National Radio Science Meeting

◆ January 4-8, 2022

Plenary Talk, January 6, 2022

Making Spectrum Better: Collaboration Opportunities between Radio Scientists and other Spectrum Users

Andrew Clegg
Google and Baylor University

Abstract: When radio science and other radio spectrum applications are mentioned together in the same sentence, there's usually some conflict involved: 5G interfering with passive sensors, or satellite transmissions interfering with (or even physically harming!) radio telescopes, or some other coexistence challenge. The reality is that the relationship need not always be adversarial. In fact, there are many technical and policy developments that the services can leverage from one another. For example, propagation models are used to set the limits on how bands can be shared, and therefore dictate the economics of spectrum sharing. But we are using antiquated models such as ITM to dictate modern-day commercial/government and commercial/commercial shared spectrum opportunities, including the 3.5 GHz CBRS band and the new 6 GHz unlicensed band. Conversely, developments in commercial spectrum sharing systems can be leveraged to provide improved opportunistic access for passive systems to spectrum normally occupied by active services. Various cloud-based sharing frameworks have been developed and deployed (or will be soon), such as SAS in 3.5 GHz and AFC in 6 GHz. These software-defined systems can easily be extended to other bands, other applications, and other services, including science services. This talk will focus on areas of joint interest between radio scientists and other spectrum users.

Biography: Andrew has over 25 years of experience in national and international spectrum management for both government and industry. He is currently the Spectrum Engineering Lead for Google, where he is focused on identifying and deploying spectrum sharing opportunities for wireless networks and services. He was one of the founding developers of the U.S. Citizens Broadband Radio Service (CBRS) at 3.5 GHz, and is currently helping to develop standards and products that support the new 6 GHz unlicensed band through an Automatic Frequency Coordination (AFC) system.

Andrew also holds a part-time appointment as a senior research scientist in the Department of Electrical and Computer Engineering at Baylor University. He collaborates on adaptive and reconfigurable technology and its application to radio spectrum access.

Previously, Andrew served as the spectrum manager for the U.S. National Science Foundation. He founded NSF's Enhancing Access to the Radio Spectrum (EARS) program, NSF's first-ever initiative dedicated to funding academic and small business research focused on improving spectrum efficiency and access.

Prior to NSF, he was a Lead Member of Technical Staff at what is now AT&T, a senior engineer with Comsearch, and a research scientist at the U.S. Naval Research Laboratory.

Andrew chairs several industry standards committees developing shared spectrum technology. He is on the boards of directors of the Wireless Innovation Forum, the OnGo Alliance, the National Spectrum Management Association, and ATIS. He also serves as the Chief Technical Officer of the Wireless Innovation Forum.