

# Sustainable Energy Management that makes a difference is complex and requires focused innovation



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# Huawei: Leading provider of ICT infrastructure and smart devices

Bring digital to every person, home and organization for a fully connected, intelligent world



**196.000**

Employees



**107.000+**

R&D employees



**170+**

Countries and regions



**68+**

Interbrand's  
Top 100  
Best Global Brands



**44+**

Fortune Global 500

# Why Energy Management?



# Why Now?

# Energy Management – Why now?

1

Increasing demands

2

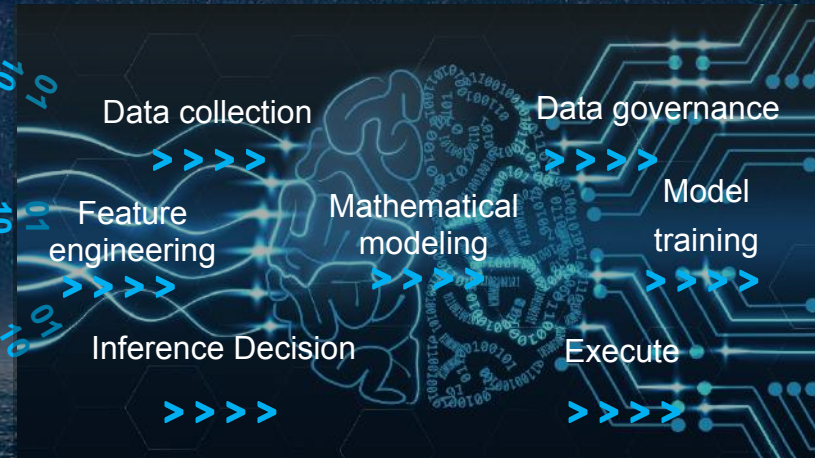
Legislation / Standards

3

Technology / Innovation

# Energy Management – Why now?

## 1. Increasing demands



Intelligent diagnosis



Early warning and early prevention

Intelligent optimization



Further improvement in energy efficiency

Intelligent collaboration



Manual to automatic, reducing Opex

IoT

5G

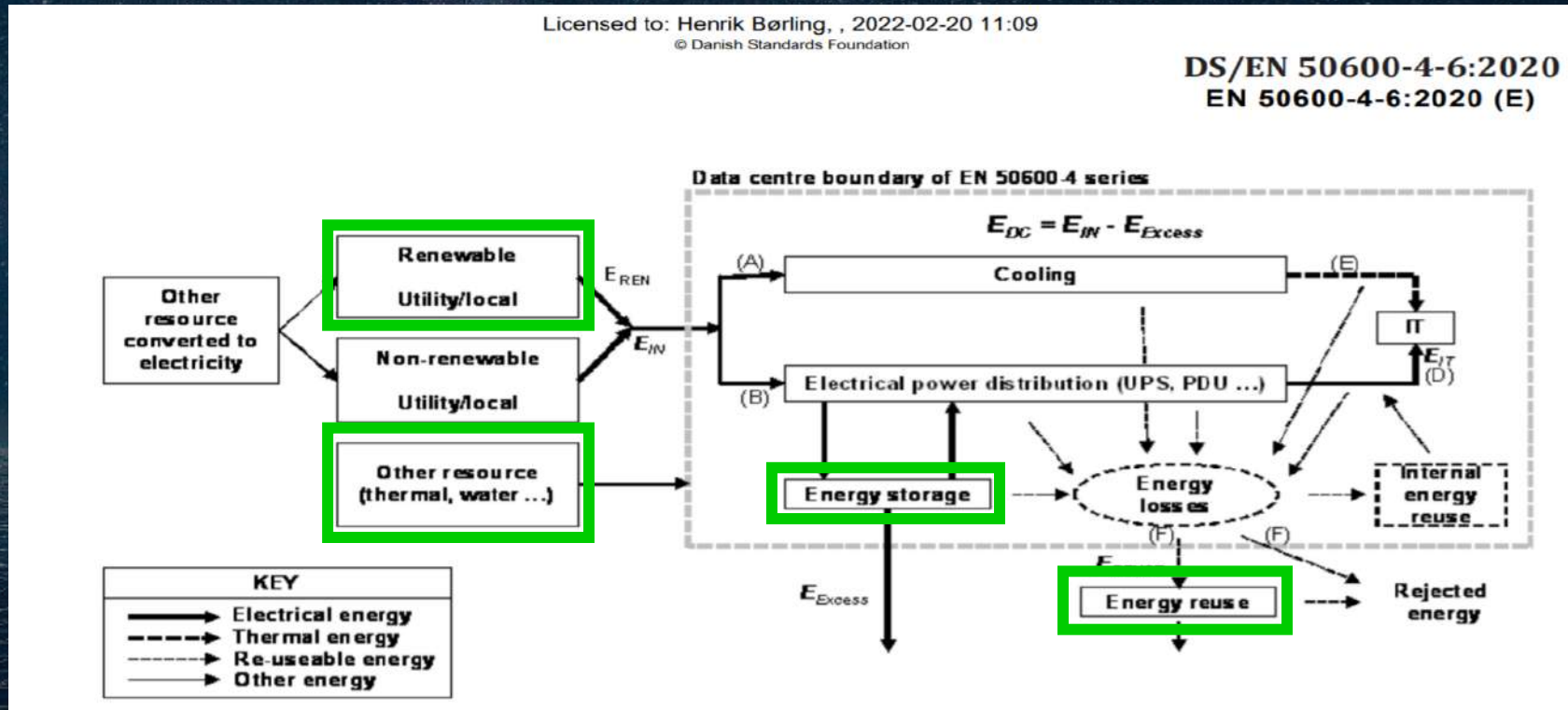
IT/  
OT

AI/  
ML

# Energy Management – Why now?

## 2. Legislation / Standards

Focus for sustainability has increased as there now for The European standard for datacenters EN50600 has an amendment EN50600-4 with several definitions of KPI's for datacenter installations





