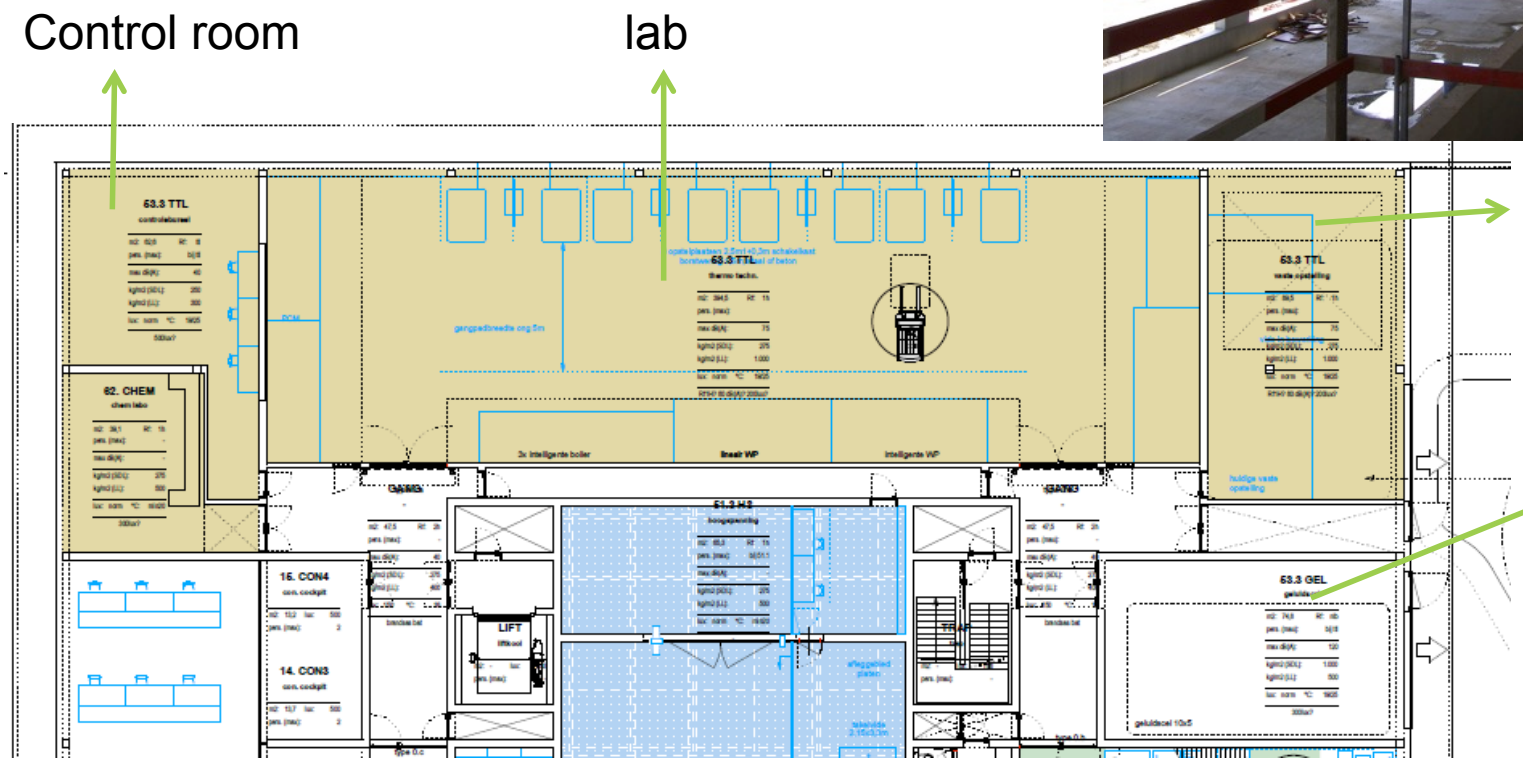
Area 2
(available)

Area 3
(available)



- 3 test areas
- S~150m² (h~ 3.5m)
- + 40m² opslag

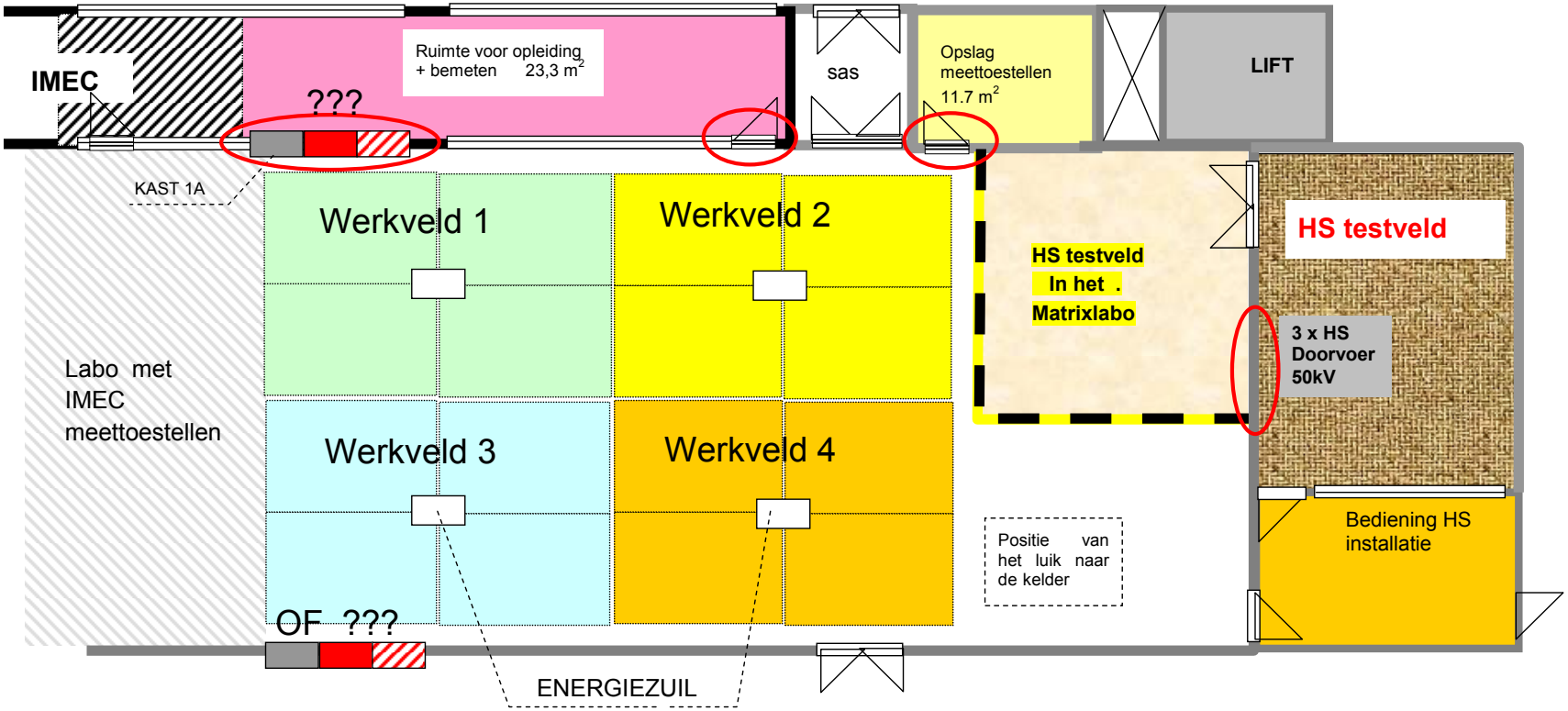
Thermal Technical Lab (TTL)



