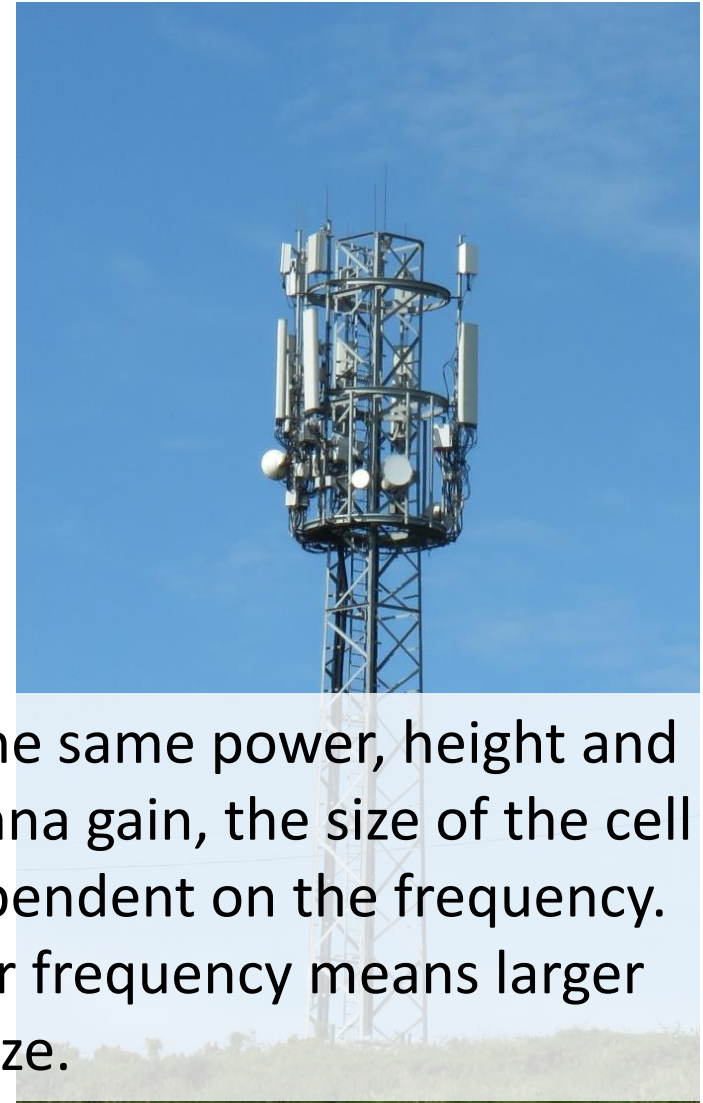
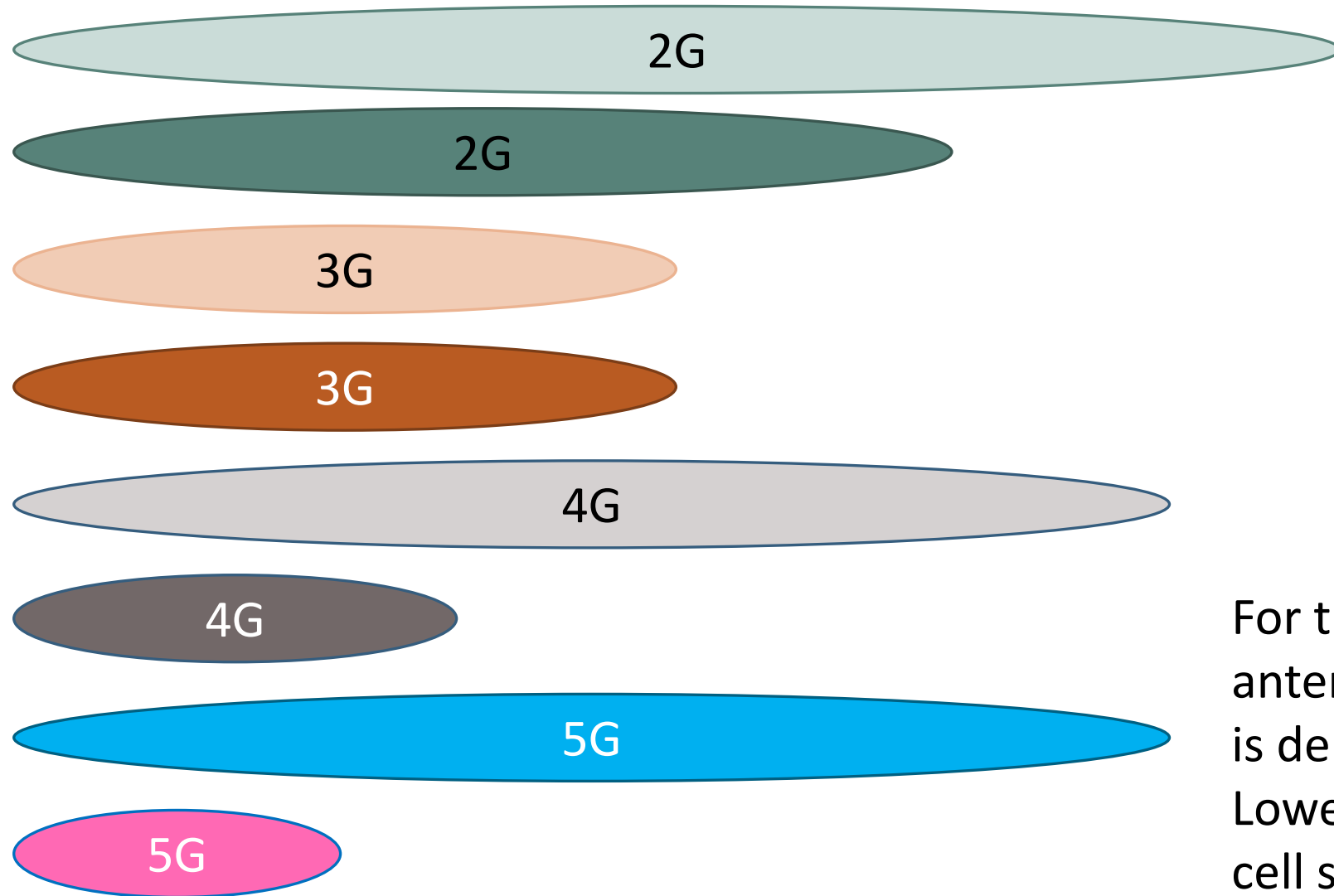


