



# oneM2M – The IoT Standard Enabling the Digital Transformation

## Market Challenges and Mitigation. Learnings from Deployments

Roland Hechwartner  
Deutsche Telekom  
oneM2M Technical Plenary Chairman

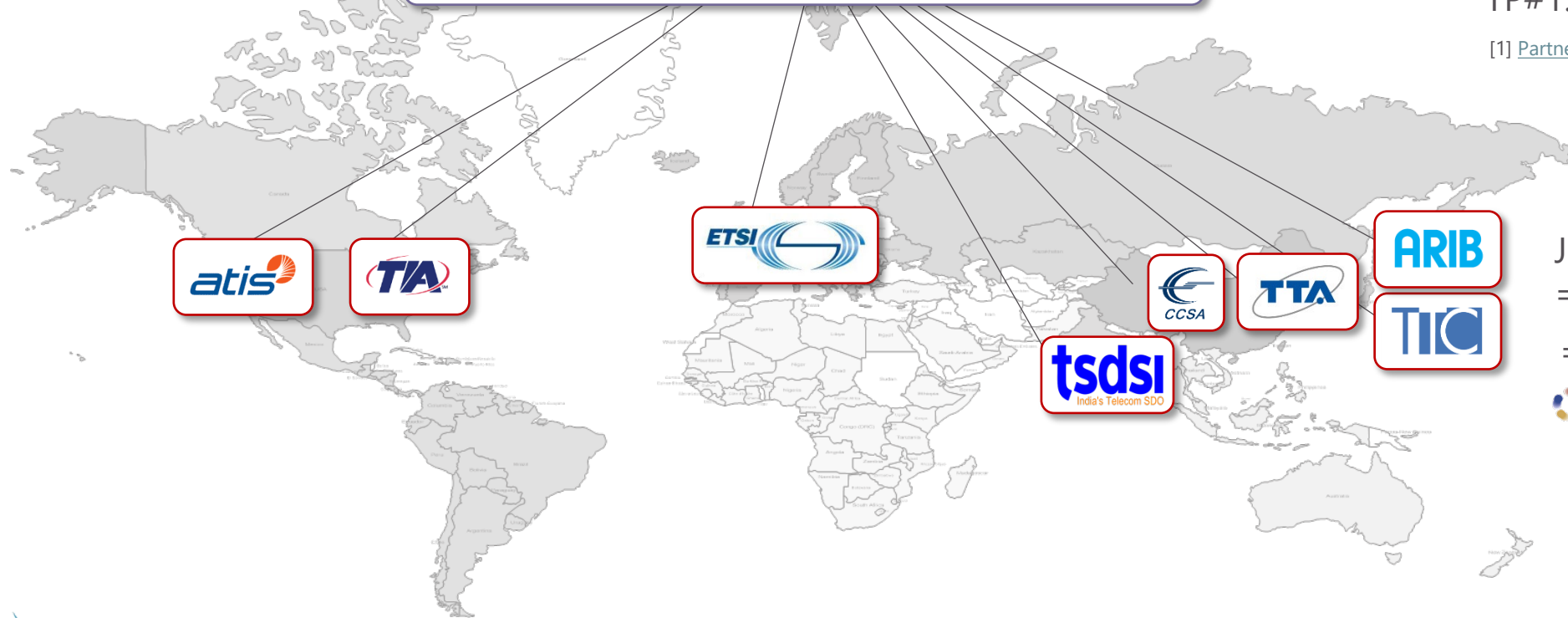
July 5, 2023

# oneM2M Partnership Project

More than 200 member organizations in oneM2M

founded<sup>1</sup> July, 24<sup>th</sup> 2012  
TP#1: Sep 24<sup>th</sup>-29<sup>th</sup> 2012

[1] [Partnership Agreement V 2.0](#) (Approved March 2013)



Join forces  
=> reduce fragmentation  
=> Reuse e.g.



