ETIP SNET

PLAN. INNOVATE. ENGAGE.

#Vision2050

formed in 2016

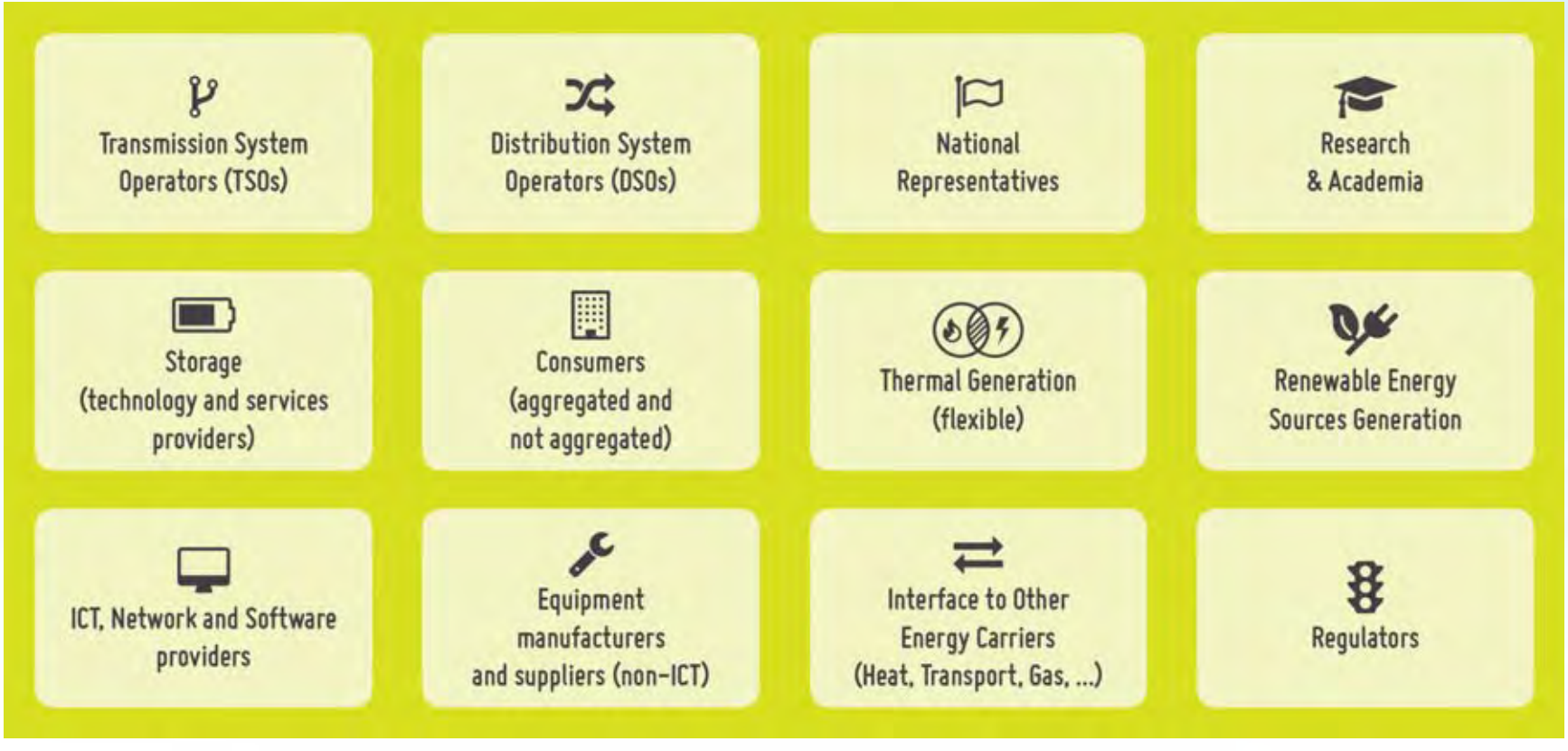
The INTENSYS4EU Project supports ETIP SNET activities and has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 731220

ETIP SNET's mission

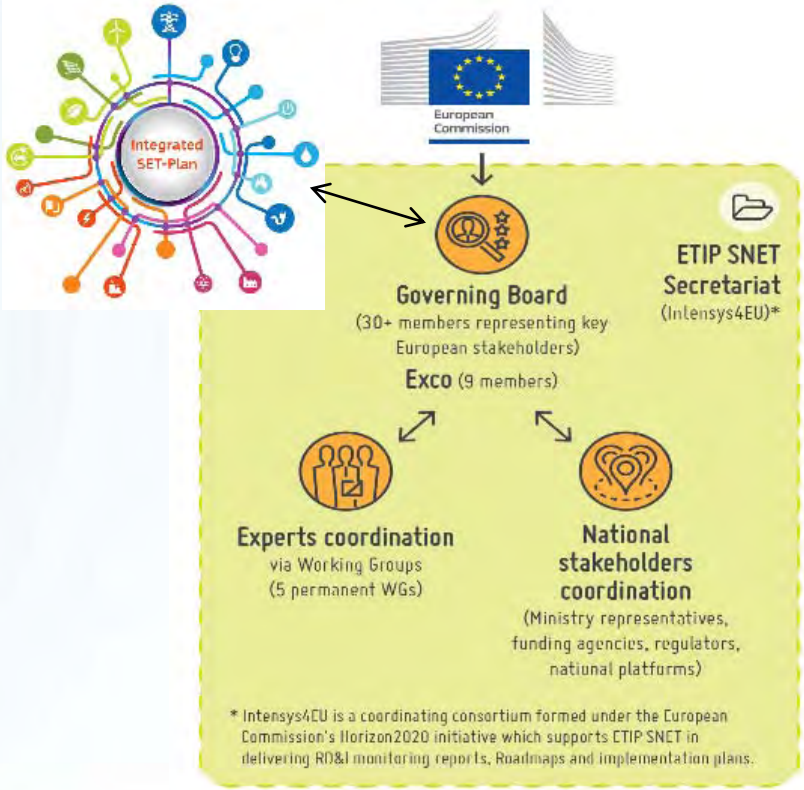
- **Set-out a vision for RD&I for Smart Networks for Energy Transition** and engage stakeholders in this vision.
- **Prepare and update the Strategic Research and Innovation Roadmap**.
- Report on the **implementation of RD&I activities at European, national/regional and industrial** levels.
- Provide **input to the SET Plan action 4** which addresses the technical challenges raised by the transformation of the energy system.
- **Identify innovation barriers**, notably related to regulation and financing.
- Develop enhanced knowledge-sharing mechanisms that **help bring RD&I results to deployment**.
- Prepare **consolidated stakeholder views** on Research and Innovation to European Energy Policy initiatives.

