



Delivering MCCS

ESIG – GPST – 50Hertz Webinar

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10.10.2024





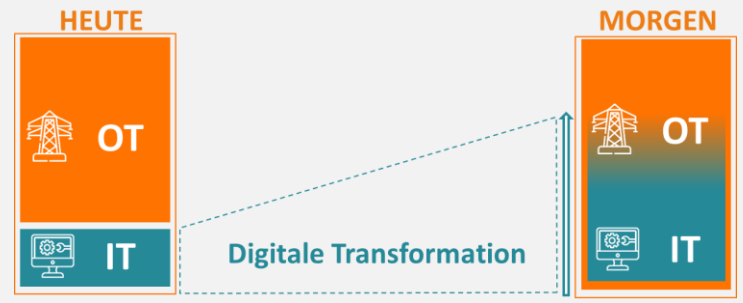
1 WHY?

a 50Hertz objective to integrate 100% by 2032



100 Prozent bis 2032
Neue Energie für eine starke Wirtschaft

b Digital Transformation is key to success



2 WHAT?

a MCCS: Modular Control Center System

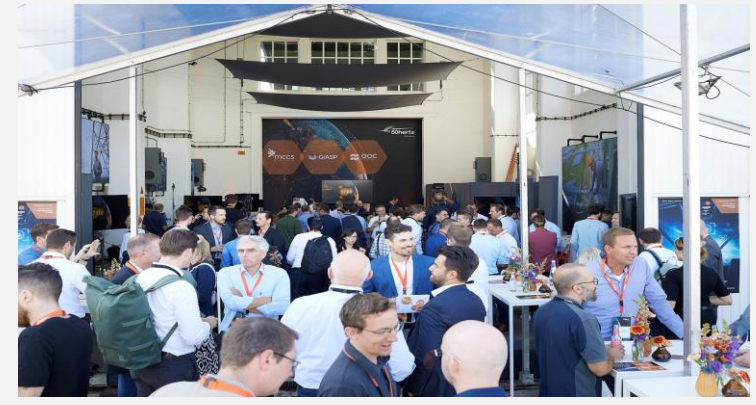


No more "SCADA"!
BUT:
Monitoring & Control

b Central Platform for data integration and exchange of modules (such as forecasting)

3 HOW?

a Together with partner in industry and across sectors



b Iterative development and commissioning

www.mccs.com

Delivering MCCS

WHO?

WHY?

WHAT?

HOW?

WHEN?





WHO?

