

3GPP TSG RAN Meeting #80  
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## Motivation for Relaying for IoT Devices

# Use Cases for IoT Relaying

## ■ Relaying for coverage extension

- Some IoT deployments have devices where existing coverage extension techniques cannot reach reliably
- Underground utility meters
- Deep sensors e.g. in wells
- Relaying can assist in reaching these problematic devices
- Multiple hops may be required for some cases

## ■ Relaying for power saving

- Many IoT deployments are sensitive to battery consumption
- Battery lifetimes of years to decades expected, and recharging is not always possible
- Improving the link budget reduces battery consumption in active mode (lower power transmission, and higher instantaneous data rates imply a lighter duty cycle)

# UE Relaying

- **UE based relaying can use 3GPP sidelink or non-3GPP RAT (e.g. Bluetooth)**
- **The FeD2D study item achieved good results in studying a Layer 2 based UE-to-network relay architecture**
  - The studied architecture allows the network to manage the remote device as a full participant in the 3GPP ecosystem (“identify, address, and reach”)
- **IoT use cases were considered and the studied enhancements can be applied to IoT devices**
  - Many IoT features (CIoT optimisations, attachment without PDN, non-IP data) are transparent for a L2 relaying architecture
- **Requires sidelink support by the devices**

# Uu Relaying

- **Alternatively, relaying can be considered based on Uu interface with small cell type relay sites**
- **Backward compatible toward legacy devices as the relay interface is just the existing Uu**
  - Link selection can rely on legacy procedures (select the best cell)
- **Requires deployment and management of the small cell sites**
- **Downselection of relaying options can be considered as a first phase**

Thank you !

