

CONNECTED

Cities Redefined | Digital & Energy Converged

João Rodrigues
General Manager Portugal

Life Is On

Schneider
Electric



Perspective - Cities - Energy - Buildings - Final Ideas

World Urban Population

0.75b
n30%

1950

+3.15bn

3.9bn
54%

2014

+2.5bn

6.3bn
66%

2050

Our cities will get bigger and there will be more of them
They will have to be smarter and more efficient

Our challenge in the next 40 years

x1.5

ENERGY
CONSUMPTION

÷2

CO₂ EMISSIONS
NEED TO BE
HALVED

3x

WE HAVE TO
BECOME 3 TIMES
MORE EFFICIENT

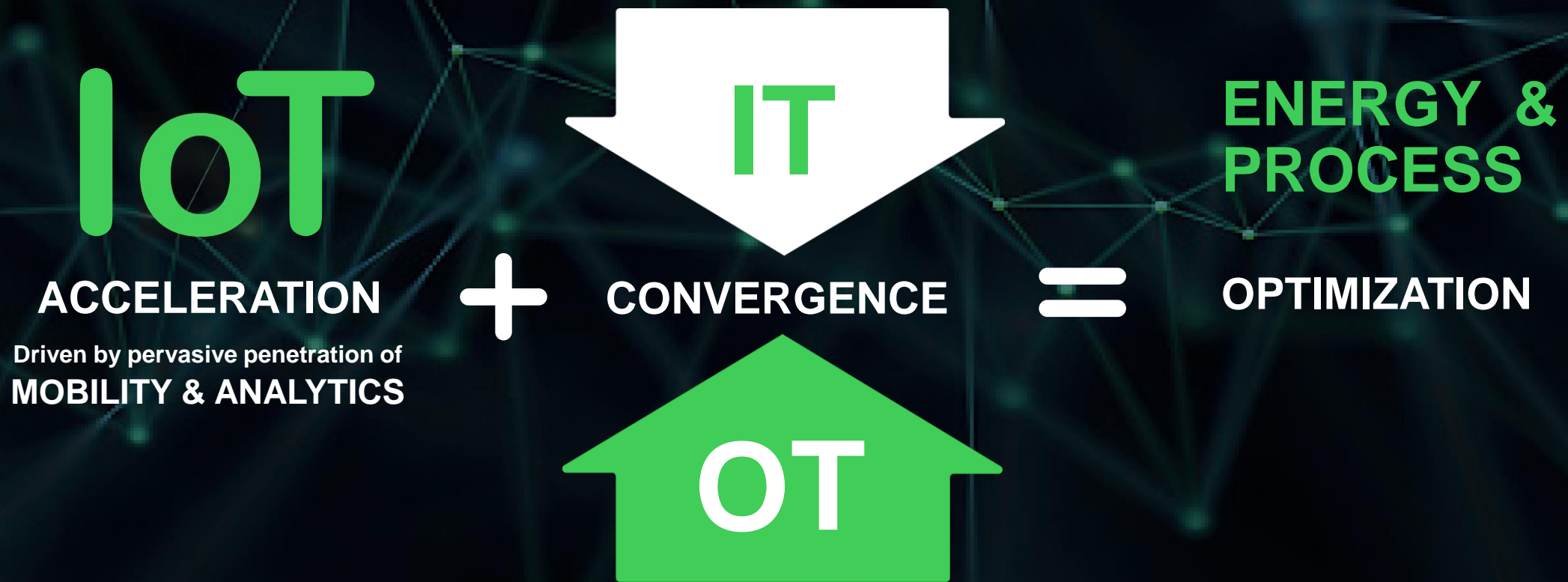
Note: Forecast for 2015 compared to 2009 levels

...the Climate Change Battle

will be won or lost in the cities



Making Demand CONNECTED and EFFICIENT



We have an opportunity to co-create the future



**More
ELECTRIC**

**More
DIGITIZED**

**More
DECARBONIZED**

**More
DECENTRALIZED**



Perspective - Cities - Energy - Buildings - Final Ideas

We believe every citizen deserves a city that is:

- Efficient
- Sustainable
- Resilient

A man with a large black backpack is carrying a young child on his shoulders. They are standing in front of a large glass window, looking out at an airport tarmac. The scene is captured during the "golden hour" of sunset, with warm orange and yellow light reflecting off the glass and the tarmac. Several airplanes are visible on the ground outside. The man and child are silhouetted against the bright light from the window.

