oneM2M

TAKING A LOOK INSIDE

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Agenda

- The Partnership Project
- The Common Service Layer
- The Technical Reports and Specifications

- Use Cases and Requirements
- Architecture and Information Modelling
- Communication Protocols

- Security
- Device Management & Interworking with OMA/BBF
- Interworking with 3GPP/3GPP2 and with AllJoyn

The Partnership Project

Over 200 member organizations in oneM2M
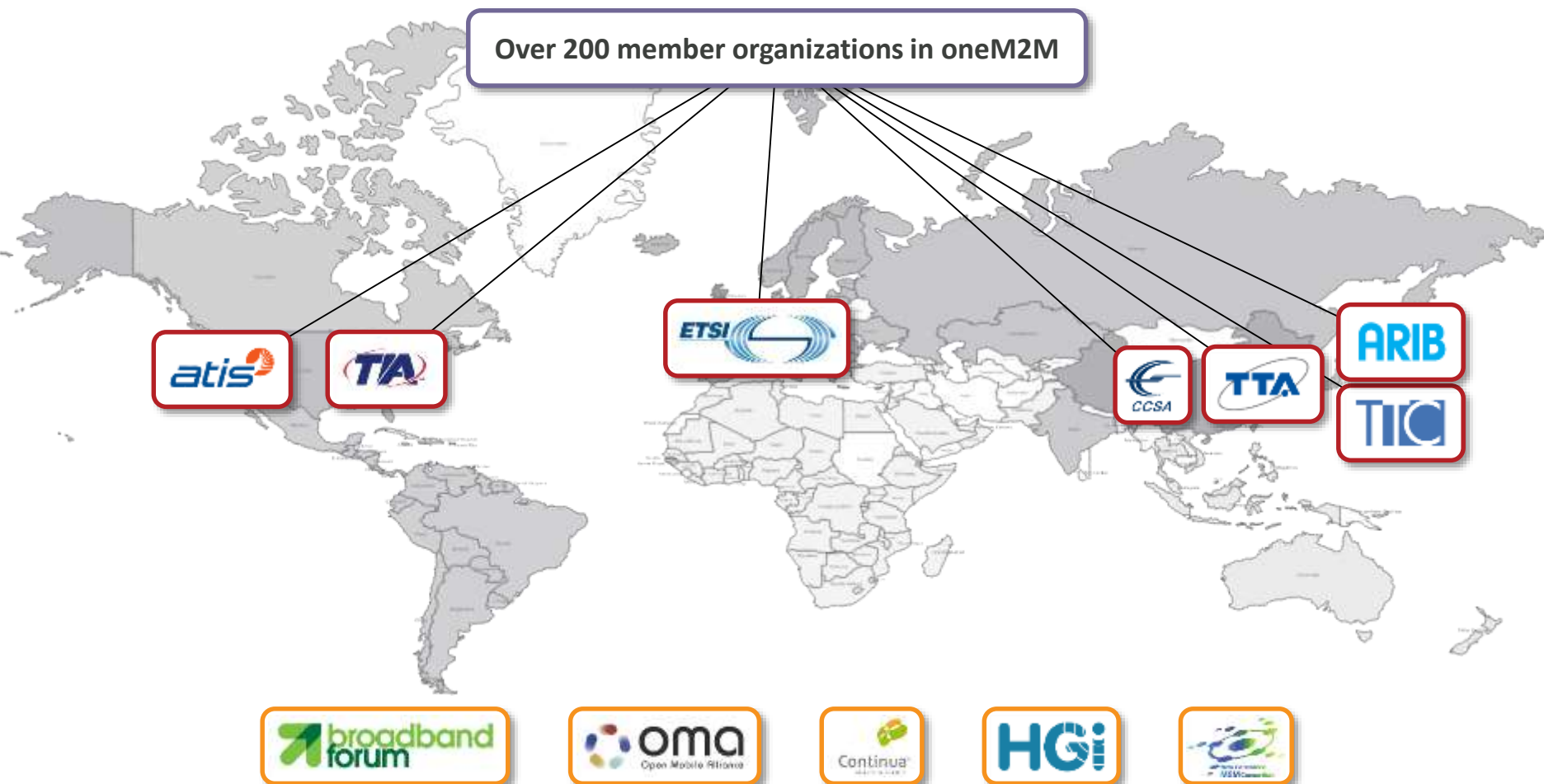
Purpose, Work & Deliverables

