

WEBINAR

L'ELETTRICO E LA DIGITALIZZAZIONE PER LA TRANSIZIONE

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Elettrificazione e digitalizzazione tra Next Generation EU e Green Deal

RdS
RICERCA DI SISTEMA

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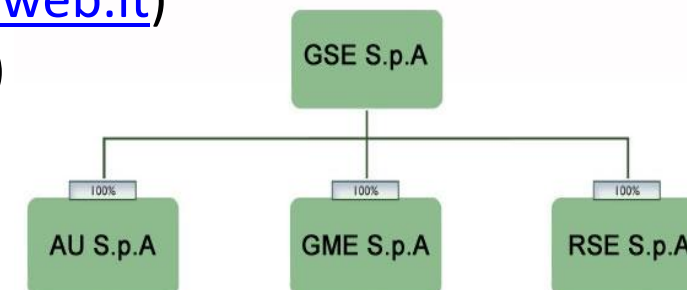
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Natura e ruolo di RSE

Ricerca sul Sistema Energetico - **RSE** è una società di ricerca (www.rse-web.it) con sede principale a Milano, controllata al 100% dal **GSE** (www.gse.it)

- Le attività sono finanziate in misura prevalente da programmi nazionali e comunitari, soprattutto attraverso il Fondo della **Ricerca di Sistema** per il settore elettrico (**RdS**)
- Il principale obiettivo delle attività di ricerca è il beneficio per il sistema elettrico nazionale: dunque gli utenti e il sistema delle imprese
- Grande attenzione verso un'ampia disseminazione dei risultati della ricerca



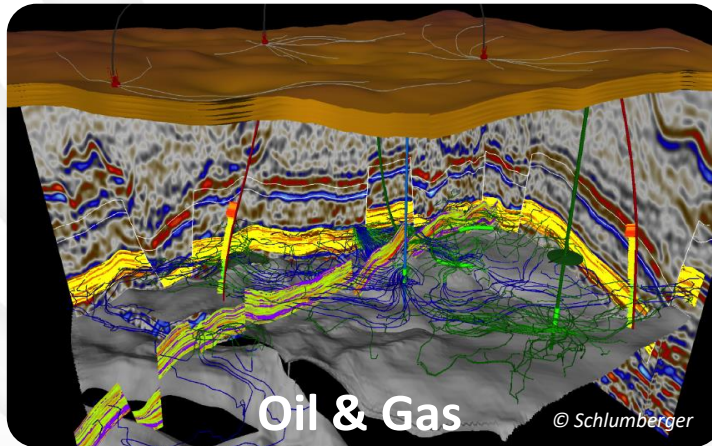
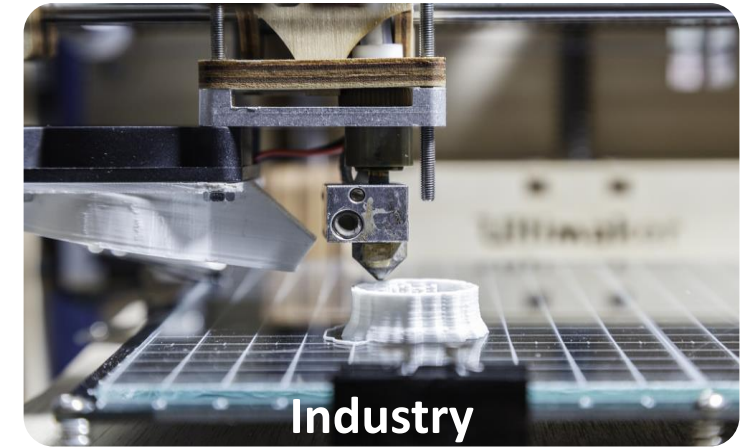
Global Energy Transformation

