

# Liander LiveLab

## A living lab for the distribution grid

April 25, 2012  
Alfons Lansink

*IEA DSM Agreement, Task XVII  
Integration of DSM, DG, RES and storages*

# There are many questions about the deployment and potential advantages of a smart grid



## het digitale net

Het digitale E-net bestaat uit de volgende onderdelen:

- 1 Gedigitaliseerde bedrijfsvoering**  
houdt het net 24 uur per dag in de gaten met elektronische systemen en schermen.  
Project Llander DMS
- 2 Intelligent onderstation**  
Intelligent gemaakt door computer- en sensortechnologie (SASensor).  
Project SA Llander
- 3 Intelligente middenspanningsruimten**  
Intelligent gemaakt door computer- en sensortechnologie.  
Project I-Net
- 4 Flexibele ringvoeding netstructuren**  
waarop tweerichtingverkeer mogelijk is.  
Project I-Net
- 5 Slimme meter**  
in de woningen geeft inzicht in het energieverbruik.  
Project uitrol slimme meter
- 6 Telecom netwerk**  
naar alle aansluitpunten.  
Project uitrol slimme meter

Which instrumentation is required in the medium voltage stations ?

Which data can be provided and what is the reliability of this data ?

What is the value of data for fraud detection, power quality, failure location detection, etc. ?

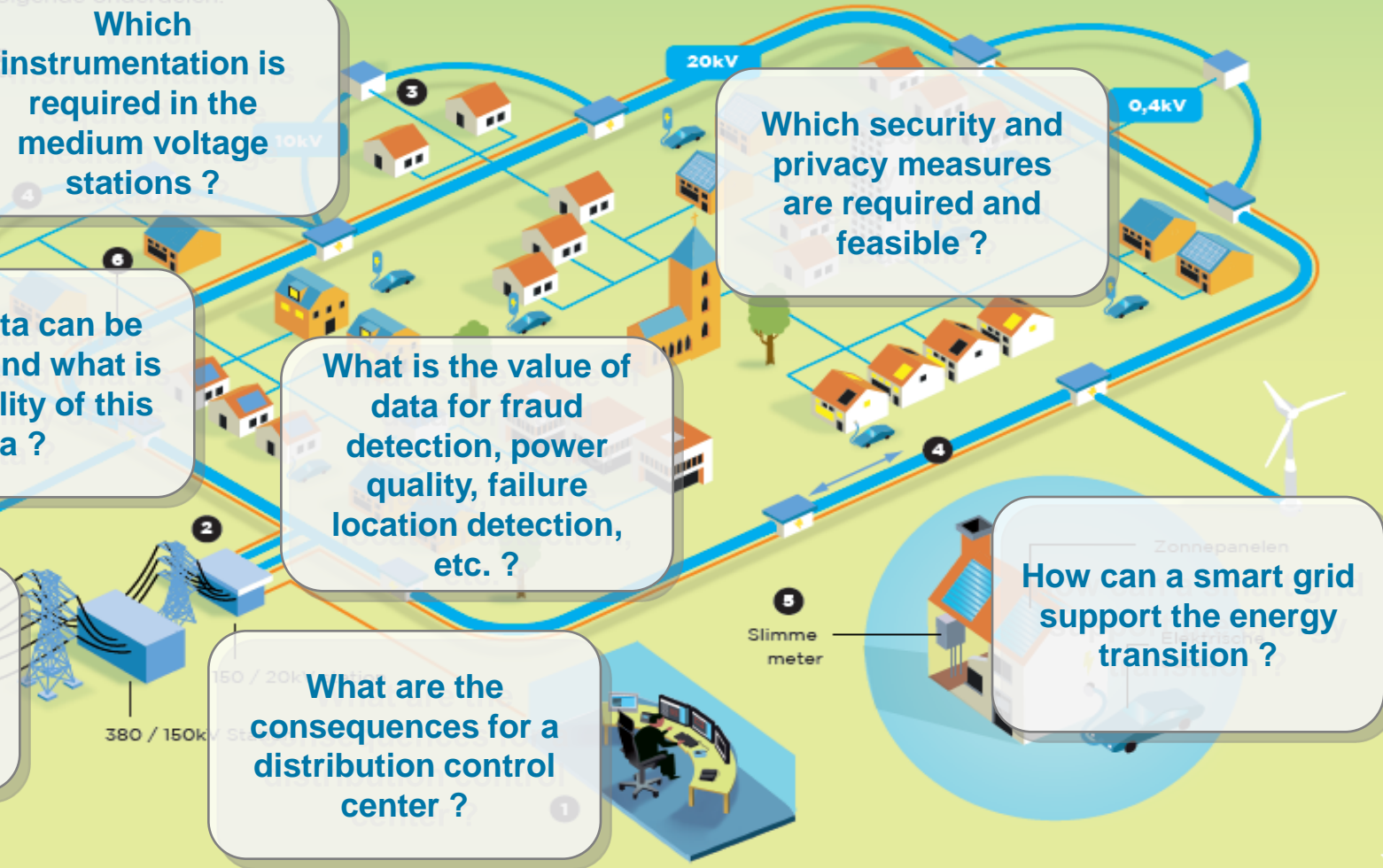
Which security and privacy measures are required and feasible ?