Purpose

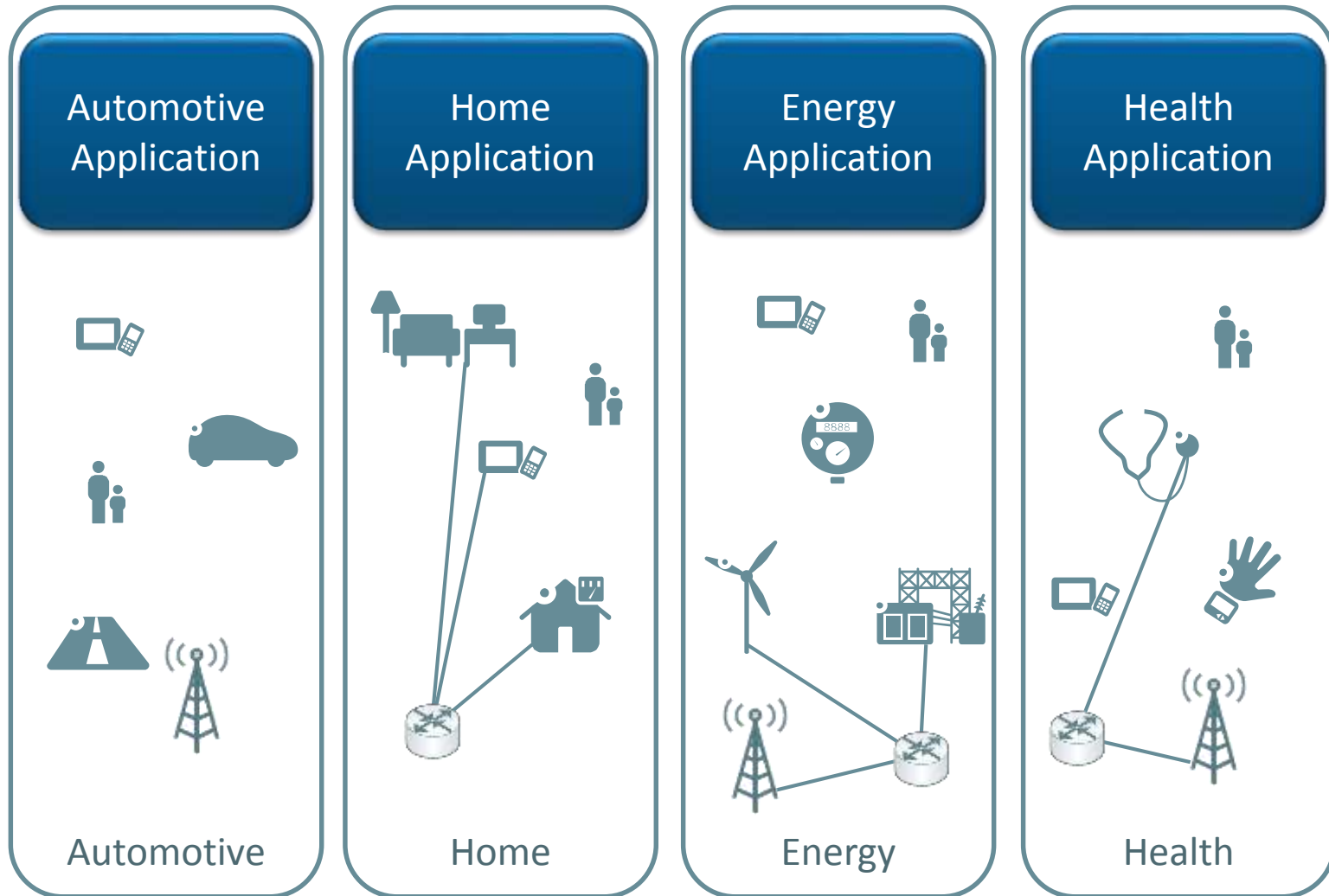To specify and promote an
M2M Common Service Layer

