

NEXTGEN SCADA 2020

Modular Design

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SCADA Product Manager

MODULAR DESIGN

Agenda

- Who am I
- What is Energinet, Danish TSO
- Why Modular SCADA
- How Modular SCADA at Energinet
- Next step

MODULAR SCADA DESIGN

Who is Helge Nielsen

- Education
 - Electrical Engineer from the university of southern Denmark
 - Certified project Manager from Mannaz
 - MBA from Århus Business school
 - And a whole lot of different SCADA education
- Work experience
 - SCADA programmer
 - Project Manager in automation projects
 - Division director for automation
 - Product manager SCADA
 - So; more than 20 year of experience within the SCADA area



GROUP

Energinet is a group of companies with a workforce of around 1,550 split between 11 locations.

Our head office is in Fredericia.

Our mission is to provide reliable energy for society. Our vision is to achieve balance in a sustainable energy system.



WE ARE WORKING FOR YOU

Energinet is responsible for ensuring that Denmark is supplied with gas and electricity, both today and in the future.

We safeguard society's interests as we move to a 100% green energy system.

We are owned by the Danish Ministry of Climate, Energy and Utilities.



THE WORLD'S BEST ENERGY SYSTEM

Denmark ranked #1 out of 125 countries in 2016, 2017 and 2018



GREEN RECORDS

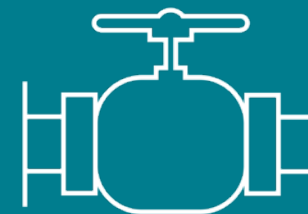
49% wind and solar power
in the electricity grid in
2019

9% biogas in the gas grid
in 2018



ELECTRICITY 99.99% OF THE TIME

11 seconds of
unserved electricity in
2018



GAS ALWAYS ON TAP

Zero gas supply failure
in 2018

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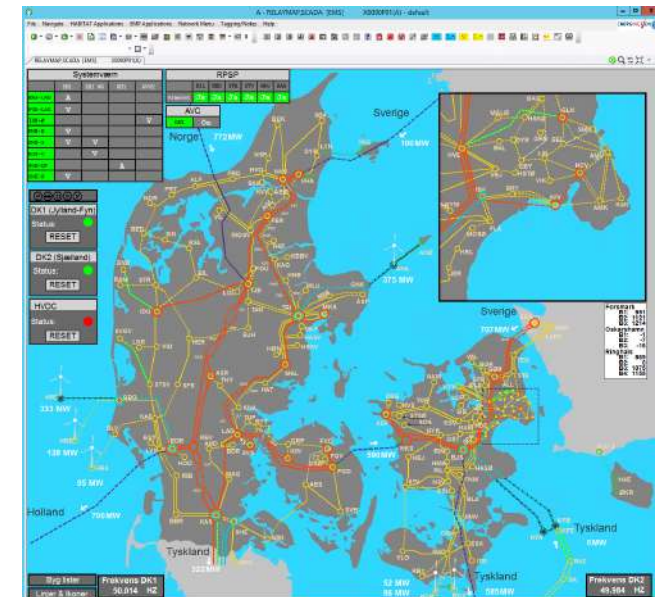
WHY?