Formed in 2016

ETIP SNET's stakeholders



ETIP SNET's organisation



WG1
Reliable, economic and efficient smart grid system

WG2
Storage technologies and sector interfaces

WG3
Flexible Generation

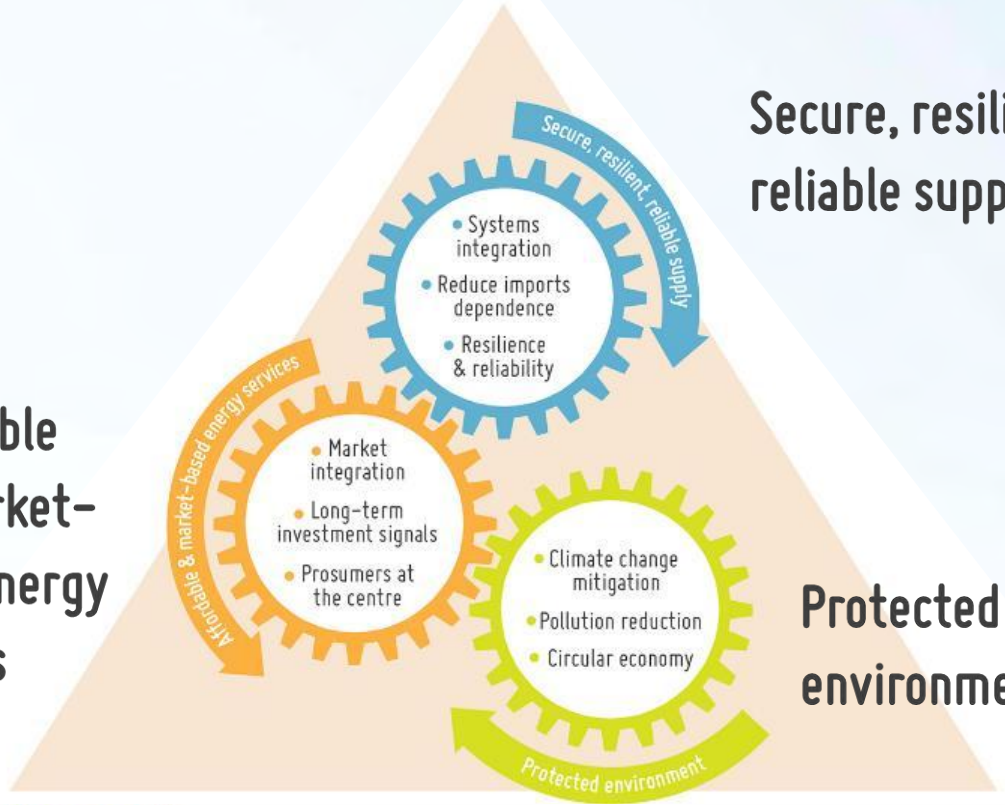
WG4
Digitisation of the electricity system and customer participation

WG5
Innovation implementation in the business environment

NSCG
National Stakeholders Coordination Group

THREE GOALS OF EU ENERGY POLICY

Secure, resilient, reliable supply



Affordable and market-based energy services

Protected environment

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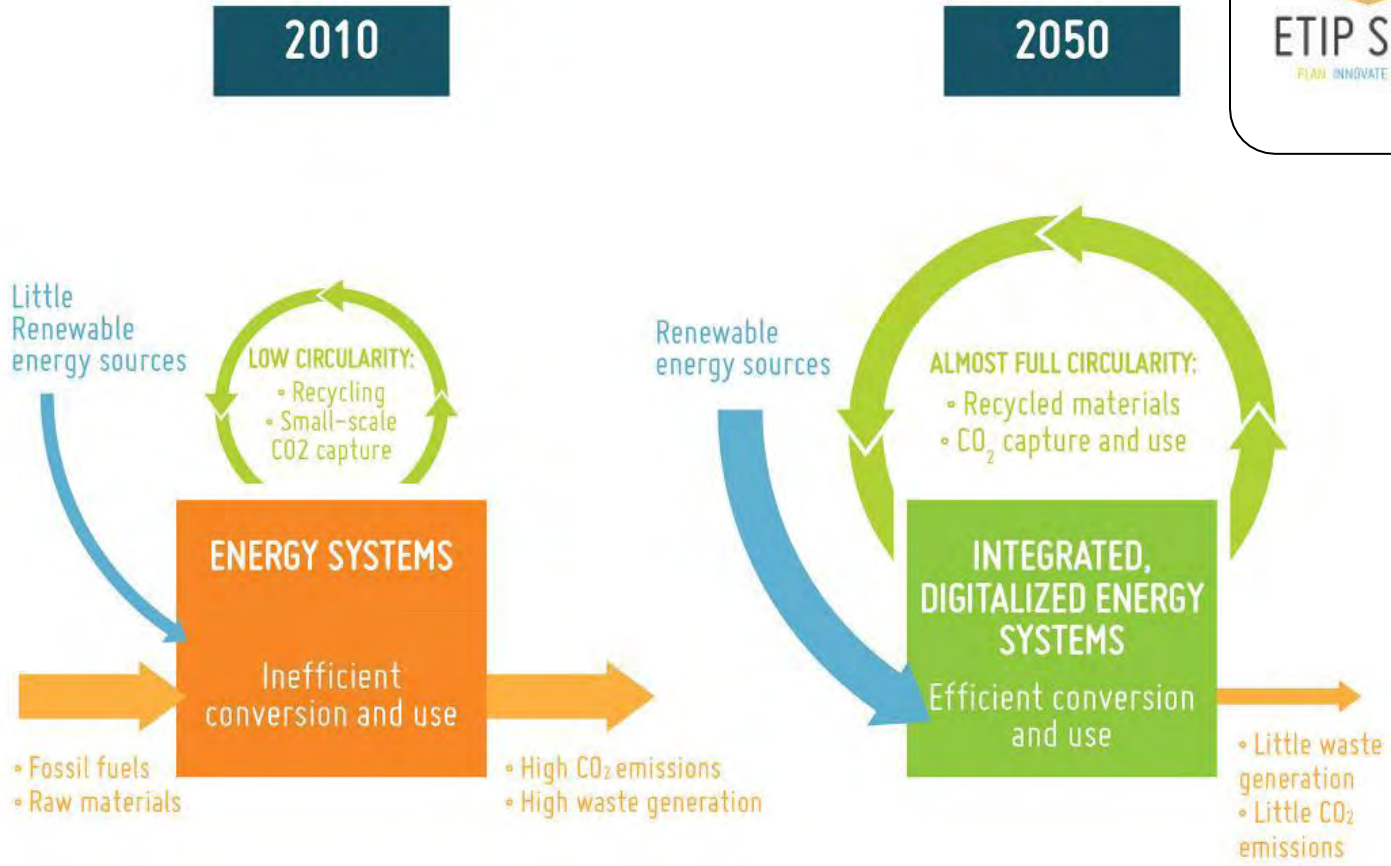

