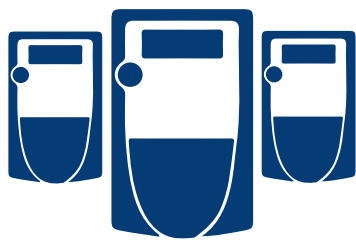


Evolution of PLC Technology - Gateway to Utility Intelligence

Gatis Kalniņš
JSC «Sadales Tīkls»

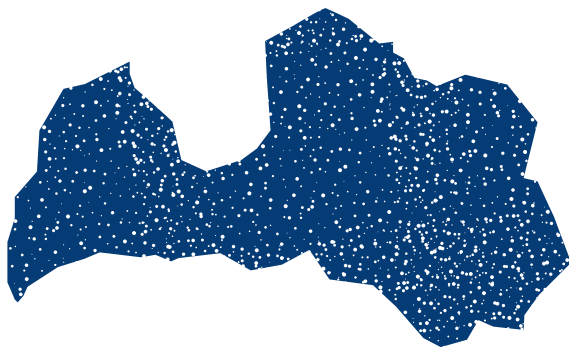




~100% of customers
have installed smart
meters

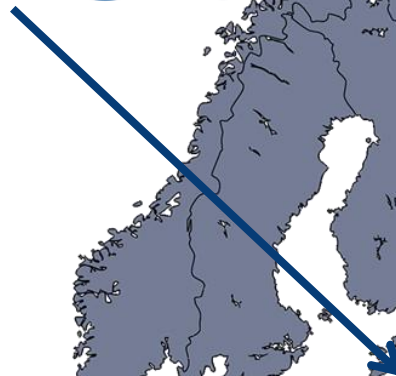


the total length of power
lines **92 000 km**



790 000 customers
and 1.1 million
objects

EST



LATVIA



3

DISPATCH
CENTERS



WOODEN
SUPPORTS
FACTORY

28

SUPPORT
BASES



LEARNING
CENTRE



LOGISTICS
CENTRE



METROLOGY
LABORATORY

2013

2014

9.91 % PLC PRIME



2015

10.11 % GPRS



2016

8.02 % GPRS



2017



2017

2018

2019

2020

2021

71.96 % G3-PLC



三星 SANXING 星

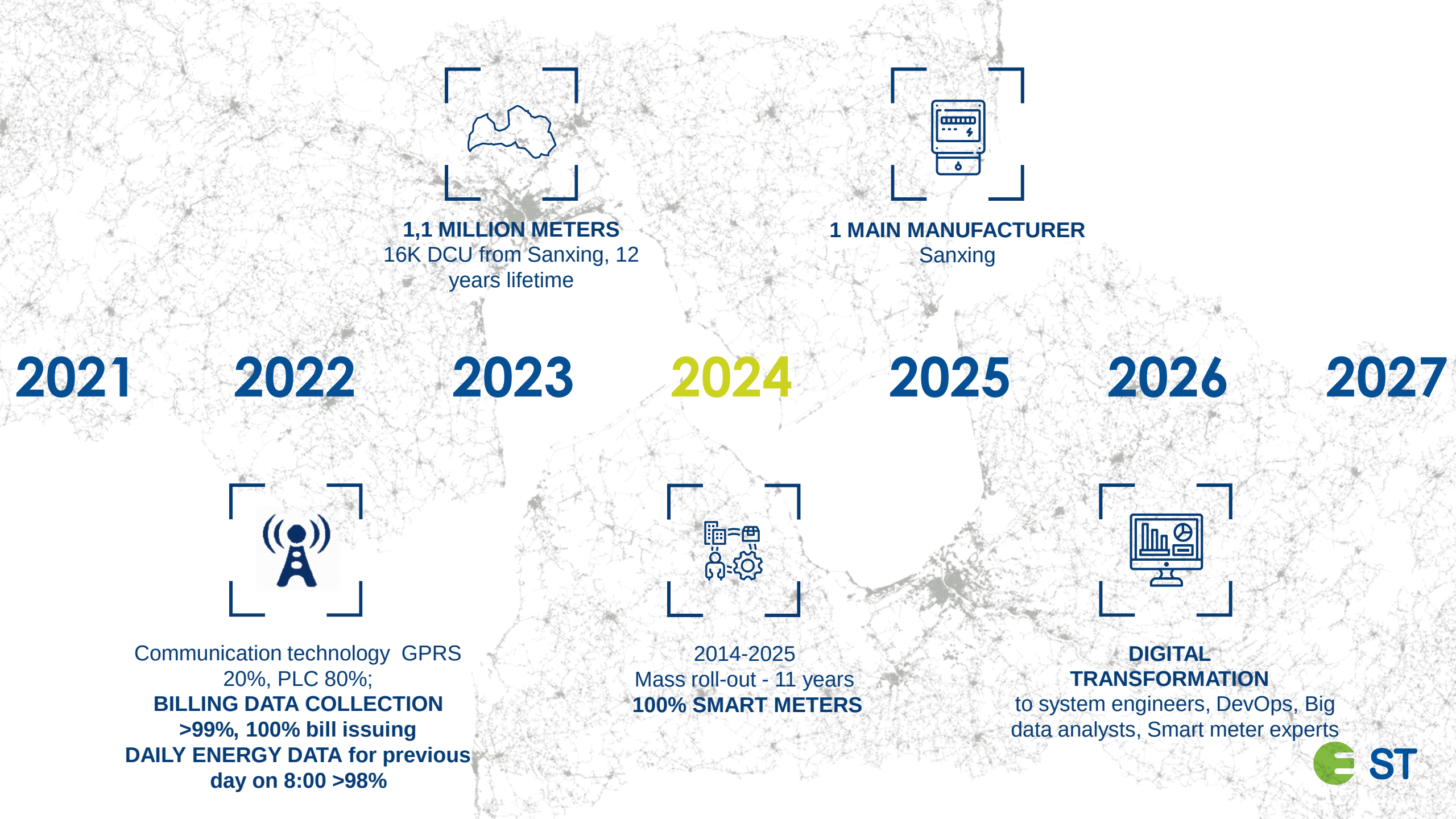
- ▶ First G3 mass deployment
- ▶ More than 0.8M PCs meters
- ▶ End to end solution with high performance (Meter-DCU-HES)