How should maintenance of the smart grid be organized ?

What are the consequences for a distribution control center ?

How can a smart grid support the energy transition ?

Alliander bouwt aan het digitale E-net. Enerzijds zorgt dit net voor betere besturing en beheer. Anderzijds heeft het nieuwe net voordelen voor de klant, zoals minder en kortere stroomstoringen en verbeterde mogelijkheid tot teruglevering aan het net.



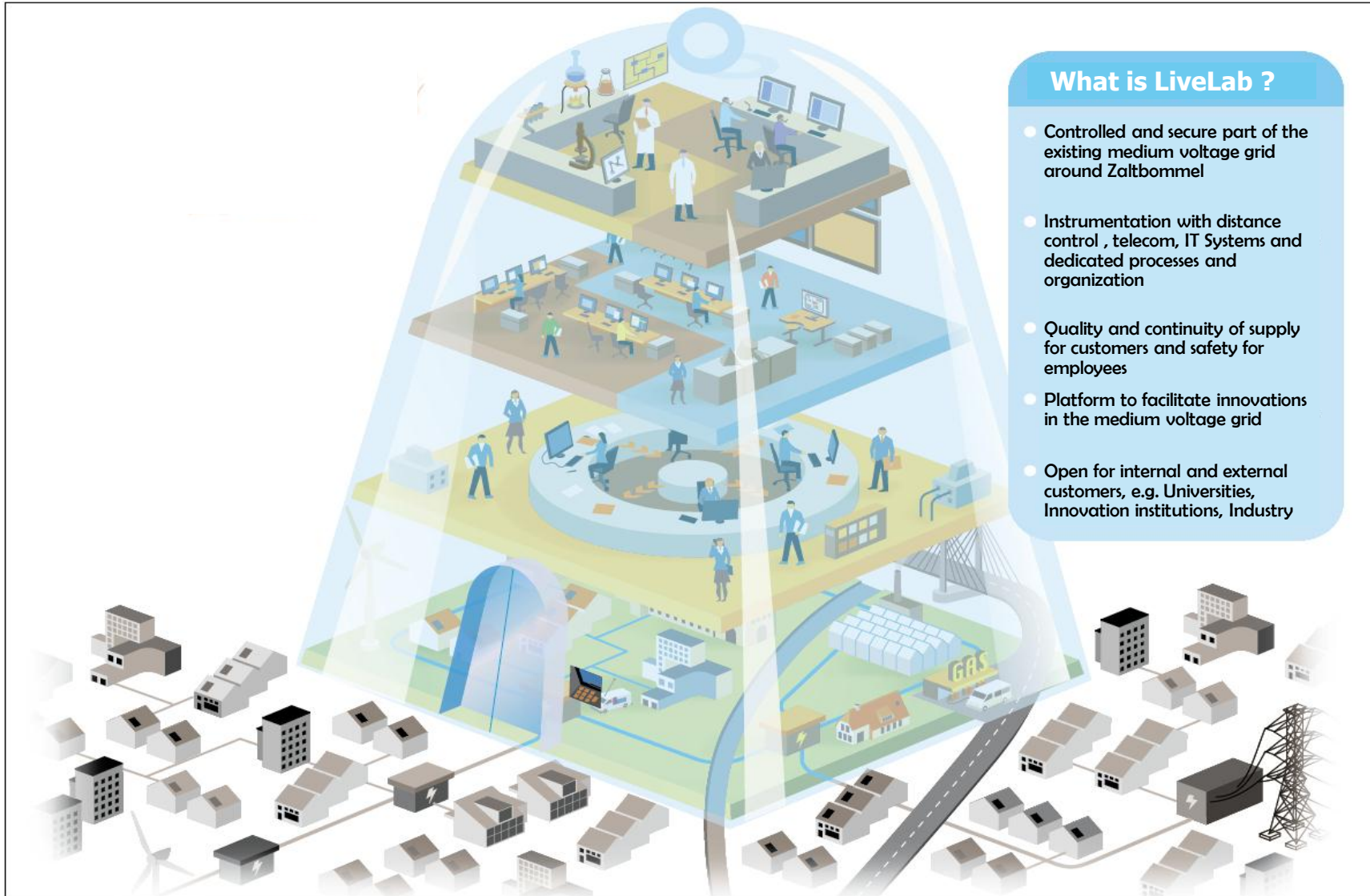
# The Liander LiveLab is a valuable asset in helping answering these questions