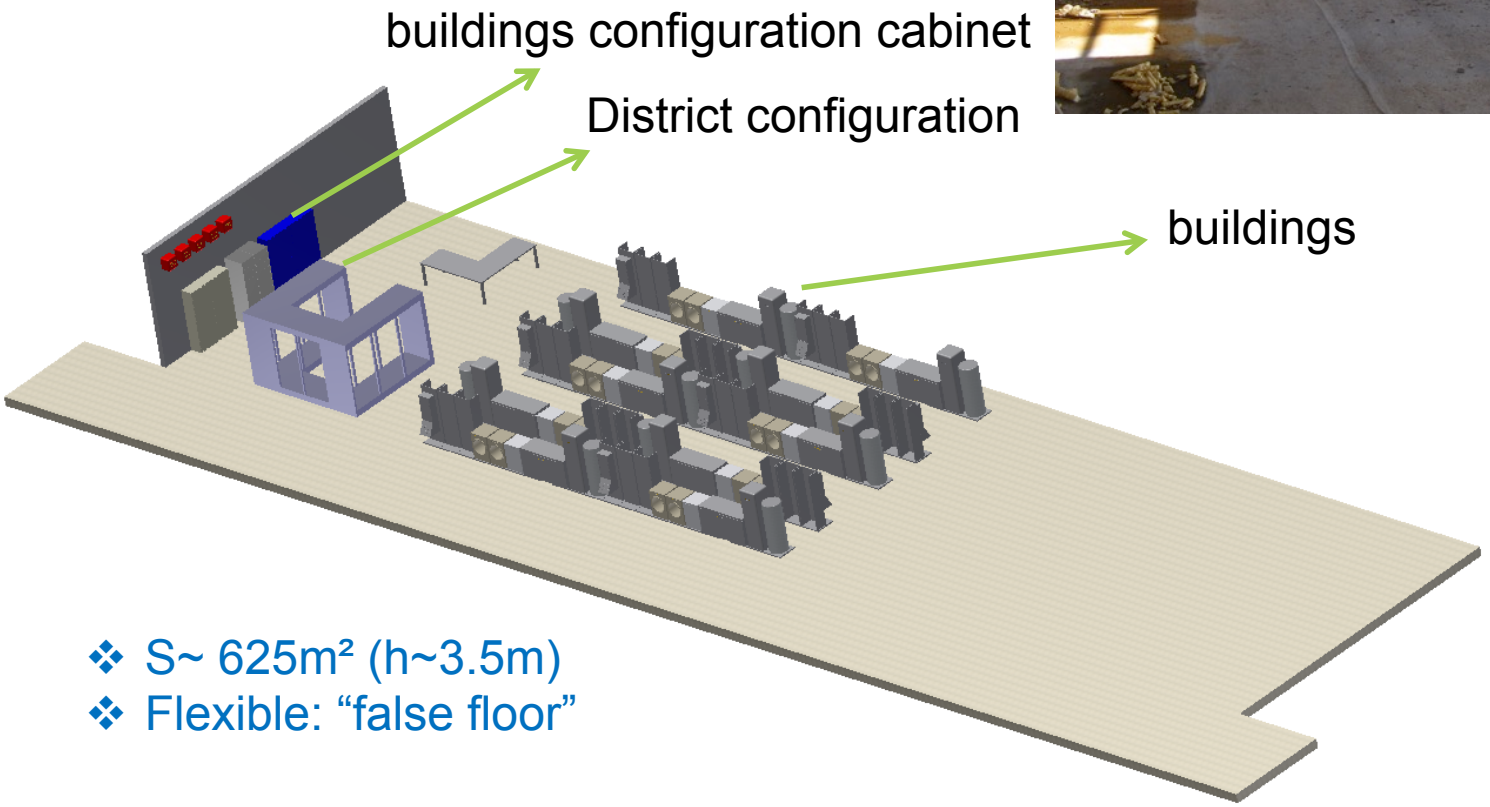
- S test area ~625m²; h~6,5m
- Pe: 500kW max
- Pth:1MWth max (ext koelunit)

