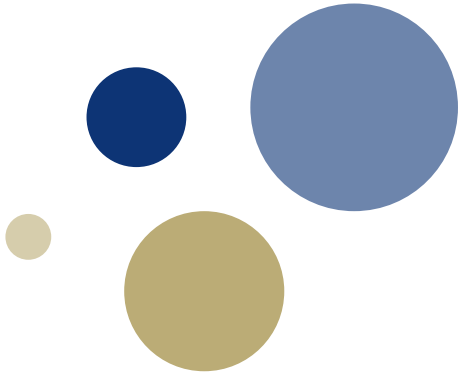
NTNU

Norwegian University of Science and Technology



D 4.1.1 Analysis of IoT Sec Ecosystem

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Planned contribution

To define an ecosystem of IoTSec:

- Define groups of stakeholders
- Populate those groups with members
  - Define main companies
  - Explore their products\services
  - Perform precise classification
- Establish relations between groups
  - Discover relations
  - Define “thickness of relations” by exploring them in detail
- Position SGSC on this graph
- Analyse what is considered to be outside of the research and industrial applicability

Defined groups of Stakeholders

1. Production of energy
2. TSO
3. DSO

4. Security companies
5. Software development
6. Consulting

7. Manufacturers of “smart meter value chain”

8. Legislative
9. Research

8. Prosumers\ Customers

Legislative

- Government
  - Norwegian Water Resources and Energy Directorate (NVE)
  - Norsk Elektrisk komite (NEK)
- Trade Unions
  - Energi Norge
- Company unions
  - Nettalliansen
  - KS Bedrift Energi
  - Sol Energi Klyngen
    - Unite companies producing solar power for better cooperation
- Private organizations
  - Rasjonell Elektrisk Nettvirksomhet AS (REN AS)

NVE
(security regulations from Sept. 2012)

- Section A: General security requirements to DSOs
- Section B: Regular Risk analysis, with reaction: training and review
- Section C: Access control
- Section D: Incident Handling procedures

- AMS security incident can have direct impact: disruption of electricity supply => important
- ...no clear regulation regarding privacy of customer data.

NVE
(IS department)

- Main responsible department for development of IS regulations is Beredskapsseksjonen
- So far they had responsibility for sec. of SCADA
- According to draft of regualtions (31 March 2017) the same department will take over security of AMS

Sol Energi Klyngen

- Goal (solar energy market)
  - Strengthen the Norwegian partners' innovation capacity and competitiveness
  - take a bigger share of the global energy market
- Method
  - Unite energy companies, R&D organizations and educational institutions
- Market areas of the cluster are:
  - Sustainable production of materials
  - Building-integrated solutions
  - Micro-distribution
  - Energy systems
  - Energy services
- Cooperation
  - NCE Smart
  - Smart Grid Center