Work

Six physical 1-week meetings per year

About 5 conference calls per week between the meetings

200+ documents produced and discussed at each meeting
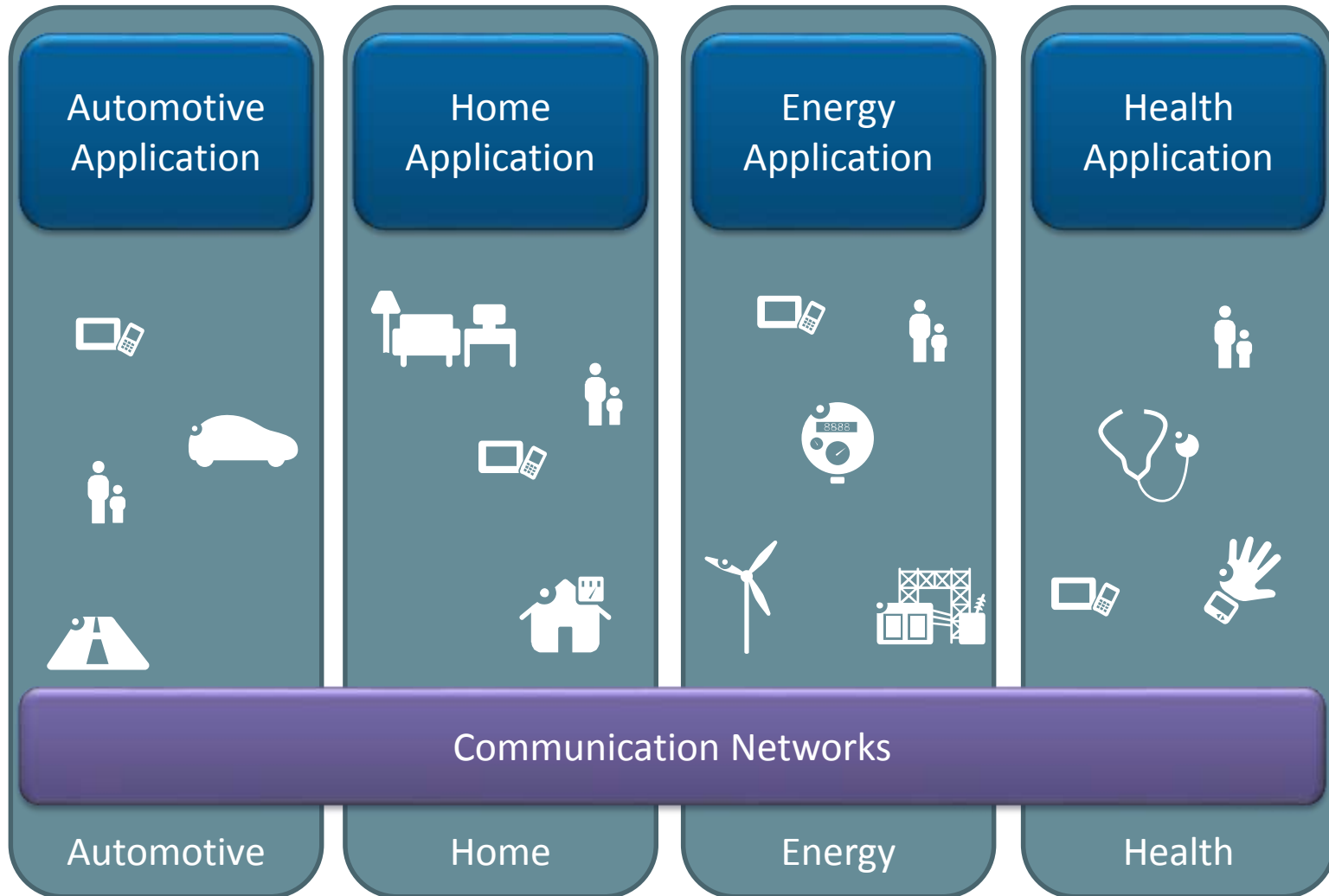
3800 docs in 2013   4200 docs in 2014 so far

