

Business of Intelligent Buildings

26.10.2020, Aalto Yliopisto

Harald Schnur, Head of Smart Infrastructure

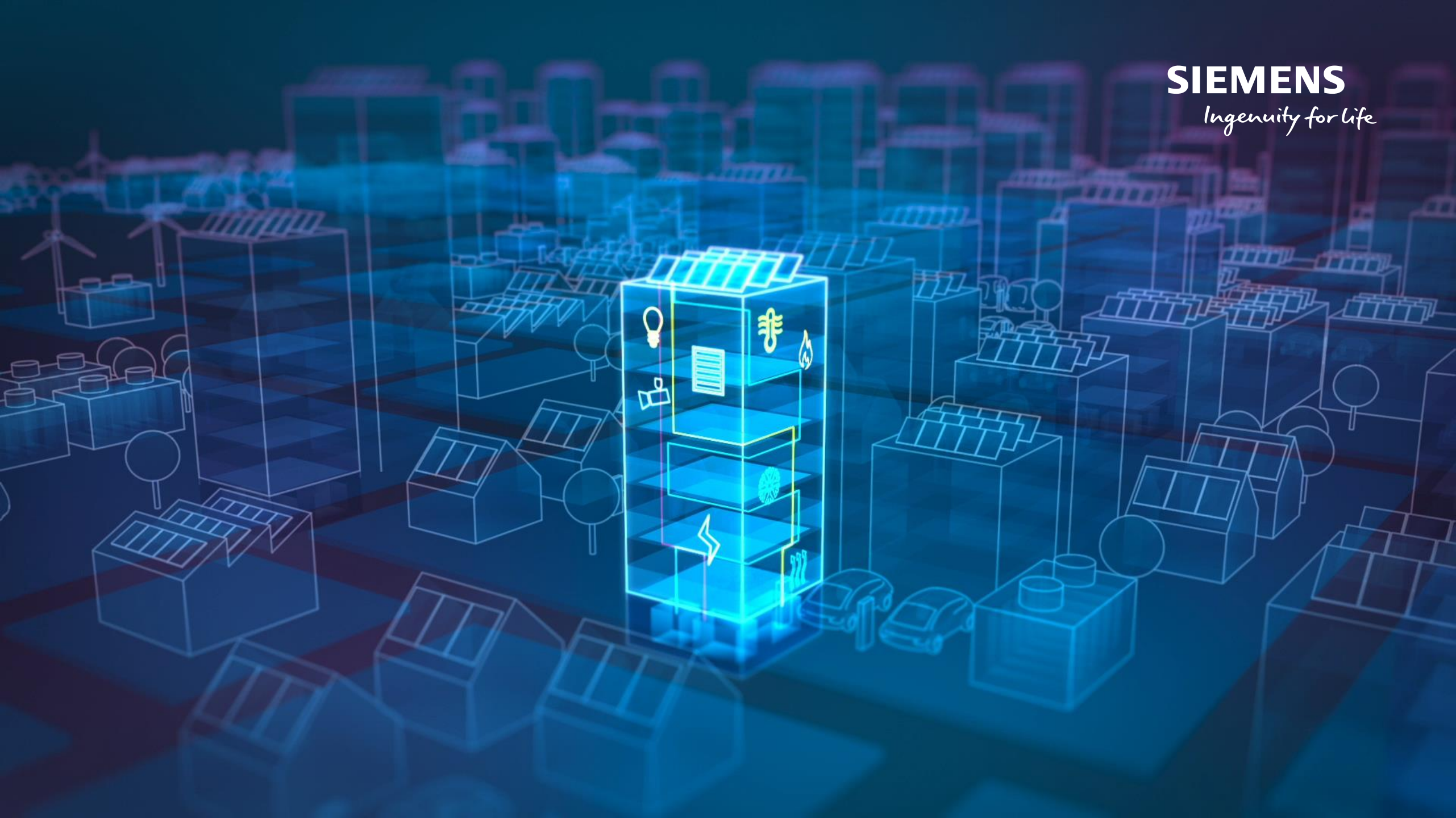
Siemens Osakeyhtiö

Buildings consume 40 % of energy globally
We spend 90 % of our time in buildings