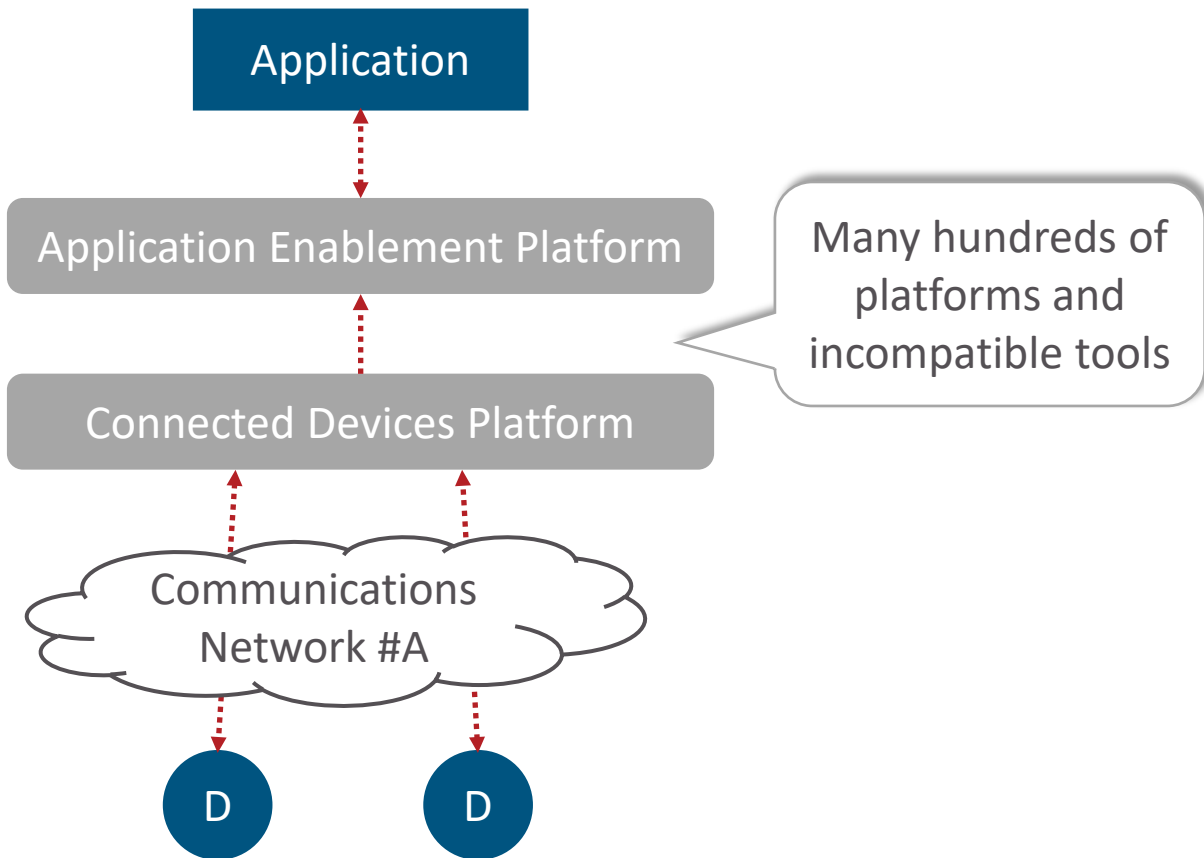
e.g. Release 2 transposition  
ITU-T SG20 Y.4500.x