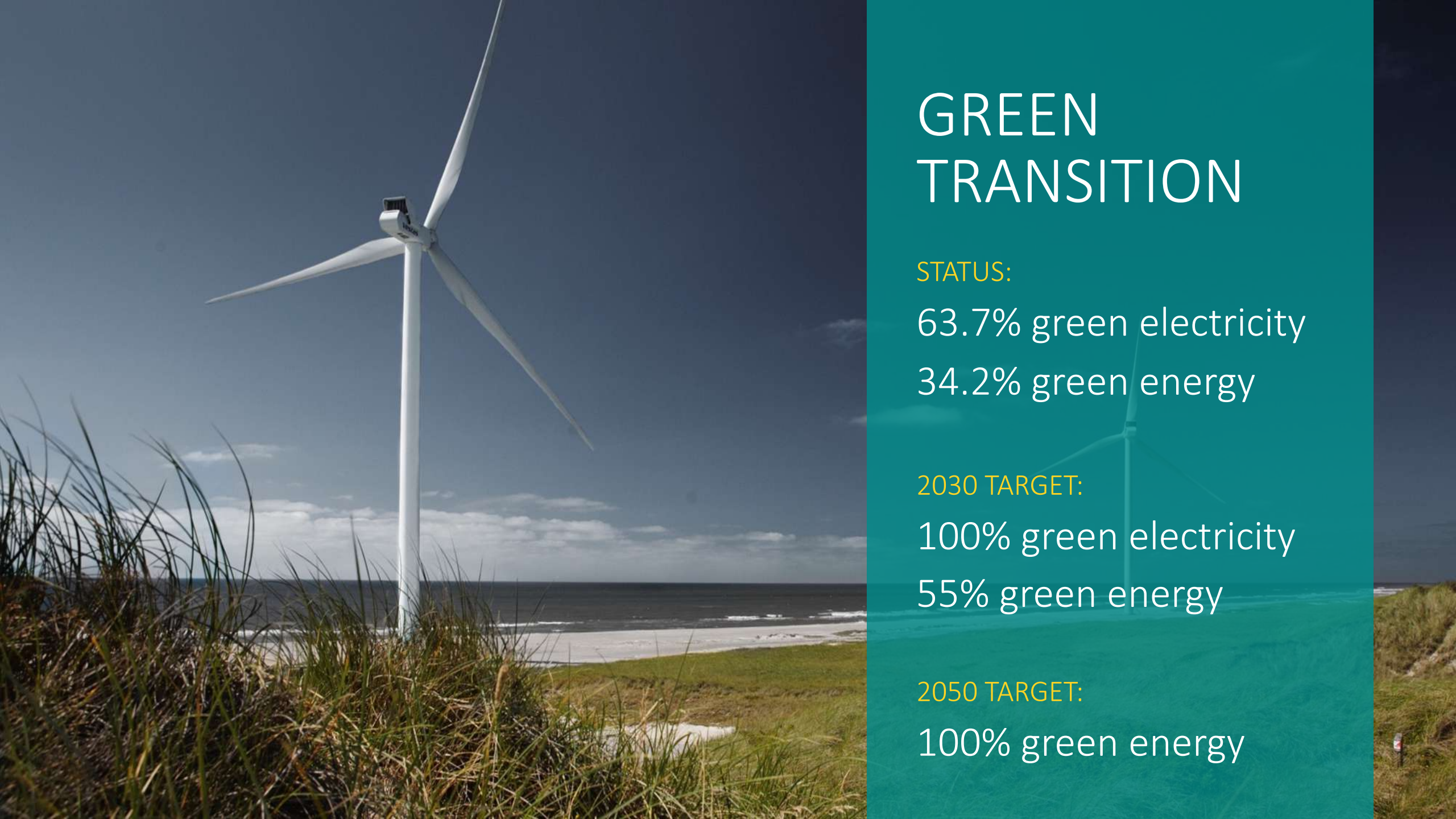


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SCADA system in operation

- Is it because the existing SCADA system is bad ?
- Is it because there is a lot of defect in the existing SCADA system ?
- Is it because the existing SCADA model is bad ?
- Is it because the existing SCADA system is outdated ?
- NO, not at all !!!!!!!!!!!!!!!
