

Tutorial - A softwarized perspective of the 5G networks - non-3GPP

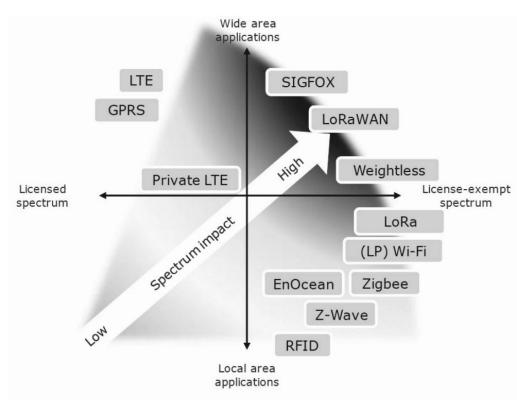
Presenters: Kleber, Cristiano, Lucio, Ciro, and Victor







- 3GPP envisaged in Release 15 the integration and support of other non-3GPP wireless access technologies
- The coexistence of different access technologies promotes significant gains concerning the performance and cost of the communication of IoT devices

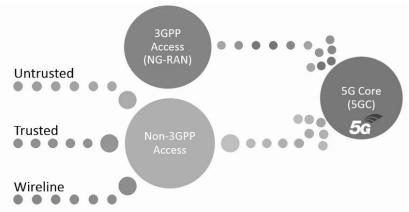


Source: https://www.itu.int/

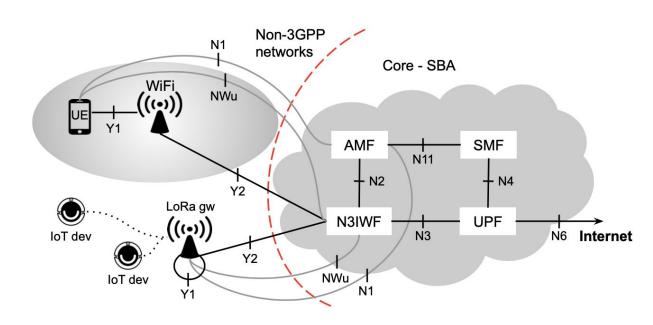
For SBA core, fewer options were defined

- Release 15 Untrusted non-3GPP access focus only on WLANs
 - Non-3GPP traffic must be isolated from other traffics, including the 5G core, which is suitable for IoT applications and services
 - Non-3GPP InterWorking Function (N3IWF)
- Release 16 Trust non-3GPP access on definition

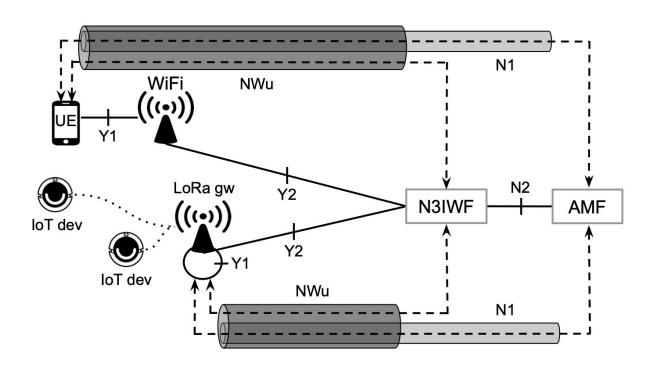
 The trust access does not allow integration with other wireless communication technologies used in IoT



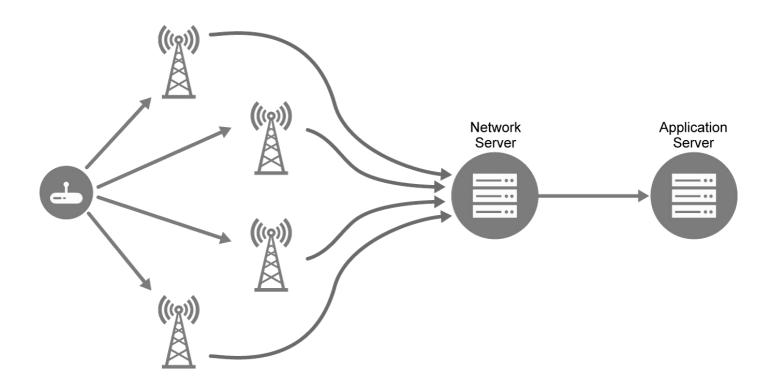
Integration between the untrusted non-3GPP access networks and the 5G SBA core