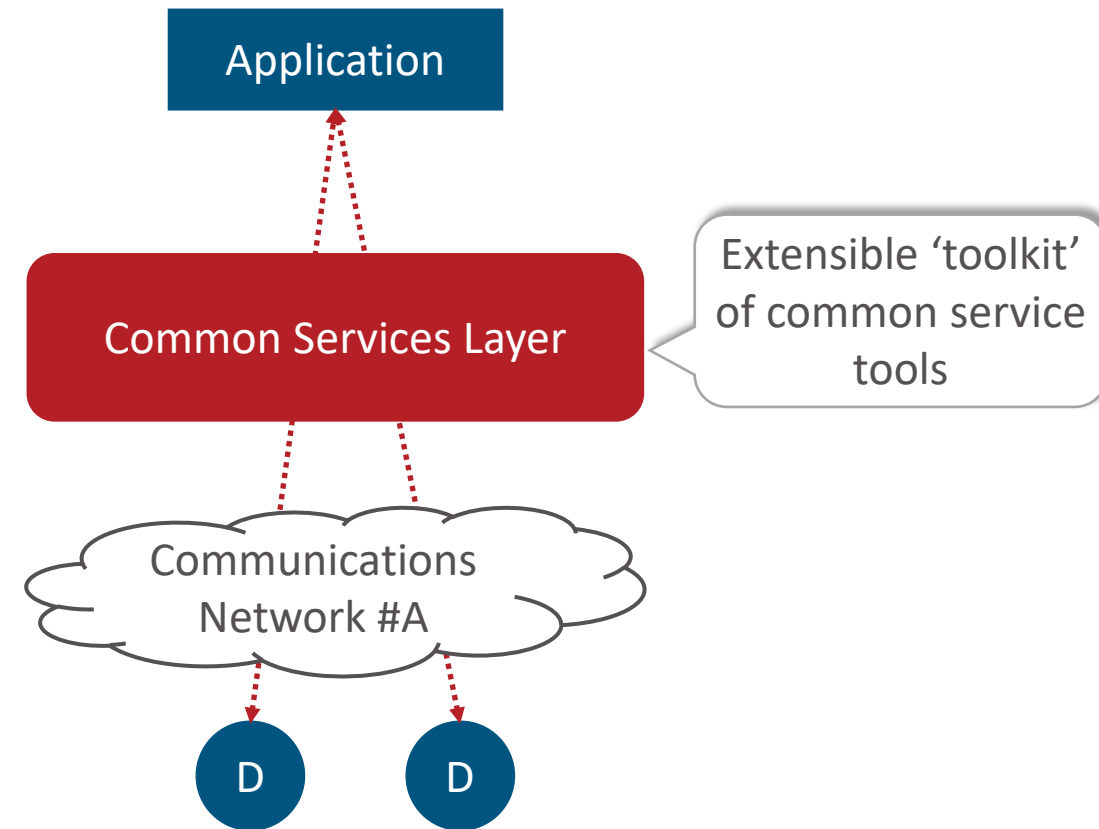
[www.oneM2M.org](http://www.oneM2M.org) All documents and specifications are publically available

# Developers use platform tools to build and support IoT systems

## Traditional Market Structure



## oneM2M's Standards-based Structure





THE ELECTRIC UTILITY INDUSTRY NEEDS AN OPEN STANDARDS BASED IOT SERVICE LAYER DESIGNED FOR INTEROPERABILITY TO ENABLE THE SELF-ADAPTIVE ELECTRIC GRID REQUIRED TO INTEGRATE ELECTRIC VEHICLES AT THE LOWEST COST

Published: 5 June 2023



In this interview, oneM2M hears from Ray Bell, CEO of Aetheros which has operations in Australia, New Zealand, Mexico, and the USA. Headquartered in Sausalito, California, Aetheros spans the communications, electric utility, and smart metering industries. It offers an open-standard, secure, Linux based, distributed operating system for machines that addresses the coming generation of requirements arising from distributed renewable generation, battery systems, and electric vehicles.

**Q: Would you begin with an overview of your background and Aetheros?**

OVER 40 INDUSTRY PARTNERS ARE INTERESTED IN DEVELOPING THEIR IOT SOLUTIONS USING C-DOT'S COMMON SERVICE PLATFORM, BASED ON oneM2M

Published: 22 February 2023



In early 2021, oneM2M spoke to Poornima Shandilya of the Centre for Development of Telematics (C-DOT) about her group's early work to develop an IoT platform in line with the oneM2M standard. During recent oneM2M's 57<sup>th</sup> Technical Plenary, held in Seoul, Korea, Poornima spoke about post-2021 developments, use case project experiences and market demand for oneM2M solutions.