- But we need to be more agile to achieve the goals





GREEN TRANSITION

STATUS:

63.7% green electricity

34.2% green energy

2030 TARGET:

100% green electricity

55% green energy

2050 TARGET:

100% green energy

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Trend 1: Energy across borders



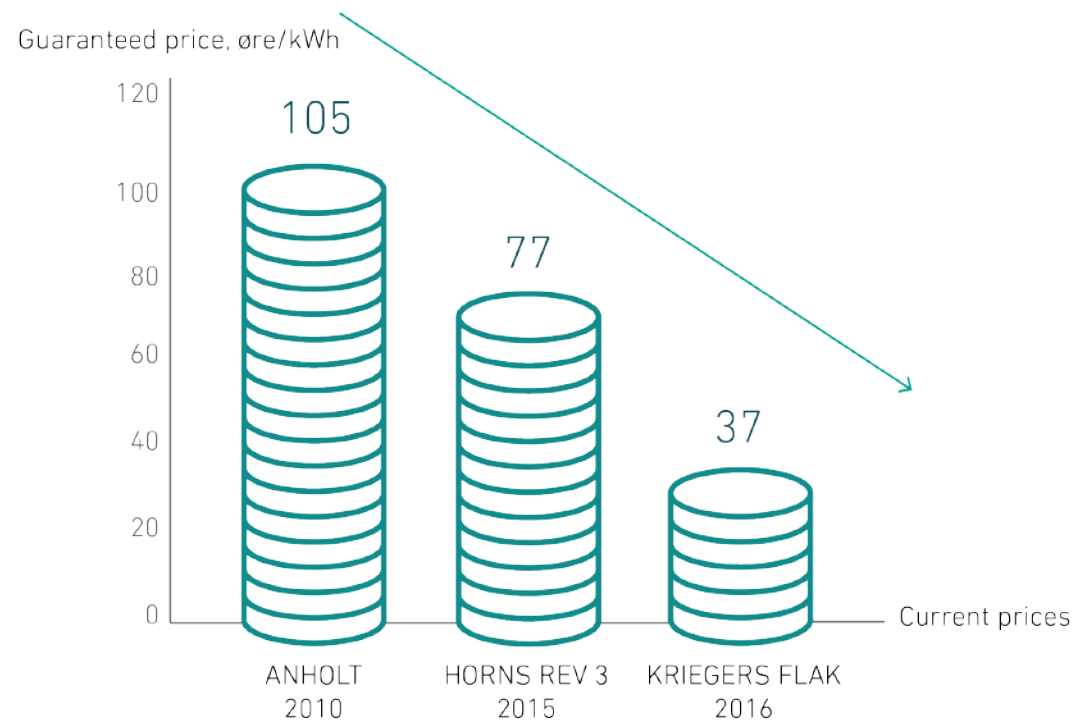
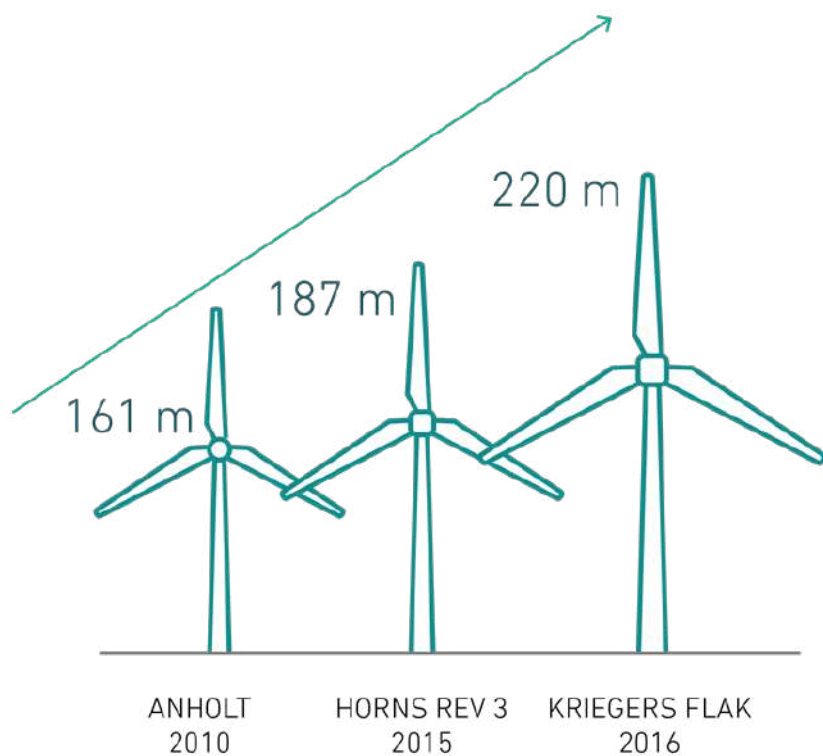
NATIONAL RULES AND
SOLUTIONS