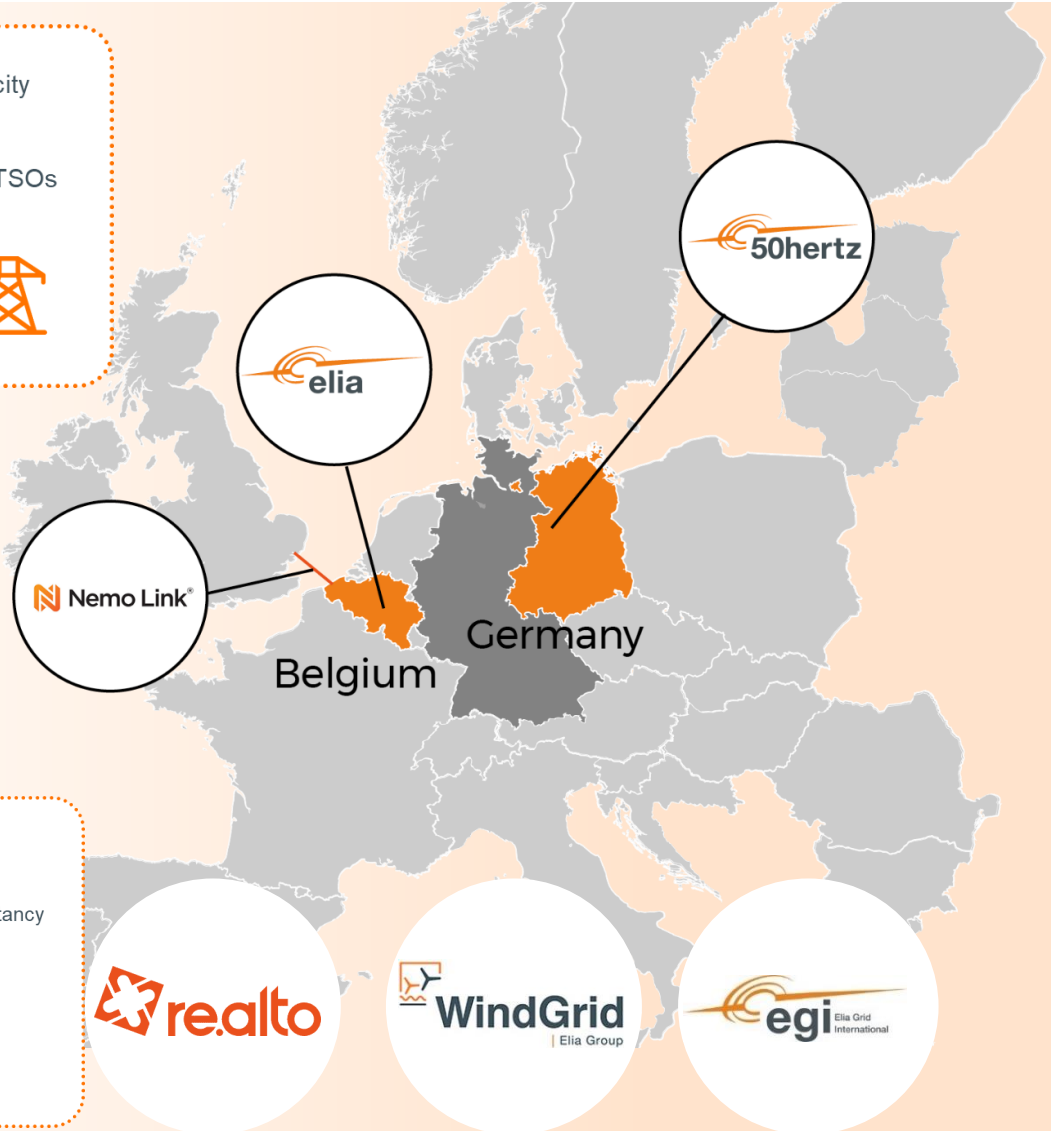


50Hertz and Elia, a group of two TSOs at the heart of Europe

Elia Group is active in electricity transmission.

It encompasses two leading TSOs strategically located in two European regions:

- Elia in Belgium
- 50Hertz in Germany



Elia Group has multiple subsidiaries including:

- **EGI:** international leading consultancy company focused on energy
- **Re.alto:** digital start-up providing energy data services
- **WindGrid:** Wind transmission infrastructure developer

