



Energa
operator

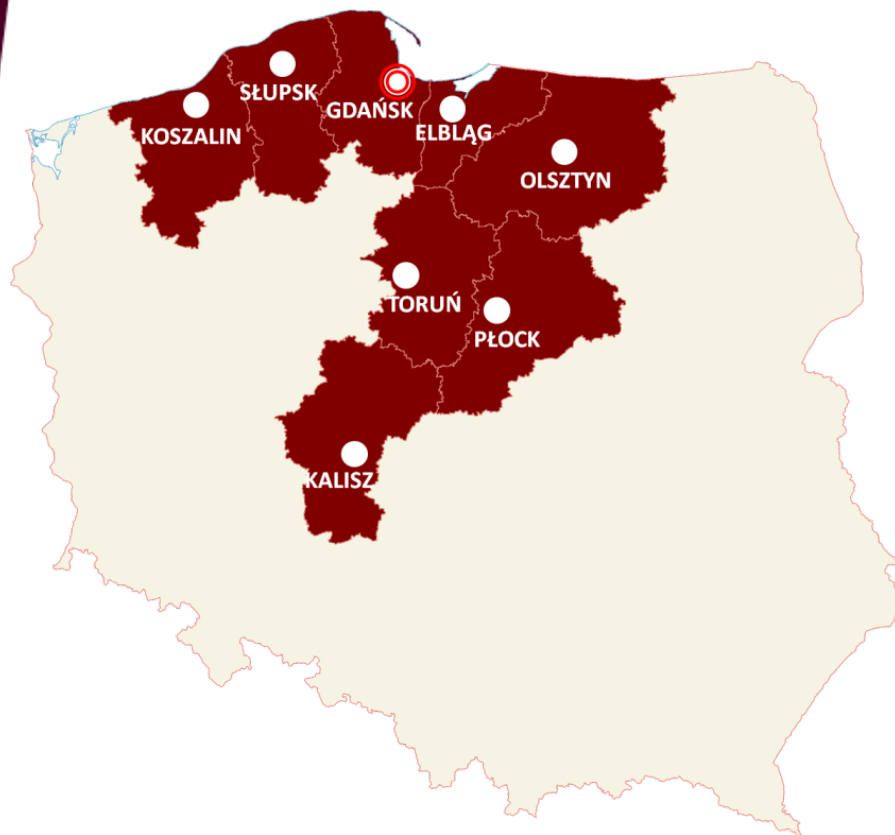
Selected Projects

Adam Olszewski

Agenda

- AMI roll-out
- Added values for our customers
- Smart Grid laboratory - project located in area of Hel Peninsula
- Project „Road Map for Smart Grids implementation till 2020“

ENERGA-OPERATOR SA in numbers



🌱 No. of customers – 2,9 mln

🌱 Operating area – 75 000 km²

🌱 Length of distribution network:

- HV - 6,3 thousand km
- MV – 67,4 thousand km
- LV – 115,6 thousand km

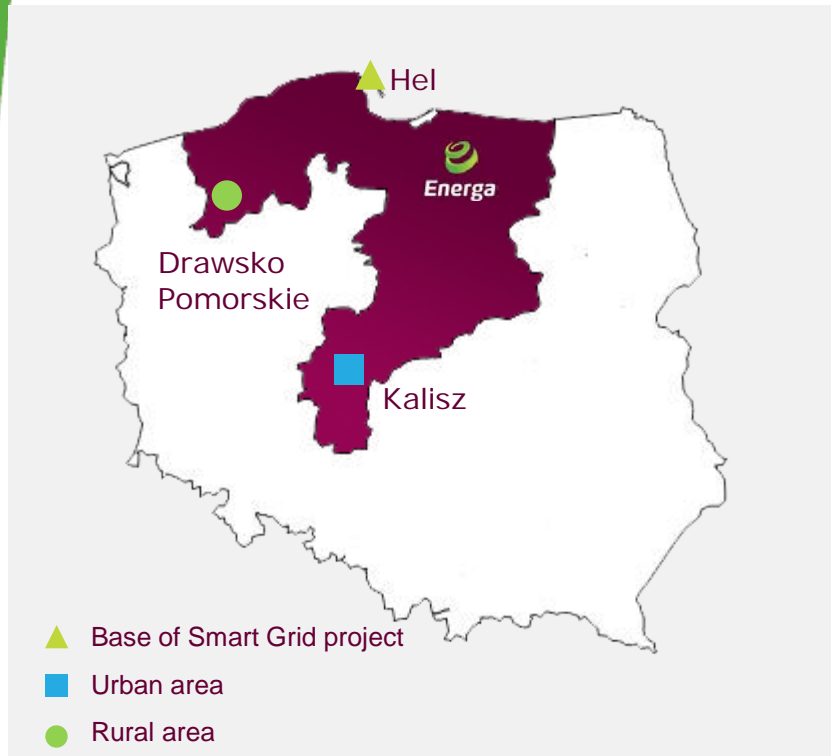
🌱 No. of substations:

- HV/MV – 265 pcs.
- MV/LV – 57,4 thousand pcs.

