

HET POTENTIEEL VAN DIGITALISERING IN DE ENERGIESECTOR

ODE Vlaanderen
Webinar Digitalisering in de energiesector
25 mei 2021

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Microsoft Western-Europe





Agenda



Industry trends



The Journey of
Digital Transformation



Microsoft capabilities



Industry
trends



Industry trends



The Journey of
Digital Transformation



Microsoft capabilities

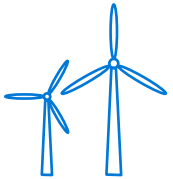
What is the expected of “energy” today?



Accessible and affordable for the consumer



Reliable to stimulate a country's economy



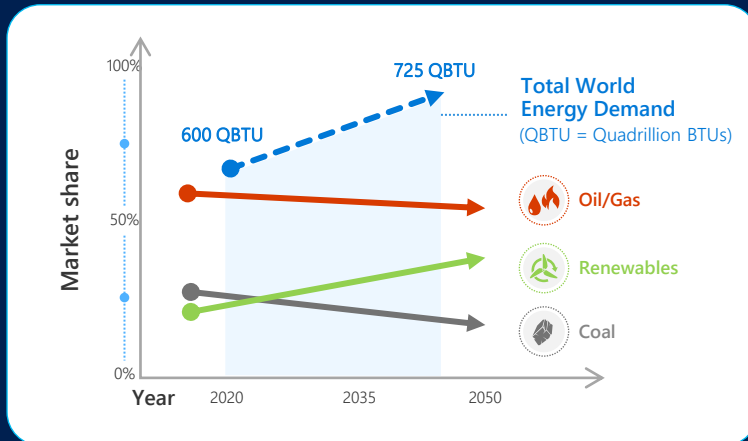
Clean and sustainable to fight climate change for our planet



Shifting overall energy landscape

ENERGY MIX

Overall Energy Demand



Power Generation

By 2035, **>50%** of electricity will be generated by renewable energy

DECENTRALIZATION

Today



Producer



Grid

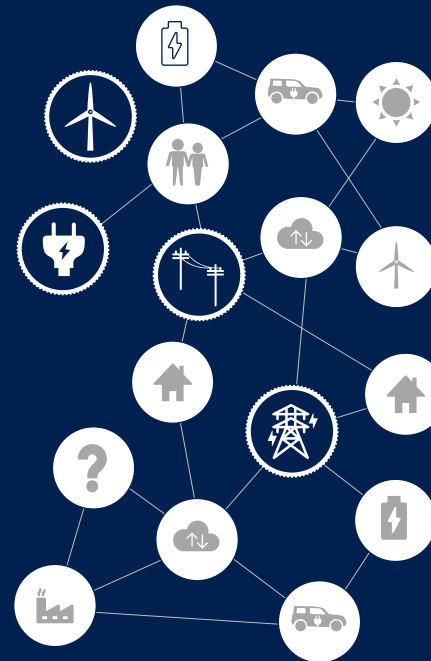


Distribution Trade



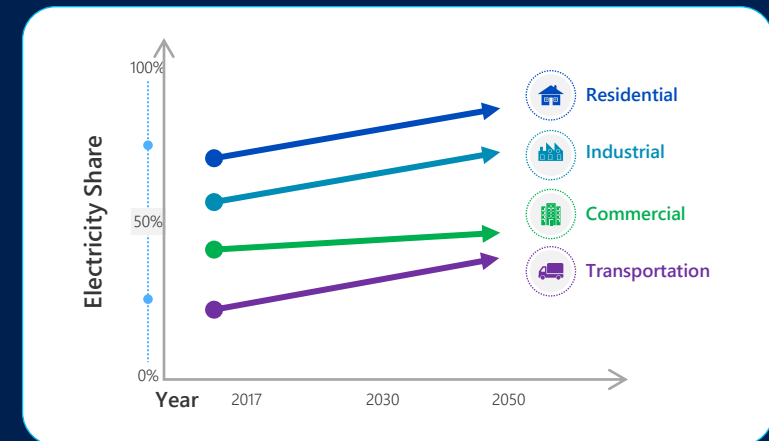
Customer

Future



ELECTRIFICATION

Power Consumption Growth



Overall Growth

By 2050, overall electricity use is expected to grow by **>50%**



We've got to move in that direction **[from oil & gas quickly to renewables]**, but our shareholders also want the dividend. . . So we've got to figure it out.



Distributed energy resources – small-scale local resources, often installed at a customer's home or business – can help meet California's greenhouse gas reduction goals, help customers reduce electricity use and support grid reliability.



Electricity is vital to our daily lives and can help meet rising energy demand with fewer emissions. Electricity is the fastest-growing part of the energy system.