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Integrating Smart Networks for the Energy Transition:

Serving Society and Protecting the Environment

2050 VISION GOAL

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A low-carbon, secure, reliable, resilient, accessible, cost-efficient, and market-based **pan-European integrated energy system**

supplying the whole economy and paving the way for a **fully CO2-neutral and circular economy by the year 2050**,

while **maintaining and extending global European industrial leadership** in energy systems during the energy transition.

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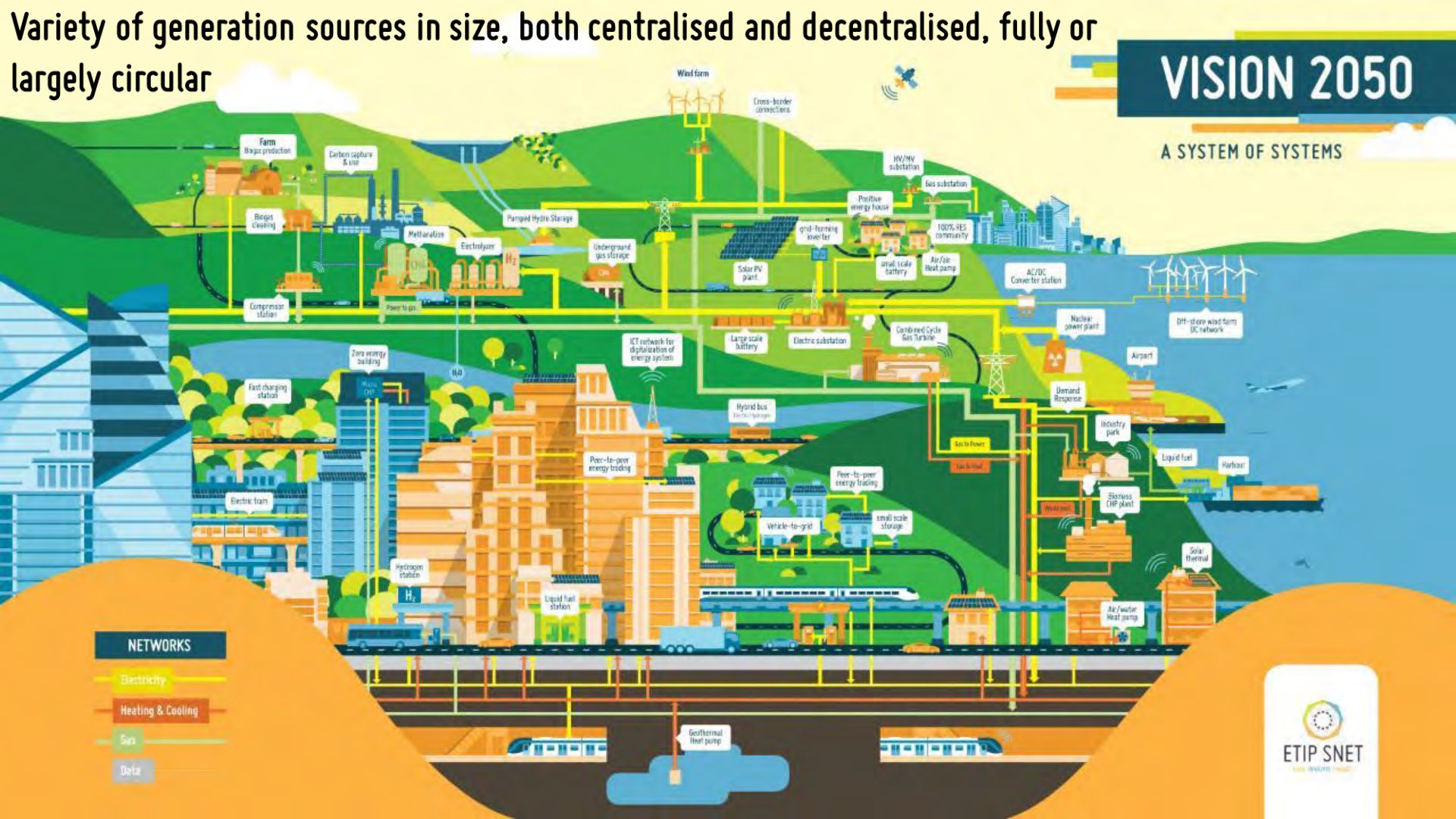
A SYSTEM OF SYSTEMS

Variety of generation sources in size, both centralised and decentralised, fully or largely circular