1

Plan & Build
Grid infrastructure

19,271 km
High voltage lines and cables

2

Manage
Assets

EUR 9.2 bn
Regulated Asset Base

3

Operate
System

EUR 2.1 bn
Revenues

99.99%
Reliability of the Elia Grid

2,544
Employees

4

Enable
market facilitation

30 Million
End users

ENTSO-E & GO15
Active member

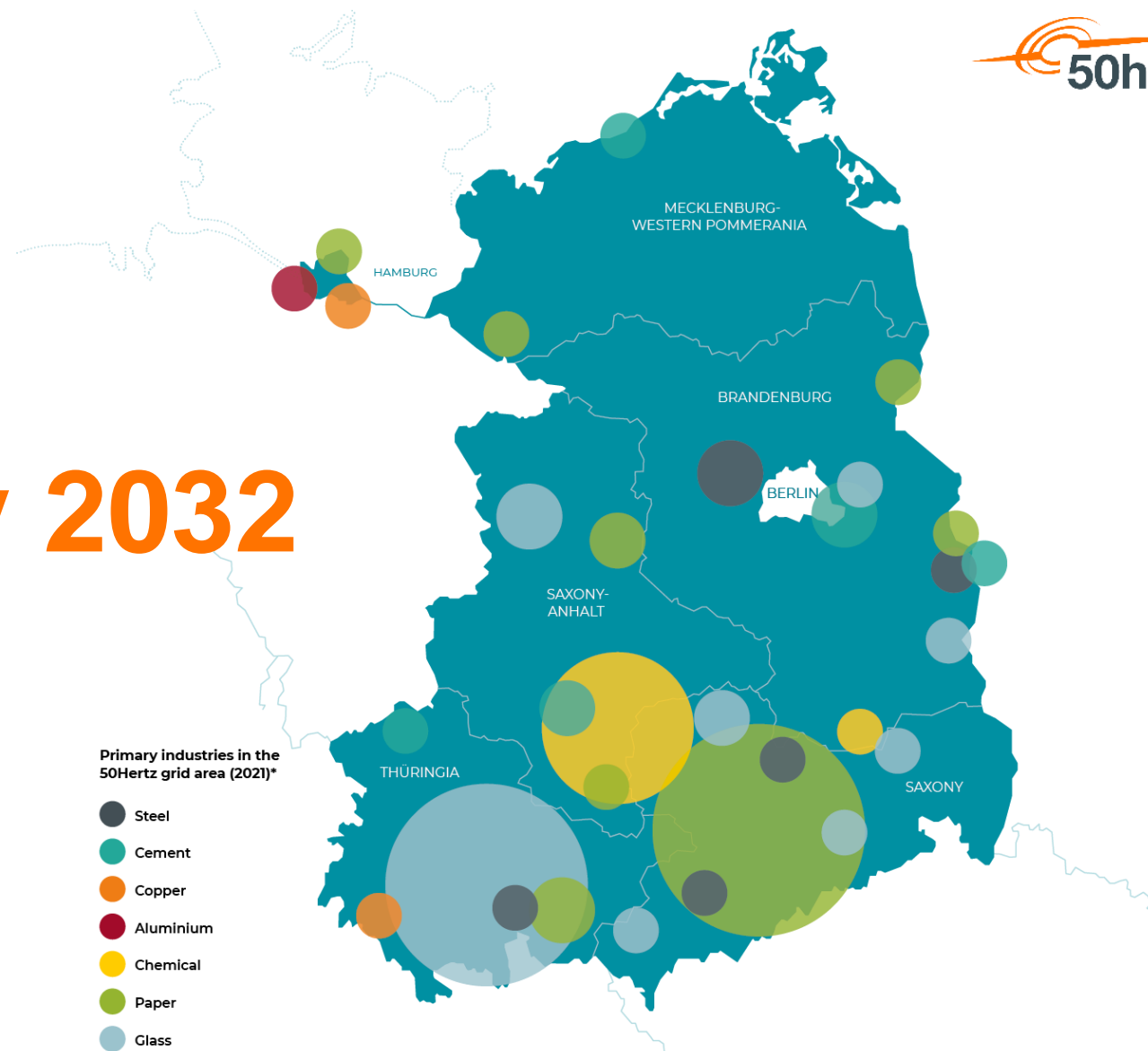
5th
Largest TSO in Europe



Our strategy

100 percent by 2032

Affordable energy for a strong economy



* Illustration symbolises a concentration of individual sectors, non-exhaustive

All information about the 50Hertz strategy
[50hertz.com/strategy](https://www.50hertz.com/strategy)



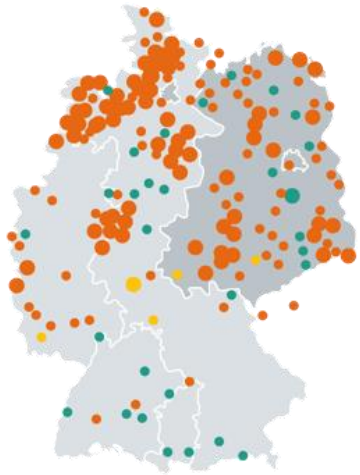
WHY?



We have to integrate millions of flexible & decentralized RES...