Traffic Steering (TS) Concept

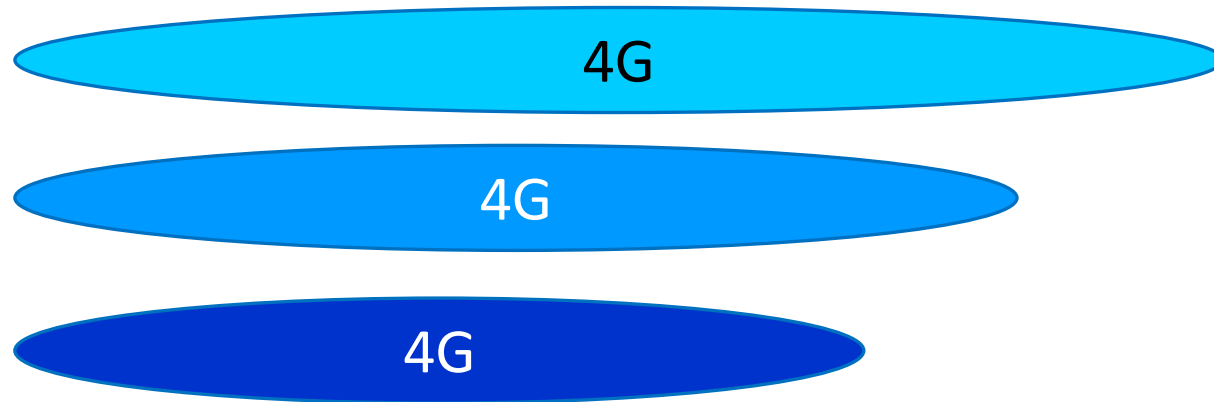
The Concept of “Hierarchical Cells”



For the same power, height and antenna gain, the size of the cell is dependent on the frequency. Lower frequency means larger cell size.