Sanxing, a leading smart energy solution provider in China. 35 years experience (since 1989), annual revenue \$2.5B (2024), 5000+ employees, business covers 70+ countries.



-  China Headquarter
-  Manufacturing Bases(8)
-  Overseas Companies(5)
-  Under Planning(9)



1,1 MILLION METERS
16K DCU from Sanxing, 12
years lifetime



1 MAIN MANUFACTURER
Sanxing

2021 **2022** **2023** **2024** **2025** **2026** **2027**



Communication technology GPRS
20%, PLC 80%;
BILLING DATA COLLECTION
>99%, 100% bill issuing
DAILY ENERGY DATA for previous
day on 8:00 **>98%**



2014-2025
Mass roll-out - 11 years
100% SMART METERS



**DIGITAL
TRANSFORMATION**
to system engineers, DevOps, Big
data analysts, Smart meter experts

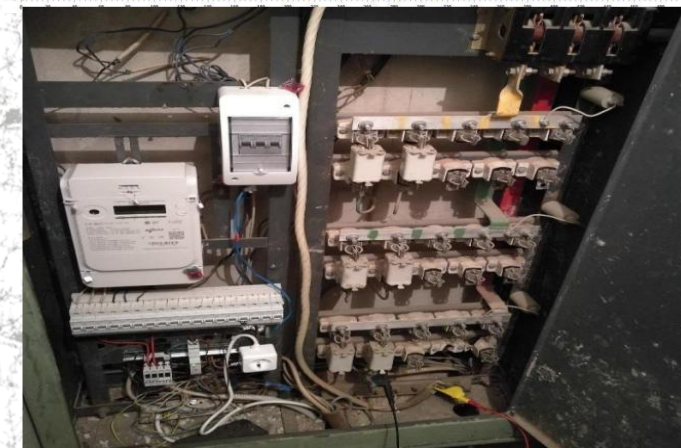
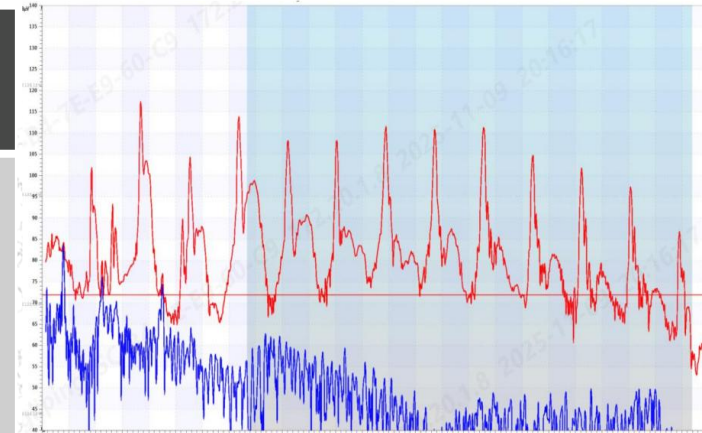
HOW TO ACHIEVE READING PERFORMANCE with PLC-G3 ?