Matrix & MV labo

- 16 Work fields
- MV labo
- IMEC labo

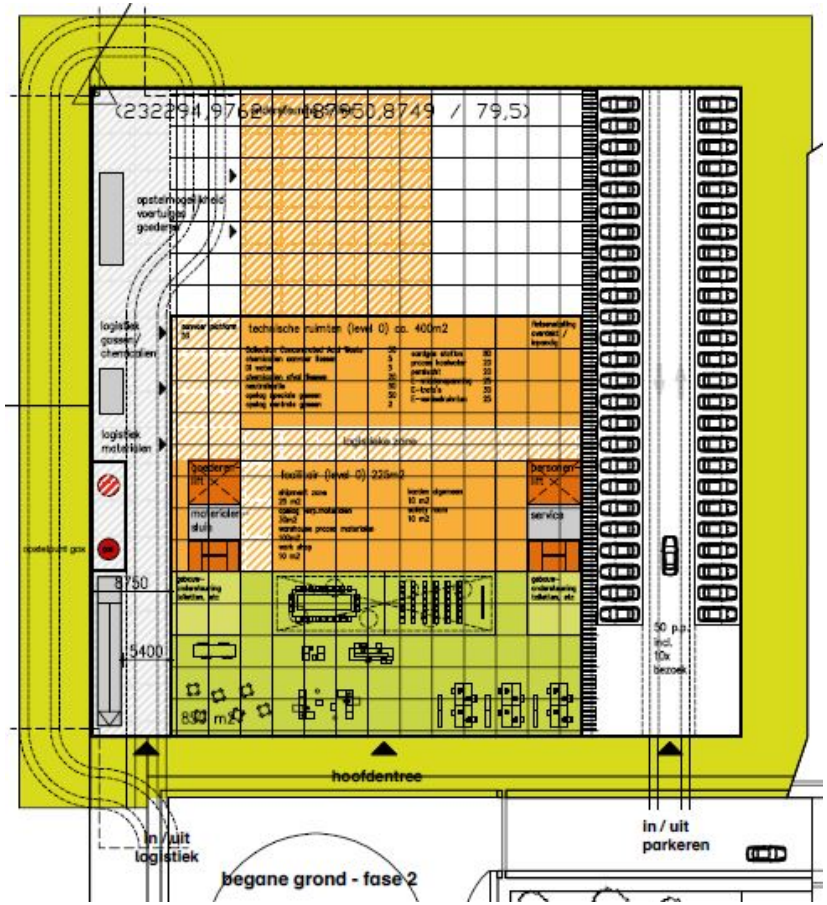


Homelab

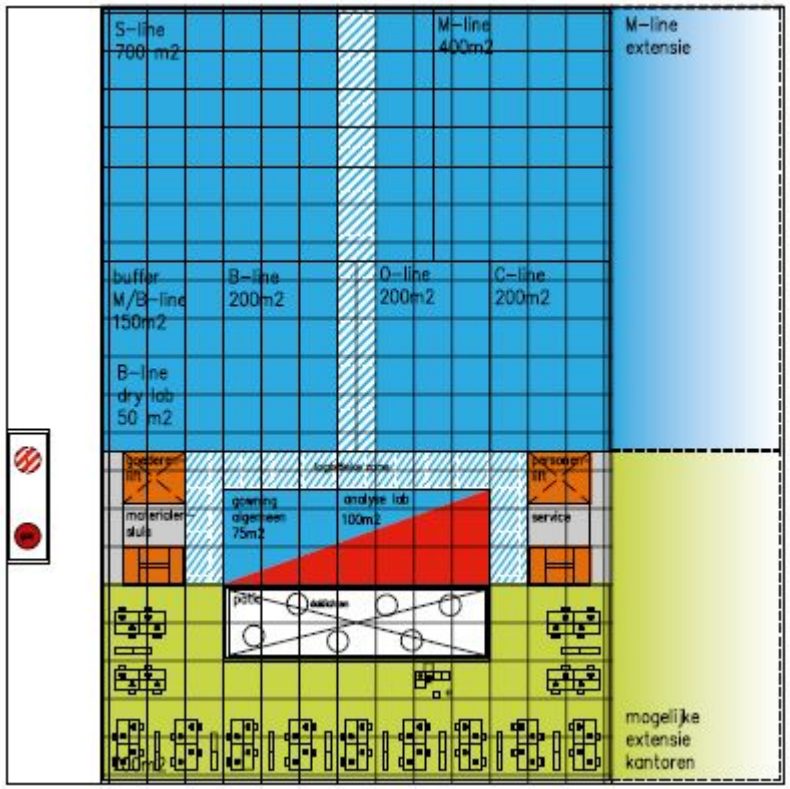


- S~ 625m² (h~3.5m)
- Flexible: “false floor”

Building: EnergyVille 2



Ground Floor



Labs Floor +6.5m

Campus EnergyVille

- Campus EnergyVille Thor Park, Waterschei, Genk

- With the support of:

EFRO Europa investeert, Vlaanderen groeit.

Vlaanderen In Actie Pact 2020

met steun van het Agentschap Ondernemen

Europese Unie

Met steun van de Vlaamse overheid

Campus EnergyVille

- Campus EnergyVille Thor Park, Waterschei, Genk

- With the support of:

EFRO Europa investeert, Vlaanderen groeit.

