



The challenge

PENTAGON

Europe's electricity system change

- Shift from fossil fuel to renewable energy for power generation
- Centralized generation to decentralized
- Households, business and industry are active participants in the grid

Europe has committed to ambitious 2030 objectives

- 40% greenhouse gas reduction
- 27% renewable energy increase
- 27% energy efficiency increase

Need for an effective energy management at district level

- Taking into account the gas, electricity and thermal networks
- Taking advantage of energy conversion

- Paving the way for a new generation of eco-districts

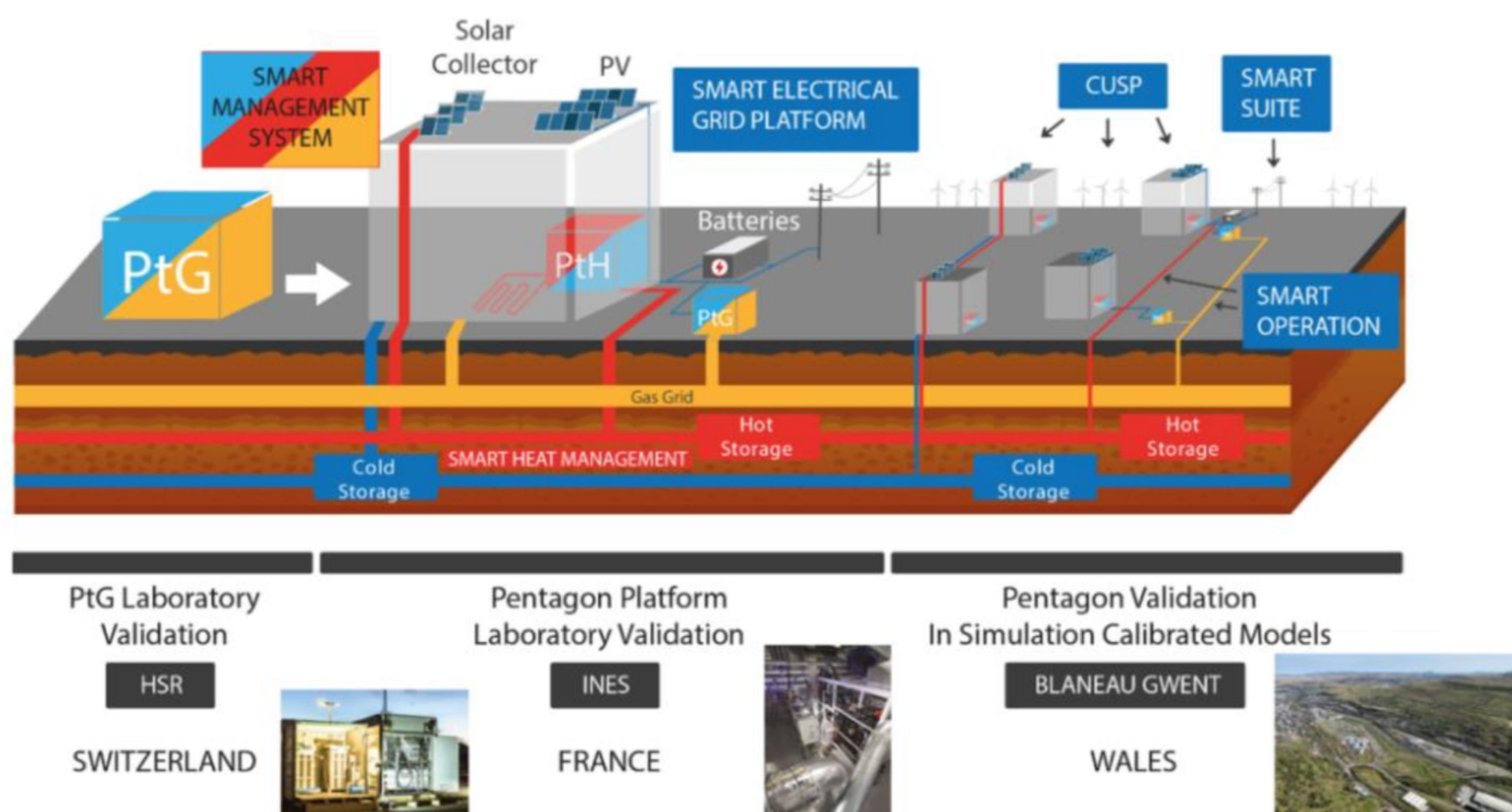
- Development of ground-breaking technologies