Key Power & Utilities trends



Including more renewables and DERs



New grid operating models



Serving the new energy consumer



Setting ambitious sustainability goals



Energy companies are increasing investments in renewables and Distributed Energy Resources



*"Invested €100Bn
and will accelerate
with €10Bn per
year"*



*"Our target is 99%
green energy
generation by 2025"*



*"Shell in residential
solar energy storage
– acquired Sonnen"*



*"A new solar
customer connected
every 12 minutes"*



Creating a world that runs entirely on green energy

“ *When we engineer new wind farms, the computations for the foundations alone used to take weeks. Now with the cloud, it takes between 4 and 8 hours.*

”

- Michael Judén, Head of Digital Strategy, Ørsted



Grid modernization and new operating models



Digitally transforming the distribution network to increase its flexibility



"Grid investment deferral based on operating demand side flexibility"



"From energy network operator – to holistic system provider"



"Unmanned aircraft systems are integrated into our operations to improve grid reliability"

AI to identify potential issues in the power grid

“

We could quicker restore power after Hurricane Irma, and we kept our crews safer since we were able to see the damage before we put our crews in any danger.

”

— Gerri Boyce, Director, Jacksonville Electric Authority



Serving the new energy consumer

centrica

*"We're making our
customers' lives
easier"*



Increasing customer
satisfaction with
more personalized
experiences



*"Renewables
matching (24/7)
Services"*



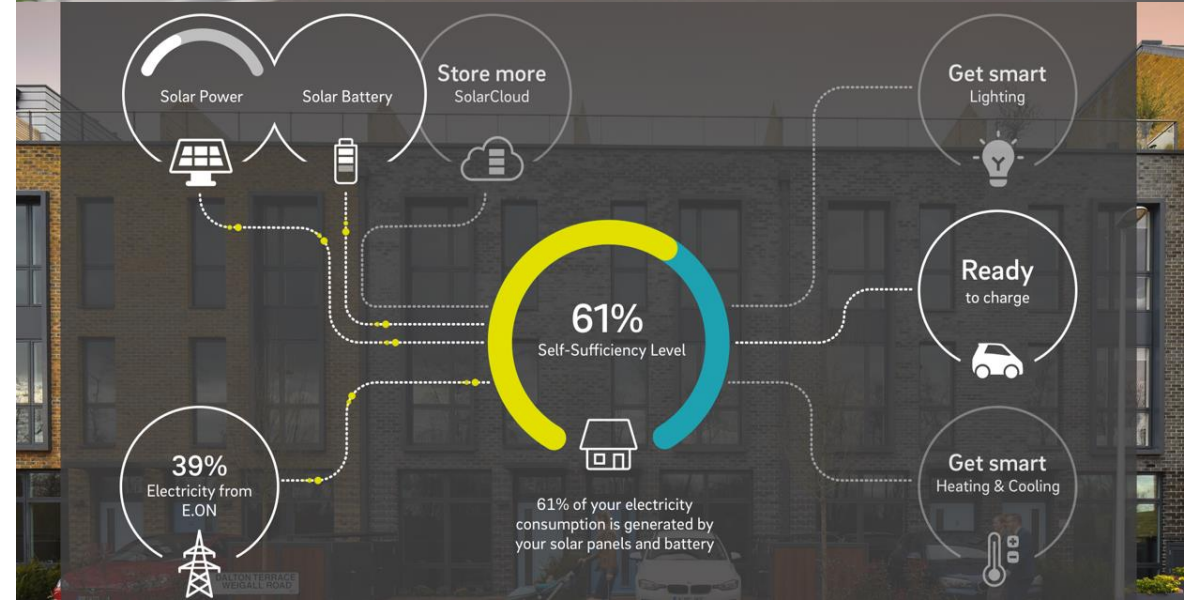
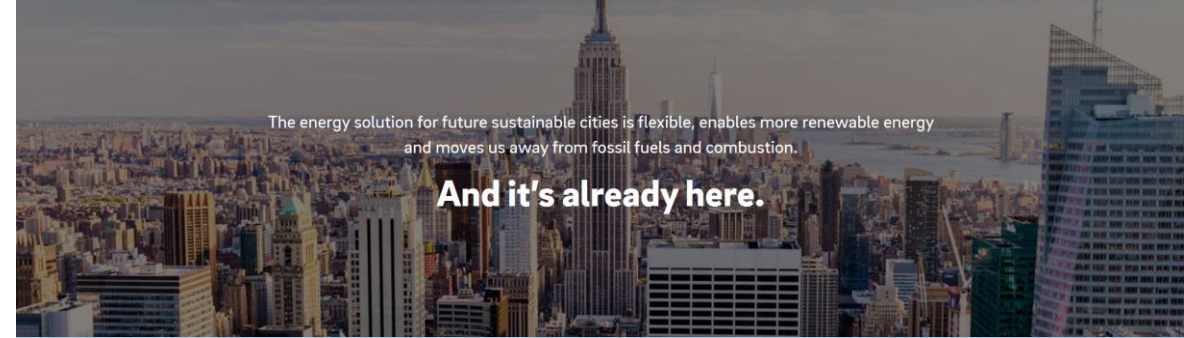
Improved call center
performance –
6% reduction in call
duration



Customers at the heart of the new E.ON

“Energy markets are changing rapidly, and competition in the energy market is intense. Customer needs are changing fundamentally. The result is a new energy world.”