CERTIFICATION IS A KEY STEP IN DEVELOPING INDIA'S STANDARD BASED IOT ECOSYSTEM, TO BENEFIT FROM oneM2M'S TECHNICAL STANDARD

Published: 23 February 2023



A delegation from the Indian government's Department of Telecommunications (DoT) attended oneM2M's 8<sup>th</sup> Interoperability Test event in Seoul, Korea and shared their views on the IoT market and progress towards the adoption of oneM2M standards in India. For this interview, we spoke to Mr. Manish Saxena and Ms. Namrata Singh.

**Q: Would you begin by introducing yourselves to our readers?**

USING oneM2M, OUR DATA HUB FOR DAEGU CITY COLLECTS AND LINKS DATA FOR A HUNDRED DIFFERENT SERVICES. WE PLAN TO EXPORT IT TO OTHER LOCAL GOVERNMENTS

Published: 9 January 2023



For this interview, Seon-woo Yi of nTels in South Korea describes his early work on IoT systems and the evolution of solution requirements as attention has shifted to innovative ways of working with data.

ULTIMATELY, GIVEN THE SIZE OF THE IOT MARKET AND ITS FRAGMENTATION, EVERYONE NEEDS TO WORK TOGETHER, AND STANDARDIZATION IS A GREAT WAY TO CREATE AN ECOSYSTEM

Published: 4 May 2023



Andre Dutra of Deutsche Telekom discusses important market challenges in deploying IoT systems and some recent work to demonstrate cross-vendor interoperability. He also shows how to marry established industry standards, taking LWM2M as an example, with oneM2M's open standard to build complex IoT systems.

**Q: Would you begin by introducing yourself?**

oneM2M'S OPEN-STANDARD FITS WITH OUR MEMBERS' SHARED ENVIRONMENT AND LEAVES US TO FOCUS ON 21ST CENTURY ELEVATOR SERVICES

Published: 16 January 2023



Patrick Cox is the General Manager for TRE-E srl, a consortium of elevator and escalator industry service providers operating across Italy.

In this interview, he discusses the competitive landscape in Italy's elevators sector and the value of standardization. He also explains how IoT capabilities enable business transformation and provide sources of innovation and competitive advantage to small and medium-sized service providers.

