

Building One 5G Wireless Standard to Rule Them All

Tirelessly working through reams of documentation, the 3GPP marches onward to create a solitary standard for 5G communications.

The on-time beginning of too many of my business meetings is tarnished by the initial 15 minutes wasted watching three impromptu IT “experts” search for the right port, adaptor, and monitor setting to connect someone’s laptop to the projector. If you have never experienced this problem, allow me to suggest that you do not exist.

Are we incompetent operators of IT tools? No. We simply lack a single standard. And while I have little hope for projector convergence, in 5G we are on the verge of something revolutionary: a single and globally-deployed standard for mobile communications.

From the earliest days of radio, standards organizations arose to ensure that Marconi’s magic could be applied in a manner enabling us to communicate from afar. A quick perusal of the internet will yield fascinating tales surrounding the standardization of Morse code, radio channels, distress signals, and spectrum management. Early standards arose from the predecessors of today’s ITU meetings, the results of which read remarkably like those created today.

From 2G forward, we had global standards for cellular communications. But we did not have the potential of a single standard until we reached 4G—and that convergence was forced to cower while the WiMAX/LTE duality threatened the peace of the mobile world for a few tense years.

THE STANDARD BEARER

The 3GPP has been working for over a year to define a fifth-generation standard—the most ambitious development in communications since the advent of analog cellular. Gaining global alignment across all segments of our industry requires difficult technical work hashed out in long meetings, frustrating discussions, email rants, and legal battles. All of this is amongst a demographic of engineers and mathematicians, and our little technical club is not known for its smooth social skills.

I do not mean to belittle standards work. Those not asso-

ciated with such bodies may be surprised at their scope and breadth. Three technical specification groups exist within 3GPP, each responsible for several technical working groups that develop the details of the specifications. This means approximately 1,500 people in 20 committees meeting up to eight times annually who generate massive amounts of documentation distilled from tens of thousands of technical submissions.

Some perspective: A colleague who attends 3GPP RAN4 recently sent me a copy of “3GPP TR 38.803 v2.0.0,” a 200-page, 11-MB feasibility study on radio frequency and coexistence aspects of the new 5G wireless air interface. This work-in-progress document represents just one part of one part of one part of one part of the gestating standard. During this subgroup’s last meeting, no fewer than 37 documents were submitted for consideration for the topic of radio testability alone.

The recent 3GPP decision to accelerate the standard comes after a yearlong argument. Without getting into details, this was driven by a discussion of the tradeoffs relating to enabling new business models, standards “fragmentation,” and the risk of a standard that falls too far short of the 5G vision originated in the ITU and now beautifully portrayed in every company’s 5G presentation.

The technical and commercial demands of creating and deploying these standards are monumental. As a consumer, I look forward to the wireless standards being as unwavering as the color of traffic lights and certainly more consistent than interfacing with display projectors. As a supplier of simulation, design, test, and measurement solutions, I admit that the past 20 years of fragmented standards have created wonderful business opportunities. It is thus difficult for me to find a neutral space. But while it will take a few years, I believe the market forces will drive a common standard to reality.