



Your inclusive guide to  
the energy transition.

*[www.enlit-africa.com](http://www.enlit-africa.com)*



**Hybrid communication:  
Extended capabilities for  
the smart grid and IoT!**

Leon Vergeer  
General Secretary  
G3-PLC Alliance  
France



## G3-PLC is a proven Powerline Communication technology

Cost effective, reliable and secure  
communication...



... in a wide range of applications



- ➡ Mature technology with >80 million products in >30 countries worldwide
- ➡ Supported by international group of nearly 100 DSO's and industrial players

## Designed for long-term operation and harsh network conditions

### Robust communication

- Operates at very low SNR and at different modulations
- Self healing
- High indoor penetration( high rise buildings, in home applications)

### Long distance

- Easily covers several hundreds of meters

### High data rate

- Complies with future needs for energy demand management and demand response policies

### Strong security

- State-of-the-art Security with MAC security combined with data integrity mechanisms in higher layers

### Future proof

- End to end IP communication and IPv6 compliant
- Designed to accept diverse application layers

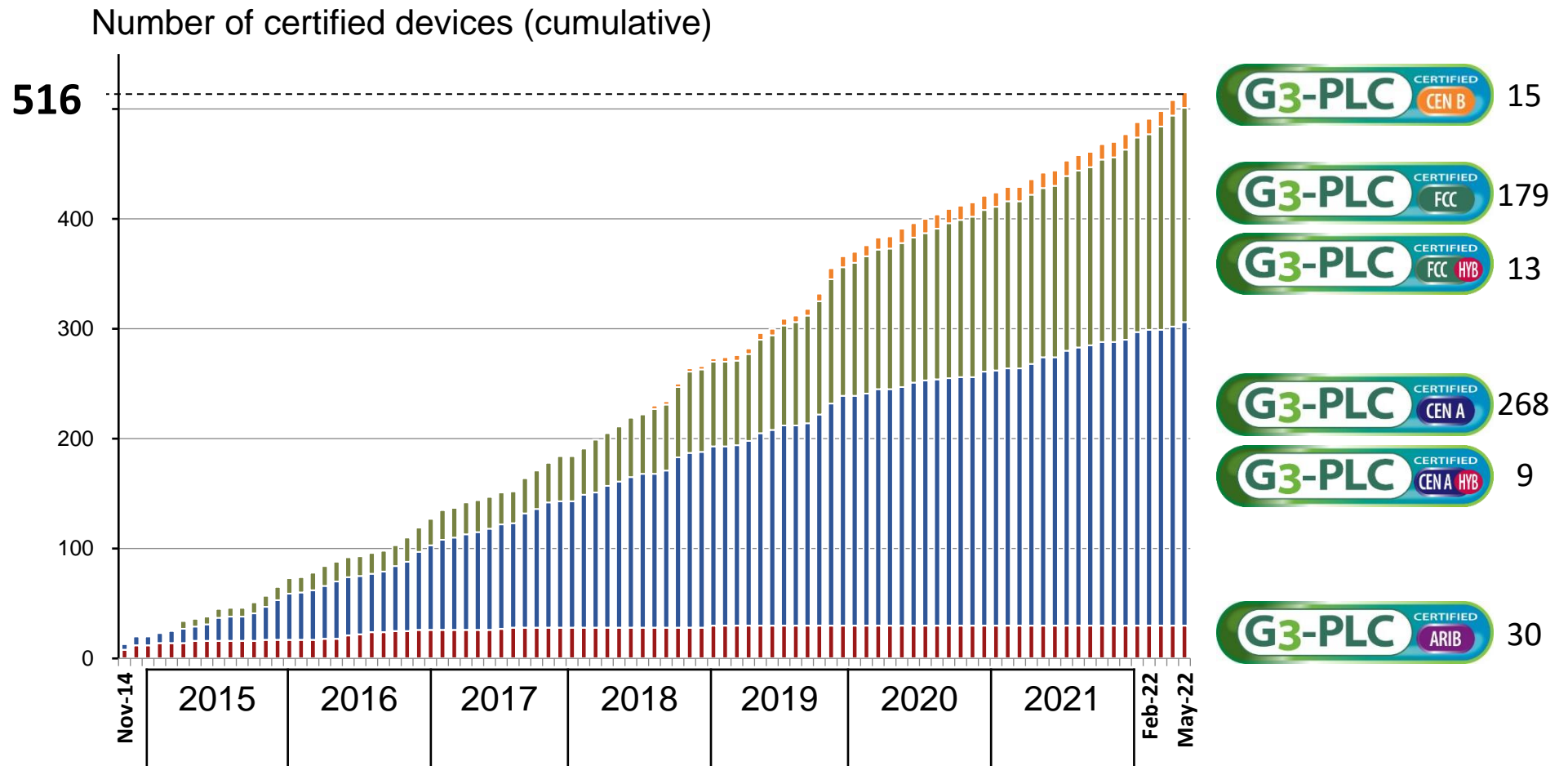


### International Standard

- International open ITU standard
- Strong certification program



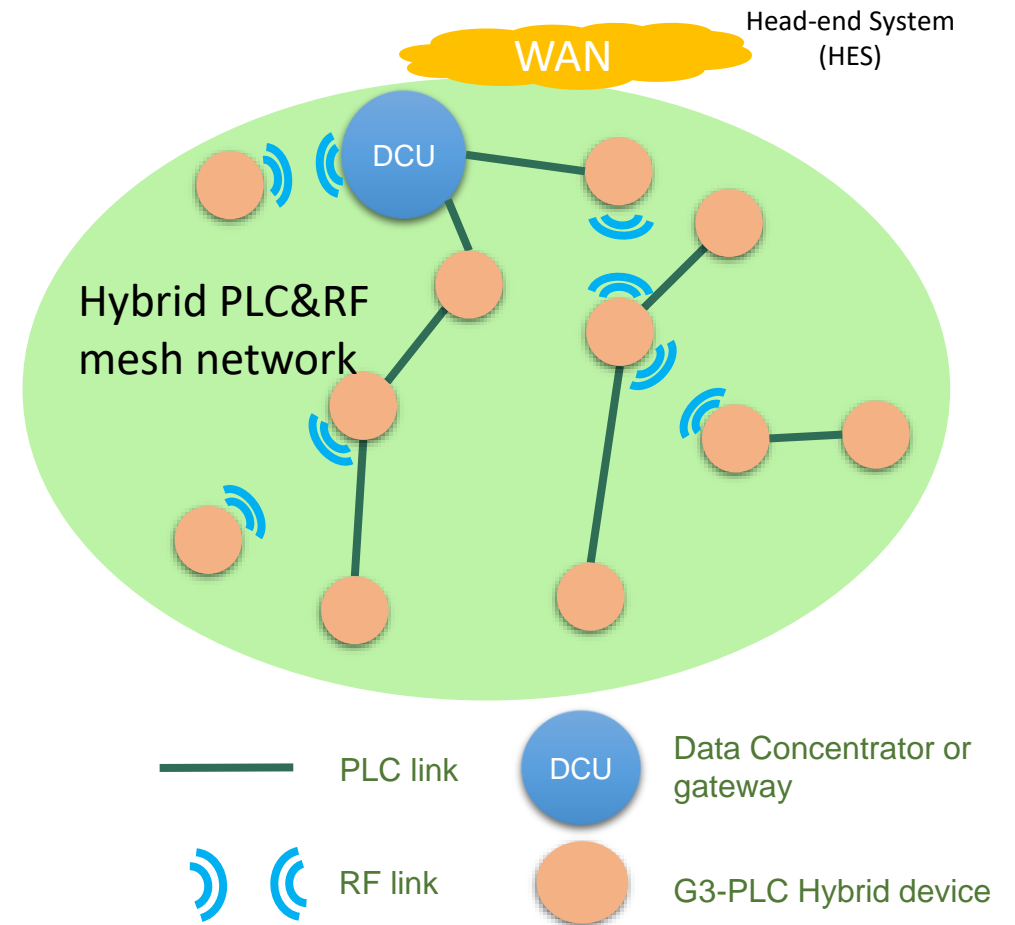
# Strong certification program with over 500 devices certified



For list of all certified devices: <https://g3-plc.com/g3-plc-certification/certified-products/>

