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to Be Precise



Annual Report  
2022



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# Board Chair Message: 2022

## – Accelerating UWB Adoption



**Charlie Zhang, Board Chair**

Senior Vice President, Engineering, Samsung Research America

**As Board Chair of the FiRa™ Consortium, I have had the pleasure of seeing first-hand the significant role that FiRa plays in advancing the development and use of UWB technology. The knowledge, expertise, insights, and dedication shared by our members continues to resonate with me.**

As you will see in this 2022 Annual Report, FiRa has a great deal to celebrate. A few highlights:

- Membership has grown to 119 members hailing from 21 different countries around the globe.
- A Security Working Group was established to develop and maintain a security requirements roadmap used in the development of FiRa technical and test specifications.
- The number of Validated Test Tools and Authorized Test Labs used in the FiRa Certification Program increased, allowing members more flexibility in the testing and certification of products.
- Ten (10) additional devices (i.e., chipsets and modules) were FiRa Certified™ in 2022, creating a platform for growth and accelerated adoption of UWB.

I invite you to take a moment to read this 2022 Annual Report; it will help you to understand our dedication to UWB and the associated development of an open and interoperable ecosystem.

Since forming FiRa just over three years ago, industry has seen steady interest in UWB technology along with an associated level of innovation. Likewise, consumers are increasingly aware of UWB technology, driven by its inclusion in handsets from well-known handset manufacturers such as Apple, Google, Samsung, and Xiaomi. And, as automobile manufacturers such as Audi, BMW, Ford, Genesis, Mercedes, Skoda, and Volkswagen implement UWB in digital car keys, consumers find themselves delighted by the seamless access experience that UWB provides.

FiRa has also seen the use of UWB expand in other consumer uses including device tracking, health monitoring, and a variety of uses that promote convenience within the home. Likewise, there are industrial uses for UWB including Real-Time Location Services (RTLS), contact tracing, and enhanced facility management. Further demonstrating the versatility of UWB, we also recently witnessed UWB used in soccer balls during the FIFA™ World Cup! There is no end to the potential that UWB offers in transforming connectivity experiences across all aspects of everyday life.

While signs of UWB growth and adoption are positive, FiRa has also continued to review previous technology adoption curves for newer technologies such as Wi-Fi and Bluetooth®, noting the pitfalls that have the potential to slow or stop widespread adoption and use of an innovative technology. Relying on “lessons learned,” FiRa has continued to refine our approach to ensure the ubiquitous adoption of UWB.

Our challenge as an industry is to expand the adoption of UWB. There is a whole new world of use cases just waiting to be positively impacted by the inclusion of UWB. As such, in the course of 2022, FiRa has spent time identifying relevant ecosystems and has then established collaborative efforts with different consortia across all key segments including automotive, connected home, payment, and logical access. I expect you will soon see the positive results from today's efforts. In the second half of 2022, FiRa focused on putting in place an updated organizational framework to make our organization more efficient, agile, and responsive. The Board is confident that these changes will provide the organization with a stronger foundation for continued success. More about our organization structure is available [here](#).

Looking forward in 2023, FiRa has several clear objectives:

- Strengthen collaboration with key consortia across automotive, connected home, payment, and logical access to achieve common goals and continue to build an open, interoperable ecosystem that incorporates the use of UWB
- Complete and release Technical Specification 2.0 to include the associated PHY / MAC 2.0 certification and associated analysis of security and performance requirements
- Support the adoption of UWB by identifying new use cases, working with regulators to gain more favorable spectrum regulations, and evangelizing UWB and the importance of an open and interoperable ecosystem

Examples of new use cases expected to be supported by the Technical Specification 2.0 include:

- **Untracked indoor navigation**
- **Asset tracking**
- **Emergency mustering**
- **Enhanced smart home use cases**

As Board Chair, I ask our members to remain actively involved in the work done by FiRa. Your participation is what keeps us moving forward. For this, and on behalf of the FiRa Board, I give you our heartfelt thanks.

I also use this as an opportunity to invite other organizations to join our Consortium. It is your opportunity to contribute to our ground-breaking efforts around UWB development and adoption, work with other thought leaders to stay current with the latest trends, network to strengthen your industry knowledge and ties, and enhance your own personal knowledge of UWB and how it might be used to transform connectivity experiences.

**In closing, I look forward to being a part of FiRa in 2023. We will monitor the dynamics of a rapidly changing industry and proactively take on the challenge of working to expand adoption of UWB! I look forward to working with all of you on this journey!**



# The UWB Market is Evolving

Ultra-wideband (UWB) is a short-range, wireless technology that makes use of wideband radio waves. Compared to Wi-Fi or Bluetooth®, UWB operates in higher frequency bands and uses a wider bandwidth (500 megahertz or more). These special characteristics of UWB allow it to measure distance and to determine position much more accurately than other technologies, providing the basis for building more secure applications.

Today, UWB is used in a variety of applications from smartphones to cars, connected homes, and industrial and enterprise uses, pushing UWB to become a vital mainstream wireless technology like Wi-Fi and Bluetooth®.



## UWB GROWTH IN THE CONSUMER SEGMENT



As previously reported, since 2019 the addition of the secure fine ranging feature (standardized in IEEE 802.15.4z) has led to the adoption of UWB in mass market consumer products including devices such as smartphones and smart watches. In 2021, UWB was adopted in over 300 million smartphones, representing an attach rate of approximately 20%. In the next five (5) to ten (10) years, it is anticipated that UWB will be gradually adopted across all smartphones, representing a market potential of 1.5 billion devices per year.