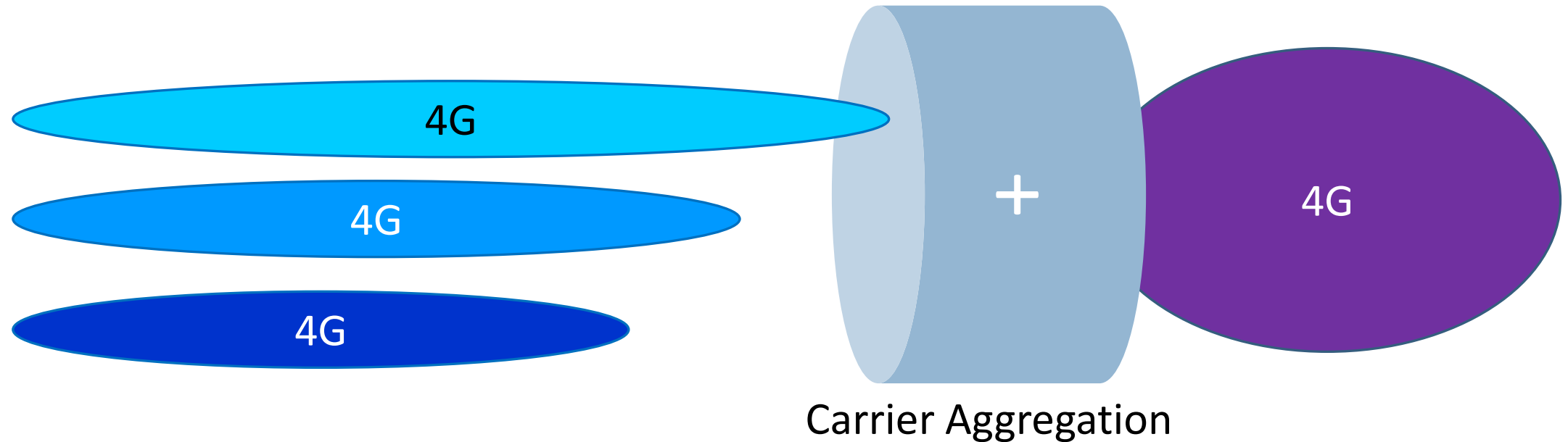
Mobility Load Balancing (MLB) in 4G/LTE

Put the UE on the layer that is least loaded, alternatively check that it can meet the required data rates (QoS – Quality of Service)



