

# UKKOVERKOT

**Truly Nationwide LTE network in Finland**

# Brief history of 450MHz spectrum in Finland

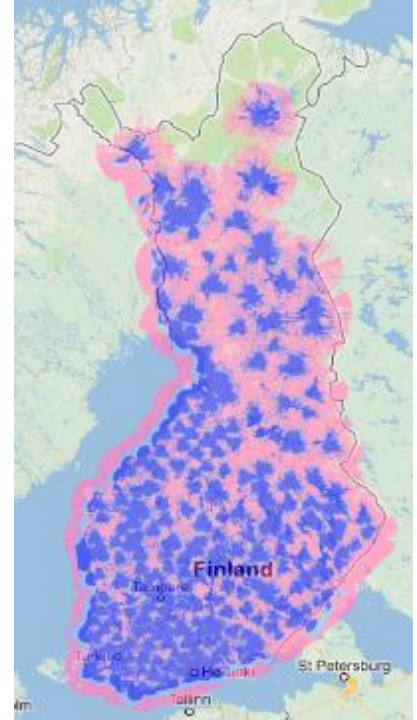
- NMT 450, first generation analog mobile telephony network was opened in Finland in 1982 providing nationwide coverage
- After NMT 450 network was shut down a wireless broadband network using Flash-OFDM technology was built and branded as “@450”
- 2012 @450 network was upgraded to Huawei CDMA technology
- During second half of 2014 network technology will be again updated, this time to LTE

Nokia Mobira

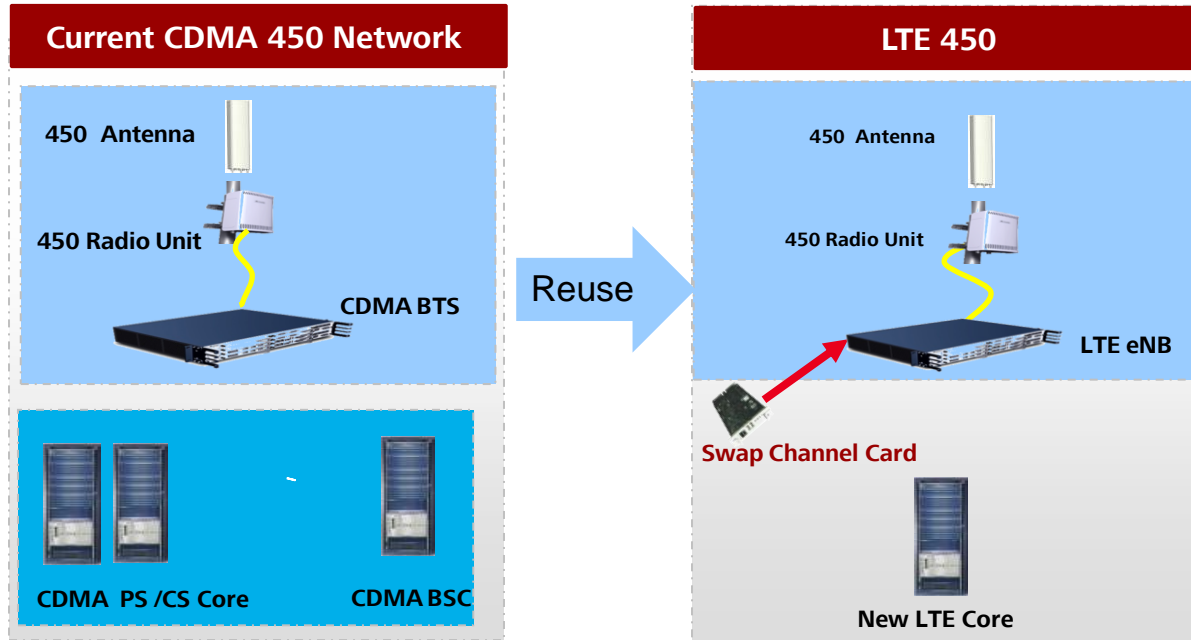


## LTE migration

- Current CDMA network covers over 99.9% of Finnish population with only 241 base stations
- CDMA base stations can be updated to LTE by simply swapping channel card
- RRU and antenna can be reused directly
- No tower climbing required
- Planned schedule 2H2014
- This quick migration path is possible by leveraging Huawei upgradable product platforms



# LTE migration operationally



## Customers segments

- Ukkomobile targets enterprise and public safety segments
- Ukkomobile 450 MHz network fits very well for customers looking for coverage providing satellite service type of foot print with mobility and indoor usage
- LTE technology provides high spectral efficiency and low latency enabling real time applications
- Ukkomobile network do not get congested even in mass events like rock concerts etc. as there are no consumers sending selfies and streaming event information

## Going forward

- LTE 450 ecosystem is just maturing, specifically on UE side
  - Ensuring big enough market for vendors is important
  - Common procurement platforms?
- LTE 450 regional roaming possibility is important for many potential customer
  - Shipping and logistics
- Ukkomobile welcomes a discussion with all other 450MHz players how to make this opportunity a world wide success!

Thank You!