- Johannes Teyssen, CEO, E.ON



Sustainability goals for Energy

DAILY NEWS

No. 49,725 THE BEST SELLING NEWSPAPER IN THE WORLD Today's Edition
National - World - Business - Lifestyle - Travel - Technology - Sport - Weather

Germany to phase out coal by 2038 in move away from fossil fuels

DAILY NEWS

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Orsted is ranked the most sustainable company in the world. A decade ago, they were one of the most fossil fuel intensive energy companies in Europe.

DAILY NEWS

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Xcel Energy, one of the biggest utilities in the US, committed to going completely carbon-free by 2050

DAILY NEWS

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Iberdrola: Transitioning to sustainability and electrification:
“We are offering our customers smart charging solutions at a 10th of the cost of traditional combustion engines”

Microsoft approach to Sustainability

By 2030 Microsoft will be **carbon negative, reducing our emissions by more than half**

Microsoft is eliminating more carbon than we emit resulting in a **carbon impact that is below net zero.**

By 2050, we will remove **all the carbon Microsoft has emitted since our founding in 1975**





Investment in innovation for carbon removal

A new **\$1 billion** climate innovation fund over the next four years

Accelerate the **development of technologies for carbon reduction and removal technologies**

The fund will be deployed in **three key areas**

1. **Accelerating** ongoing technology development
2. **Investing** in new innovations
3. **Supporting** key academic and non-profit efforts

