Policymakers Increase Emphasis on Standards Development

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Policymakers have a better appreciation for the importance of standards as the telecom industry moves closer to the launch of 6G, experts said Tuesday during a 6G workshop streamed from the Technology & Innovation Centre at the University of Strathclyde in Glasgow, Scotland. Experts warned that standards development is complicated and always is a lengthy process.

Iain Sharp, principal technologist at ATIS, said geopolitical issues are becoming more prominent as industry moves toward 6G. “We’ve moved from an environment where you couldn’t get policymakers to be interested in the strategic importance of standards to the point where you can’t stop” them “from talking about standards,” he said.

Standards are vital in communications because of the need for interoperability, said John Cioffi, an engineering professor at Stanford. Cioffi mentioned a study he did that found it usually takes about 14 years from when a major concept like 6G is proposed before the first million devices are deployed in a network. The conclusion proved controversial, he said. Cioffi said he heard discussions of 6G in the 2017-2018 time frame; rollout is expected around 2030.

Matthew Baker, Nokia Bell Labs fellow, agreed standardization takes a long time but said that’s partly because technologies that are tried in one generation often “come to fruition in the next.” Much of today’s work on AI, machine learning (ML) and other technology in 5G-advanced “will enable us to get it right the first time” when we get to the first 6G release, he said.

6G will need to provide additional network capacity, Baker said. While the growth rate for data demand has slowed, we need “to be alert to the advent of new demands on network capacity,” like dependable real-time traffic, which takes “many times more network resources per byte” than best-effort data traffic, he said. “If we want to understand what the capacity requirements are for 6G, we can’t simply extrapolate from today’s data traffic,” he said. Use of AI/ML will likely mean growing data demands on networks and from AI-enabled apps, he said.
History teaches that data traffic will increase, but industry usually isn’t good at predicting the traffic’s source, Baker said. “The challenge for 6G is we need to provide additional capacity, with reduced energy consumption, using the existing site grid,” he said.

When standards are working, people don’t notice them, said Luis Jorge Romero, director general of the European Telecommunications Standards Institute. “People usually point out things if they don’t work,” he said. The goals of 6G are becoming clearer, including additional capacity and bandwidth, lower latency and improved energy efficiency, he said. Other areas of focus include bigger coverage areas and non-terrestrial networks, sensing and the use of AI. “All these things are part of the standards,” Romero said. The 3rd Generation Partnership Project just froze Release 18, and is working on 19, he explained. Release 20 will start 6G studies and Release 21 will be the first with 6G specifications, he said. Release 21 is expected to be “frozen no sooner than March 2029,” he said.

Romero said standards work has its own “jargon” and isn’t always a “friendly environment” for the uninitiated. It’s hard to get started in standards, "but please do make the effort,” he said. “We hope that we’ll do it right for 6G ... rather than doing it fast.” Industry has learned lessons from trying to move too quickly “and we always pay for the lack of quality in what we produce.”

The world recognizes the “massive value” of having a global standard, and countries worldwide know the importance of cooperation in the 6G era, Sharp said. ATIS’ membership is concerned about the business model “for rolling out a new G in what is a relatively short time frame,” he said. Many of those concerns can be addressed through a “good transition strategy” and “if we can show that there are operational cost savings in 6G,” he said. Carriers want to use their 5G investments and are concerned about “backwards compatibility,” he said.

One challenge of standards development is “to really understand what backwards compatibility means and what are the limits that we are willing to go to” versus innovation, Sharp said. If carriers want to retain 5G hardware in the network, “that’s going to be a very big practical constraint as to how we design 6G.”

Fixed wireless access and “connecting the unconnected” are 5G success stories, said Edward Tiedemann, senior vice president-engineering at Qualcomm Technologies. Another is the growth of private networks, he said. Some say these networks haven’t been very successful, but that’s in part because things move slowly in the manufacturing industry, much more slowly than in the communications industry, Tiedemann said.

5G has driven many carriers to build fiber to their cellsites, Tiedemann said. That means 4G networks have also improved and gotten faster, he said. Carriers also have started deploying “much more sophisticated antenna systems,” he said. But densification of networks has sometimes been disappointingly slow, he said.