# Energy Management – Why now?

## 2. Legislation / Standards



ISO/IEC 30134

ISO/IEC 30134-2 Data Centre Key Performance indicators, Power Usage Effectiveness (PUE)

ISO/IEC 30134-3 Data Centre Key Performance indicators, Renewable Energy Factor (REF)

ISO/IEC 30134-4 Data Centre Key performance indicators, IT Equipment Energy Efficiency for servers (ITEEsv)

ISO/IEC 30134-5 Data Centre Key performance indicators, IT Equipment Utilization for servers (ITEUsv)

ISO/IEC 30134-6 Data Centre Key Performance indicators, Energy Reuse Factor (ERF)

ISO/IEC 30134-7 Data Centre Key Performance indicators, Cooling Efficiency Ratio (CER)

ISO/IEC 30134-8 Data Centre Key Performance indicators, Carbon Usage Effectiveness (CUE)

ISO/IEC 30134-9 Data Centre Key Performance indicators, Water Usage Effectiveness (WUE)

# Energy Management – Why now?

## 2. European- and local regulations

European



Agency for Digitalization



Agency for Energy



# Energy Management – Why now?

## 2. Procurement requirements

### Environmental requirements must make up a significant proportion of the total supplier evaluation

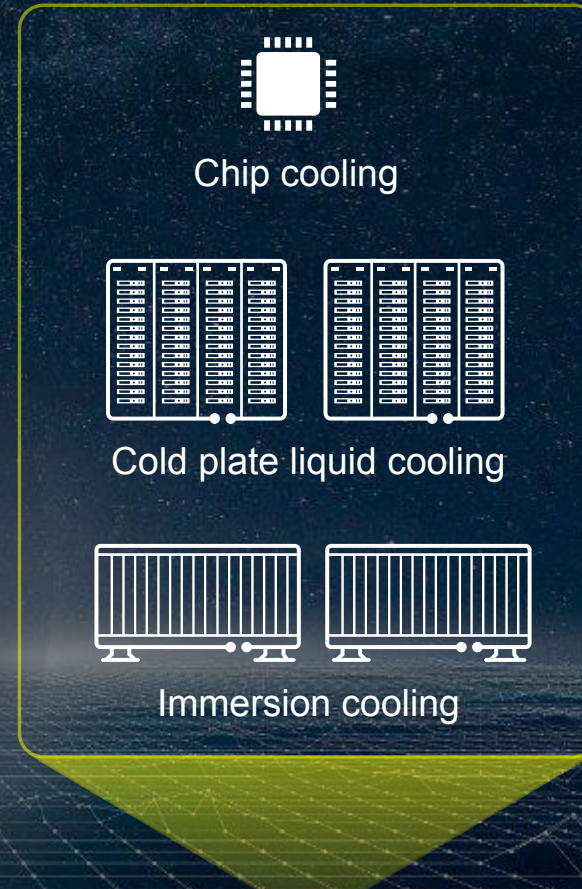
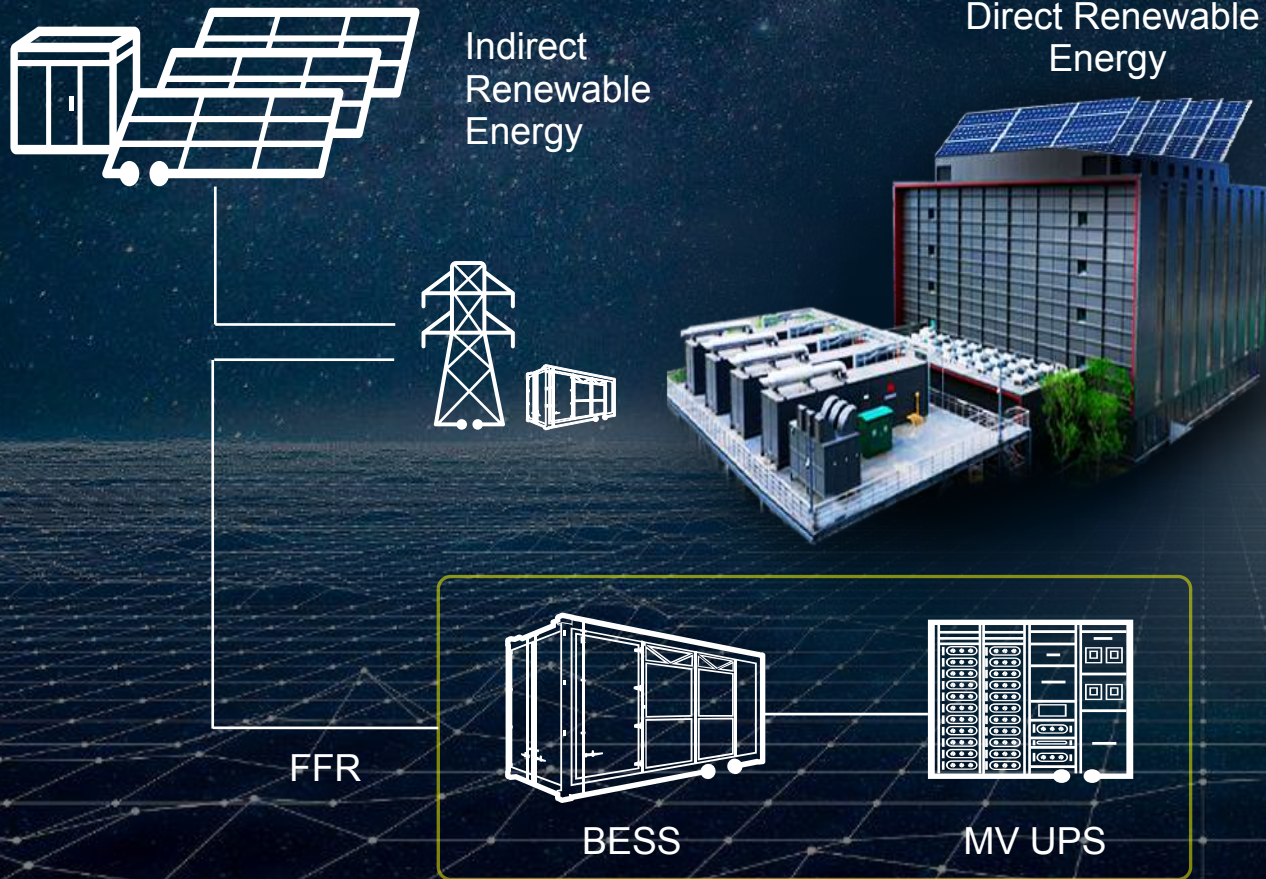
- Environmental requirements for a Cloud Solution as example
- Evaluation and compliance with environmental requirements account for 15% of the overall evaluation based on the following headlines:



- Non-compliance with requirements and reporting will initially be considered as breach of contract

# Energy Management – Why now?

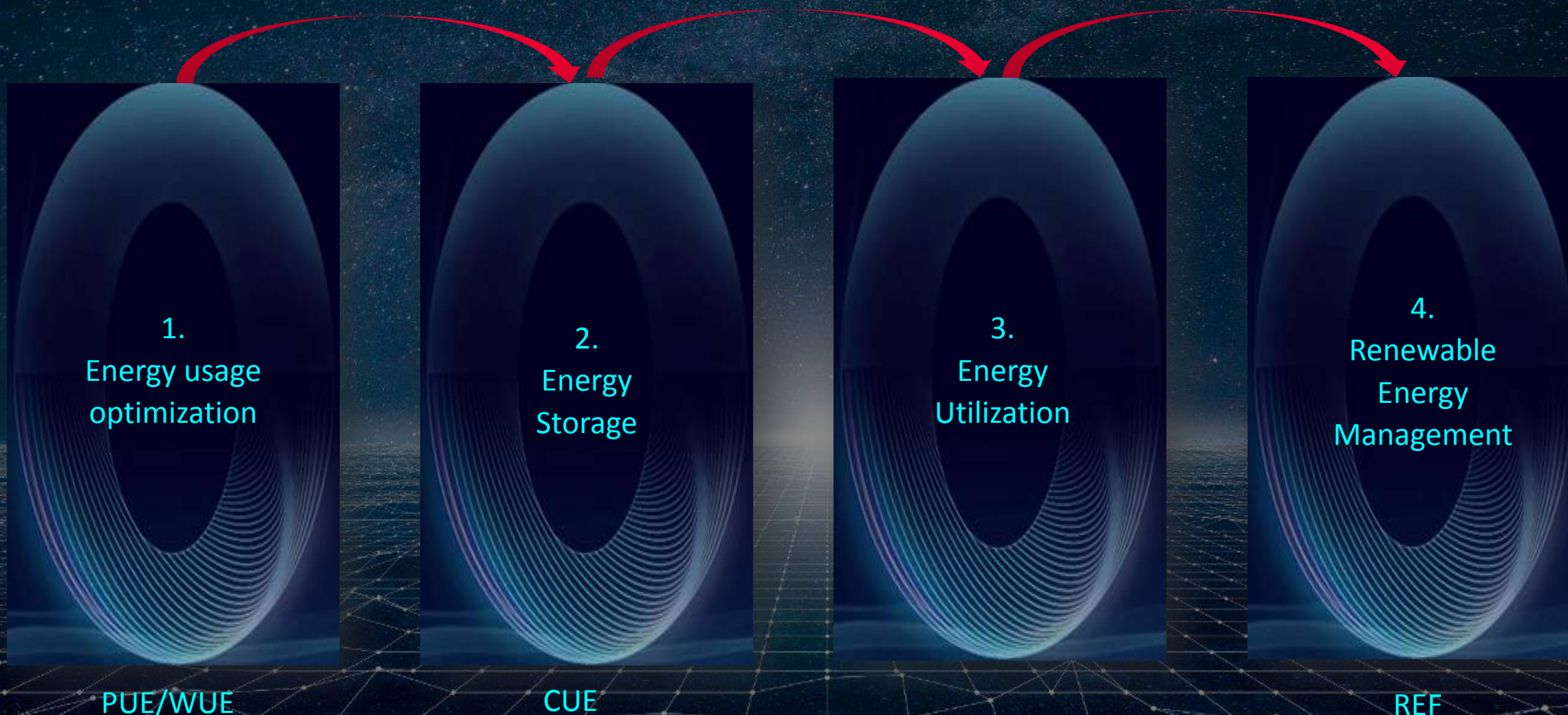
