

The 6G Global Summit 2024 Shaping the 6G reality - what are we trying to achieve? London, 21 May 2024

Why 6G?

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5G deployment is in progress but the discussion on 6G already started some years ago. ITU-R published 6G vision in 2023 while standardization efforts will continue towards 2030 with commercial deployments expected in 2030.

To better envision, understand and even plan ahead for 6G we need to understand the radio access and mobile technology dynamics as well as the broader IT and socio-economics trends that will shape our 6G future. We need to explain the "why's" of 6G. So, why 6G?

Interpreting Radio Access Network evolutionary generations as purely technical ones gives us little insight on the why's, and only leave us a strictly technical set of benchmarks to measure and understand progress, with the most recognizable of these benchmarks being speed.

Higher speeds as a 'why' seemed to work adequately for transitioning from 3G to 4G and for as long Radio-Access Networks were unable to deliver the experience Fixed-Access Networks did. For 5G, speed became a much less convincing "why" and most probably, it will be a totally non-convincing "why" for 6G.

We need a different viewing angle to understand the benefits late 5G and early 6G generations will bring along. Such an angle is using the services and functionalities.

Since even late 2G, Radio-Access (or Cellular) networks progress rode the trends of Internet access becoming mainstream and mobile phones becoming the portable, multi-functional computers we call "smartphones".

The kind of functionality our RANs offer since then and up until now, is mostly internet access connectivity services. Our RANs provide batch, best-effort access to information. Light-weight web browsing during the earlier days and heavyweight content consumption today.

For new services and functionalities to become a reality, this needs to change and this is the most important "6G why".

Internet connectivity speeds run their course as "selling point" strategy. They will of course continue to be important, but in a less profound, 'utility-like' manner, and our next set of mobile applications will not need such batch, best-effort services but new, real-time, guaranteed ones.



The highest-potential such 6G applications, in socio-economic-impact, will undoubtedly be the autonomous driving and smart city related ones.

Is any meaningful degree of autonomous driving even an option in a batch, best-effort network, or can key city-scale utilities be trusted in a network of that type?

So why 6G?

Because network continuity, latency, predictability, reliability and resilience, need to become network service options, and not only that. They need to become measurable, transparent and accessible network service options in providing next-generation RAN services to build next-generation applications.

6G will not be about new speeds – it will be about new services. It will be about providing the needed network fabric that will bring these new services to life, that will make them possible.

This apparently "simple change", from Speed-Focus to Quality of Services focus, will bring sea of changes in our economies and societies. It will challenge the status-quo and will shake the foundational business models of everyone in the multi-trillion-dollar ICT world, telecom operators and web 2.0 companies alike. It will also bring governments and regulators before important decisions with the most important of them being the preservation of net neutrality.

We need to agree on the very simple fact that: all types of networks need to be net-neutrality preserving, but not all net-neutrality preserving networks are of just one type.

Translating all that back to 6G network architecture, I would dare to say that 6G hyper-dense type of network architecture will be more about reliably picking-up low-powered Smart-City IoT radios, due to high proximity, to make our cities smarter, safer and more efficient, and less about beaming 10Gbps of data on a single mobile device.

I would dare to say that 6G hyper-dense micro/pico cell-based deployment, will be more about promoting "always connected" connectivity, lowering latency and advancing predictability, and less about "just" supporting mmWave propagation.

Our networks will become fully software defined and 6G will probably be the first generation to accomplish that. That will be 6G biggest 'why'. By becoming software defined our networks will not only have IP level connections brought up and tore down no demand. They will have physical layer deep, quality-of-service related features created and disposed on demand, delivering a diverse set of network fabrics for new applications to thrive on – real-time and guaranteed.

And to handle these network operations complexity, 6G networks will most probably be run by AI. Not it the -exotic- Artificial General Intelligence sense, but in the practical Machine Learning sense that will allow insight on extremely multi-dimensional datasets, which we now perceive as chaotic, like how competing QoS will co-exist in bandwidth-constrained channels.

To conclude: 6G will not be about new speeds – it will be about new services. It will be our first fully Software Defined RAN, across all network layers, so definitely critical having.