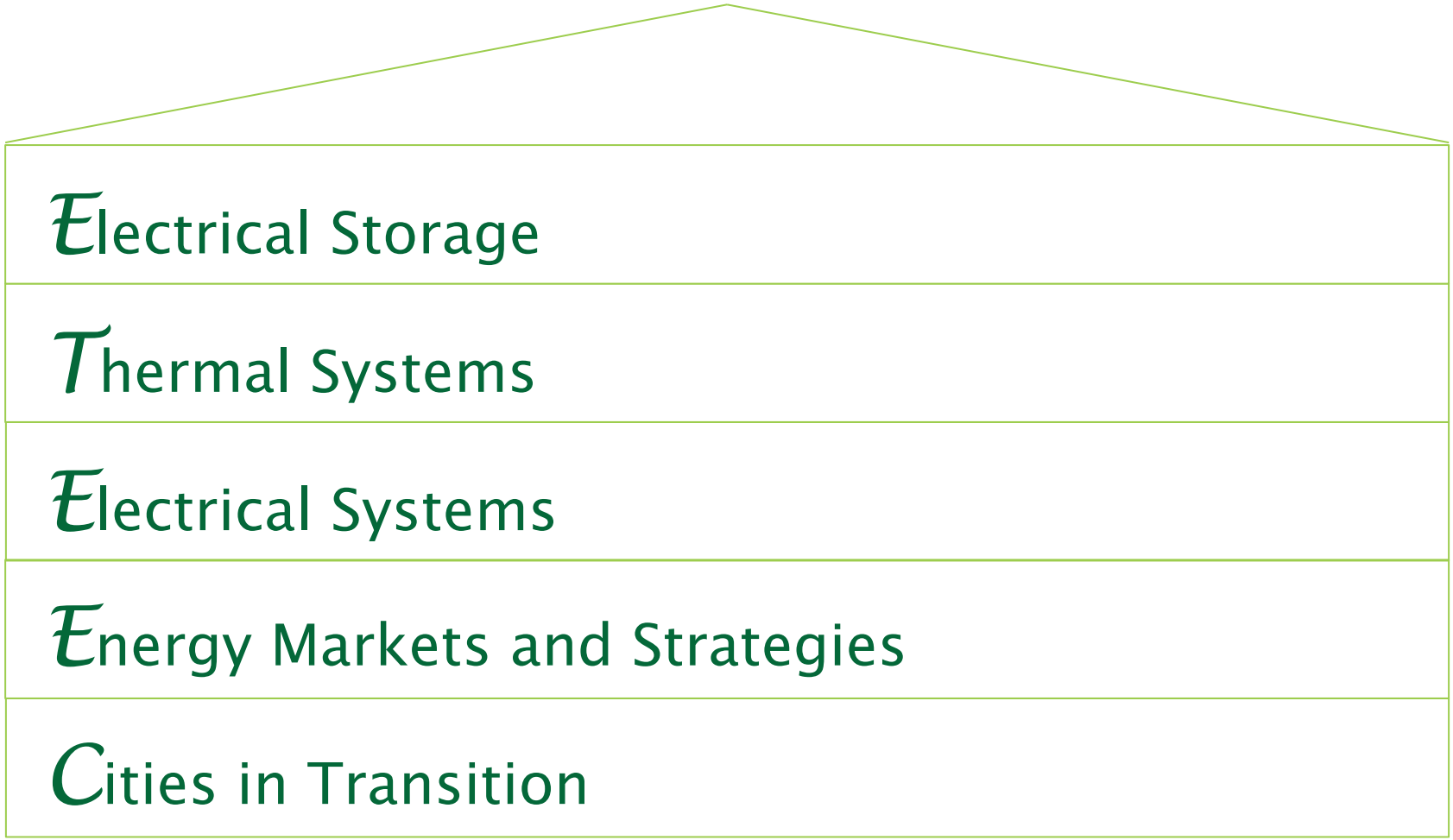
Vlaanderen In Actie Pact 2020

met steun van het Agentschap Ondernemen

Europese Unie

Met steun van de Vlaamse overheid

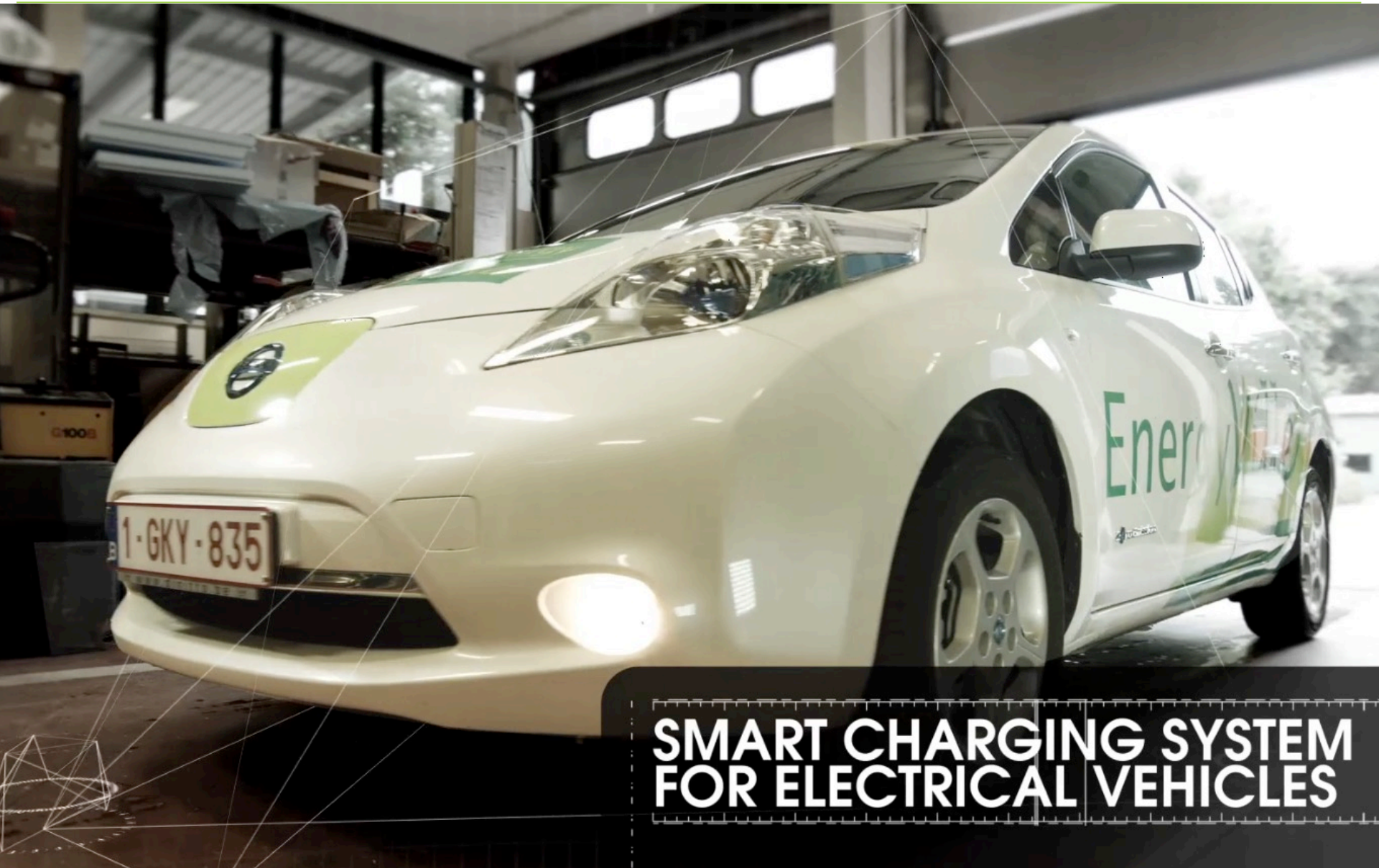
Research into



Electrical Storage

- New types of batteries
- Battery Management Technologies
- Integration of Storage Devices
- Long Term Storage and Conversion

Electric vehicles



Thermal Systems

Optimization of Thermal Energy Systems

Substations	Optimal (building) Energy Demand	Advanced Thermal Energy Storage	Integration of Energy Conversion Technologies

