



# Digitalization of Vidiškiai transformer substation (Lithuania)

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ETIP SNET Northern Region Workshop

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**LITGRID AB**

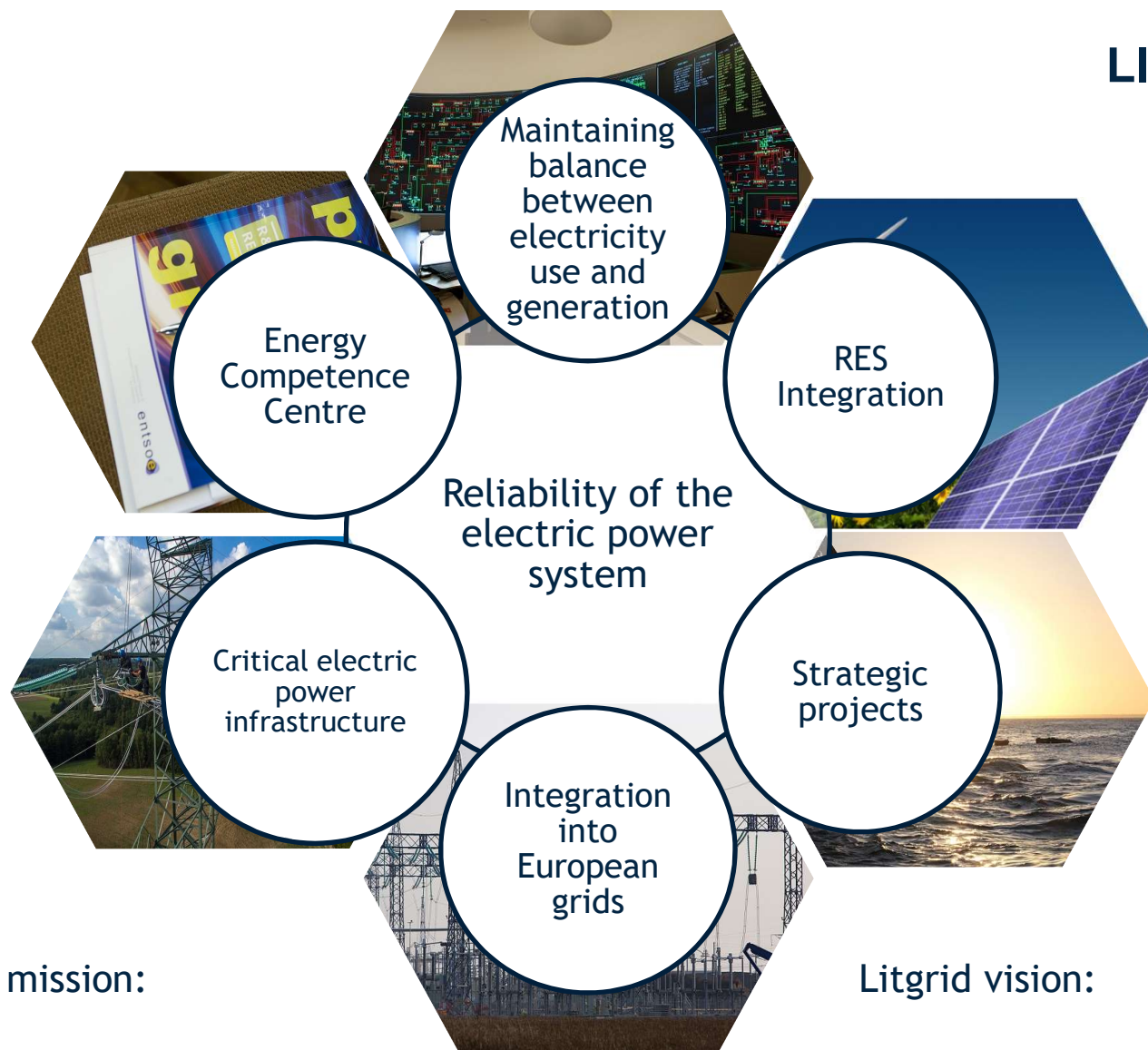
2017-12-08 Riga, Latvia



**ETIP SNET**  
PLAN. INNOVATE. ENGAGE.

# Agenda

- Litgrid in brief
- Way to „digital“ substation
- Project description
- Project implementation
- Project results
- Lessons learned
- Future R&D