## 3. Technology / Innovation



# Energy Management How?

# Energy Management – How?

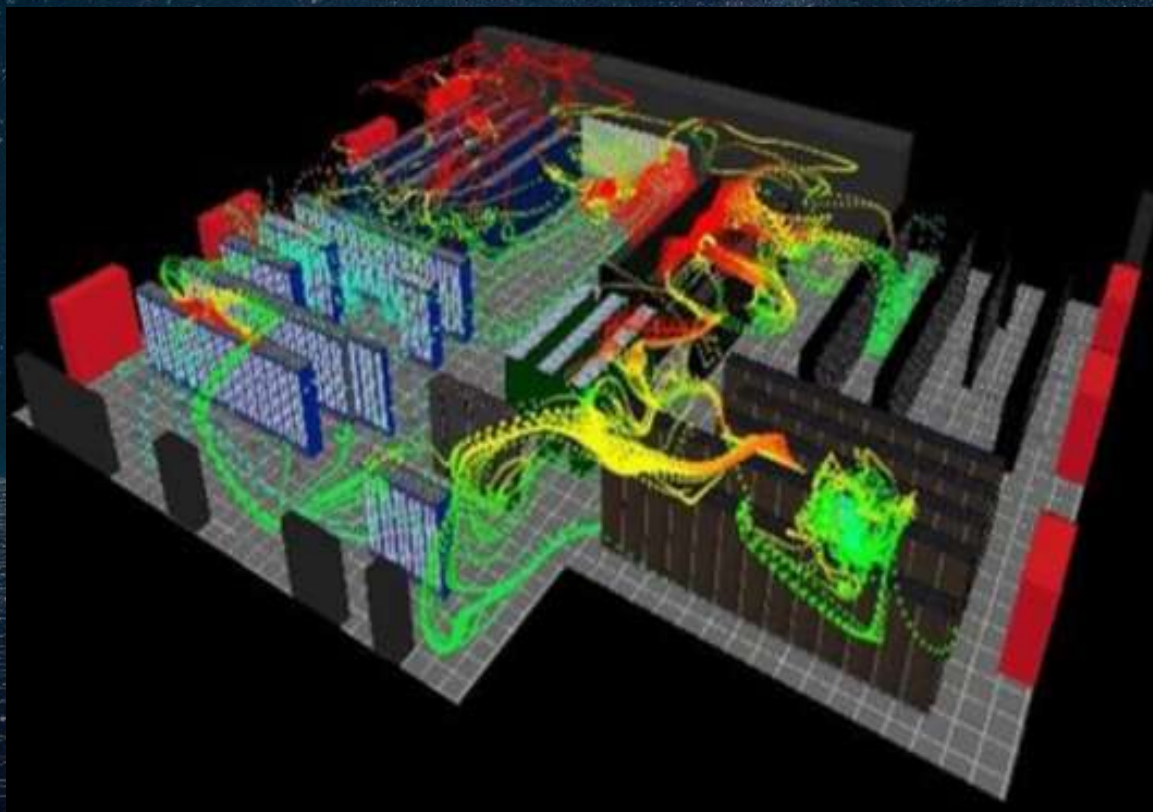
## Process for Energy Management



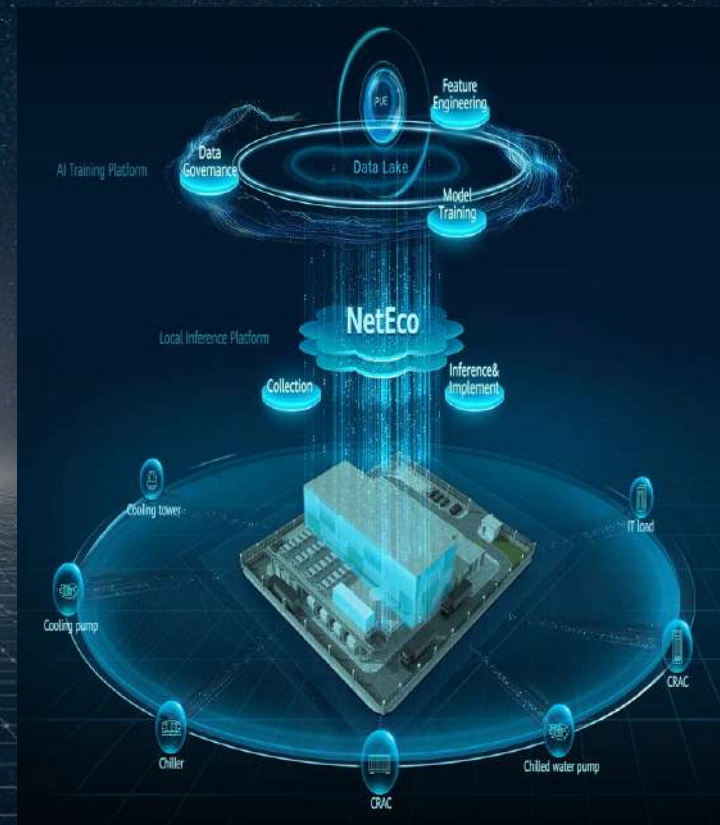
# Energy Management – How?

