



# **LONG DISTANCE COVERAGE: REQUIREMENT FOR NEXT GENERATION ACCESS**

Telstra, Orange, [Sprint], [Qualcomm]

# Purpose and motivation

## **We propose that coverage beyond 100 km be included as a requirement for next generation access**

- We seek agreement from RAN plenary that long distance coverage be included in the new study item

## **Motivation**

- Support extreme coverage scenarios in rural and remote areas
- Provide coverage at sea for maritime industries, for example fishing and oil exploration
- Expand capability of ultra low cost networks for low density and low ARPU areas
- Provide greater reach for air to ground use cases

# Telstra's experience with long distance coverage

## **We've demonstrated WCDMA coverage beyond 200 km in Australia**

- “Outback” locations with expansive, flat, uncluttered environments
- Proprietary techniques applied to the network

## **We think extended range coverage is applicable to most countries**

- We see frequent use at sea – maritime industries really appreciate long distance coverage
- We also see use by light aircraft

**Many countries with a coastline and / or an interest in aviation!**

# Technology options to support long distance coverage

## Long distance coverage is only required for certain use cases

- Typically only required for low band frequencies (although ATG may be interested in higher frequencies)
- Will become particularly interesting if we address bands below 700 MHz
- Typically not required in built-up areas

## We can typically trade-off long distance coverage with capacity

- Will almost certainly need to give up some capacity to support long distance
- Sites requiring long distance coverage do not typically have high capacity needs

## Address long distance coverage as an aspect of flexible numerology

- Long distance coverage typically limited by uplink timing and frame structure
- Allow these to be modifiable to support greater distance

# Suggested specific requirements in support of long distance coverage

**We suggest consideration for target maximum distances as follows**

- 250 km for bands at or above 700 MHz
- 400 km or more for bands below 700 MHz

## **Fully functional physical layer**

- Long distance carrier shall be fully functional as for a standard range carrier (albeit with less capacity)

## **Full interoperability with standard range carriers and other RATs**

- Support handover with standard range carriers, both intra- and inter-frequency; also inter-RAT