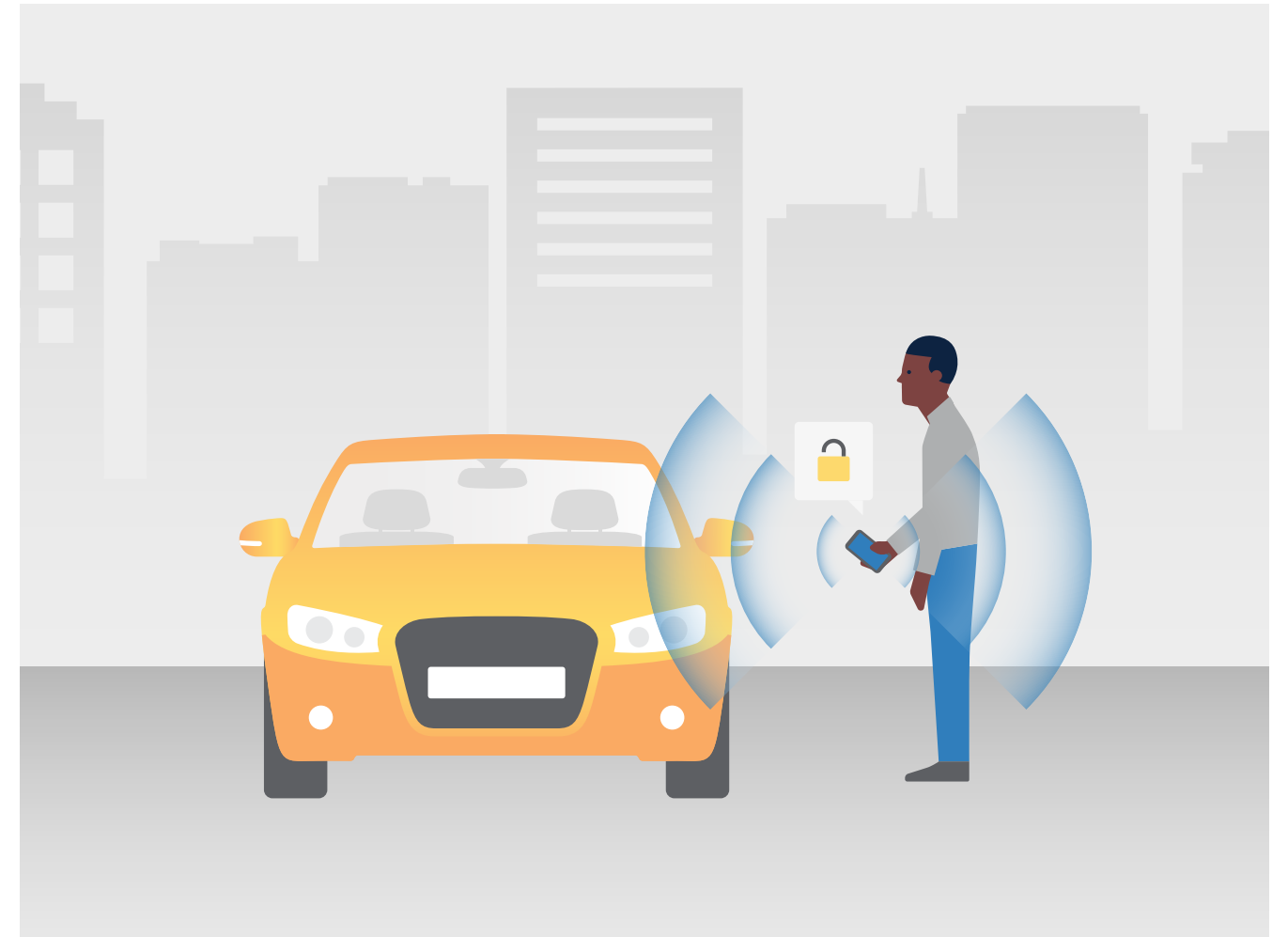
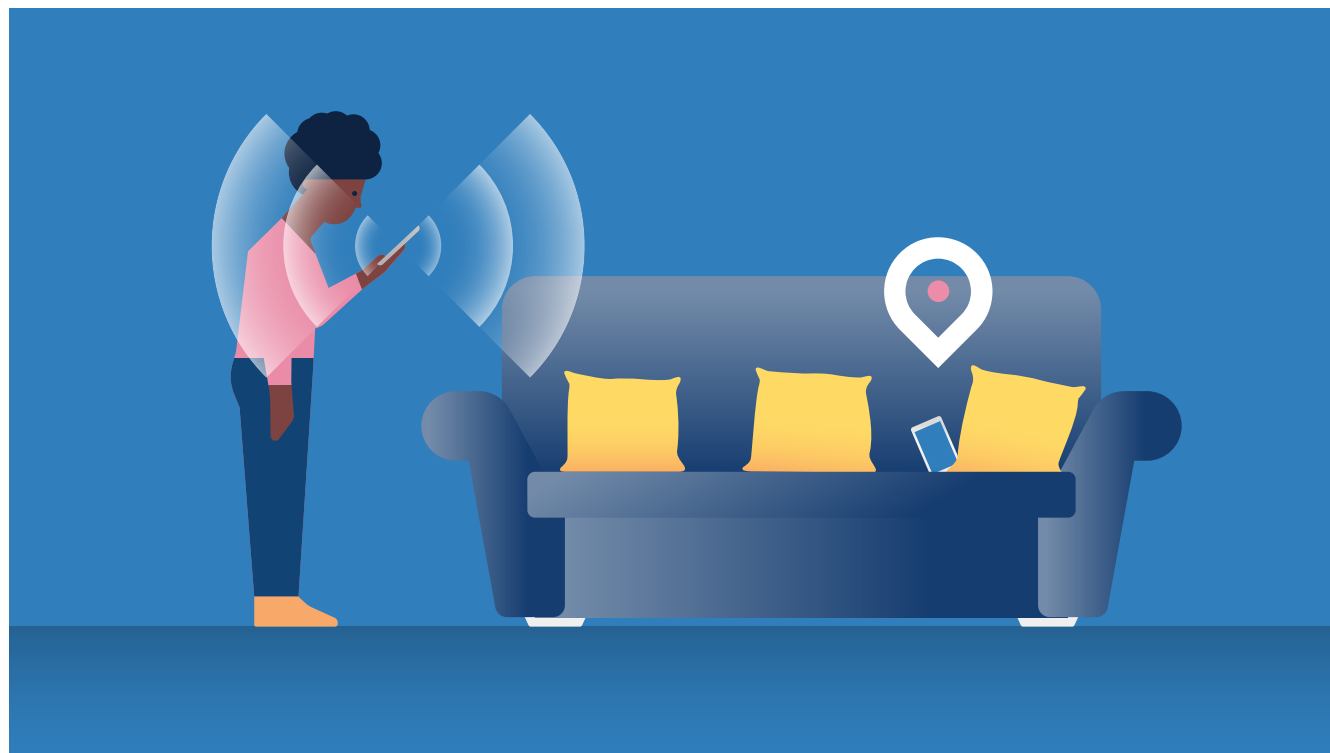
This inclusion of UWB in ubiquitous consumer devices is driving diverse real-world examples of UWB applications, some of which are explained here.

## Locate People and Things

Based on UWB's inclusion in several flagship smartphones, UWB is well positioned for growth in consumer applications. As life becomes more hectic, there is an increasing need for the ability to accurately locate people and things. UWB's integration in smartphones provides simple-to-use solutions which enable a user to find a friend or a misplaced item easily with a high degree of precision.

The use of UWB technology can help you to easily and precisely locate someone or share digital content using a UWB-enabled service application on your UWB-enabled smartphone. As your smartphone finds smart devices belonging to your friends, the ride hailing driver or meeting participants nearby, you may select one or many users' devices by touching a display or sending a message. It is that simple!

To find something nearby, you simply open a UWB-enabled service application, such as "find my device" on your UWB-enabled mobile device. The device will pinpoint associated misplaced items nearby and can even display the direction to the misplaced item. While the "find my device" capability initially relied on tags to be attached to items users wanted to locate, this function can now be directly embedded into products such as earbud cases. In the future, any UWB-enabled device – remote control, laptop, or car key – could offer the same functionality.



## Digital Car Keys

Digital Key allows consumers to easily and confidently use their mobile device to access vehicles. The Car Connectivity Consortium® (CCC), is developing a standardized ecosystem that "enables mobile devices to store, authenticate, and share Digital Keys for vehicles in a secure, privacy-preserving way that works everywhere, even when the smartphone's battery is low."<sup>1</sup>

Many car manufacturers, including Audi, BMW, Ford, Genesis, Mercedes, Skoda, and Volkswagen have implemented UWB into digital car keys. BMW notes that "overall, UWB technology is set to become very handy for car owners everywhere, promising both increased security and added ease when using car keys."<sup>2</sup>

<sup>1</sup> <https://carconnectivity.org/>

<sup>2</sup> <https://www.bmw.com/en/innovation/bmw-digital-key-plus-ultra-wideband.html>