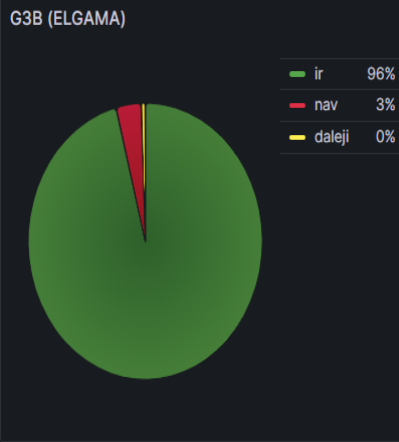
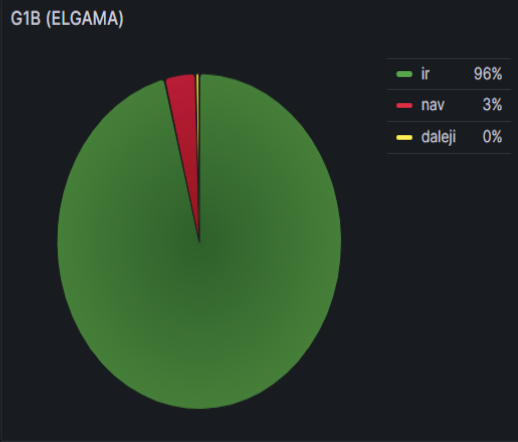
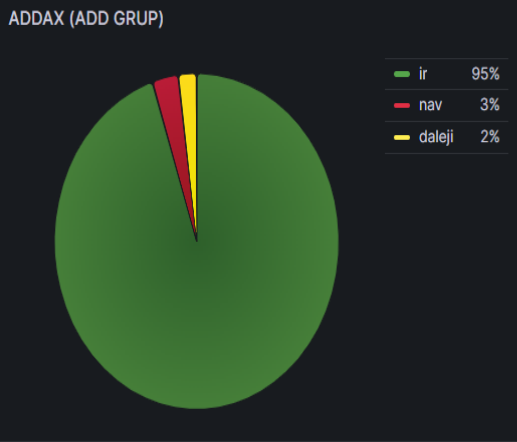
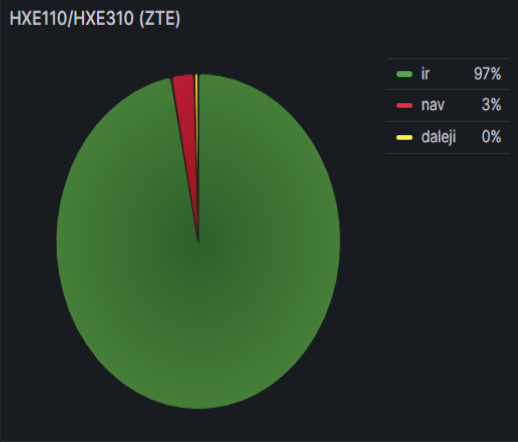
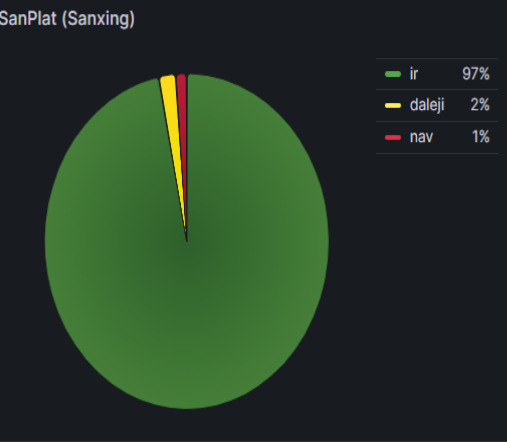
- ✓ BILLING DATA COLLECTION >99%, 100% bill issuing
- ✓ DAILY ENERGY DATA for previous day on 8:00 >98%



NINGBO SANXING used technological innovation to solving practical problem, quickly technical servers, to improving KPI