Tech Trends in Reimagine Energy



Devices



IoT / ML



Digital Twin



AI/Cognitive Services



Satellites & Map



Data ecosystem





The Journey of Digital transformation



Industry trends

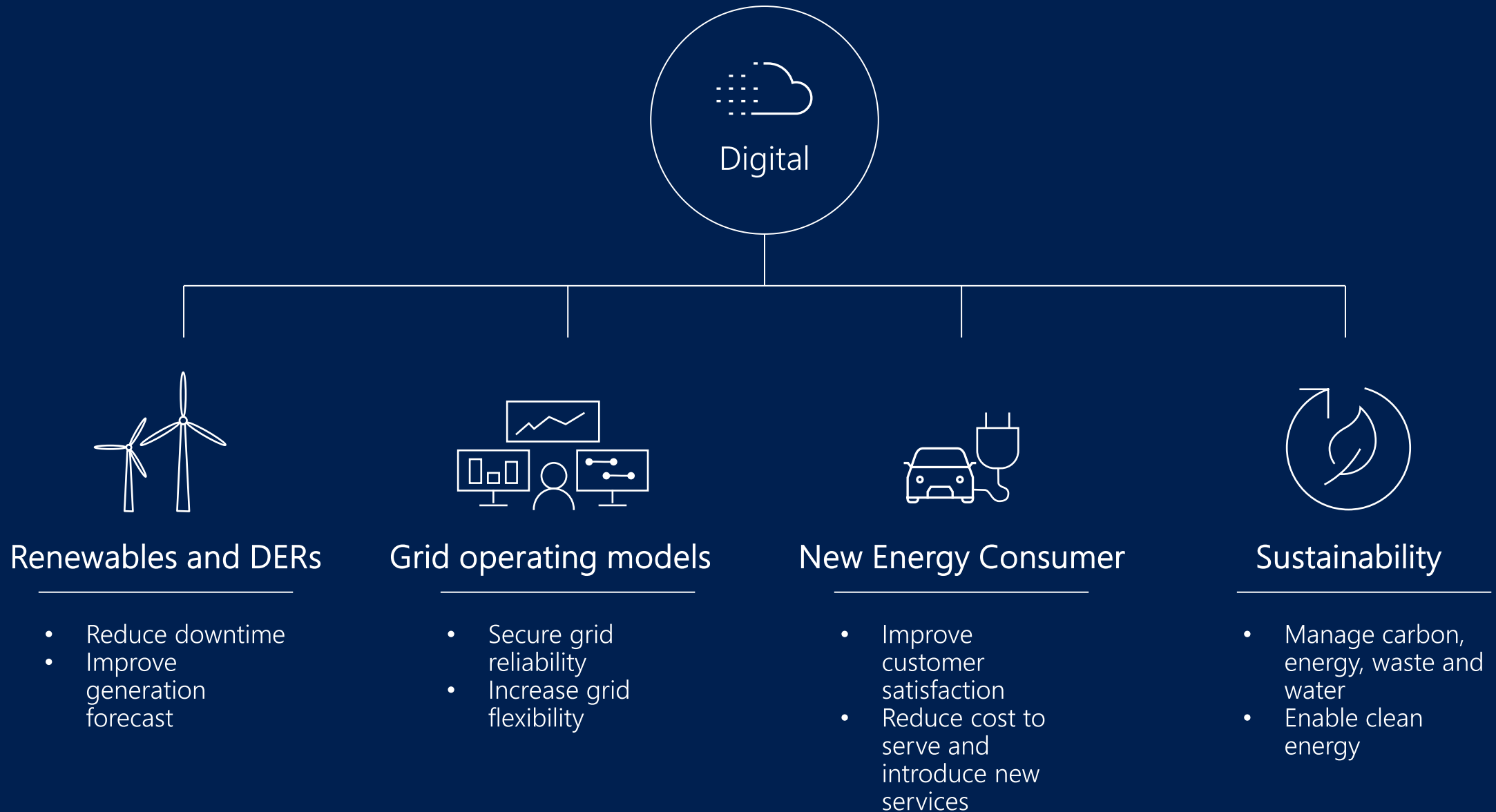


The Journey of
Digital Transformation



Microsoft capabilities

Digital as an enabler



Digital feedback loop





Vision &
Strategy



Culture



Unique
Potential



Capabilities

An aerial photograph of a wind farm situated on a mountain ridge. Several white wind turbines are visible, some partially obscured by a thick layer of fog or low clouds that fills the valley and surrounds the base of the turbines. The terrain is green and rocky, with a dirt road winding through it. In the background, more mountain peaks are visible under a clear blue sky.

1

A **vision and strategy**
that helps to reimagine how energy
is delivered to the world

Creating a world that runs entirely on green energy

“*While we're proud and grateful to be ranked the most sustainable company in the world, we're painfully aware that the world must speed up green action to stay below the 1.5°C limit for global warming that is outlined in the Paris Agreement on climate change.*”

- Ørsted, 2020



2



A **culture** that keeps teams
connected, elastic, and invites change

Exelon's culture of innovation

“ *Fostering a culture of innovation is critical to the utility industry in an era defined by the rapid integration of electronic digital devices and technology at home and in the workplace.* ”

- Chris Crane, CEO, Exelon



3

Unique potential that unlocks
and amplifies the value it creates



Taking your power asset potential to the next level

“ *With Enerlytics, you'll gain broad in-depth knowledge, not only of your fleet and its assets, but also of past, current, and future commercial activity. So that you can be sure you're doing the maximum to increase the commercial attractiveness of your power station and help secure its future.* ”

- Uniper, 2020



4

Capabilities that enable
organizational transformation



Ready for What's Next

“ *We have nearly 400 people at our Innovation Center dedicated to developing new products and services, supporting our customers and enabling our workforce* ”

- Lynn J. Good , CEO, Duke Energy



$$\text{Tech intensity} = (\text{Tech adoption} \times \text{Tech capability})^{\text{Trust}}$$





Microsoft
capabilities



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Microsoft capabilities


...and together with partners we are powering a sustainable future.

Operate for the future




Increase reliability and recovery rates and decrease variability of your operations, reducing environmental impact while generating value for stakeholders

Transition to clean



Keep people, products, and the world moving, while realizing reductions in carbon emissions and intelligently fulfilling demand with new renewable energy sources

Transform your workforce



Attract, train, and retain your next generation workforce, equipping them with the skills and technologies to drive your transformation to sustainable energy operator and service provider

Reimagine energy



Shape the future of energy beyond power generation and distribution with innovations in smart cities, infrastructure, vehicles and homes and energy services