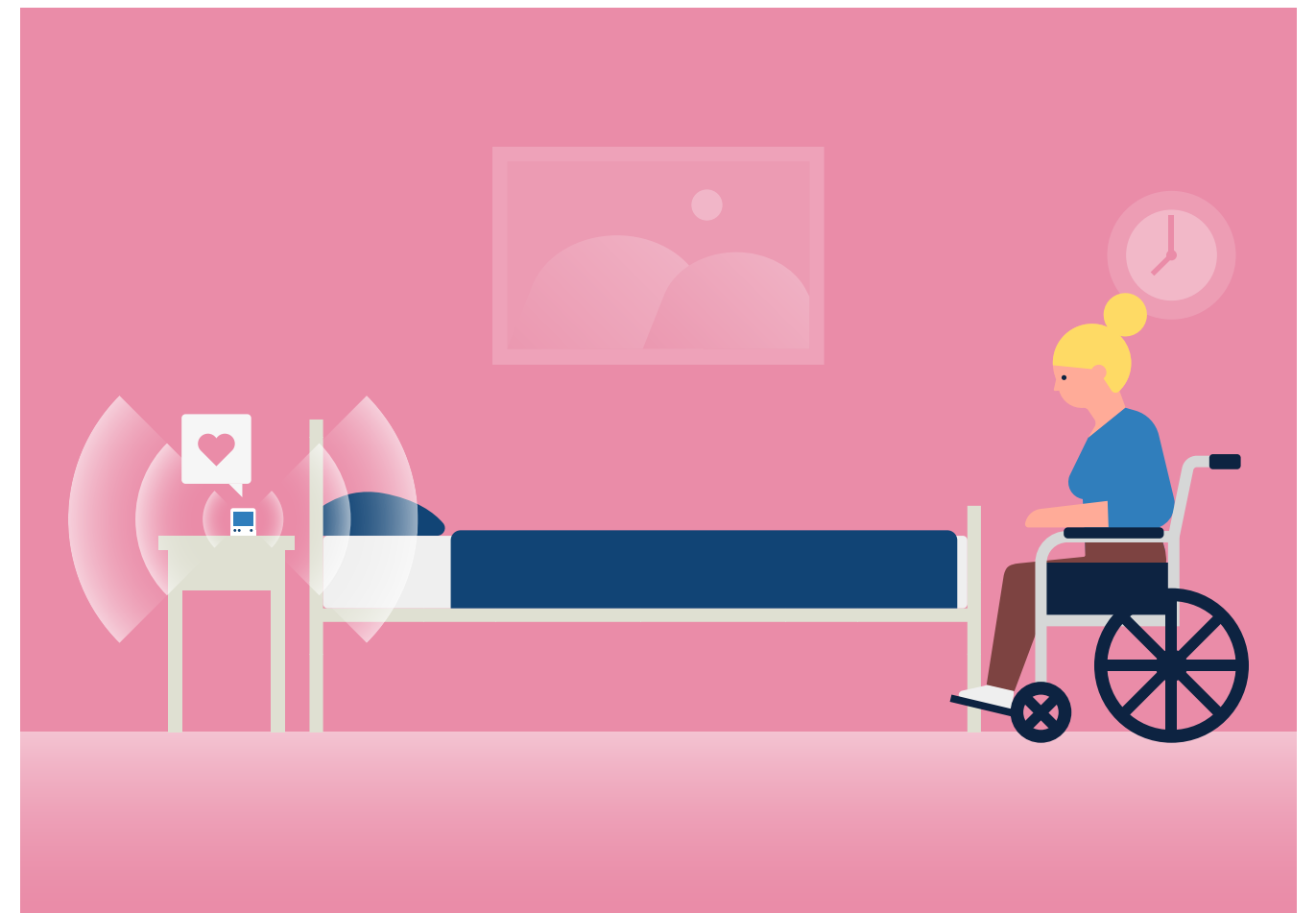


### In-Restaurant Customer Positioning

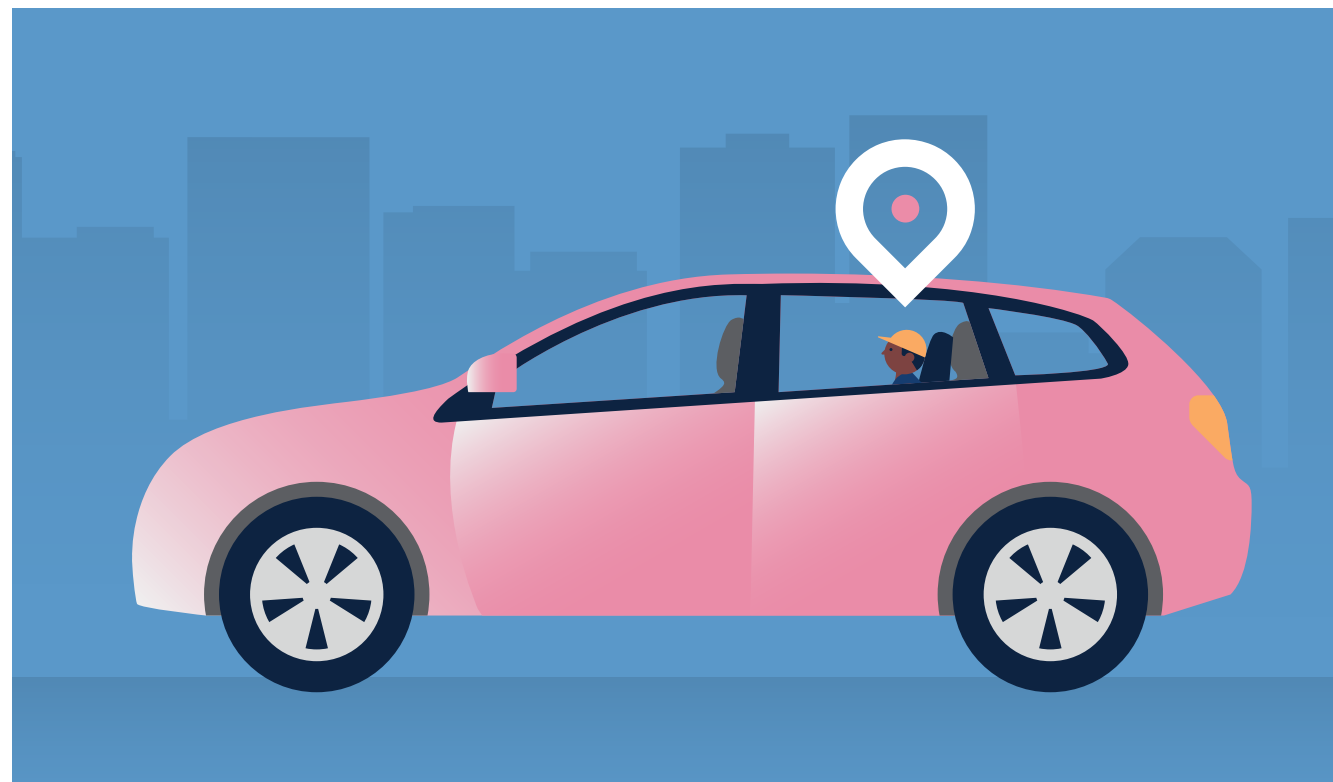
UWB is being used in restaurants to ensure that meals are delivered to the guest who ordered that meal.<sup>3</sup> By placing a UWB positioning tag in a “table tent”, the meal preparation and wait staff can easily and quickly determine exactly where the guest is seated such that the meal can be served to the guest at his/her table. Such capability drives customer convenience as well as operational efficiency for restaurants.

### Health Monitoring Using UWB Radar Technology

The recent COVID-19 pandemic has caused some to look for new methods to monitor the health and safety of loved ones in a reliable and unobtrusive way. Steven Plunkett, M.D., a medical adviser at Keenly Health, discovered that UWB radar sensors provide the ability to know when loved ones go to bed, how well they have slept, and when they leave the bed. He also can obtain ongoing real-time assessments of a person’s respiration.<sup>4</sup> With UWB radar technology, caretakers such as Dr. Plunkett have the assurance of knowing that their patients and/or relatives are stable and healthy 24/7.







## Child Presence Detection Systems

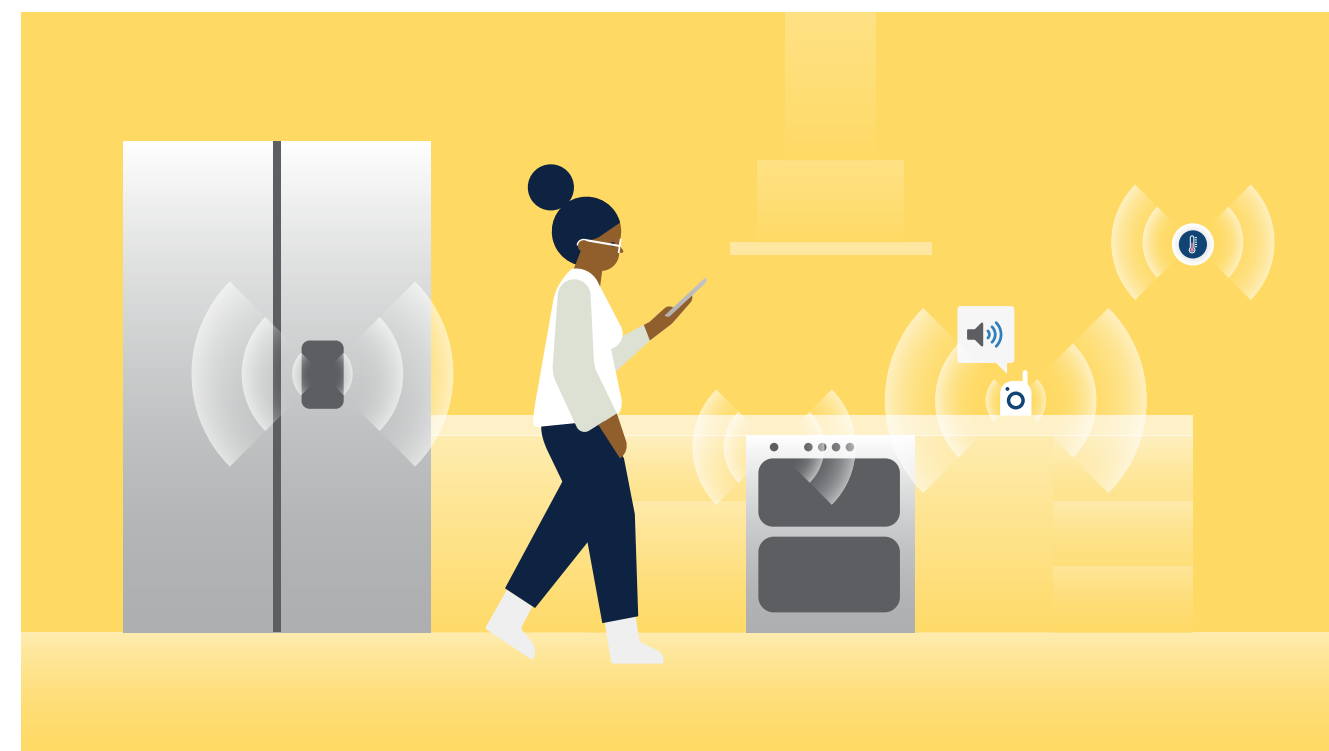
Within the safety category, UWB is being explored for use in child presence detection systems.<sup>5</sup> UWB can save lives by generating alerts if occupants are detected inside parked cars. Every year about 38 children in the United States die resulting from being in an unattended parked car that quickly becomes too hot inside. UWB can be implemented in Child Presence Detection (CPD) systems, helping to reduce the number of needless and tragic deaths of children, most of whom are under 3 years old.