## What is hybrid communication?

- Uses RF as complementary technology next to PLC
- For each link the best available network is selected *automatically* and adjusted *dynamically*
- PLC and RF technology in one *single* solution
- Fully backwards compatible
- Standards based solution adapted by ITU



# Hybrid communication benefits



## Cost of Ownership

- Avoids high cost of last 1% connectivity
- Reduces complexity of the roll-out
- No OPEX for using the network



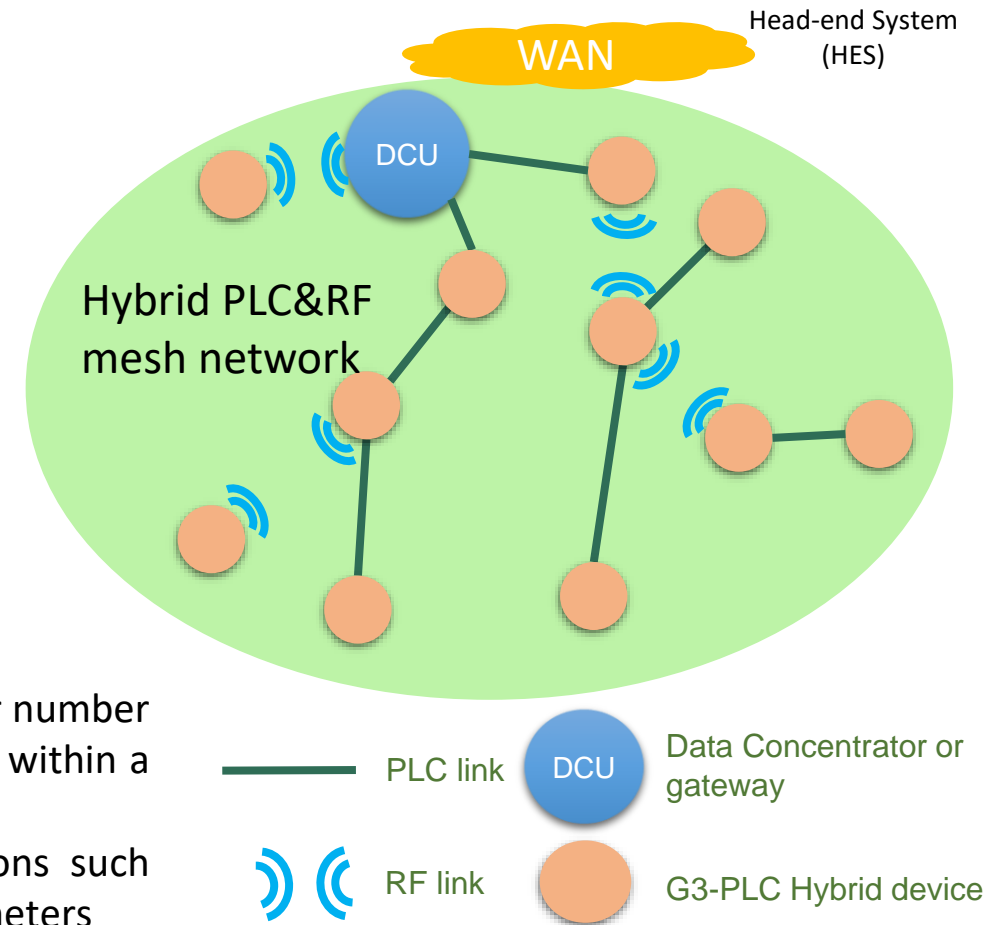
## Flexibility

PLC and RF work hand-in-hand to penetrate the white area where single technologies struggle