EUROPEAN RULES AND
SOLUTIONS

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Trend 2: Green energy without subsidies

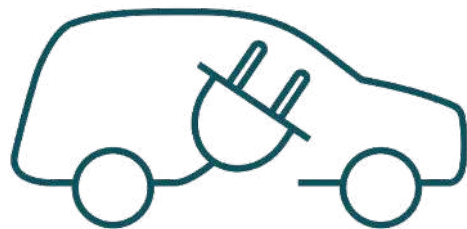


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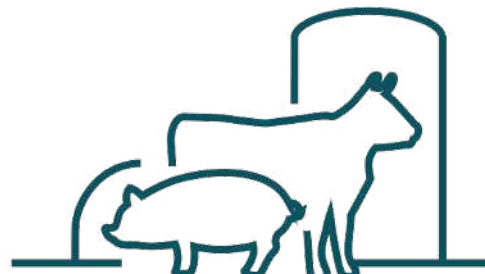
Trend 3: New technologies are developed



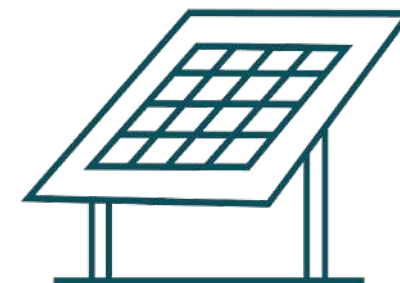
BIG DATA



ELECTRICITY FOR
TRANSPORT



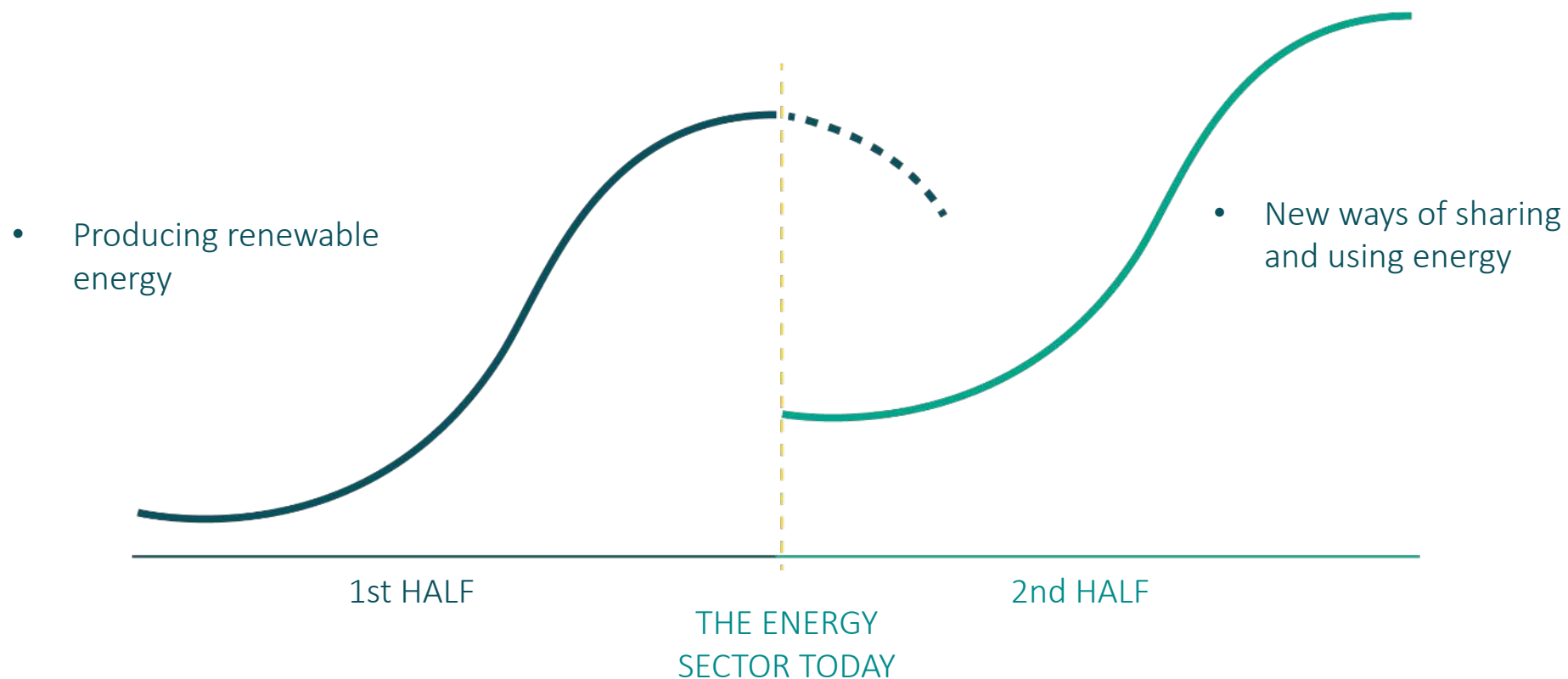
GREEN GAS



SOLAR CELLS

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From 50% to 100% green energy



ENERGINET'S ESTABLISHED TOOLS

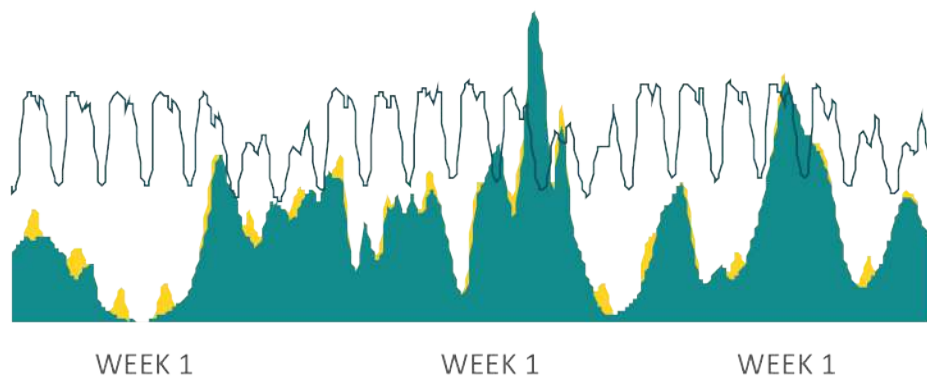
- Strong grid and interconnections
- International electricity and gas markets
- Specialised analyses and models
- Long-term planning

NEW TOOLS FOR THE 2ND HALF

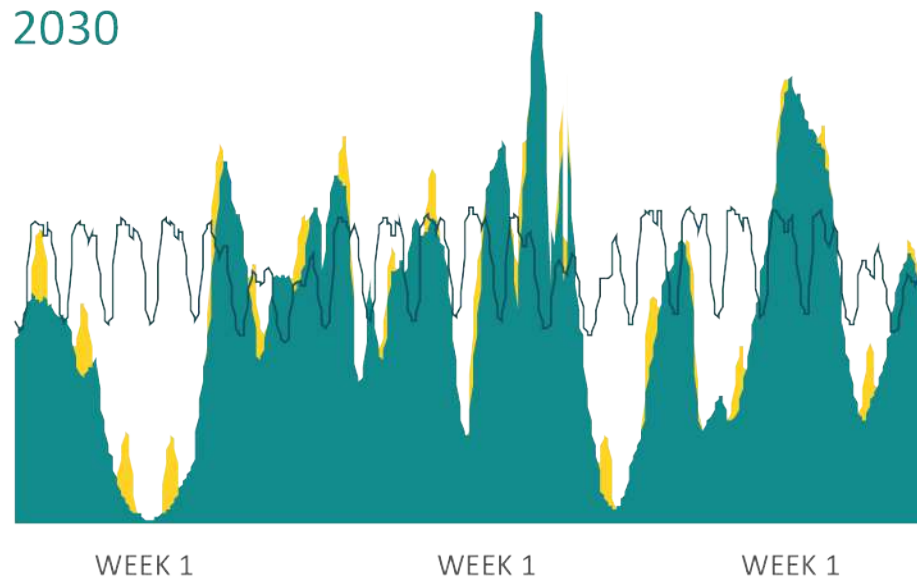
- Sector coupling (electricity, gas, heating, transport)
- Flexible consumption
- Digital business models
- New players and partnerships