## UWB AND THE INTERNET OF THINGS

According to Verified Market Research, “the IoT market size was valued at USD 1186.20 Million in 2021 and is projected to reach USD 6075.70 Million by 2030, growing at a CAGR of 19.91% from 2022 to 2030.”<sup>6</sup>

Oracle notes that the “Internet of Things” (IoT) describes the network of physical objects – “things” – that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools.

Oracle further notes that “over the past few years, IoT has become one of the most important technologies of the 21st century”. Now that we can connect everyday objects – kitchen appliances, cars, thermostats, baby monitors – to the internet via embedded devices, seamless communication is possible between people, processes, and things.<sup>7</sup>

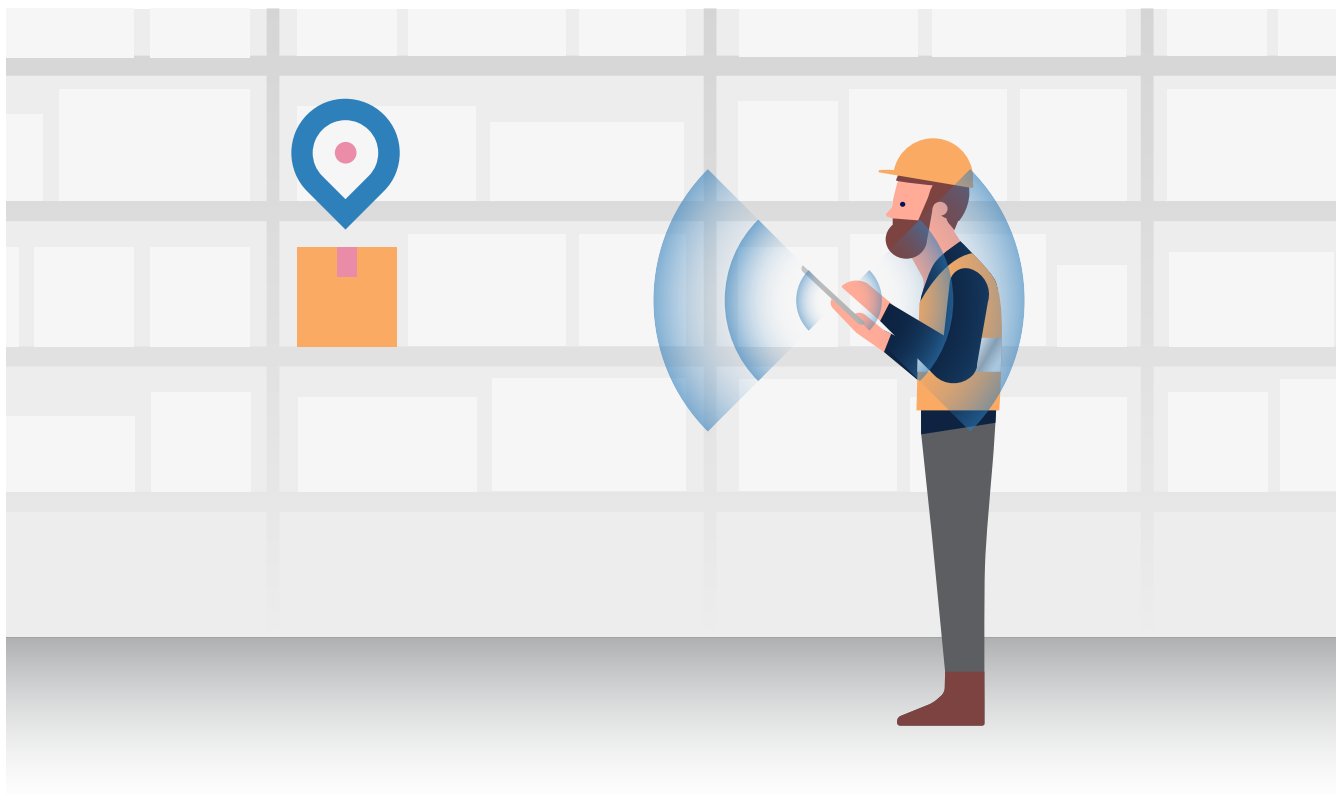


# UWB GROWS IN THE INDUSTRIAL SEGMENT

As highlighted by MarketsandMarkets™, factors outside of the consumer space that are driving growth in the UWB market include the industrial Internet of Things (IIoT) and the rising demand for UWB technology in Real-Time Location Systems (RTLS) applications.

## Real-Time Location Systems (RTLS)

A report from Research and Markets indicated that the global indoor location-based services market size was estimated at USD 17.28 billion in 2021 and was expected to reach USD 74.05 billion in 2030, at a CAGR of 19.9%.<sup>8</sup>

