

**REMARKS OF
FCC CHAIRWOMAN JESSICA ROSENWORCEL
FEDERAL COMMUNICATIONS COMMISSION
AND
NATIONAL SCIENCE FOUNDATION
JOINT WORKSHOP
“THE OPPORTUNITIES AND CHALLENGES OF ARTIFICIAL INTELLIGENCE FOR
COMMUNICATIONS NETWORKS AND CONSUMERS”
WASHINGTON, DC
JULY 13, 2023**

Good morning! Thank you for being here and a special thank you to the National Science Foundation and Director Panchanathan for co-hosting this event to discuss artificial intelligence and communications.

As we begin today’s discussion, I am going to put my cards on the table and confess that I am much more hopeful about AI than pessimistic. A big reason why is that I am an optimist by nature. But that is not the only reason. There is an old expression: Where you stand depends on where you sit. From my perch as the head of our Nation’s expert agency on communications, I can’t help but be an optimist about the future of AI.

That might sound contrarian. After all, so much of the news about AI is dark. How do we rein in this technology? What does it mean for the future of work? What will it mean for democracy and elections? What happens when AI models inherit the prejudices of the systems they are trained on and determine who gets a loan and who gets a job? What does it mean for competition? And does generative artificial intelligence pose an existential risk to humanity that could lead to our extinction?

These are big questions. They lead to a heap of emotion and a whole lot of hand wringing. But again, my optimism comes from where I sit. Because every day I see how communications networks power our world. I know how their expansion and evolution can change commercial and civic life. I also know the power of those communications networks can grow exponentially when we can use AI to understand how to increase the efficiency and effectiveness of our networks. Because the day is not far off when we will be able to use this technology to help self-configure, self-optimize, and self-heal facilities. It provides a level of insight and precision that can increase network trust and help turn communications scarcity into abundance.

Take spectrum efficiency. The airwaves around us are invisible infrastructure. How we allocate it supports—and constrains—what we can do with it. For decades we have licensed large slices of our airwaves and come up with unlicensed policies for joint use in others. But this scheme is not truly dynamic. And as demands on our airwaves grow—as we move from a world of mobile phones to billions of devices in the internet of things—we can take new-found cognitive abilities and teach our wireless devices to manage transmissions on their own. Smarter radios using AI can work with each other without a central authority dictating the best of use of spectrum in every environment.

If that sounds far off, it’s not. Consider that a large wireless provider’s network can generate several million performance measurements every minute. And consider the insights

that machine learning can provide to better understand network usage and support greater spectrum efficiency.

Then consider that the work that the Defense Advanced Research Projects Agency and National Science Foundation have been doing for years on this subject. In particular, take a look at DARPA's Colosseum network emulator, designed to support the development of new radio network technologies, and DARPA's Spectrum Collaboration Challenge, which invited innovators to design new wireless networks using AI. The final round of this challenge was held a few years back in Los Angeles. Teams used AI-enabled radios to go head-to-head against each other demonstrating how machine learning can support real-time dynamic spectrum decision-making, increasing efficiency and decreasing interference. It was held in a dark auditorium in Los Angeles, but it was a bright look at our wireless future—I know, because I was there.

DARPA's Colosseum network emulator is now hosted by Northeastern University in Boston, in partnership with the National Science Foundation. Here at the Commission, we've supported these efforts by establishing special wireless Innovation Zones in Boston to support continued work with the emulator and in Salt Lake City, where the National Science Foundation has set up outdoor, city-scale wireless test beds.

Next, look at network resiliency. We depend on communications like never before. However, when weather events challenge our infrastructure and unforeseen technical problems arise, our networks may not be there when we need them most. But as our networks increasingly rely on software and virtualization, AI can help proactively diagnose difficulties, orchestrate solutions, and heal networks on its own. That means operators can fix problems before they reach customers, and design them with radically improved intelligence and efficiency.

Then consider how our networks are used by consumers. AI has tremendous potential to expand and refine the analytics tools we have to block unwanted robocalls and robotexts. It could help restore trust in our networks. Because using these systems we can enhance our ability to see fraudulent traffic before it reaches you and stop it in its tracks.

So those are three reasons to be optimistic about AI in communications—spectrum efficiency, network resiliency, and tools to protect consumers. I hope we can talk some more about them today. I also know the Commission's Technological Advisory Council is doing good work on this subject. It has a group dedicated to studying AI and machine learning and has already begun to look at the impact of these kind of developments.

But the work of the Technological Advisory Council and this event with the National Science Foundation today are just the start. Because I have just shared with my colleagues a proposal for an inquiry to have the agency explore ways to leverage tools like AI to better understand the usage of non-Federal spectrum. We have traditionally relied on third parties for metrics regarding spectrum usage, which provides a limited picture. But if we use new tools to understand usage, we can identify new opportunities to facilitate greater spectrum use, enhancing spectrum sharing techniques and expanding approaches to enable co-existence among users and services.

I hope many of you will submit comments to this inquiry. But the good news is we have you here with us today and don't have to wait several weeks to benefit from your insights.

Now let me wrap up and yield the floor to our friends at the National Science Foundation. Thank you again for being a part of this important discussion on how AI will impact the technologies that connect us all. Thank you for being AI optimists. Because if you're here, I am going to assume you are one and that you see the opportunities as well as the challenges. So let's get to it.