AMI project is heading towards full implementation

Stage I - closed

The scope of Stage I of the AMI implementation project



As part of Phase I it is scheduled to run
~ 100 thousand meters

Hel – Base for Smart Grid project, verifying system functions in mixed build-up area

Kalisz – Verification site for high density area

Drawsko Pomorskie – Verification site for PLC in LV and MV in rural, dispersed build-up

Choice of three different locations enabled verification of different communication technologies planned for use in the AMI project

The program supports Energa Operator in achieving its strategic goals

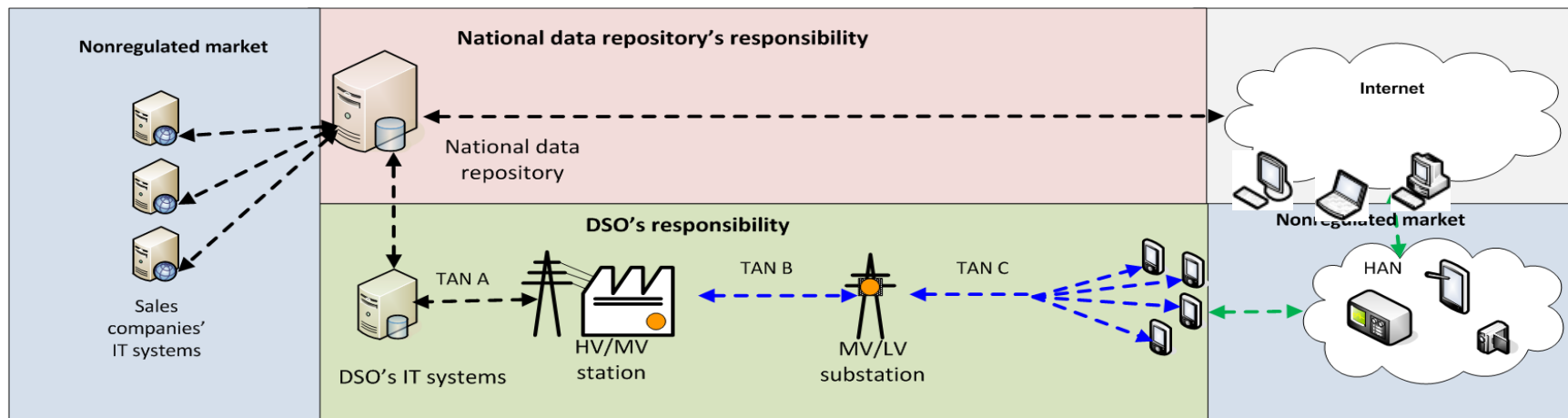
AMI program objectives

- Remote metering data acquisition
- Remote control of metering devices
- Increase in operational efficiency
- Optimization of grid management and development processes
- Increase of customer awareness in the areas of energy efficiency and distributed generation
- Accordance with regulatory requirements for meter reading

Implementation of AMI system is the first step towards Smart Grid deployment in Energa Operator

Interoperability and robust telecommunications are among the key issues to be considered by DSOs

AMI system – conceptual schema for Poland



Key issues for DSO

Telecommunication technologies

- Each of telecommunication segments has different characteristics, therefore telecommunication technologies used can differ in different segments
- Telecommunication technology can differ across segment due to local conditions

