InquisIT

5G Network & The Federal Government

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INTRO

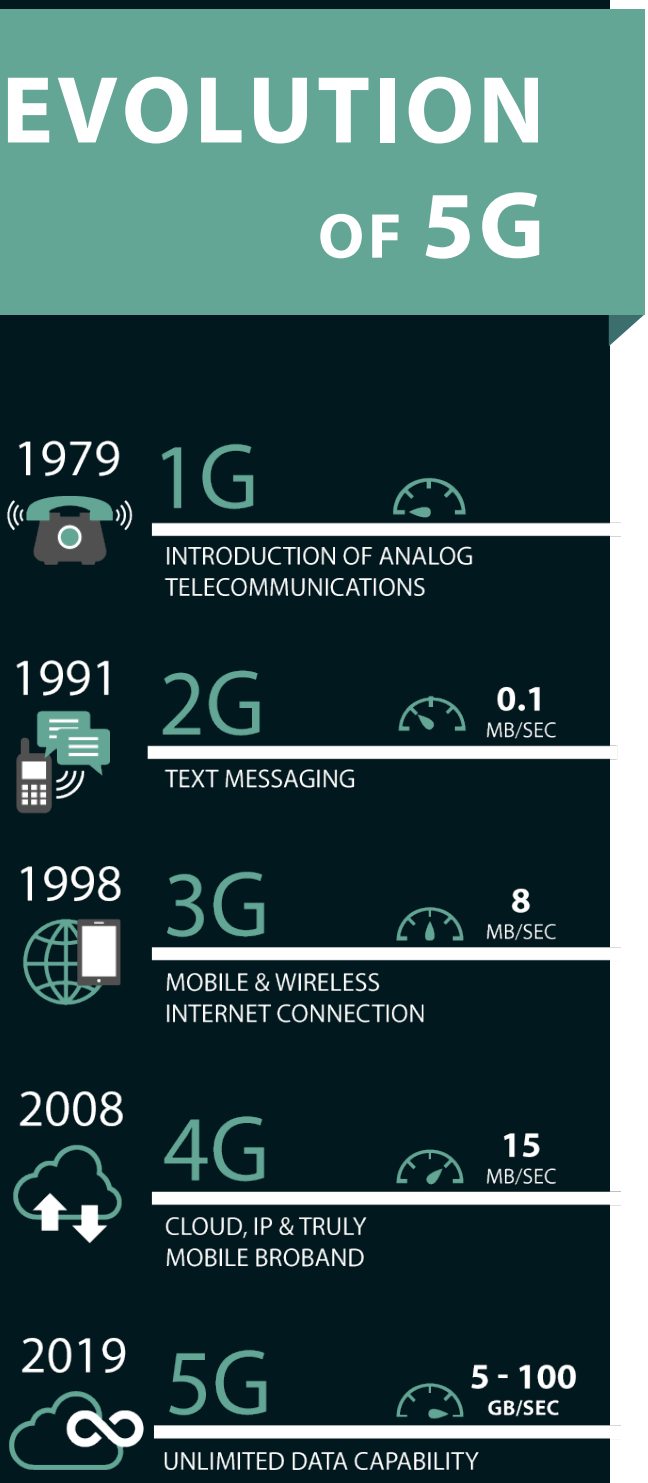
The implementation of “5G” networks is rolling down the tracks and promises a revolution in mobile networking with potentially close to the same speeds as wired ethernet connections. Tests of 5G networks boast speeds as much as one hundred times that of today’s rates. The implications for the federal government are vast and it may create a whole new flexibility in organization and function within the branches of the federal government.

INVESTMENT

"5G" translates to fifth generation of mobile broadband. The generations, such as 3G and 4G, are simply agreed upon standards in connection speed and quality.

In order to achieve this goal of drastically improving the speed of mobile connections by moving to 5G, the Federal Government has allotted $20 billion in annual universal service funds for fiber-optic deployments, simplified permitting, and utilizing presently underutilized frequencies to build the network. AT&T, Verizon, Sprint, and T-Mobile will collectively be investing $275 billion into updating 4G networks to create 5G networks. AT&T has been investing in advancing their existing 4G network recognizing the need for a strong 4G network as a backup for 5G networks. "4G is the fallback for 5G. And what you don't want is that people fall off a cliff," - says Roger Etner an analyst for Recon Analytics. Sprint CTO John Saw posted online that the Sprint network has installed new hardware to many cell sites so more of them are using three spectrum bands, 800 MHz, 1.9 GHz, and 2.5 GHz with the goal of giving customers faster download speeds.

