



G3-PLC solution for the Indian Smart Grid System providing an alternative to RF communications for the last mile networks

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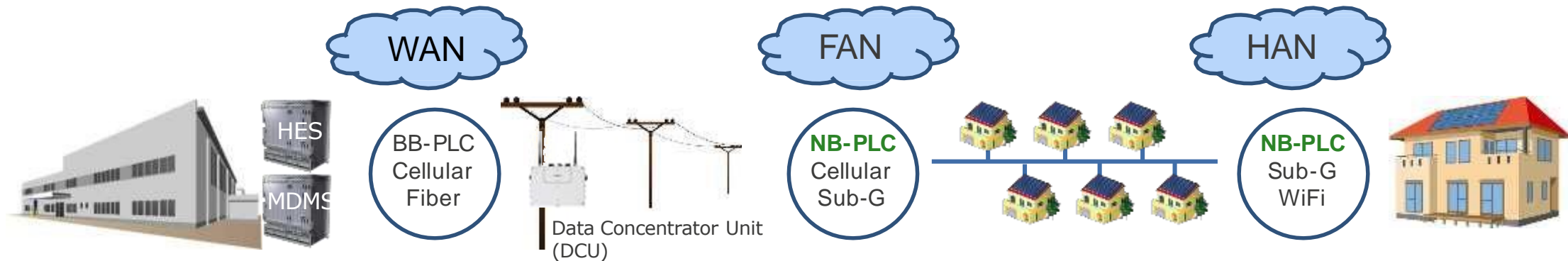
AMI, Communications and Advanced Analytics

14th March 2019

NB-PLC Technology in Smart Metering Systems

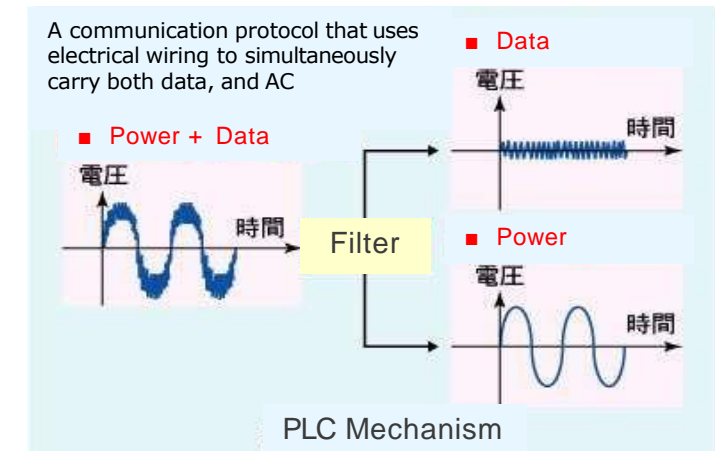
Narrow-band PLC to provide essential solutions in last mile networks