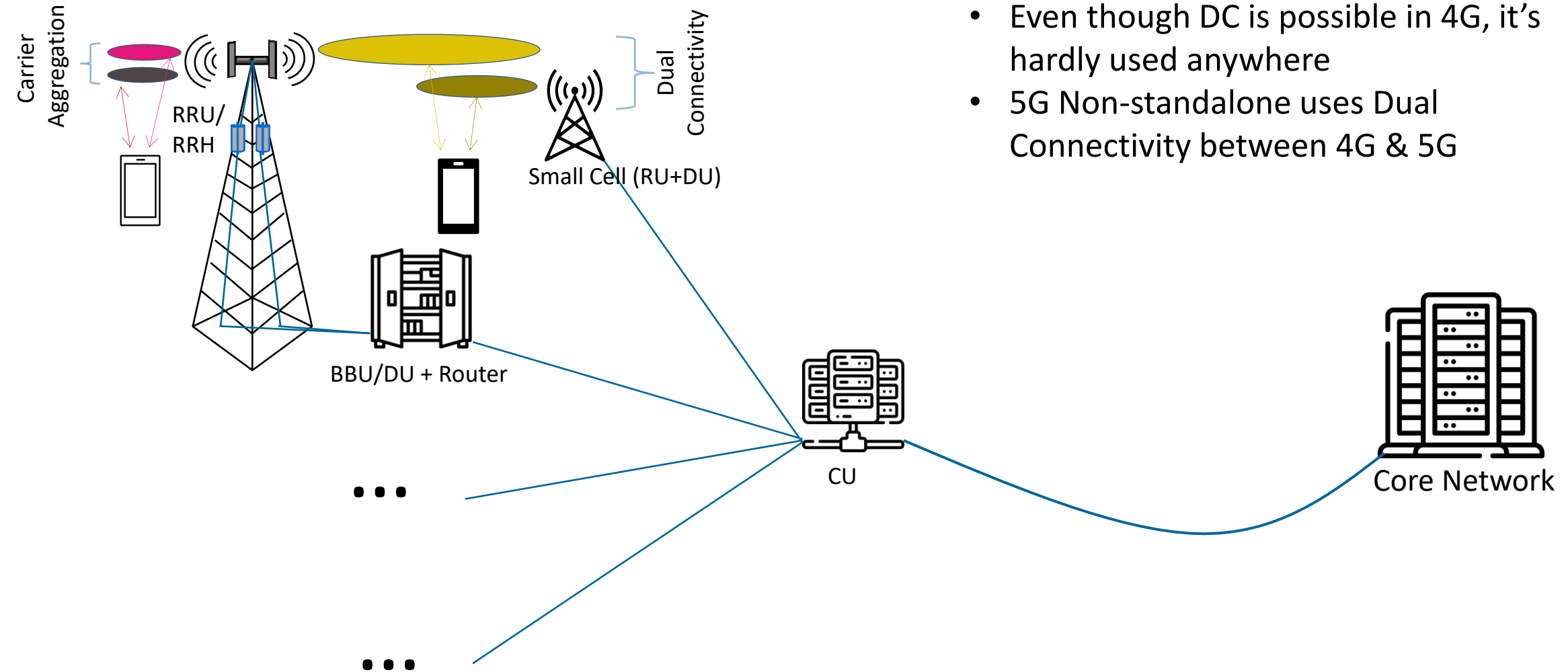
Carrier Aggregation

Combine multiple layers to create an illusion of fatter pipe



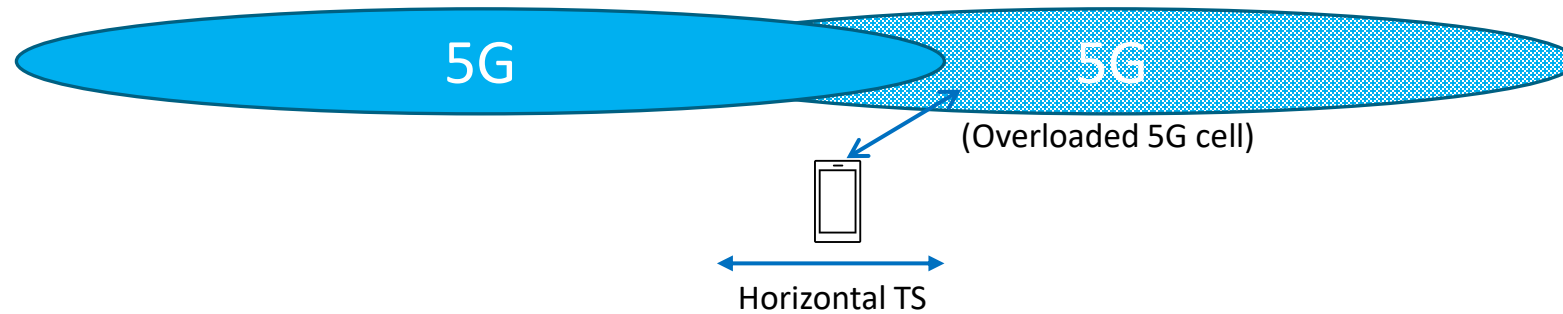
- In 4G/LTE the maximum bandwidth of each layer is 20 MHz. In 5G, it is 100 MHz for low/mid bands and 400 MHz for mmWave
- Carrier Aggregation can only be done for layers being transmitted from same Baseband / BBU.

Carrier Aggregation (CA) & Dual Connectivity (DC)