CONSUMPTION AND GENERATION ARE OUT OF STEP

2019



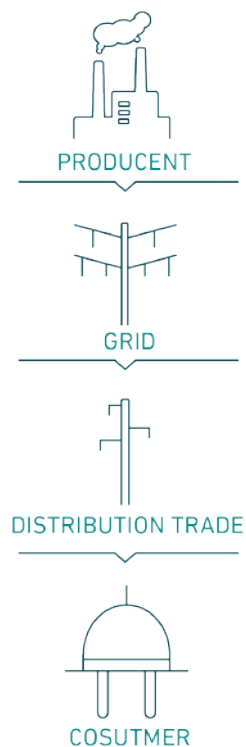
2030



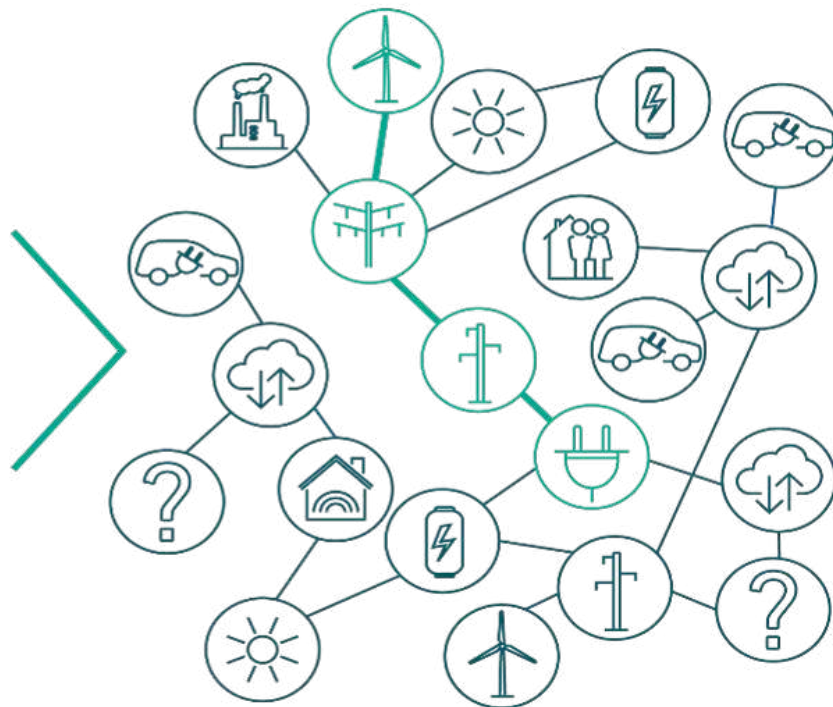
— Power consumption ■ Wind power ■ Solar power (PV)

OLD ASSUMPTIONS CHALLENGED

BEFORE



In



Electricity ~~cannot~~ ^{can easily} be stored economically

Electricity and gas consumers ~~are passive (inflexible)~~ ^{are active and flexible}

Green energy needs ~~subsidies~~ ^{no} to survive

~~Everyone receives~~ the same product in terms of security of supply
^{Not everyone receives}
 or wants

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HOW?



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SCADA vision

Q1 2018

New
SCADA
vision



ENERGINET



Energinet will have a SCADA system that is "Best in Class" and be ready to operate a 100% renewables based grid, with a unlimited number of HVDC connections (full scalable system)

Platform independent and with main focus on integrating instead of incorporating.

With "world class" cyber security.

Predictive Intelligence that can run the grid to the edge automatic with edge limits defined by Energinet.

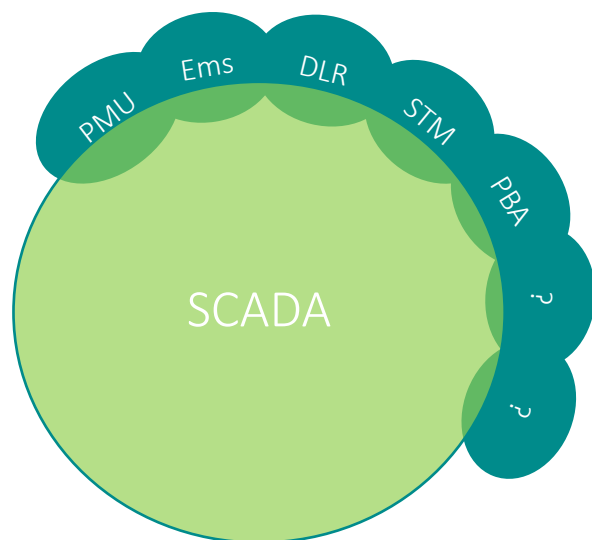
Data acquisition capable of handling the number of data from digital substations and IOT



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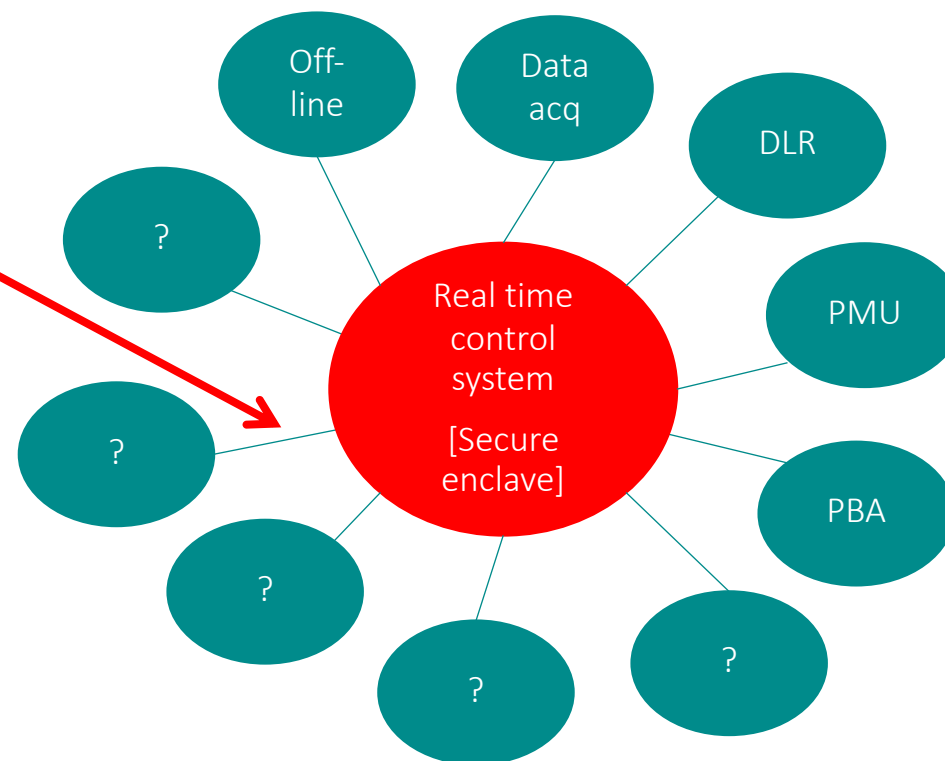
Direction

