

James Rowe, CEO of OTOjOY, offers these reflections on the future of Bluetooth Low Energy (LE) “Auracast” as a possible future assistive listening technology (November 2022):

Executive Summary: Implications for hard of hearing people:

- For now, we should all keep advocating for hearing loops and telecoils. They remain the one technology available NOW and compatible with most receiving devices, providing an OUTSTANDING listening experience in a big public space. Or over a counter. Or at an airport gate. Or in a meeting room. Or in the many other examples where assistive listening is required.
- The 2022 Budapest Declaration by the International Federation of Hard of Hearing People (IFHOH) World Congress said it well: “Until Auracast becomes widely available and proves its promises to the satisfaction of all concerned, it is important that the globally used and proven systems of Hearing Loops, FM, IR + Telecoils, not be dismissed. As a new technology, Auracast will take time to become stable, reliable, and easy enough to use for potential users. Therefore, it is important to have both Telecoil and Auracast technologies in hearing aids and cochlear implants until most hard of hearing users will feel they can rely on the new Auracast technology.” *Auracast – New Bluetooth Technology: Implications for Hard of Hearing Persons*
- To assess Auracast’s promise for people with hearing loss, independent research by non-manufacturers will be needed.

The Bluetooth/Auracast story:

Bluetooth is the name given to a standardized protocol for sending and receiving data via a 2.4GHz wireless link. It was first launched in 1999 and that protocol was known as Bluetooth 1.0. Since 1999 there have been 5 major revisions to the protocol, with the most recent in 2016. The most recent version of the protocol is known as Bluetooth 5.0. If you own a smartphone released in 2016 or later, you very likely have Bluetooth 5.0 in that product. Likewise, if you own a CI or a hearing aid purchased since 2016, you will likely have Bluetooth 5.0 inside. If you bought your hearing aids in 2014 (for example), then you will have Bluetooth 4.0. If like my own father, you’re still using a Nokia 3210, then there’s a good chance you have Bluetooth version 1.0!

Bluetooth is always evolving, as you can see above, and right up until version 5.0, it was still only a useful protocol to send data between two different devices - one sending device and one receiving device: Your smartphone (transmitting

device) and your hearing aids (receiving device) for example. Or your smartphone and your car. It is not possible to send data from one Bluetooth device to multiple other devices.

That is, until now. Very recently, an update to Bluetooth, which is known as Bluetooth version 5.2, has changed this capability, meaning that for the first time, Bluetooth will be able to be *broadcast* from one sending device to multiple receiving devices. And that functionality is what has everyone in the assistive listening industry very interested. In theory, you could have one sending device in a church, for example, broadcasting to multiple receiving devices (everyone wearing a hearing aid).

Auracast is simply the brand name that the Bluetooth Special Interest Group (Bluetooth SIG)¹ have given this new broadcast feature. It is NOT a separate Bluetooth release. It is NOT the name given to a specific piece of hardware. It is simply the brand name for the new broadcasting capabilities of Bluetooth version 5.2.

Here's what's really important to know. The Auracast feature will only work if you have a Bluetooth version 5.2 sending device and a Bluetooth version 5.2 receiving device. As of today, there are NO transmitting devices in the market. Companies are working on them, but NONE are available. Additionally, there are almost NO receiving devices in the market. Those that have been released (the newest version of Apple AirPods, for example) DO have the new 5.2 protocol inside. Apple is saying that when Auracast transmitters are available, it will be a simple software upgrade to turn on the feature in your AirPods.

This means that virtually NOBODY has the correct Bluetooth protocol in their receiving device and will require the purchase of a new device (whether that is a smartphone, hearing aid, or CI) to take advantage of the technology. And only then, once manufacturers release transmitters into the market. And that is another big question - when will the first transmitters be available for sale? The other big question for the assistive listening industry is — when will hearing aids and cochlear implants be available with Bluetooth 5.2? Estimates range from 2023 - 2030, depending on the brand.

¹ The Bluetooth Special Interest Group is the standards organization that oversees the development of Bluetooth standards and the licensing of the Bluetooth technologies and trademarks to manufacturers. The SIG is a not-for-profit, non-stock corporation founded in September 1998

So, when it comes to who will pay for this? Any company that wants to use Bluetooth 5.2 in a sending device must purchase a license from Bluetooth to do so. Any individual who wants to use Bluetooth 5.2 in a receiving device (smartphone, hearing aid, AirPods, etc.) will buy that consumer product the same way they do today. That brand new product (sometime in 2023) will contain the correct version of Bluetooth (5.2), allowing for the Auracast feature. Just as you do not have to pay any fees to use Bluetooth today, I can't imagine a future where you would need to pay fees for that one specific feature.

The other big question, even when these sending devices and receiving devices ARE available, is how well that Auracast feature will work. Whenever you send data wirelessly, there are lots of different places in the transfer chain where "loss" can occur. And if the data being sent is Audio, then any "loss" will result in a horrible listening experience. **For assistive listening systems, there is a lot for us to learn before anybody can reliably recommend Auracast as an alternative to hearing loops or Auracast as an alternative to FM.**

Follow-up HearingLoop.org question: Will Auracast require a tech interface (such as a smartphone)? One HUGE advantage of hearing loops is their simplicity. An older, not tech-savvy adult need only push a button on their hearing aid or remote and, bingo!, their aids become in-the-ear speakers. With multiple Auracast signals in a sports bar, one presumably would need to select the desired Auracast channel. But could Auracast operate with simplicity similar to hearing loops in a worship place or auditorium?

Your question identifies another unknown. You're correct to say that each TV would have a separate stream in a venue, such as a sports bar; therefore, you would need a way to connect to the stream you want to listen to. Various options are being floated, but I think the one that will rise to the surface will look something like the list of WiFi networks available to you when you're out and about. If you've ever tried to connect to WiFi in an airport, for example, you'll know that very often the list of network choices can often be very long (Free Airport WiFi, Boingo, LoungeWifi, StaffOnly, etc.) For this option, you would almost certainly need a smartphone to open up the Bluetooth settings and then select the AuraCast stream you want to listen to. It could also be feasible that each stream has a QR code on the wall next to it, which you could 'snap to hear', but that would still require a smartphone.

In a smaller venue with only one stream, it would conceivably be more straightforward with fewer Auracast streams to connect to, but you would still need a way to choose that stream in the first place. I don't think it will ever be as easy as it is now with a hearing loop. I think there will always need to be a

smartphone in “the middle”. Even in a place of worship or auditorium, it’s conceivable that there would be multiple streams. Imagine a huge theater with orchestra stalls, a dress circle and a grand circle. Each of those different areas might well need a separate stream.

I think it’s safe to say that these connection protocols are still yet to be determined. It will be interesting to see if a standard emerges quickly or if there will be multiple different options depending on manufacturer’s transmitting products. Let’s hope not, but there’s no clear answer just yet.

The bottom line: Auracast is a promising future possibility, though far from ready for prime time. Unless and until its promise is substantiated for most hearing aid and cochlear implant users, we must continue offering proven, user-friendly hearing accessibility, and then to offer both telecoil and Auracast reception in hearing aids to come.