LoRa ALLIANCE®
2021 END OF YEAR REPORT

THE POWER OF
LoRaWAN®

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LoRaWAN®

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CONTENTS

2021: THE YEAR OF MASSIVE SCALING	3
VIDEO: LoRaWAN® WORLD EXPO 2022	5
KEY FACTS & FIGURES	6
GLOBAL LoRaWAN COVERAGE	7
TECHNICAL UPDATES	8
CERTIFICATION UPDATES	10
REGULATORY UPDATES	11
VIDEO: LoRaWAN WORLD EXPO ECOSYSTEM	12
MARKETING UPDATES	13
LIAISONS & COLLABORATIONS	41
MEMBER ECOSYSTEM	42

2021: THE YEAR OF MASSIVE SCALING

2021 was a pivotal year for the LoRa Alliance® and LoRaWAN®. Not only did we solidify LoRaWAN as the LPWAN of choice for massive IoT, we also achieved our 2021 goals:

- To be accepted as an international standard by an independent SDO
- To evolve LoRaWAN technology and guidelines to make development and deployments of LoRaWAN simpler, especially at high volumes
- To expand our market opportunities by pursuing collaborations with complementary radio technologies to support true multi-RAN deployments
- To secure membership of key market leaders in the alliance, to further grow our ecosystem, and advance the LoRaWAN technology through member collaboration on end-to-end solution offerings
- To increase LoRaWAN device certifications, and have the most certified LPWAN sensors on the market
- To increase visibility of and accessibility of LoRaWAN services and products to facilitate deployments

The LoRa Alliance developed LoRaWAN as an open standard from the beginning with the foresight that massive IoT scaling requires interoperable connectivity solutions and cannot be sustained by single-source solutions. Thanks in part to this strategy, LoRaWAN was formally accepted as an international standard by the independent standards organization ITU. Achieving the **ITU-T Recommendation for LoRaWAN** as a global standard clearly sets the stage for further market acceleration as we enter 2022.

To remain the leading LPWAN, we must continually evolve the standard. Last year, we made tremendous strides toward increasing global coverage and access by **facilitating global roaming** and expanding **our NetID** program to grow LoRaWAN's reach. I'm excited to share that many of the largest global brands have implemented LoRaWAN roaming across their networks, making LoRaWAN more accessible than ever before. Additionally, LoRaWAN terrestrial networks may roam with **LoRaWAN satellite networks** to provide global coverage.

Donna Moore,
CEO & Chairwoman of the LoRa Alliance®

Building on the momentum of interoperability and constant evolution, in 2021 we added new multi-RAN solutions to meet additional IoT use cases. We truly believe that multi-RANs will become the norm for businesses supporting IoT requirements because they offer the only path to scale and meet the requirements of billions on billions of use cases. Using a multi-RAN approach allows end users to plan now for current needs and also be prepared for unknown needs in the future. Having already proven LoRaWAN's ability to integrate with and complement technologies like Wi-Fi, Bluetooth and DLMS, we added to LoRaWAN's diversity in deployments this year by combining **RFID and LoRaWAN**, as well as strengthened our position in metering by integrating the **OMS and LoRaWAN standards**. Using LoRaWAN with OMS is a game-changer for the utility market that makes deployments simpler and more cost-effective, while ensuring the interoperability of legacy meters, to maximize ROI.

The next goal for the LoRa Alliance was to welcome key industry leaders who serve as hyperscalers to our membership. These large brands have invested in LoRaWAN and its related infrastructure to accelerate LoRaWAN IoT adoption. A key example last year is **Microsoft** joining the LoRa Alliance board of directors, alongside an impressive roster of industry leaders who back the LoRaWAN standard and are committed to its development and the expansion of our ecosystem. The participation of hyperscale companies like Microsoft and Amazon Web Services truly skyrockets industry confidence in LoRaWAN, and drives collaboration and development of end-to-end solutions, which all contribute toward accelerating massive scaling.

As the number of LoRaWAN deployments continues to grow exponentially, it is critical that we maintain confidence in LoRaWAN device functionality, namely through certification of end-devices. The simple fact is that certification is a must for scale. With IoT comprising millions of devices—often in hard-to-reach areas, for multiple years—no business can afford costly surprises; they need to know their devices will work every time, saving time and money. In the past year, we've experienced a significant increase in membership from end-device manufacturers looking to obtain certification and leverage the LoRaWAN ecosystem to grow their businesses. This has further contributed to our members having the **most certified LPWAN sensors on the market**.

Building on our solid base of certified products and the backing of hyperscaler organizations has allowed the LoRaWAN ecosystem to offer the most end-to-end solutions to accelerate scaling. Our members are offering full, market-ready, complete solutions—more than any other LPWAN. We've upgraded the **LoRaWAN Showcase** on our website over the past year to better feature our members' products and solutions and make it easier than ever for end users to find the products and services they need to rapidly bring new IoT solutions to market. With so many different parts to the value chain for IoT, access to complete solutions and cross-member collaboration has also been critical to LoRaWAN's rapid scaling this year.

We achieved so much in 2021 and aren't slowing down! As I look ahead to 2022, I am proud that we met our 2021 goals and have seen the successful evolution of LoRaWAN into a mature technology that will continue to drive massive IoT growth. These are some of the key themes of the upcoming **LoRaWAN World Expo**, taking place in person in Paris, July 6 and 7, 2022. The timing is perfect to bring the global ecosystem together to learn from everything we've accomplished as an alliance and to look ahead to what's next. The Expo will examine LoRaWAN's role in improving people's health, safety and welfare; increasing our planet's sustainability; and driving businesses efficiencies. I can't wait to share my view on the current trends driving transformational change, LoRaWAN's growing role as an agent of that change and what that means for the future of LoRaWAN itself. I hope to see you all there.

I thank each and every one of you for your support and contributions to drive the LoRa Alliance's leadership in the LPWAN market.

By working to together, in an open ecosystem, through a shared standard, everything is possible.

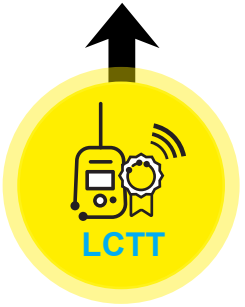
VIDEO: LoRaWAN® WORLD EXPO 2022

2021 LoRa Alliance® Contribution Award Winners will be announced in July 2022 at the LoRaWAN® World Expo. See the 2020 winners here.

KEY FACTS & FIGURES

NEW MEMBERS IN 2021:

+88

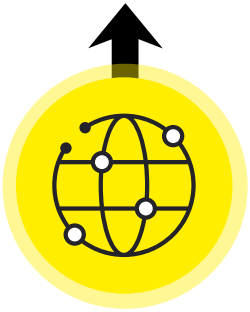


2021 LoRaWAN® CERTIFICATION TEST TOOL (LCTT) LICENSES ADDED:

+119

2021 CERTIFIED PRODUCT GROWTH:

+33%



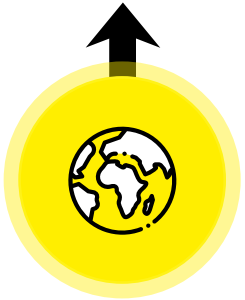
2021 LoRaWAN® NETWORK OPERATORS:

GLOBAL COVERAGE

CONTENT DOWNLOADS (ALL PDFS):

78,848

(FIRST YEAR REPORTED)



COUNTRY SUPPORT ADDED FOR:

Israel

SPECIFICATIONS RELEASED IN 2021:

- RP2-1.0.3 Regional Parameters
- TR007 Developing LoRaWAN Devices
- TR008 European Roaming Guidelines
- TR009 Roaming Configuration Guidelines
- NetID Allocation Policy and Procedure