Cities need to leverage technology

to be more attractive and competitive for citizens, employers & tourism

Cities face many challenges:

Stress

Infrastructure

Cost

Environment

Competitiveness

Citizen Expectations

Improving infrastructure allows cities to drive their *unique* agenda

Boost competitiveness

Creating jobs

Increasing attractiveness for residents, citizens, and visitors

Making the city efficient, sustainable & resilient



Improving efficiency of underlying urban infrastructure

Improving public services (schools, safety, transportation)

Providing new, innovative services

Life Is On

Schneider
Electric

Smart Integration

Energy and Sustainability Management
City-wide Infrastructure Automation
Weather Forecasts

The foundations of tomorrow cities

Smart Water

Water Utilities
Parks and Gardens

Smart Energy

Ports
Electric Utilities
Gas Utilities
Prosumers

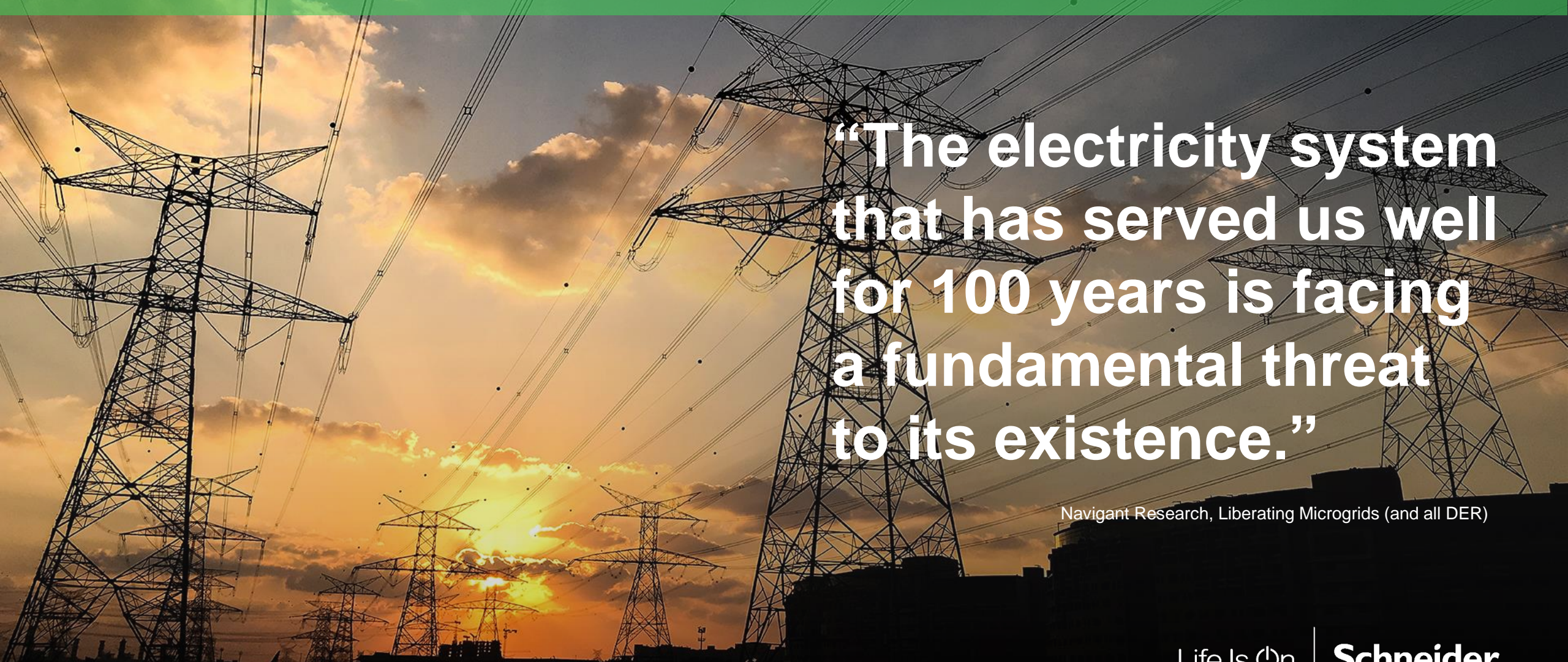
Smart Built Environment

Tech Parks
Offices
Data Centers
Homes
Hospitals
Schools
Airports
Hotels
Shopping Malls
Stadiums
Railway Stations
Tunnels



Perspective - Cities - **Energy** - Buildings - Final Ideas


Disruption is here




“The electricity system that has served us well for 100 years is facing a fundamental threat to its existence.”

Navigant Research, Liberating Microgrids (and all DER)

The Future is Electric

A close-up photograph of a hand with the index finger pointing upwards. The background is dark and out of focus.

IT the biggest
energy demand
by 2030?

