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FCC's Starks, Experts See 6G Starting as Early as 2030

FCC Commissioner Geoffrey Starks urged industry to start preparing for 6G, during a Thursday virtual meeting of ATIS' Next G Alliance. The group released a "Roadmap to 6G," seeking increased collaboration between industry and government, and proposing areas for future research. The report projects a 2030 start for 6G.

"It's certainly not too soon to think about 6G," Starks said, noting the average planning cycle for a new generation of wireless is about 10 years. 6G networks "will be able to use higher frequency bands than 5G with substantially greater capacity and reduced latency," Starks said: "6G is expected to support data rates of 1 terabyte per second, hundreds of times [better] than the fastest 5G." 6G could have latency "a thousand times faster than 5G," he said. It will incorporate artificial intelligence "with a foundation of fully merged mobile and cloud systems," which "will allow for tremendous increases in speed and efficiency, permitting use cases that we are still dreaming up."

With the benefits of 6G come challenges, Starks warned. 6G's expected reliance on AI, remote sensors and disaggregated networks "creates potential opportunities for bad actors to disrupt our economy and even our public safety," he said: "Industry and policymakers must ensure that security standards are baked into 6G, rather than bolted on."

Starks also wants focus on environmental concerns. 6G could mean better energy efficiency and reduced carbon emissions, and the information, communications and technology sector already consumes as much as 9% of global energy supply, which could rise to 20% by 2030, he said: "Figuring out how to reduce carbon emissions and electronic waste must be part of the 6G conversation."

"We are mapping out the path for the next G," said Andre Fuetsch, AT&T chief technology officer-network services. "With each generation of wireless technology, adoption gets more complex and challenging," he said. 6G will "push the spectrum envelope into the terahertz range," he predicted. "We will also continue to see a trend towards the softwarization and disaggregation of network elements into more granular microservices that can … operate relatively independently," Fuetsch said: "There will likely be extreme edge or edge-centric applications across the network." Providers will need more spectrum to "better handle the ongoing surge in demand," he said.

6G networks must be “trusted, safe and reliable in all circumstances,” said Doug Castor, InterDigital senior director-future wireless research and innovation. “Accelerating the digital transformation, and the economic growth associated with it, cannot happen without trusted systems,” he said: “Securing the supply chain will clearly be a continued national concern as we develop the approach to 6G.” Castor noted less than 24% of the current U.S. population is covered by 1 GBs service, and 51% has a choice of just one provider.

6G will require “sufficient” and “suitable” spectrum, said Reza Arefi, Intel director-spectrum strategy. It's most important to tailor allocations to how spectrum is used, he said. Covering large geographic areas with very high frequencies “would not be the most efficient, economic and rational way of using spectrum because of propagation losses,” he said: In densely populated areas “this excessive path loss of higher frequencies would be beneficial in limiting intersystem interference and improving performance.”

Companies are increasingly reluctant to do research on their own, said Jeffrey Reed, Virginia Tech professor of electrical and computer engineering. “Governments can pool the risk by sponsoring R&D programs in academia, federal research labs and industrial research labs,” he said. The work of these labs is too often “disconnected, to a great extent, from industry needs,” he said.

The alliance offers “a call to action … for the U.S. industry and academic to work more collaboratively,” said Nick Laneman, Notre Dame professor of electrical engineering. “We need to find better mechanisms, and more funding, to connect basic research in academia with more applied research and development in the commercial wireless industry,” he said. Without better collaboration “we will continue to be too fragmented by self-interests in the U.S. to remain competitive globally,” he said.