Deliverables

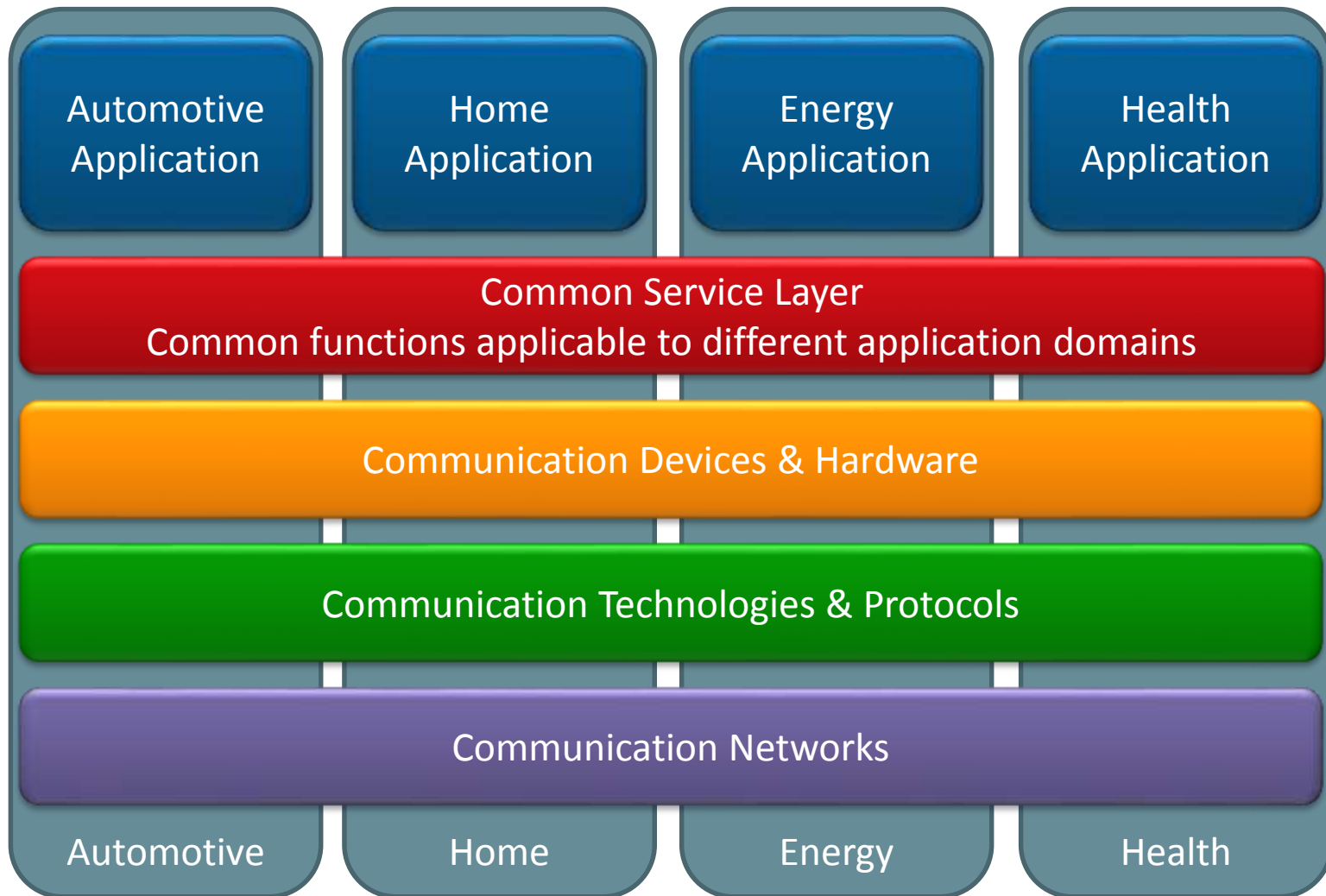**Technical Reports and Technical Specifications**

The Common Service Layer

The Common Service Layer

The Common Service Layer

Common Service Functions

Registration	Discovery	Security	Group Management
Data Management & Repository	Subscription & Notification	Device Management	Application & Service Management
Communication Management	Network Service Exposure	Location	Service Charging & Accounting