Connections for the integration of untrusted non-3GPP access network with the 5G SBA core



Non-3GPP - LoRaWAN Network



LoRa

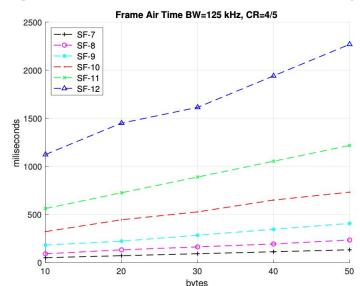
LoRa RF technology, developed by Semtech Corporation, allows communication over long distances using the Spread Spectrum concept of RF

This technology has the following configuration parameters that directly influence

the communication performance:

Spreading Factor (SF)

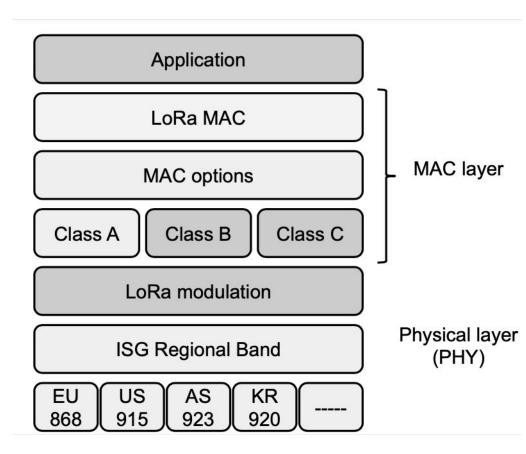
- Bandwidth (BW)
- Code Rate (CR)



Source: "A Survey on LoRaWAN Architecture, Protocol and Technologies", 2019 DOI: 10.3390/fi11100216

LoRaWAN MAC

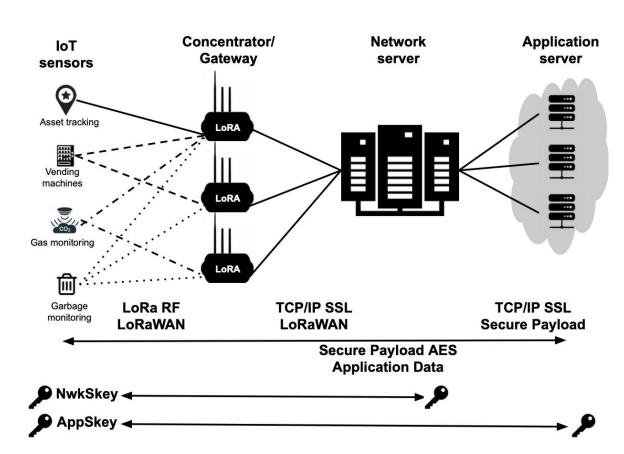
LoRaWAN network is the name given to IoT Low Power Wide Area Network (LPWAN), which uses the LoRa technology as a physical medium and implement an architecture based on the LoRaWAN Media Access Control



LoRaWAN

Several components of the network are defined in the LoRaWAN specification and are required to form a LoRaWAN network:

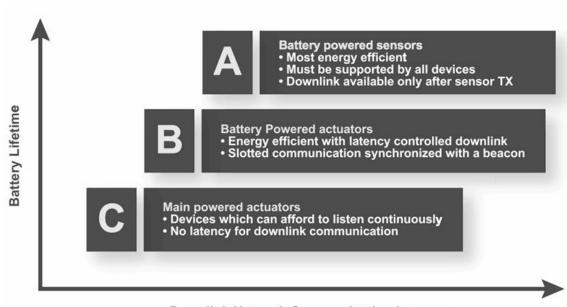
- End-devices
- Gateways
- Network server
- Application servers



LoRaWAN

LoRaWAN has three different classes of end-devices to address the various needs of applications:

- Class A
- Class B
- Class C



Downlink Network Communication Latency