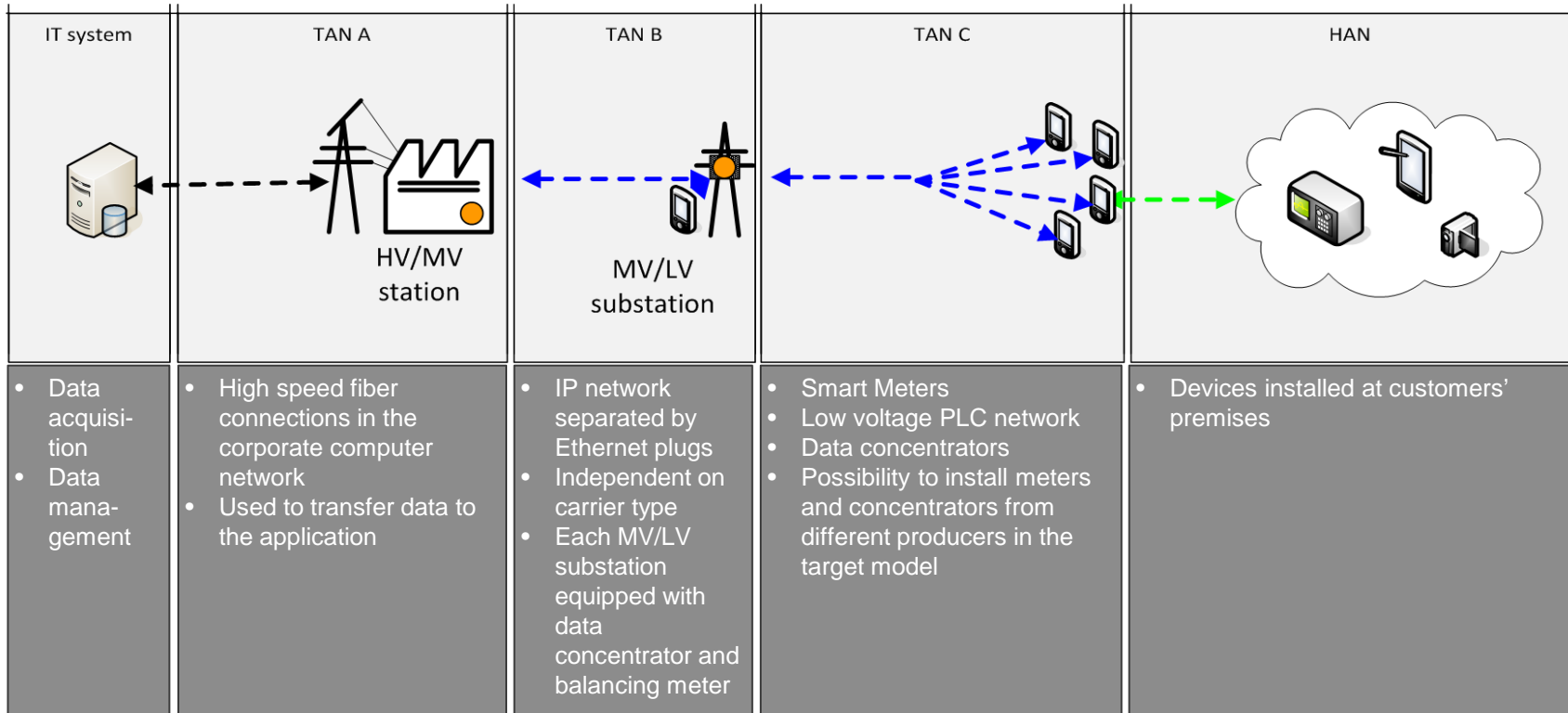
Interoperability

- Investments required to set up a smart metering system are significant, therefore DSOs should invest in solutions that are not closed to one supplier only
- Choice of an interoperable solution will improve DSOs' negotiation position with suppliers and therefore it would help DSOs to reduce its future spend required to develop and maintain the system

TAN – Technical Area Network
HAN – Home Area Network

Energa Operator AMI system is split into several modules separated by well-defined interfaces