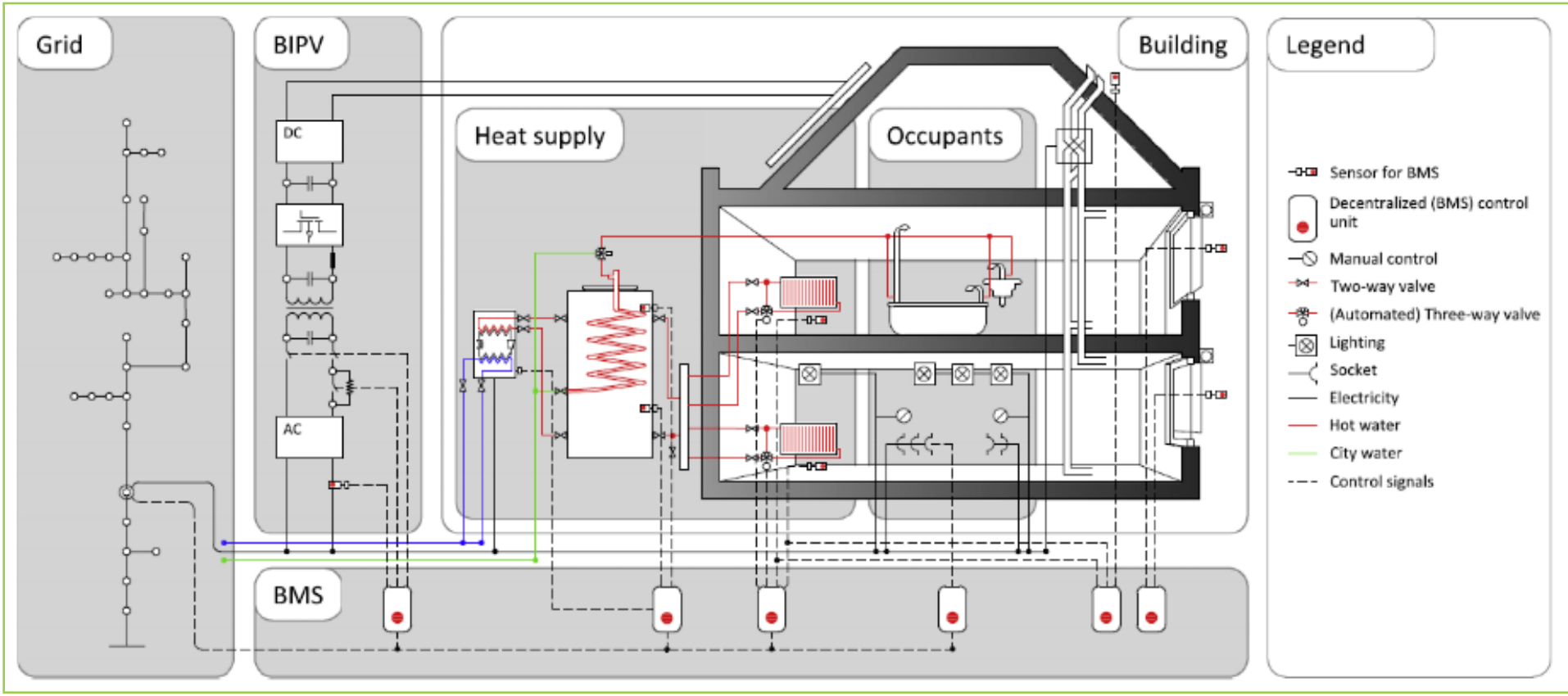
4G thermal networks

Electrical Systems

- HVDC
- Technologies for grid services
- Photovoltaïc Integration in buildings and DC nanogrids
- Cell and module technologies

Photovoltaic Integration

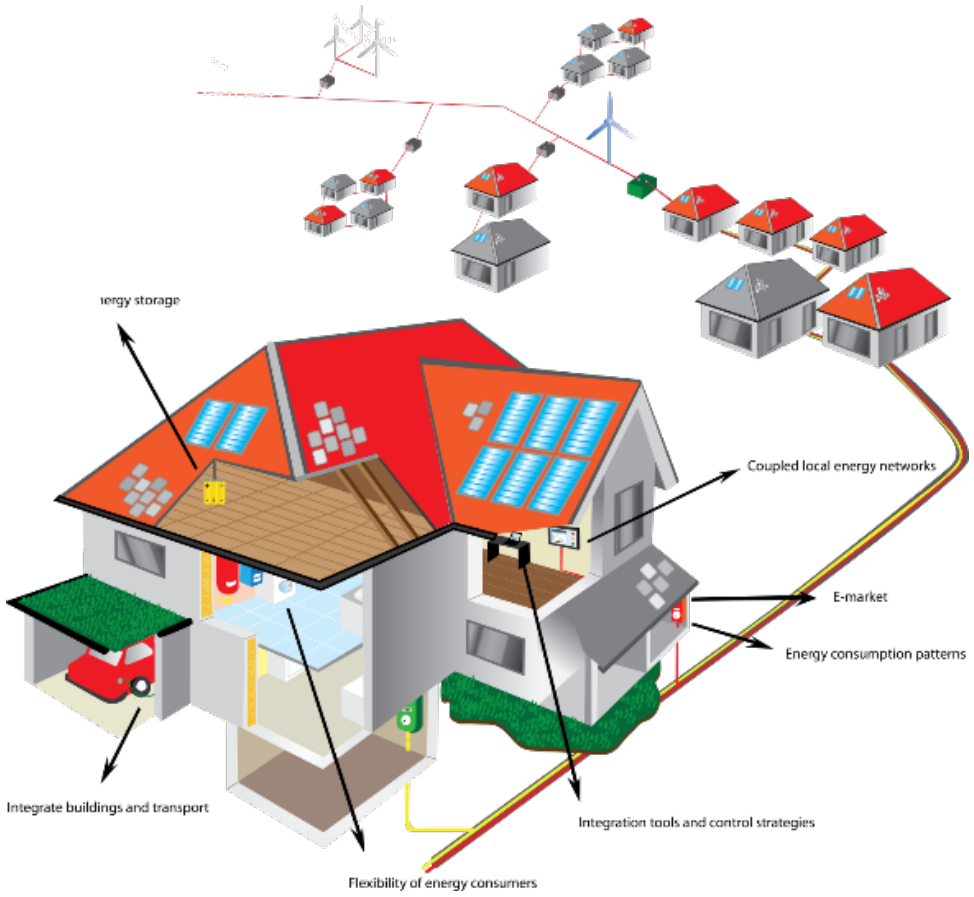
Integrated District Energy Assessment by Simulation



- Modelica environment

Linear: a living lab

- Demand side management of domestic loads
- Demonstration pilot project with households