■ Communication technologies usage



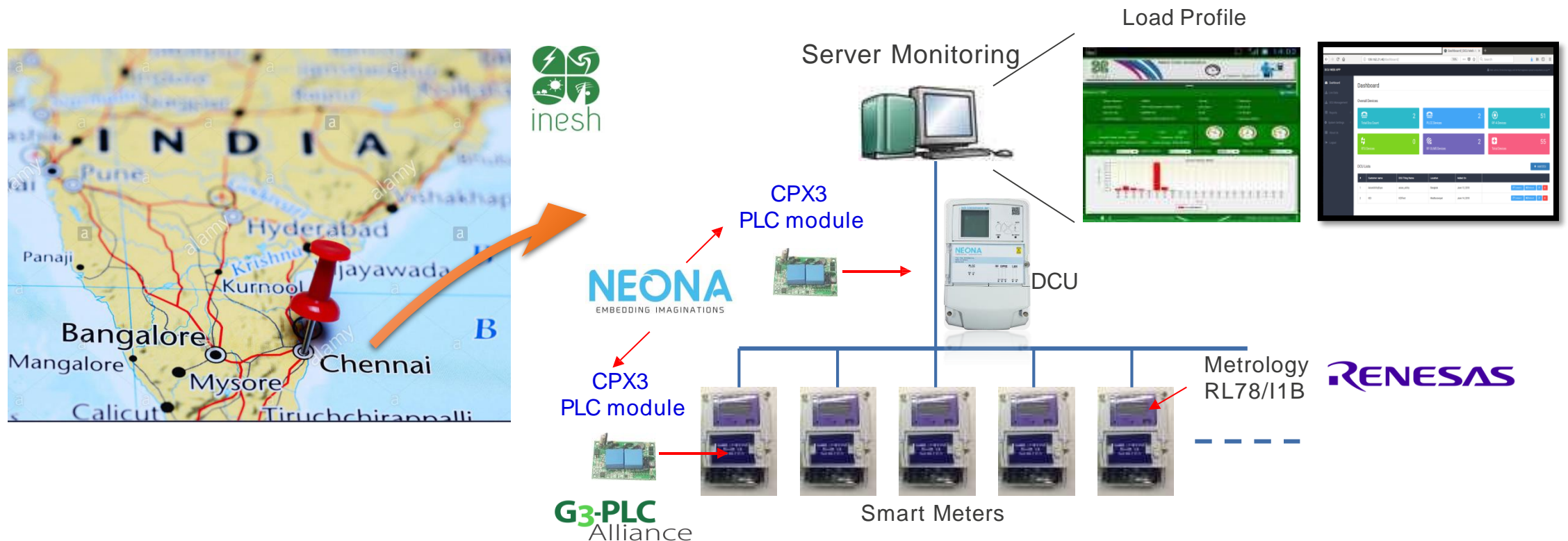
■ Advantages of NB-PLC

- Minimal infrastructure cost:
PLC is the transmission of data using existing power cables
- Wireless is limited for rural areas and in-building communications
- Realizing broadcast communications
- Interoperable communications



G3-PLC Smart Meter Field Test in Chennai, India

Inesh (Indian IDH) carried out field tests in cooperation with an electric power company



READY PRODUCT/SOLUTION

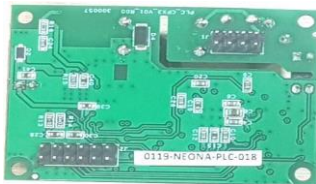
End-to-end Integrated Smart Grid Suite with intelligent IoT platform

RENESAS

NB-PLC - CPX3 based module

- Data Rate - 300 kbps
- OFDM (Multi-Carrier)
- 2 Layer of FEC
- AES128
- Topology - Mesh
- IPv6 Compliant
- Robust Mode

G3-PLC
Alliance



Data Concentrator Unit (DCU)

- BUILD in DLMS Client
- Manage > 500 PLC Meter nodes
- Meter data is stored >180 days
- MDAS / Cloud Interfaces: -
 - 3G/4G/HSPA+ / GSM / GPRS, 10/100 Ethernet
 - HTTP / MQTT Interface
- Processor / Controller



- Linux 4.9 Kernel based System
- ARM Cortex A9 @ 400MHz
- SD – RAM - 128 MB
- eMMC FLASH - 1GB (Expandable)
- NOR FLASH - 64 MB (Expandable)
- Internal Local Server on Java

NEONA
EMBEDDING IMAGINATIONS

(MDAS/MDMS) for AMR and AMI

- Meter Data Management
- Meter tamper / Events Alerts
- Reporting
- Calculate Billing
- Profiling
- GIS
- Load Management



Renesas Cool Phoenix 3 Market Results and Usage

Electricity meters



HEMS controller



LED Street Lighting



Factory Energy Management System (FEMS)