Technical Reports

Architecture Analysis 1 **TR-0002** (WI-0002)	**Use Cases** **TR-0001** (WI-0001)	**Architecture Analysis 2** **TR-0003** (WI-0002)
Protocol Analysis **TR-0009** (WI-0008)	**Study of Mgt Capab. Enabl^{nt}** **TR-0006** (WI-0004)	**Abstraction & Semantics** **TR-0007** (WI-0005)
Security Analysis **TR-0008** (WI-0007)		
Roles & Focus Areas **TR-0005** (WI-0003)	**Use Cases v2** **TR-0011** (WI-0014)	**E2E Security & Group Authent.** **TR-0012** (WI-0011)

ftp://ftp.onem2m.org/Work Programme/

Technical Specifications

Requirements TS-0002 (WI-0001)	**Functional Architecture** TS-0001 (WI-0002)	**Definitions & Acronyms** TS-0011 (WI-0003)	**Service Layer Core Protocols** TS-0004 (WI-0009)
HTTP Protocol Binding TS-0009 (WI-0013)	**CoAP Protocol Binding** TS-0008 (WI-0012)	**Management Enabl^{nt} - OMA** TS-0005 (WI-0010)	**Management Enabl^{nt} - BBF** TS-0006 (WI-0010)
MQTT Protocol Binding TS-0010 (WI-0014)	**Security Solutions** TS-0003 (WI-0007)	**Service Components** TS-0007 (WI-0011)	