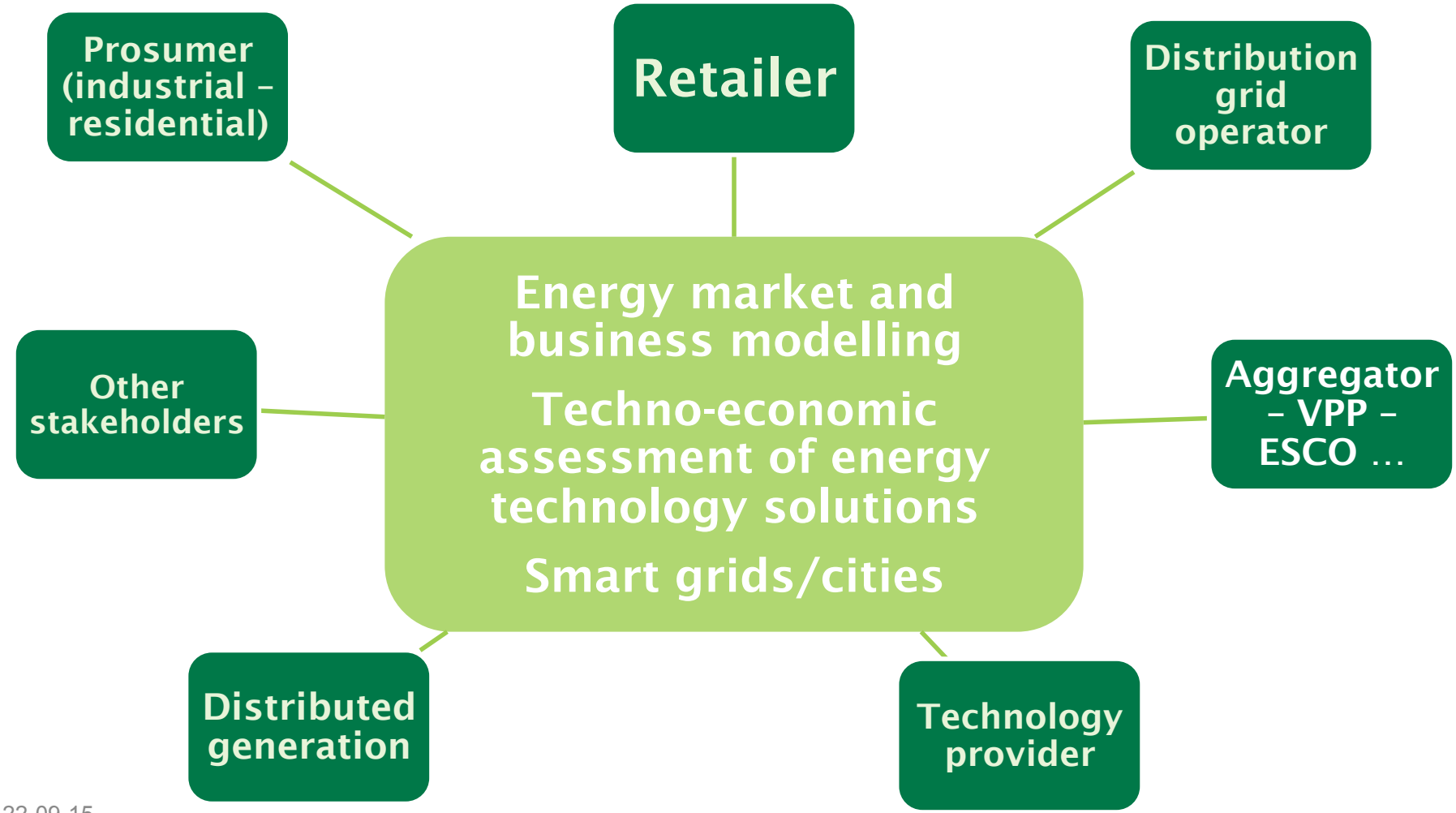


Linear acknowledges the Flemish Government for its support

Energy Markets and Strategies

- New concepts/scenarios for energy markets
- Interoperability
  - Communication
  - clustermanagement

European Energy Markets



Energy Strategies

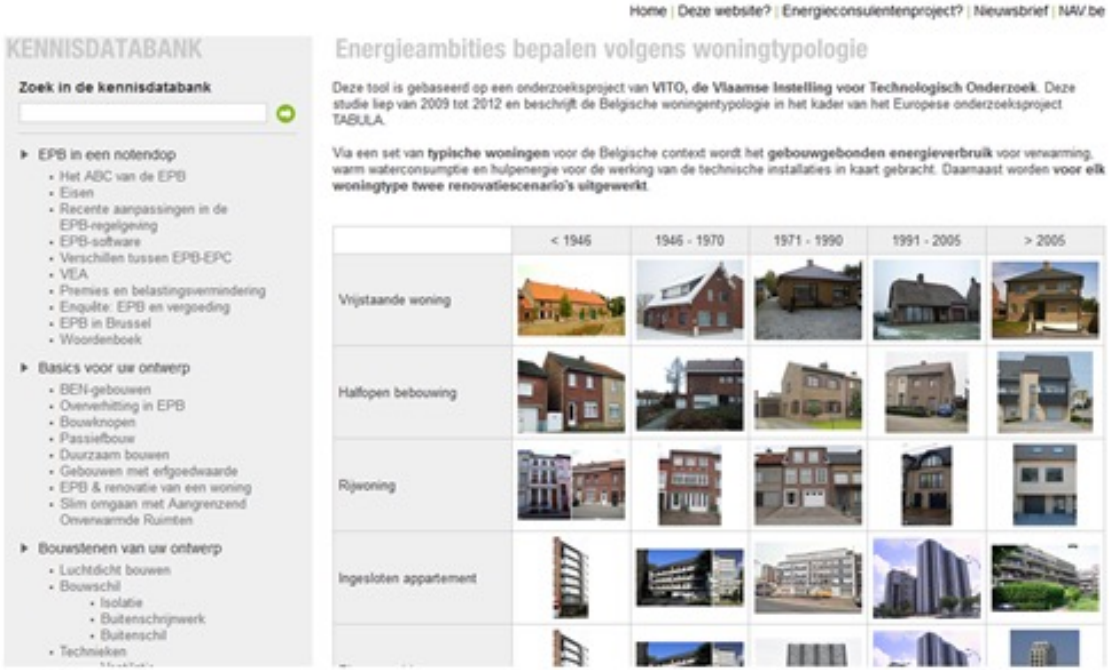
- Support for key stakeholders in the energy transition
- Modelling future energy systems
- Economical and environmental impacts
- Technology roadmaps
- Living labs and user behavior

Cities in transition

- Building renovation strategies
- Energy district design
- Sustainable building concepts

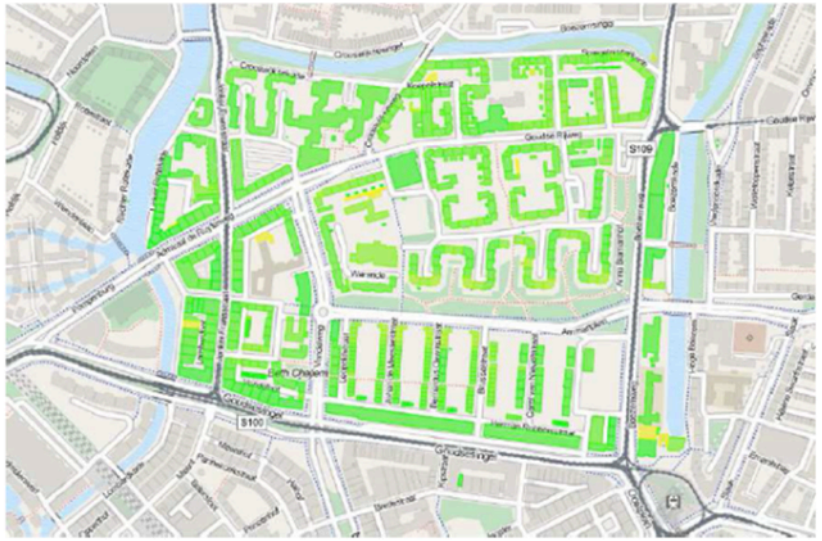
Building renovation strategies

- Databases & tools to support retrofit decisions
- Costs and effects over the full life cycle
- Co-operation models / services