Mega-trends and drivers



- **Decarbonization** - global energy markets are changing rapidly: costs of renewable energy sources (RES) continue to decline rapidly, and wind and solar PV lead the power capacity expansion *driven by policy support & cost reductions*
- **Digitalization** is having profound impacts both at system operation level and as customer empowerment, but also raising growing cyber security concerns
- **Decentralization** - Distributed Generation especially by RES, such as rooftop PV, enables the progressive evolution of passive electricity consumers towards active prosumers that will increasingly produce, consume, store, and sell electricity
- **Electrification** - expanding electricity use in all sectors can be the main driver for accelerating the energy transformation e.g. *Electric car sales are growing exponentially*
- **System integration** – storage integration at all levels and sector coupling between the electricity system and other energy vectors (e.g. gas, water, heating & cooling) has the potential to dramatically expand the flexibility of the entire energy sector

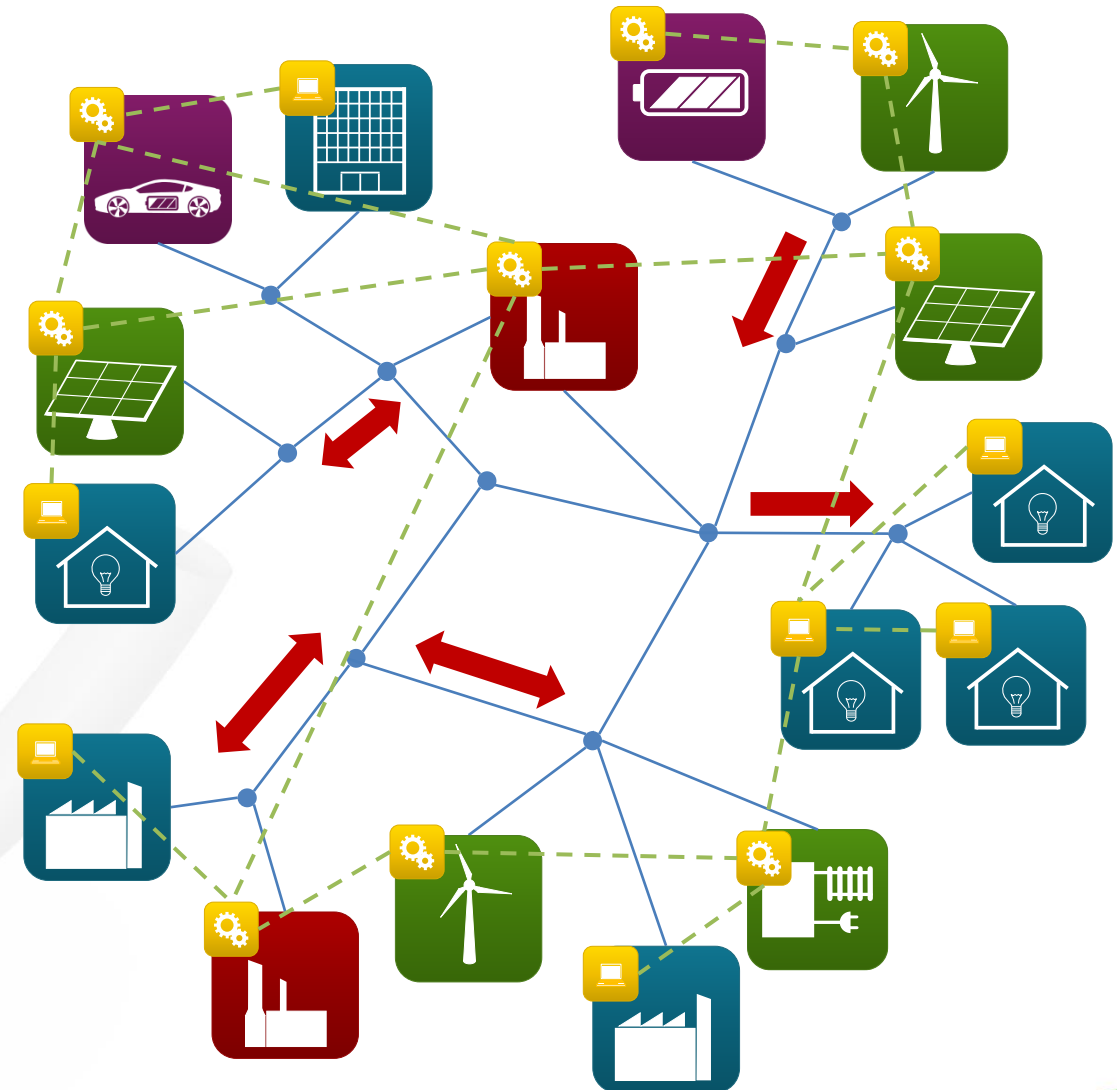
Digitalization impacts all energy demand and supply sectors ...