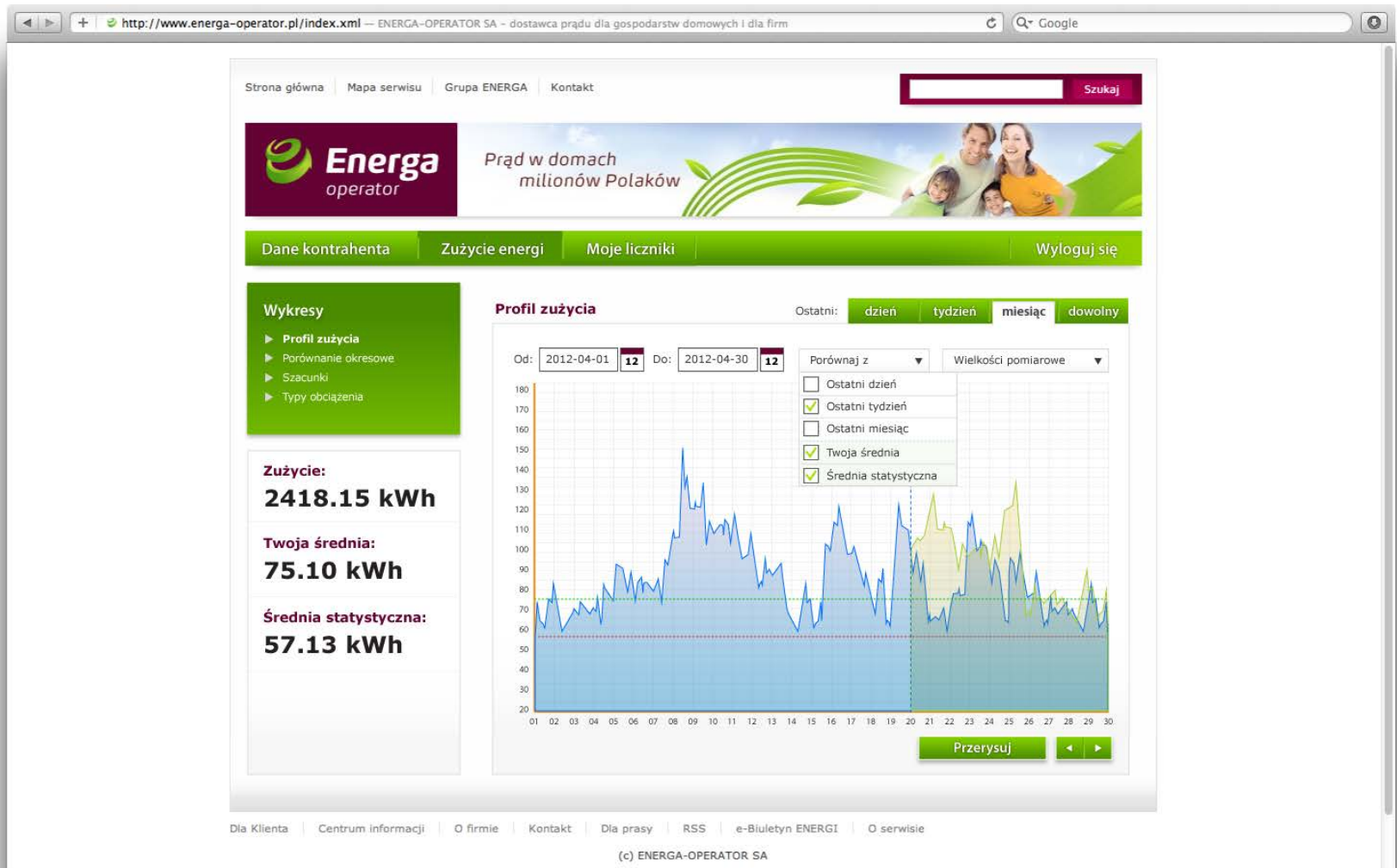
General design of AMI System in Energa Operator



Separation of modules in our system gives us required scalability and makes us independent from suppliers

Value for Customers

Access to Consumption Profiles



Value for Customers

Selected analysis tools



Version for mobile platform



Smart Grid Vision by 2020

Key areas of the development of Smart Grids in Energa-Operator

1

Active customer

Creating the conditions
for activation of customers
within energy generation
and consumption

2

Quality of supply

Improvement of power
supply reliability
and supplied energy quality

3

Smart network control

Advanced network management
and control under conditions of
dynamic growth of
distributed generation

4

Smart DSO

Optimal use and development of resources and assets

5

Information and communication technology

Development of information and telecommunication technology

Smart grids includes existing and new elements in network infrastructure

Smart grid elements

Power lines and substations

- Transmission lines
- HV Substations
- MV/LV substations
- Customers power lines



Measurement systems and control devices

- Smart meters
- Network parameters measurement systems
- Network automation devices



Telecommunication infrastructure and data exchange

- Teletransmission networks
- Data bases
- Data processing applications



Network management and process support systems

- SCADA systems
- Power outage detection and failure elimination systems
- Asset management systems