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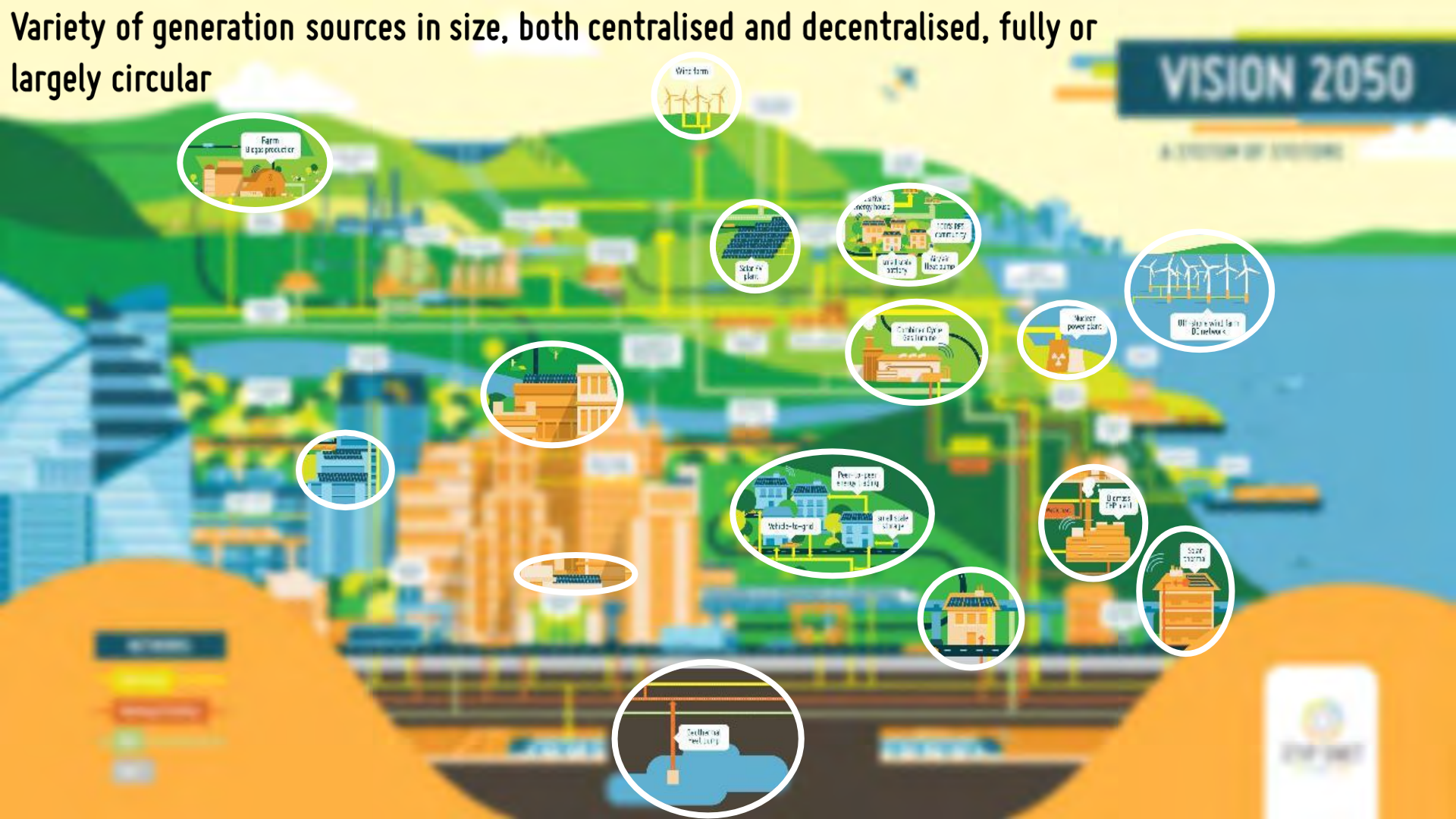

In 2050 the Customer is fully engaged

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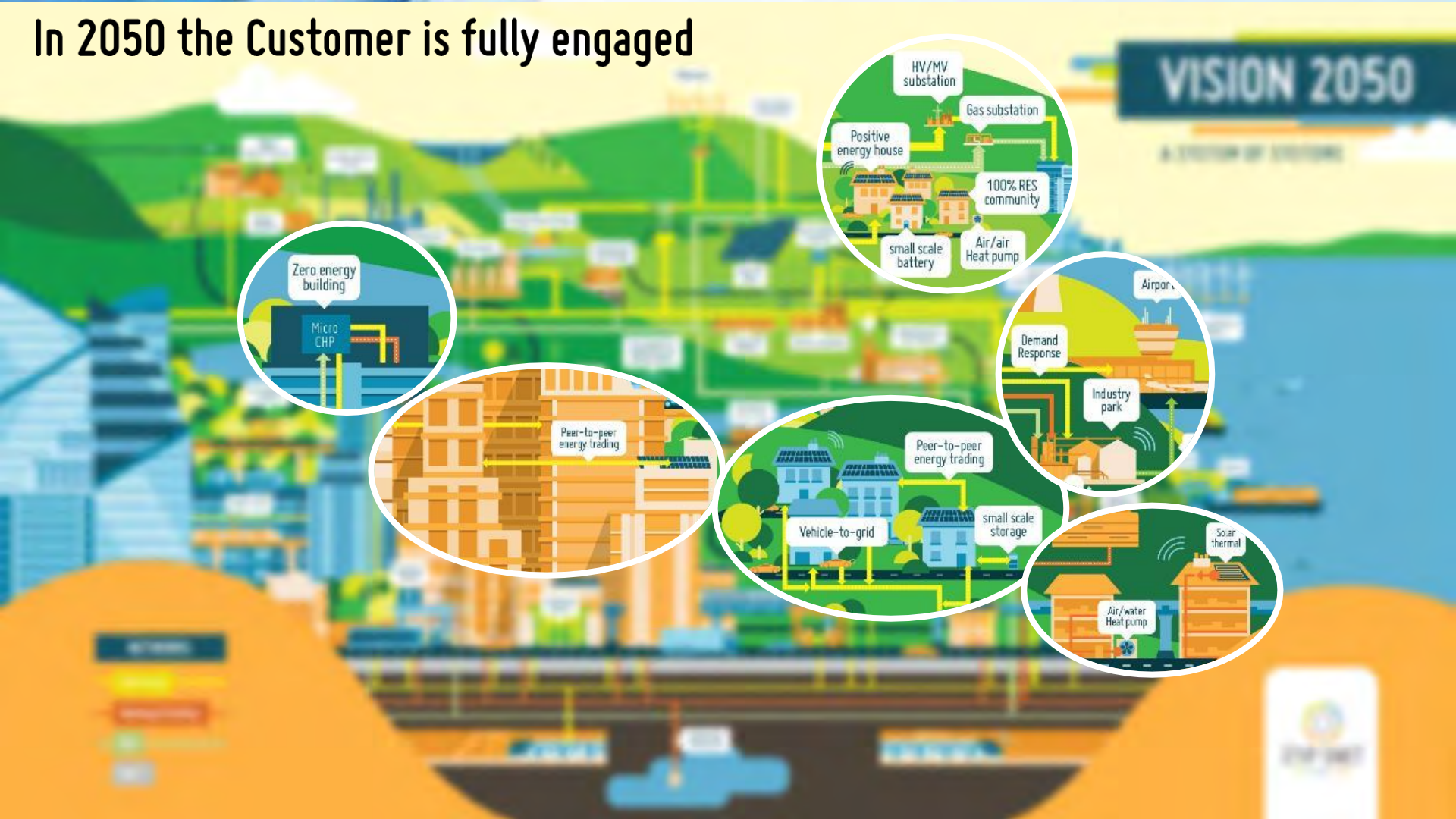