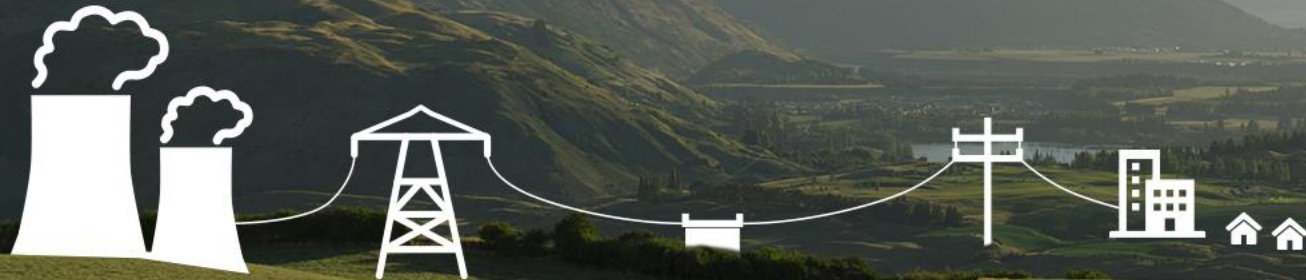
A photograph of a large solar farm with rows of solar panels stretching across a grassy field under a cloudy sky.

Solar cheaper
than fossil
by 2030?

A close-up photograph of a blue electric car's charging port with a charging cable plugged in.

EV to replace
50% conventional
cars by 2030?