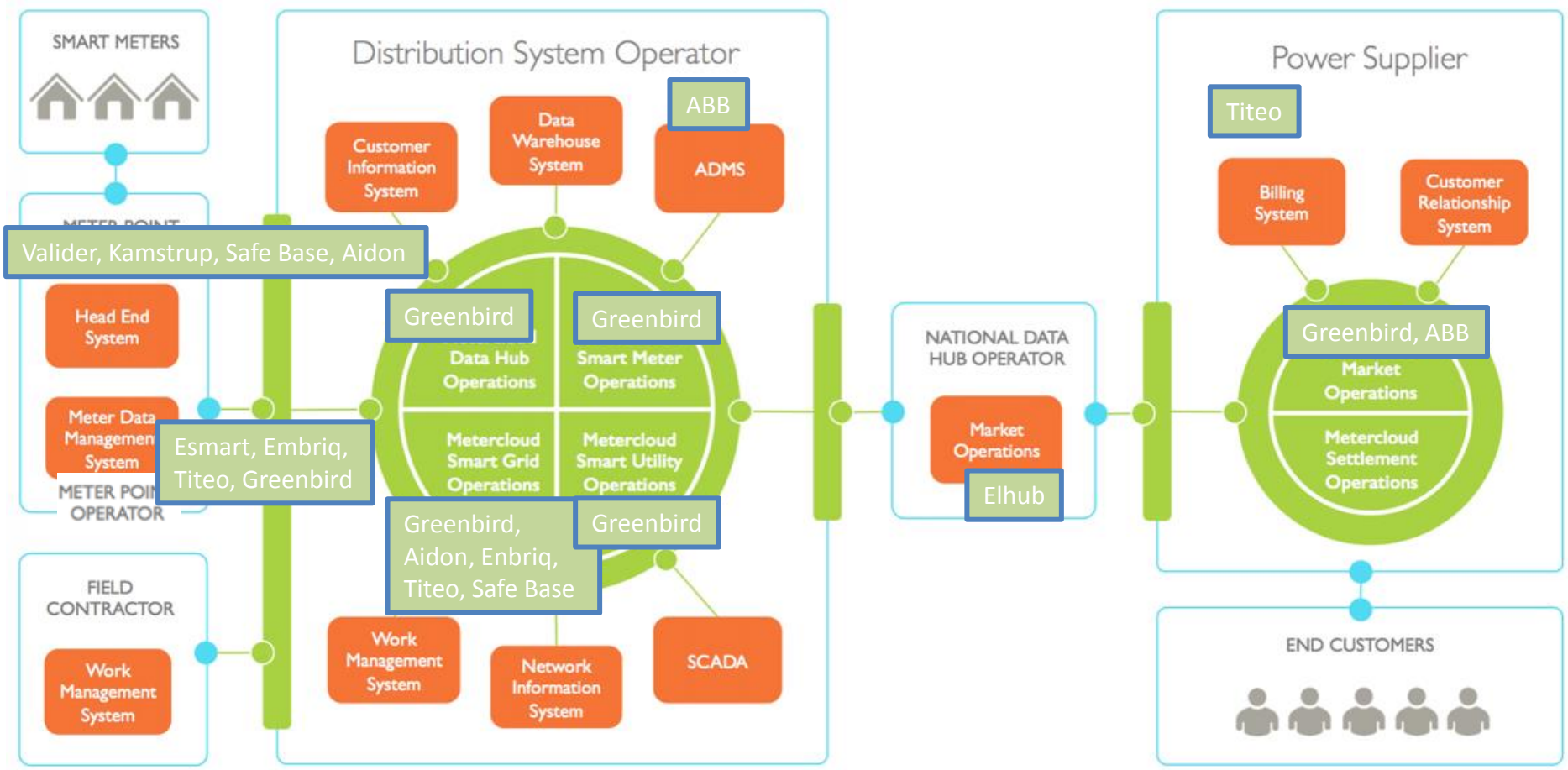
Smart Grid Center Trondheim

- Establishment
  - 2013, as a result of recommendation from OED
  - NTNU and SINTEF were (are) main research partners
- Goal
  - Center (organized as a membership organization) has an aim to be a main coordinator of the research activities in the area of Smart Grids
- Activities
  - Develop demo sites for research and testing of smart grid projects (Smart Grid National Library)
    - **Smart House demonstration**
    - **Smart Energy Hvaler**
  - Exchange knowledge and promote robust solutions for AMS
  - Focus on standardization and interoperability of smart grid solutions
  - Promote activities within security and reliability of Smart Grids.
    - **Not yet started due to many activities in other areas**

Rasjonell Elektrisk Nettvirksomhet AS (REN AS)

- Establishment
  - owned by 61 DSO
  - Members of the board include: Hafslund Nett AS, Lyse Elnett AS, BKK Nett AS, etc. as well as trade unions Energi Norge
- Goal
  - to develop and promote recommendations (sometimes standards) for energy companies aiming to increase efficiency of operation and quality of services
- Activities
  - Accumulate and publish industries best practices in form of REN blader, related to areas of :
    - Projecting
    - Installation
    - Maintainance
  - conduct external and internal courses
  - Information Security
    - REN does not issue any standards\ recommendations related to IT security

Software development



Safe Base

Products:
- Head-end system
- Monitoring system at DSO`s Smart Grid operation site

Goal
- predict failures on low voltage power lines
- determine actual point of failure on the line