ABB

SIEMENS

Schneider
Electric

EY
Building a better
working world

accenture

avanade

SAP

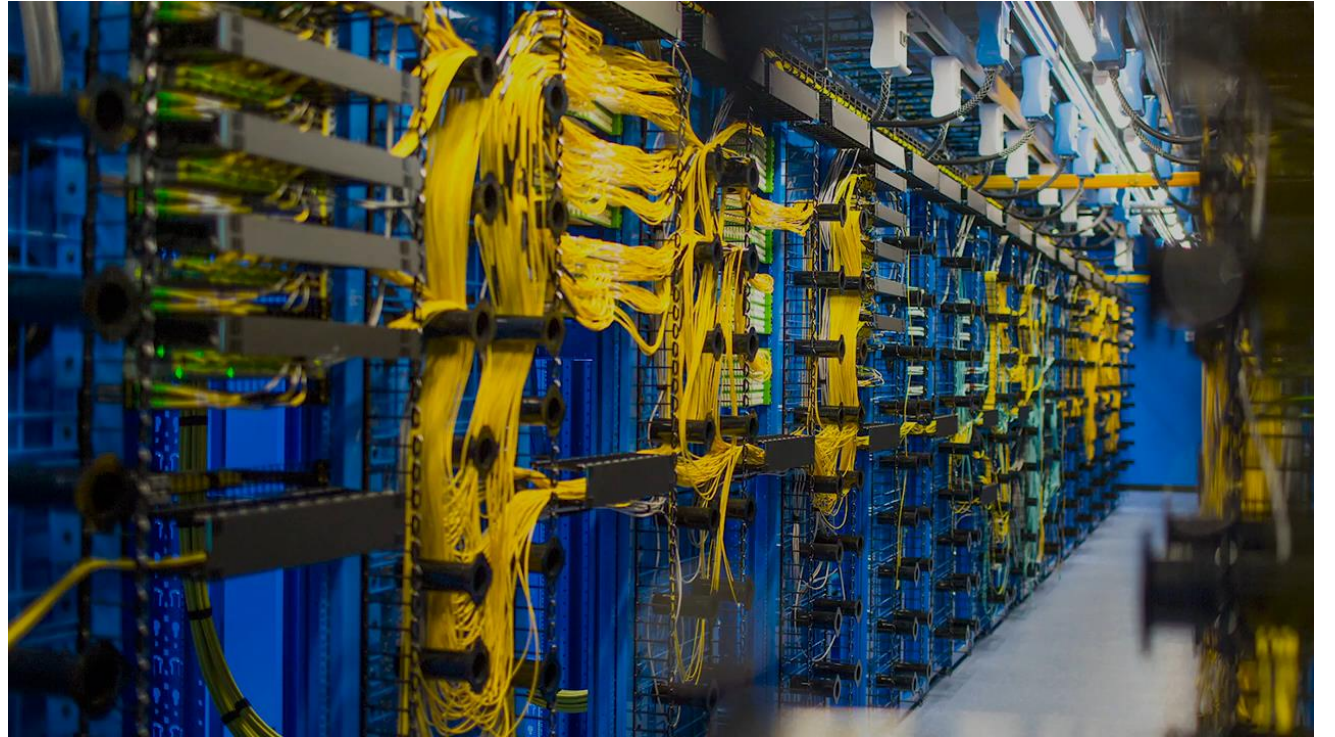
Bentley

esri

itineris
excellence in utilities

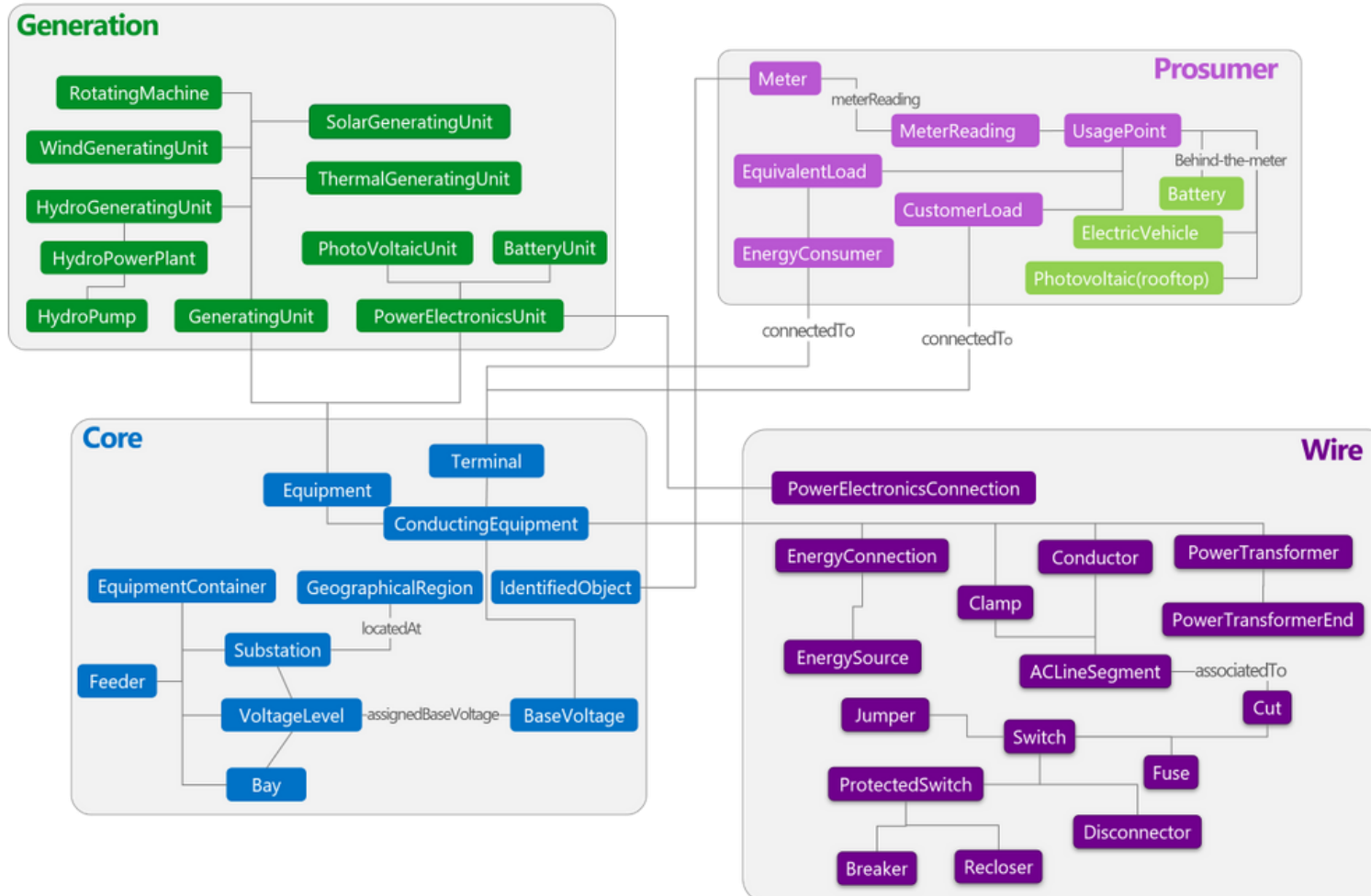
MECOMS

Vattenfall and Energinet



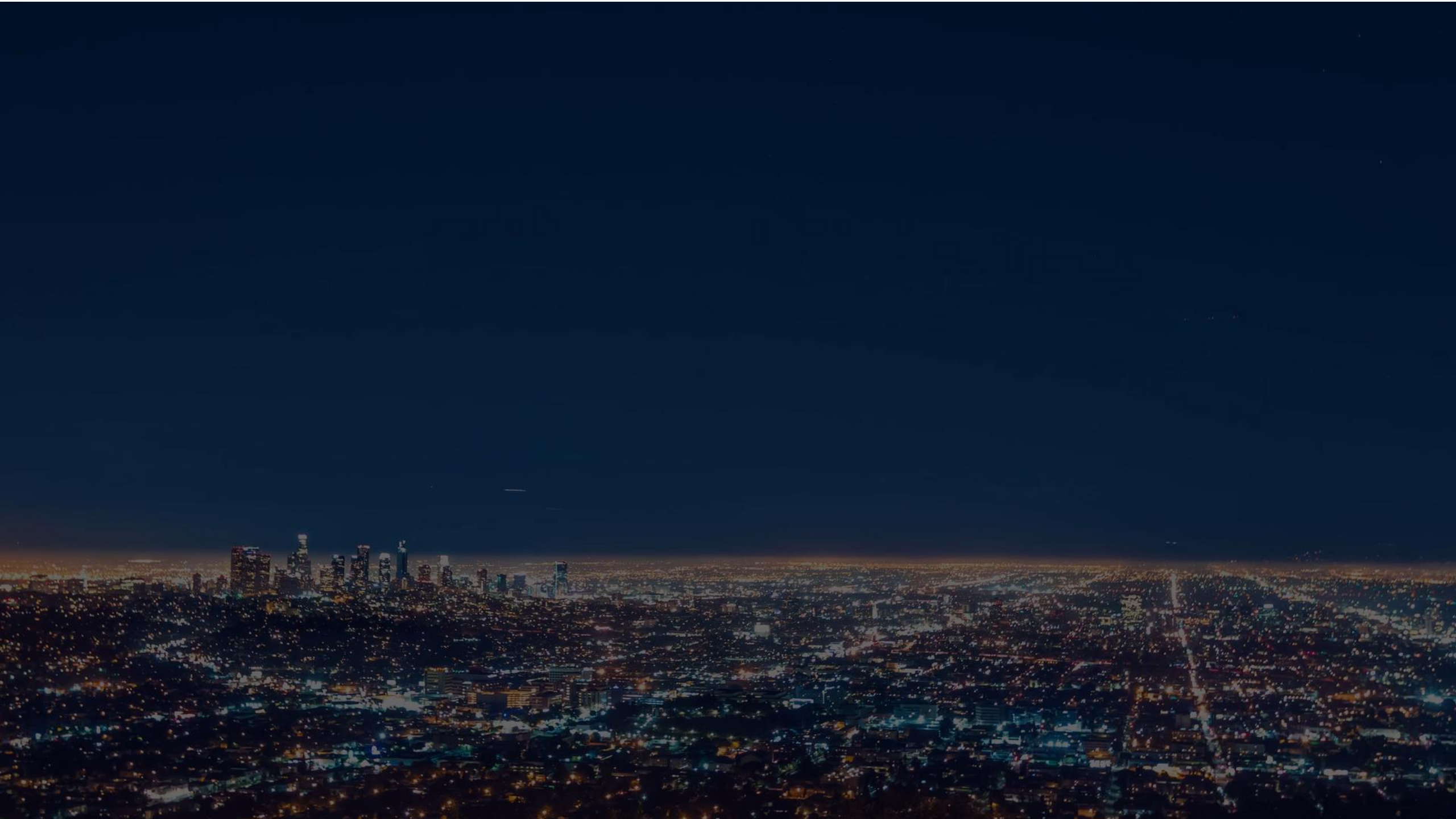
Energy Grid Ontology for Digital Twins

The associated open modeling language, Digital Twins Definition Language (DTDL), is a blank canvas which can model any entity – [blog](#) – See also the 4 packages available



We published the open-source [Energy Grid Ontology](#) for digital twins, an open-source GitHub repository.