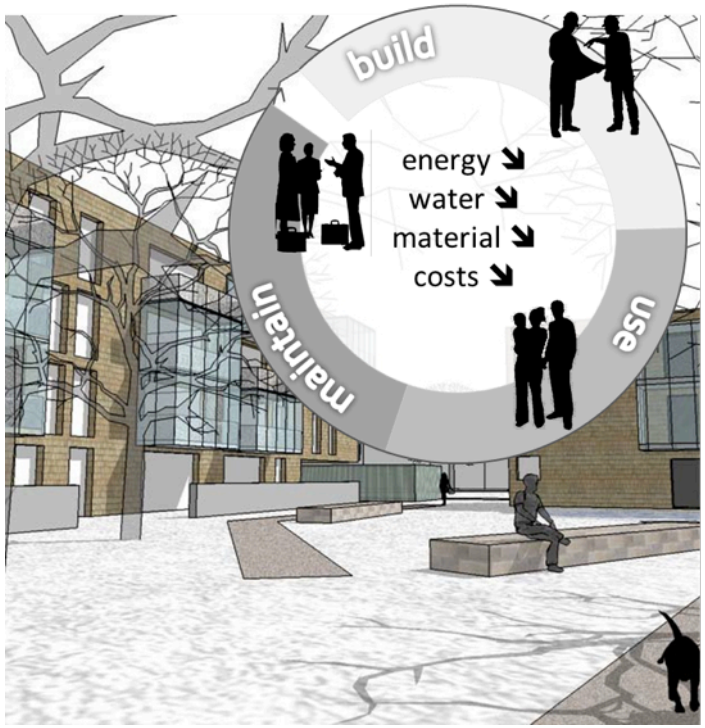
Energy district design

- Local energy & climate policy
- Tools for innovative district planning
- Integration of renewable energy : smart grids, district heating and cooling
- Smart city living labs