Digital technologies can help improve safety, productivity, and efficiency of energy systems

Energy System Transformation

- **Information and Communication Technology (ICT)** enables better monitoring, operation, decision making and control
 - Strong coupling among systems
- **Challenges in energy systems**
 - Uncertainty due to integration of distributed energy resources
 - Complexity due to increase in the number of active actors



Digitalization of the Demand-Side



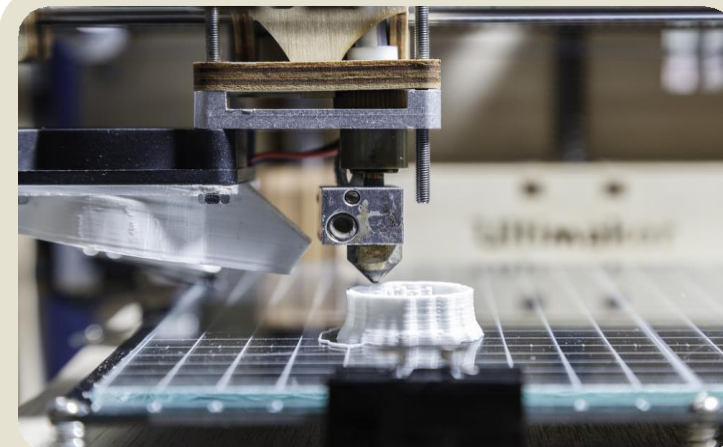
Transport

- Key digital trends across all modes: connectivity, sharing, and automation
- Digital solutions for trucks and logistics could reduce energy use for road freight by 20-25%



Buildings

- Smart building controls will improve comfort and transform building energy use
- Energy use could be reduced by 10% to 2040, but rebound effects are uncertain