Lighting system in BEMS



**CPX3
PLC solution**



Voice over PLC *



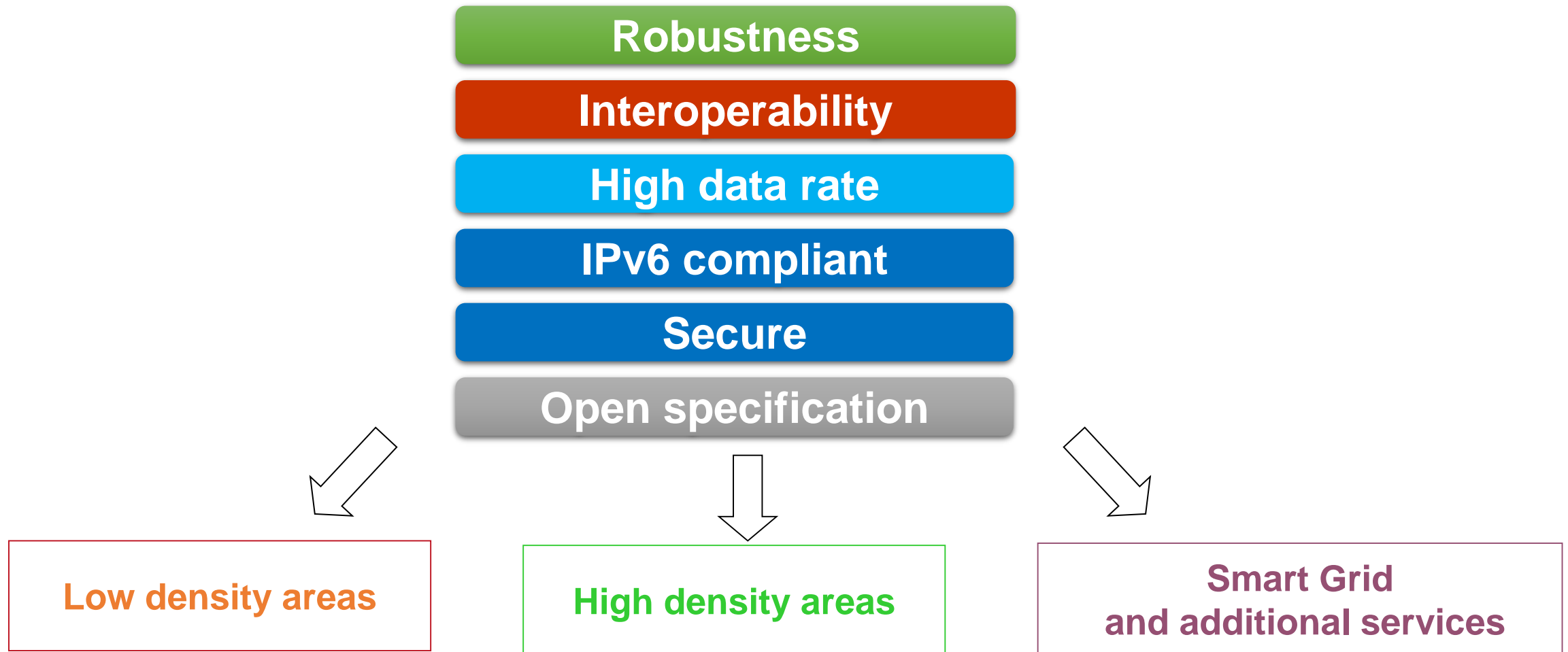
Heating, Ventilation, and Air Conditioning system * (HVAC)