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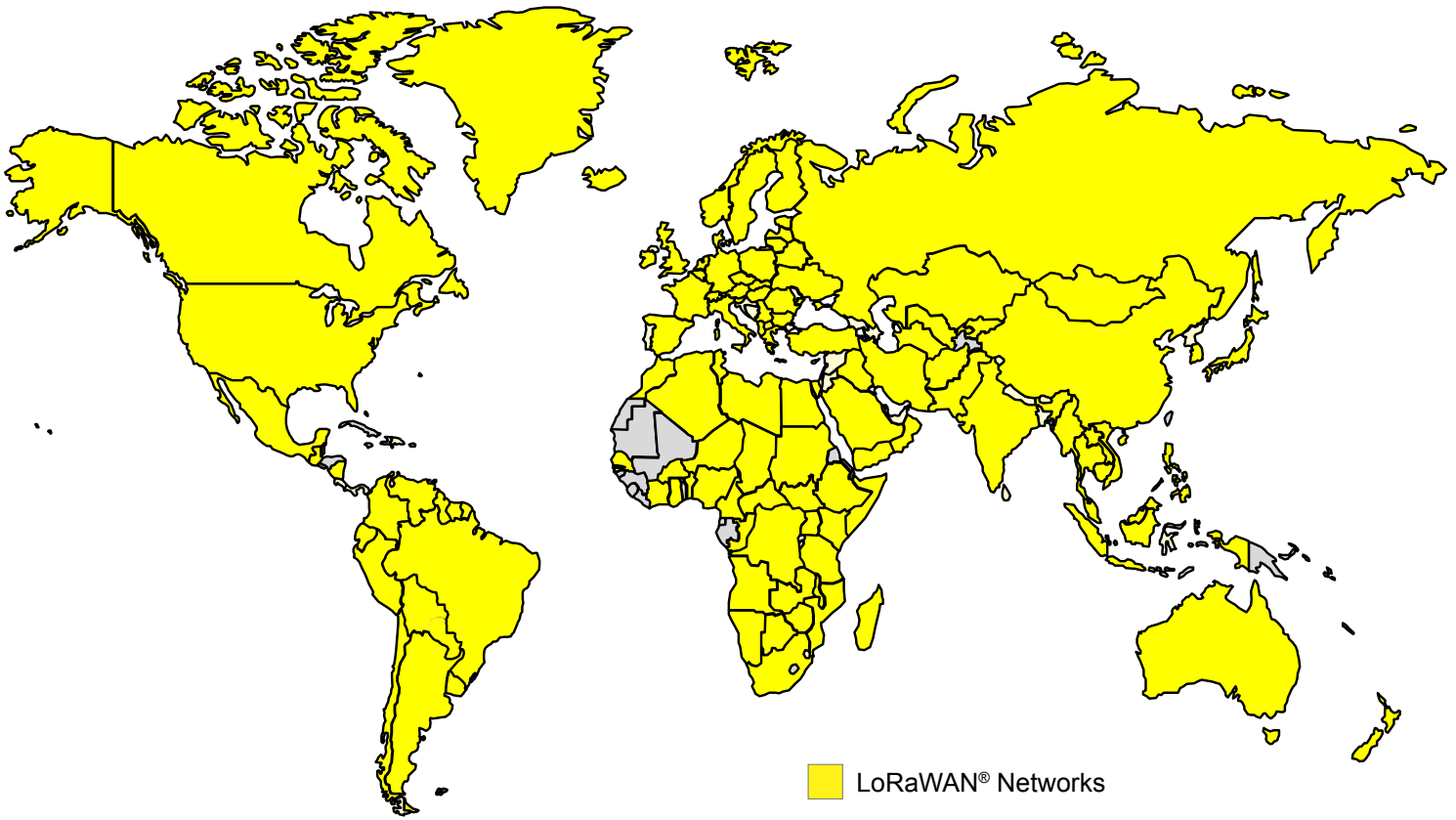
GLOBAL LoRaWAN® COVERAGE



166 LoRaWAN network operators globally

December 2021

All information contained herein is current at time of publishing – LoRa Alliance® is not responsible for the accuracy of information presented

TECHNICAL UPDATES

Throughout 2021, the Technical Committee (TC) actively developed and advanced the LoRaWAN® specifications. Our work supported the LoRa Alliance® goal of evolving and enhancing the standard to simplify LoRaWAN deployments and enable massive scaling.

Recognition as an international standard is critical to massive scaling, and thanks to our successful collaboration with the IoT group of ITU, ITU-T SG20, we were able to transpose the LoRaWAN Link Layer Specification v1.0.4 (TS1-1.0.4) into an **ITU-T standard** in November. Now available on the ITU website, Recommendation Y.4480 describes our low-power protocol for wide-area wireless networks, which is optimized for battery-powered end-devices that may either be mobile or mounted at a fixed location; this Recommendation is technically equivalent to (and compatible with) the LoRaWAN Link Layer Specification **[TS001-1.0.4]**.

Other notable achievements of the TC in 2021 include the publication of:

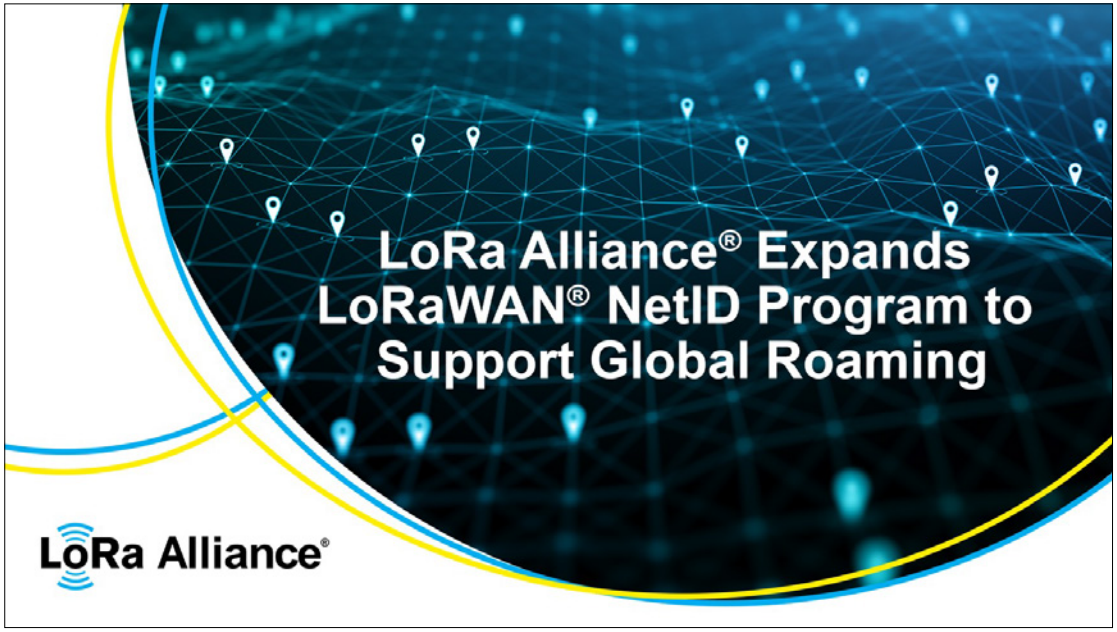
- A new version of our **Regional Parameters document (RP2-1.0.3)**, which defines a regional plan called AS92304, which supports Israel.
- Technical Recommendation **TR007, Developing LoRaWAN Devices**, which provides guidance to end-device and LoRaWAN protocol stack developers to help ensure they produce well-behaved and interoperable products.
- Two Technical Recommendations related to roaming: **TR008, European Roaming Guidelines**, which provides guidelines for optimizing roaming procedures for European network operators to ensure highly efficient passive roaming across LoRaWAN networks; and **TR009, Roaming Configuration Guidelines**, which provides a description of the required configuration parameters to be used on the network servers and join servers to enable stateless passive roaming.
- A third technical recommendation, TR010, Roaming Hub, was approved for publication and will be made available in early 2022. This document describes how LoRaWAN roaming hubs operate.
- **A new NetID allocation policy and procedure** that has been updated to allow non-LoRa Alliance members to license NetIDs from the LoRa Alliance to fully leverage LoRaWAN roaming.

TECHNICAL UPDATES

The TC also made significant progress in several other areas during 2021, many of which are close to publication:

- The second version of the building block specifications of firmware updates over the air (FUOTA) feature, including TS003 - Application Layer Clock Synchronization, TS004 - Fragmented Data Block Transport, and TS005 - Remote Multicast Setup), achieved successful interop and TC approval in 2021 and will be published as soon as the Intellectual Property Rights (IPR) review of TS005 is completed. TS003 and TS004 had already completed the IPR review.
- Two new specifications related to FUOTA were also completed and are under IPR review: TS006 - Firmware Management Protocol, which facilitates firmware image file management; and TS007 - Multi Package Access, which allows discovery of app-level protocols on the end-device and efficient encoding of multiple app-layer protocol payloads in single frame.
- TS010 IPv6 Adaptation for End-Devices Specification is approved by the TC and is awaiting completion of IPR review for publication. This specification leverages IETF's Static Context Header Compression and Fragmentation (SCHC) **protocol** to transport IPv6 packets over LoRaWAN connectivity with very high efficiency.

The TC supports the LoRa Alliance in many areas beyond technical development of the standard. In 2021, we pursued a dedicated effort to foster collaboration between the industry and academia, leveraging the strengths of both sides for the benefit of LoRaWAN technology. Finally, we actively supported the Destination LoRaWAN webinar series with two technical programs: **Implementing and Deploying LoRaWAN Roaming** and **LoRaWAN Security - from the Network to the Device**.



CERTIFICATION UPDATES

Leveraging the foresight of our members, partners and staff in building the foundation of the **LoRaWAN® certification program**, we are now uniquely poised to take it to the next level—which is to ensure that the LoRaWAN end-device ecosystem delivers the interoperability and consistency required for scaling to meet the needs and demands of IoT. Our members have provided certified solutions to the market that have not only solved challenges during the pandemic, they've also solved so much more for IoT defining the path forward for long-range, low-power communication.

2021 was yet another great growth year for LoRaWAN, with an increase of 33% in end-device certifications. The volume of LoRaWAN end-devices in the market based on the end-devices certified is significant, with analysts predicting several hundred million in only a few years. Our certification program is maturing rapidly, and its velocity of development (reference implementations, code and test spec development) is increasing at an incredible rate due to the intellectual mindshare within the alliance membership generally and certification program specifically.

To achieve scale, it has been our continued focus on simplifying our certification program by consolidating our policies and procedures, increasing our development pace and advancing the scope of certification. Much of our concerted focus last year was spent on enhancing the LoRaWAN Certification Test Tool (LCTT), ensuring its readiness to be the sole tool for both precertification at a member's lab and the official test lab certification tool used at LoRaWAN Authorized Test Houses (ATHs).

Today, the LCTT covers all regions addressed by the current Regional Parameters version 1.0.3, which includes EU 863-870, US 902-928, CN 779-787, CN 470-510, EU 433, AS 923-1/-2/-3, KR 920-923, IN 865-867, AU 915-928 and RU 864-870, as well as all Layer 2 version 1.0.4 Classes (A, B and C), Certification-by-Similarity, Back-off Retransmission (polluting devices) testing and the new long-range frequency hopping spread spectrum physical layer (LR-FHSS).