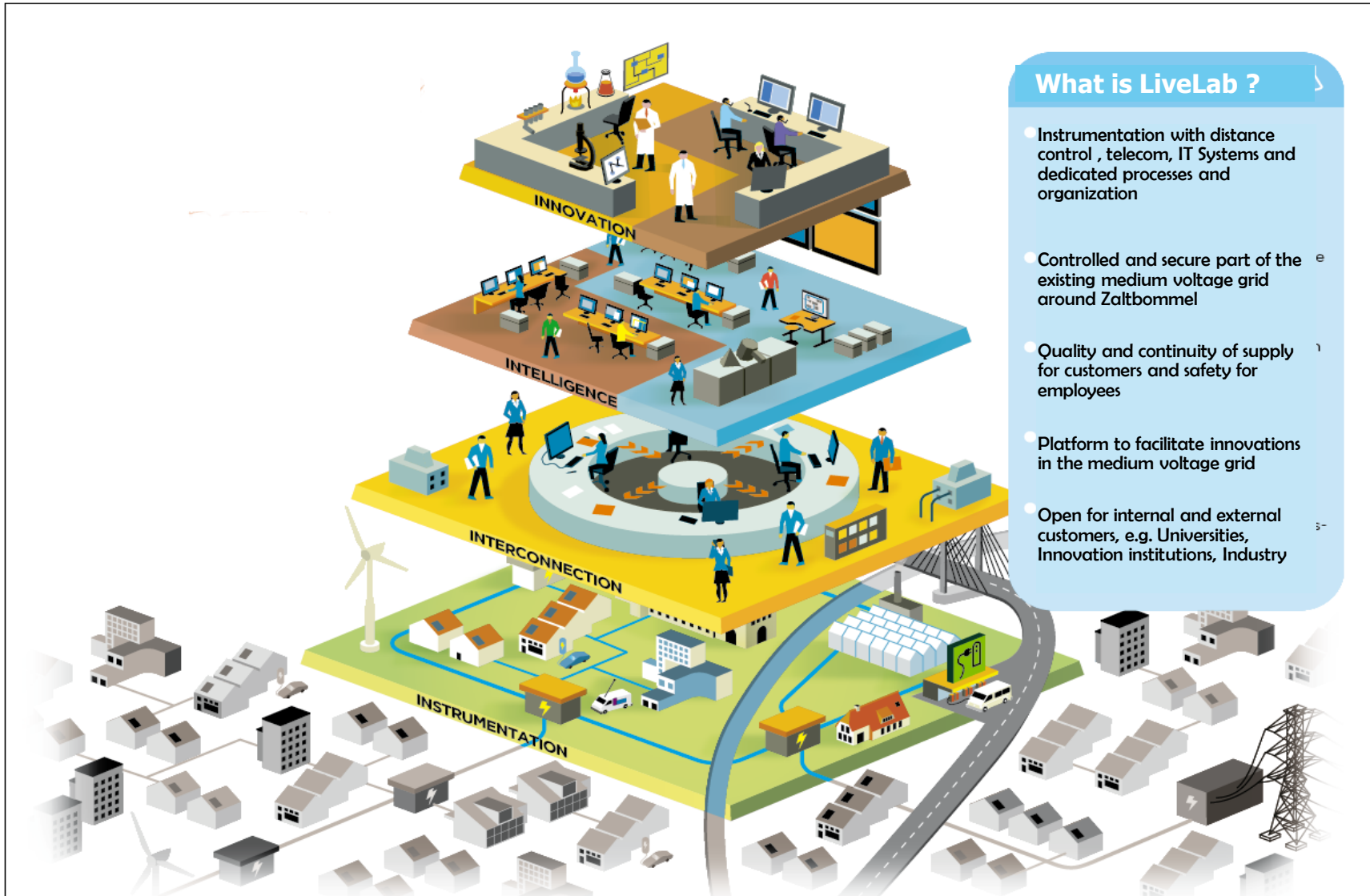
## Characteristics:

- End-to-end chain, from the instrumentation in the medium voltage stations to the central IT Systems (and vice versa)
- In an operational part of the medium voltage grid ('real' operational data):
  - Charging stations
  - Island operation, Decentral power generation (by market gardeners)
  - Residential area
- Dedicated monitoring and maintenance of the chain
- Flexible, adjustable infrastructure
- Available for internal and external users (customers)

# What is LiveLab ?



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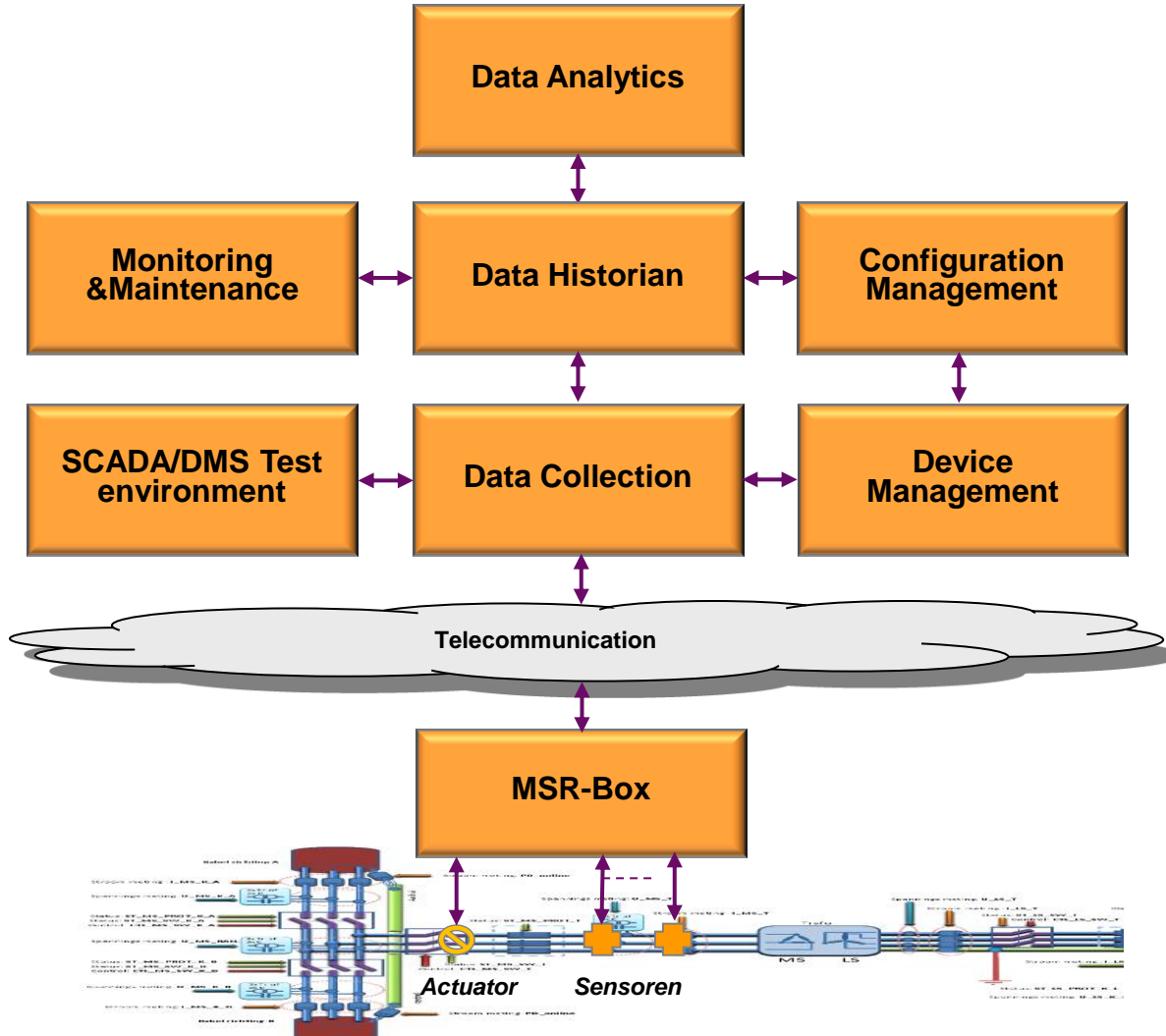