Today



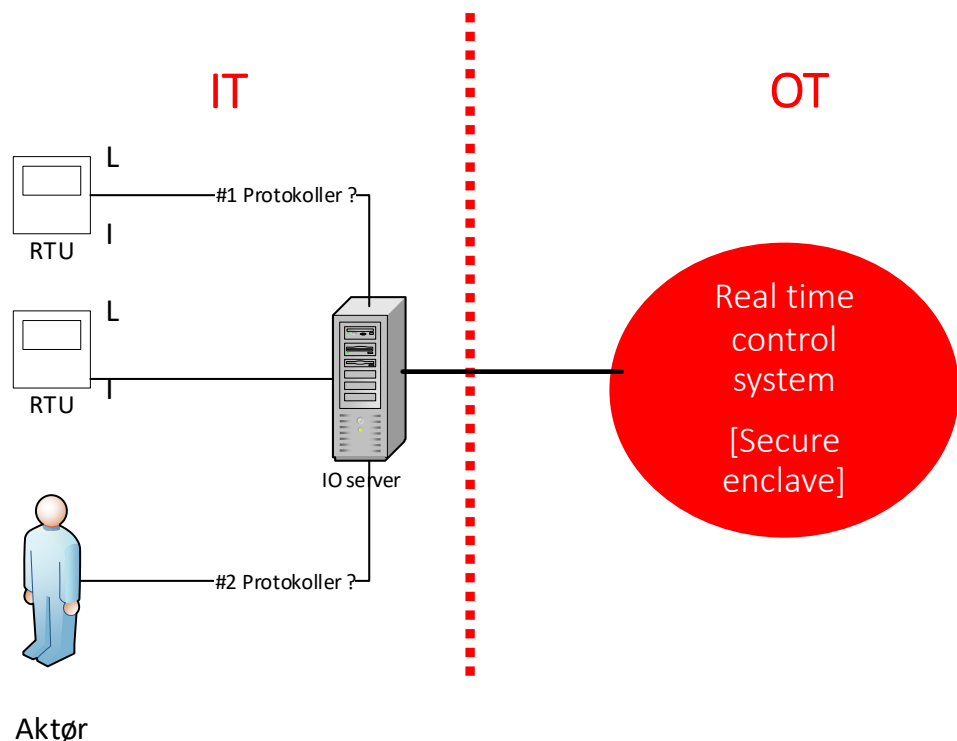
Standard integration
vendor independent!!

Tomorrow

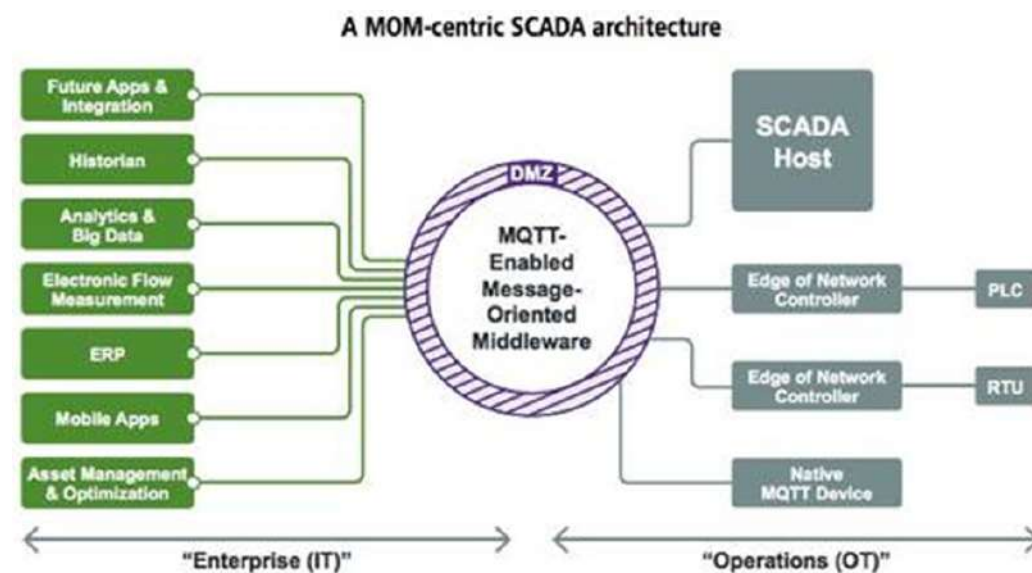


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1. Idea "Realtime datalake"