Certification is a must for any global standard to be successful and to scale. By continuously enhancing our certification program, we ensure our certification testing tools are robust while also **minimizing the time and cost required for end-device manufacturers to certify**. The importance of certification will only grow in the coming years; RFPs and tenders for IoT deployments are increasingly requiring LoRaWAN certification. Our efforts will remain focused on strengthening and growing our certification to make it easier than ever for end-device manufacturers to validate reliability and interoperability. This, in turn, will enable massive scale and consumer confidence in deployments.

LoRaWAN CERTIFIED℠

REGULATORY UPDATES

The Regulatory Working Group (RWG) of the LoRa Alliance® focuses on identifying key regulatory trends and addressing public policy challenges to promote the LoRaWAN® ecosystem's interests and to ensure the business of LoRa Alliance member companies can flourish with appropriate regulation.

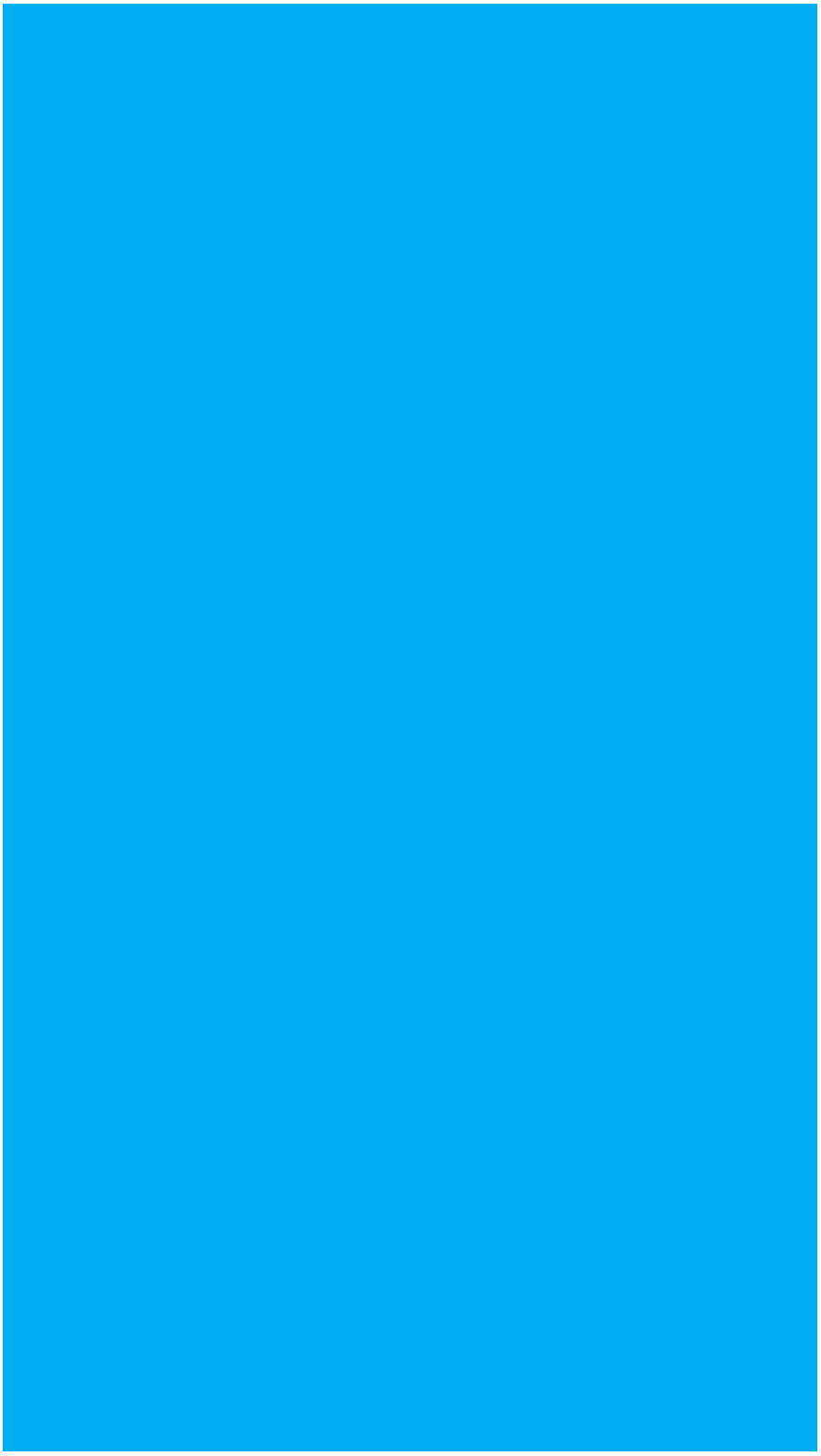
2021 was a very busy year for the working group, with both the number of members and the number of meetings doubling from the prior year. There are now more than 100 members participating in RWG and Devices & Gateways Compliancy Task Force meetings now held weekly. This increase led to a number of key developments, not the least of which was having LoRaWAN **recognized as a standard by ITU-T**, a huge achievement for the LoRa Alliance.

Our activities extended well beyond the standardization work. One major achievement was the completion of an up-to-date database of more than 50 countries. The database includes information on spectrum that can be used by LoRaWAN networks. It lists the regulators and main technical details as well as links to official regulatory decisions. The database is regularly updated, and alerts the RWG about possible changes to spectrum regulation that may be relevant to LoRaWAN in different countries. The document is available to every member of the LoRa Alliance who participates in the RWG.

2021 also saw the formation of regional organizations to be closer to and better able to respond to regional and national regulators in India, Vietnam, Qatar, the U.S., Europe, and more. Several LoRa Alliance members have stepped forward to facilitate activities and coordination for lobbying regulators in key regions. For example:

- In the U.S., we responded to consultations from the NIST on cybersecurity and the FCC on spectrum for IoT
- In India, we initiated work with Indian policymakers and regulators for the inclusion of LoRaWAN in the list of standards for the IoT for smart cities, as well as for the extension of the spectrum for LoRaWAN in India
- In Europe, we defined regulatory positions and contributions for future evolutions of LoRaWAN (i.e., 915MHz increase of transmitting power and spectrum harmonization)
- The RWG also supported more than 40 public consultations, inquiries and lobbying efforts in India, Israel, Italy, Jordan, Qatar, Mali, Nigeria, the U.S., and Vietnam, among others

Finally, the RWG and its members were quite active in the planning and preparation for the **LoRaWAN World Expo**, soliciting key regulators and executives to participate in keynotes and panels. We are very excited that we will be joined in Paris by Bilel Jamoussi, Chief of Study Groups Department, TSB, ITU Standardization Bureau; Mariya Gabriel, European Commissioner for Innovation, Research, Culture, Education and Youth; and Laure de la Raudière, President, Arcep, who will focus on topics related to standardization and regulatory activities.



VIDEO: LoRaWAN® WORLD EXPO ECOSYSTEM

MARKETING UPDATES

The LoRa Alliance® ecosystem demonstrated the maturity of LoRaWAN® and its profound importance to LPWAN IoT, leading to unprecedented adoption on a massive scale. LoRa Alliance's dedicated members created and delivered enlightening and engaging content, enabling LoRaWAN to reach audiences around the world like never before. 2021 was indeed the year of massive scale for LoRaWAN. Here are some of the marketing highlights:

- Launch of Destination LoRaWAN—the LoRa Alliance's exciting flagship event in 2021—comprising a series of webcasts addressing LoRaWAN's impact in IoT, targeting key regions in their local languages, with over 20 webcasts broadcast or subtitled in six different languages: Chinese, English, Italian, Japanese, Portuguese and Spanish.
- **140+ written use cases.**
- Implementation of a new **resource library**, designed to greatly increase the user experience and ensure visitors to our website can easily find the content they need.
- Expanded focus on regional marketing, with increased content translated into other languages.
- Donna Moore, CEO and chairwoman of the LoRa Alliance, received a prestigious award from Peggy Smedley of Connected World: 2021 Women of Technology: Rising after the Storm.
- Four white papers, covering topics from **Sustainable Smart Buildings**, **LoRaWAN – BACnet Integration**, **Smart Industry – Oil & Gas** and **Smart Utilities**.
- Expanded membership benefits to increase the value of membership, including the introduction of LoRaWAN Tenders & RFP Connect, a service designed to provide opportunities for members to grow their LoRaWAN business.
- The LoRa Alliance significantly upgraded marketing tools with the implementation of seven new platforms to turbo-charge our marketing reach and effectiveness for 2022 and beyond.
  - The new platforms started paying dividends, increasing exposure to our members in 2021
    - 60% LoRa Alliance website traffic growth
    - 78,848 downloads of PDFs, including technical specifications
    - Traffic across all countries significantly increased, with some markets showing outstanding growth; some examples: Canada (140%), China (70%), India (57%), Italy (95%), UK (78%), U.S. (68%)
      - Latin American interest increased, with Mexico and Brazil entering our top 15 country visitor list for the first time ever

The marketing committee will continue to demonstrate that LoRaWAN is the lead communication technology enabling global digital transformation. Our messaging will revolve around how LoRaWAN improves people's lives—making the world safer, healthier and more sustainable—and how LoRaWAN facilitates the highest ROI in IoT implementations.

In a few short months, the largest and best LoRaWAN event in history will occur at the **LoRaWAN World Expo**, the only official LoRaWAN event. This event will bring together the premier thought leaders, companies and users of LoRaWAN from across the globe. Offering access to the ecosystem on the largest scale ever, the LoRaWAN World Expo is the must-attend event in 2022 to create new business opportunities, grow your LoRaWAN business and learn how LoRaWAN will impact the world—today and tomorrow.

Come to the LoRaWAN World Expo and see how a world enabled by LoRaWAN can make a difference to you.

