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INTERNATIONAL

Is there a smart grid in your future?

A Bottom-Up Perspective

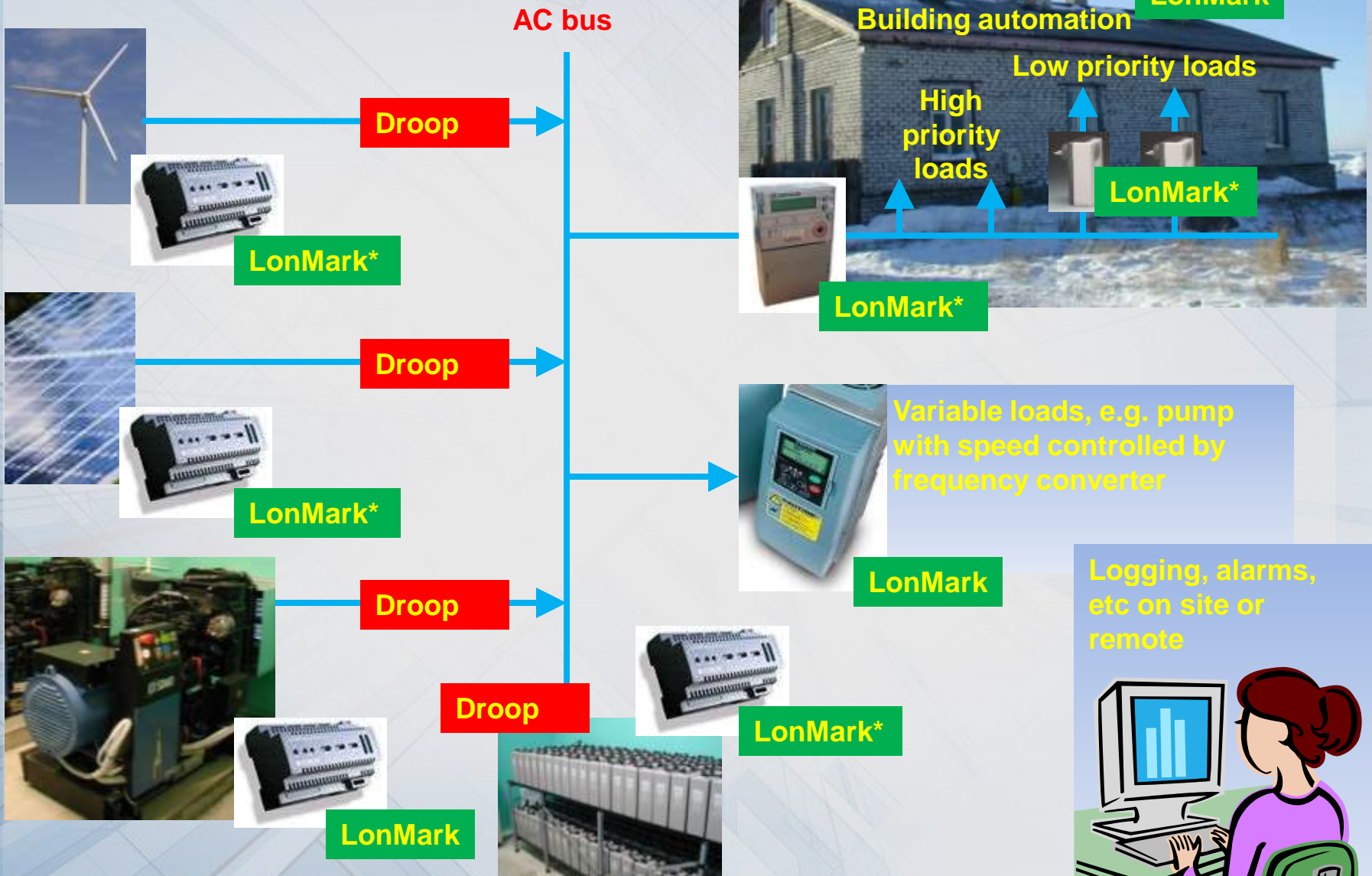


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Where can the greatest benefits of a more intelligent power grid be achieved today?