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Ingenuity for life



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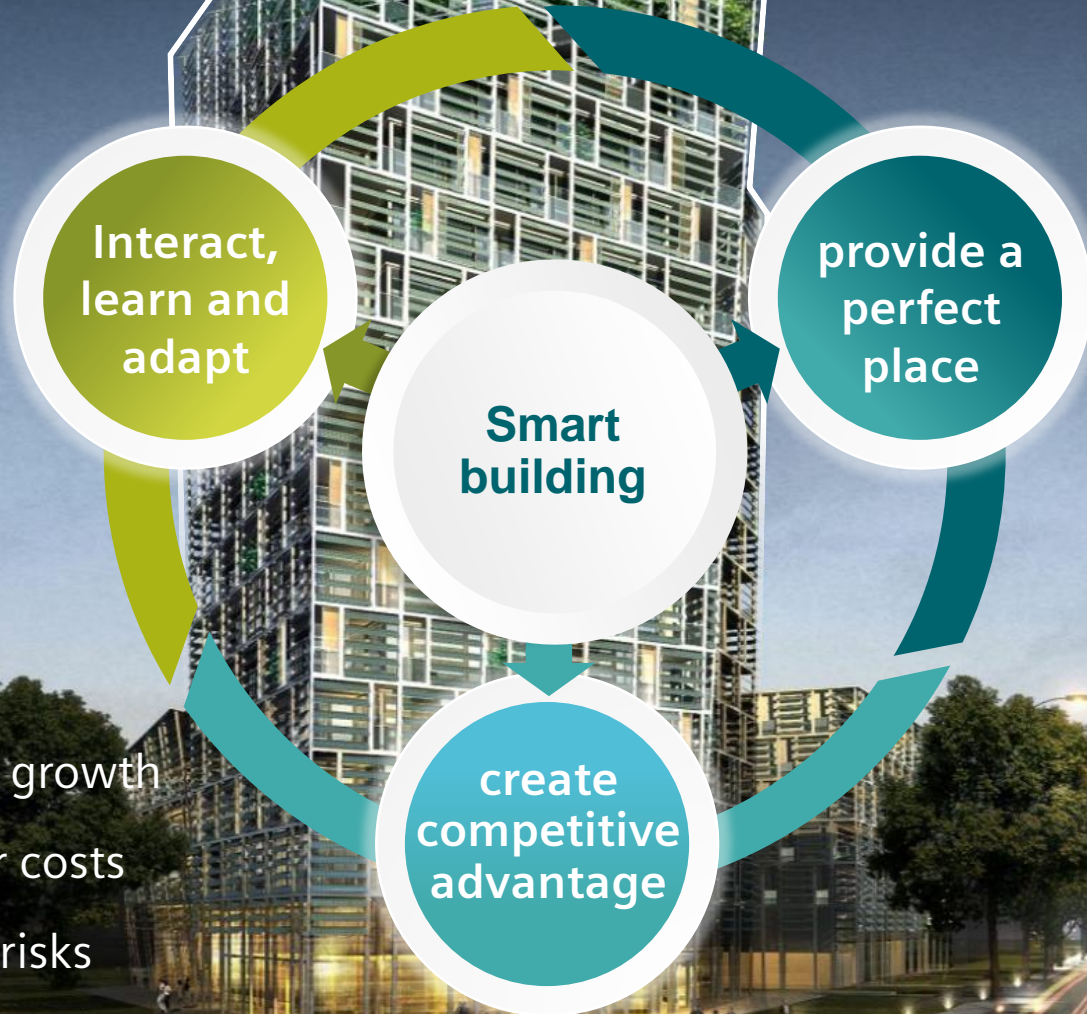


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Digitalization enables a holistic approach