DESTINATION LoRaWAN®

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DESTINATION LoRaWAN®

The Destination LoRaWAN® webcast series kicked off on December 16, 2020 and ran throughout 2021. Industry leaders from inside and outside of the LoRa Alliance® ecosystem demonstrated the power and impact LoRaWAN has to affect change in the world today. The LoRa Alliance produced webcasts covering a wide variety of LoRaWAN technology and business topics including; roaming, satellites, security, driving ROI, and complementary technologies. Webcasts also dove deep into discussing how LoRaWAN is solving challenges and accelerating growth in logistics, agriculture, industry 4.0, utilities, buildings and cities, and more.

In addition, some Destination LoRaWAN webcasts focused on regional markets around the world, with webcasts in local languages and featuring region-specific market and technology experts. The topics were designed to engage all audiences, from developers to end-users, who want to learn more about LoRaWAN technology and how LoRa Alliance membership drives business value for members.

Beyond each episode's initial airing, the series serves as an excellent resource for information about LoRaWAN with all **21 webcasts** available to the public free and on demand.

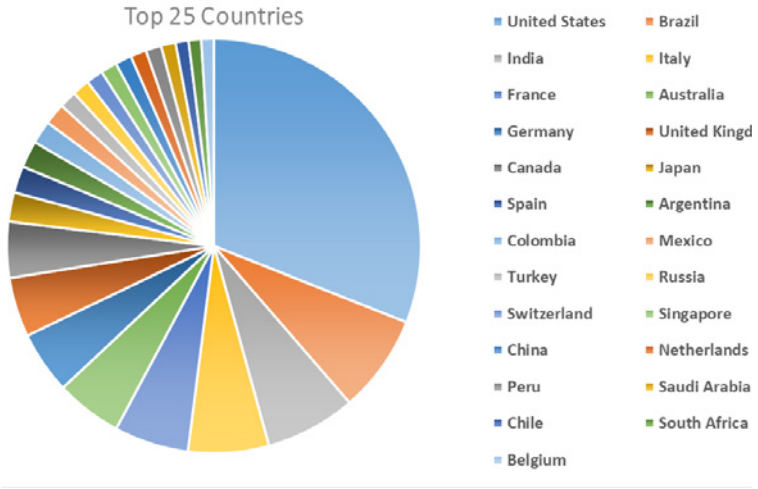
21 Webcasts

>90 Speakers

Reaching Audiences in 110 Countries

More than 7,000 Registrations

Engaging Nearly 4,000 People



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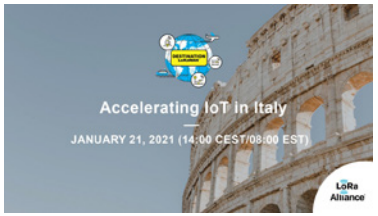
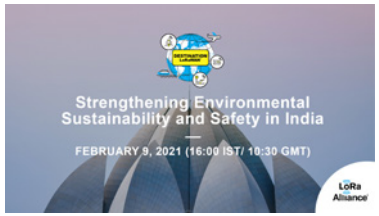
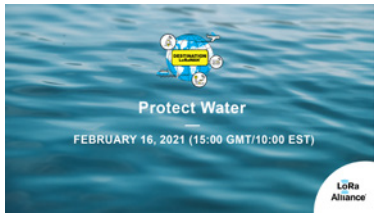
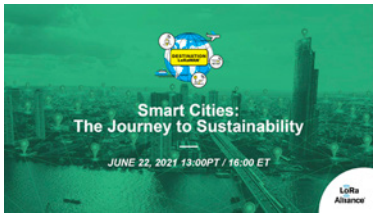
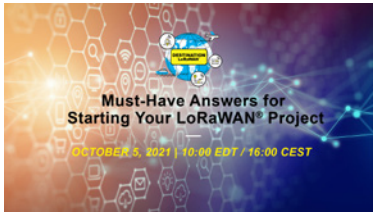






DESTINATION LoRaWAN®





VERTICAL MARKET UPDATES

The LoRa Alliance® vertical industry work groups and task forces steadily pursued their work to increase awareness and adoption of LoRaWAN® in 2021, reaching a larger market audience than ever before. In another challenging year, these dedicated members produced outstanding content on the profound impact that LoRaWAN is making globally—enabling an ever-growing number of applications and use cases in key vertical IoT markets.

As usual, the vertical industry work groups created excellent content, adding new use cases, white papers, articles and video material to educate the market on why LoRaWAN is the ideal communications technology for IoT, how it provides real ROI and, increasingly, is enabling a more sustainable planet.

Uncertainty still ruled in 2021, yet there were brief windows of opportunity to participate in live events. The Smart Industry and Smart Utilities Work Groups participated in two in-person events: Entelec (oil & gas) in Houston, Texas; and Enlit (utilities) in Milan, Italy. Both events were a huge success and reminded everyone just effective meeting people in person is for sharing the value that LoRaWAN brings to the IoT market.

We expect LoRaWAN adoption in key vertical markets to increase significantly in 2022, and we look forward to seeing you all—virtually and in-person!

WHITE PAPERS

Augmenting BACnet with LoRaWAN® Wireless IoT

Why Utilities are choosing Smart LoRaWAN® connectivity

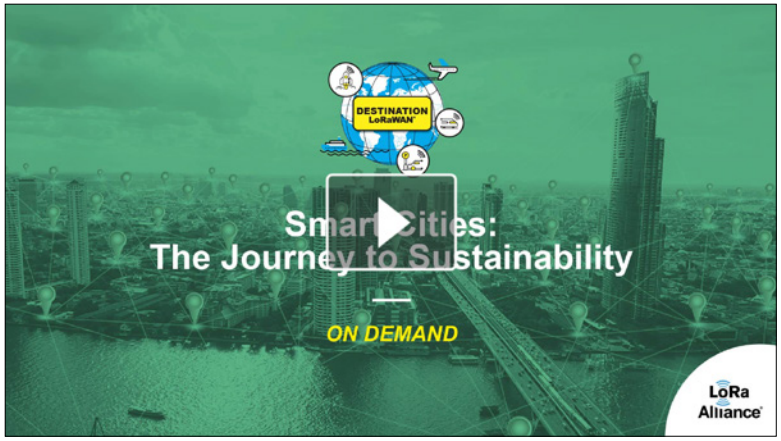
Sustainable smart buildings for the planet, people, and profit

LoRaWAN®; A Digital Revolution for Oil & Gas from SCADA to Industrial IoT

VERTICAL MARKET UPDATES

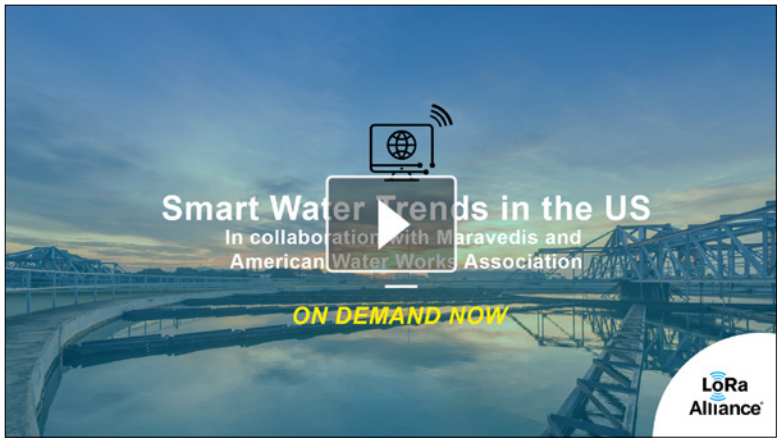
WEBINARS

The LoRa Alliance® produced four webinars focused on vertical market topics in 2021, with many of our other Destination LoRaWAN® webinars touching on topics of strong interest to these markets.



Smart Cities: The Journey to Sustainability

Using LoRaWAN to Transform and Scale Smart Utilities



Smart Water Trends in the US

Internet of Manufacturing and Supply Chain Panel

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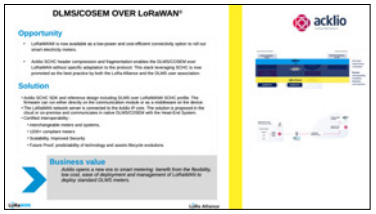
VERTICAL MARKET UPDATES

USE CASES

The LoRa Alliance® use case library now stands at more than 140, including many that were updated or refreshed in 2021. Here are some highlights from this year:



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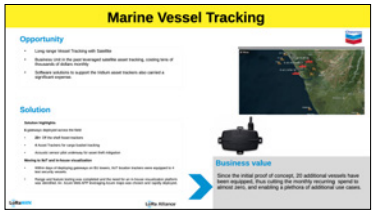
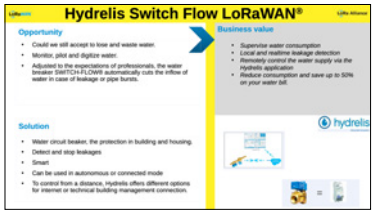