INTERNATIONAL STANDARDIZATION IN THE SMART LIFTS SECTOR WILL BUILD ON THE FOUNDATIONS WE PIONEERED WITH oneM2M

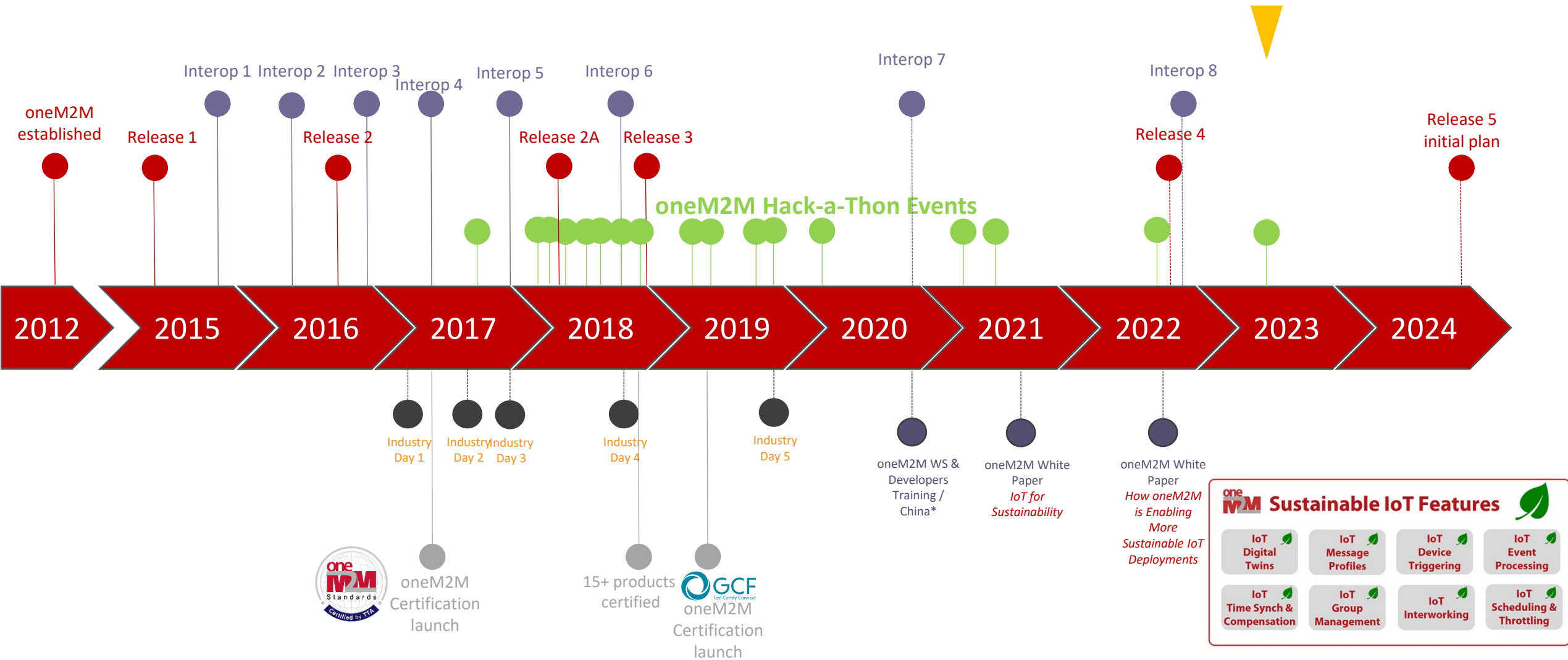
Published: 1 February 2023



Marco Cogliati is the Director for Research Design & User Experience at TRE-E srl, a consortium of elevator and escalator industry service providers operating across Italy. In this interview, he discusses his activities in standardizing new ways to capture, share and apply data from elevators.