Industry

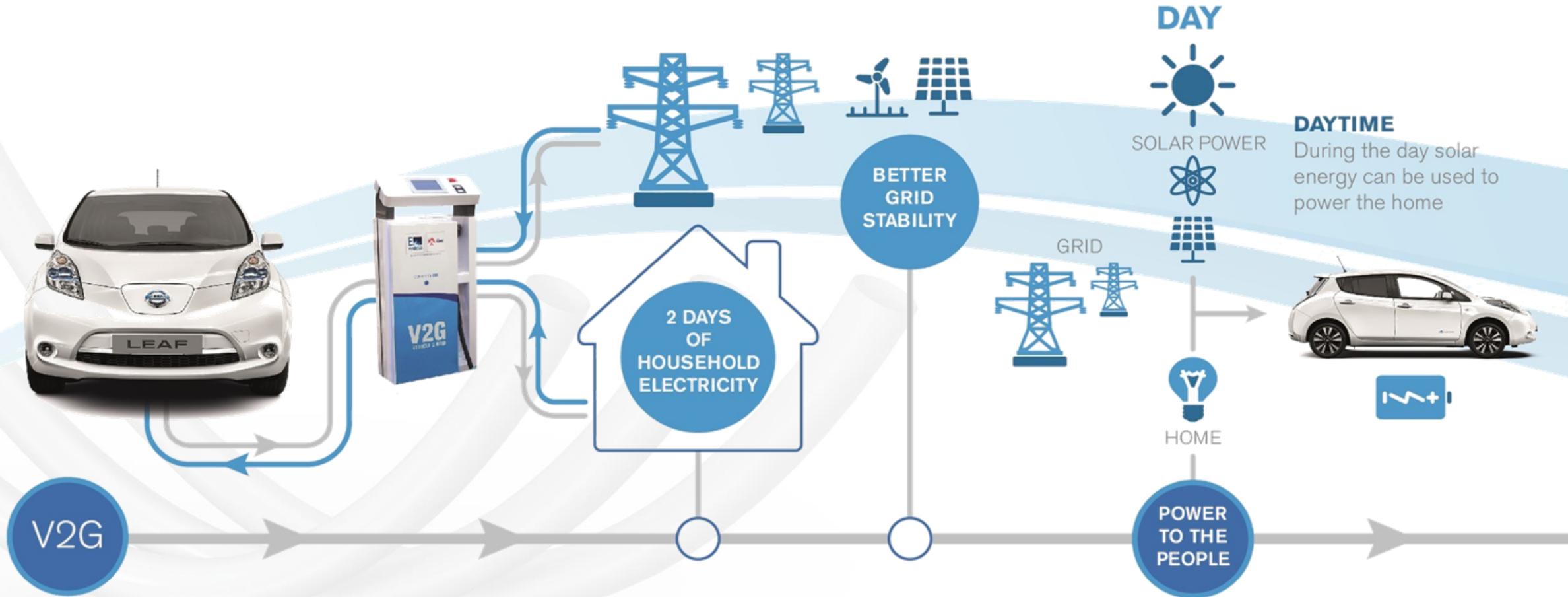
- Industry will witness increased productivity, reduced costs and improved safety
- Energy use can be incrementally reduced at plant level but broader impacts remain uncertain

Digitalization has the potential to reshape, modernize, transform demand-side sectors

Electromobility:

Opportunities and grid impact

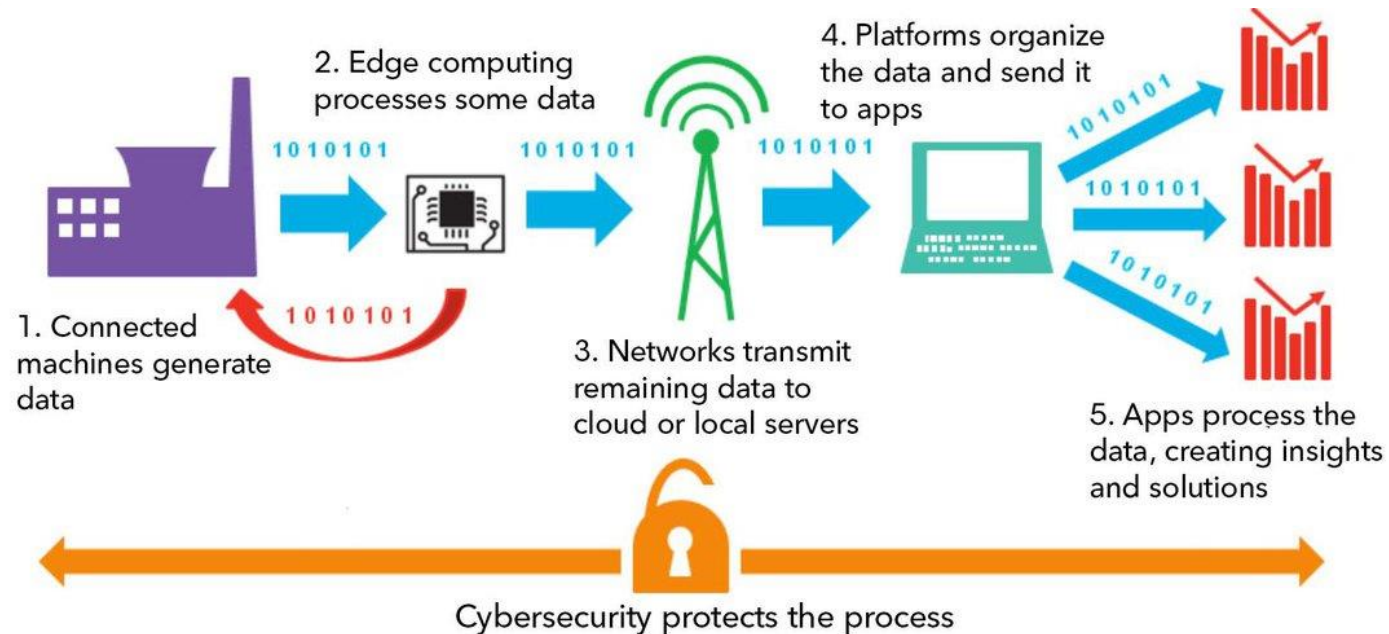
VEHICLE-TO-GRID



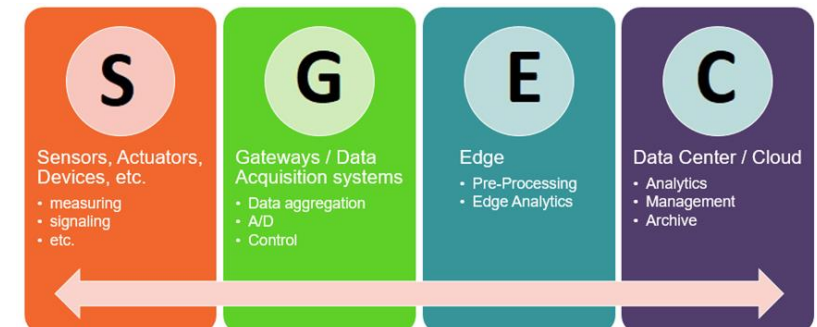
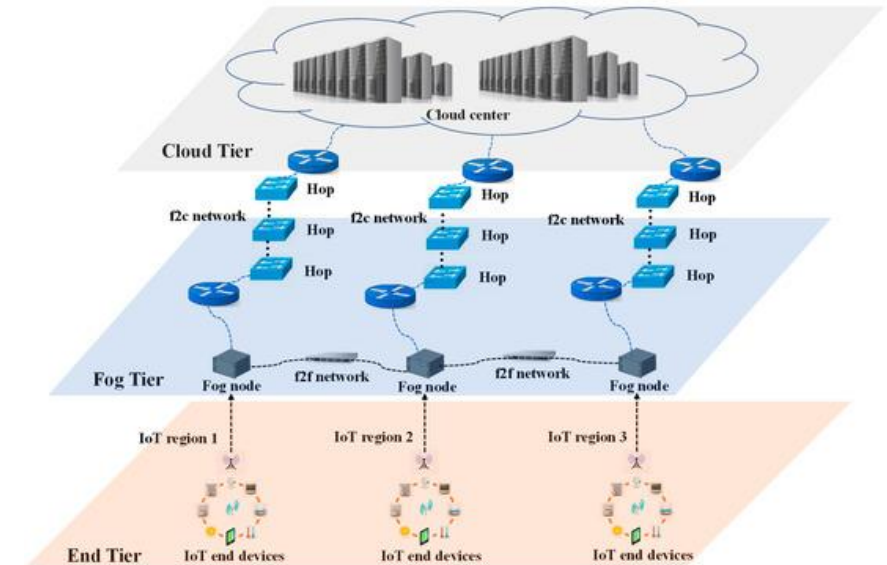
Emerging IoT platforms

Cybersecurity aspects

Devices/services/algorithms



Source: Bloomberg NEF



Final Remarks

Digitization is certainly the key to fostering the transformation / modernization and decarbonization of electricity and energy systems.

Data is the great resource to be exploited in the best possible way to improve the management of the electricity system and to offer new services to end users.