Chevron

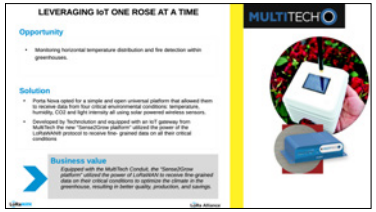
Connexin



Hydrelis

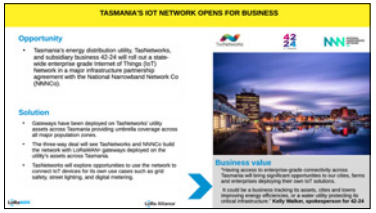
Kerlink

MachineQ

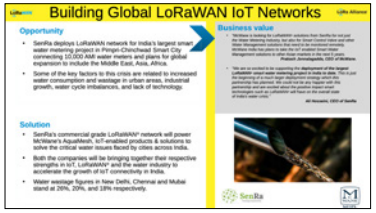


MultiTech

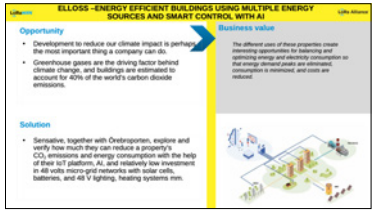
NetzeBW



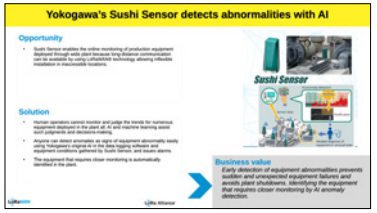
NNNCo



SenRa

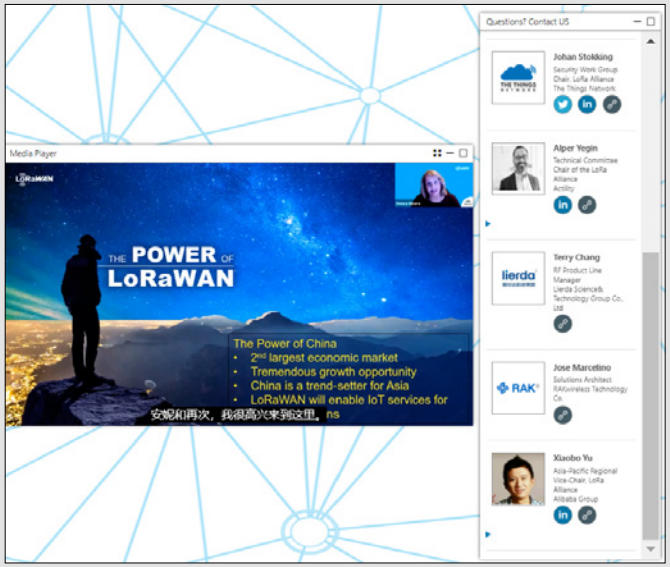


Sensative



Yokogawa

2021 INDUSTRY EVENTS



LoRa ALLIANCE®, LoRaWAN®, AND THE CHINESE MARKET: UPDATES & PLANS FOR 2021

January 20, 2021

Virtual

The LoRa Alliance and industry experts present how LoRaWAN is powering IoT and fostering business growth in China with real-world use cases.

Click here to watch OnDemand >

- Subtitles are available in simplified Chinese

MUST EXHIBITION OF SMART CONNECTIVITY: 5G AND BEYOND

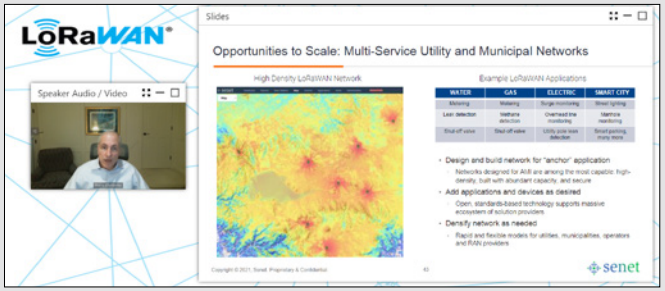
March 23 – 25, 2021

Virtual Conference

Virtual exhibit booth and various presentations:

- Opening Presentation & Introduction to LoRaWAN® by Olivier Beaujard, Semtech
- How LPWA Complements Traditional Cellular Networks by Rémi Lorrain, Semtech & Ronan Le Bras, Orange
- **Use Case:** Volvo Uses Abeeway Vehicle Tracking, by Olivier Hersent, Actility
- **Use Case:** Tracking with LoRa Edge™ and satellites to Resolve Human-Wildlife Conflict by Maria Kalama, Lacuna Space
- **Use Case:** Veolia Will Deploy Over 3 Million Smart Water Sensors in France by Pierre-Emmanuel Dubois & Bruno Hamamlian, Birdz

2021 INDUSTRY EVENTS



SMART WATER TRENDS IN THE US

March 30, 2021

Virtual

This event was presented by Maravedis, American Water Works Association (AWWA), and LoRa Alliance®. The event entirely focused on water utilities in the United States, with Maravedis presenting key findings from their research focused on top market, technical and regulatory requirements for water utilities to deploy and manage advanced metering infrastructure (AMI) to improve their operational efficiency and customer service. Presenters also take a look at the top challenges and opportunities for water utilities to leverage low power WAN technologies such as LoRaWAN®.

Presenters:

- Adlane Fellah, Senior Analyst at Maravedis & Founder, Greenwave Wireless Research
- Barbara Martin, Director of Engineering and Technical Services at AWWA
- Bruce Chatterley, CEO of Senet
- Donna Moore, CEO and Chairwoman of LoRa Alliance

Click here to watch OnDemand >

ENTELEC CONFERENCE & EXPO

August 10 – 12, 2021

Houston, USA

The LoRa Alliance® Smart Industry Working Group organized 2 speaking opportunities and numerous members had booths.

- **Intelligent Energy:** Control and Condition Monitoring for a complete CGSS by Josh Cox, Oxit
- **Panel:** LoRaWAN® Enables Transition to Industry 4.0 - the digital transformation of Oil & Gas markets with Daniel Quant, MultiTech; Ashley Pope, Oxit; Lucas Funes, Webee; Philippe Daroux, Chevron; Robert Ward, MultiTech; Scott Kubes, Orbiwise

2021 INDUSTRY EVENTS

BROADBAND WORLD FORUM

October 12 – 14, 2021

Amsterdam, Netherlands & Virtual

As a partner of the event, we hosted a LoRa Alliance® Workshop and had an additional speaking opportunity on one of the exhibit floor stages on-site at the event in Amsterdam:

- **Workshop:** Deploying a superior connectivity experience for smart buildings and facilities with LoRaWAN® with presentations from Charles Paumelle, Microshare; Jesper Holm Kristoffersen & Andreas Jensen, Minol ZENNER Group; Stefan Lindgren, Talkpool; Lode van Halewyck, Actility
- **Presentation:** How to ensure safer, smarter, and greener future building management by Derek Wallace, LoRa Alliance

SIDO PARIS

November 9 – 10, 2021

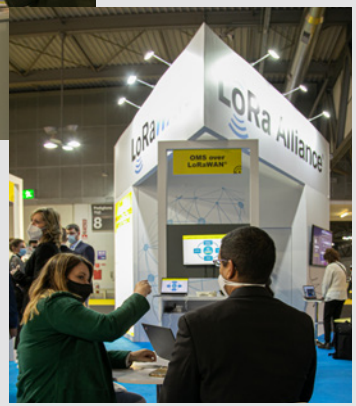
Paris, France

The LoRa Alliance® booth focused on The Power of LoRaWAN® Drives Efficiencies in Smart Cities, Buildings, and Industry with 4 members showing demos:

- Actility
- Asystom
- MClimate
- OrbiWise

- **On-site Workshop:** "How LoRaWAN® and IoT are enabling Buildings, Cities, and Industry 4.0 to be more efficient and productive" with speakers:
  - Olivier Beaujard, Semtech
  - Adrian McLellan, Asystom
  - Didier Helal, OrbiWise
  - Lyubomir Yanchev, MClimate
  - Nicolas Jordan, Actility

2021 INDUSTRY EVENTS



ENLIT EUROPE

November 30 – December 2, 2021

Milan, Italy

Led by the LoRa Alliance® Smart Utility Working Group

Silver Sponsor with an 81m² exhibit booth with 11 demo stations and 10 members participating:

- Everynet
- Unidata
- acklio
- Actility
- Kerlink
- Mainlink
- MultiTech
- OrbiWise
- ResIOT
- TEKTELIC
- OMS over LoRaWAN®

- 2 speaking slots:
  - Panelist on Technologies that enable Data Exchange with Derek Wallace, LoRa Alliance
  - Presentation during the Cloud Computing: Internet of Things and Edge Computing session by Didier Helal, Orbiwise
- LoRa Alliance theater included 6 presentations led by Everynet and their business partners

VIDEO: VIRTUAL ALL-MEMBERS MEETING

At the LoRa Alliance® Virtual All Member Meeting in June 2021, Donna Moore, CEO & Chairwoman of the LoRa Alliance, shared the vision and strategy of the LoRa Alliance, along with key achievements that the LoRa Alliance made in the first half of 2021.