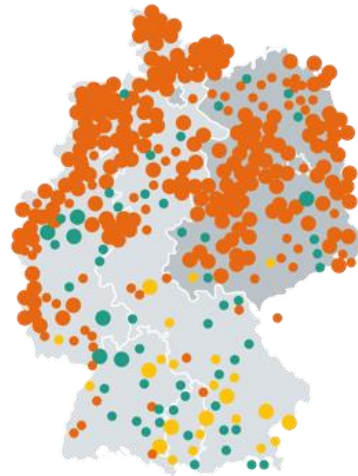
2000

30.000 Units



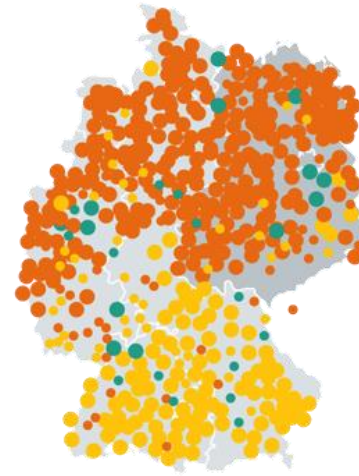
2010

930.000 Units



2020

2.700.000 Units



2030

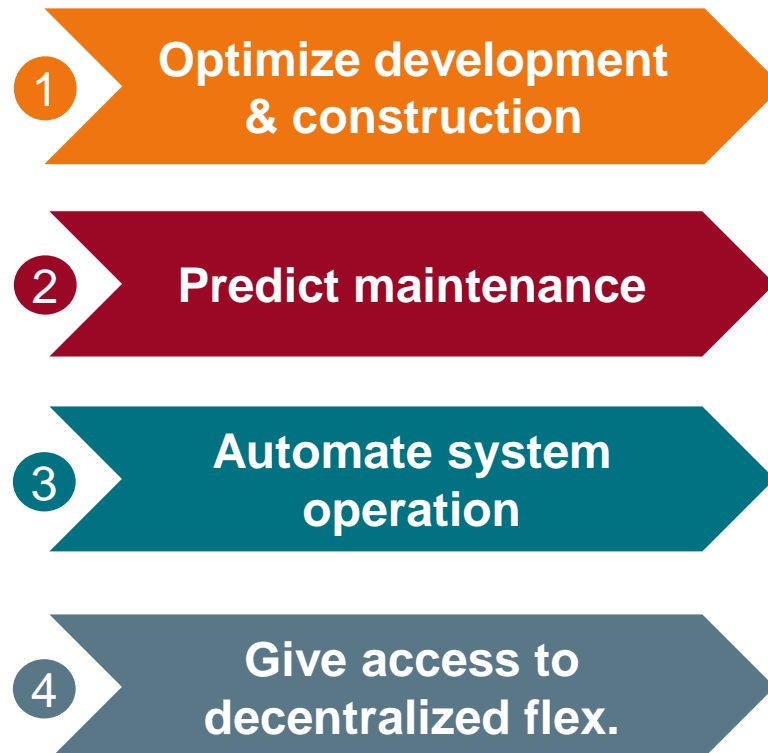
~6.000.000* Units



Wind ● PV ● Biomasse ● * Estimate

To address the challenges for a system with high shares of RE, we are inventing new solutions across the value chain