Challenge	Solution	Effectiveness	Reading rate
Strong noise	Anti noise (PLC network filter)	1.3% ↑	Load profile 90%→98%
Signal attenuation	PLC three-phase injection	1.2% ↑	
Low once reading success rate	Flexible replenishment mechanism	2% ↑	
Low transmission efficiency	Data compression	3% ↑	
Cross-station	Blacklist mechanism	0.5% ↑	





Visi Viedie [↗](#)





More reliable communication:

Works better on long and noisy LV lines

Fewer connection drops and retransmissions

Future-proof:

Uses standard **IPv6** (ready for smart grid & IoT)

Lower costs:

No SIM cards or mobile fees like GPRS

Uses existing power lines for data transfer

Interoperable:

Supported by many meter vendors across Europe

Easier to mix different equipment

Proven technology:

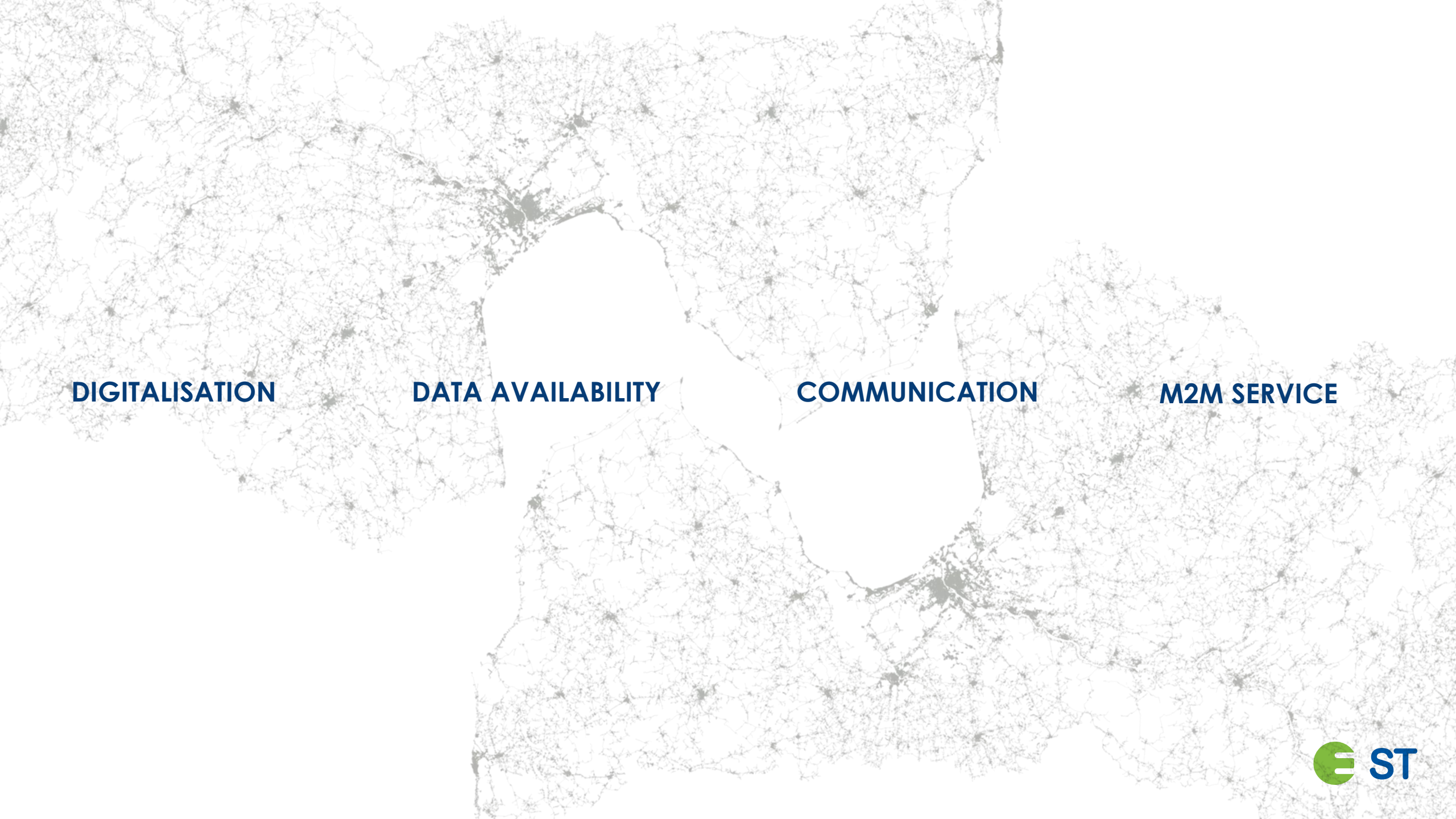
Used by major European utilities (e.g., Enedis, E.ON)

Stable and widely supported standard

So why **G3-PLC**?