LoRaWAN® AMBASSADOR SPEAKING ENGAGEMENTS

LoRa Alliance®, LoRaWAN®, and the Chinese Market: Updates & Plans for 2021
Donna Moore, Derek Wallace, LoRa Alliance®

The Things Conference
Considerations for LoRaWAN® in Different Geographic Regions; Dave Kjendal, Senet
LoRaWAN® standard developments & LoRaWAN® 1.0.4; Alper Yegin, Actility
The Power of LoRaWAN® – 2021 is the year of scale; Donna Moore, LoRa Alliance®
LoRaWAN® Device Certification; Derek Hunt, LoRa Alliance®

WBA Asia Telecom Summit, "Next Gen Wi-Fi & IoT"
Introduction to the WBA & LoRa Alliance® Initiative & Smart Light Pole for Smart City Applications; Wael Guibene, Charter
Overview of the Wi-Fi & LoRaWAN® joint trials program; Rémi Lorrain, Semtech
LoRaWAN® and OpenRoaming; Paul Duffy, Cisco

"Improved Connectivity with LoRaWAN® innovations: Smart Measurements, Sensors, and much more!", webinar hosted by UTCAL
DLMS over LoRaWAN® - Liasion between LoRa Alliance® and DLMS User Association; Rémi Demerlé, Semtech

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GS1 Global Forum 2021, "RFID & wireless technologies in the GS1 architecture: New promising IoT applications"
GS1 and LoRa Alliance® cooperation for Railway; Pierre Gelpi, Semtech

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The eeDesignIt Podcast: Episode 10: How LoRaWAN® Is Changing the Way We Connect
Derek Wallace, LoRa Alliance®
Click here to watch >

IoT at the Edge Virtual Summit
How connectivity and data processing at the Edge drives an efficient future;
Wael Guibene, Charter

IoT at the Edge
Digital Symposium

LoRaWAN® AMBASSADOR SPEAKING ENGAGEMENTS

The Exhibition of Smart Connectivity: 5G and Beyond

Opening Presentation; Olivier Beaujard, Semtech

How LPWA Complements Traditional Cellular Networks; Rémi Lorrain, Semtech & Ronan Le Bras, Orange

Use Case: Volvo Uses Abeeway Vehicle Tracking; Olivier Hersent, Actility

Use Case: Veolia Will Deploy Over 3 Million Smart Water Sensors In France; Pierre-Emmanuel Dubois & Bruno Hamamlian, Birdz

Smart Water Trends in the US, hosted by Maravedis

Bruce Chatterley, Senet & Donna Moore, LoRa Alliance®

Click here to watch >

IoT Manufacturing & Sensors

Closing Keynote - *Connecting Machines with LoRaWAN® - Operational Technology + IoT;* Michael Finegan, MultiTech

Connecting Things – IoT in Supply Chain, hosted by Supply Chain & Logistics Association of Australia

Accelerating the transformation of supply chains with LoRaWAN® technology; Rob Zagarella, NNNCo

Click here to watch >

LoRaWAN® - an engineering view on the technology and protocol for today's IOT world, hosted by The Institution of Engineering and Technology

Derek Hunt, LoRa Alliance®

ACWA Virtual Water Conference

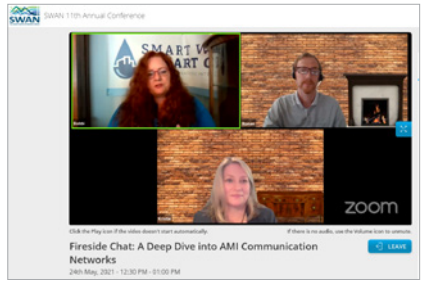
Derek Wallace, LoRa Alliance®

ACWA

subeca
Genius Water Management™

SWAN 11th Annual Conference

Fireside Chat: A Deep Dive into AMI Communication Networks; Ronan Le Bras, Orange



LoRaWAN® AMBASSADOR SPEAKING ENGAGEMENTS

Wireless Russia & CIS: LTE, 5G and IoT

How Network Operators can Achieve the Lowest Total Cost of Ownership with LoRaWAN® IoT Solutions; Ivan Dergachev, TEKTELIC

Connectwave, Smart Cities Roundtable participation

Charles Paumelle, Microshare

Connected Life Digital Symposium

Delivering a superior deployment and connectivity experience inside and outside of smart buildings and facilities with LoRaWAN®; Donna Moore, LoRa Alliance®

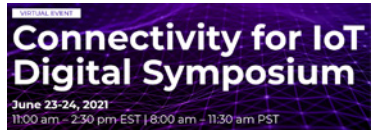
AWS Podcast LATAM: #53: Tech - IoT en AWS: Conectandonos a AWS con IoT Core for LoRaWAN®

Pierre Gelpi, Semtech

Click here to watch >

Connectivity for IoT Digital Symposium

Panel: Living in a Fully Connected World: Refining your Business and IoT Network with Wireless Technologies; Karthik Ranjan, Semtech



BCN2021 LATAM Summit

The Power to Scale; Donna Moore, LoRa Alliance®

ENTELEC

Intelligent Energy: Control and Condition Monitoring for a complete CGSS; Josh Cox, Oxit

Panel: LoRaWAN® Enables Transition to Industry 4.0 - The digital transformation of Oil & Gas markets; Daniel Quant, MultiTech; Ashley Pope, Oxit; Philippe Daroux, Chevron; Scott Kubes, OrbiWise; Robert Ward, MultiTech

Wavelink Industrial Internet of Things

Where's IOT today, and what the future looks like for Industrial IOT in supply chain;
Karthik Ranjan, Semtech

LoRaWAN® AMBASSADOR SPEAKING ENGAGEMENTS

China Smart Agriculture Summit 2021

Grow with LoRaWAN®: The Best Networking Solution for Smart Agriculture;
Donna Moore, LoRa Alliance®

Click here to watch >

IoT Tech Expo Global Hybrid Expo

Panel: Integrating IoT Connectivity; Alper Yegin, Actility

Sustainability and IoT Webinar: The critical link for net zero, climate adaptation, and energy and water security

Derek Wallace, LoRa Alliance®

Click here to watch >

IoT Tech Expo North America Virtual Expo

Panel: Integrating IoT Connectivity; David Smith, GetWireless LLC

Broadband World Forum Workshop: Deploying a superior connectivity experience for smart buildings and facilities with LoRaWAN®

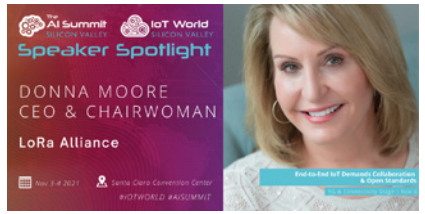
Charles Paumelle, Microshare; Jesper Holm Kristoffersen & Andreas Jensen, Minol ZENNER Group; Lode van Halewyck, Actility

Broadband World Forum

How to ensure safer, smarter, and greener future building management;
Derek Wallace, LoRa Alliance®

IoT World USA

End-to-end IoT Demands Collaboration and Open Standards; Donna Moore, LoRa Alliance®



Aeas and global onmium

El impacto de las tecnologías IOT en los abastecimientos de agua

Pierre Gelpi, Semtech

LoRaWAN® AMBASSADOR SPEAKING ENGAGEMENTS

Evolution of Smart Energy Utilities with LoRaWAN® for Grid Edge Optimization, hosted by DistribuTech

Gabriel Nave, Everynet & Evgeny Grin, Actility

Click here to watch >

IoT PropTech Summit

Derek Wallace, LoRa Alliance®

IoT Tech Expo Europe

Panel: Connectivity for 2022 and Beyond; Johan Stokking, The Things Network

LoRa Russia 2.0 Conference hosted by the Russian Internet of Things Association

LoRaWAN® Networks on the Route to Ubiquitous Coverage; Rémi Lorrain, Semtech

ENLIT Europe, Cloud Computing: Internet of Things and Edge Computing

Didier Helal, Orbiwise

Technologies that enable Data Exchange, panel at ENLIT Europe

Derek Wallace, LoRa Alliance®

AWWA 2021 North America Water Loss Conference

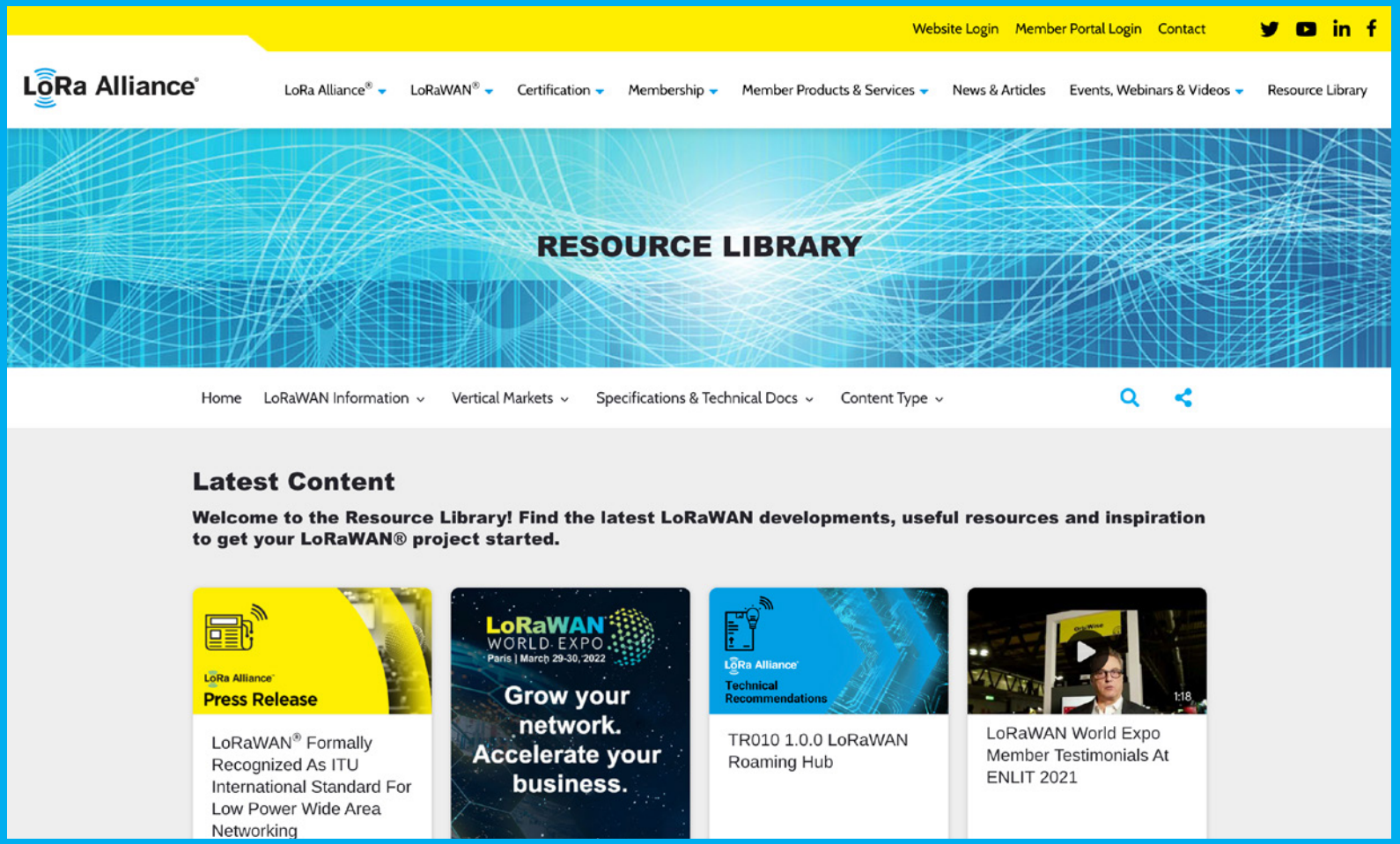
Automatic Meter Reading (AMR)/ Advanced Metering Infrastructure (AMI); Murali Thandavamurthy, Semtech