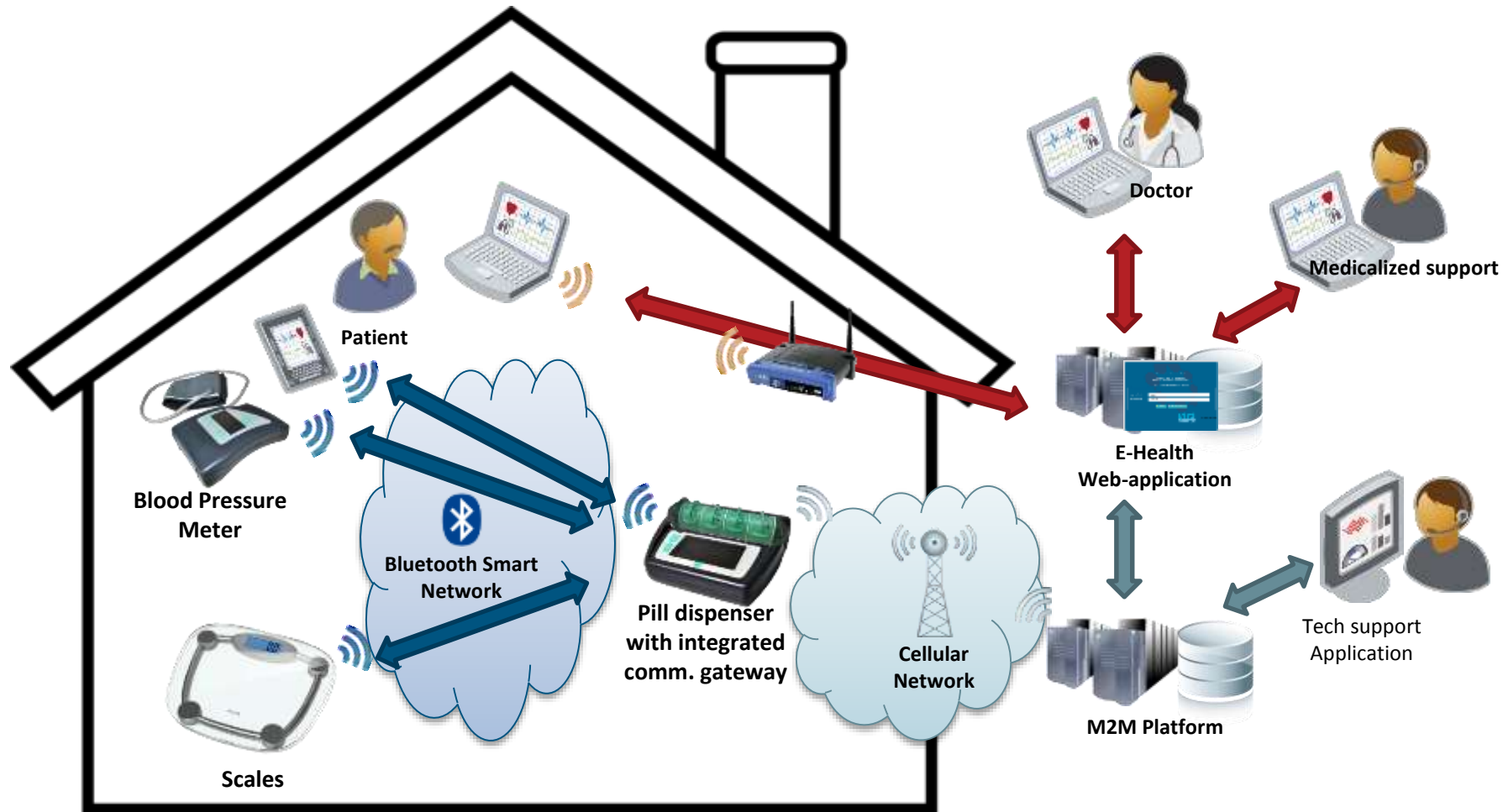ftp://ftp.onem2m.org/Work Programme/

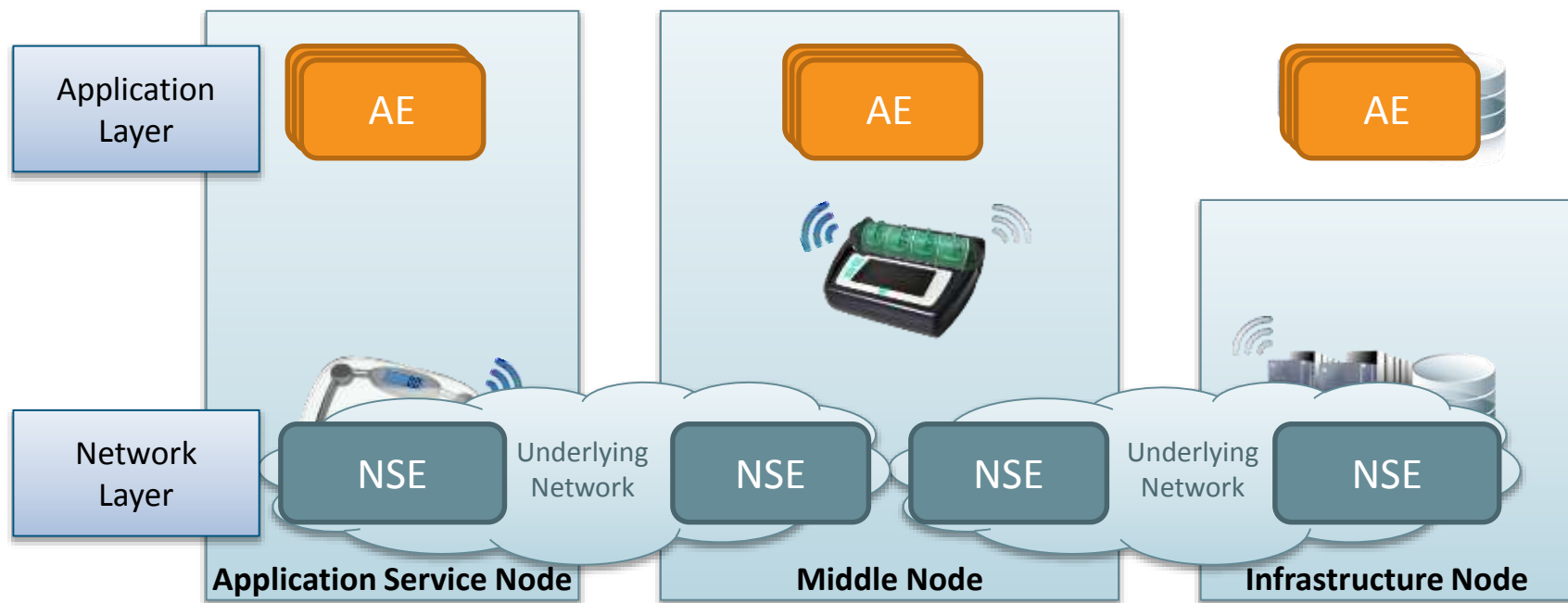# Use Cases & Requirements

# Example Scenario – E-Health

Architecture

Application Entity   Provides application logic for the end-to-end M2M solutions

Network Services Entity   Provides services to the CSEs besides the pure data transport