## 1. Energy usage optimization: From component to system

Utilization

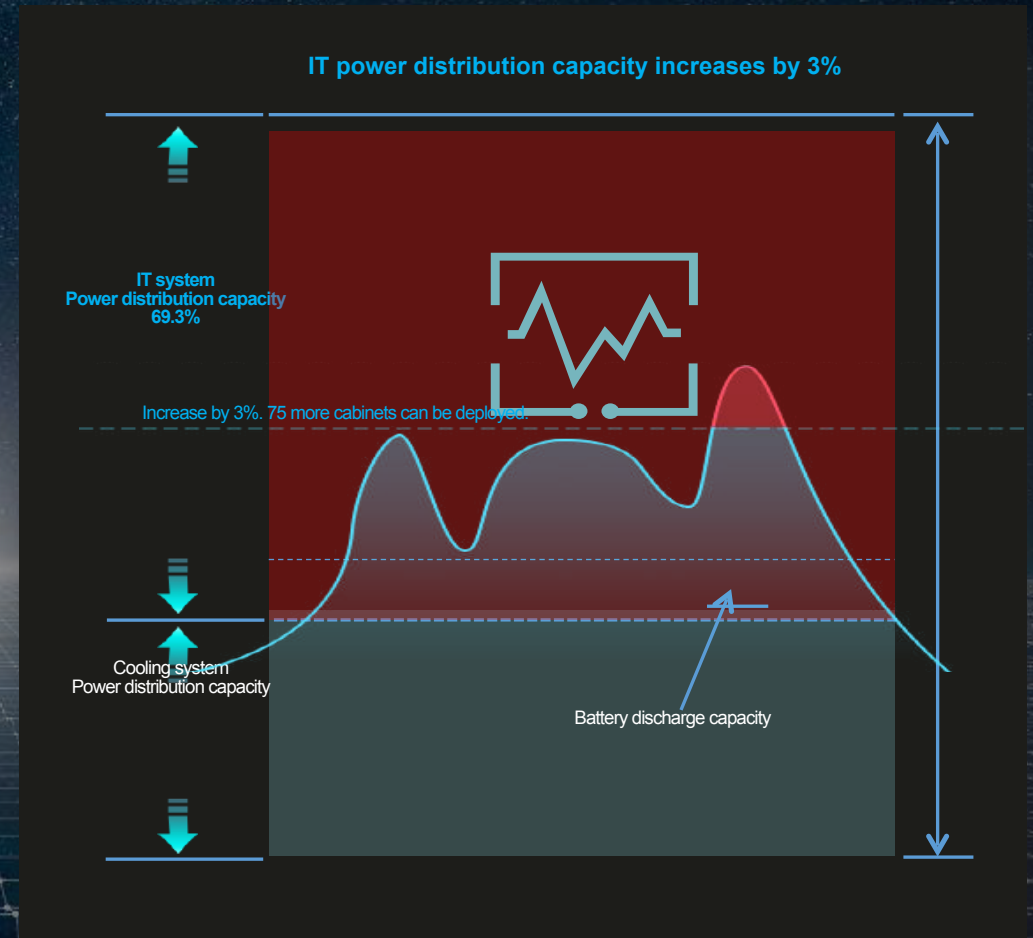
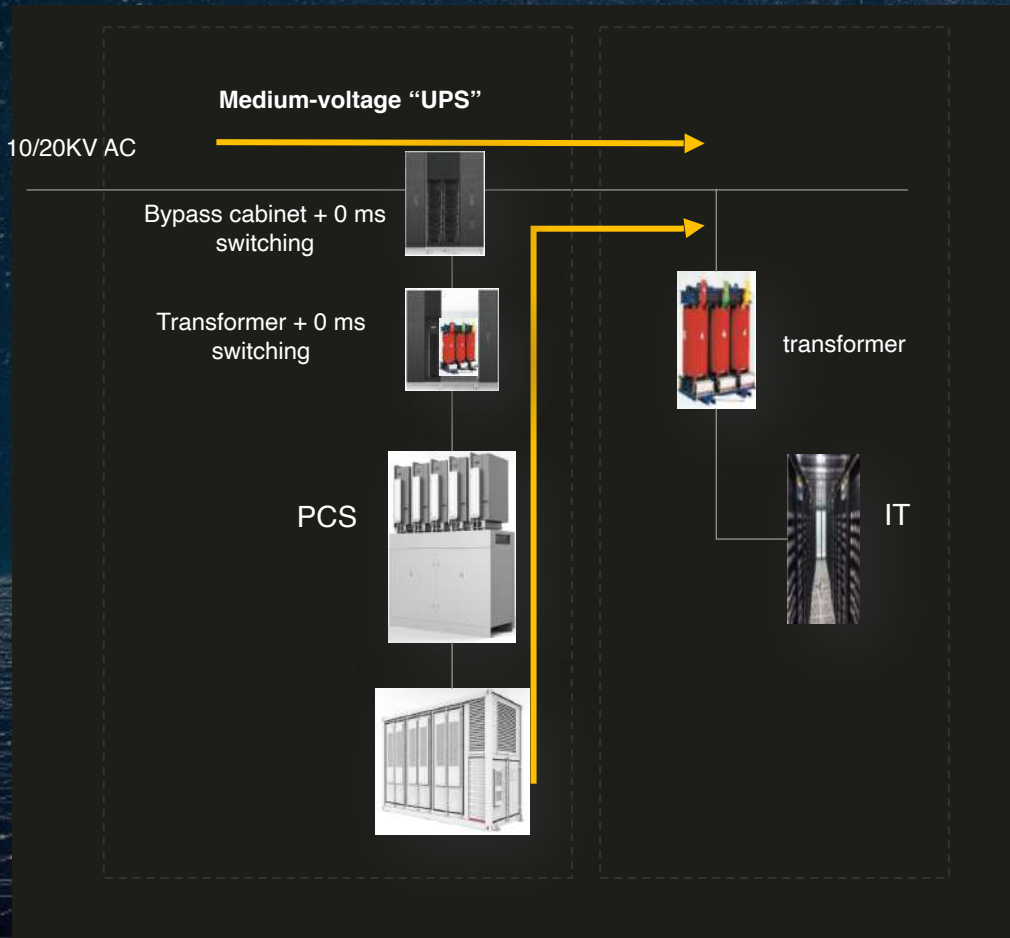