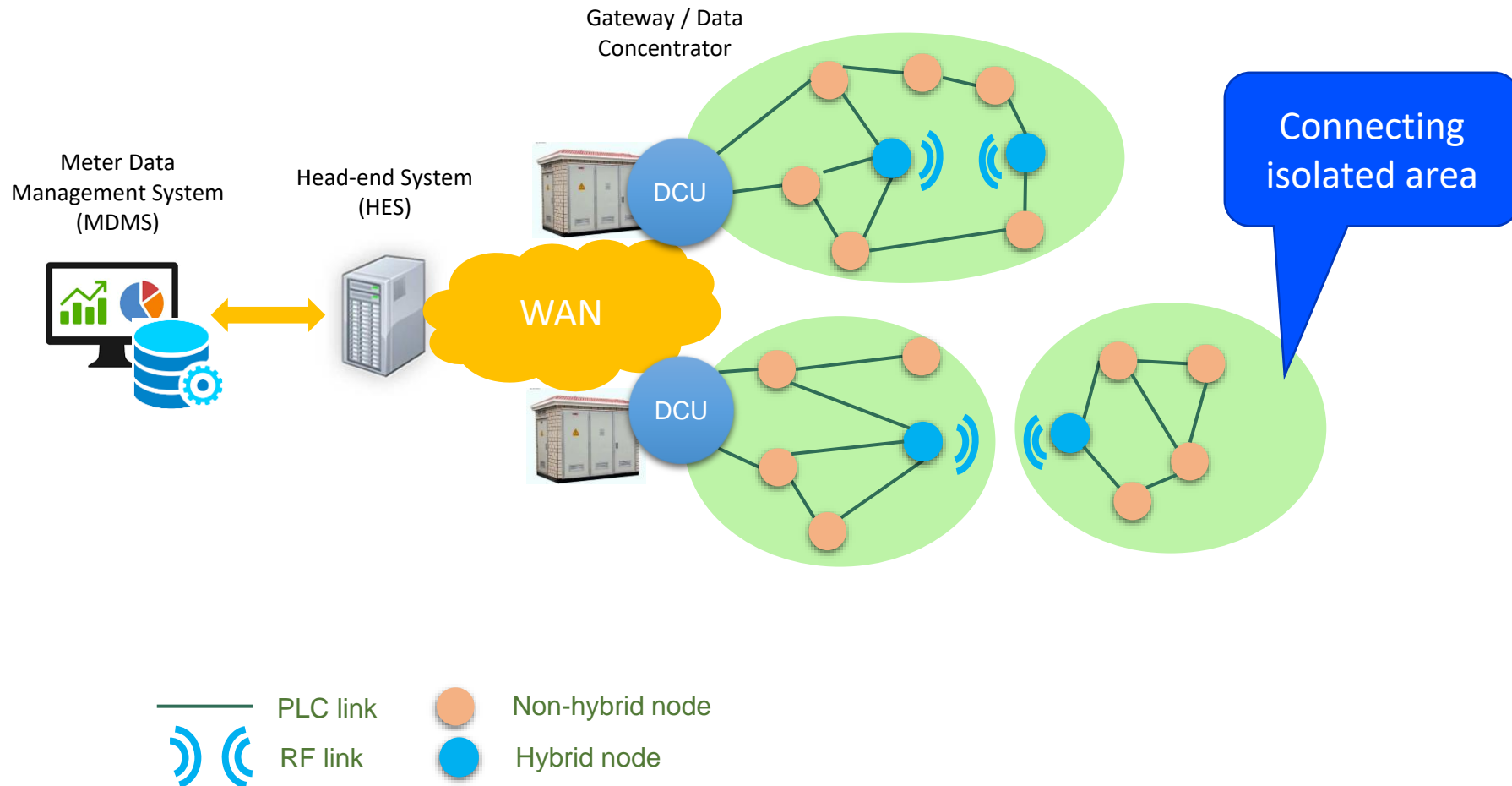


## Performance

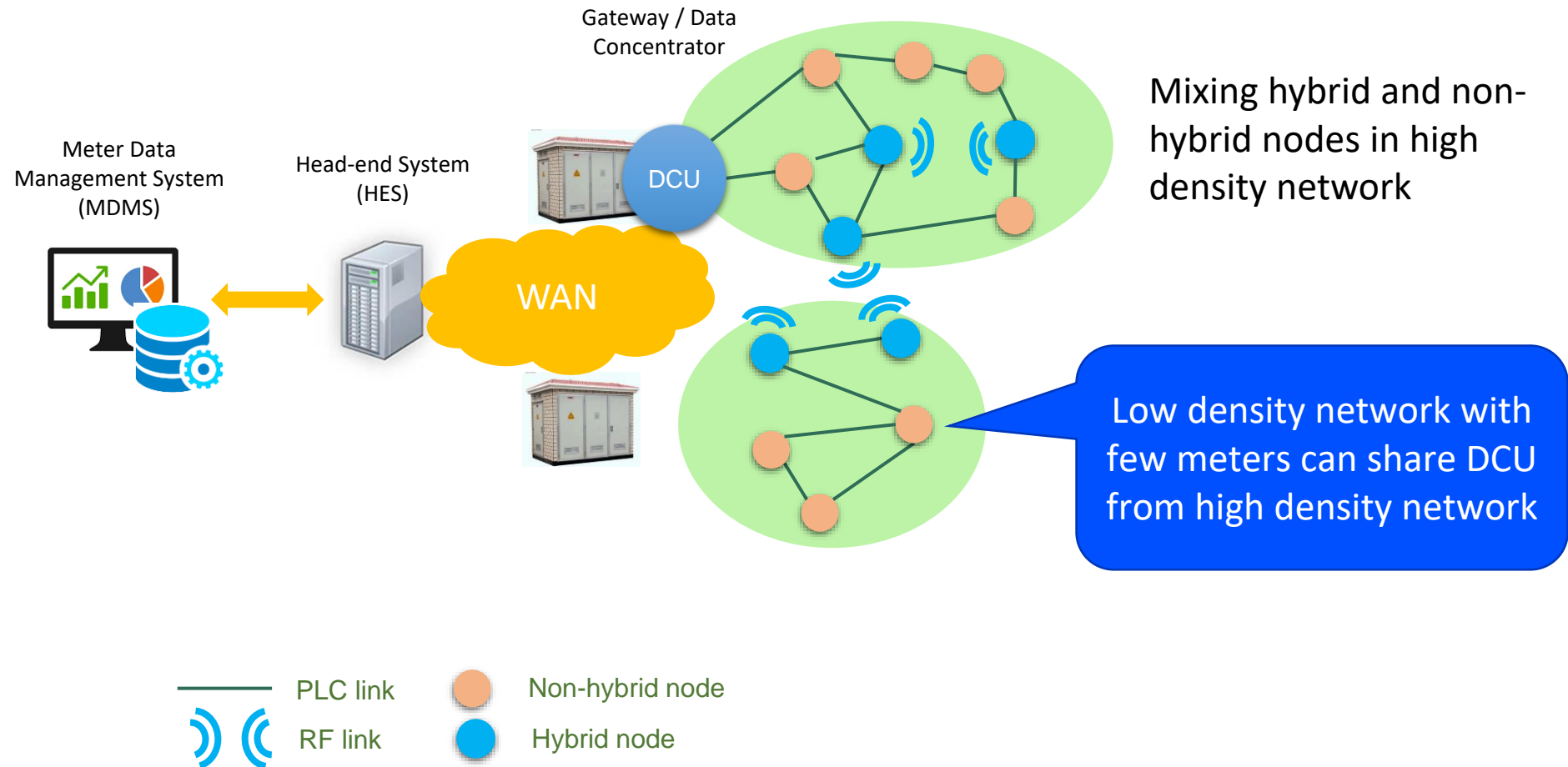
- Higher data rate with larger number of nodes can communicate within a network
- Opens other IoT applications such as sensors, gas and water meters