SCALE, FLEXIBILITY AND SPEED



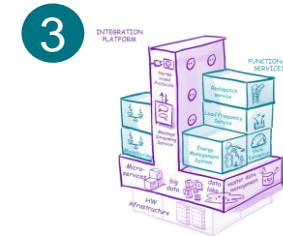
1

**New assets:
Energy Islands**

**New tech.:
Drones, robots**



2



3

**New CC System:
MCCS**

**New approach:
Consumer Centric**



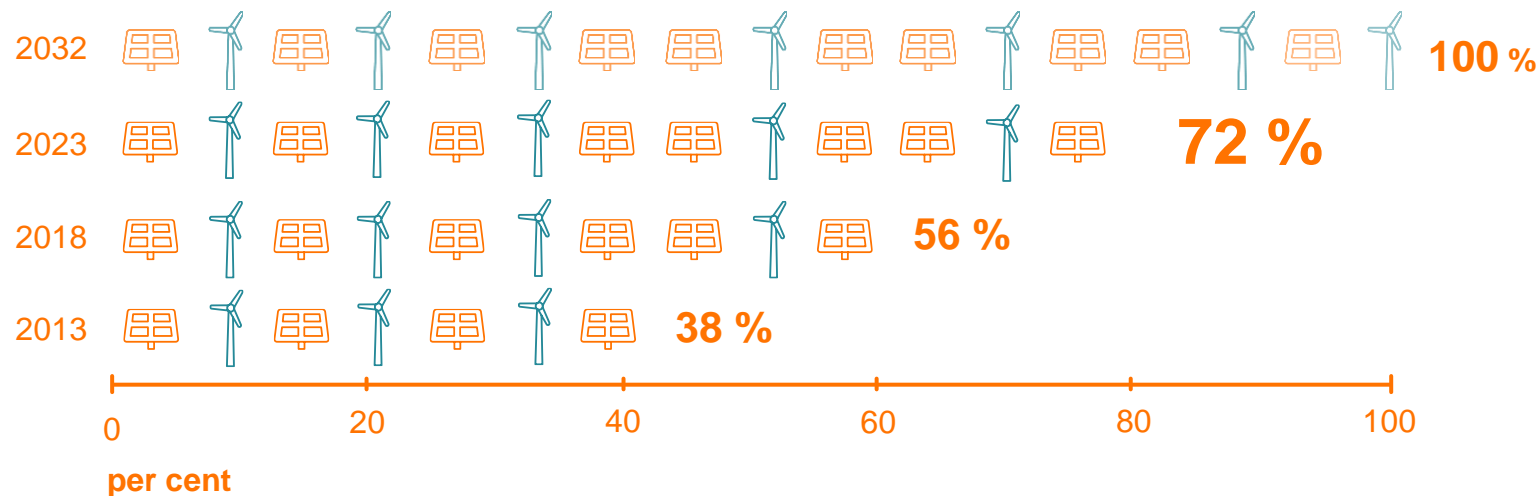
4



WHAT?



50Hertz increases investments for a climate-neutral society



RE generation 2023

68 TWh

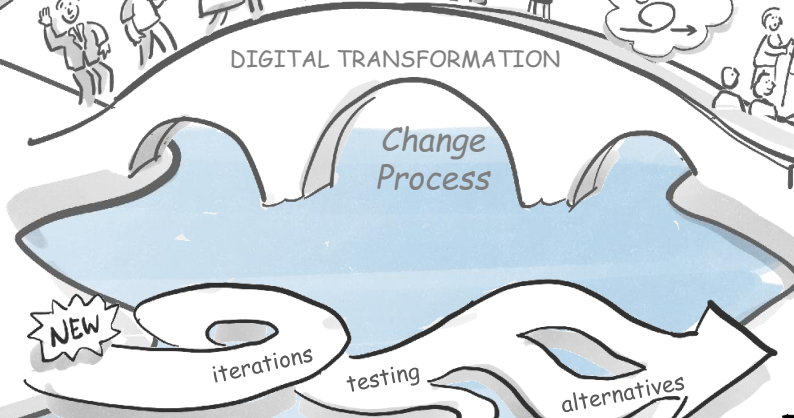
Electricity consumption
2023

94 TWh



Yesterday

Today



manual data synchronization

strong personal identification and feeling of responsibility

work-grounds

data redundancy

in depth know-how of current solution

costly maintenance

WEAKNESSES

vendor lock-in

no standard integration

others...

INTEGRATION PLATFORM

use cases across platforms

easy integration of new services

FUNCTIONAL SERVICES

Redispatch service

Load Frequency Service

Energy Management System

State Estimation

single point of truth

reuse n-to-n

Micro-services

big data

data lake

master data management

HW infrastructure

scalability

stakeholder identification and analysis

information & communication

success factors and barriers

mind-set/ agile thinking

training and development

Agile Process

culture of failure

Application Development Maintenance

Stakeholders

Group Innovation

IT-Security

Digital & Data Teams

System Operations

Group Infrastructure

Build for the future!

- PoC1
- PoC2
- MVP1
- Roll-out

Digital and innovative TSO!

parallel projects

vendor independency

A stable, reliable, performant and resilient house!