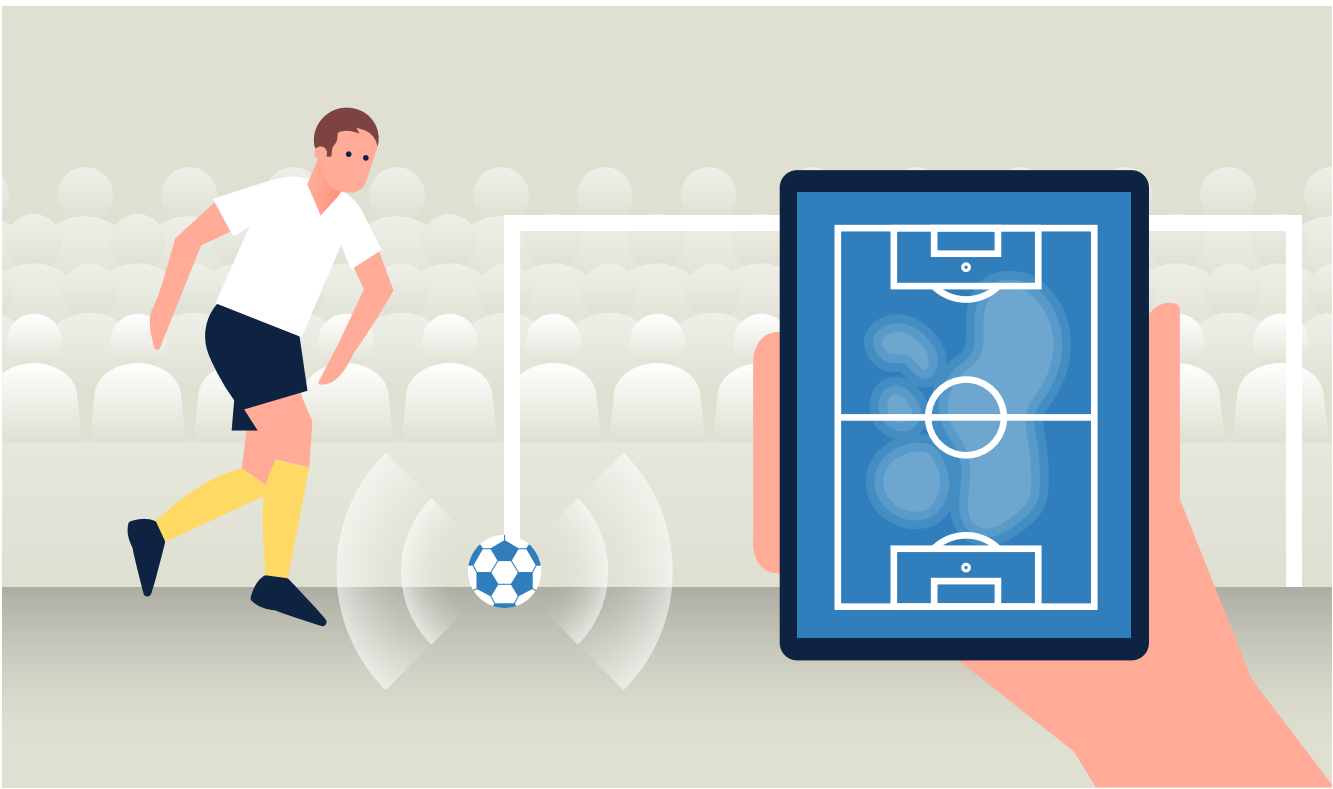


<sup>8</sup> <https://www.researchandmarkets.com/reports/4896758/indoor-location-based-services-market-research#rela0-5427261>  
<sup>9,10</sup> [https://www.marketsandmarkets.com/Market-Reports/indoor-location-market-989.html?gclid=EAlaIqobChMIutrnsoSw9wlVI2lvBB3KNw-mEAYASAAEgLoIPD\\_BwE](https://www.marketsandmarkets.com/Market-Reports/indoor-location-market-989.html?gclid=EAlaIqobChMIutrnsoSw9wlVI2lvBB3KNw-mEAYASAAEgLoIPD_BwE)  
<sup>11</sup> <https://innotechtoday.com/soccer-fans-perplexed-as-picture-of-world-cup-balls-being-charged-goes-viral/>

In a corresponding report from MarketsandMarkets, it was noted that “there is an increasing demand for indoor positioning technologies across manufacturing, retail, and transportation and logistics verticals across Asia Pacific (APAC) countries.”<sup>9</sup> The benefits of UWB for those industries range from driving operational efficiencies to ensuring the safety of the workers. This same report noted that companies are also using indoor location technology for facility management, virus tracing, people tracking and management, and smart quarantining.<sup>10</sup>

As UWB increases in popularity, new RTLS use cases are being explored. For example, FIFA™ used this year’s World Cup to implement a technology that tracks positional data and nuanced movement of soccer balls.<sup>11</sup> Developed by Adidas and Kinexon, the soccer ball includes a sensor that uses UWB to help give precise data on where the ball is at any time and then transmits that data in real-time. A second sensor is an inertial measurement unit (IMU) sensor, which gives a granular look at how the ball moves in space.

The data collected helps the referee and officials in the control room when reviewing offside calls. In addition, the additional confirmation provided by the sensors is intended to act as a complement to the VAR (video-assisted referee) system already used in most professional domestic and international leagues and tournaments. The new technology also provides critical data to managers, training staff, and players.







## DEVELOPMENT OF AN OPEN AND INTEROPERABLE ECOSYSTEM

FiRa remains committed to the development of an open and interoperable ecosystem. For the last two years, FiRa has written about the “network effect” in which the proliferation of UWB in one sector accelerates innovation in other sectors. We clearly see this happening today.

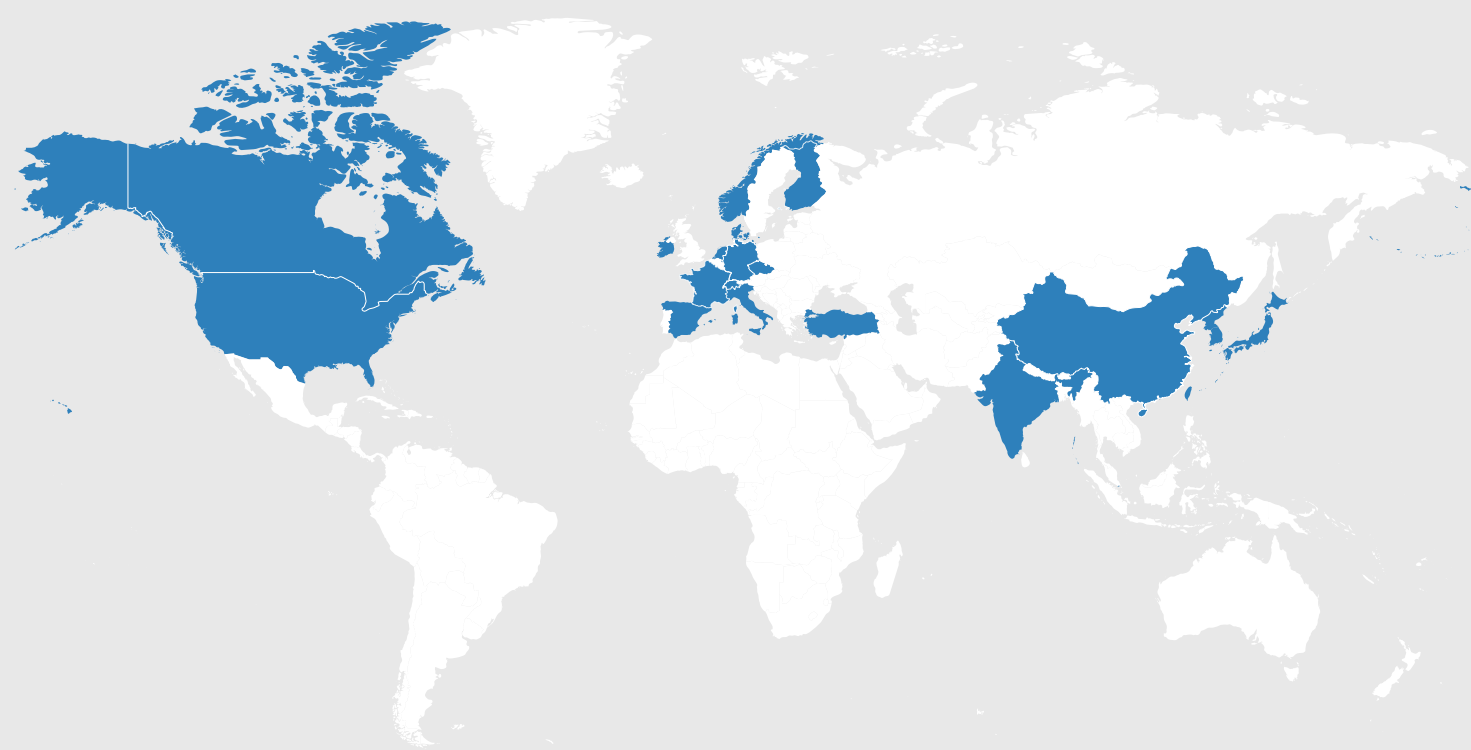
FiRa members also believe that the creation of an open and interoperable ecosystem will be needed to move the use of UWB from being a niche technology to being a technology that is used in mainstream applications. This same type of phenomenon was witnessed in the growth of both Wi-Fi and Bluetooth®.

As consumers experience the power of UWB in their hands via their UWB-enabled mobile devices, they will help to increase the pace of UWB adoption by demanding more uses for UWB within the home. As new habits are formed around the use of UWB, expectations for higher penetration of UWB in all types of commercial devices and settings will occur. And thus the “network effect” continues to have a positive impact on the growth of an open and interoperable ecosystem.

With FiRa being comprised of industry leaders sharing a common vision for the development of an open and interoperable ecosystem, the FiRa Consortium is in the right place at the right time to propel the industry forward.