**Q: Would you begin by introducing yourself and your role with TRE-E?**

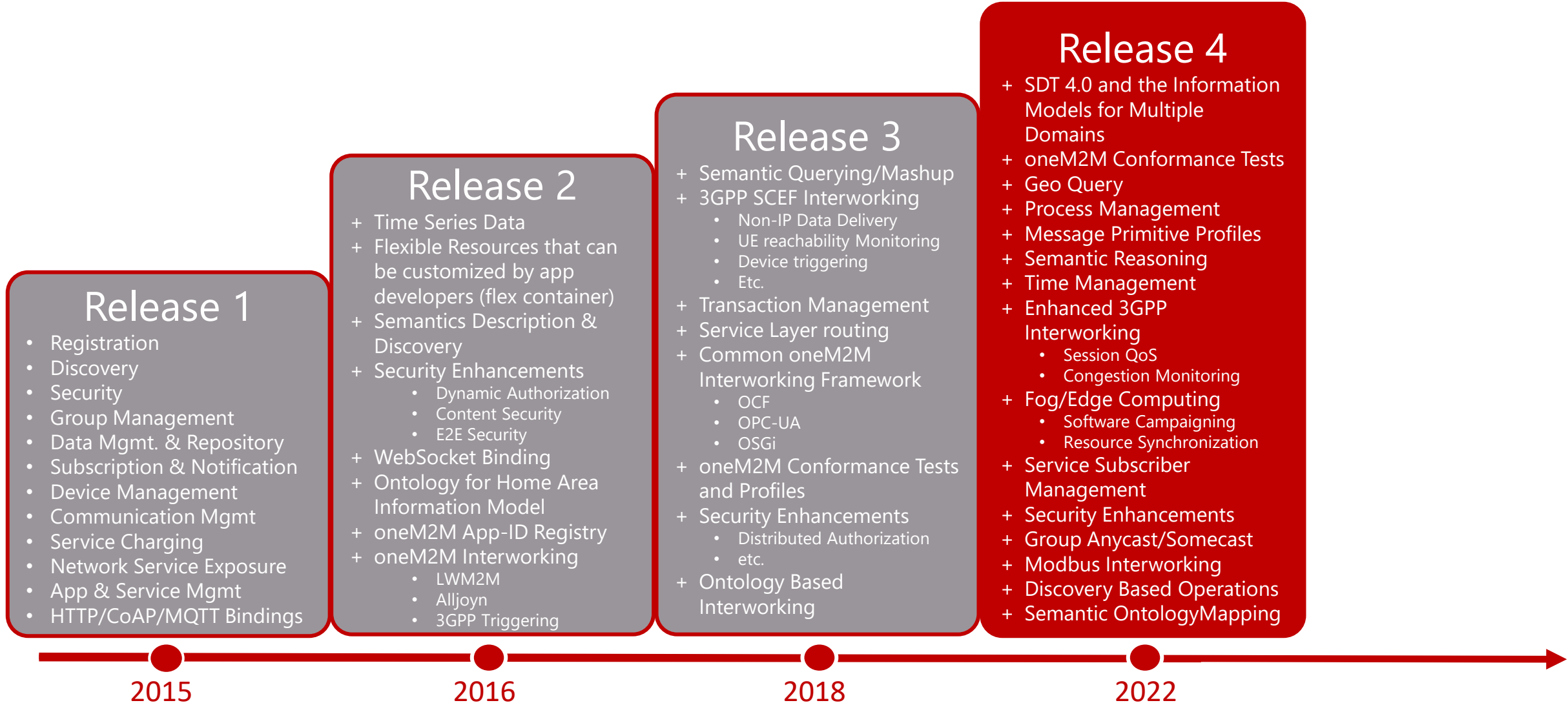
# oneM2M Key-events Timeline



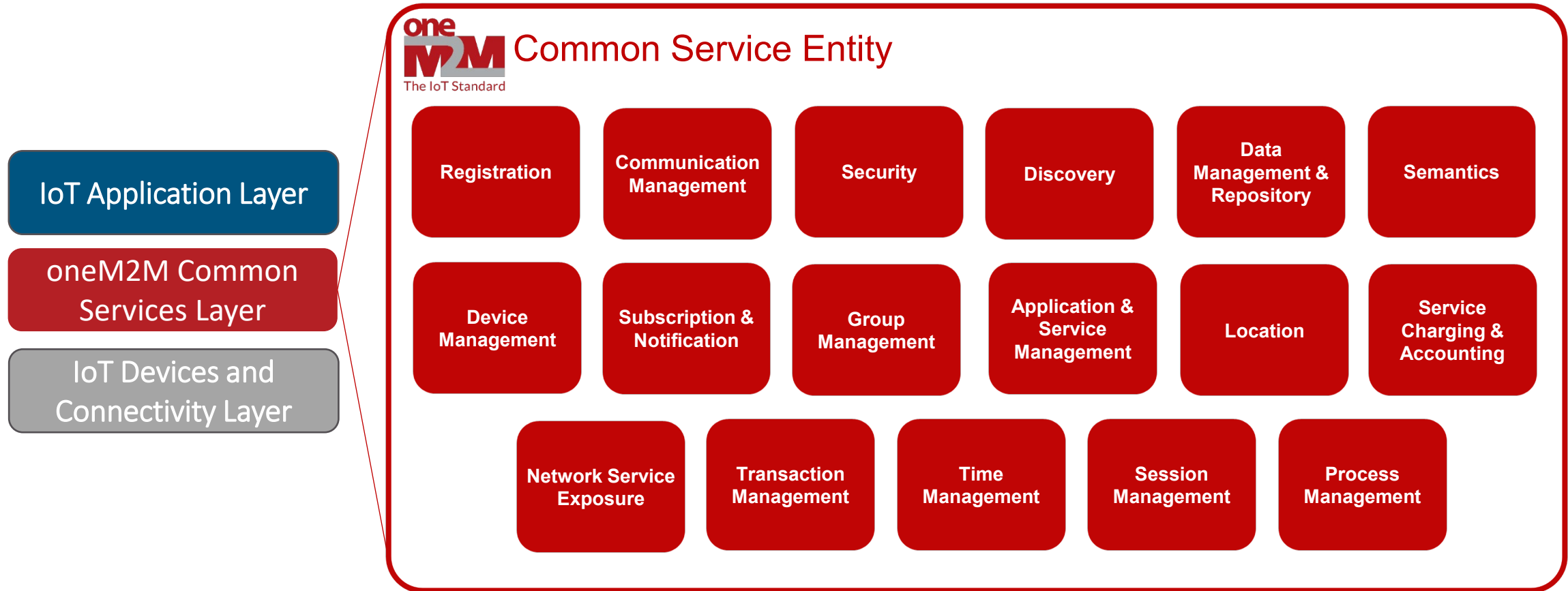
**oneM2M Sustainable IoT Features**

IoT Digital Twins	IoT Message Profiles	IoT Device Triggering	IoT Event Processing
IoT Time Synchronisation & Compensation	IoT Group Management	IoT Interworking	IoT Scheduling & Throttling

# oneM2M Feature Summary by Release



# oneM2M Common Services “Toolkit”



# oneM2M Future Feature development

## Release 5

TECHNICAL REPORTS

REQUIREMENTS  
TS-0002

TECHNICAL SPECS

- AI enablement
- Information Model enhancements – SDT4.0
- Support of Data Protection Regulations
- Support of Data License Management
- Smart City and Enterprise domain enablement enhancement
- Advanced Semantic Discovery
- Additional Interworking (e.g. OGC's Sensor Thing API)
- Enhanced Filter and Queries
- Enhanced Public Warning Service Enabler
- Effective IoT Communication to Protect 3GPP Networks (cont'd)



# Takeaways 2

## oneM2M

- is a global open standard, not controlled by a single private company
- specifies a common set of horizontal IoT services
  - architecture, common services functions,
- enables data interoperability
  - Information model, semantics, ontology based interoperability
- interworks with existing IoT technologies
- has interoperability testing and a certification program
- standardized APIs simplify the life for IoT stakeholders
  - minimize development, deployment & maintenance costs
- is a mature and a commercially deployed technology

Work in progress on  
oneM2M Release 5

# oneM2M Tutorials

The first set of the **oneM2M Tutorials using Jupyter Notebooks** is now online!

## oneM2M Wiki

[https://wiki.onem2m.org/index.php?title=OneM2M\\_Jupyter\\_Notebooks](https://wiki.onem2m.org/index.php?title=OneM2M_Jupyter_Notebooks)

## YouTube

[https://www.youtube.com/playlist?list=PLDd4EJmw5gUnA\\_d1RgYnxrOrYeYuHdH5u](https://www.youtube.com/playlist?list=PLDd4EJmw5gUnA_d1RgYnxrOrYeYuHdH5u)

