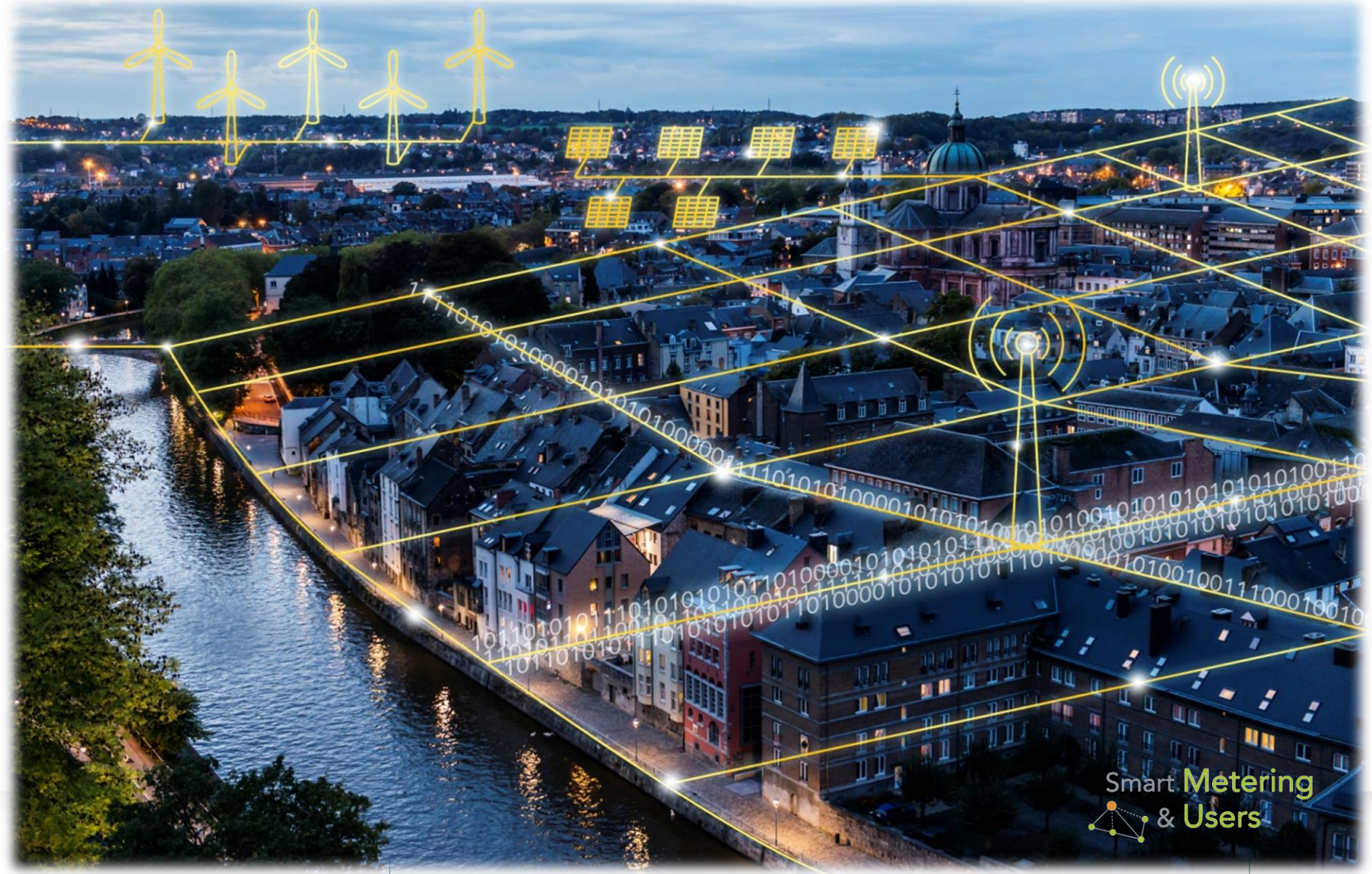


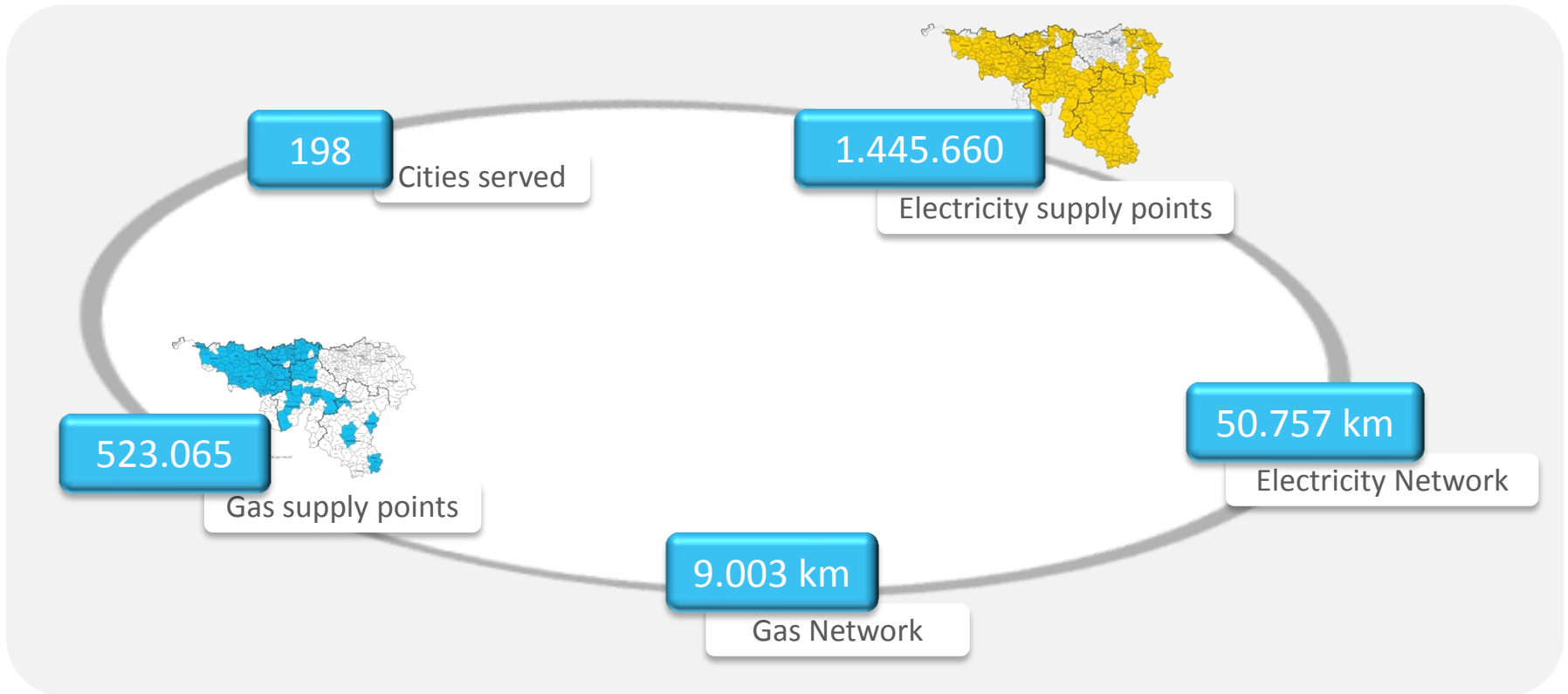
SMART METERING PILOT *TESTING G3 PLC TECHNOLOGY*



Introduction

In a nutshell

ORES is the **main network operator in Wallonia** for electricity, gas and public lighting and is owned at 75% by the municipalities.



Smart Metering

Pilots launched

Different types of **pilots and collaborations** have been launched so far...

Technology pilots

GPRS

G1 PLC

G3 PLC

Public
lighting

Radio 169
MHz (Gas)

Collaboration

Water company



Faculty Chair



ORES
OPÉRATEUR DES RÉSEAUX GAZ & ÉLECTRICITÉ

French DSO

Erdf
L'ÉLECTRICITÉ EN RÉSEAU

G3-PLC
Alliance

Technology
Alliance

G3 PLC Pilot

Objectives & limitations

Objectives of the pilot

- Testing bidirectional communication **performance in G3 PLC**
- Testing impacts on performance of a **progressive deployment**
- Identifying impacts of setting up a AMI headend in **ORES IT infrastructure**
- Testing the use **G3 PLC for public lighting**