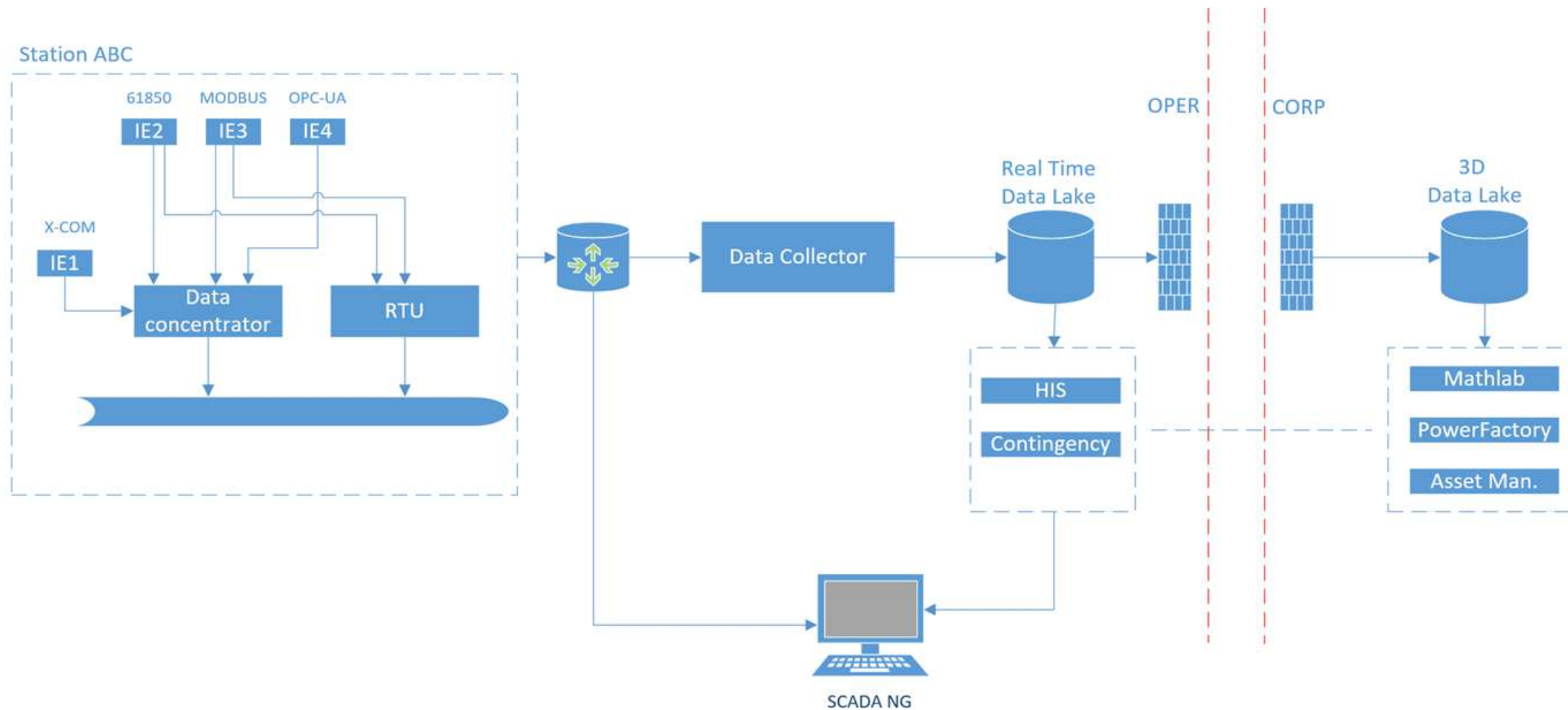
1. idea on whiteboard



1. idea translated to IT people

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And some iterations latter



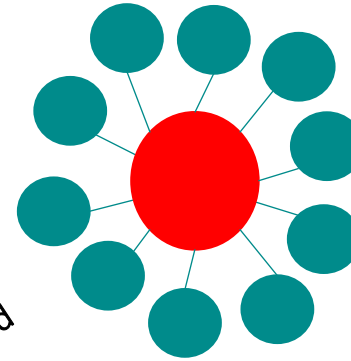
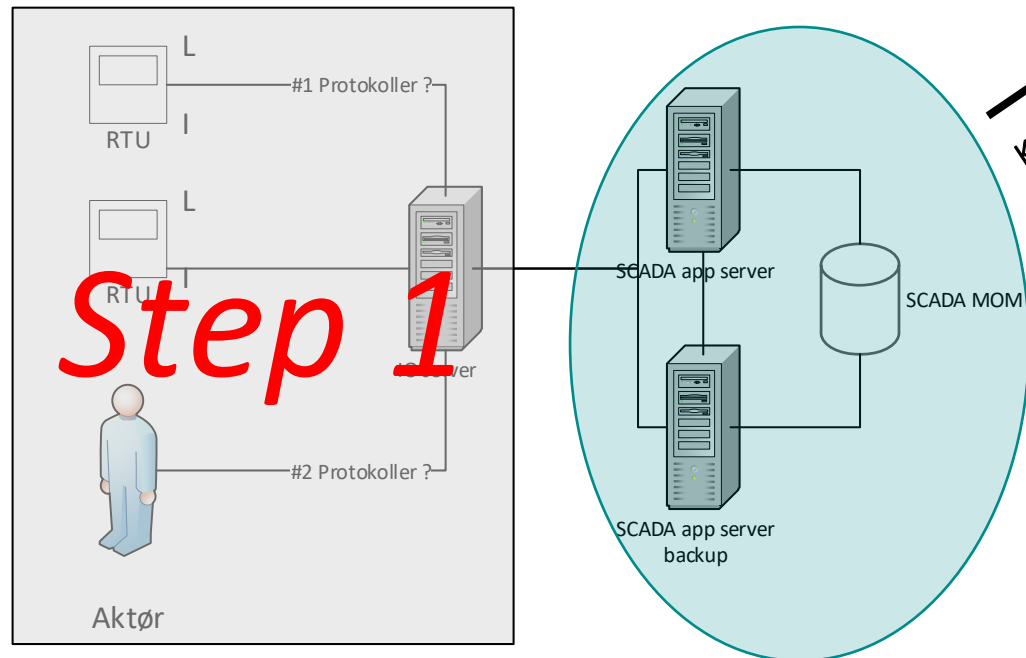
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Next step