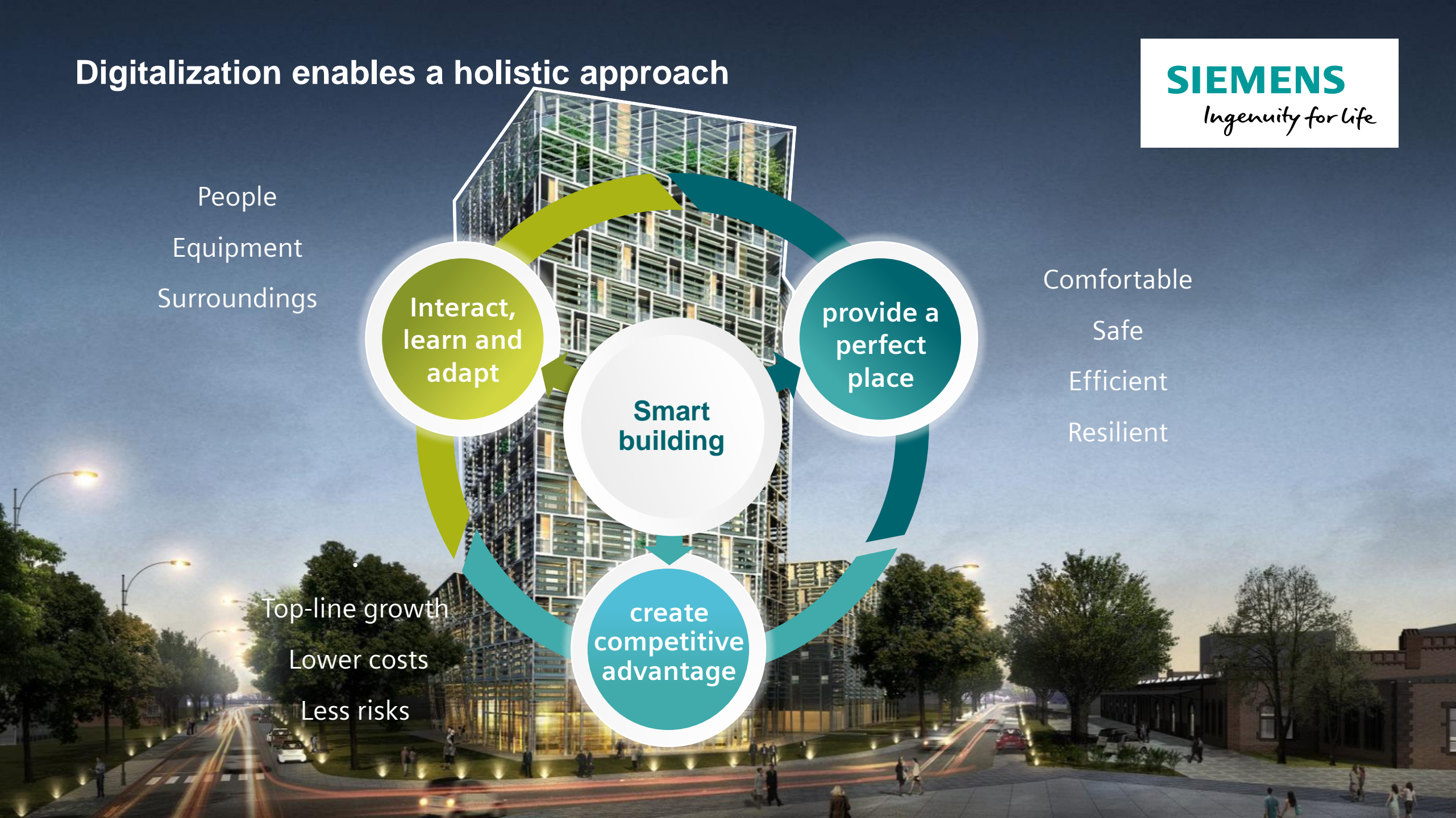


People
Equipment
Surroundings



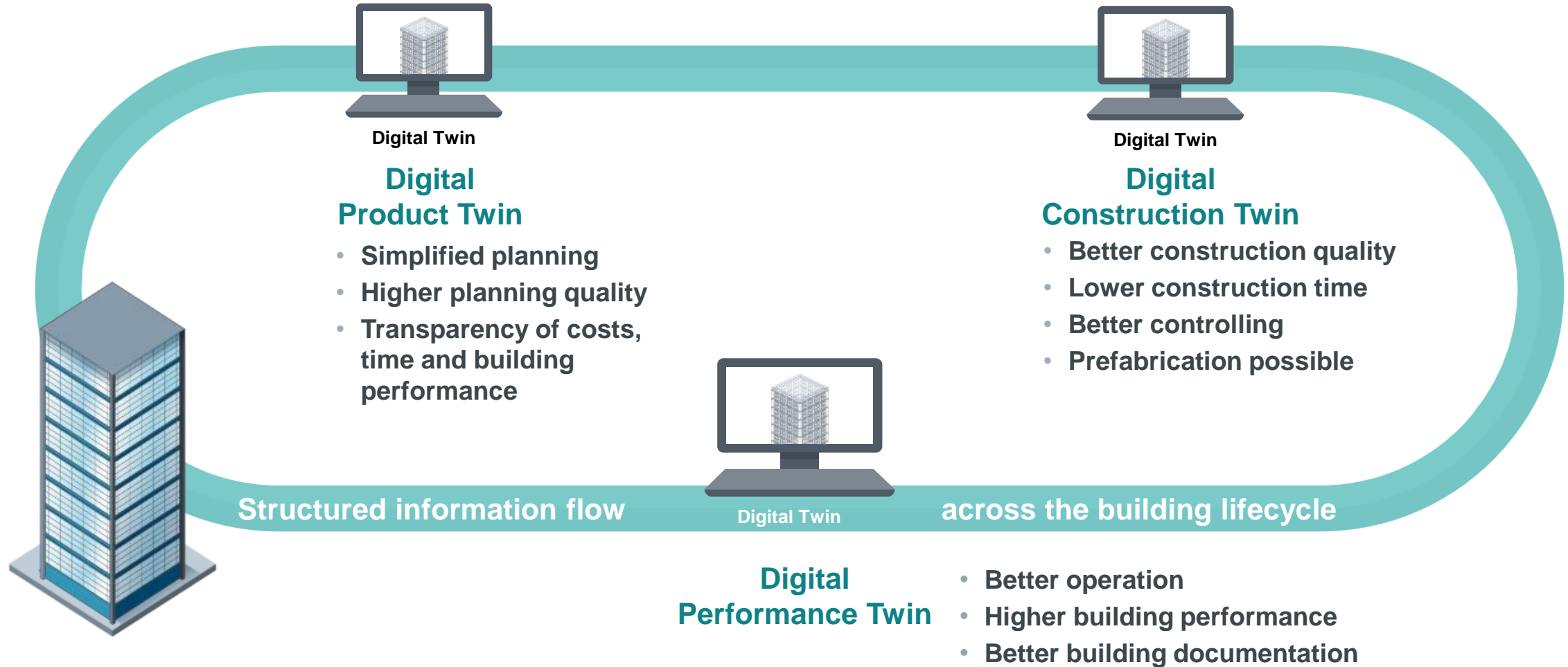
Comfortable
Safe
Efficient
Resilient

Top-line growth
Lower costs
Less risks

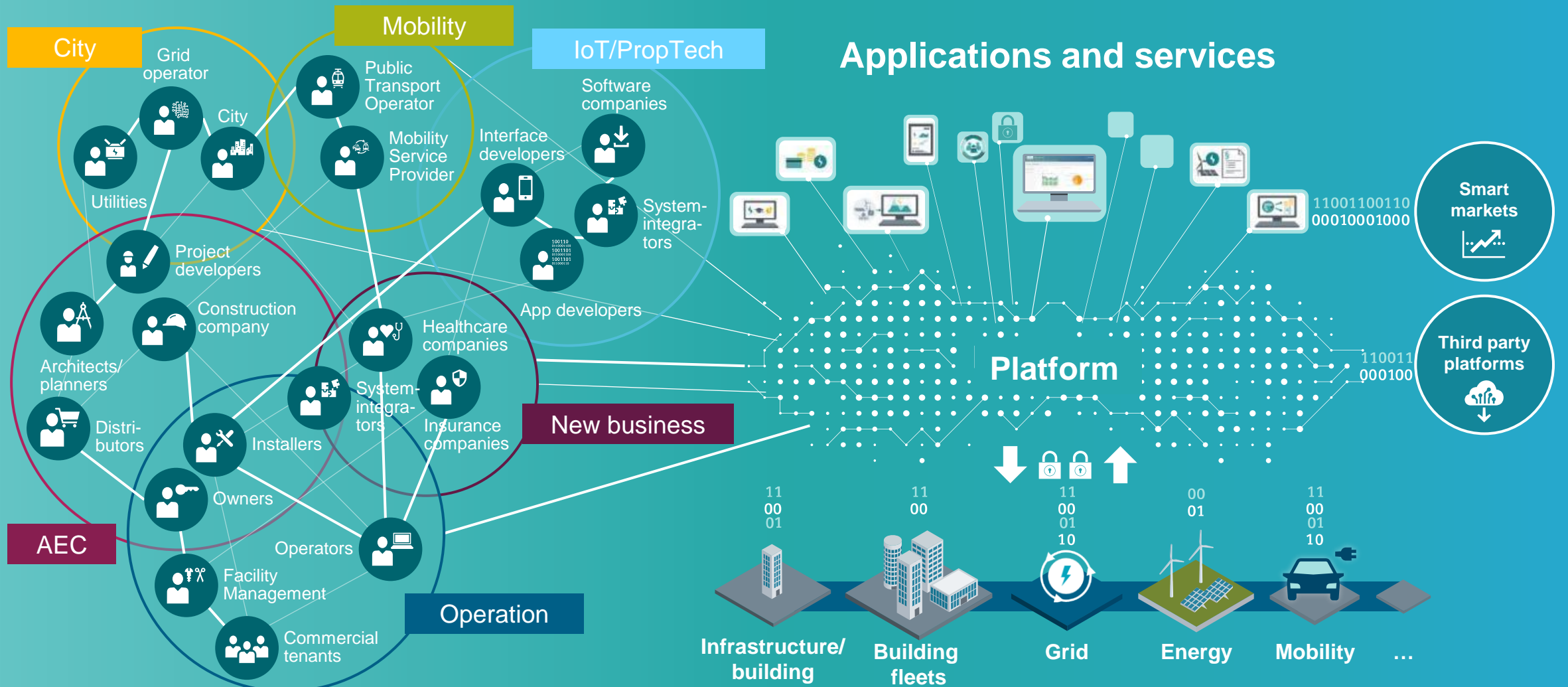


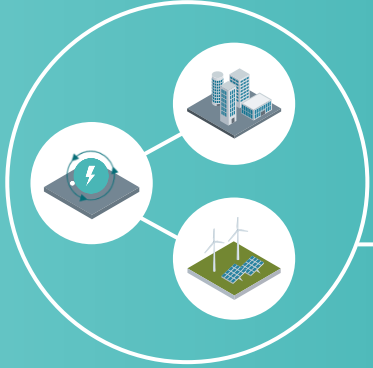
Digital Twin in the building industry

Potentials along the entire building lifecycle



An open and secure ecosystem





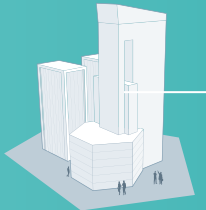
Integrated building and energy management



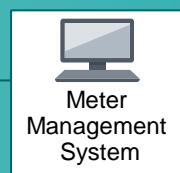
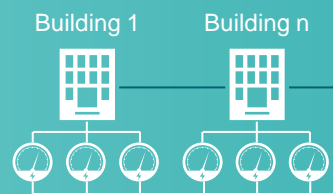
On site
Resiliency and control

Transparency and awareness

Building Management – Designo CC



Metering and Sub-Metering



Micro grid Controller



Web Apps
Efficiency and optimization

Power Management – Navigator

- CO₂ emissions and alarm statistics
- Fault identification and recommendation optimization measures