IoT Online Conference

Deploying Mass FUOTA Updates with LoRaWAN®; Ashley Pope, Oxit

USER EXPERIENCE: RESOURCE LIBRARY

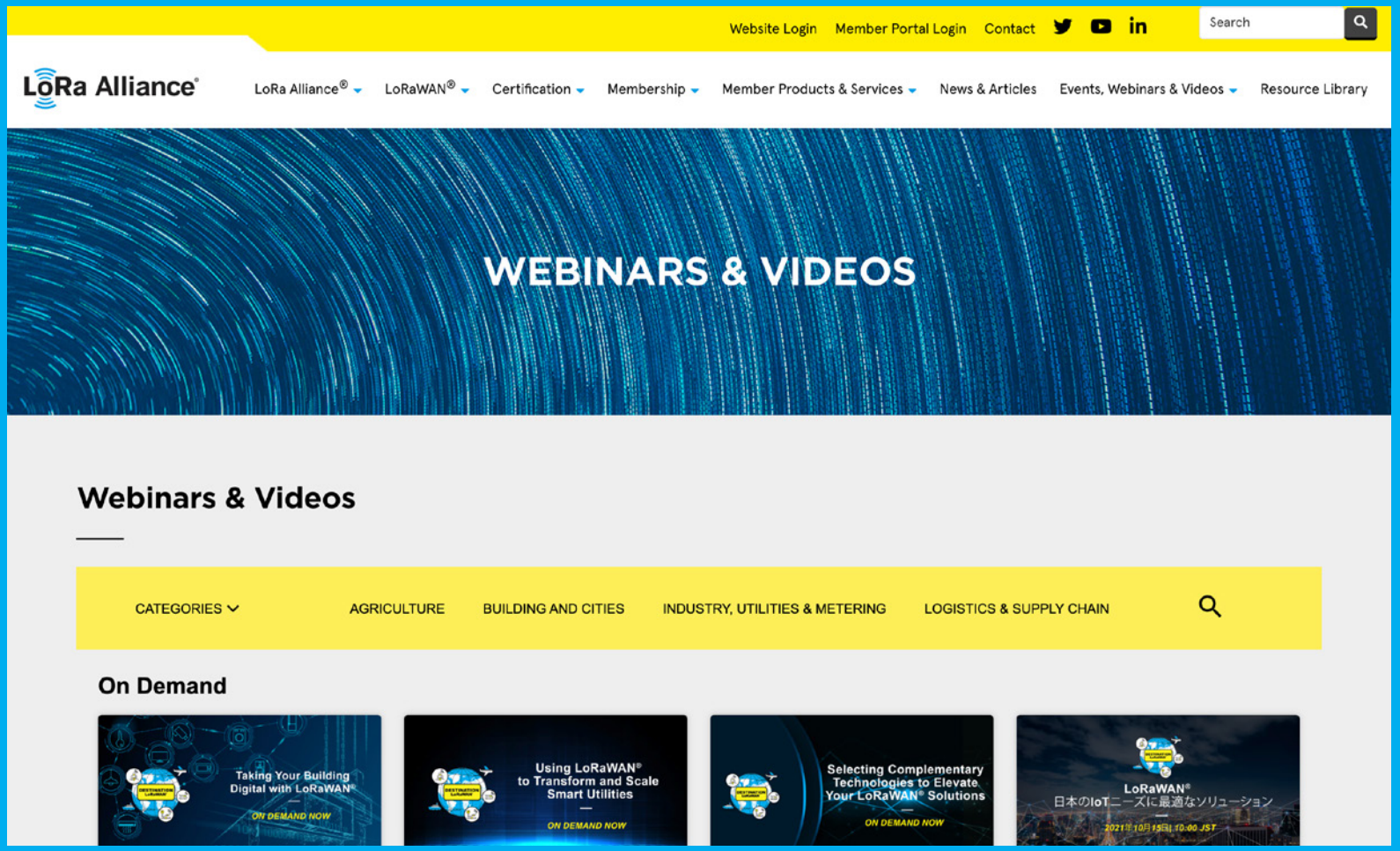
The LoRa Alliance® launched a new Resource Library to aggregate all of its content in one centralized, easy-to-navigate space. With hundreds of articles, white papers, use cases, videos, technical documents, reports, infographics and more, visitors are sure to find the resources they need to get their LoRaWAN® project started. Browse by topic, vertical, technical document type, and content type, or use the robust search engine to find your desired content. The Resource Library also provides analytics into what content users are searching for and consuming, so we can develop new content to meet our visitors' needs.



Visit the Resource Library:

USER EXPERIENCE: WEBINARS & VIDEOS

In conjunction with the Destination LoRAWAN® webcast series, the LoRa Alliance® launched a new webpage for all video and webinar content. Never before could visitors view on-demand, quality video content without leaving the LoRa Alliance website for other streaming platforms. In this enhanced experience, users can access hours of video content from experts inside and outside of the LoRa Alliance ecosystem, as well as supplemental materials available for download.



Visit the Webinars & Video page: https://lora-alliance.org/webinars-videos/

WEBSITE FEATURES: RFP & TENDERS

MEMBERSHIP BENEFITS

As part of a continuous process to ensure our members receive maximum value, the LoRa Alliance® introduced a new benefit called LoRaWAN® Tenders & RFP Connect (LoRaWAN Connect). LoRaWAN Connect is a Public Tenders listing service designed to connect LoRa Alliance members with current opportunities to grow their LoRaWAN and IoT business around the world. This members-only service provides information to all members on Public Tenders requiring LoRaWAN products, services and solutions. Updated weekly, members receive access to Public Tenders details, including instructions on how to submit their proposals, along with contact information. This service is included as part of LoRa Alliance membership fees at no extra cost to members.

2022 will see an expansion of this service to include more Public Tenders sources and the introduction of RFP listings from private companies. Organizations will be invited to list their RFP involving LoRaWAN on LoRaWAN Connect, providing them access to the LoRaWAN products, services and solutions of the LoRa Alliance ecosystem while increasing business opportunities for our members.

LINKEDIN PERFORMANCE

LinkedIn has continued to be a strong channel for the LoRa Alliance®, and in 2021 we increased our audience by 38%, ending the year with 22,830 followers. This tremendous growth was driven heavily by the introduction of video content, including webinars from the Destination LoRaWAN® series. We saw the biggest follower growth in Q4 (+13%) as we ramped up our efforts in promoting the LoRaWAN World Expo.

Follower growth: 6,258 new followers

16,572 → 22,830 | +38% year over year

2021 TOTAL PAGE VIEWS:
20,668

2021 TOTAL UNIQUE IMPRESSIONS:
444,710

2021 TOTAL FOLLOWERS:
22,830

2021 LINK CLICKS:
28,941

2021 AVERAGE LINK CLICKS/DAY:
79.29

2021 IMPRESSIONS:
1,591,000

2021 AVERAGE SHARES/DAY:
3.83

2021 REACTIONS:
14,853

2021 ENGAGEMENT RATE:
3.47

FOLLOW US ON LINKEDIN: **https://www.linkedin.com/company/loraalliance**

TWITTER PERFORMANCE

The LoRa Alliance® Twitter channel following grew 14% in 2021, proving it's still an active and vital channel for discussions around LoRaWAN®. The LoRa Alliance received 4853 mentions, showing that we've gained traction among tech influencers (such as Kirk Borne, Dean Anthony Gratton, Stacey Higginbotham, and others), media (IIoT World, EE Engineering), and leading tech companies.

Follower growth: 1,994 new followers

14,450 → 16,444 | +14% year over year

2021 FOLLOWERS:
16,444

2021 TWEETS:
1,248

2021 IMPRESSIONS:
1,701,900

2021 AVERAGE IMPRESSIONS/MONTH
141,825

2021 AVERAGE ENGAGEMENT RATE:
.96%

2021 RETWEETS:
2,544

2021 RETWEETS/DAY:
7

2021 LINK CLICKS
3,855

2021 AVERAGE LINK CLICKS/DAY:
10.6

FOLLOW US ON TWITTER: **https://twitter.com/loraalliance**

FACEBOOK PERFORMANCE

In the first 14 months since launching a Facebook account for the LoRa Alliance®, the channel grew to become the LoRa Alliance's largest social media audience. Video content has driven strong engagement on the channel, as well as interest in the LoRaWAN® World Expo (with the top ad driving as many as 29.5K clicks).