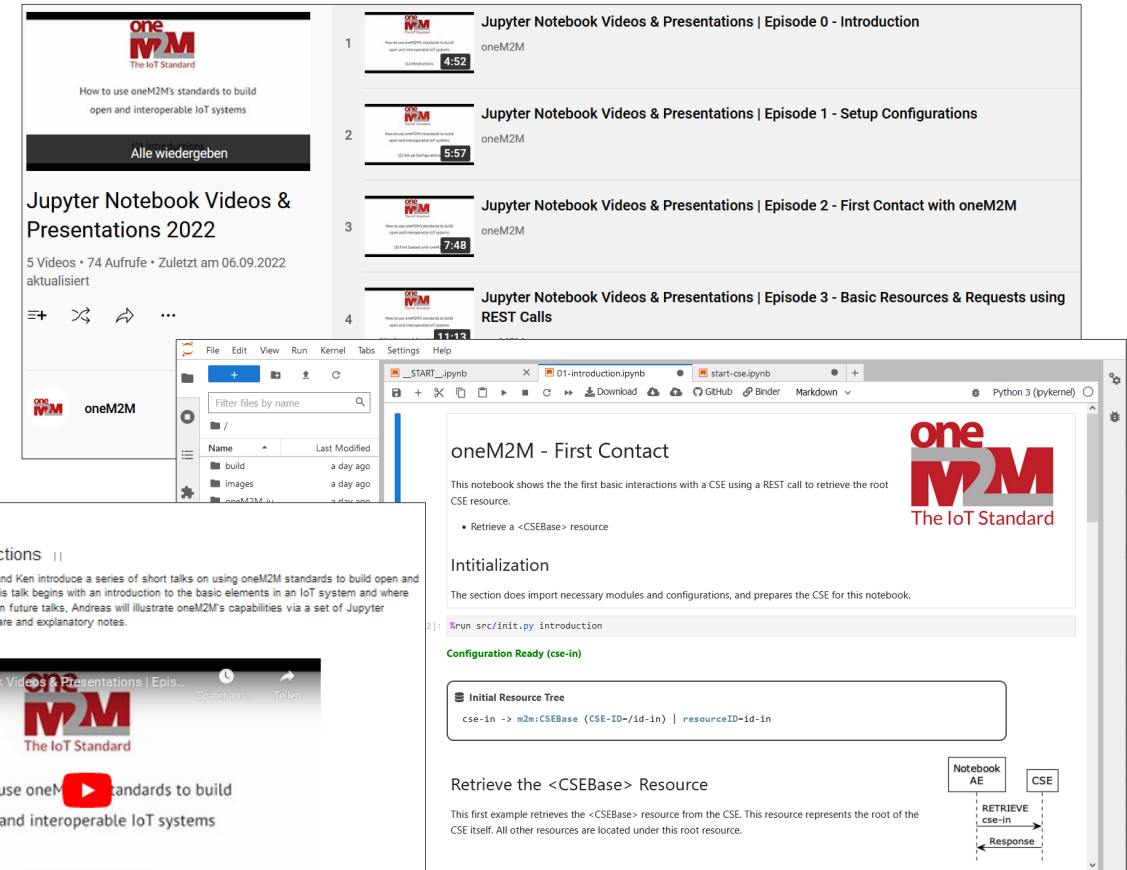
## GitHub & Discussions

<https://github.com/oneM2M/onem2m-jupyter-notebooks>

<https://github.com/oneM2M/onem2m-jupyter-notebooks/discussions>

## MyBinder Runtime

[https://mybinder.org/v2/gh/oneM2M/onem2m-jupyter-notebooks/master?urlpath=lab/tree/\\_START\\_.ipynb](https://mybinder.org/v2/gh/oneM2M/onem2m-jupyter-notebooks/master?urlpath=lab/tree/_START_.ipynb)



The collage displays the following content:

- YouTube Playlist:** A list of four video episodes:
  - 1. Jupyter Notebook Videos & Presentations | Episode 0 - Introduction (4:52)
  - 2. Jupyter Notebook Videos & Presentations | Episode 1 - Setup Configurations (5:57)
  - 3. Jupyter Notebook Videos & Presentations | Episode 2 - First Contact with oneM2M (7:48)
  - 4. Jupyter Notebook Videos & Presentations | Episode 3 - Basic Resources & Requests using REST Calls (11:13)
- GitHub Repository:** A view of the `oneM2M` repository on GitHub, showing a file browser with folders like `build`, `images`, and `oneM2M`.
- Jupyter Notebook Screenshot:** A screenshot of the `oneM2M - First Contact` notebook. It shows the notebook title, a description of the first basic interactions with a CSE, and a section for initialization. A code cell shows the command `!run src/init.py Introduction` with the output `Configuration Ready (cse-in)`. Below this, an `Initial Resource Tree` is displayed as `cse-in -> m2m:CSEBase (CSE-ID=/id-in) | resourceID=id-in`. A diagram at the bottom illustrates the interaction between the `Notebook AE` and the `CSE`, showing a `RETRIEVE cse-in` request and a `Response` return.

# For more information ...

## visit [www.oneM2M.org](http://www.oneM2M.org)

Executive Viewpoints - <https://onem2m.org/insights/executive-viewpoints>

oneM2M in the News - <https://onem2m.org/news-events/newsmenu/onem2m-in-the-news>

Technical Specifications - <https://onem2m.org/technical/published-drafts>

Roland Hechwartner – [roland.hechwartner@magenta.at](mailto:roland.hechwartner@magenta.at)



# Thank You!



Roland Hechwartner  
roland.hechwartner@magenta.at