MCCS Platform Approach

<https://www.mccs.com/en/platforms>





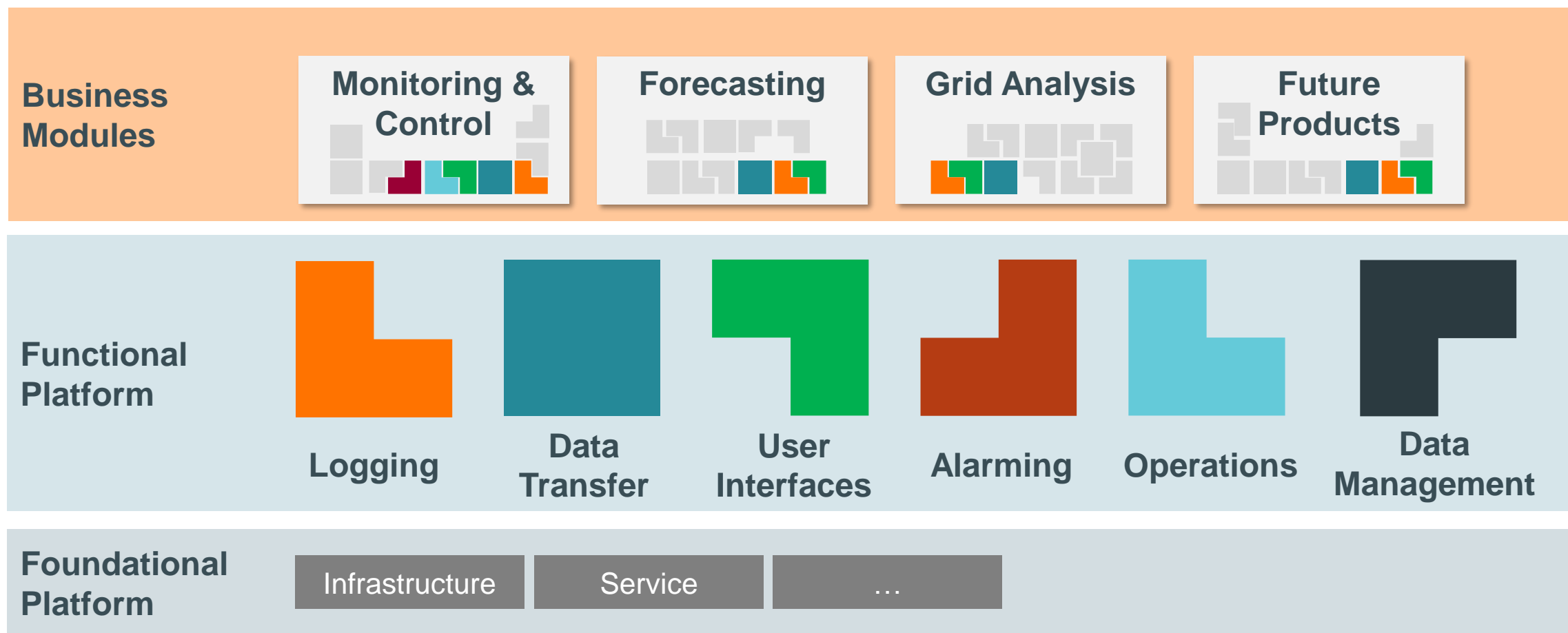
HOW?



1. Internal: - Digital Transformation



Product organisation that delivers re-usable & interoperable CC software



2. External :

- Co-Creation



To JOINTLY go where we have not gone before



TSOs



DSOs



Researchers



Generators



**Start-ups
& Cross Industry**



**Software companies
& Retailer**





WHEN?