1. An innovative power to gas technology at district level

2. An innovative Power to Heat system at district level

3. A high level platform for flexible energy management

Flexibility management platform



System configuration

- Different type of energy carriers : gas, electricity, and heat
- Can operate on a real district, or on a virtual district for testing purposes
- Real time operation

Service based platform

- Internet of Things protocols
- Secure communication

Management of district energy resources

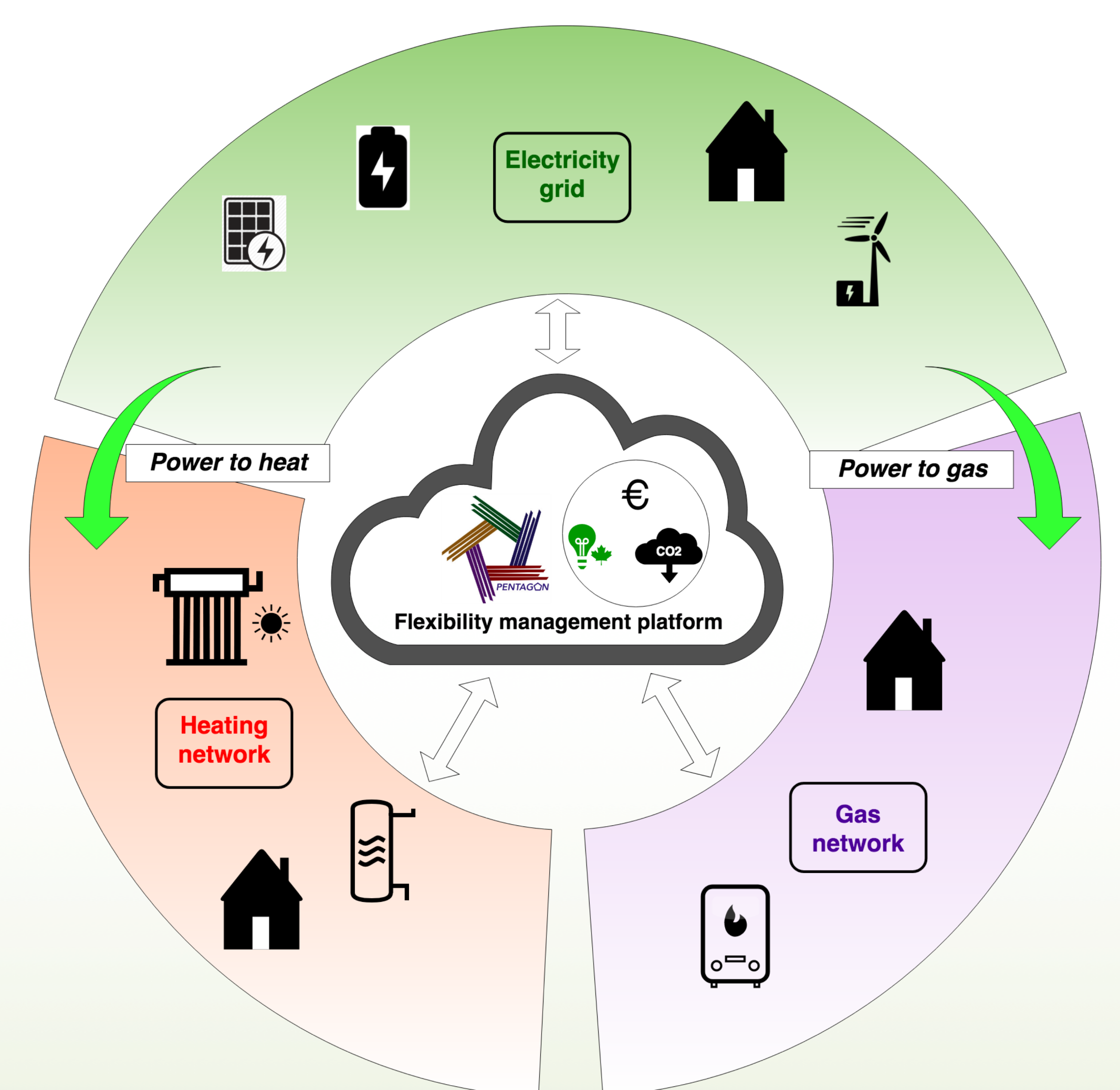
- Advanced optimization schemes at district level
- Primary objective : reduction of cost at district level
- Based on predictions of energy consumption and renewable energy production

Expected Impact

- +25% penetration of renewables in distribution grids
- Increase of +15% of revenues generated from district flexibility
- Integration to market of power to gas technology and energy management platform within 5 years

Pilots:

- Blaenau Gwent (Wales)
- CEA-INES (France)



Project Partners