Litgrid mission:

Transmitting electricity across European markets, creating value to the society

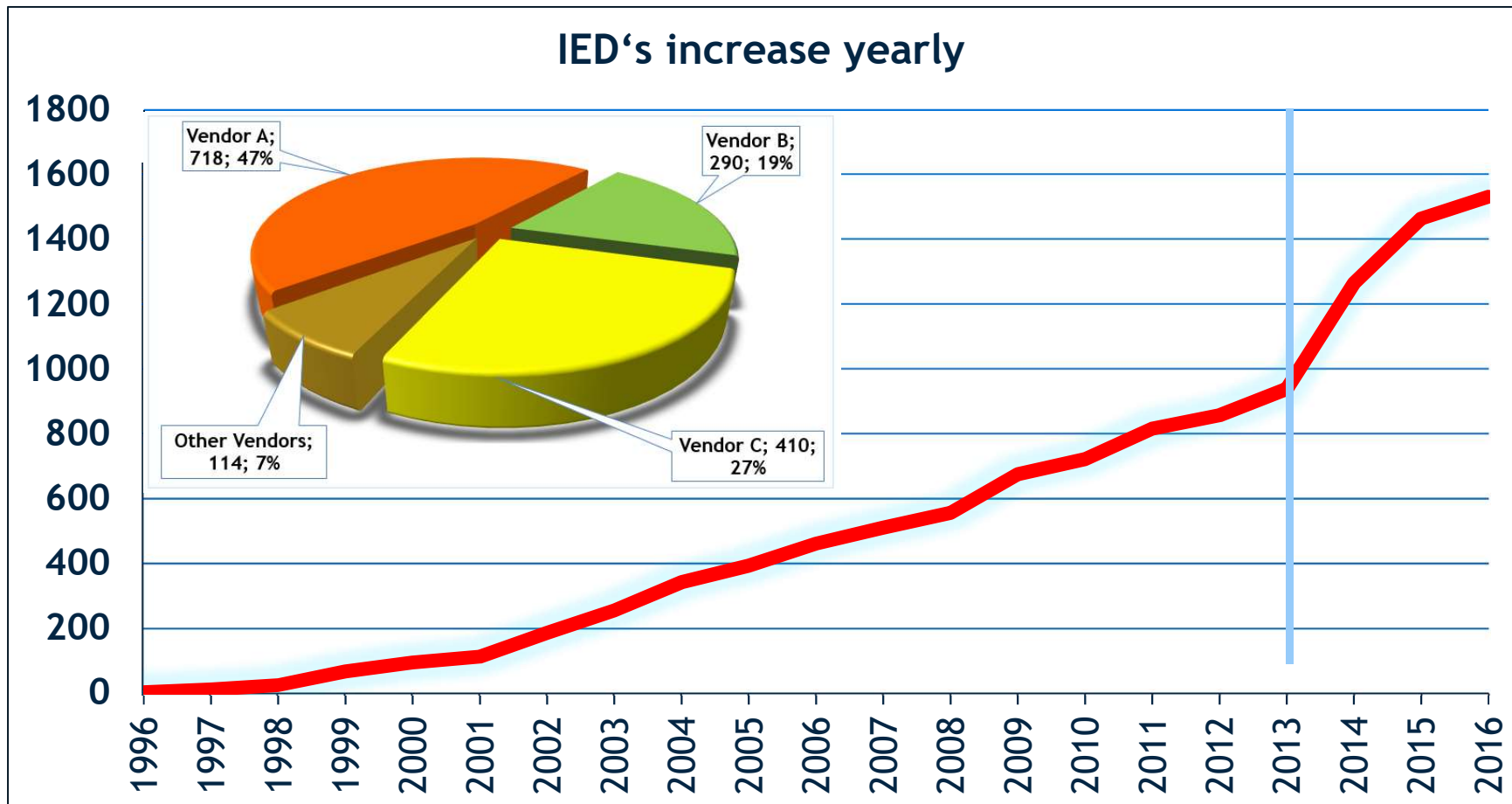
Litgrid vision:

Europe's smartest TSO

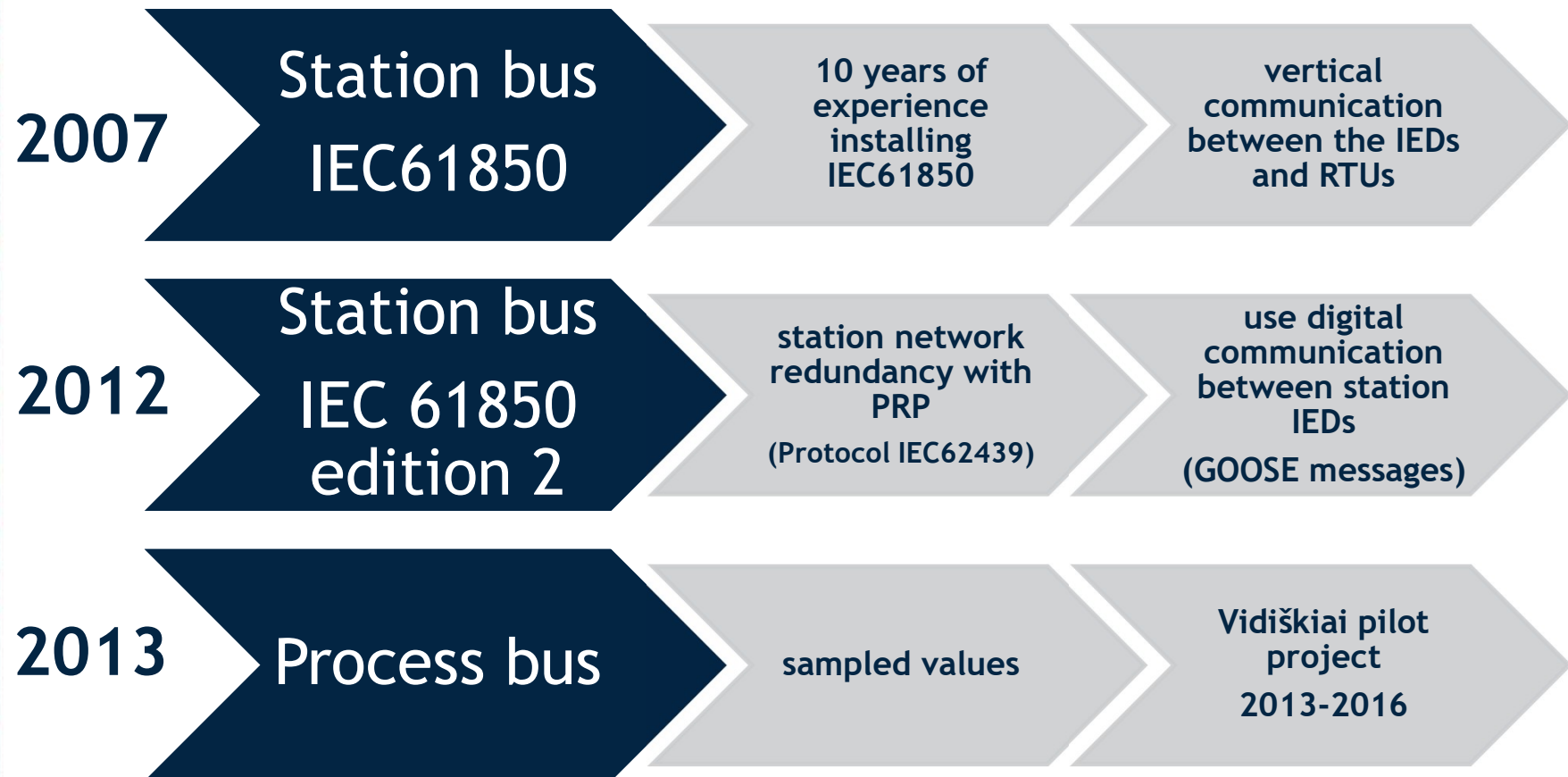


# Way to „digital“ substation

Every year Litgrid starts and completes reconstruction of 5 to 8 substations and the number of smart microprocessor devices (IED's) is growing rapidly - **over 500 new IED's since 2013.**



