

# BEREC Workshop on the update of the Net Neutrality Guidelines

## Session 2 – 5G – Nokia Bell Labs use cases

Fixed and mobile converging need open common planning

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# 5G is a giant leap

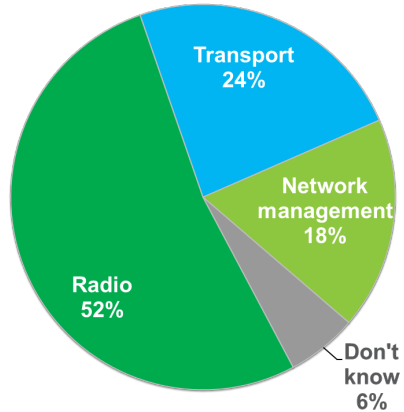
Endless possibilities

	Today	2020-25	
Users	10M people	+100M 'things'	 Smart home  Mobile gaming  Industry 4.0  Connected cars  Drones  IoT wearables <p><b>Enhanced Mobile BB</b></p> <p><b>Ultra Reliable Low Latency Communications</b></p> <p><b>Massive M2M Communications</b></p>
Speed	100 Mbps	100x faster	
Latency	>>10 ms	10x less	
Network service level	Best effort for all	Committed SLAs	
Logical networks	1	Many (slices)	

Nokia Bell Labs 5G Future X Solution

# Analyst survey - densification

## Which part of the network requires the biggest amount of development?



*After radio, transport is considered the most challenging component in 5G development!*

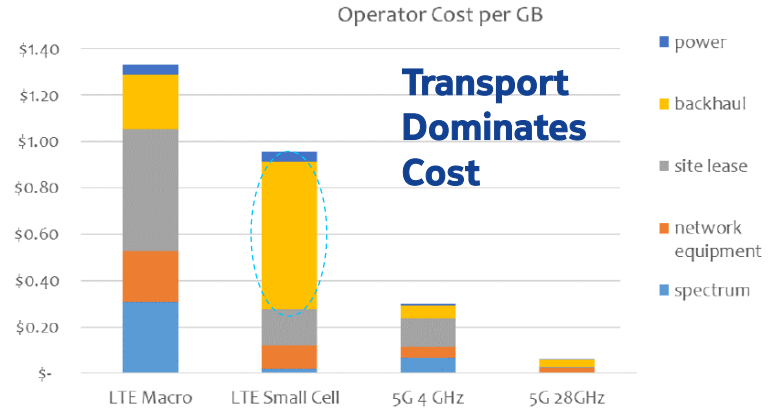


Chart 2: Cost per GB: Comparison of LTE and 5G networks, at 4 GHz and 28 GHz

Source: IHS Markit Evolution from 4G to 5G: Service Provider Survey, 27 July 2018

Source Mobile Experts : 5G Millimeter Wave 2019: Radio Architecture and Outlook, March 2019

# Fixed and mobile are converging. It is time for common planning.

Source: Nokia Bell Labs

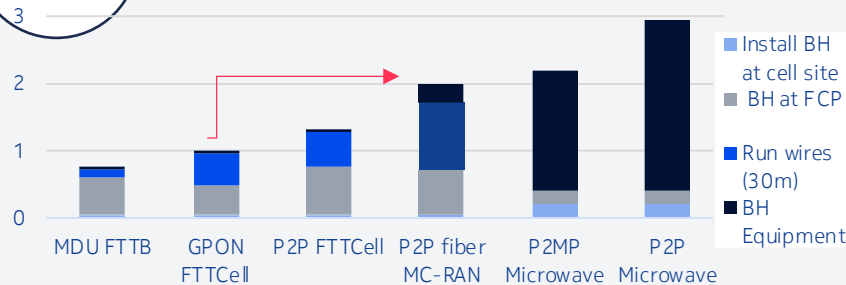
## Opportunities

Financial incentive to share ONE fiber infrastructure (ROWS, ducts, pole lines, cabinets, cables)

	Terminals/distrib.area	Civil works savings
FTTH	500	
Large cells	1-5 cells (400m spacing)	\$ 60k / cell
Small cells	10-50 cells (200m spacing)	\$ 25k / cell

50%

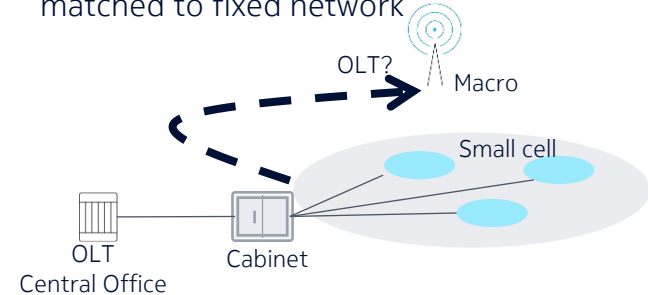
Lower transport CAPEX when connecting radio cells to existing fixed access and faster time to market



## Considerations

How to ensure highest level of synergy?

Small cells homing architecture not always matched to fixed network



How to ensure some level of separation?

- Dedicated** = Common cable with segregated fibers
- Shared** = Common fiber with segregated wavelengths
- Converged** = Common wavelength with segregated time slots (slices)

**NOKIA**