In 2050 multiple form of storage are used

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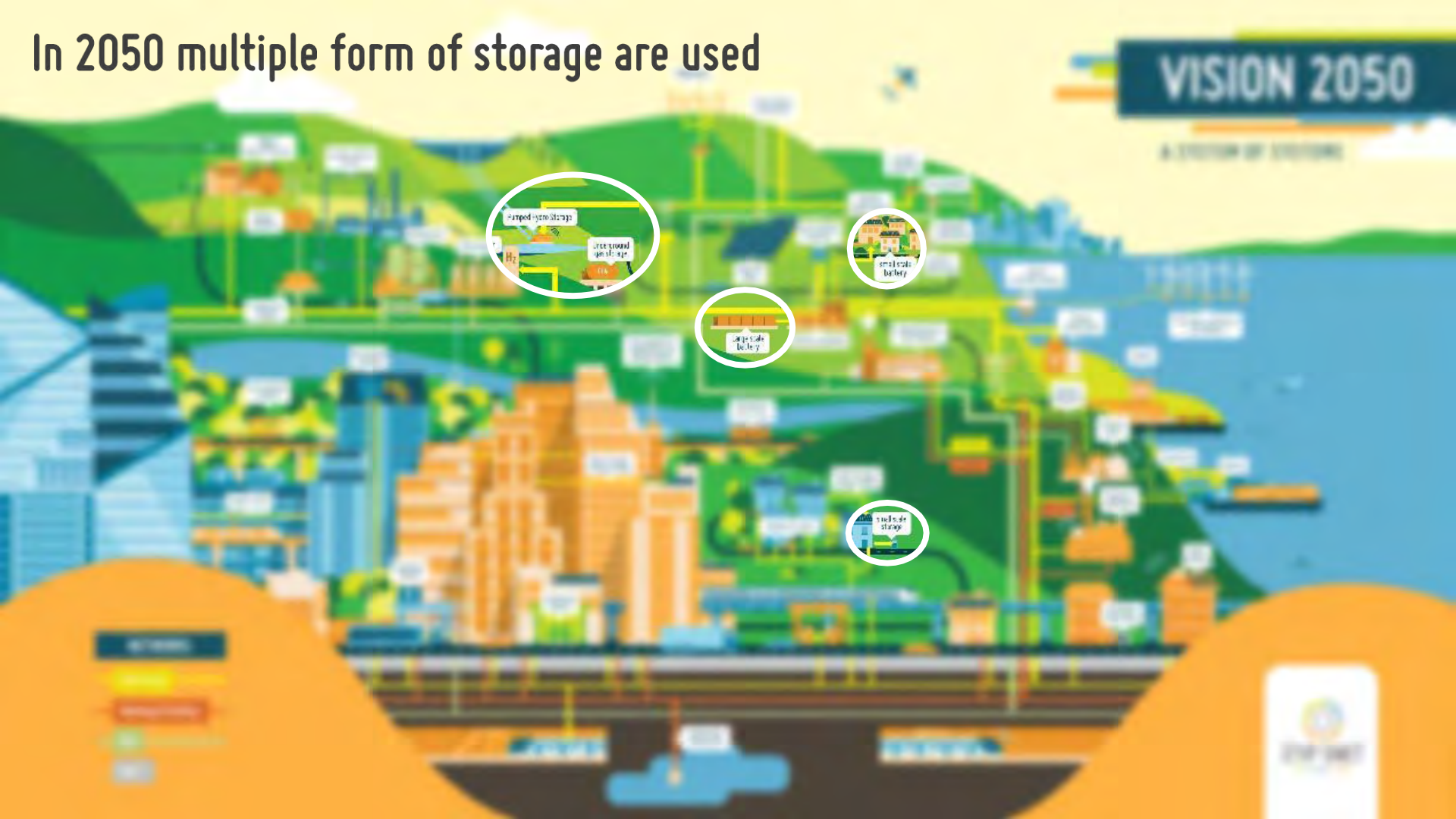

Conversion technologies are widely needed

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In 2050 Networks are fully integrated

VISION 2050

A SYSTEM OF SYSTEMS

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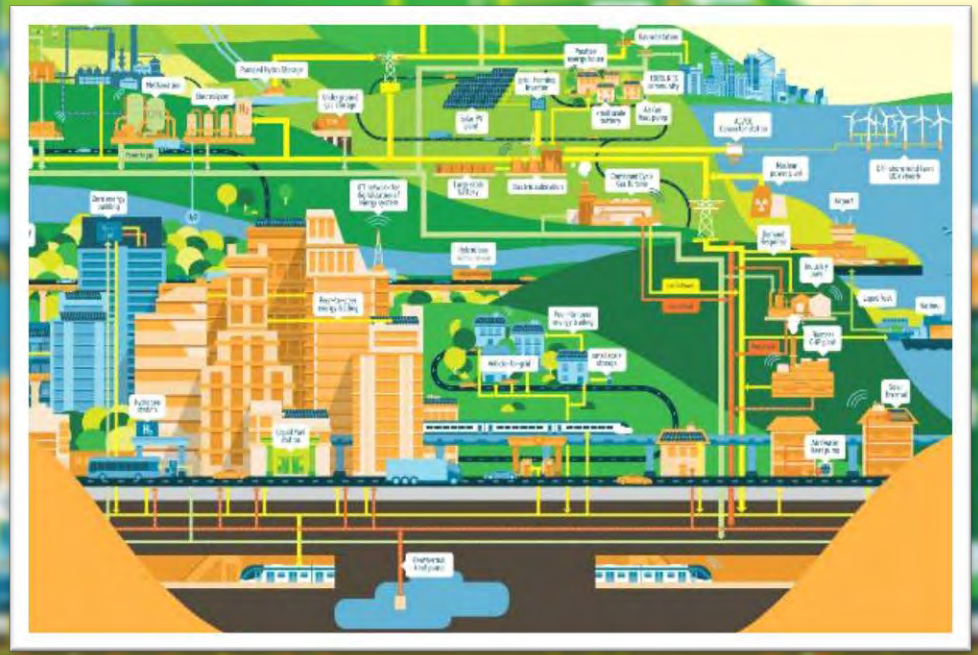
In 2050 Networks are fully integrated