# Organizations Around the Globe Join FiRa!



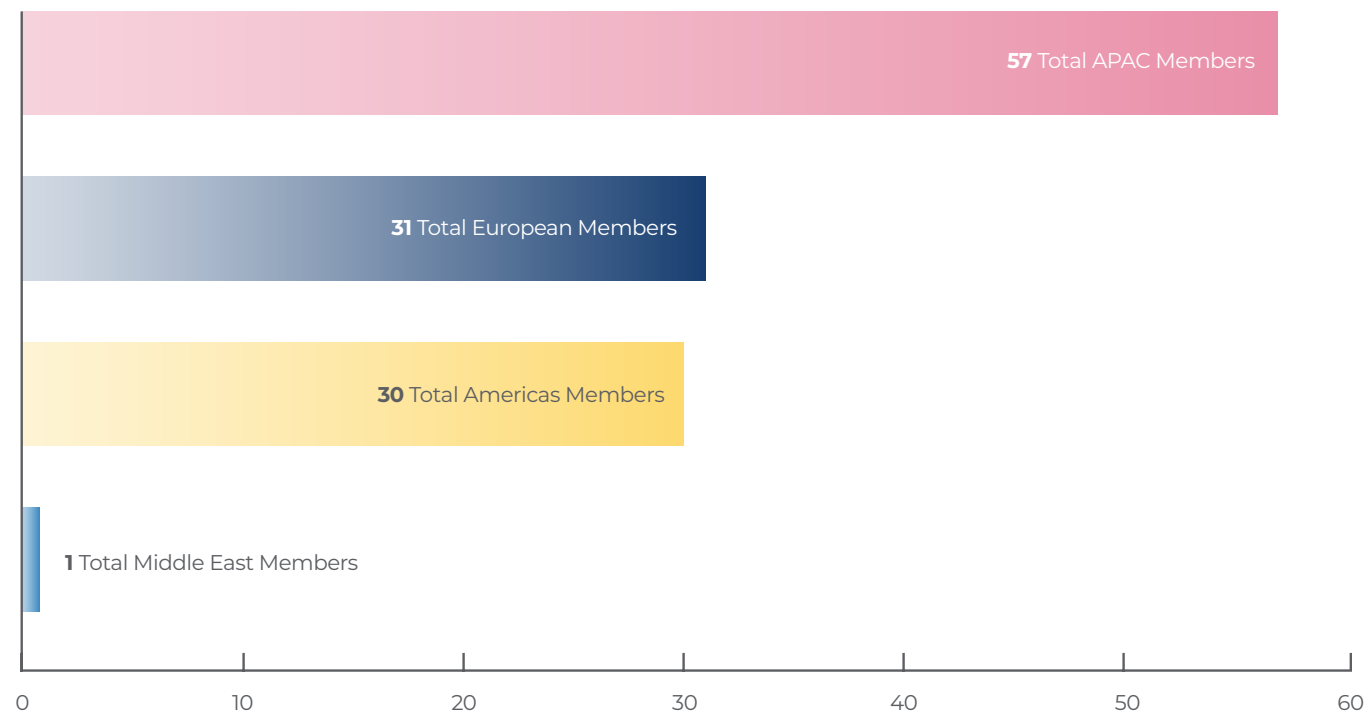
- |                |           |             |               |
|----------------|-----------|-------------|---------------|
| Canada         | Germany   | Korea       | Taiwan        |
| China          | Hong Kong | Netherlands | Turkey        |
| Czech Republic | India     | Norway      | United States |
| Denmark        | Ireland   | Singapore   |               |
| Finland        | Italy     | Spain       |               |
| France         | Japan     | Switzerland |               |

The FiRa Consortium, established in August 2019, is a truly global organization with 119 member companies with principal offices spanning **21 countries**. Our industry-leading members represent every discipline across multiple sectors. As thought leaders, our members are choosing to lend their expertise to foster the growth of an open and interoperable UWB ecosystem.

The FiRa Consortium enables its members to maximize the benefits of UWB technology for their brand by:

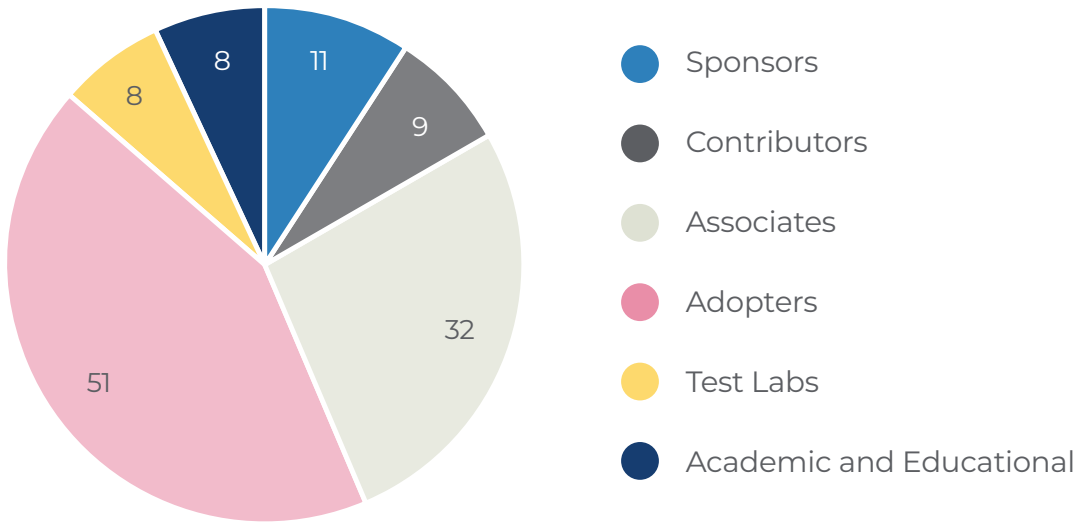
- Demonstrating leadership in wireless innovation
- Exploring new market opportunities
- Getting innovative products to market faster
- Selling products and solutions more easily because they are part of an open and interoperable ecosystem

The FiRa membership hails from four regions.





The FiRa memberships spans all membership levels.



### FiRa Fast Facts

Based on the caliber of members, industries represented, and number of members, FiRa is the premier UWB industry consortium.

**Membership includes:**

- Numerous major mobile and consumer electronics manufacturers: Amazon, Apple, Cisco Systems, Google, LG Electronics, Meta, Microsoft, Samsung, and Sony
- The world’s premier semiconductor manufacturers: Infineon, Intel, NXP, Qorvo, Qualcomm, and ST Microelectronics
- Three (3) global smartphone manufacturers (i.e., Apple, Google, and Samsung) are on the FiRa Board
- There are six (6) Authorized Test Laboratories (i.e., CAICT, DT&C, HCT, SGS China, SGS Korea and TTA) , all located in the Asia Pacific region
- Four (4) FiRa Associate members (i.e., Comarch, LitePoint, NI, and Rohde & Schwarz) provide Validated Test Tools to test for PHY/MAC conformance

# Our Members

## Sponsor Members

FiRa’s top tier Sponsor members are long-time leaders in technology and innovation. Representatives of these organizations comprise the FiRa Board, bringing together a diverse group of organizations with a singular focus on the need to establish a strong, sustainable ecosystem to support emerging applications that utilize UWB technology.



## Contributor Members

FiRa also has a strong roster of Contributor members. This group of members bring significant technical and market knowledge to the creation of technical specifications that result in an interoperable ecosystem.



To see a more complete view of FiRa’s membership roster, visit our website at: <https://firaconsortium.org/about/members>.

# The Strength of the FiRa Organization

FiRa has been a working Consortium for just over three (3) years. Our top-notch Board has continued to lead the organization’s evolution in support of the Consortium’s dedication to transforming the way we interact with our environment by enabling precise location awareness.

FiRa’s organizational highlights over the course of 2022 include:

- FiRa established a new Security Working Group (SWG).  
Key elements of the SWG charter include:
  - Development of a security requirements roadmap
  - Providing security recommendations associated with FiRa specifications
  - Defining a methodology to address the security certification process
- FiRa formed multiple “Tiger Teams” to address specific short-term opportunities and/or needs of the organization. This has proven to be fruitful, helping to move topics under consideration forward at a much faster clip.
- New chairs / co-chairs have been nominated to guide the activity of several Working Groups. You can learn more in our overviews of each Working Group in this Annual Report.
- FiRa has formed a Working Group Steering Committee (WGSC) that oversees the coordination of the Working Groups to ensure that FiRa follows guidelines and best practices across the Working Groups. Brian Redding with Qualcomm has been designated as the Chairperson pro tem of the new WGSC.