# Way to „digital“ substation



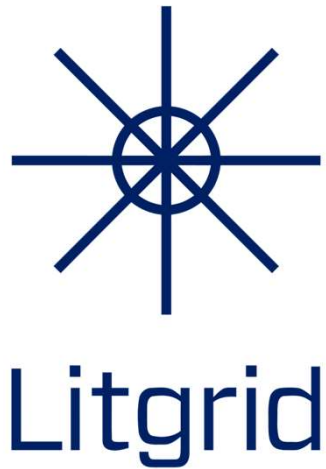
# Vidiškiai station

- Commissioned in 1980;
- Without remote control possibility;
- „Low risk station“ for testing new technology.



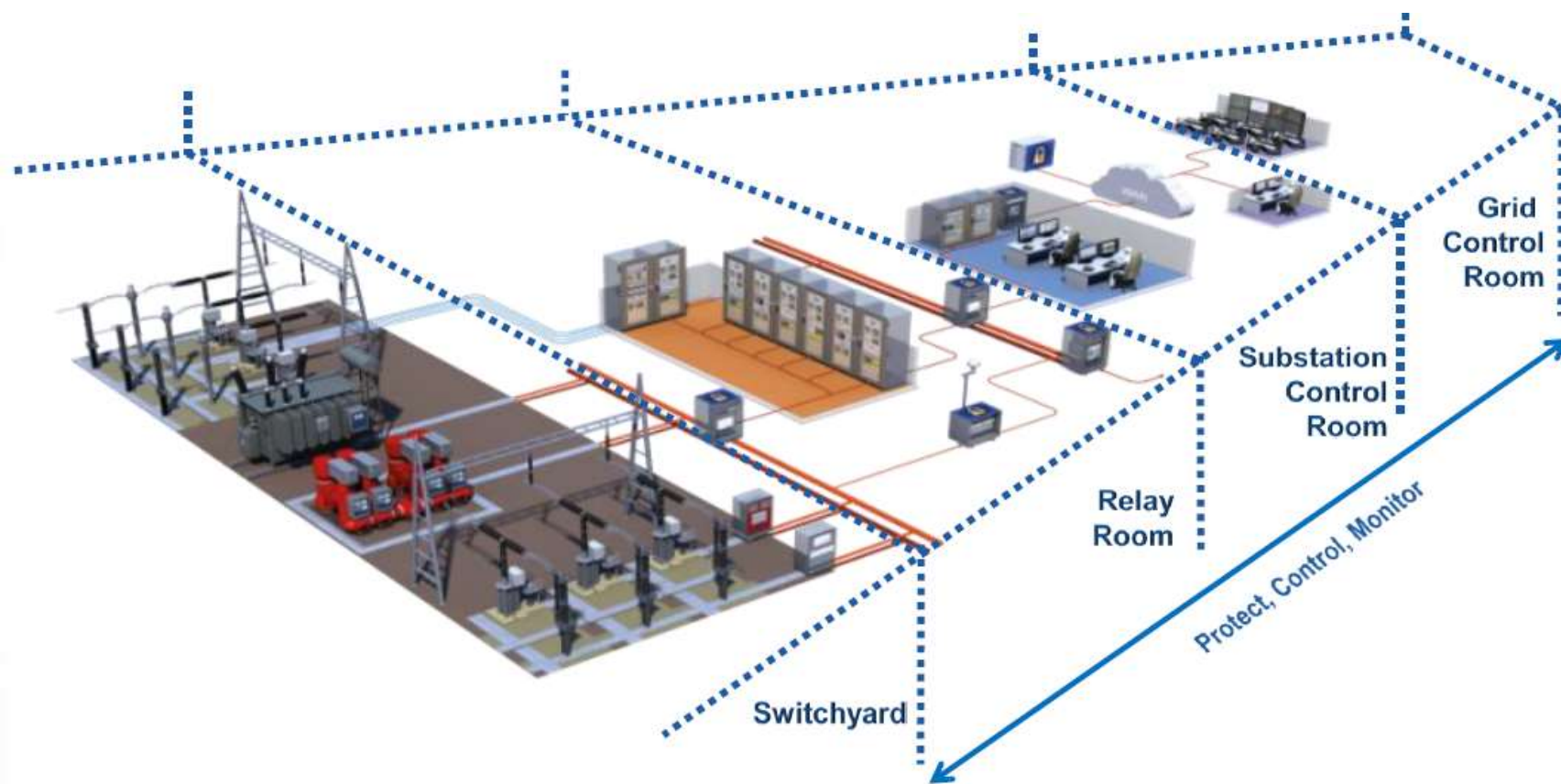


# Vidiškiai station - Project partners



„Turn key“ project

# Project description (GE)



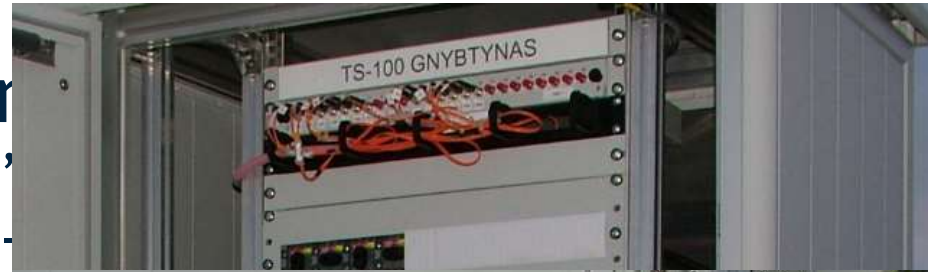
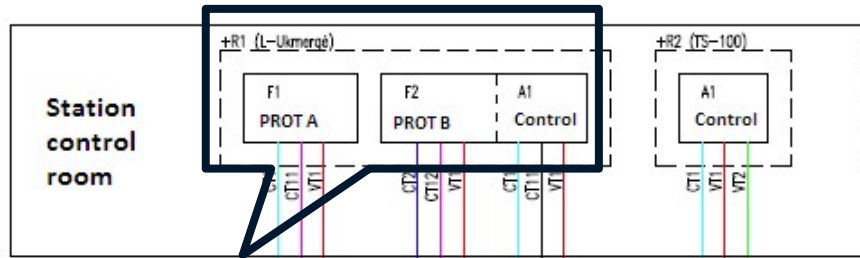




