

Marty Cooper and Jessica Rosenworcel: Here's how to expand wireless spectrum

By Jessica Rosenworcel and Marty Cooper Special to the Mercury News
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In *Riley v. California*, Chief Justice John Roberts concluded that our phones contain "the sum of an individual's private life."

This is certainly true. But we are just getting started.

Over the next five years, worldwide demand for mobile service is expected to grow by 11 times. As the Internet of Things emerges, wireless functionality will become a part of nearly everything we do. By the end of the decade, we may have as many as 50 billion machine-to-machine devices communicating wirelessly worldwide.

The services dependent on this infrastructure will become increasingly vital for our daily lives. Our homes will be connected. Our business opportunities will expand. Our children will be better prepared for a global economy with access to the Web anywhere, combined with applications that make learning fun.

Patients will receive better medical care, with their providers using wireless sensors to help anticipate diseases before they occur. All of this connectedness will empower more people and lead us to think differently about boosting political engagement and economic growth.

But this unlimited potential hinges on a limited resource: the airwaves known as radio spectrum.

Spectrum is the basis of our new wireless world. But the laws of physics being what they are, we cannot create more. So we need to find ways to use the airwaves we have more efficiently.

President Barack Obama recognized the importance of this by introducing an initiative to free 500 megahertz of spectrum for commercial services. Congress assisted by directing the Federal Communications Commission to hold new spectrum auctions to bring more airwaves to market, helping bring us closer to this goal. More spectrum used by federal authorities is being converted to new commercial mobile broadband use.

This is a good start, but we need to do more. We need to think differently.

We believe it is time for Washington to issue a challenge. It is time for a contest to spur innovation to improve spectrum efficiency. Think of it as Race to the Top, Spectrum Edition.

Here's how it would work. The first person who finds a way to make spectrum use 50 to 100 times more efficient over the next decade would win. The reward could be spectrum itself -- say 10 megahertz suitable for mobile broadband.

That might sound like a small goal and a modest reward, but the impact could be really big. If

the winner can find a way to use spectrum 50 times more efficiently, 10 megahertz of spectrum could do the work of 500 megahertz using today's technology. The technology developed by the winner, and even the near misses, would help manage the growing demand for our airwaves and further stimulate the wireless economy.

Moreover, the reward would be a good deal. Ten megahertz of spectrum may not sound like much, but it could be sold or leased -- and spectrum auctions at the FCC bring in billions. Even a small slice of that revenue represents a pretty sweet incentive.

The contest could be just the start. We could take what we learn from it to help develop new measures of spectrum efficiency.

This would be a different approach to thinking about the future of our airwaves. Revolutionary opportunities lie ahead -- if we find new ways to seize them.

Jessica Rosenworcel is a Federal Communications Commission member. Marty Cooper is a pioneer in the wireless industry and is considered the father of the cellphone. They wrote this for this newspaper.