Monitoring/Reporting

Meter Data Management

electricity, gas, district heating and water meters



Customer Information Systems



Workforce Management



Data Warehouse

Distributed Energy Optimization



Load forecasting



Optimization of own requirements



Price forecasting

Aggregator
Monetization

DEMS



Smart Grid



Smart Market



Virtual Power Plant



Market interaction



Demand response

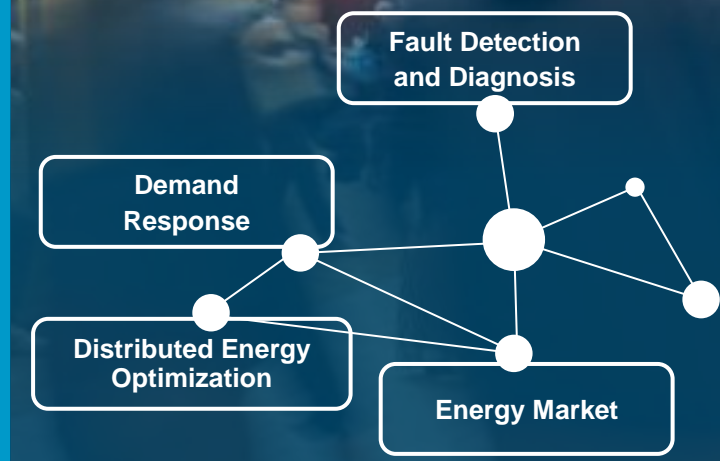
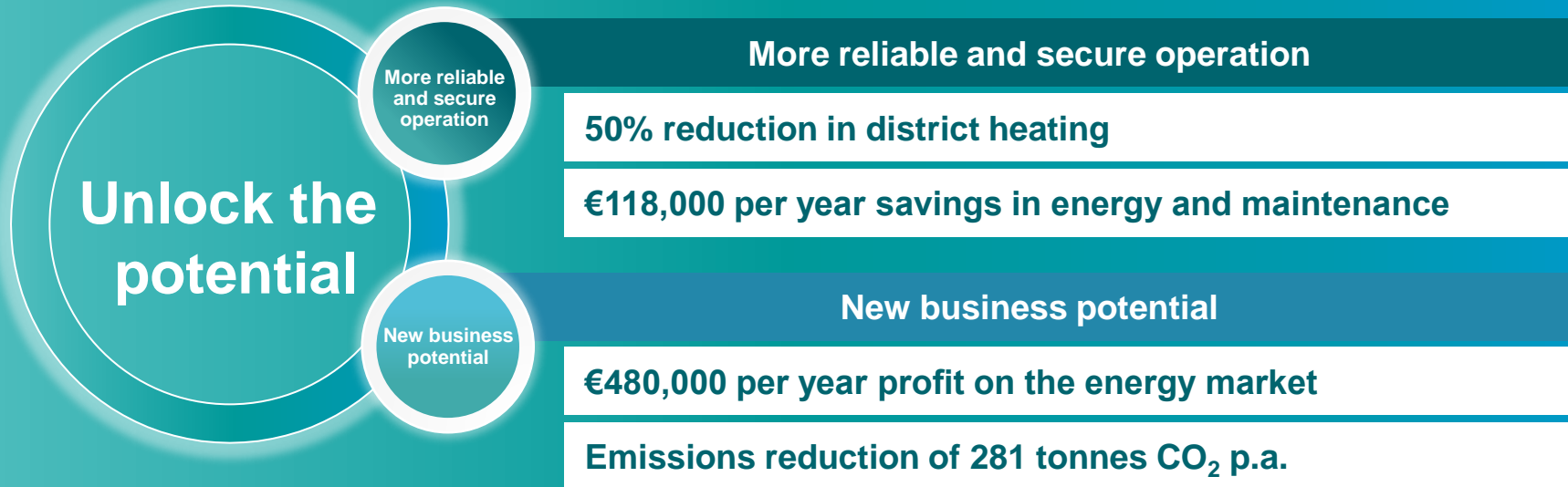


Trading energy

Sello Shopping Center, Finland

»Data-driven services transform Sello into one of the greenest shopping centers in Europe«