2021 PAGE LIKES:
22,903

2021 NEW PAGE LIKES:
15,788

2021 IMPRESSIONS:
6,032,332

2021 IMPRESSIONS/DAY
16,526.9

2021 AVERAGE
REACH GROWTH:
+1,672%

2021 AVERAGE
ENGAGEMENT GROWTH:
+111%

2021 TOTAL ENGAGEMENT:
280,491

2021 REACTIONS
22,393

2021 SHARES:
776

2021 TOTAL
POSTS CLICKS:
257,127

2021 POSTS:
1,146

FOLLOW US ON FACEBOOK: **https://www.facebook.com/LoRaAlliance**

2021 LoRaWAN® NEWS HIGHLIGHTS

2021 was another very active year for media engagement, even with most engagement remaining virtual. Total mentions of LoRa Alliance and LoRaWAN increased by more than 10% over 2020. Key announcements included roaming, Microsoft joining the Board of Directors, and the year was capped off by the announcement that LoRaWAN was independently recognized as a global standard by ITU. Once again the LoRa Alliance retained share of voice of greater than 50% against competitive technologies.

2021:

31,300 MENTIONS

11 PRESS RELEASES

302 TIER 1 ARTICLES

LoRa ALLIANCE® ON 2021: "THE PLANET MUST GET (IOT) PREPPED FOR FURTHER DISRUPTION"

Donna Moore

Published: January 11, 2021

READ ARTICLE >

SECURITY PROVISIONING MOVES OUT OF THE FACTORY

Bryon Moyer

Published: March 4, 2021

READ ARTICLE >

EPISODE 10: HOW LoRaWAN® IS CHANGING THE WAY WE CONNECT

Bryon DeLuca/Nicolette Emmino

Published: March 10, 2021

READ ARTICLE >

2021 LoRaWAN® NEWS HIGHLIGHTS

INSPIRATIONAL WOMEN IN STEM AND TECH: DONNA MOORE OF LoRa ALLIANCE® ON THE 5 LEADERSHIP LESSONS SHE LEARNED FROM HER EXPERIENCE

Penny Bauder

Published: April 23, 2021

READ ARTICLE >

LoRa ALLIANCE® ISSUES BEST PRACTICES DOCUMENTS TO STANDARDIZE AND BOOST LoRaWAN NETWORK IMPLEMENTATION

CIO Review

Published: May 8, 2021

READ ARTICLE >

THE FUTURE OF SMART BUILDINGS: SUSTAINABLE, SMART BUILDINGS: PLANET, PEOPLE AND PROFITS

Staff

Published: July/August 2021

READ ARTICLE >

MICROSOFT JOINS LoRa ALLIANCE® BOARD OF DIRECTORS

Staff

Published: September 15, 2021

READ ARTICLE >

REACHING THE UNREACHABLE WITH SATELLITE IOT

Anne van Gemert

Published: September 21, 2021

READ ARTICLE >

LoRaWAN® FORMALLY RECOGNIZED AS ITU INTERNATIONAL STANDARD FOR LOW POWER WIDE AREA NETWORKING

IoT.Business.News

Published: December 8, 2021

READ ARTICLE >

Approved for distribution outside of the LoRa Alliance®

PR & ANALYST PROGRAM STATS

302 PIECES OF TIER 1 COVERAGE

5.25M ESTIMATED COVERAGE VIEWS

26 MEDIA BRIEFINGS

824M ONLINE READERSHIP

18 ANALYST BRIEFINGS

1 AWARD FROM CONNECTED WORLD

48 AVERAGE DOMAIN AUTHORITY

644 SOCIAL SHARES

147 LINKS FROM COVERAGE

PRESS RELEASES ISSUED

January 26	LoRaWAN® Roaming Now Available in More than 25 Countries
April 27	The LoRa Alliance® Accelerates LoRaWAN® Network Deployments to Further Drive Mass Scale for the Internet of Things
May 11	The LoRaWAN® Standard Is Open for Business in Israel
May 26	LoRa Alliance® Achieves Goals to Drive Scale of LoRaWAN® for Massive IoT
September 15	Microsoft Joins the LoRa Alliance Board of Directors
October 5	Discover the Power of LoRaWAN® at LoRaWAN World Expo 2022
November 9	LoRa Alliance® and OMS-Group Optimize Smart Utilities Transmissions with OMS Over LoRaWAN®
November 23	LoRa Alliance® Shows Continued Rapid Growth in LoRaWAN® Deployments for Utilities; Demos Latest Advancements at Enlit 2021
December 1	LoRaWAN® World Expo to Bring Together Industry Visionaries with Technology, Regulatory and Standards Leaders to Showcase LoRaWAN's Global Impact
December 7	LoRaWAN® Formally Recognized as ITU International Standard for Low Power Wide Area Networking
December 14	LoRa Alliance® Expands LoRaWAN® NetID Program to Support Global Roaming

LIAISONS & COLLABORATIONS

dlms™ device language message specification

CABA™ Continental Automated Buildings Association

NFC FORUM

WIRELESS BROADBAND ALLIANCE
DRIVING NEXT WIRELESS EXPERIENCE

ICA

CEPT ECC
Electronic Communications Committee

IEEE
Advancing Technology for Humanity

technology innovation AGENCY

SWAN
THE SMART WATER NETWORKS FORUM

GS1® in Europe

OMS®
OPEN METERING SYSTEM GROUP

MEMBER ECOSYSTEM | Sponsors

The LoRa Alliance® is the largest LPWAN organization globally. Our work and the success of the LoRaWAN® standard wouldn't be possible without our ecosystem, which is unrivalled in its size and range of companies. Our list of members as of December 31, 2021 follows.

- ACTILITY SA
- AMAZON Web Services, Inc. (AWS)
- Charter Communications
- Cisco Systems, Inc
- MachineQ, a Comcast Company
- KERLINK
- Microsoft
- Netze BW GmbH
- ORANGE
- SAGEMCOM BROADBAND SAS
- Semtech
- Senet
- Shenzhen Tencent Computer Systems Company Limited
- STMicroelectronics International NV
- TEKTELIC Communications Inc.

Learn more about **Member Benefits** and how to **become a member** of the LoRa Alliance today.

MEMBER ECOSYSTEM | Contributors

A2A Smart City S.p.A.
ADTRAN Inc.
AFNIC
Arduino SA
Birdz
Bouygues Telecom
British Telecommunications Plc
Cellnex Telecom, S.A.
Chevron
Decentralized Wireless Foundation Inc (Helium Foundation)
Digita Oy
EDF
eleven-x
Eutelsat S.A.
Everynet BV
GetWireless LLC
Itron, Inc.
KPN
LORIOT
Machines Talk
meshify
Microshare
Minol ZENNER International GmbH & Co. KG
Multi-Tech Systems, Inc
myDevices
NAGRA USA LLC (Kudelski IoT)
National Narrowband Network Communication
Nebra Ltd
NEC Corporation
Neptune Technology Group, Inc.
Netmore Group formerly known Blink Services
Nippon Telephone and Telegraph
OrbiWise
OXIT LLC
Pingday AB
Proximus SA
Renesas Electronics Corporation
Schneider Electric
SK Telecom
SoftBank Corp.
Spark New Zealand Trading Limited
STRATIS IoT, Inc.
Swisscom (Switzerland) Ltd
Target Corporation
Telekom Srbija
The Things Network Foundation
U-blox AG
UNIDATA SPA
UPLINK Network GmbH
Ventia Utility Services Pty Ltd
Allion Labs, Inc.
Bureau Veritas Consumer Products Services, Inc
DEKRA Testing and Certification, S.A.U.
IMST GmbH
Telecommunications Technology Association
TUV Rheinland Group

MEMBER ECOSYSTEM | Adopters

1M2M

3S

Aartesys AG

ACKLIO

AcSiP Technology Corp.

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Aeris Communications, Inc.

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Allora Factory

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Sensative AB

SenseWay, Inc.

Sensor Networks, Inc.

Sentinum GmbH

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Shenzhen Kaifa Technology Co., Ltd. (Chengdu) Co., Ltd.

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Sichuan Changhong Network Technologies Co.,Ltd

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Small Data Garden Oy

SOCOMEC SAS

Somfy Protect

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TESGL Ltd T/A SSE Enterprise Energy Solutions

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Worldsensing S.L.

Wyld Networks

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Xiamen Milesight IoT Co., Ltd.

X-Telia Group inc.

Yokogawa Electric Corporation

Yosensi Sp z.o.o

ZTACOM Co., Ltd.

MEMBER ECOSYSTEM | Institutional

ADEMED - Asociatia Pentru Dezvoltare Si Mediu

American Farm School

China Academy of Information Communications Technology

Covenant University, IESCC Research

Danang International Institute of Technology

ER&DCI Institute of Technology, CDAC Thiruvananthapuram

Freie Universitat Berlin, Internet Technologies Research

HEIG-VD

IMT Atlantique

Inria Saclay-ile-de-France Research Centre

Institute of Theoretical and Applied Informatics, Polish Academy of Sciences

Instituto Brasilia de Tecnologia e Inovacao- IBTI

Instituto Tecnologico de Hermosillo

International Centre for Free and Open Source Software (ICFOSS)

IT University of Copenhagen

Korea Institute of Science and Technology Information (KISTI)

Nanyang Technological University – Wireless And Networked Distributed Sensing Group

SASI Institute of Technology and Engineering

Savoie Mont Blanc University

Telecom SudParis

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