What`s **Next**? One Meter for all Utilities

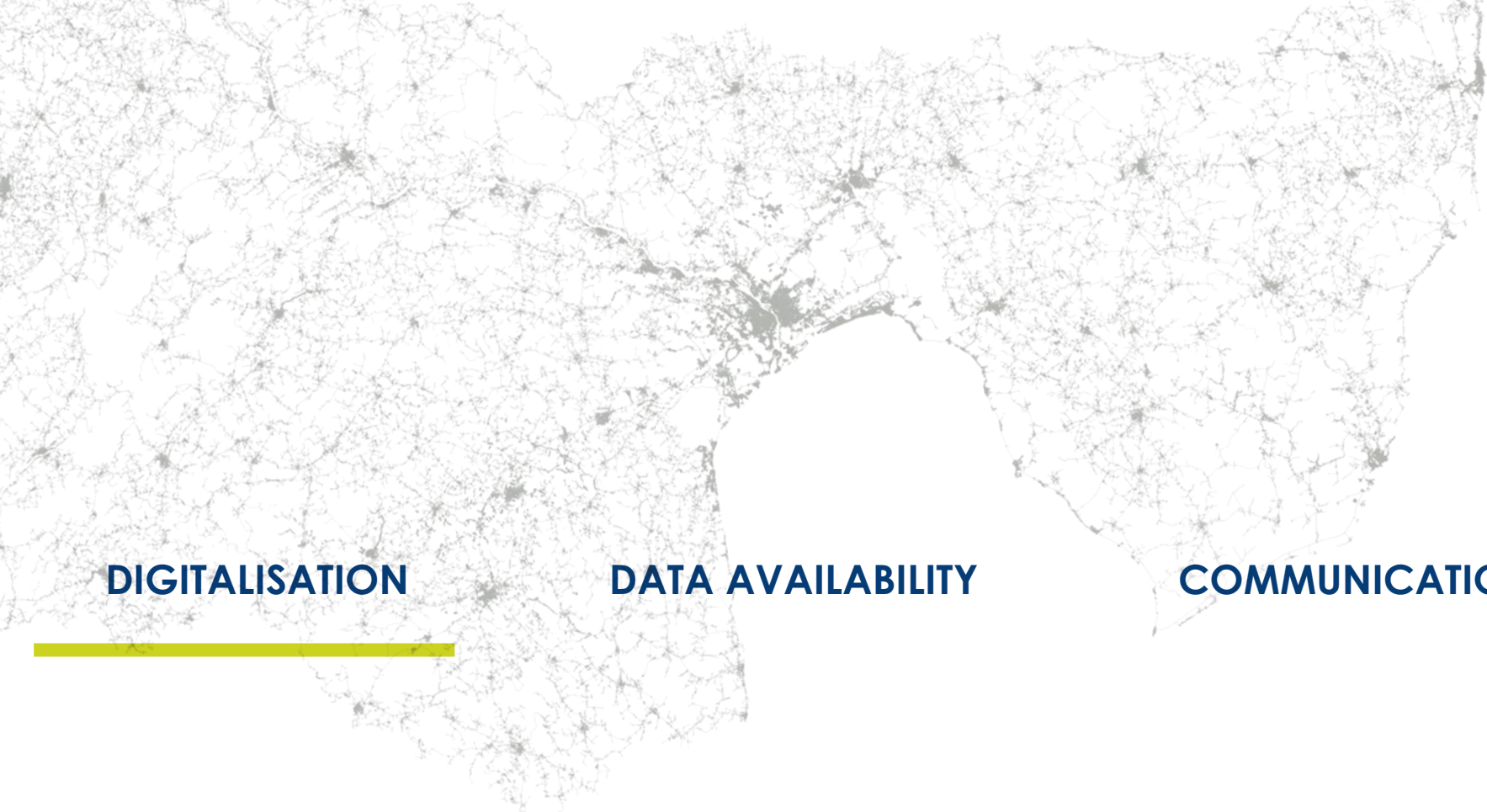


DIGITALISATION

DATA AVAILABILITY

COMMUNICATION

M2M SERVICE



DIGITALISATION

DATA AVAILABILITY

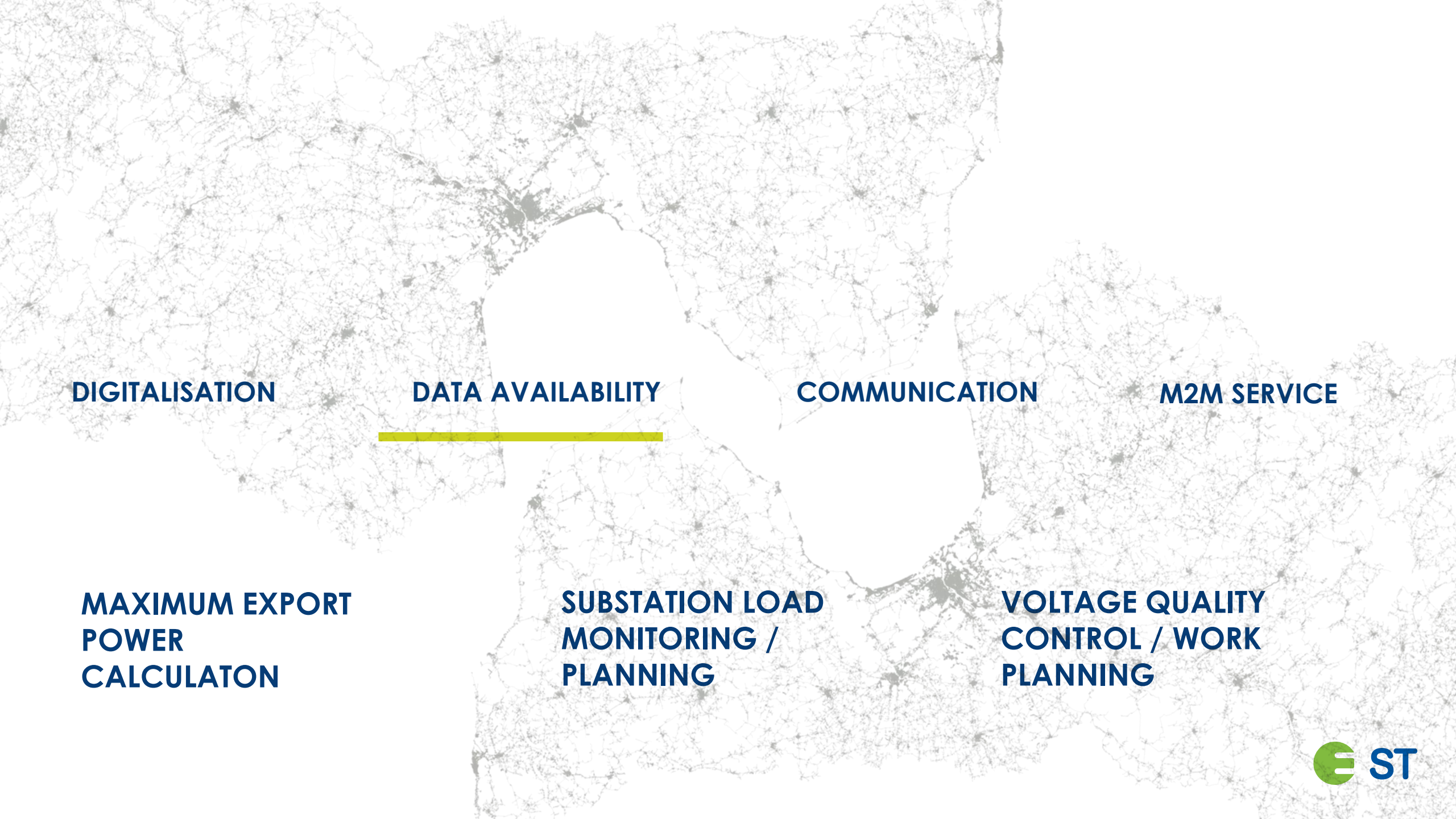
COMMUNICATION

M2M SERVICE

SMART METER READINGS

LOAD / CONSUMPTION PROFILES

SMART METER INCIDENTS



DIGITALISATION

DATA AVAILABILITY

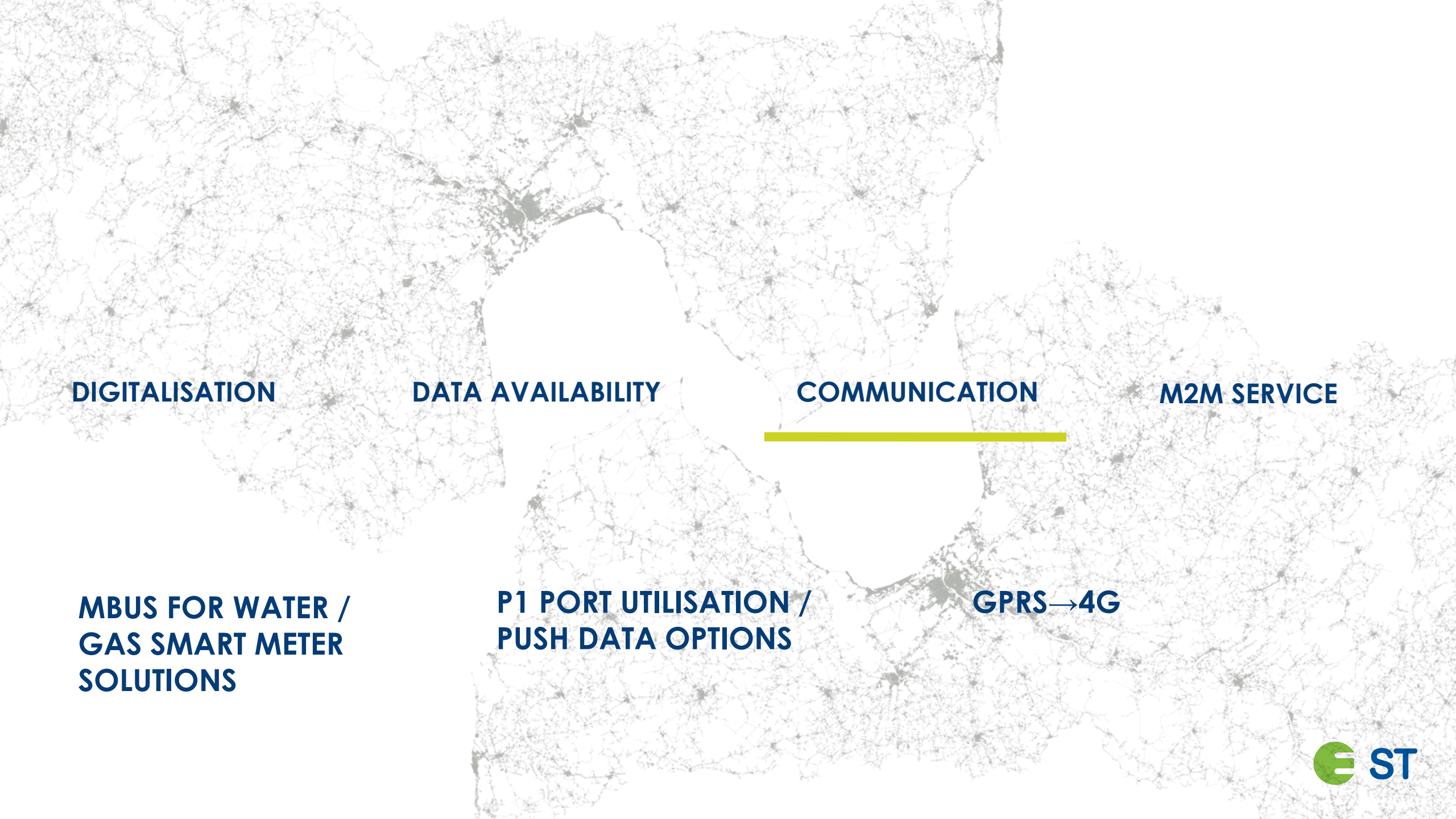
COMMUNICATION

