Connecting to others online via voice and video calls is something that is increasingly a part of everyday life. The real-time communication frameworks, like WebRTC, that make this possible depend on efficient compression techniques, codecs, to encode (or decode) signals for transmission or storage. A vital part of media applications for decades, codecs allow bandwidth-hungry applications to efficiently transmit data, and have led to an expectation of high-quality communication anywhere at any time.

[...]

To solve this problem, we have created Lyra, a high-quality, very low-bitrate speech codec that makes voice communication available even on the slowest networks. To do this, we've applied traditional codec techniques while leveraging advances in machine learning (ML) with models trained on thousands of hours of data to create a novel method for compressing and transmitting voice signals.
Google's AI team has announced "Lyra" as a very low bit-rate codec for speech compression designed for use-cases like WebRTC and other video chats... With a bit rate so low that when combined with the likes of the AV1 video codec could potentially allow video chats over 56kbps Internet connections.

Google engineers formally announced Lyra on Thursday as this new codec to challenge the likes of Opus. Lyra leverages machine learning to make it suitable for delivering extremely low bit-rate speech compression.

Google's Lyra announcement noted, "Lyra is currently designed to operate at 3kbps and listening tests show that Lyra outperforms any other codec at that bitrate and is compared favorably to Opus at 8kbps, thus achieving more than a 60% reduction in bandwidth. Lyra can be used wherever the bandwidth conditions are insufficient for higher-bitrates and existing low-bitrate codecs do not provide adequate quality."

People with disabilities can experience huge benefits from technology but can also find it frustrating or worse, downright unusable. Mozilla's Firefox accessibility team is committed to delivering products and services that are not just usable for people with disabilities, but a delight to use.

The Firefox accessibility (a11y) team will be spending much of 2021 re-building major pieces of our accessibility engine, the part of Firefox that powers screen readers and other assistive technologies.

While the current Firefox a11y engine has served us well for many years, new directions in browser architectures and operating systems coupled with the increasing complexity of the modern web means that some of Firefox's venerable a11y engine needs a rebuild.

Browsers, including Firefox, once simple single process applications, have become complex multi-process systems that have to move lots of data between processes, which can cause performance slowdowns. In order to ensure the best performance and stability and to enable support for a growing, wider variety of accessibility tools in the future (such as Windows Narrator, Speech Recognition and Text Cursor Indicator), Firefox's accessibility engine needs to be more robust and versatile. And where ATs used to spend significant resources ensuring a great experience across browsers, the dominance of one particular browser means less resources being committed to ensuring the ATs work well with Firefox. This changing landscape means that Firefox too must evolve significantly and that's what we're going to be doing in 2021.