## Hybrid use case connecting isolated networks



# Hybrid use case sharing DCU for two adjacent substations





## G3-PLC Hybrid supports all PLC bands and already many RF frequencies

- The G3-PLC Hybrid is available for CENELEC and FCC PLC bandplans

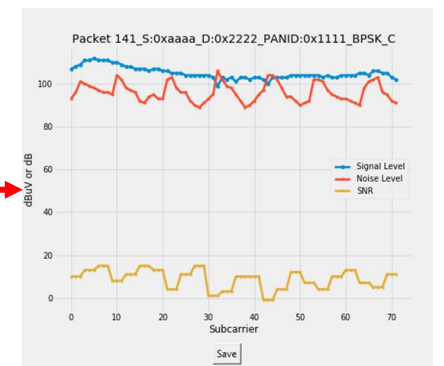
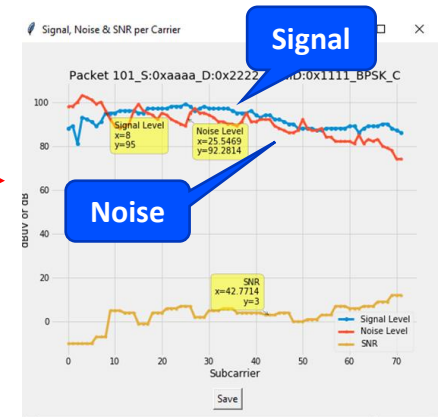
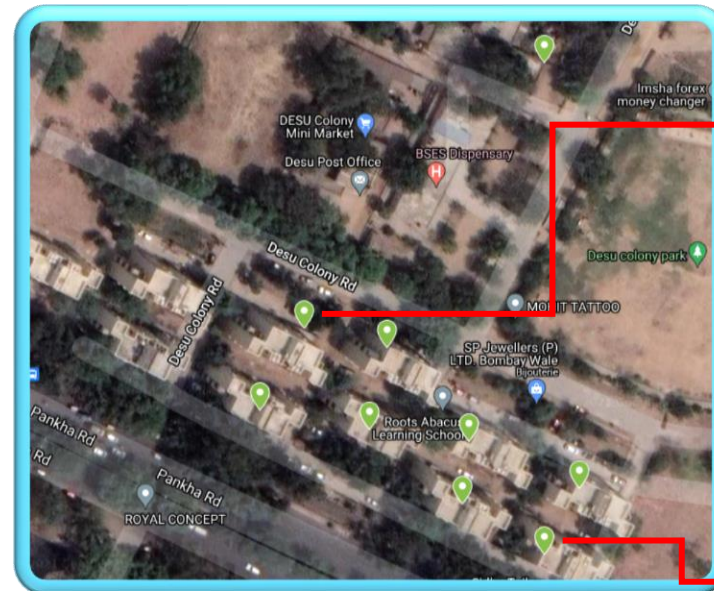


- An extensive range of RF frequencies is already included in the hybrid solution:

RF frequencies included in the G3-PLC specification		
863 MHz (Europe) 866 MHz (India) 870 MHz (Europe)	915 MHz (US, Canada, Mexico, Colombia) 915-a MHz (US, Canada, Mexico) 915-b MHz (Brazil) 915-c MHz (Argentina, Australia, NZ)	919 MHz (Malaysia) 920 MHz (Japan) 920-b MHz (Indonesia, Thailand, Vietnam, Singapore)

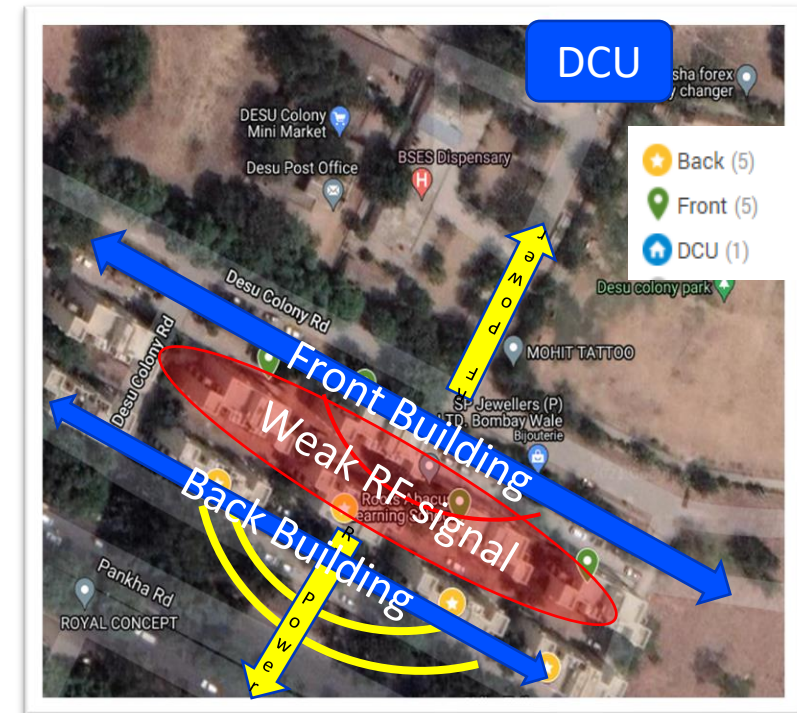
# Trials for example in India by Sagemcom show G3-PLC Hybrid is performing well under very harsh conditions