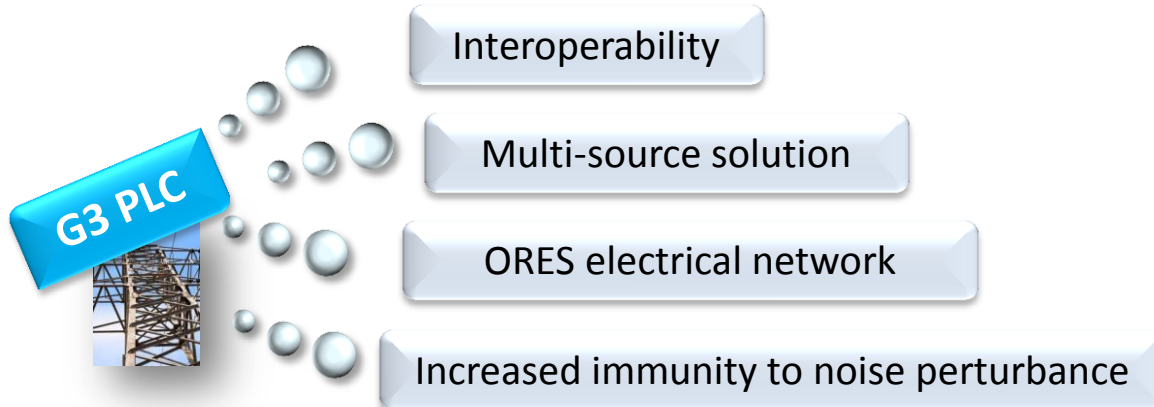
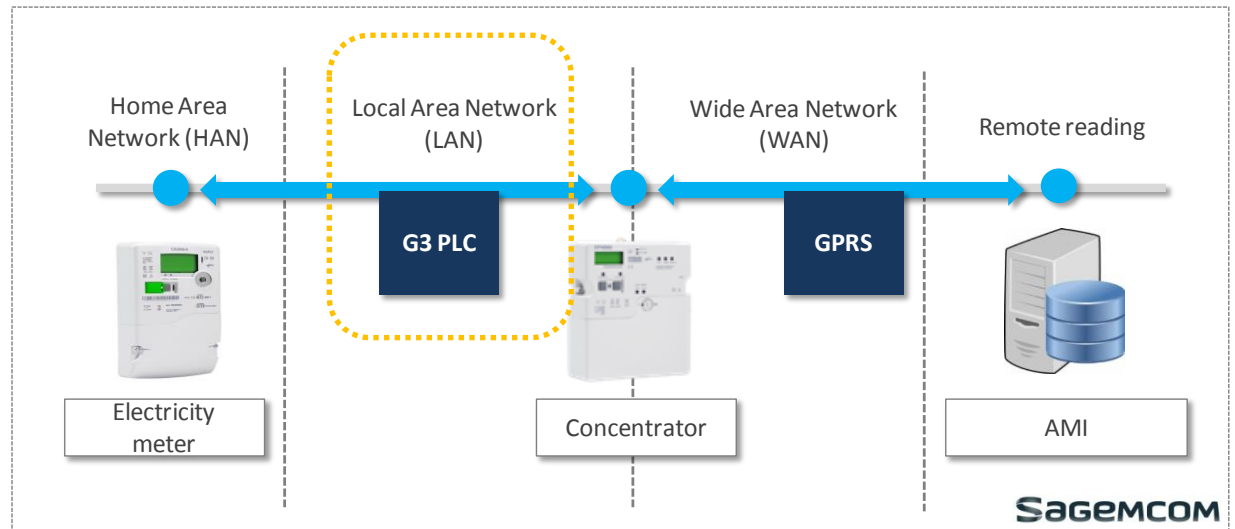
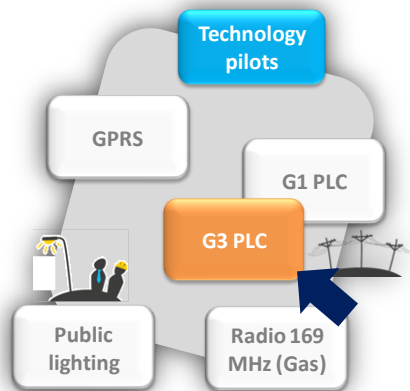


Limitations

- Pilot on a limited volume of substation
- Limited integration with IT (housing of the AMI within ORES infrastructure only)
- Low volumes of deployed meters

G3 PLC Pilot

Design solution



G3 PLC Pilot

Technical performance – High level results

We obtained a **good performance** from both meter reading and broadcasting test.