- Remote Analytics: connecting 1,500 energy- and heating/cooling/air conditioning data points with a cloud-based building automation system
- Micro-Grid: 0,5 MW own solar electricity, 2 MW energy storage
- Demand response: enabling participation on the energy market
- Dedicated operations manager ensuring continuous development



Smart Readiness Index - Sello



Building type	Year of construction	Assessed services	Absolute SRI score	Relative SRI core
Shopping centre	2003	41/52	73%	91%
Office	1990	36/52	43%	60%
Office	2014	44/52	48%	55%
Educational	2018	45/52	47%	52%
Office	2013	44/52	42%	50%
Educational	2015	33/52	35%	46%
Office	2004	36/52	35%	46%
Residential	2018	28/52	28%	46%
Hotel	(2020)	39/52	33%	41%
Residential	1967	20/52	11%	40%

Project data

Location: Espoo, Finland

Floor area: 100 000 m3

Environmental certificate:
LEED Platinum

Indoor climate class: S2

91%

Basic design features

- District heating
- Air heating
- Mechanical balanced ventilation with heat recovery
- Solar PV utilization
- Advanced demand management
- Electricity storage

VIBECO - 4win approach to protect climate by combining energy system and building know-how

Buildings

- New earning model
- Efficiency increase
- Future readiness for smart cities



VIBECO
Virtual Buildings Ecosystem Oy

Society

- No need to maintain reserve power plants
- Open platform for new service providers
- Climate protection as a service