NOW! Lets go live



MONITORING & CONTROL



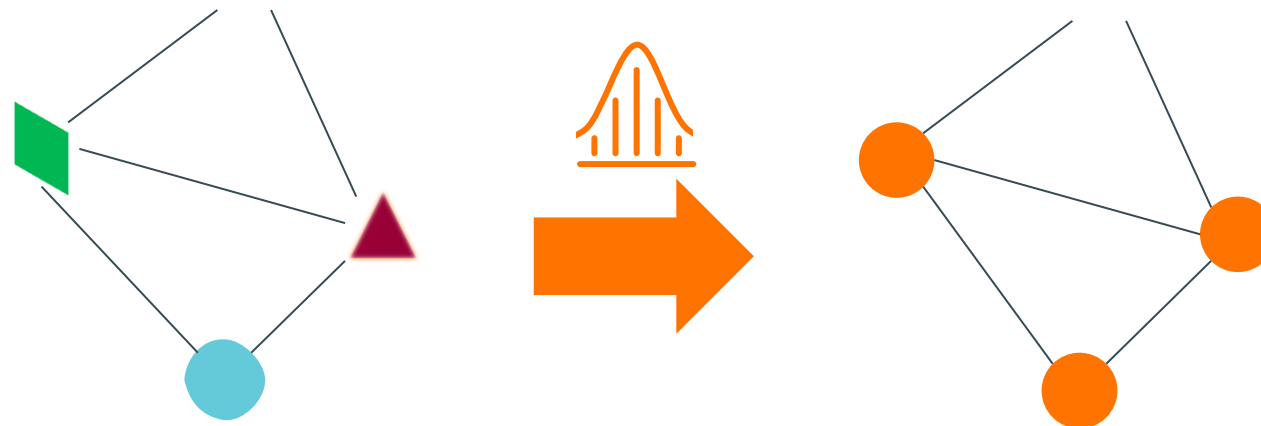
ALARMING



STATE ESTIMATION



The Power of State Estimation



**Measurements can be incorrect or missing.
State Estimation helps to determine the best possible picture of
what really is happening on the electrical grid.**

"A process to estimate the electrical state of a network by eliminating inaccuracies and errors from measurement data"*

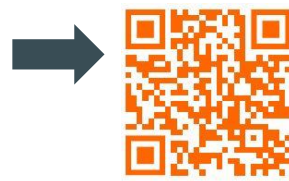
* <https://pandapower.readthedocs.io/en/v2.2.1/estimation.html>, 9.9.2024



Summary



Successfully digitizing the energy transition together



Scan me, join me!



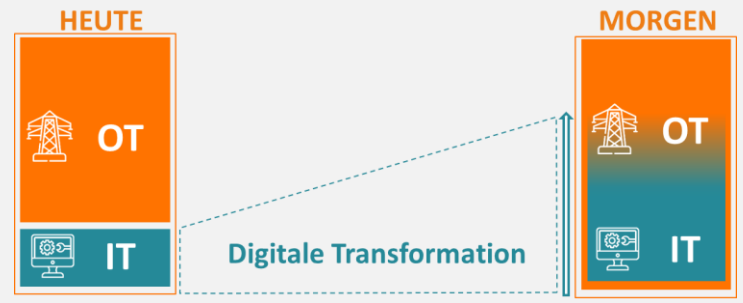
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3 Take-aways from delivering MCCS

1 Software not Slides



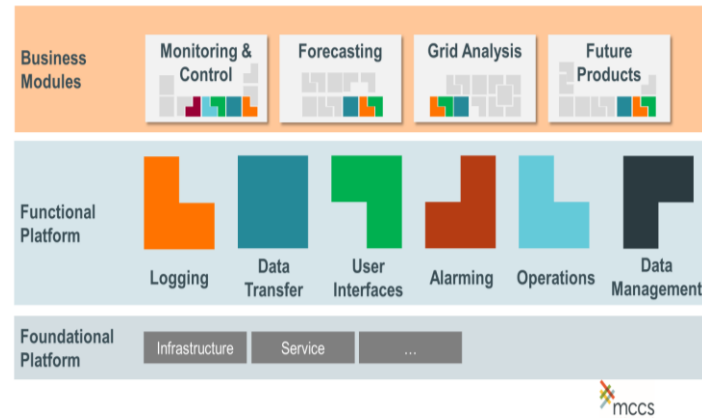
MCCS is not just a vision on slides but productive development of CC software



2 Modularity not Monolithic



Re-usability of components is basis for efficiency, flexibility and speed



3 Co-Creation not Lock-Ins



Cooperation & research is key



Let's digitize together

Reach Out



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