This will help solution providers accelerate development of digital twin solutions for energy use cases (monitoring grid assets, outage and impact analysis, simulation, and predictive maintenance) and facilitate digital transformation and modernization of the energy grid.



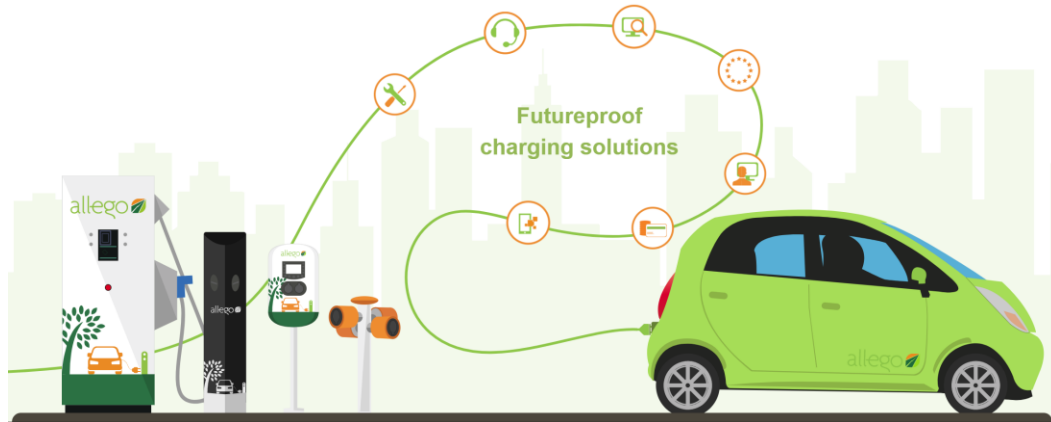
Allego offers electric vehicle smart charging solutions

“

Azure Digital Twins' optimization has added intelligence to our EV platform. Without this optimization capability, it would be difficult to deliver a smart and flexible charging solution.

”