Smart Grid Pilot Area Hel Peninsula

Conception

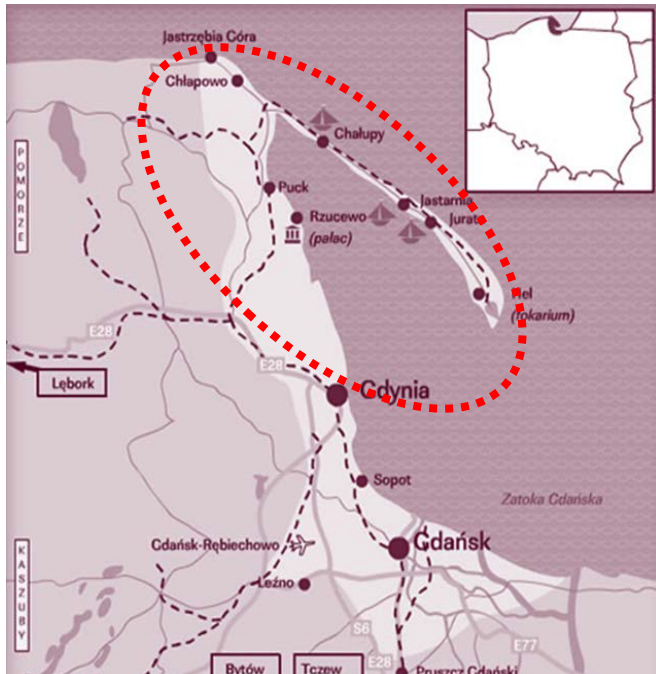
2011

Implementation

2012

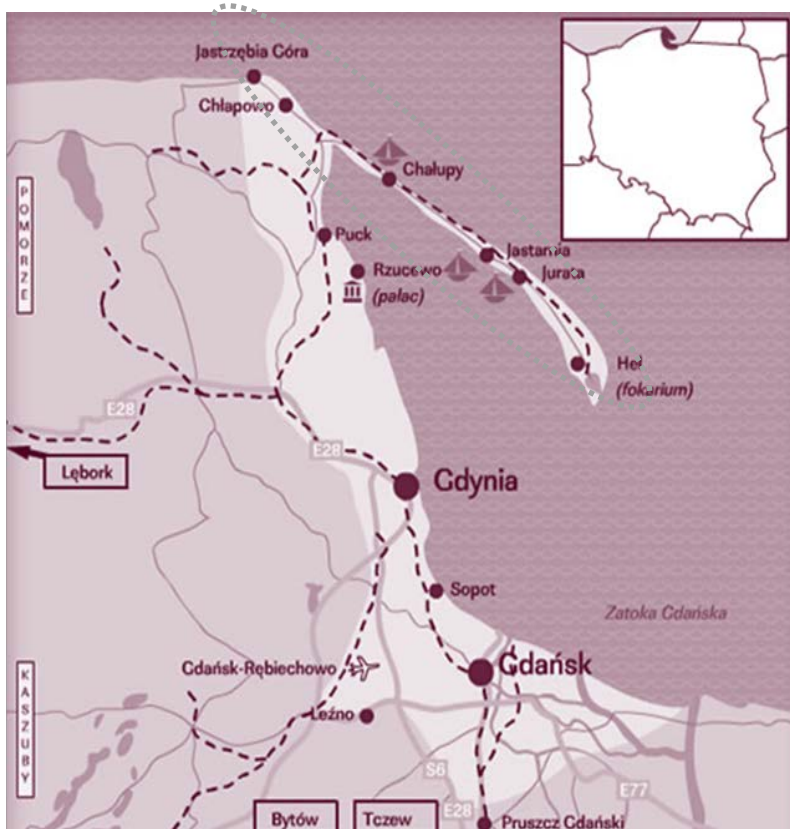
Research and analysis

2013



- Number of customers – 10 000
- Distribution MV network – 200 km
- Distribution LV network – 150 km
- Substations 15/0,4 kV – 150

Smart Grid Pilot Area Hel Peninsula



Automatic network control (DMS, SCADA nn)

- Live grid management
- Automatic fault location and network configuration
- Allowing island operation of the distribution system

Distributed generation

- including prosumers in the network
- Sales of excess electricity generated by consumers
- Creating opportunities for cooperation between Smart Grid and smart buildings

Electric vehicles

- Adjustment of the network to charge electric vehicles
- Use of electric vehicles as energy storage

Agenda – again ...

just to reffer to its last point

- AMI roll-out
- Added values for our customers
- Smart Grid laboratory - project located in area of Hel Peninsula
- **Project „Road Map for Smart Grids implementation till 2020“**



Energa

Thank you for your attention