AI



# Energy Management – How?

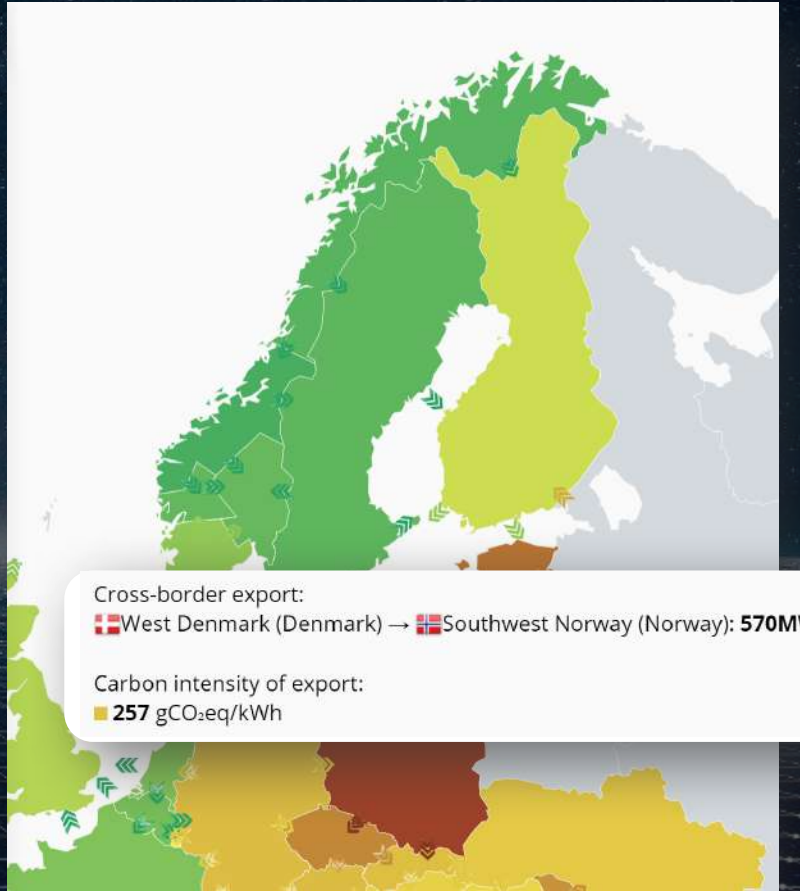
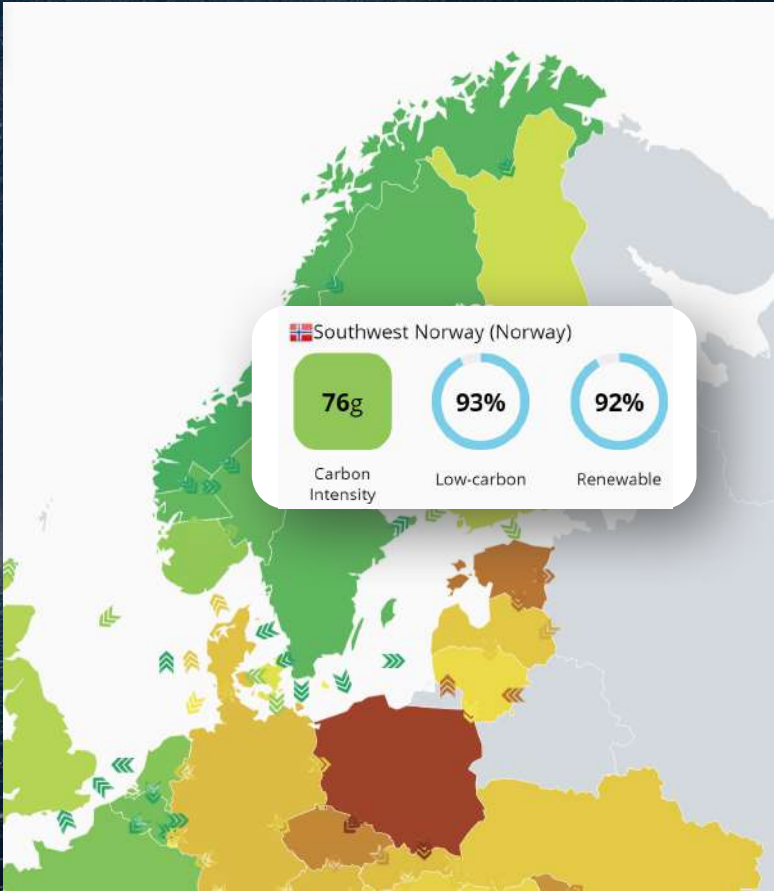
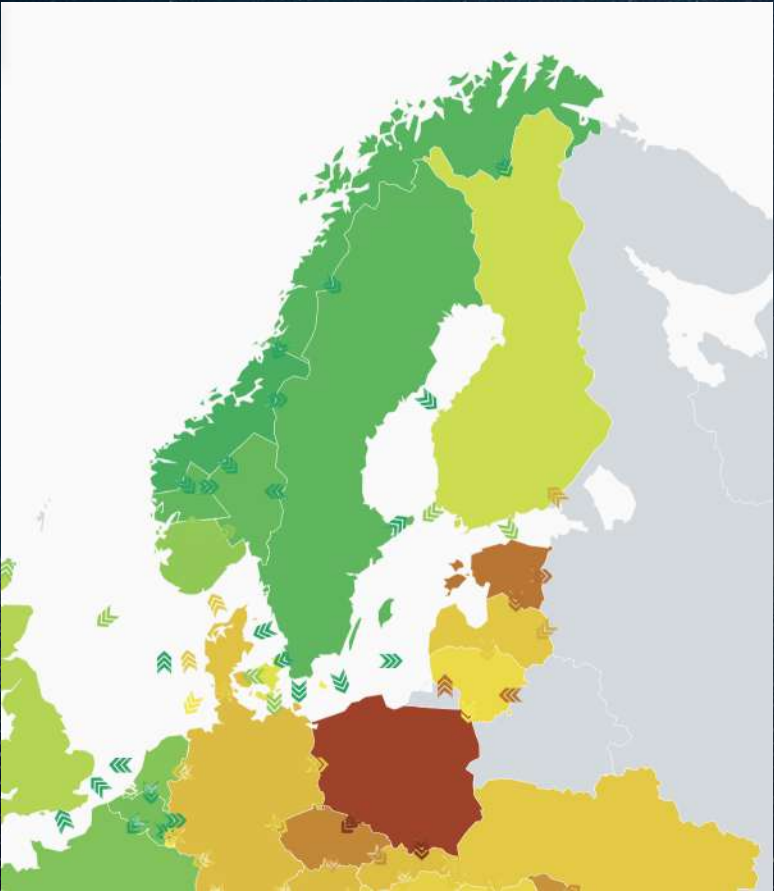
## 2. Energy Storage: From PPA to 100% Real-time Match