— Marc Diks
CIO, Allego

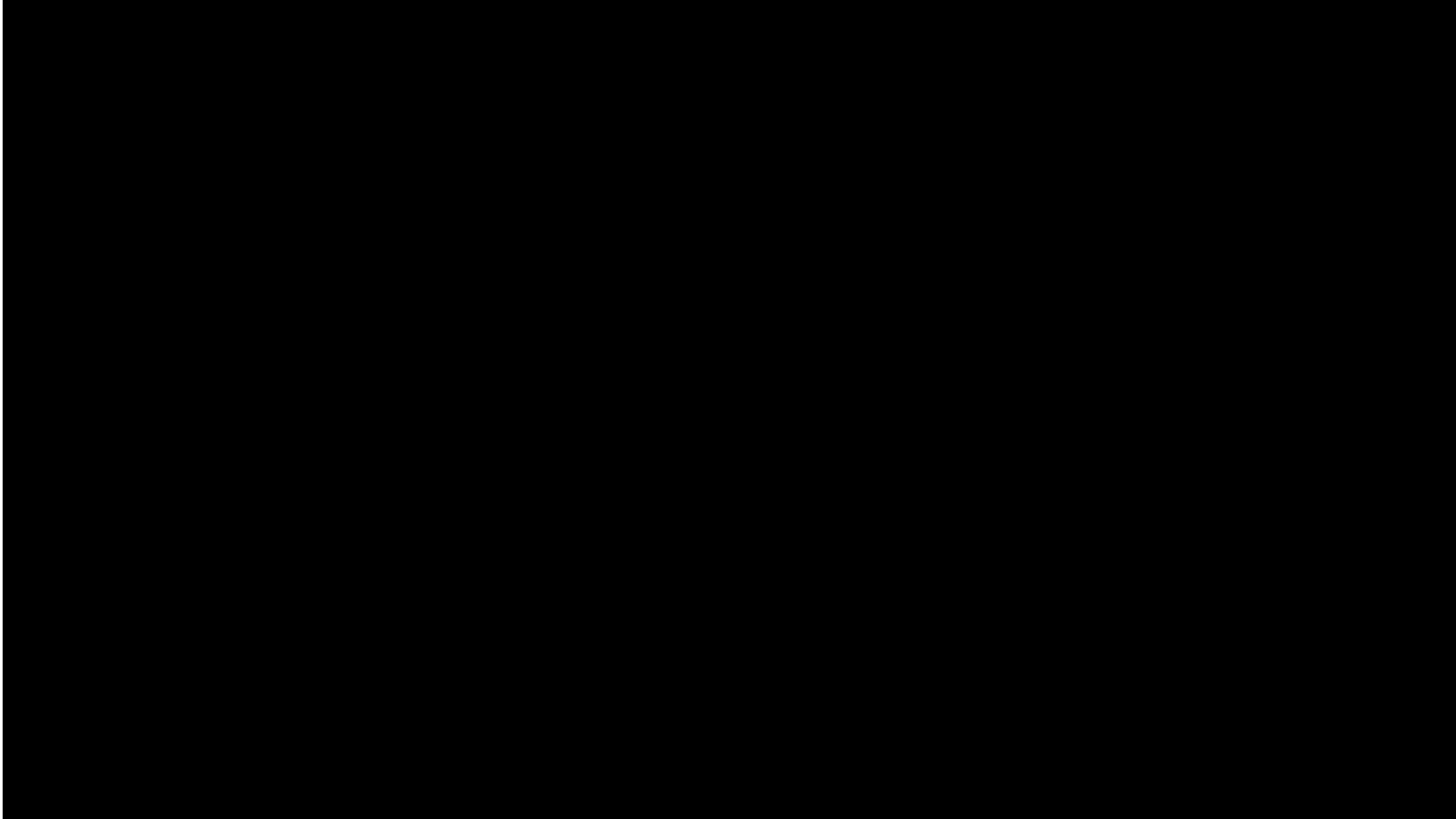


EV Cloud Services Platform



Agder Energi builds an intelligent grid

agder energi

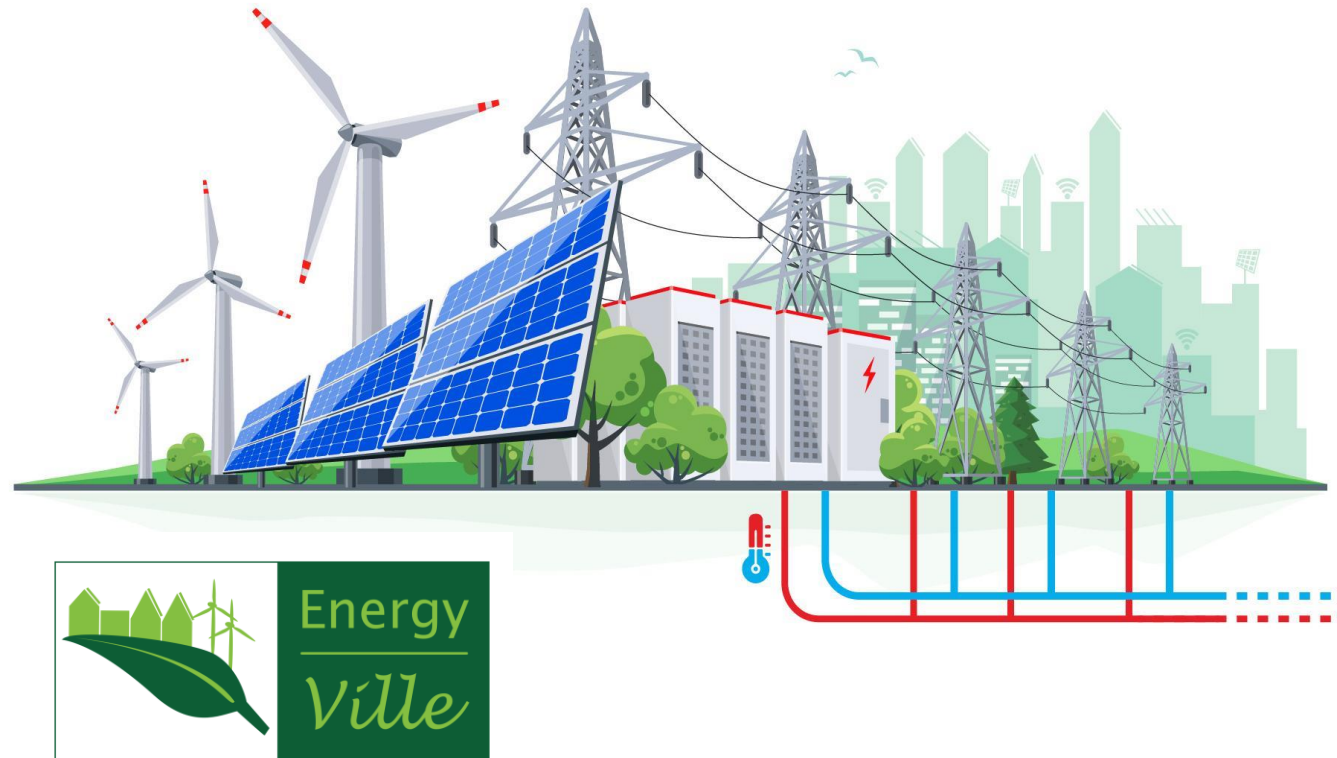


Flexharvester – fostering an ecosystem culture

Electrical Vehicle Charging



STORM district energy controller



Thank you