Meter reading

% installed meters registered in the system



% meters collecting **6 index** per day
(with recovery)



% meters collecting **6 load curve** per day
(with recovery)



Broadcasting test

Polling test every
30 minutes
(simulation
prepayment
meters)

Average
from 7am to 10pm



Average
from 10pm to 3am



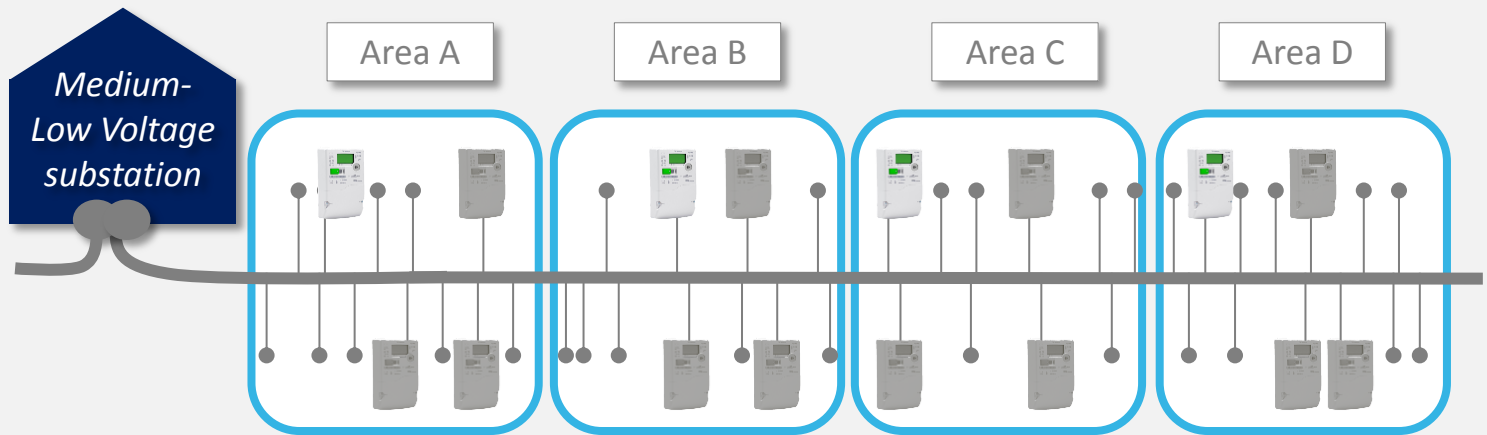
Average
from 3am to 7am



G3 PLC Pilot

Deployment strategy

We have tested **a partial deployment of G3 PLC** on a transformer to assess the impact on communication performance.



G3 PLC Pilot

Required density of meters on a cabin

A high performance has been obtained with a **density down to 60%** of smart meters installed on a substation.

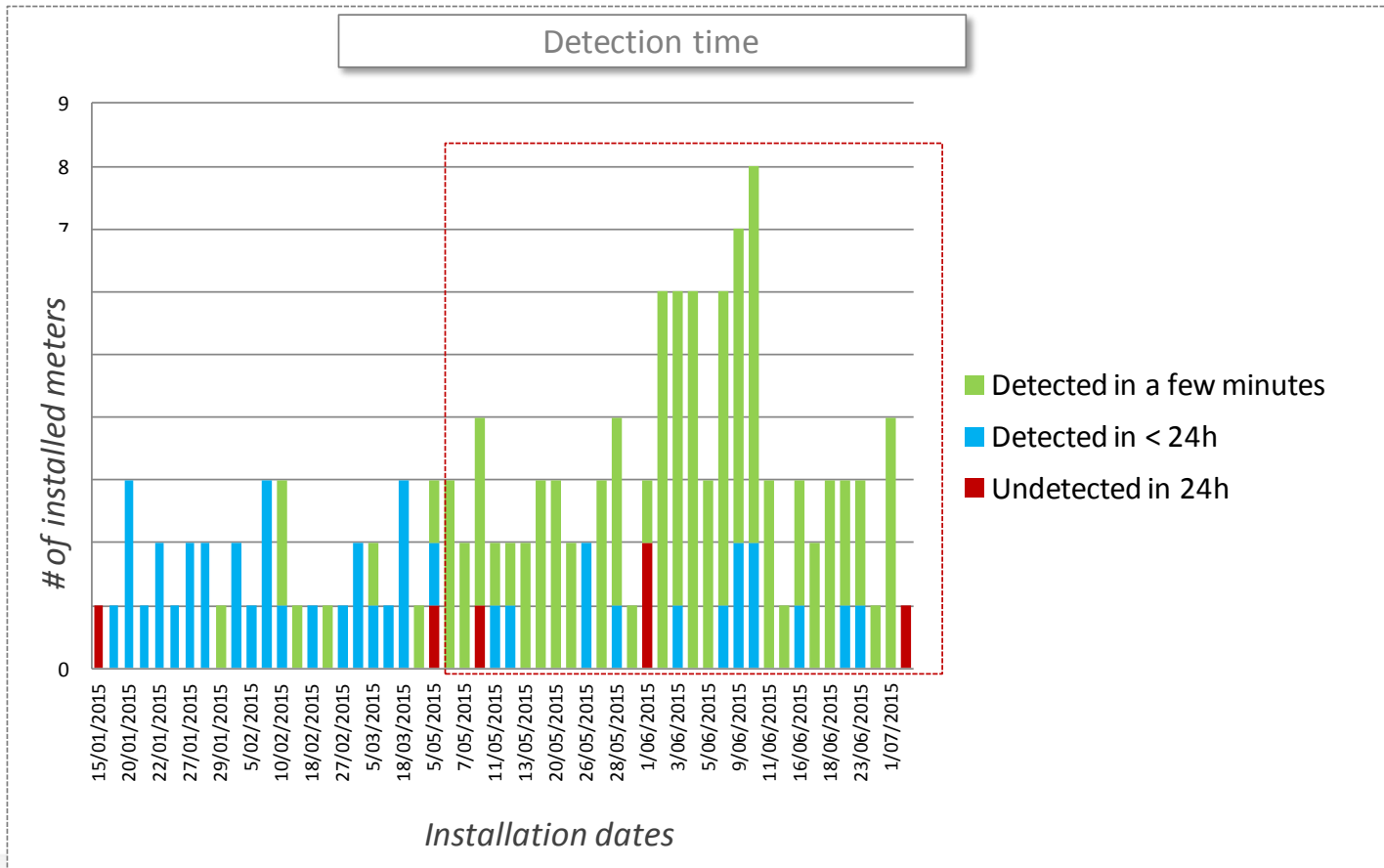
Density < 60%	Density = 60%	Density > 60%
Below 60% of smart meters installed on a cabin, the risk of non communication is rather high and stability of the solution can not be guaranteed.	With a minimum of 60% installed on a cabin, the risk of non communication is minimized but non zero.	With 100% of meters installed on a cabin, the risk of non communication is close to zero.