- In isolated 'island' grids without connection to the national grid (imagine typical electricity costs of 1 Euro/kWh from diesel gensets, blackouts/brownouts due to overload, desire for high renewable energy penetration)
- In locations with frequent power outages

TEROC Independent Power (TIP) was created for isolated grids



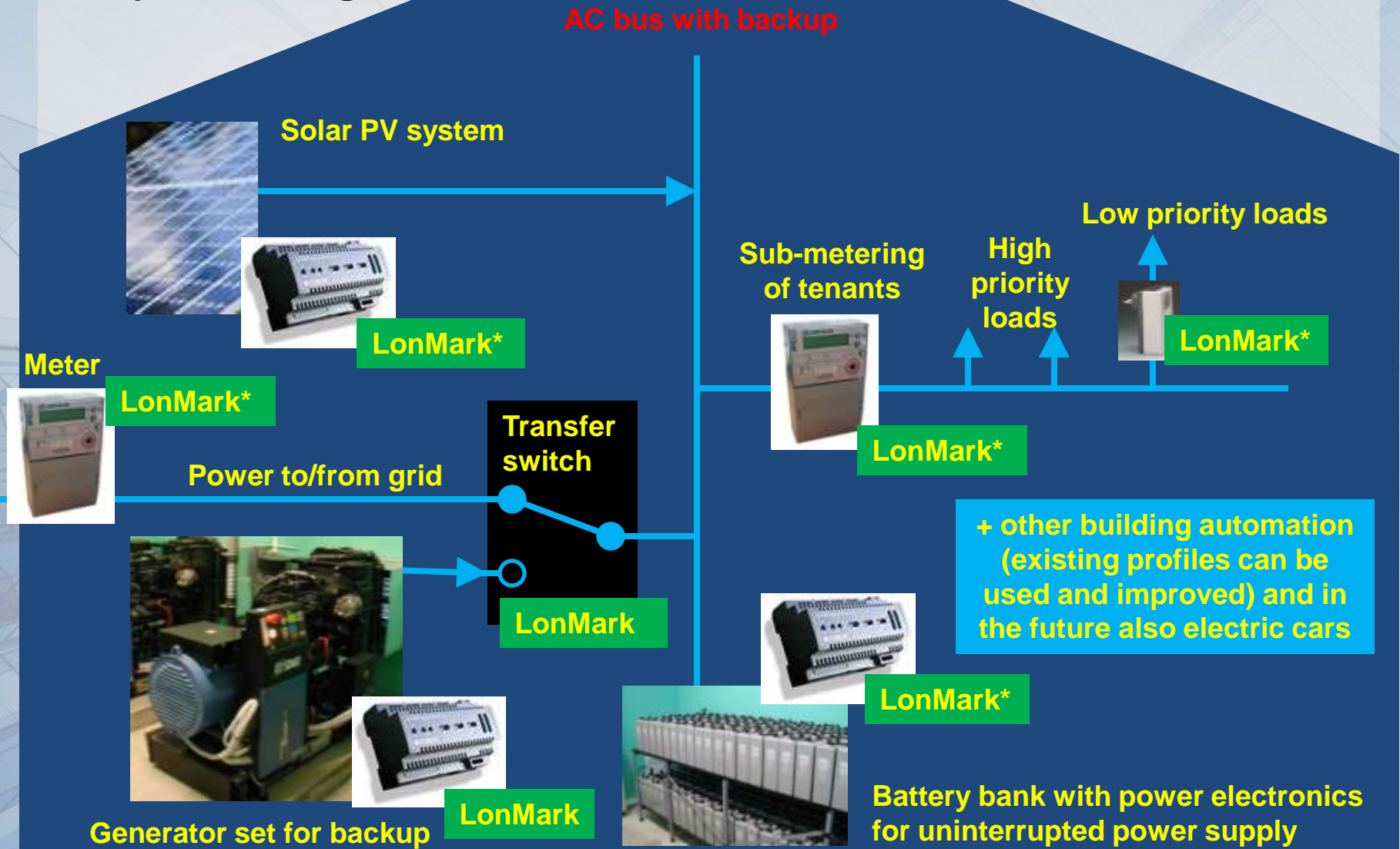
* LonMark functional profiles under development

Example of island grid on a remote radar station in Estonia, where the wind-diesel system is controlled by a LonWorks network.

Exceptionally high fuel savings achieved!



Example of use in a building with backup power and utility net billing



* LonMark functional profiles under development

What else do we need from a more general end-user perspective?

Standardized communication with:

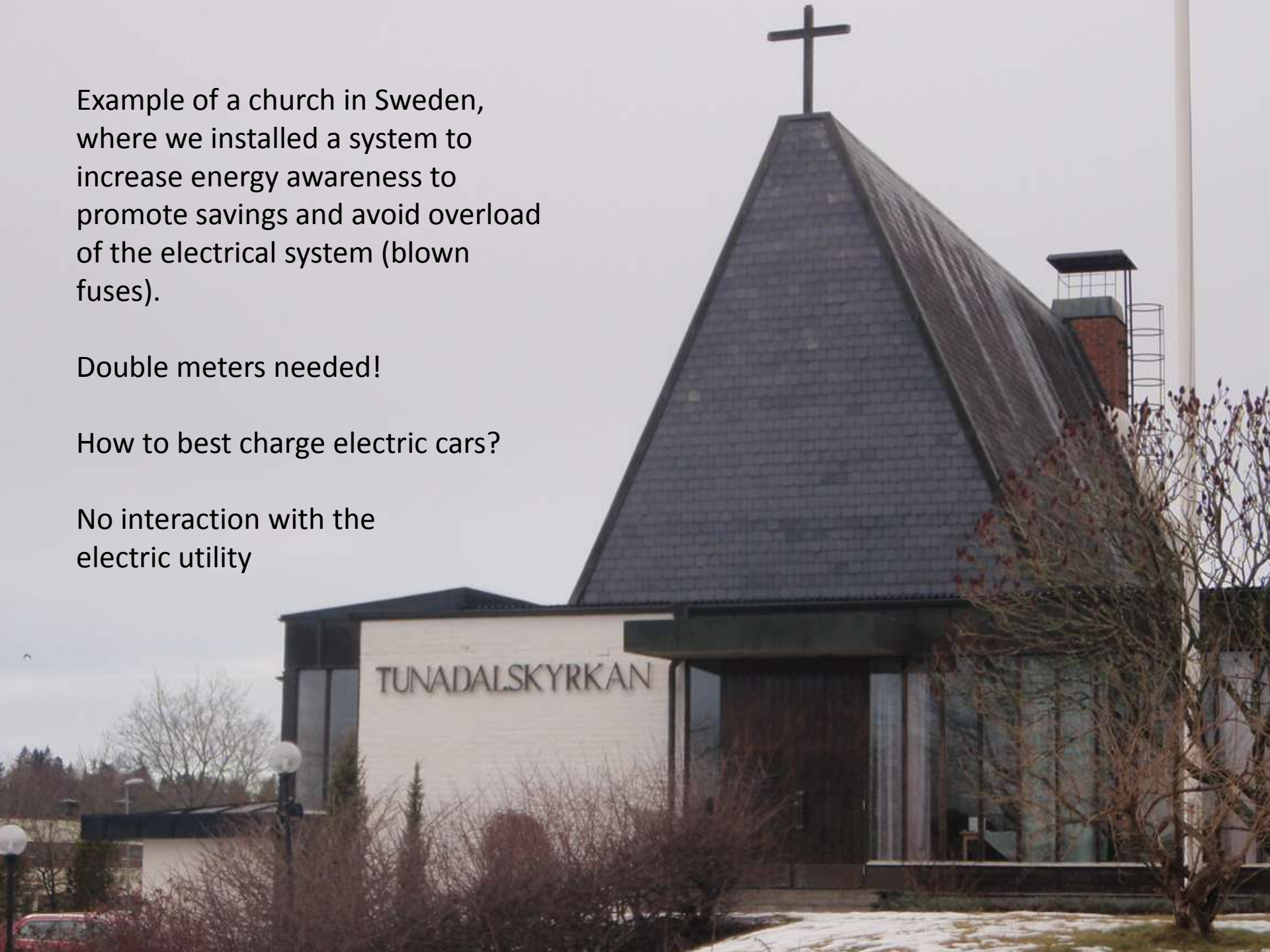
- Smart meters
 - Many meters still report only your consumption
 - Only the utilities can normally communicate with their smart meters
- Electric cars
 - Smart Energy 2.0
 - E.g. for limiting the charge current
- Electric utilities
 - OpenADR

Example of a church in Sweden, where we installed a system to increase energy awareness to promote savings and avoid overload of the electrical system (blown fuses).

Double meters needed!

How to best charge electric cars?

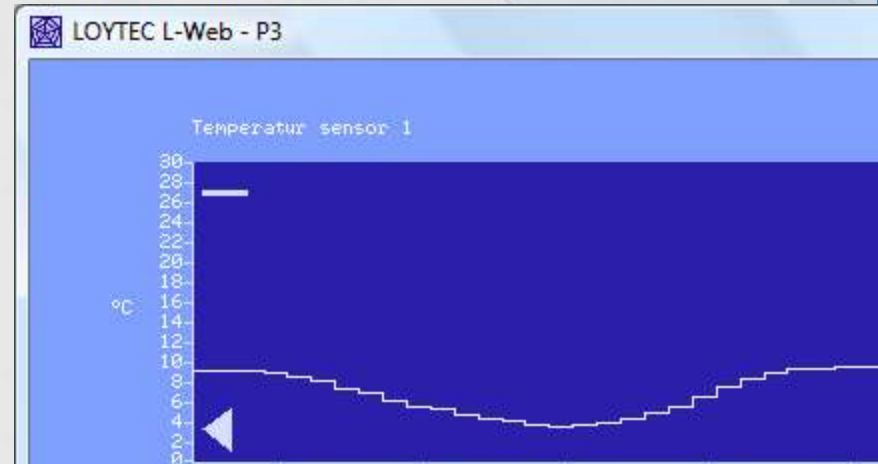
No interaction with the electric utility