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NETWORKS

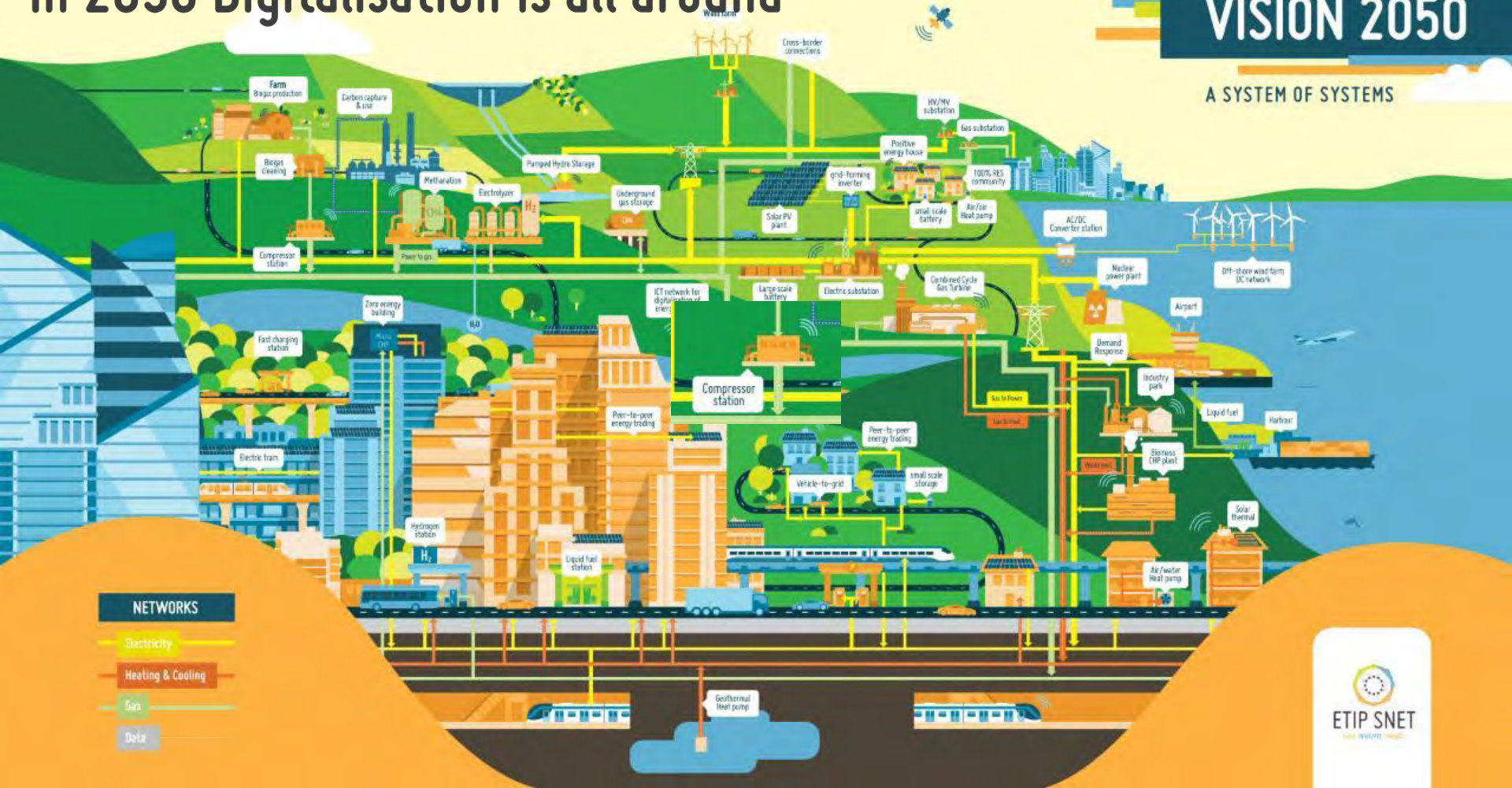
Electricity

Heating & Cooling

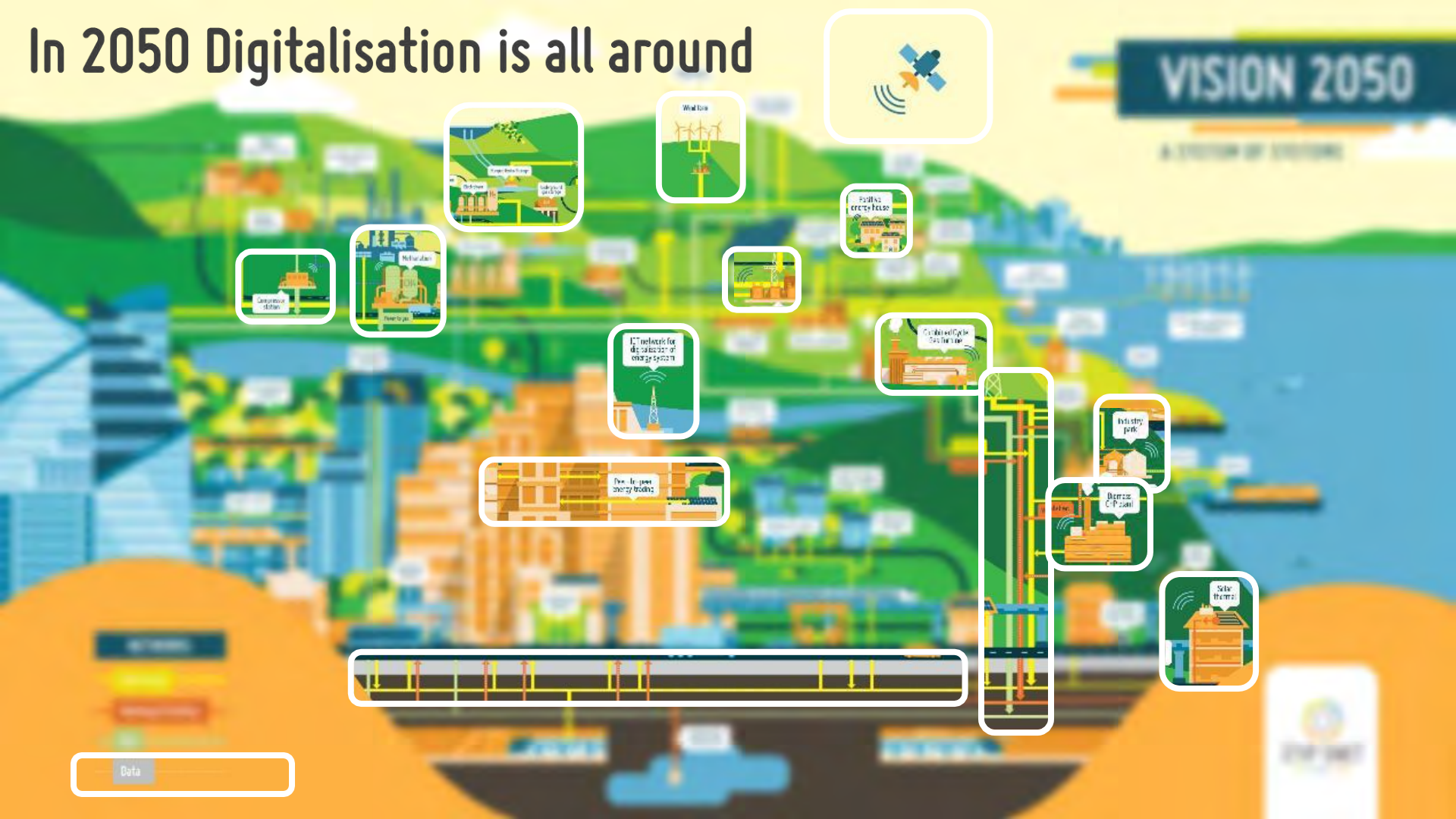
Gas

Data

In 2050 Digitalisation is all around