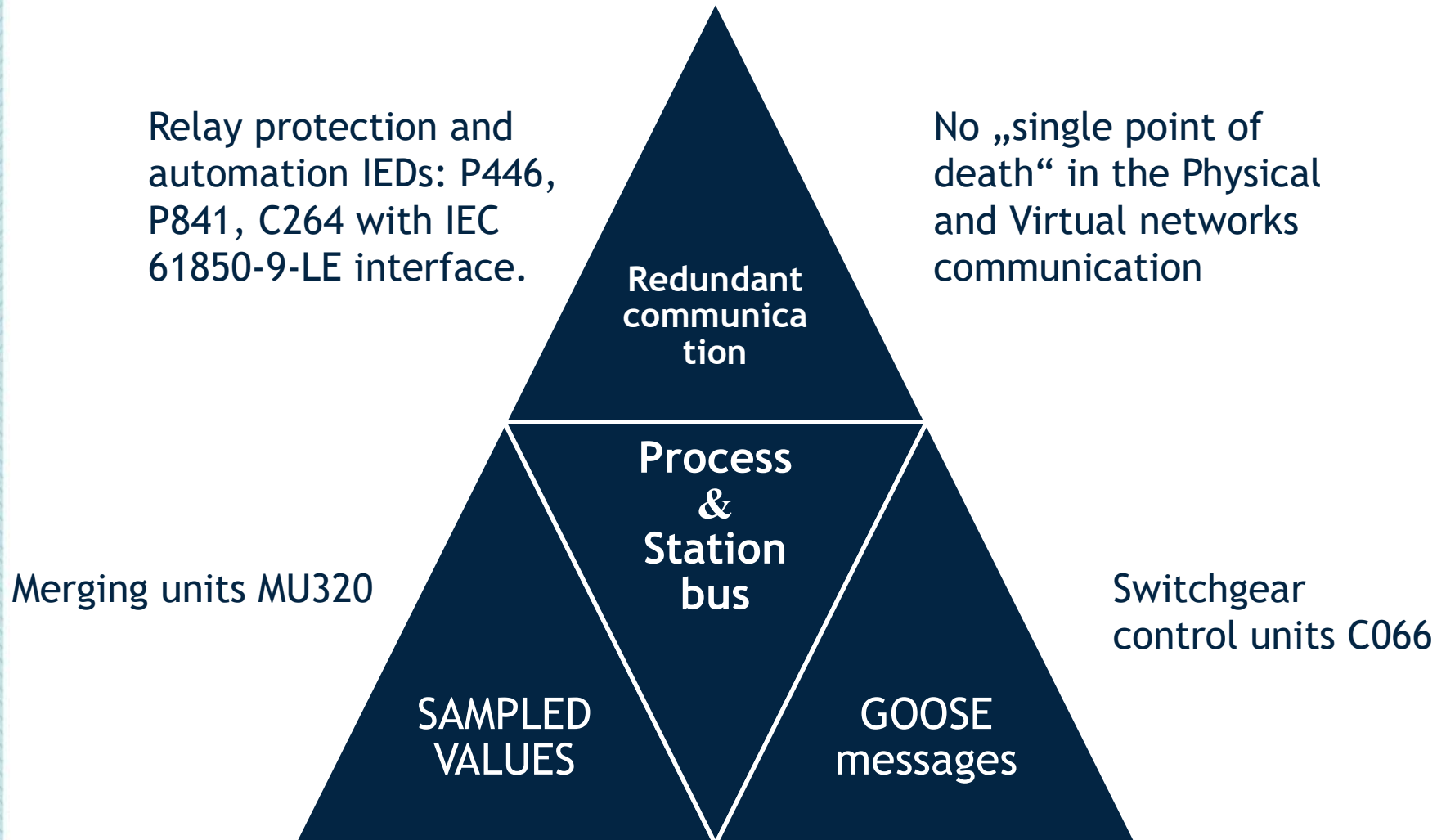
# Project implementation

## Voltage and Current “digitalization”

### From copper wire to optical fiber



# Project results



# Main drivers of Digital SS technology (according to GE)

-50% at design stage	-15% necessary space	-20% For transport	-50% For foundation
-80% cost of cables	-80% laying the cables	-80% for connection	-50% space in cubicles.
-80% design modification	100% sure for no interruption	100% technology ready	+80% personnel knowledge
-50% time of cubicles making	100% standardisation	+20% battery at substation	+100% more safety of power supply
100% noise resistance	+100% cost of yard cubicles	+100% additional redundancy	+100% personnel safety
Savings/ Advantages	Additional Cost	Additional Benefits	

# Main challenges and lessons learned

-50% at design stage				✗
-80% cost of cables	-50% time of cubicles making	-80% design modification	100% noise resistance	✓
100% technology ready	100% standardisation			✓ ✗
+100% cost of yard cubicles	+20% battery at substation	+80% personnel knowledge		✓
+100% personnel safety	-20% For transport	-50% For foundation	-15% necessary space	✓ ✗

# Next steps and future R&D&I

„Digitalization“ is not yet completed yet  
(Vidiškiai substation still missing some “digital” items)

Optical current and  
voltage  
measurement  
sensors with  
standardized digital  
interfaces

Standardized  
merging and  
switchgear control  
units for process bus

Equipment software  
development and  
standardization

Litgrid believes in the future of IEC 61850 however  
**equipment** in which the standard is released is  
essential for making step forward.

A landscape photograph showing a green field in the foreground, a dark horizon line, and several high-voltage power lines with towers stretching across the middle ground. The sky is blue with scattered white clouds. The text "Questions ?" is overlaid in white on the lower part of the image.

Questions ?