Users

- Better conditions in the buildings
- #CreatingPerfectPlaces

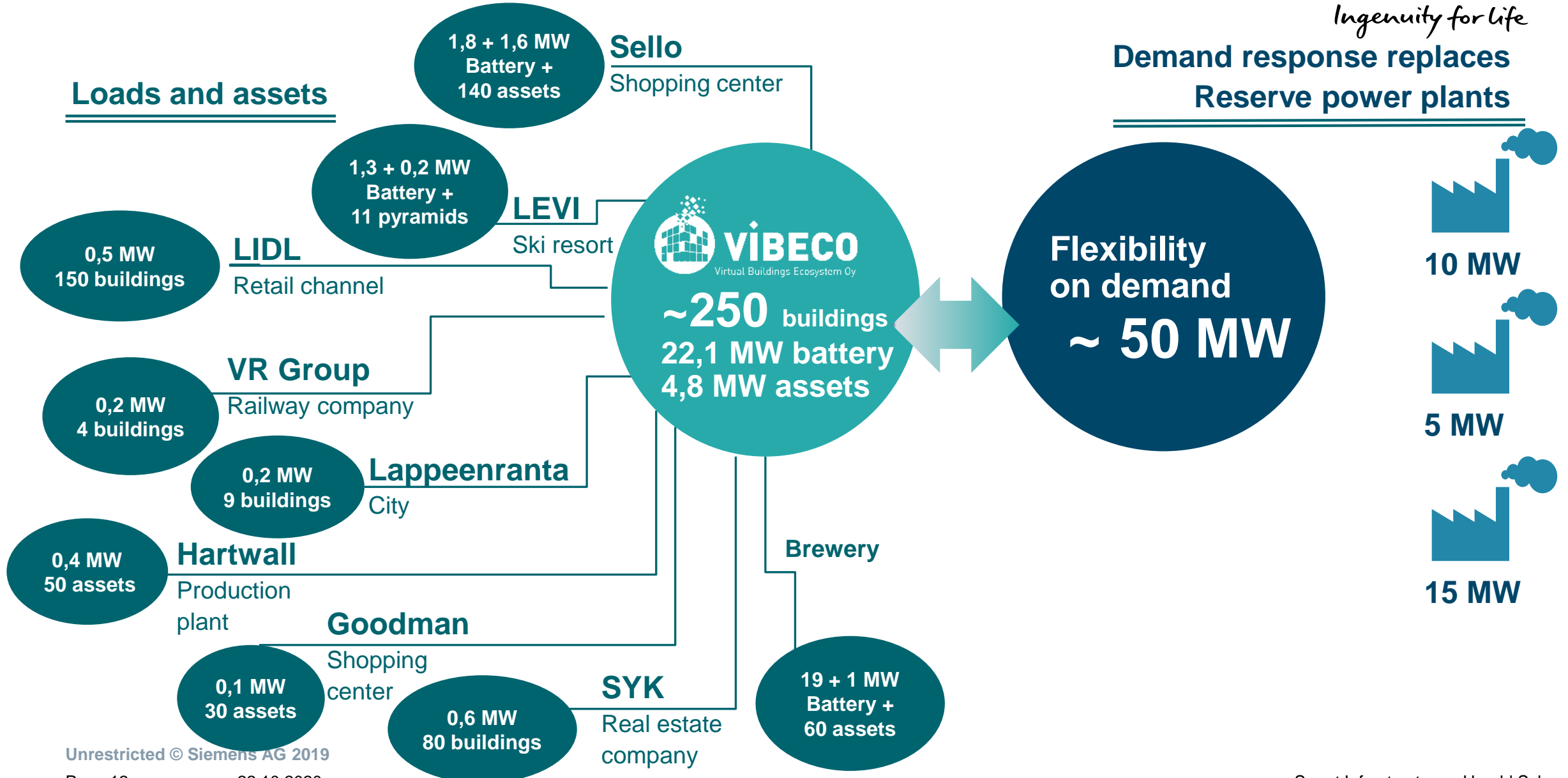
Environment

- Enabler of renewable energy and eTraffic
- Less need for fossil based balancing power
- #timetocare

VIBECO – We make real what matters

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**Demand response replaces
Reserve power plants**





Sello Shopping Center

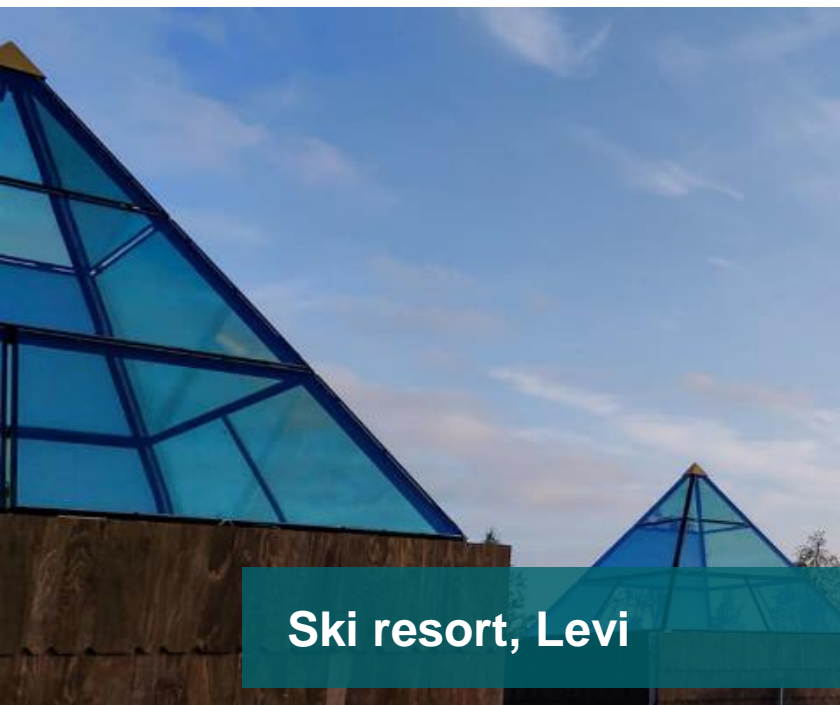


VR Group



SIEMENS
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City of Lappeenranta



Ski resort, Levi

Forerunners for
creating sustainable
future.



Goodman
Shopping Center

Smart society

Smart platform connects buildings, energy systems and industries to boost efficiency and sustainability in a society.



The world needs a new approach.



Flexibility in energy markets

Aurora Pyramids, Levi

- Building technology
- Regional electrification
- 132 kWp solar panels:
114 MWh/a
- 1,3 MW energy storage
- 10 vuoden guarantee for functionalities
- Connection to virtual power plant
- Finance: Siemens Financial Services



Sello
Lappeenranta City
VR Group
Goodman
Hartwall

Thank you.