The reality is that 4G will still dominate in most areas as 5G will have limited rollout to large cities at first. Building the new 5G network will take a significant amount of central planning and industry collaboration. Sourcing the needed hardware is a unique challenge and two suppliers, Huwaii and ZT, have already been barred due to security concerns. The battle over where to source the hardware is growing and the desire for cutting edge technology for both 4G and 5G is great.



PUBLIC OR PRIVATE?

The need for 5G networks is so great and is anticipated to be such a boon to the country, that some inside the federal government have suggested nationalizing the effort. Much like the interstate highway systems of the 1950's, this would mean that the federal government, either directly or through a chosen company, would oversee the creation and maintenance of the 5G network.

At this time, the proposition does not have widespread support and construction and implementation have been left to the private sector. However, this does highlight the strong desire and increased attention surrounding the 5G network. The president has even tweeted in favor of implementing 6G networks as soon as possible, although 6G standards have just started being developed.

Many developed countries are currently racing to design and build complicated 5G networks hoping that economic success will follow. China has nationalized their effort to build a 5G network using several government-directed companies. The European Union has contracted several companies to construct a 5G network under stringent government guidelines. The United States is confident in its strategy that private mobile carriers will develop this technology.

AnquisIT

Government Outlined Research & Development Guidelines

1 *"Pursue spectrum flexibility and agility to use multiple bands and new waveforms."*

Meaning: Spectrum R&D is needed to improve the use of waveforms, as well as new radio frequency technology to support a range of multiple bands in wireless systems.

2 *"Improve near real-time spectrum awareness."*

Meaning: Network sensing and monitoring in a manner that is secure and preserves privacy. The increased use of different types of directional antennas is a challenge and an opportunity in realizing spectrum

3 *"Increase spectrum efficiency and effectiveness through secure autonomous spectrum decision making."*

Meaning: Spectrum R&D is needed to improve the use of waveforms, as well as new radio frequency technology to support a range of multiple bands in wireless systems.

INFRASTRUCTURE

One major difference in 5G network technology than prior versions is that it relies less on distributed radio towers and instead requires clustered antenna with a fiber backbone. The initial investment is massive and requires more distributed infrastructure and use of fiber networks installed by internet service providers.

Additionally, the requirement for hardware is vast and there are concerns about the quality and security of some equipment providers. However, the government is confident that the competition in the private sector will continue to encourage innovation in the implementation of these networks. In statements to the press, the FCC Chairman has pointed to the success of the 4G and 3G networks created and presided over by private sector providers.

The four large U.S. carriers have been developing the 5G networks in a mad dash to be the first to offer the service and gain the upper hand.

Some people say that the rollout of the 5G network will not be as much of a disruptor as 3G and 4G due to the lack of mobile applications that require the 5G speed. However, many developers have started working on new projects that utilize the increased speed to offer services that would be unavailable on slower 4G networks. Tesla has announced plans to utilize 5G to communicate live with other cars on the road and transfer massive amounts of sensor data to other vehicles.

The increased capacity of 5G networks carries implications for almost all sectors, as innovators ride the wave of new capacity by creating new services and products. In particular the revolution will affect internet of things, which will have the ability to share more real time data than ever before.

This technology could change the modern office and create greater potential for distributed resources and increased redundancy. The improvement in network speeds could make computers equipped with 5G cellular cards capable of running anywhere with service, without the need for an office or home internet connection. Mobility in workspace and data collection in federal agencies has been greatly improved by technologies like VPNs and mobile wireless cards, but the technologies have drawbacks. VPN requires an internet connection of some kind and mobile wireless cards have significant speed and latency restrictions.

The 5G network could make it possible to create applications that greatly benefit federal agencies. With the increased capacity for mobile data, exchange agencies can increasingly rely on field devices for large amounts of data.

For example, as more and more companies release wearable health monitoring devices, the Food and Drug Administration should move quickly to provide incentives to consumers. The United States Department of Agriculture could create remote live monitoring applications for shipping ports and livestock. The United States Justice Department could gather real time data from every justice officer in the country. Every Federal employee could have a card that allows them to conduct business in the field with no limitation in connectivity, including all applications currently in use in federal offices, like VoIP. The 5G network could also create redundancy for offices, or it could become the primary method of connectivity.

The primary limitation facing the government agencies may be the development of applications designed to take advantage of the 5G capabilities. ■