In 2050 Digitalisation is all around



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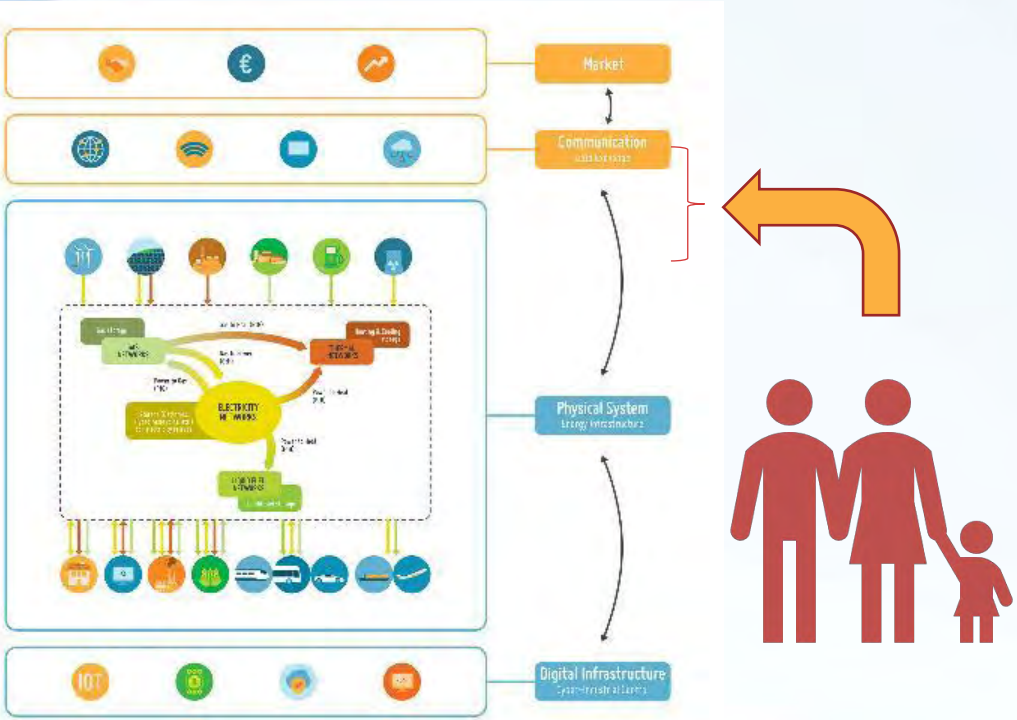
Building Blocks:

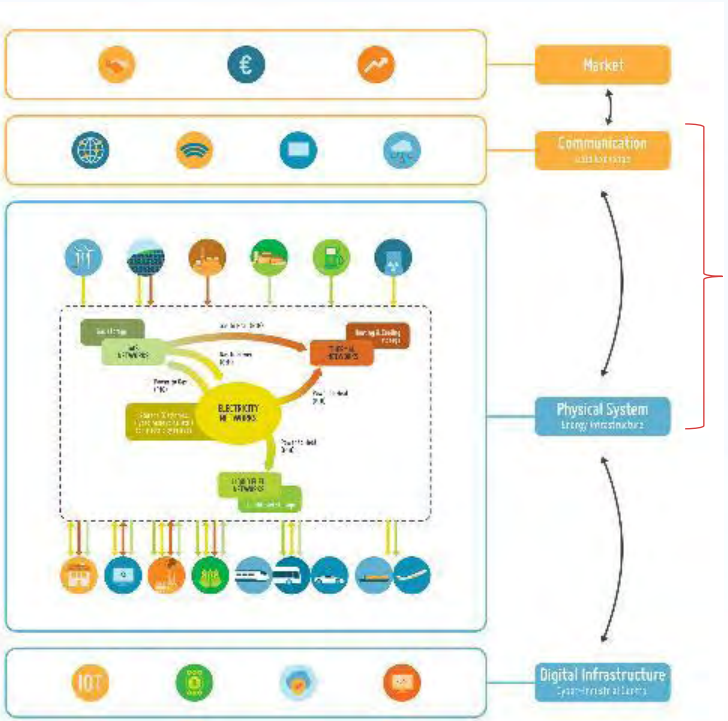
The Ingredients of the Vision

Customers and Markets ...