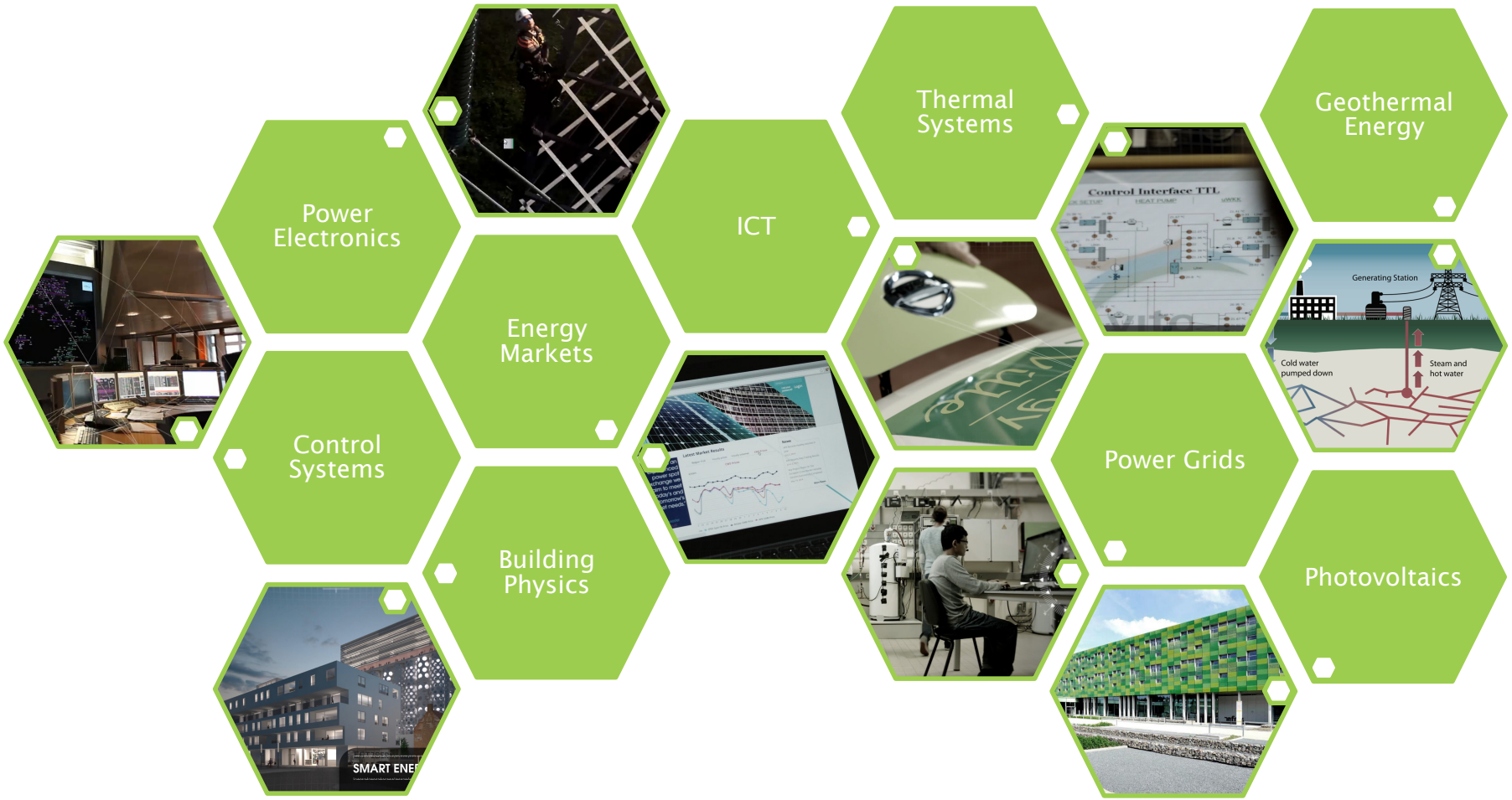


Sustainable building concepts

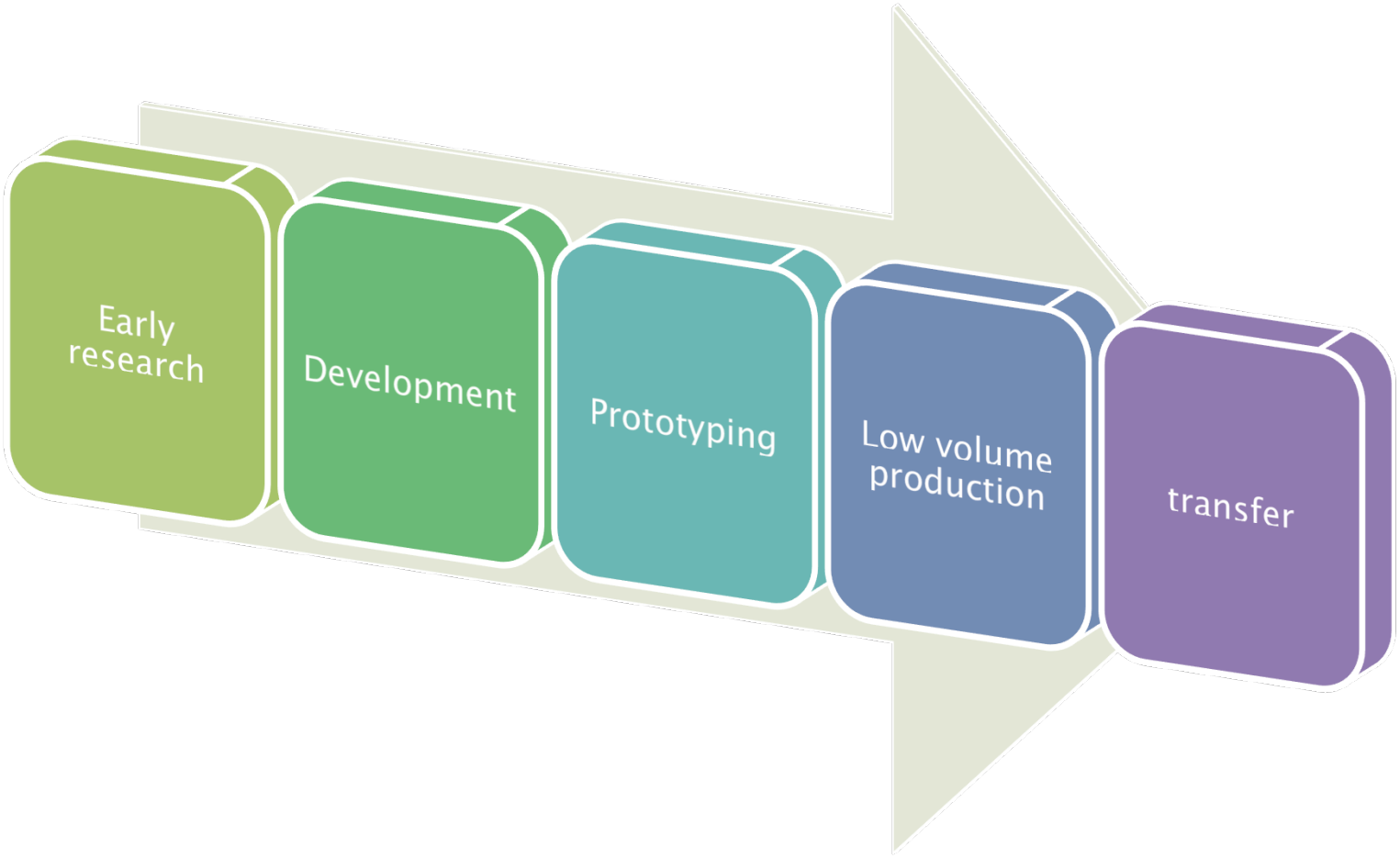
- Sustainability assessment of building materials, buildings and districts
- Life cycle analyses and life cycle costing
- Support for innovative building concepts – flexible and adaptive design



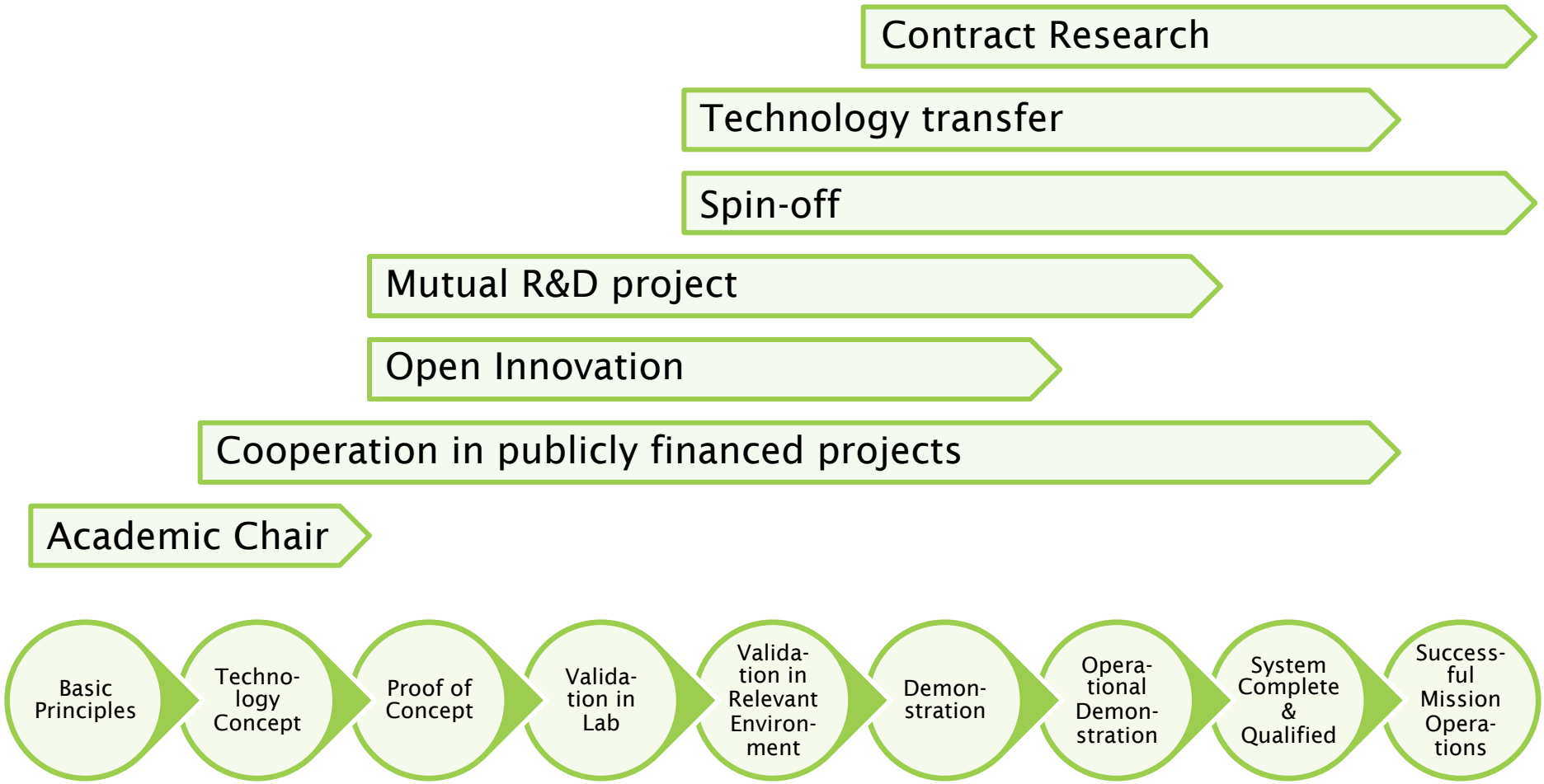
Domains of expertise



Innovation chain



Cooperation possibilities



Technology Readiness Level

More info?

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