G3 PLC Pilot

AMI – delays of detection

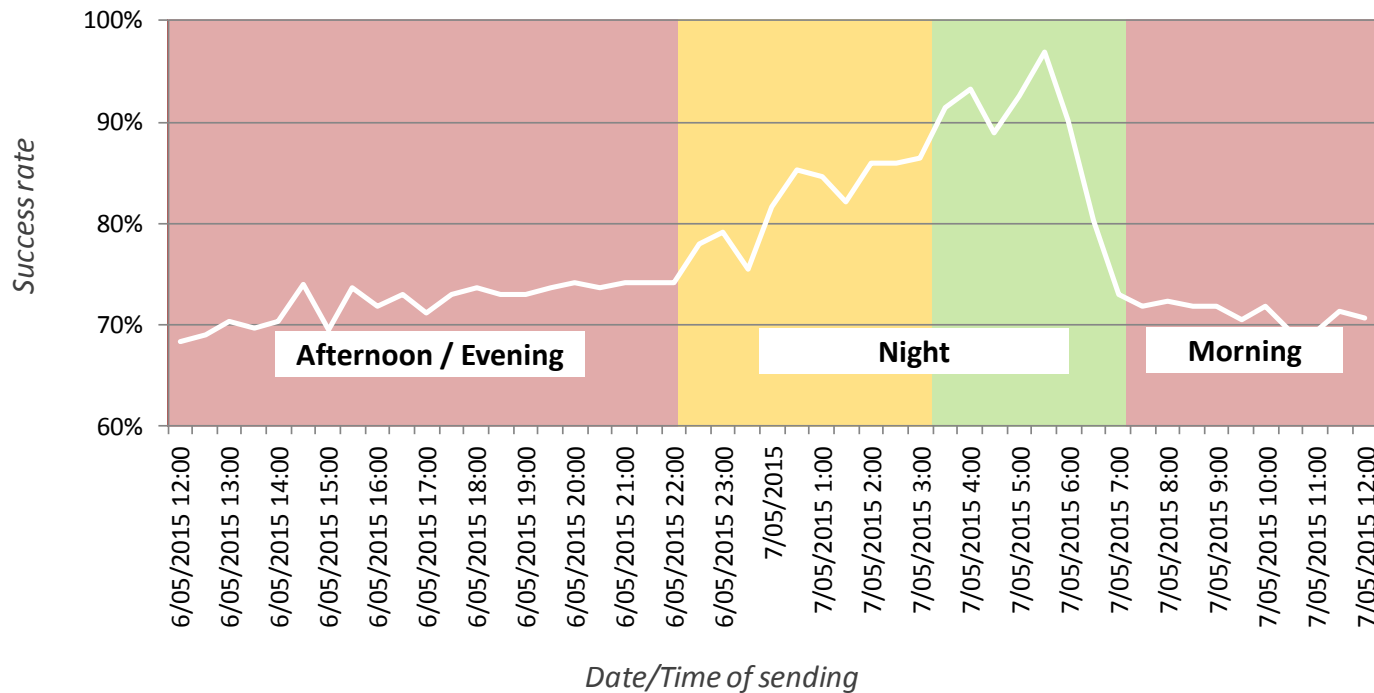
The **more meters installed**, the **faster they are detected** by the AMI.