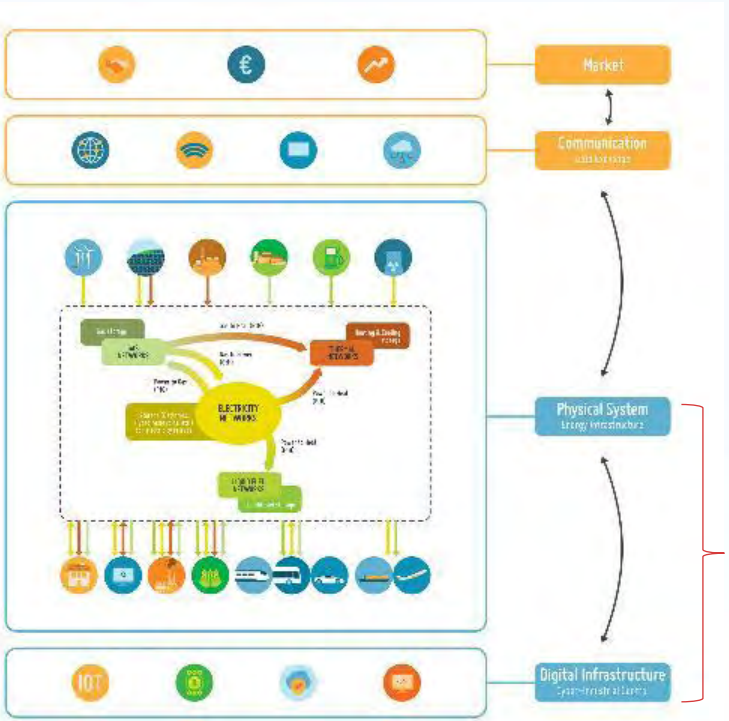
- **enable price-based coordination**: based on wind, sunshine, and cost-reflective customer choices (no subsidies any more)
- **enable diverse use of resources**: optimal use of renewable resources, weather and demand across Europe.
- **enable use of biomass and synthetic gas**: must be integrated efficiently (with hydro, ocean and nuclear energy)
- **enable end-use value**: for industrial processes or for aviation, shipping and long-distance trucking.
- **enable daily or seasonal energy storage**: Value of energy in storage, from seasonal to hourly

Customer, Communication, Digitalisation



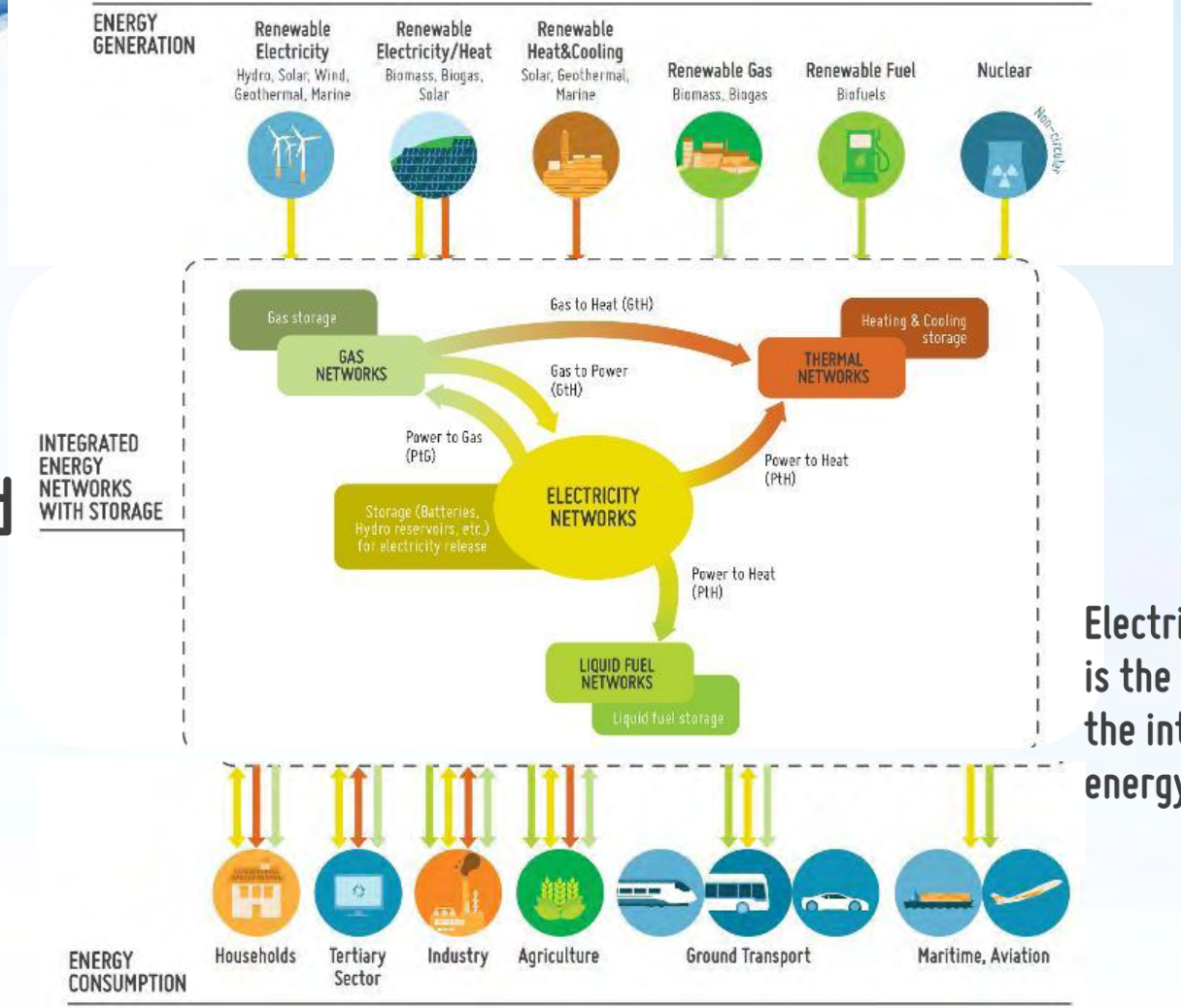
- **Information:** IoT with smart meters and sensors for real-time monitoring and control
- **Analytics:** Data mining, machine learning, digital twins
- **Connectivity**: Massive data exchange including M2M

Customer, Physical System and Digital infrastructure



- **Enable cooperation**: TSO & DSO, both electricity and gas, from building to pan-european (and heat/cooling district/locally)
- **Enable subsidiary**: Actions are optimised at the most immediate level. Actions that cannot be handled locally are handled at the next level.
- **Enable automation**: handle the available physical capacities through new, automated services for flexible energy network resources

The future integrated energy systems with conversion and storage devices



Electricity network is the backbone of the integrated energy system

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Thank you for your attention!