M2M SERVICE

**MAXIMUM EXPORT
POWER
CALCULATON**

**SUBSTATION LOAD
MONITORING /
PLANNING**

**VOLTAGE QUALITY
CONTROL / WORK
PLANNING**



DIGITALISATION

DATA AVAILABILITY

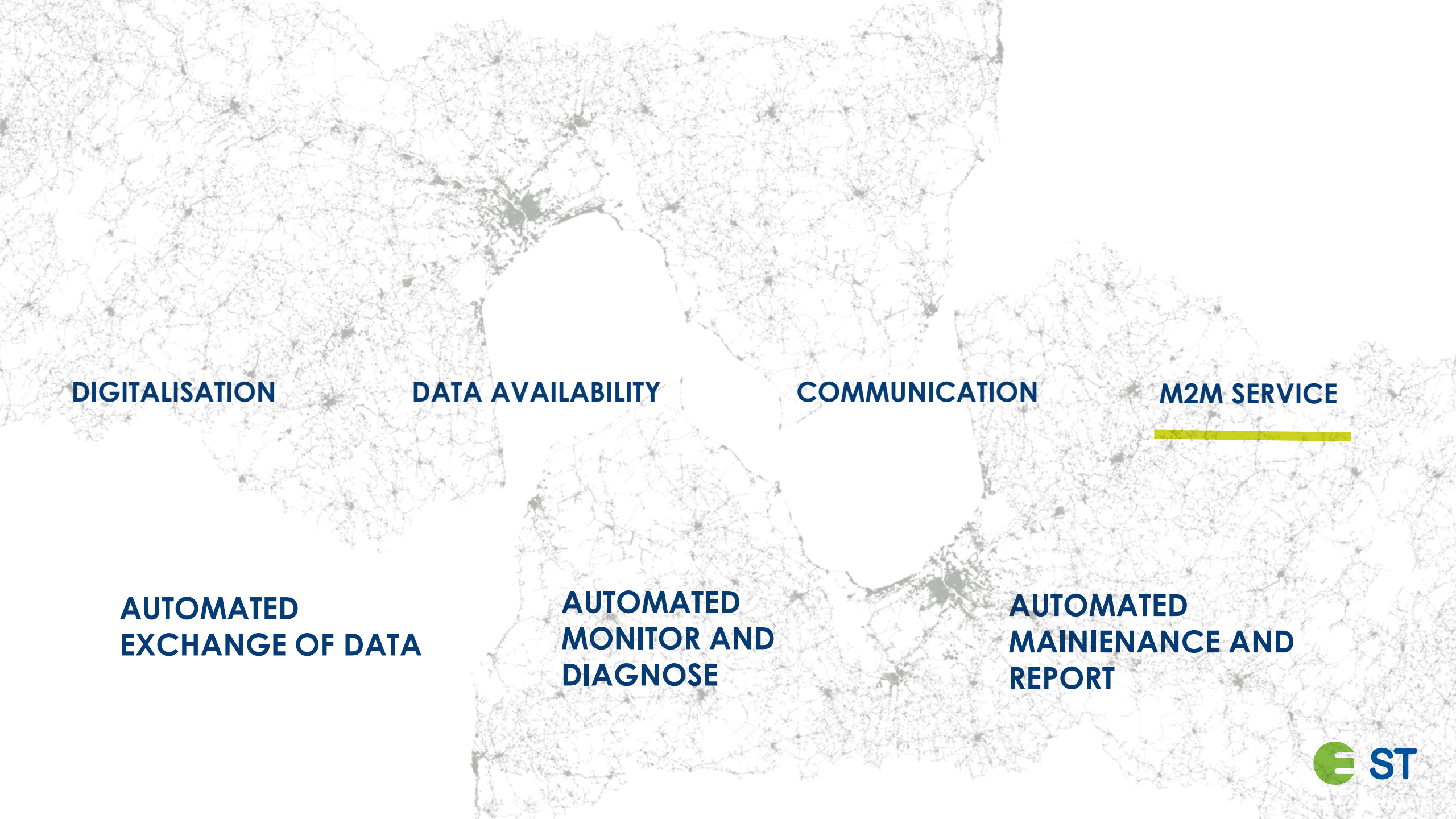
COMMUNICATION

M2M SERVICE

**MBUS FOR WATER /
GAS SMART METER
SOLUTIONS**

**P1 PORT UTILISATION /
PUSH DATA OPTIONS**

GPRS→4G



DIGITALISATION

DATA AVAILABILITY

COMMUNICATION

M2M SERVICE

**AUTOMATED
EXCHANGE OF DATA**

**AUTOMATED
MONITOR AND
DIAGNOSE**

**AUTOMATED
MAINIENANCE AND
REPORT**

So.. To wrap up

- **SMART EQUIPMENT** - Verified smart meters with MBUS, P1; DCU applied in G3 solution

- **DATA TRANSMISSION** and Communication solution implementation PLC-G3, GPRS, Modbus communication

G3 hybrid, 4G is the future trend

- **High KPI for AUTOMATED DATA READING, PROCESSING and DELIVERY** Meter readings, electricity profile, billing profile, meter events, API solution

- **M2M SERVER FOR EQUIPMENT MONITORING and MAINTENANCE**

Monitoring SYSTEM; Information panels, meter events

Technical SUPPORT, Consultations, troubleshooting, **KNOWLEDGE**

Have You thought about your next steps regarding smart metering?

We have!

Reach out!

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JSC «Sadalestikls»

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