Celebrating **10 years** of oneM2M -**THE GLOBAL STANDARD FOR INTEROPERABLE IOT SYSTEMS**



oneM2M envisions a world of interoperable and secure IoT services where market adoption is easy and delivers benefits to society.

Our mission is to be the global community that develops IoT standards to enable interoperable, secure, and simple-to-deploy services for the IoT ecosystem. oneM2M standards are open, accessible, and internationally recognized.

A Happy and Productive 10 Years for oneM2M

On July 24, 2012, seven regional standards bodies across the world signed the oneM2M Partnership Agreement. These were – ARIB (Japan), ATIS (Americas), CCSA (China), ETSI (Europe), TIA (Americas), TTA (S. Korea) and TTC (Japan). TSDSI (India) joined the project in 2015.

By September 2012, oneM2M was holding its first Technical Plenary Meeting in Nice (France). Against long-range forecasts promising tens of billions of connected devices, business and research organizations began the task of defining an open and interoperable standard for end-to-end IoT systems.

To achieve wide applicability, there was consensus on defining a horizontal architecture and common service functions. This arrangement would act as the glue linking data-producing sensors and data-consuming applications. oneM2M's resulting 'middleware' capability could therefore be used across many verticals, from connected factories to smart cities. Its design would also re-use established technologies to avoid re-invention and make best use of legacy installations.

Making a Start with Release 1

It was not until 2015 that members completed and ratified Release 1 of the standard. This is unsurprising given the wide range of IoT use cases that members studied. Their analysis led to the definition of a horizontal architecture and a portfolio of common services that could be re-used in multiple IoT use cases across the industry spectrum.

oneM2M's initial portfolio contained twelve common service functions. These included device management, security, communications management and, HTTP/CoAP/MQTT protocol bindings.

2015 was also the year that ETSI and TTA jointly organized oneM2M's first interoperability test event. Participants verified oneM2M interoperability using sixty-four test scenarios. Thirty organizations and over eighty testers demonstrated that all implementations were compatible on a basic level. They also concluded that oneM2M standards were mature and ready for deployment.



Growing with the IoT Industry – Releases 2 and 3

oneM2M has continued to grow and evolve in the context of a maturing IoT industry. With growing industry awareness, numerous corporate initiatives and IoT alliances emerged. Many revised their standards setting roles, merged their efforts or changed course to market evangelization activities. Meanwhile, oneM2M continued with its open-standardization path. oneM2M's founding partners also added an independent certification scheme while Technical Plenary members continued to address new industry requirements through oneM2M's capabilities roadmap.

In 2021, oneM2M launched an initiative on the role of IoT in meeting sustainability goals. In addition to solutions that address the UN's Sustainable Development Goals, this work also encourages developers to apply sustainable design practices. These include design for modularity, interoperability and re-use which are also aspects of oneM2M's design philosophy.



Government and policy bodies are taking note of the increased role of IoT in key parts of the economy. They are beginning to view standards as a national strategic issue. India, for example, recently adopted oneM2M as a national standard. This adds to the adoption of oneM2M as part of the ITU's Y.4500 series at the international level across 194 member states.

Sustainability and IoT

From its inception, sustainability characterized oneM2M's technical standards. Our broad approach, spanning multiple use case opportunities, aims to minimize re-invention while standardizing common elements for the widest possible use. oneM2M's horizontal architecture maximizes the potential for re-use and knowledge sharing across domains. It provides the foundations to address new requirements and magnify the value of cross-silo interoperability and data sharing.

Through a newly launched initiative, oneM2M promotes the use of IoT systems in sustainability use cases. Five design principles make IoT technologies inherently sustainable. These encourage developers to design IoT systems that are modular, interoperable, reusable, scalable and based on open standards.



Ready for the Future – Releases 4 and 5

As the IoT market continues to expand cross-silo interoperability and innovative use cases are driving new requirements. oneM2M is unique within the industry for managing a release roadmap that can accommodate new requirements coherently. For example, work is underway to ratify Release 4 while new features are being readied for Release 5. These address requirements to conform with regulatory frameworks such as GDPR and design approaches to handle 'AI-for-IoT.' Another important topic features advanced semantic capabilities. These would make it easier and more dynamic to discover and use IoT data sources in large and distributed systems.

oneM2M members have completed over 55 Technical Plenaries across the globe. There have been seven interoperability test events and countless market deployments. oneM2M and its members continue to build on this accumulated expertise as the beacon for open IoT standards over the coming decades.

Useful Resources

oneM2M standards are accessible openly at no charge through **documents that are organized by Release**. A good place to start is the **Technical Specification documents** TS-0001: Functional Architecture and TS-0004:Service Layer Core Protocol.

The oneM2M web site groups information for three audience groups:

- oneM2M introduction for business executives and product managers
- Starting point for organizations wishing to develop oneM2M systems
- The starting point for organizations that wish to deploy IoT systems based on oneM2M without necessarily building the underlying components

oneM2M regularly contributes **articles to industry publications** and **publishes market insight interviews** with industry experts. oneM2M deployments can be **tracked here**.

Developers who wish to build and operate IoT systems using oneM2M standards can access the following resources:

- oneM2M WiKi lists oneM2M community-building, developer, and teaching materials
- **oneM2M GitLab** find oneM2M schema definitions and other artefacts that accompany the specifications.
- oneM2M Tutorials on GitHub a set of tutorials to help developers gain hands-on experience with oneM2M.
- oneM2M on StackOverflow a question-and-answer site for software developers.
- oneM2M on Hackster.io a hardware-oriented site containing descriptions of multiple oneM2M device and application implementations.