G3 PLC Pilot

Technical performance – Influencing sources

Success rate of instructions sending on a 24 hours timeframe



Analyses

We identified a **negative impact of the domestic equipments** and of the **photovoltaic panels** on the telecommunication performance.

Actions

Continued tests to improving the performance during the day.

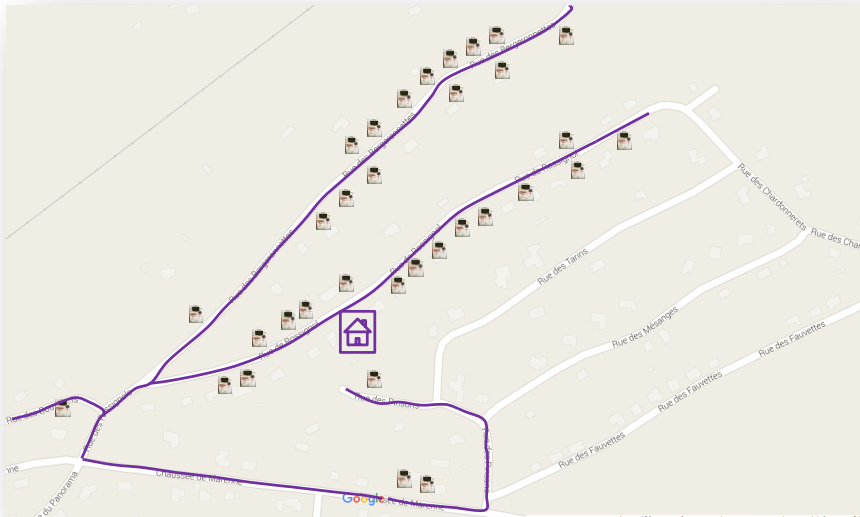
Example:

- Test G3 PLC Load NG
- Test in FCC Band

G3 PLC Pilot

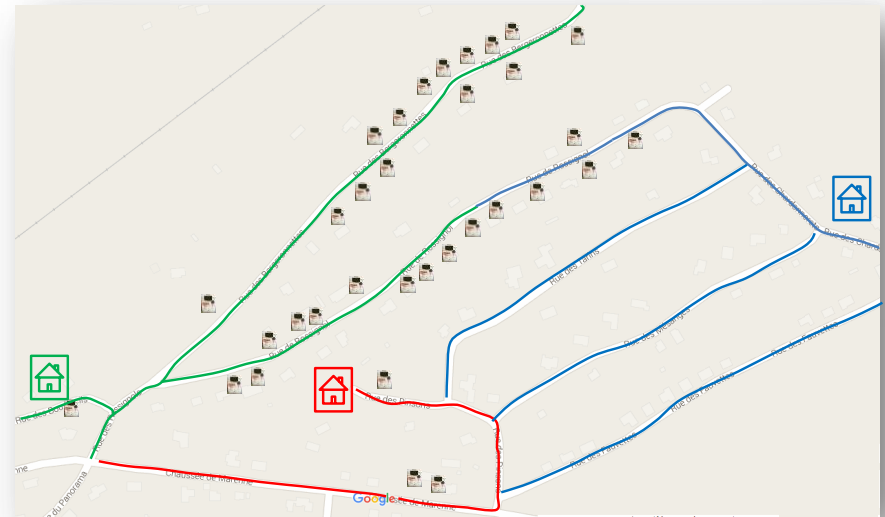
Network flexibility

G3 PLC allows quick detection of the meters even after **network reconfiguration**.



