

The new organization, which includes technology companies and end users among its members, intends to promote interoperable standards while working to ensure co-existence with W-Fi standards.

By Claire Swedberg

Tags: [Automotive](#), [Security and Access Control](#), [Innovation](#), [Standards and Regulation](#)

Feb 04, 2019—In order to promote ultra-wideband (UWB) technology development and deployments through greater interoperability and standardization, a group of technology companies and end users publically launched the [UWB Alliance](#) in December 2018. The global, not-for-profit alliance seeks not only to enable end-to-end interoperability and value chain ecosystems around the world, but also to promote UWB technology and educate the public regarding how much it is used.

"UWB is present in all sorts of products, but not everyone is aware of that," says Tim Harrington, the chairman of the UWB Alliance. The organization began in 2017 during a series of meetings between UWB technology providers and end users, and was incorporated in May 2018. The key point for the Alliance, however, has been interoperability. As part of this effort, several members have been working on the [IEEE's 802.15 Enhanced Impulse Radio \(EiR\) Task Group 4z](#) to add new capabilities to the UWB-based physical layer transceiver (PHY) and media access control (MAC) portions of the standard, which will ensure that different UWB technologies can operate together. Harrington is also the chairman of the 4z Task Group.

Ultra-wideband is a low-energy, high-bandwidth technology that transmits in pulses. The technology has been standardized at the PHY and MAC layers by the [ISO](#) and [IEEE 802.15](#). Additionally, [ETSI's](#) TGUWB Task Group has developed multiple UWB standards for regulatory approval throughout the European Union. However, there are several types of UWB—which have been published by IEEE within the 802.15.4 standard—that are classified by their pulse repetition frequency (PRF): namely, high-rate PRF (HRP) and low-rate PRF (LRP). Each plays a different role within UWB, Harrington explains, and has different transmission techniques associated with it.

The result, according to Harrington, is non-standardized technology. IEEE's working group defines the standard for only the MAC and PHY layers, he notes, but this is insufficient to provide true interoperability. There must be defined parameters above these layers in order to enable the technology to interoperate. The UWB Alliance seeks to work with members to enable the different types of technologies to interoperate, and to work with similar PHY and MAC combinations.

The efforts to standardize began in 2017, when automotive companies started meeting with UWB technology firms to discuss the global use of UWB technology in key fobs for vehicle locks. Access-control company [3db Technologies](#), located in Switzerland, was among the first businesses to seek enhancements to the 802.15.4 standard for UWB. Semiconductor firm [Decawave](#) soon joined in, promoting enhancements of its own.

Decawave helped to launch the Alliance in an effort to improve interoperability by establishing the PHY or MAC layers that enable systems to speak with each other. "We wanted to help build the framework needed to provide interoperability," says Mickaël Viot, Decawave's marketing VP. "We were seeing manufacturers designing their own solutions that couldn't talk to each other," he adds, and that inhibits growth in the UWB and IoT industries. The best way to accomplish interoperability was through industrial alliances, Viot adds. "To achieve large-scale, high-volume deployments you need network interoperability—and to get that, you need alliances."

The effort grew beyond the automotive and access-control sectors, Harrington recalls, and other companies began joining the conversation, including smartphone handset manufacturers and technology firms like [Apple](#). Members of the group then opted to form and incorporate the UWB Alliance, which now includes 3db, as well as other published members: UWB microphone technology company [Alteros](#); UWB solutions providers Decawave, [Ubisense](#) and [Zebra Technologies](#); automotive manufacturers [Hyundai](#) and [Kia](#); and impulse radar sensor company [Xethru](#) (formally known as Novelda). Coming onboard this month are robotics company [iRobot](#) and automotive components manufacturer [Denso](#). According to Harrington, other members have opted not to have their names published.

The group is currently creating technical and marketing committees and working groups with members worldwide. "Interoperability is key to having a market grow," Harrington states. He likens the UWB Alliance to the [Wi-Fi Alliance](#), which has created a standard by which 802.11 devices can interact with each other.

In addition, the UWB Alliance will support the interests of UWB companies to prevent encroachment into the 6 GHz band. The FCC has recently proposed extending Wi-Fi broadband up to 6 GHz, for instance. "The goal will be to protect the UWB band for our members," Harrington says, as well as "working with the IEEE 802.19 and 802.11 [a Wi-Fi standard] group to explore possibilities so that we can coexist."

Another goal, Harrington says, is to ensure UWB products can operate in North America, Europe and Asia. "Several of our members have products deployed in all three of those regions," he states. Moreover, the UWB Alliance intends to work with ETSI in Europe, and TGUWB (for which Harrington serves as vice-chairman) to propagate standards based on the existing regulations. "The more commonality there is, the more the market grows."

UWB deployments extend far beyond automotive applications, however. During the coming yearS, Harrington predicts UWB technology may be made available in smartphones and other mobile devices. It could be used for secure payments, as well as for access control, based on the granular location data provided, which could help users to pinpoint where a device is located before a transmission is sent. Millions of devices have been deployed to date, for such use cases as health care, sports management, tool tracking and managing work-in-progress. The benefit of UWB, Harrington says, is in its low-power pulses, which help to ensure security and allow for highly accurate location data to within a few centimeters.

Already, UWB is being used for sports tracking at NFL stadiums with Zebra Technologies (see [Kinduct, Zebra Technologies Team up for Football Performance Tool](#) and [What You Can Learn From the NFL](#)), as well as for tool tracking at manufacturing sites such as [Boeing](#), where the technology is provided by Ubisense, and for tracking WIP (see [VW Slovakia Optimizes Factor Vehicle Movement With RTLS](#)). The technology can also be used to identify where a part is located during assembly, and when it comes within range of an automated tool. Functions such as torque settings can be automatically adjusted in order to match the exact location with its specified settings.

According to Harrington, the UWB Alliance has learned of many other diverse projects that are currently under way by solution providers that partner with chip vendors, though he says he is unable to discuss specific details at this juncture. During the coming year, the group plans to work on defining and proposing interoperability options through multiple industry use cases, defining a testing methodology for interoperability and furthering relationship with recommended test facilities.