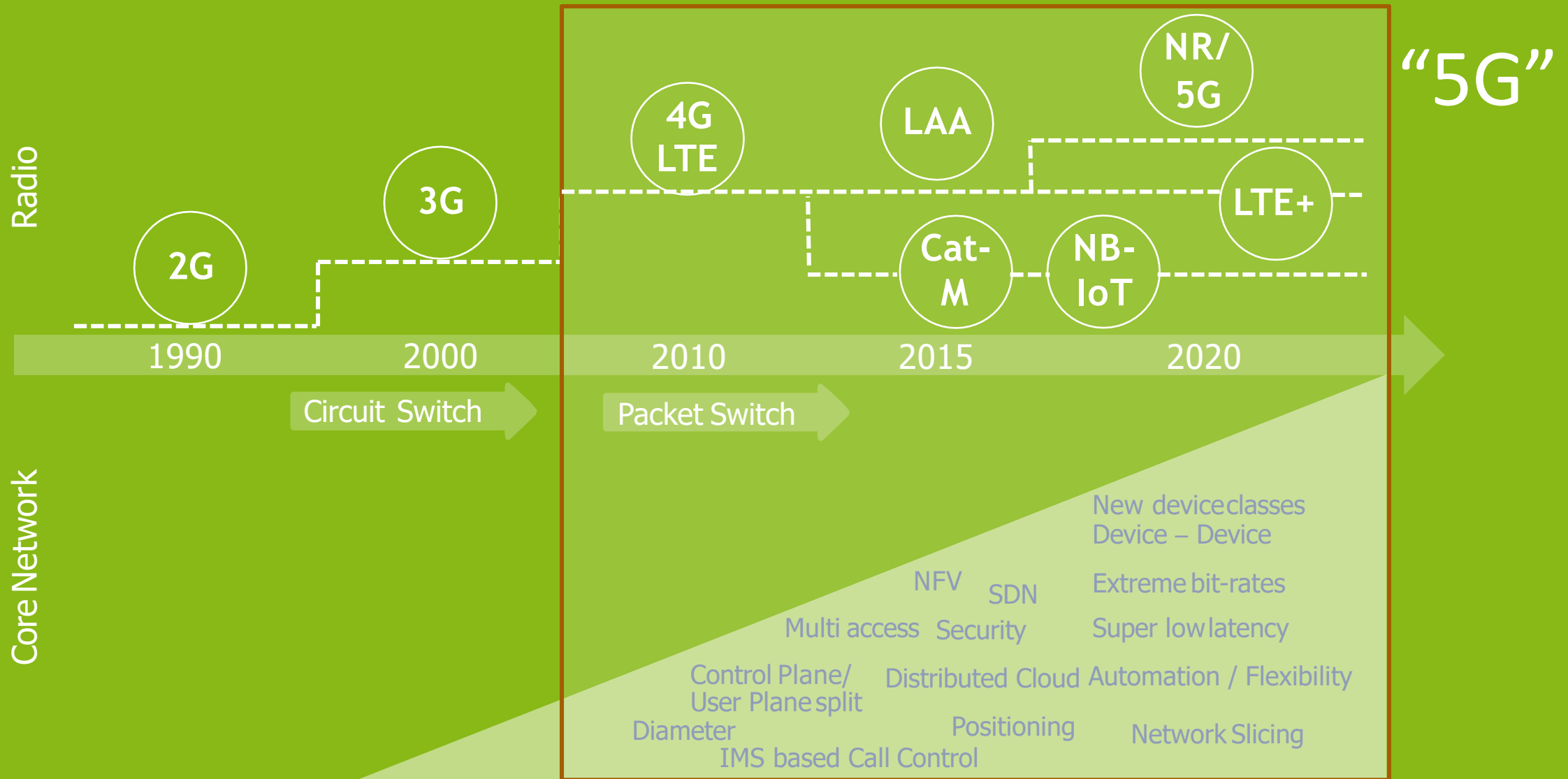


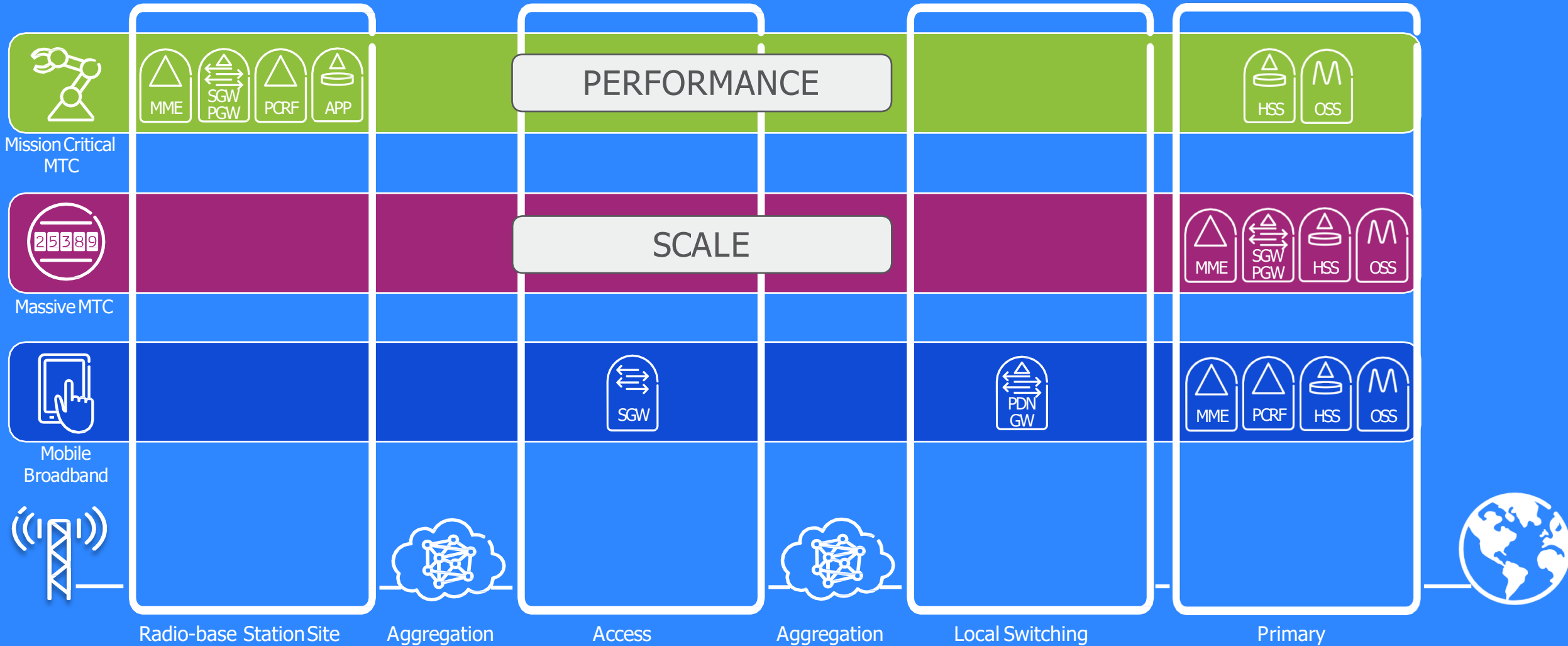
5G Challenges



The evolution towards 5G



Network slicing



New policy objectives



- **Near ubiquitous coverage**

- Indoor, roads and rail, geographic targets

- **Consistent levels of quality and experience**

- Minimum speeds, throughput, latency

- **The industrial internet**

- Public and private sector efficiencies, disintermediation, innovation

Challenges



Spectrum supply and cost

“We can only spend each Euro once: either on spectrum or network build-out. My suggestion would be on buildout.”

- DT CEO Tim Hoettges

Deployment bottlenecks

“Governments should consider spectrum policy as means of delivering critical national infrastructure rather than an income source”

- Ericsson CEO Börje Ekholm

Specialized services regulation

“We need for a regulatory regime that allows service providers to create services that are differentiated based on user experience.”

- Ericsson CEO Börje Ekholm



Assignment considerations

- **Extending market performance parameters**
 - France 4G renewal: ubiquitous 8 Mpbs by 2020, 30 Mpbs by 2023
 - Germany 5G auction: 100 Mpbs to 98% of the population by 2022
 - Italy....

- **Reconsider assignment principles to extend market performance**
 - Auctions with obligations
 - Spectrum fees as an investment fund
 - Fee waivers for investments “vive la French”
 - Annual fee structures to incentivise investment