Node   Logical equivalent of a physical (or possibly virtualized, especially on the server side) device

Architecture

Reference Point One or more interfaces - Mca, Mcn, Mcc and Mcc' (between 2 service providers)

Common Services Entity Provides the set of "service functions" that are common to the M2M environments

Application Entity Provides application logic for the end-to-end M2M solutions

Network Services Entity Provides services to the CSEs besides the pure data transport

Node Logical equivalent of a physical (or possibly virtualized, especially on the server side) device

Information Modelling
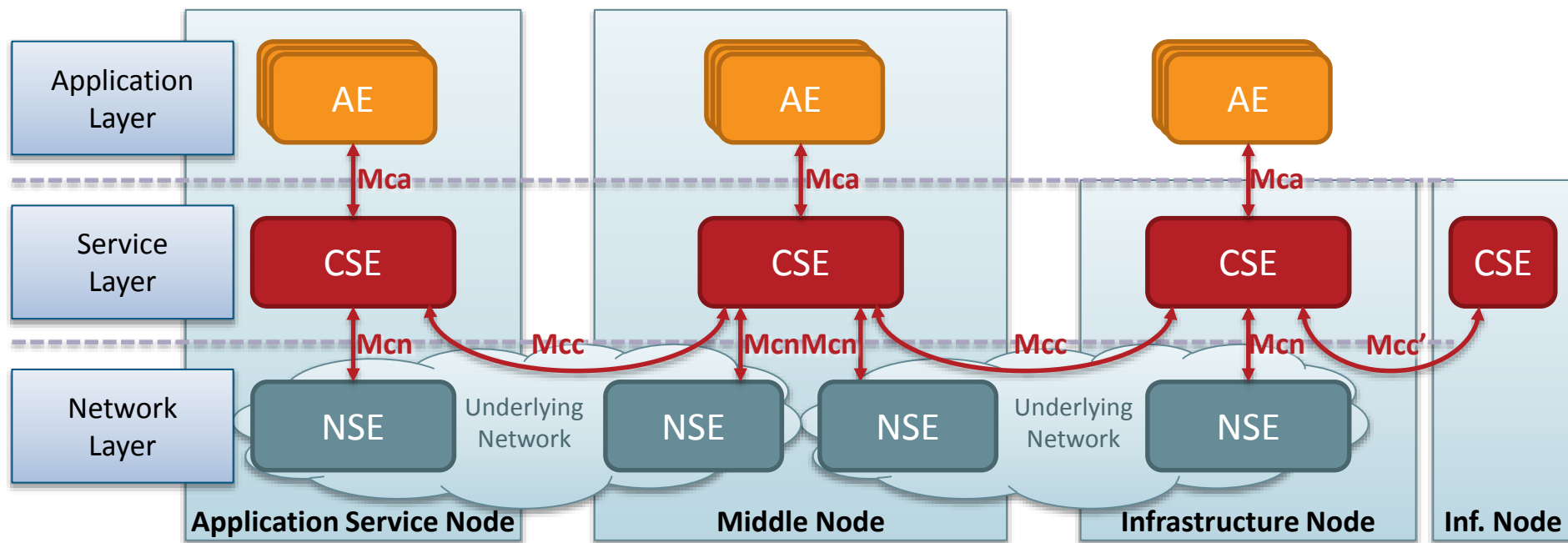
Resource-based information model