# LiveLab High-Level Architecture



LiveLab Customers/Users

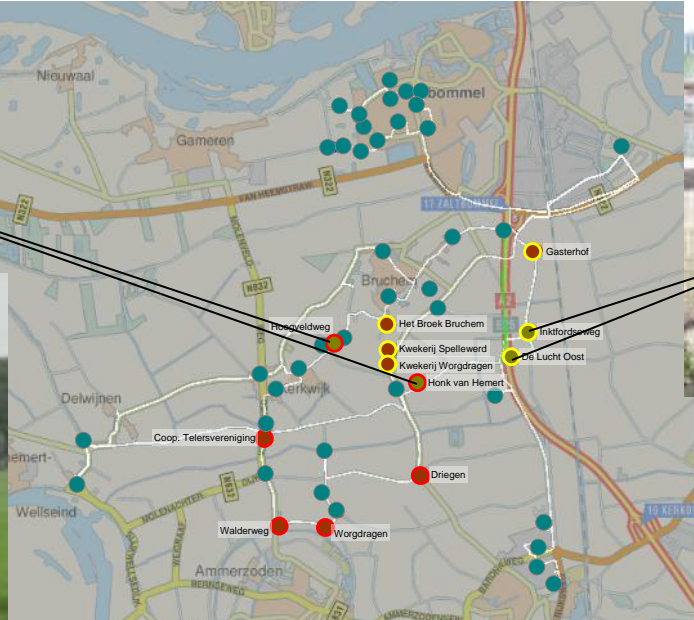
Direction & Maintenance processes



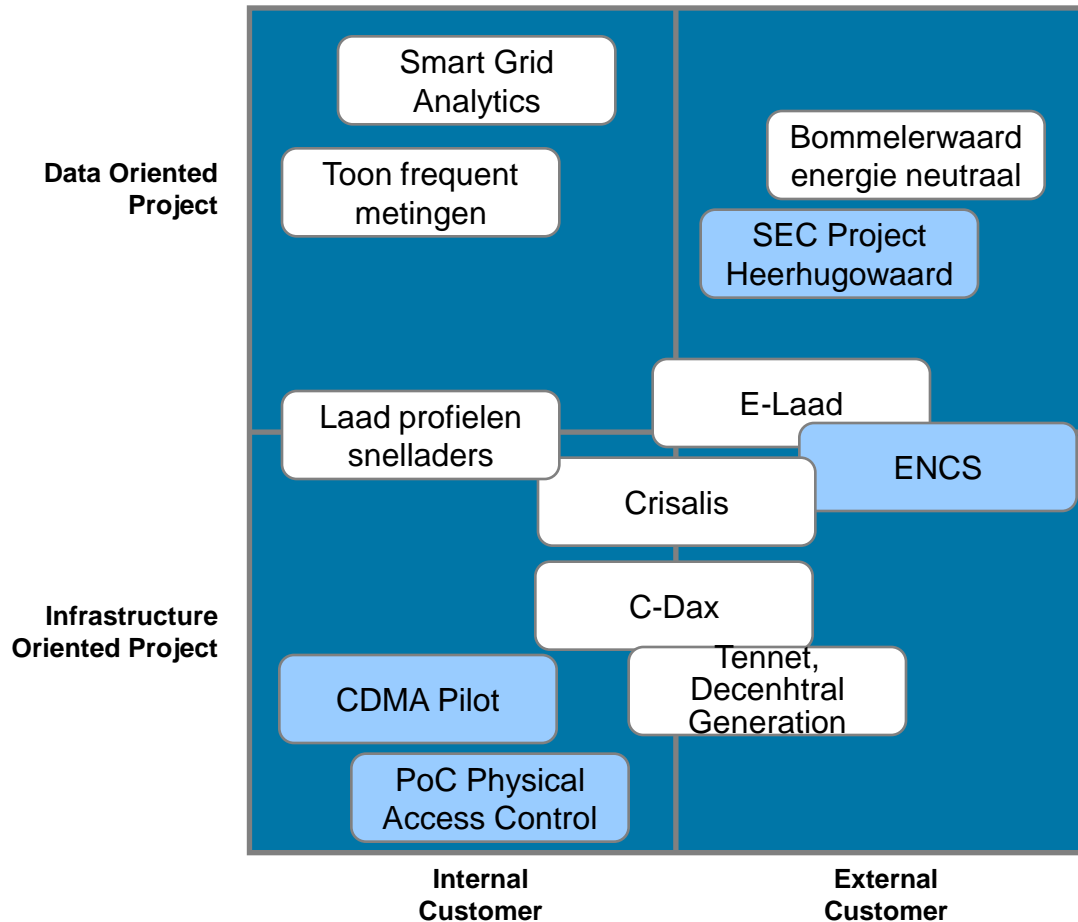
Existing systems  
(SAP, NRG, KLAK, etc.)

- MatLab
- Infra
- Osisoft PI
- Siemens PowerCC
- GRPS
- (CDMA)
- Jomitek
- PowerSense
- Locamation

# Liander has a large variety of medium voltage stations, resulting in a lot of (practical) challenges



# There is already much interest in using LiveLab



## ENCS:

Cooperation with the European Network of Cyber Security. LiveLab will be used for security tests.

## Heerhugowaard:

Cooperation with the SEC project Heerhugowaard (Power measurements in a PV Neighborhood. LiveLab will be used to collect and analyze measurements.

## CDMA Pilot:

Test of CDMA for communication purposes.

## PoC Physical Access Control:

Test of Physical security equipment (access control video in MSR's for security, safety, and monitoring and support.

*Selection of projects / interests*



# More info / contact ?



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