From simple and linear



Centralized
generation

Transmission &
distribution

End-use
consumption

Added distributed energy resources



Centralized
generation



Transmission &
distribution

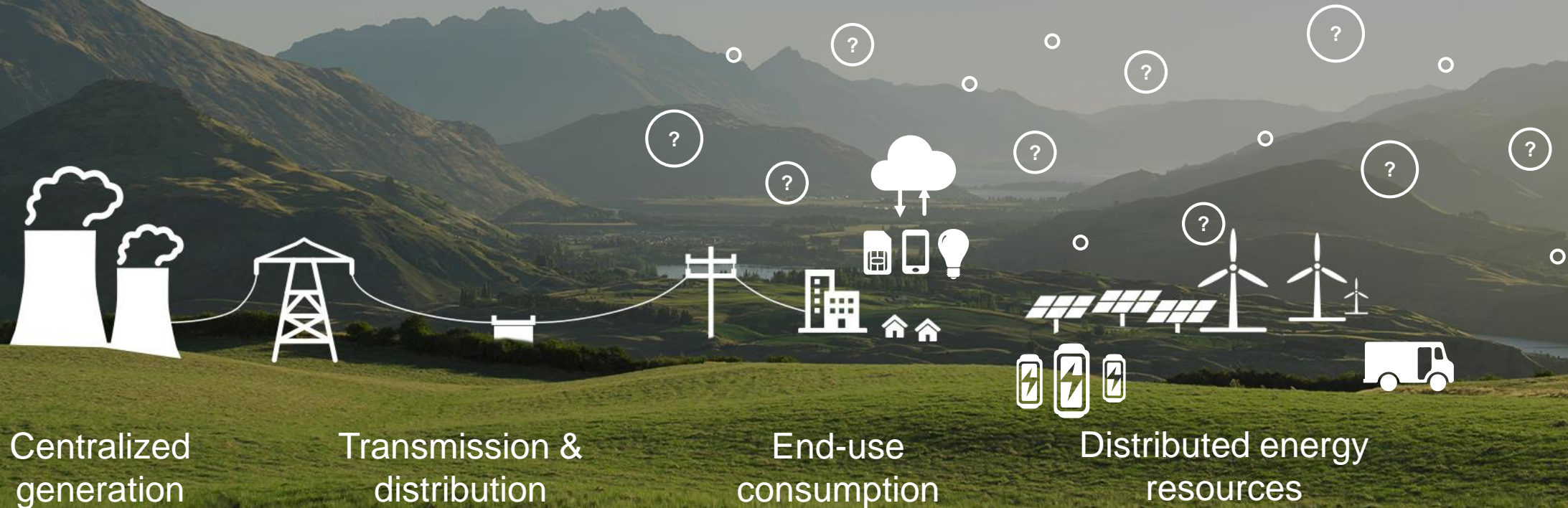


End-use
consumption



Distributed energy
resources

To increasingly complex and multidirectional



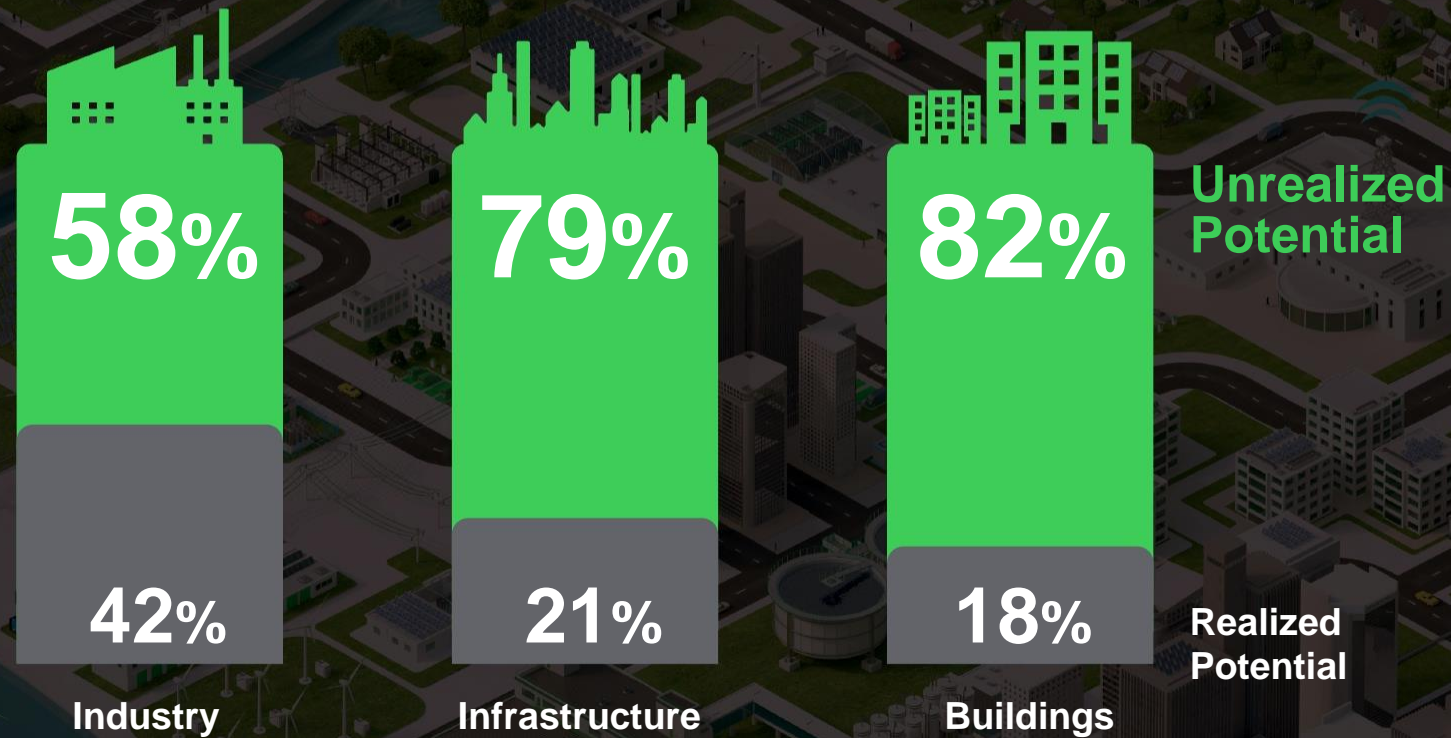


A new way of thinking is required



Perspective - Cities - Energy - **Buildings** - Final Ideas

We have massive untapped efficiency potential

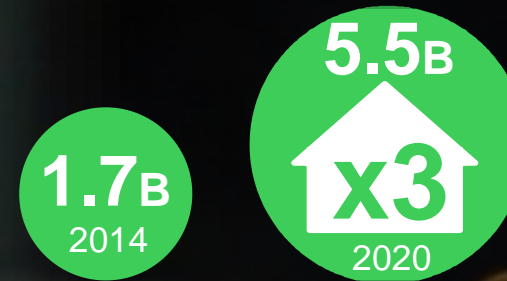


Source : World Energy Outlook 2012, OECD / IEA, Internal analysis

Buildings are getting more connected



Number of connected devices in buildings:



By 2020: >30% connected devices in each building



Desks



Trash cans



Lighting



Occupancy

New disruptive technologies are catalysts for huge efficiency gains.

Digitization presents tremendous opportunities to tackle the growing urban population's need for more comfort

Simplified

Standardization, reusability, and mobile technology mean **less effort in engineering and deployment**

30% possible reduction

Re-energized

Buildings have the highest untapped energy efficiency potential by sector

82% untapped potential

Digitized

Predictive maintenance enabled by IoT and artificial intelligence

20% savings per year

Re-engaged

A more personalized, comfortable experience drives productivity

11% increase with better ventilation

Three considerations for historic buildings...

1

Maintenance costs mount more quickly for historic buildings

2


Old buildings are rarely energy efficient (or up to modern building codes)

3

Modernizing historic buildings and aging infrastructure can be cost prohibitive



Perspective - Cities - Energy - Buildings - **Final Ideas**



Cities success will be defined by
sustainability

The only path to
sustainability is digitization

Life Is On



Schneider
Electric