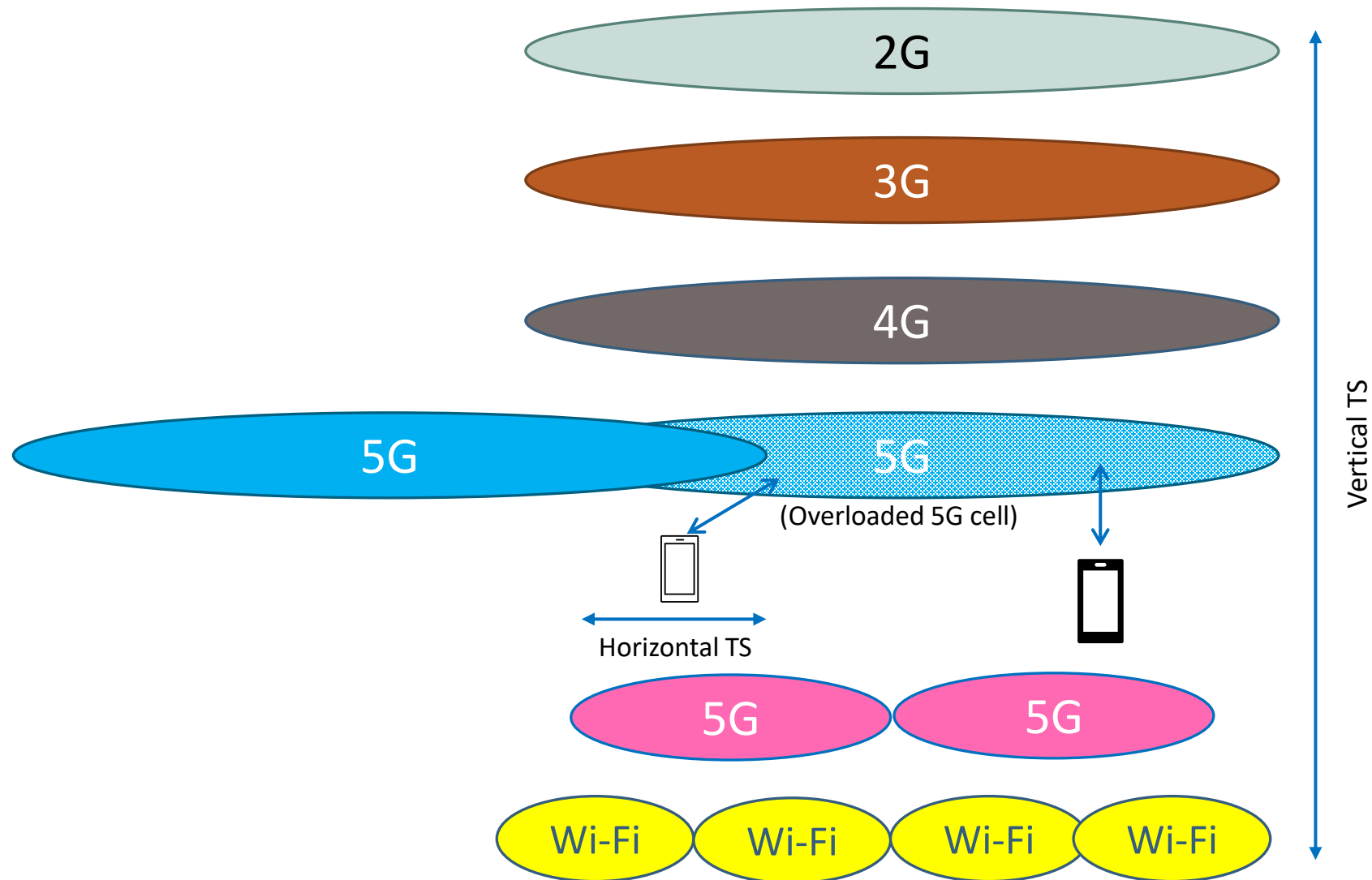


- Even though DC is possible in 4G, it's hardly used anywhere
- 5G Non-standalone uses Dual Connectivity between 4G & 5G

Traffic Steering (TS) Concept



Traffic Steering (TS) Concept



Inputs for Traffic Steering Algorithm

To properly assign radio links to users, a Traffic Steering mechanism needs to consider a set of inputs, including:

- Radio conditions,
- UE capabilities (e.g., support for MIMO, CA),
- Available RATs (e.g., 4G, 5G) and RAT-specific features (e.g., DC, CA, LAA),
- Frequency bands and layers (e.g., coverage and capacity layer),
- Cell load (e.g., Physical Resource Block, PRB load, number of users, number of Packet Data Unit, PDU sessions),
- Quality-of-Service (QoS) requirements,
- RAN and UE power consumption.

Rimedo Labs: The O-RAN Whitepaper 2024 | Traffic Steering in O-RAN

Related Presentations and Further Reading

- Rimedo Labs - The O-RAN Whitepaper 2024: Traffic Steering in O-RAN ([link](#))
- telecomHall Forum: How Traffic Steering is done in Open RAN? ([link](#))
- 3G4G: Self-Organizing Networks / Self-Optimizing Networks (SON) ([link](#))
- 3G4G - 3GPP SON Series: Mobility Load Balancing (MLB) ([link](#))
- 3G4G: Radio Frequency, Band and Spectrum ([link](#))
- The 3G4G Blog: Carrier Aggregation (CA) and Dual Connectivity (DC) ([link](#))

Thank You

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Operator Watch Blog – <https://www.operatorwatch.com/>

Connectivity Technology Blog – <https://www.connectivity.technology/>

Free 5G Training – <https://www.free5gtraining.com/>

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