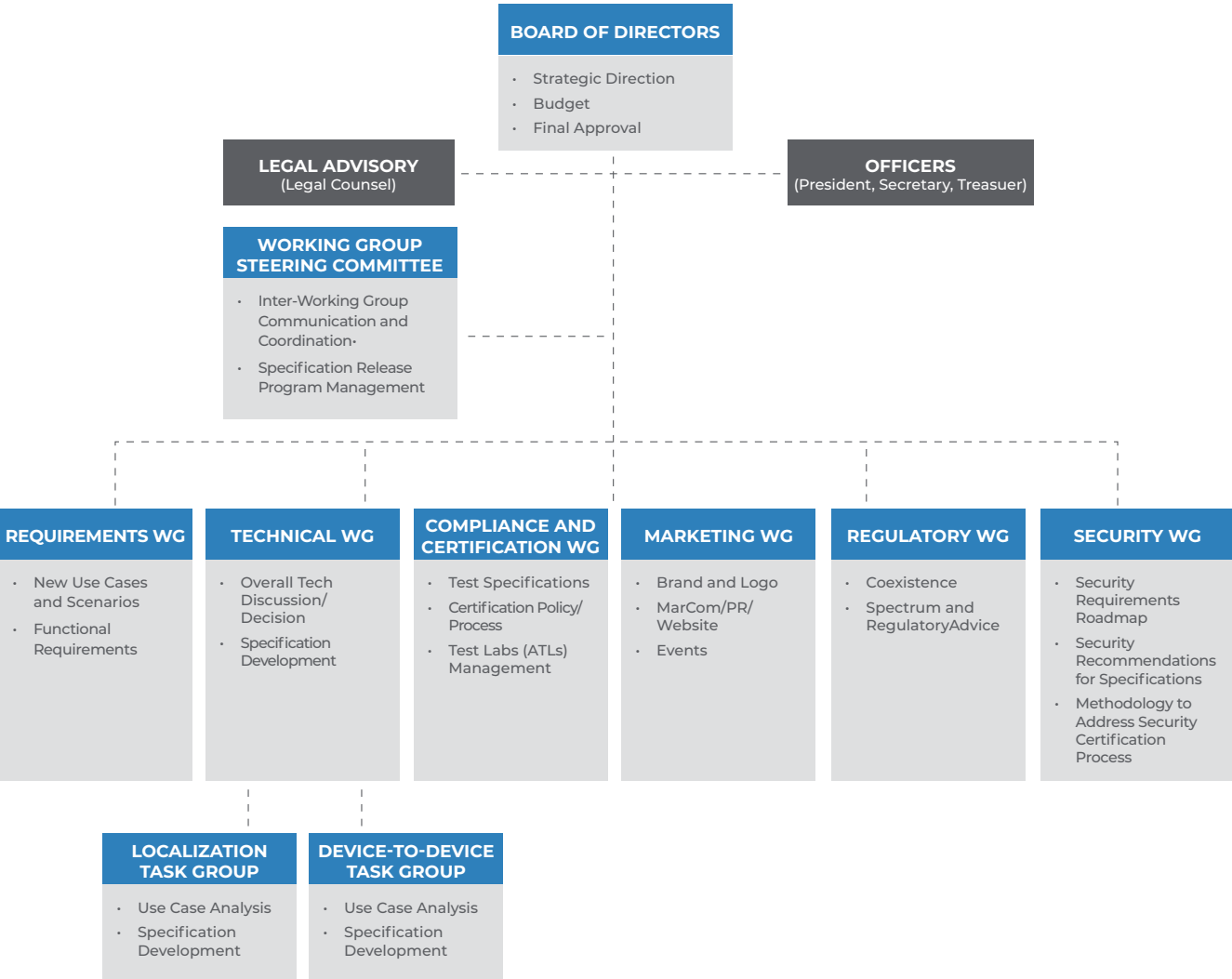


*“I am excited about the opportunity to work with the Working Group Steering Committee to develop and enhance our specification program management. This should help the FiRa Consortium improve our specification release planning and deliver specification releases and certification launches on a more predictable schedule.”*

**Brian Redding** (Qualcomm Technologies, Inc.)  
Chairperson Pro Tem of WGSC

The FiRa Board continues to take an active and visible role in the day-to-day direction of the Consortium. The Board is confident that the organizational structure will provide FiRa with a strong foundation for continued success.

A high-level overview of the [organization’s structure](#) is shown below.





# The Heart and Soul of FiRa

## – Our Working Groups

FiRa Working Groups are comprised of individuals who work tirelessly, openly sharing their knowledge and expertise.

In the Fall of 2022, FiRa formed a Working Group Steering Committee (WGSC) composed of Working Group (WG) chairpersons as primary members and non-voting Contributor and Sponsor membership level participants. This Steering Committee facilitates in-working group communication and coordination and is responsible for specification release plans and specification program management.

Over the course of 2022, each FiRa Consortium Working Group has had significant achievements and contributions to furthering the development of UWB. We would like to highlight a few achievements and, most importantly, share our priorities for 2023.



## REQUIREMENTS WORKING GROUP (RWG)

The RWG examines new UWB use cases, proposes new UWB scenarios, and identifies the functional requirements for each.

2022 Achievements	2023 Priorities
Introduced, discussed, and approved several new UWB use cases and applications to enhance the FiRa ecosystem	Strengthen collaboration with other industry standards organizations on the development of new joint use cases and applications, and methodology to drive ecosystem adoption
Developed requirements documentation to support existing FiRa-specified UWB use cases	Explore new use cases related to UWB growth markets (i.e., mobile, IoT, RTLS) and continue work on the development of requirements documentation
Collaborated with the new Security Working Group (SWG) to develop security requirements for new FiRa use cases	Prioritize use cases for 2023 and future FiRa releases as driven by market demand and ecosystem growth
Continued collaboration with the Technical Working Group (TWG) and Compliance and Certification Working Group (CCWG) to develop an improved specification management process	
Initiated discussions with several industry standard organizations to collaborate on the joint development of UWB use cases and applications	
Nominated David Fernandez with Qorvo to fill the vacant RWG co-chair seat	



*“Adoption of new technologies, such as UWB, is driven by improved user experiences. The Requirements Working Group is exploring and specifying the use case requirements that will enable these enhanced user experiences.”*

**Ardavan Tehrani** (Meta Platforms, Inc.)  
**David Fernandez** (Qorvo)  
Co-chairs

# TECHNICAL WORKING GROUP (TWG)

The TWG develops all UWB-related technical specifications, ensuring a collaborative yet structured approach to technical discussions and decision-making. Task Groups are formed as needed to support development of specific use cases.

2022 Achievements	2023 Priorities
Successfully released Technical Specifications in April 2022  <i>Framework Technical Specifications v1.0</i> <ul style="list-style-type: none"><li>• Common Service and Management Layer Technical Specifications (CSML)</li><li>• Secure UWB Service API Technical Specification (SUS API)</li><li>• Bluetooth Low Energy Out-of-Band Channel Technical Specification (BLE OOB)</li></ul> <i>PACS Technical Specifications v1.0</i>	Successfully release PHY / MAC 2.0 Technical Requirement Specifications
PHY / MAC Release 2.0 Technical Requirement Specifications achieve .9 level of maturity	Develop specifications for new use cases put forth by the Requirements Working Group



*“Over the last year the Technical Working Group has successfully developed new framework and profile specifications that enable an interoperable ecosystem and support a multitude of use cases. New members have brought new perspectives and technical depth to our discussions. We look forward to continuing to develop many new features and capabilities that will enable exciting use cases in the future”.*

**Karthik Srinivasa Gopalan** (Samsung R&D Institute India – Bangalore)  
**Brian Redding** (Qualcomm Technologies, Inc.)  
Co-chairs

# COMPLIANCE & CERTIFICATION WORKING GROUP (CCWG)

The CCWG develops UWB test specifications, policies, and processes relating to product certification, and oversees the activities of Authorized Test Labs (ATLs).

2022 Achievements	2023 Priorities
Launched the Certification Management System (CMS) as an online tool for certification management	Release PHY / MAC 2.0 certification supporting additional use cases and secure ranging
Validated two additional PHY conformance test tools	 <p><i>“I am extremely happy and excited to be part of the FiRa team. We have many reasons to be optimistic about the future as we are leading some of the spectacular changes the world will see. As we continue our journey together, I am sure that we will be proud of our achievements.”</i></p> <p><b>Jacek Hryszkiewicz</b> Certification Program Manager</p>
Authorized two additional test labs in China to conduct official certification testing	
Announced the certification of ten (10) chipsets / modules during 2022	
FiRa 2.0 Certification launch plan is developed	
Hired a new Certification Program Manager (CPM), Jacek Hryszkiewicz	



*“The Compliance and Certification Working Group released a base certification program that has been well-received in the marketplace. We are now focused on a version 2.0 of that base certification, which adds additional functionality to the FiRa MAC and PHY to enable use cases that have been accepted by FiRa.”*

**Clint Chaplin** (Samsung Research America)  
**Reinhard Meindl** (NXP Semiconductors)  
Co-chairs



# MARKETING WORKING GROUP (MWG)

The MWG manages the Consortium’s brand and use of the Consortium’s logos and guides the Consortium’s external efforts to further UWB-based solutions.