Instrument
- artificial intelligence

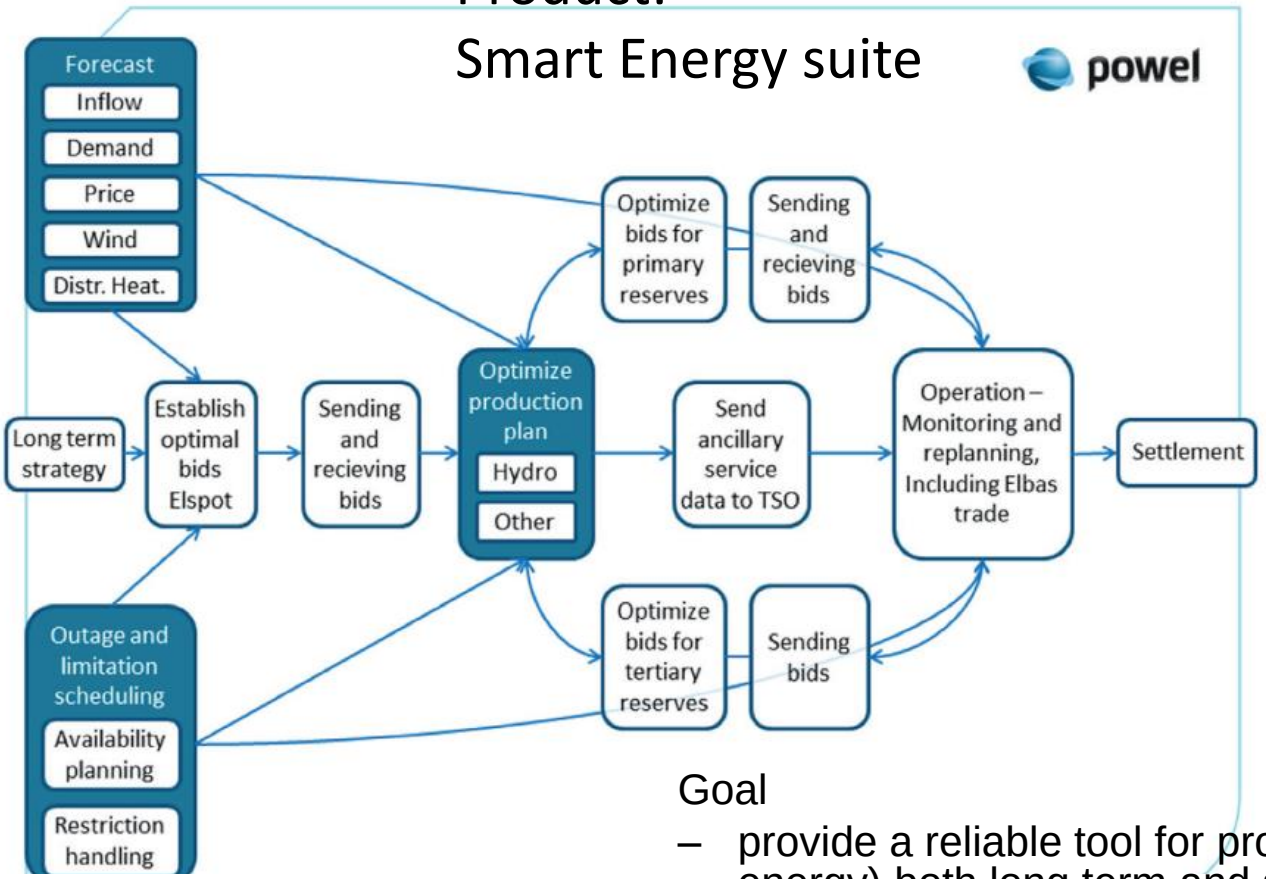
Claimed effect
- increase life expectancy of grid up to 10 years