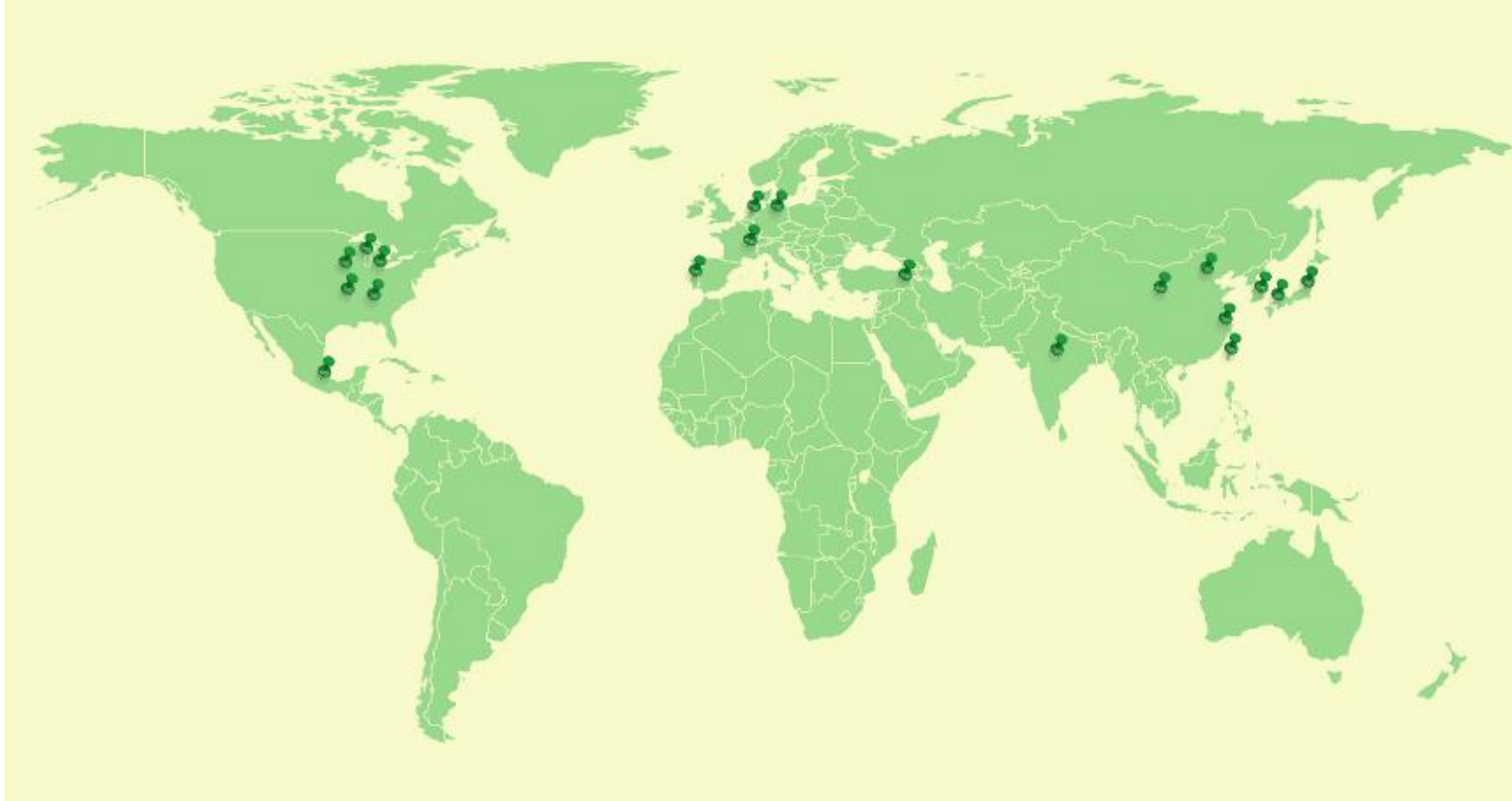
* Using for CPX3 for DC communication instead of private lines

G3-PLC - A Global Solution

with Renesas as our partner



G3-PLC Meters Global Field Rollouts taking the lead in smart meter markets



G3-PLC available worldwide

Frequency bands:

CENELEC A, B

FCC

ARIB

Many rollouts

Further trials ongoing

KEY RECOMMENDATIONS

1. Related customers to propose G3-PLC pilot to Indian Utilities



**Renesas & Neona
can support all end to end
Solutions for your cost
effective pilot**

2. Street light projects using G3-PLC



3. Smart charging stations combined connected through G3-PLC





Questions and Answer from Audience

THANK YOU!