



IEEE
Future
NETWORKS

Enabling 5G and Beyond



**International Network
Generations Roadmap (INGR)
Virtual Workshop
Deployment WG**

David Witkowski
16 June 2020

10-year Vision

- Successful 5G deployment during the 2020s has laid the foundation for future success as 6G and other technologies reach standardization.
- IEEE leads a fact-based public engagement via articles and materials addressing the deployment challenge, and the IEEE is considered a leading “go-to” source for the press and media reporting on the subject of wireless technologies and deployment challenges.
- Local governments and public agencies take telecommunications seriously, and have staff with telecommunications knowledge and experience.
- Engagement between the wireless industry, governments, public agencies, and standards bodies is common and ongoing.
- Wireless equipment vendors adjusted their product roadmaps and offerings to meet the major concerns against deployment expressed by local governments, municipal agencies, and the public.
- Courts and legislative bodies have resolved the federal mandate versus local control debate.

Scope

The Deployment WG serves as a conduit for stakeholders to communicate their goals, needs, and concerns. It serves as a convening body for the wireless industry, equipment and semiconductor vendors, local governments, public agencies, etc. The goal is to reduce the conflicts and tensions involved in moving projects through local government and municipal agency review, permitting, and appeal processes.

Topics covered by the DWG Roadmap are:

- Local government factors and perspectives affecting deployment.
- Regulatory factors affecting deployment.
- Public/Community factors and perspectives affecting deployment.
- Technology/Vendor/Real Estate issues affecting deployment.

Today's Landscape

- The first generations of cellular technologies were deployed on towers and monopoles away from population centers. While conflicts with residents and governments/agencies over sites were not unknown, in general they were located away from population centers.
- 4G densification places wireless equipment close to subscribers, increasing the number of sites subject to resident objections.
- 5G, especially in the FR2 band, requires deployment near subscribers. Popular misconceptions about health effects have grown in advance of the 5G roll-out.
- Wireless telecommunications is increasingly a critical resource, with a commensurate rise in politicization of processes and governance.

Top Needs for 10-year Vision

- Education of the public, local governments, public agencies, elected officials, and the media about the economic value of wireless technology.
- Local governments must hire trained capable people to handle wireless telecom applications, develop application approval processes, and take wireless telecom seriously.
- Semiconductor and equipment vendors must focus on building deployable products that enable telecom real estate companies and carriers to deploy within municipal codes and ordinances.
- IEEE must be an objective and authoritative voice dealing with the science and complexities of wireless deployments.

Challenges and Solutions to Meet Needs

- Education of the public: Fears about negative effects (health, property valuations, aesthetics, etc.) from wireless deployments are created by false narratives in the media, by social media misinformation, and by a general trend towards anti-science in the public mindset.
- The question of “Who can you trust?” looms large in the public mind. Distrust of established institutions (CDC, WHO, etc.) leads to conspiracy theories.
- IEEE must be an objective voice of reason and gravitas in these debates. The media should leverage the IEEE as a de facto source for objective insight.

Challenges and Solutions to Meet Needs

- Education of local governments: Permitting and planning for wireless is a relatively new area of responsibility, and there's a lack of expertise in municipal staff. Oversight of wireless permitting is often assigned to new hires, junior personnel, and federal/state regulations are seen as an unfunded mandate. Federally-mandated reductions in lease rates force local governments to fund staff via other income sources.
- In the long run, local governments will have to hire or train qualified staff to oversee wireless permitting, and will have to make it part of their core mission.
- IEEE should take an active role in providing education and training to local governments.

Challenges and Solutions to Meet Needs

- Experience shows that the wireless semiconductor and equipment vendors do not fully understand the complexities and challenges of deployment. Equipment used in the early days of the 4G small cell roll-out was poorly suited for deployment near human populations, leading to pushback and negative reactions that still exist today.
- Communication of municipal requirements up the value chain from deployment to semiconductors is needed to ensure that products are deployable and acceptable.
- IEEE must convene around this topic and create a multi-stakeholder dialog about technologies.

Stakeholders

- Semiconductor vendors
- Wireless equipment
- Telecom Real Estate
- Wireless carriers
- Governments
- Public/Residents

Contributing Working Group Members

- David Witkowski
- Tim Page
- David Young

Get involved!

5GRM-deployment@ieee.org

davidw@jointventure.org

QUESTIONS?