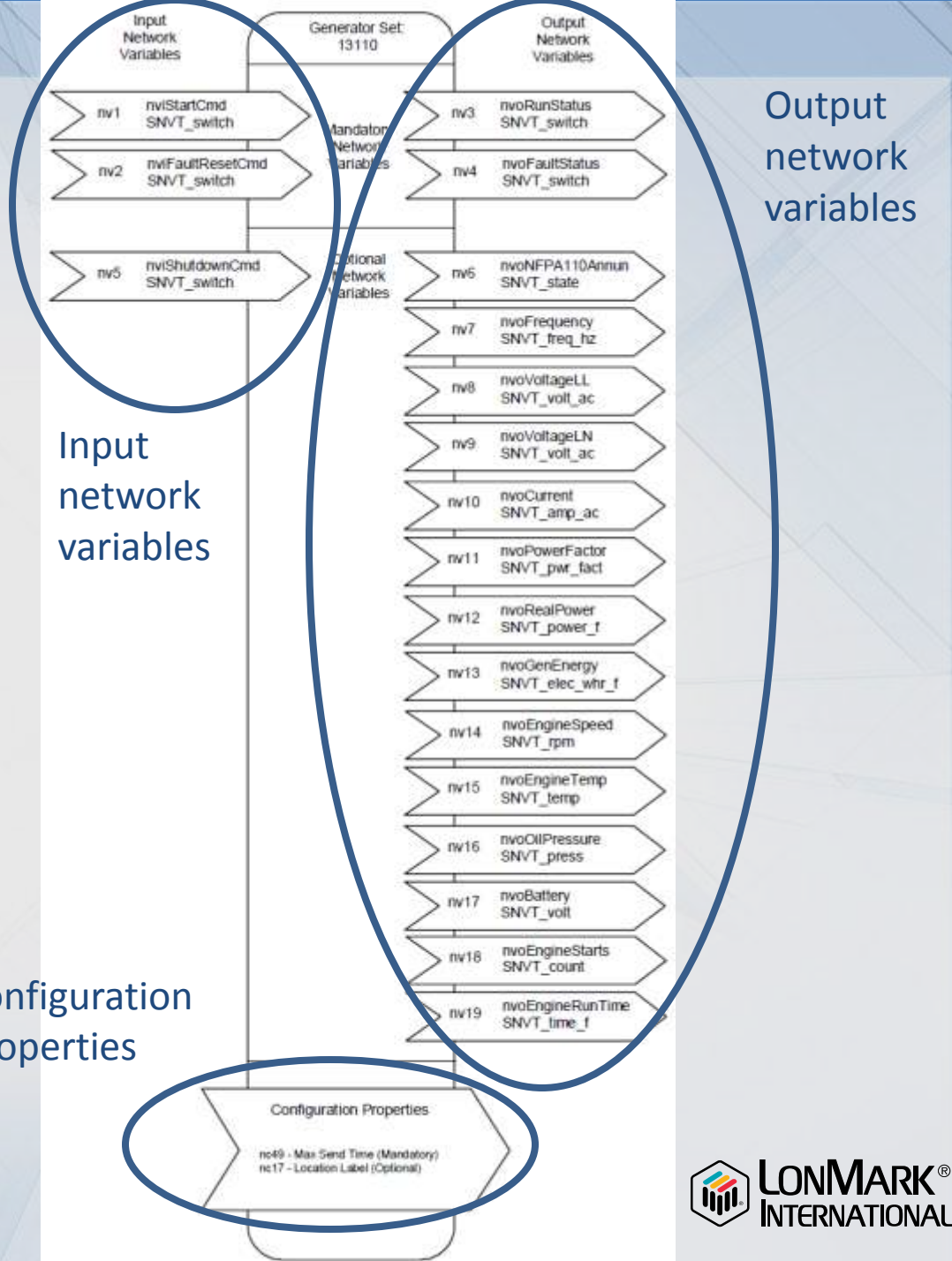
New functional profiles are under development by LonMark

- One new area is microgeneration:
 - Solar PV
 - Small wind turbines
- Will simplify integration of multiple electricity sources and building automation
 - Monitoring in same system, for better overview and lower costs
 - Combination e.g. of uninterruptible power supply, on-site renewable power generation and load control, for the most robust power supply

Integration is simplified already using LonMark SNVTs, functional profiles make it even easier



Example: Generator Set functional profile



Welcome to participate!

- LonMark's Utility Task Group welcomes members to participate in the development of functional profiles etc
- Communication drivers already exist e.g. for interfacing proprietary communication protocols of leading inverter manufacturers
- We are now in the stage where draft microgeneration profiles can be tried in reality

An ongoing project is the WaterHotel on Dämmän, a former lighthouse in the Baltic Sea





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Thank you for your attention!

For more information, please contact:

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