INITIAL network configuration

- 1** Low voltage circuit
- 1** Datacontrator
- 33** Smart Meters



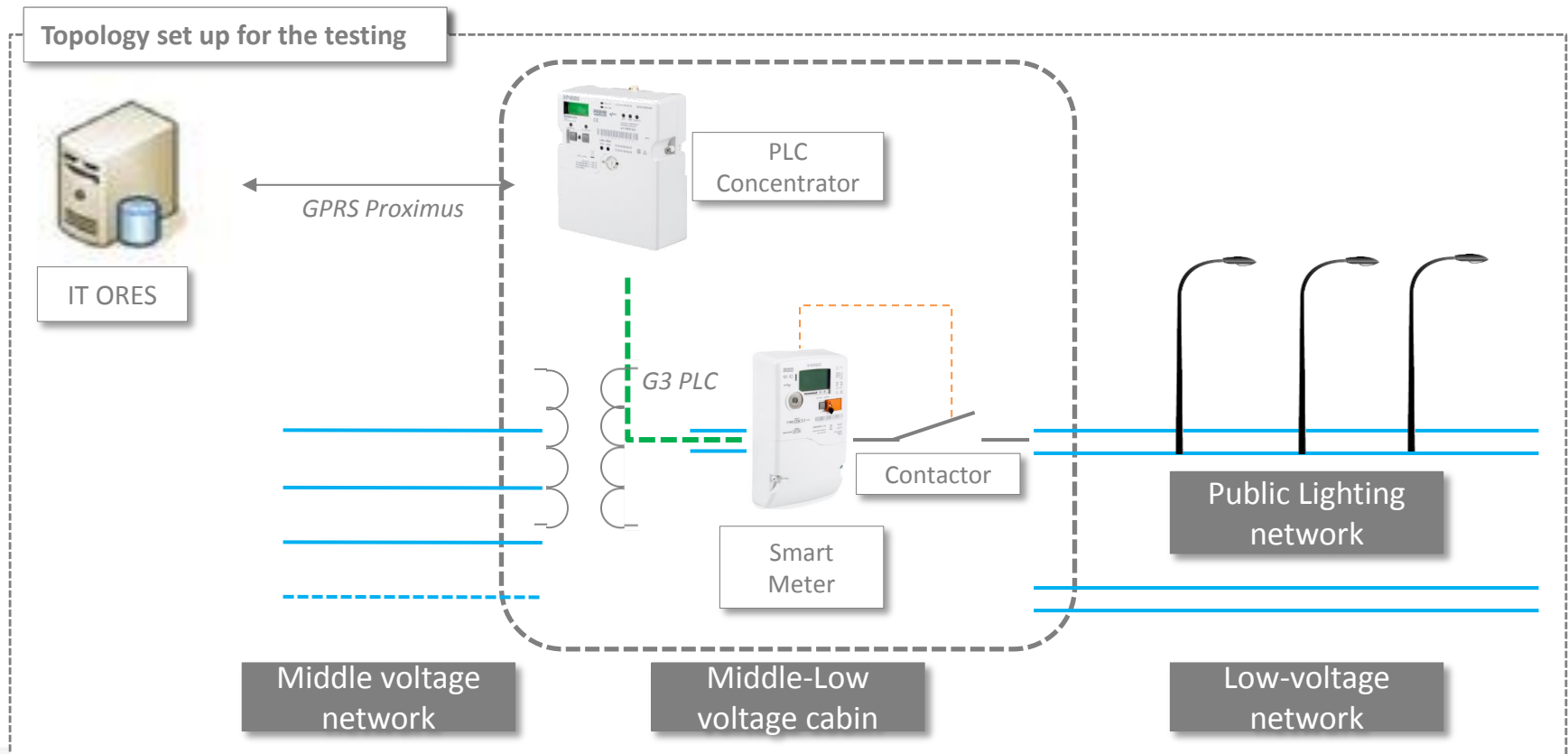
NEW network configuration

- 3** Low voltage circuits
- 3** Datacontrators
- 33** Smart Meters

G3 PLC Pilot

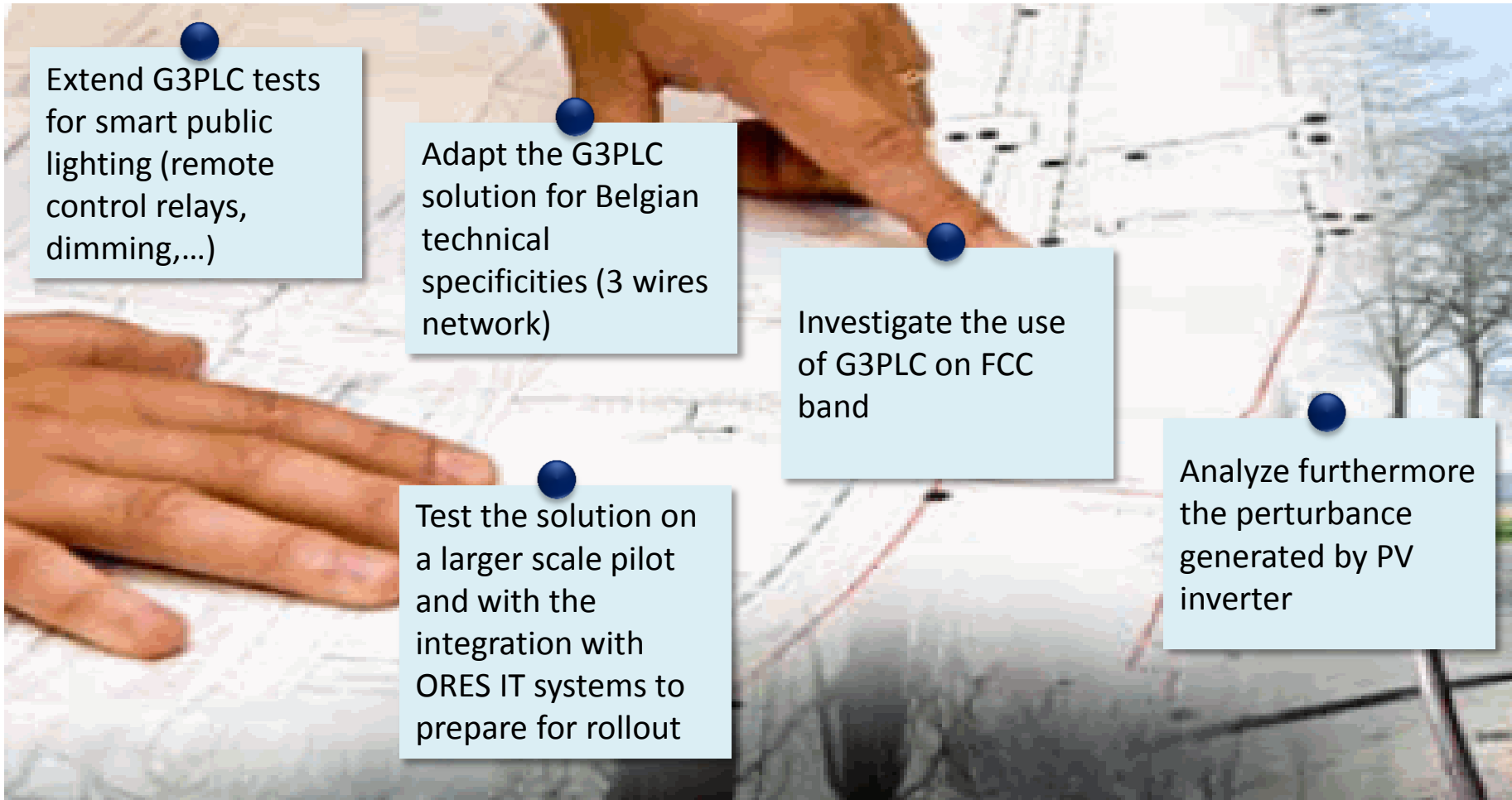
G3 PLC for Public Lighting

G3 PLC has been **successfully tested for Public Lighting**. The solution tested looked at replacing the ripple control receiver by a G3 PLC smart meter.



G3 PLC Pilot

Next steps



Extend G3PLC tests
for smart public
lighting (remote
control relays,
dimming,...)

Adapt the G3PLC
solution for Belgian
technical
specificities (3 wires
network)

Investigate the use
of G3PLC on FCC
band

Test the solution on
a larger scale pilot
and with the
integration with
ORES IT systems to
prepare for rollout

Analyze furthermore
the perturbation
generated by PV
inverter

G3 PLC Pilot

Conclusions

- Our pilot demonstrated that the **performance G3 PLC** in the field **is fulfilling the needs** of ORES
- G3PLC solution also proved to be **robust in terms of noise perturbation** as well as **allowing for a progressive deployment**.
- G3PLC can be used for **multiple DSO applications** : Smart metering, Smart public lighting,...
- G3PLC **is interoperable** and **supported by large industry players** ensuring long term vendor support

Questions

Contacts



Jean-Christophe Bouchez

Project Manager Pilots & Deployment
Smart Metering & Users

jean-christophe.bouchez@ores.net



Olgan Durieux

Program Manager
Smart Metering & Users

Olgan.durieux@ores.net



Henri Grandjean

Project Manager Engineering
Smart Metering & Users

Henri.grandjean@ores.net