2022 Achievements	2023 Priorities
Collaborated with the Regulatory Working Group (ReWG) and the Security Working Group (SWG) to develop and publish two white papers	Hire a Marketing Specialist to increase FiRa’s reach and industry voice around UWB technology
Recorded and produced two (2) new FiRa Presents videos	File Statement of Use documents with the U.S. Patent and Trademark Office to allow FiRa trademarks to register in the U.S.
Managed the FiRa website including launching a new Resource Hub and maintaining accurate content	Continue collaboration with FiRa Working Groups and member companies to extoll the benefits of UWB
Engaged with FiRa members on webinar participation and social media announcements	
Managed the FiRa trademark program	



*“The Marketing Working Group is focused on promoting FiRa as the premier industry consortium, and evangelizing UWB technology and its ability to transform the way we interact with our environment through enablement of precise location awareness for people and devices”.*

**Ardavan Tehrani** (Meta Platforms, Inc.)  
**Debra Spitler** (HID)  
Co-chairs

# REGULATORY WORKING GROUP (ReWG)

The ReWG provides technical insights on UWB’s coexistence with other wireless formats and advises on topics relating to spectrum and regulatory issues.

2022 Achievements	2023 Priorities
Collaborated with the UWB Alliance and other UWB proponents / industry stakeholders to coordinate global strategy to achieve more favourable spectrum regulations worldwide	Ensure UWB can continue to co-exist with new users (i.e., 6G) in its’ spectrum
Started a sub-group within FiRa focused on UWB regulations in Asia-Pacific	Convert the update of the ECC Decision (06)04 in an update of the European Commission Decision on UWB
Participated in the update of the ECC Decision (06)04 in Europe, which introduces fixed outdoor, enhanced indoor operation, and simplified vehicular rules	Start the process to request European regulators for easier access to the spectrum above 8.5 GHz
Completed a white paper, “Unleashing the Potential of UWB: Regulatory Considerations”, to show the need for a UWB rules revision in the U.S. and presented this to the FCC OET and NTIA	Work with the UWB Alliance and FiRa external legal counsel to submit an NPRM request in the U.S.



*“The FiRa Regulatory Working Group will continue to work for favourable spectrum regulations that support the success of FiRa Certified UWB technology.”*

**Dries Neiryndck** (Qorvo, Inc.)  
**Jim Lansford** (Qualcomm Technologies, Inc.)  
Co-chairs



# SECURITY WORKING GROUP (SWG)

The SWG develops and maintains a security requirements roadmap used in the development of FiRa technical and test specifications.

2022 Achievements	2023 Priorities
Established the Security Working Group (SWG) in April 2022	Define and establish an incident response process within FiRa
Clarified collaboration with the Requirements Working Group (RWG), Technical Working Group (TWG) and Compliance and Certification Working Group (CCWG)	Analyze security and performance requirements of the use cases to be addressed by the Technical Specification 2.0 release
Published a security white paper, “UWB Secure Ranging in FiRa”, on the FiRa website	Build threat models and derive component level security requirements for security sensitive use cases
	Clarify root cause, relevance of and possible mitigations against Ghost Peak attacks



*“The Security Working Group analyzes the security needs of the use cases to be addressed, derives security mechanisms to be specified, and provides guidance on the security level the involved components need to provide.”*

**Franz-Josef Bruecklmayr** (Infineon)  
**Olivier Van Nieuwenhuyze** (ST Microelectronics)  
Co-chairs

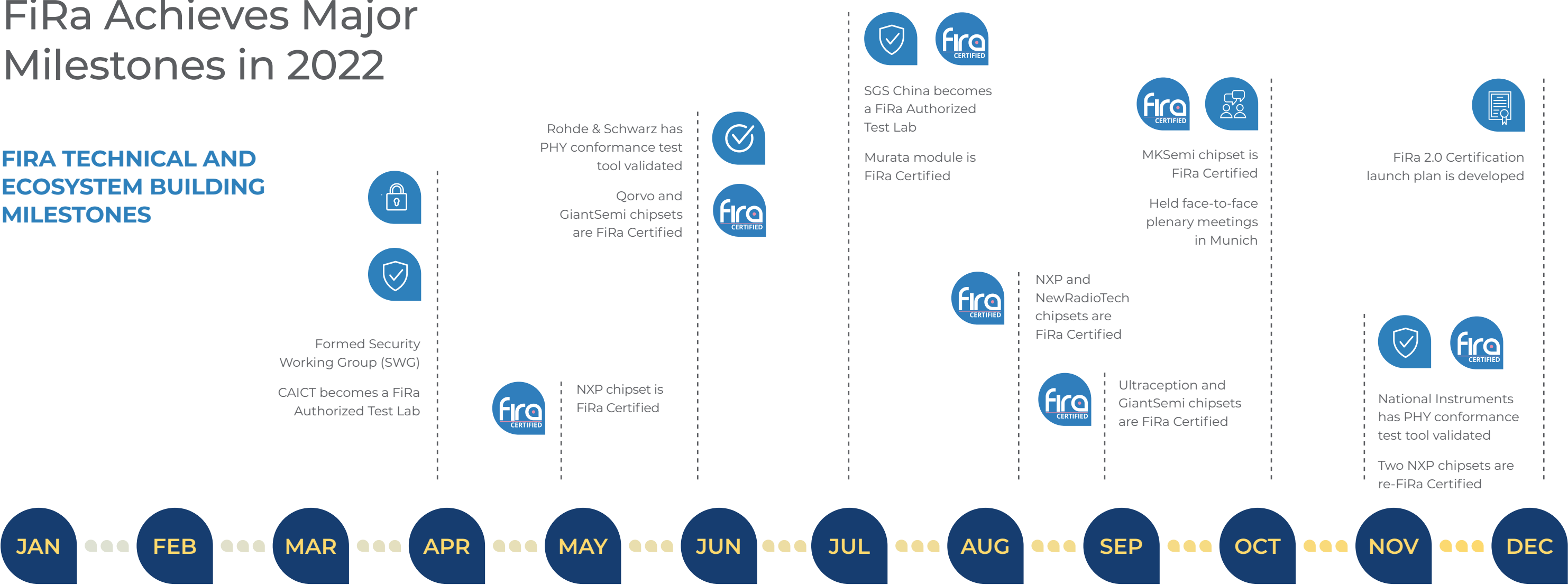
Learn more about FiRa’s [structure and Working Groups](#).





# FiRa Achieves Major Milestones in 2022

## FIRA TECHNICAL AND ECOSYSTEM BUILDING MILESTONES



## FIRA EVANGELIZATION MILESTONES



# Join FiRa Now!

FiRa invites you to experience the benefits of membership firsthand. With 119 global members representing industries across multiple market segments, FiRa offers its members access to thought leaders, expertise to strengthen knowledge, resources to stay current with the latest trends, and networking for professional development and growth.

The FiRa Consortium enables its members to maximize the benefits of UWB technology for their brand:

- Demonstrating leadership in wireless innovation
- Exploring new market opportunities
- Getting innovative products to market faster
- Selling products and solutions more easily because they are part of an open and interoperable ecosystem

Gain the connections and knowledge you need to leverage UWB and be ready to take advantage of the opportunities that lie ahead.

## Joining is easy!

1. Choose the membership level that is right for your organization
2. Review the FiRa Governing Documents
3. Complete and submit the Membership Application
4. Get involved!

See more details: <https://www.firaconsortium.org/membership/information>



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# About FiRa Consortium

The FiRa Consortium is a member-driven organization dedicated to transforming the way we interact with our environment by enabling precise location awareness for people and devices using the secured fine ranging and positioning capabilities of Ultra-Wideband (UWB) technology. FiRa does this by driving the development of technical specifications and certification, advocating for effective regulations and by defining a broad set of use cases for UWB. To learn more about UWB and the FiRa Consortium, visit [www.firaconsortium.org](http://www.firaconsortium.org).

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