# Energy Management – How?

## 3. Energy Utilization: From Independent Systems to Grid Collaboration



[Electricitymap.org/map](https://electricitymap.org/map)



# Energy Management – How?

## 3. Energy Utilization: From Grid collaboration to predictive power management

Historical



All the way back to 2018  
With hourly granularity

Real-Time



Updated hourly, estimated in  
Case of delayed/missed data

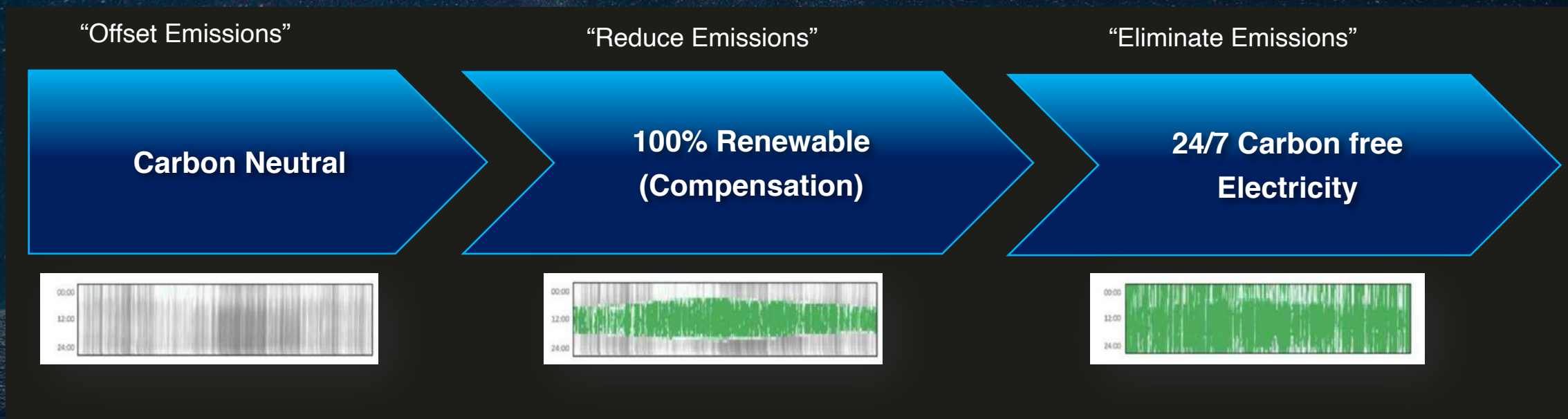
Forecasted



Hourly granularity up to 24  
Hours ahead of time

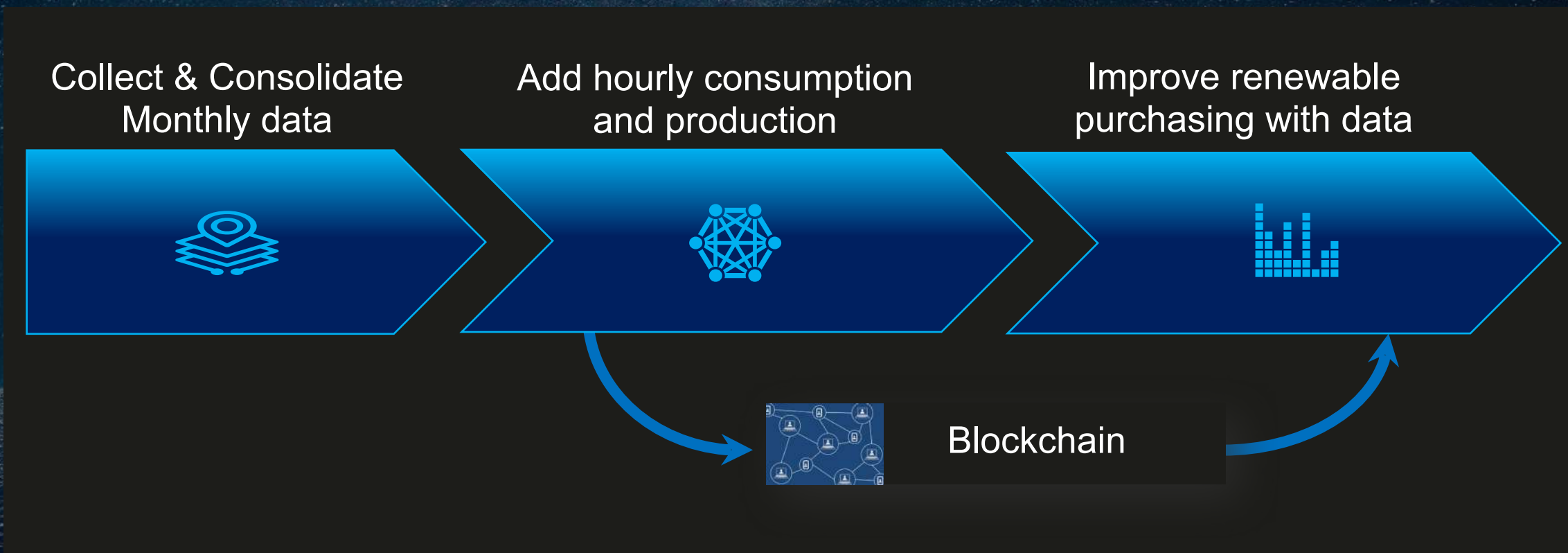
# Energy Management – How?

## 4. Renewable Energy Management



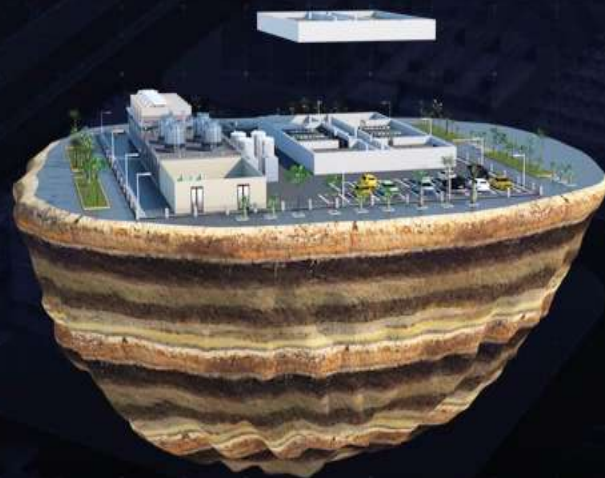
# Energy Management – How?

## 4. Renewable Energy Management



# Energy Management – How?

## 4. Renewable Energy Management: Smart operation @ AI



# Energy Management as a concept

Smart Operation  
@ AI

Documented  
Green Energy



Through strategic partnership documented usage of renewable energy, by using a blockchain solution.



Predictive  
Green Energy



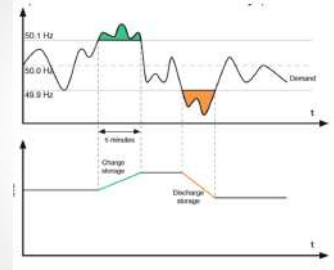