Cooperation
- NVE (almost none)
- REN
- Smart Grid Center

http://safebase.no/

Powel

Product:
Smart Energy suite



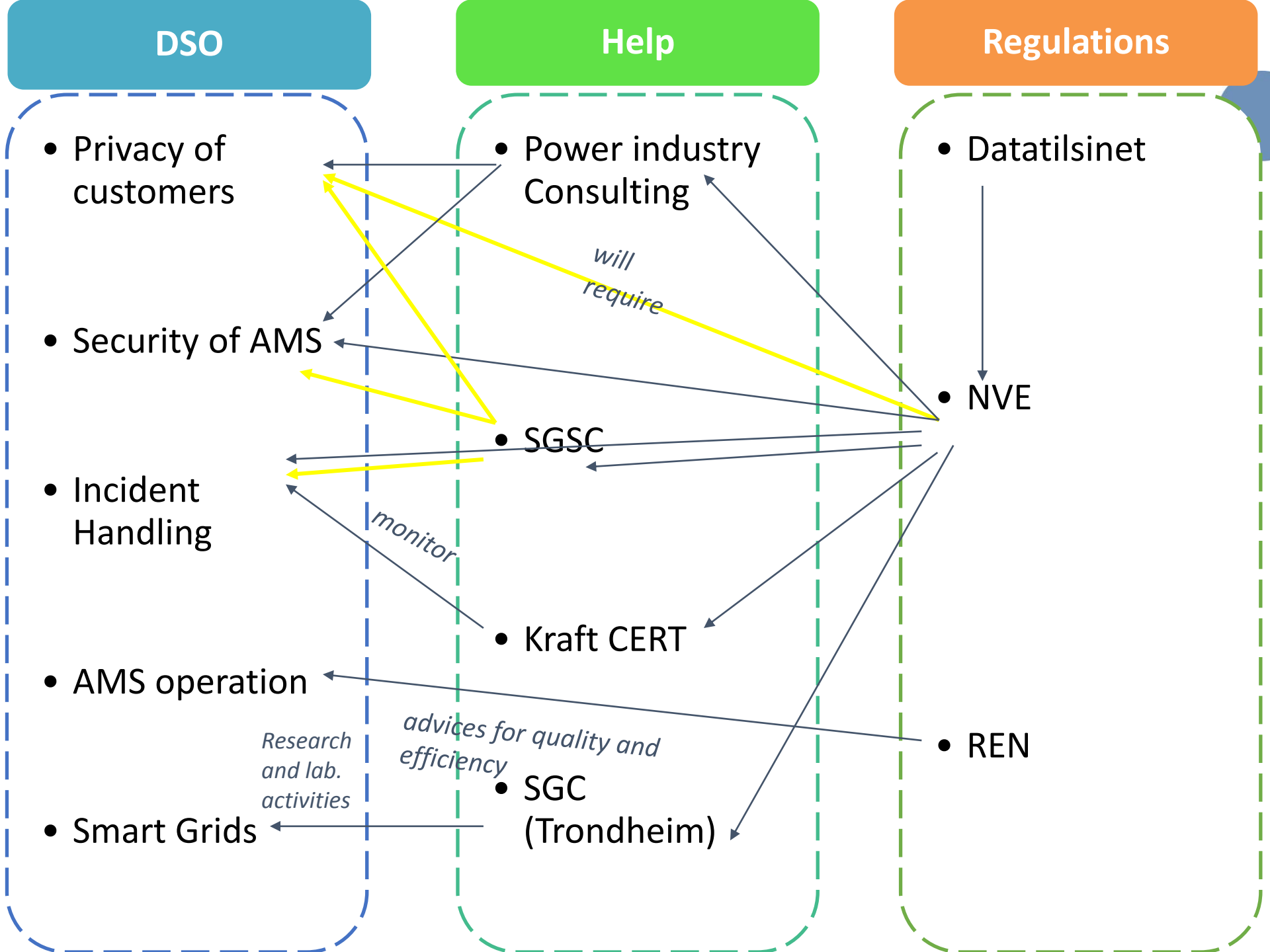
Goal

- provide a reliable tool for production planning (hydro energy) both long term and short term

Input

- forecasting mechanisms and trading data (Elsopt, Elbas)

https://www.powel.com/globalassets/product-information/smart-energy/wp-smart-energy---for-hydro-power.pdf


DSO
Help
Regulations
Privacy of customers
Security of AMS
Incident Handling
AMS operation
Smart Grids
Power industry Consulting
SGSC
Kraft CERT
SGC (Trondheim)
Datatilsinet
NVE
REN
will require
monitor
advices for quality and efficiency
Research and lab. activities

Thank you for attention!