- Location represents a challenging environment for both RF & PLC communications:
  - Very high level of PLC noise



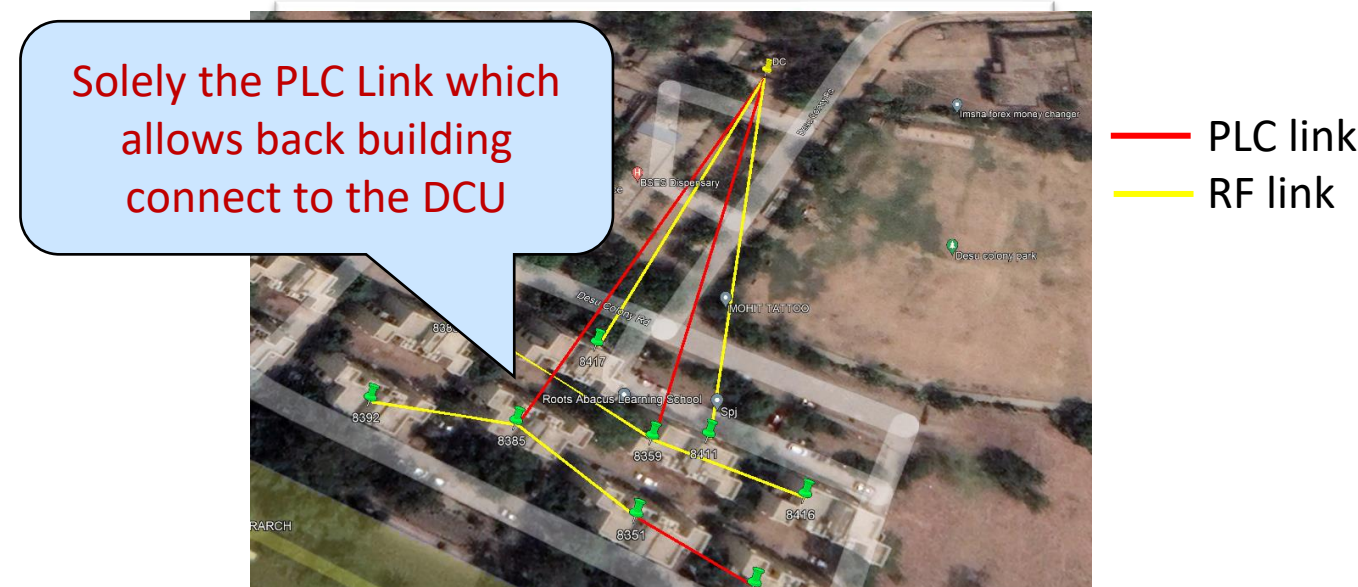
## Trials for example in India by Sagemcom show G3-PLC Hybrid is performing well under very harsh conditions

- Location represents a challenging environment for both RF & PLC communications:
  - Very high level of PLC noise
  - Obstacles create a very harsh environment for back meters to communicate in RF with the front Meters



## Trials for example in India by Sagemcom show G3-PLC Hybrid is performing well under very harsh conditions

- Location represents a challenging environment for both RF & PLC communications:
  - Very high level of PLC noise
  - Obstacles create a very harsh environment for back meters to communicate in RF with the front Meters
- Hybrid performs very well; as an example the PLC link allows the meters at the back to connect to the DCU



1 H collect with Retry and recovery	30-sept	01-oct	02-oct	03-oct	Today AVG
LP1(2690 Bytes)- Daily KPI %	100	98	97	100	98.5
Billing (76 Bytes) Daily KPI %	100	98	99	100	99

## Hybrid communication: Extended capabilities for the smart grid and IoT!

- ✓ Offers both PLC and RF technology on a single solution
- ✓ Maximises coverage and connectivity and strongly reduces complexity of roll-out
- ✓ Standards based and interoperable solution
- ✓ Fully backwards compatible with existing G3-PLC implementations
- ✓ Opens up new use cases like multi-utility metering



# Thank you for your attention!

**If you have any questions,  
please visit [www.g3-plc.com](http://www.g3-plc.com) or  
contact [generalsecretary@g3-plc.com](mailto:generalsecretary@g3-plc.com)**