Through strategic partnership – Able to predict renewable energy production in a timeslot for up to 24h



BESS



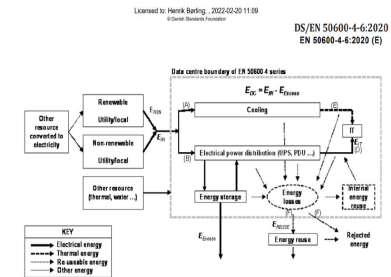
Implement BESS, as Energy Management refining, and possibility for FFR functionality



Validation &  
Certification



By using EN standard 50600, and the ISO standard 30134, enables an overall certification.



# Digital Power: Your Best Partner for a Better, Greener Future

By December 31, 2021, Digital Power has helped customers

generate green power

**482.9 billion kWh**

save power

**14.2 billion kWh**

reduce carbon emissions

**230 million tons**

equivalent to planting

**320 million trees**



Conversion note:

1 kWh electricity is equivalent to 475 g CO<sub>2</sub> (global average).

Source: IEA Global Energy & CO<sub>2</sub> Status Report 2018

1 tonne CO<sub>2</sub> equivalent of trees needed to offset 1 tonne CO<sub>2</sub> per year, and each tree has a 40-year lifespan.

Source: Open data of the North Carolina State University website

**We Do Not Inherit The Earth From Our Ancestors,  
We Borrow It From Our Children.**