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1. Idea "Realtime datalake"

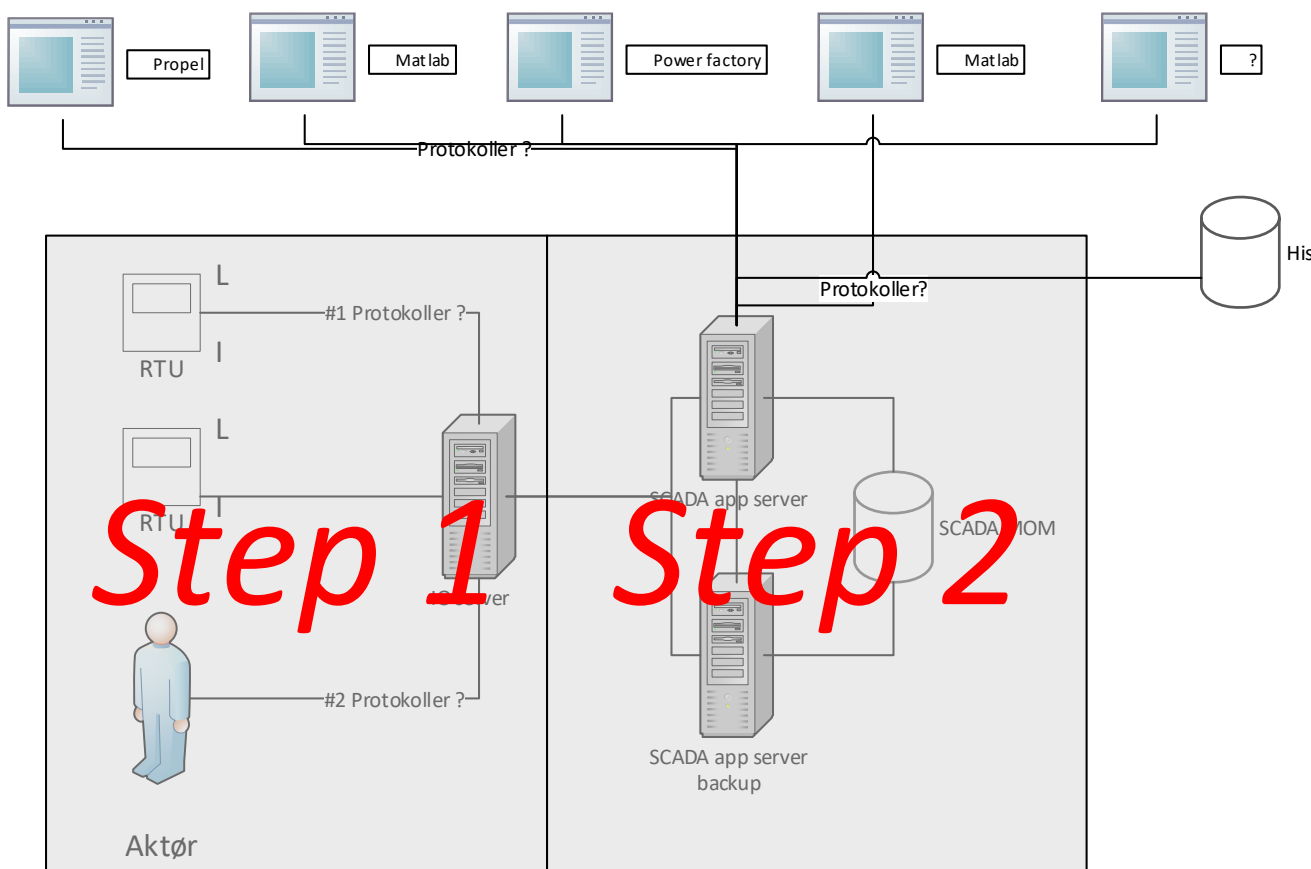


- Off the shelf system without customization, so a lot of whitepapers from different suppliers have to be read or maybe open source
- Standard of the shelf system that solves the task in the best possible way without customization or maybe open source

1. idea on whiteboard

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1. Idea "Realtime datalake"



1. idea on whiteboard

QUESTIONS



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