- Information is stored in the system as Resources
- A given Resource can be identified with a Uniform Resource Identifier
- A given Resource is of one of the defined Resource Types
- The Resource Type determines the semantics of the information in the Resource
- Resources can be Created, Read, Updated or Deleted to manipulate the information
- Resources are organized in a tree-like structure and connected by links
- Links either as the tree hierarchy or to another part or the tree
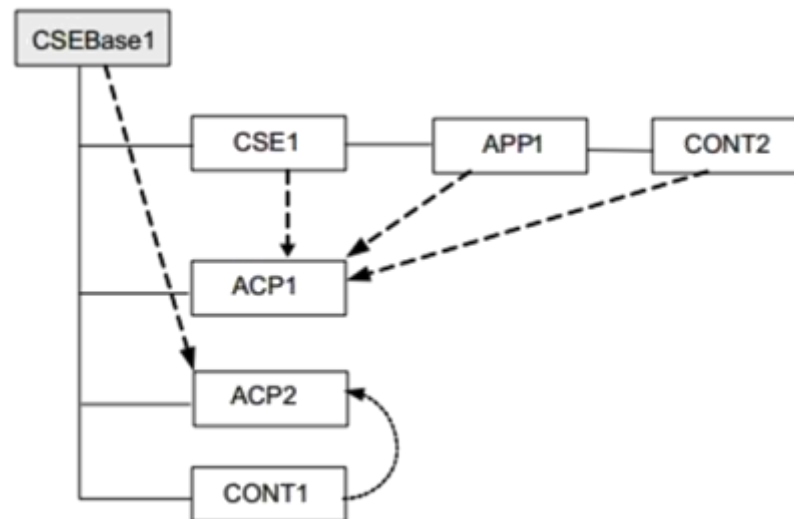
Resource Types & Flows

Defined resource types

- The System (nodes, CSEs, AEs…):   node, CSEBase, AE, mgmtObj…
- M2M Service subscriptions: m2mServiceSubscriptionProfile…
- Security: accessControlPolicy…
- Entity groups and memberships: group, members…
- Application data: container, contentInstance…
- Information dispatch and flows: subscription, delivery, request, schedule…
- Location services: locationPolicy…
- Service charging & accounting: statsConfig, eventConfig, statsCollect…
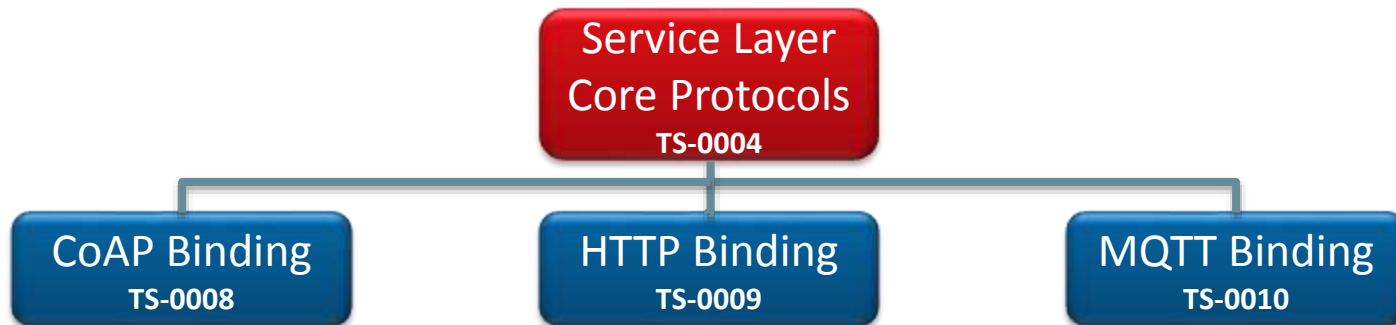
Defined communication schemes

- Direct communication and subscriptions/notifications
- Synchronous (blocking or non-blocking with regular polling) communications
- Asynchronous (non-blocking, with callback) communications

Communication Protocols

Reuse IP-based existing protocols

```
          Service Layer
          Core Protocols
            TS-0004

  CoAP Binding    HTTP Binding    MQTT Binding
    TS-0008         TS-0009         TS-0010
```

XML or JSON Content serialization

HTTP Example

REQUEST

GET http://provider.net/home/temperature HTTP/1.1
Host: provider.net
From: //provider.net/CSE-1234/WeatherApp42
X-M2M-RI: 56398096
Accept: application/onem2m-resource+json

RESPONSE

HTTP/1.1 200 OK
X-M2M-RI: 56398096
Content-Type: application/onem2m-resource+json
Content-Length: 107
{"typeOfContent":"application/json",
"encoding":1,
"content": "{'timestamp':1413405177000,'value':25.32}"
}

Security

Reuse existing mechanisms

Security Solutions
TS-0003

Enrolment

Provisioning/Configuration of the M2M System (Devices, Applications…)

Secure communications

Protocols (TLS/DTLS), credentials and authentication (PSK/PKI/MAF)

Access Control

Defined in accessControlPolicy resources
Which SUBJECT can perform which ACTIONS
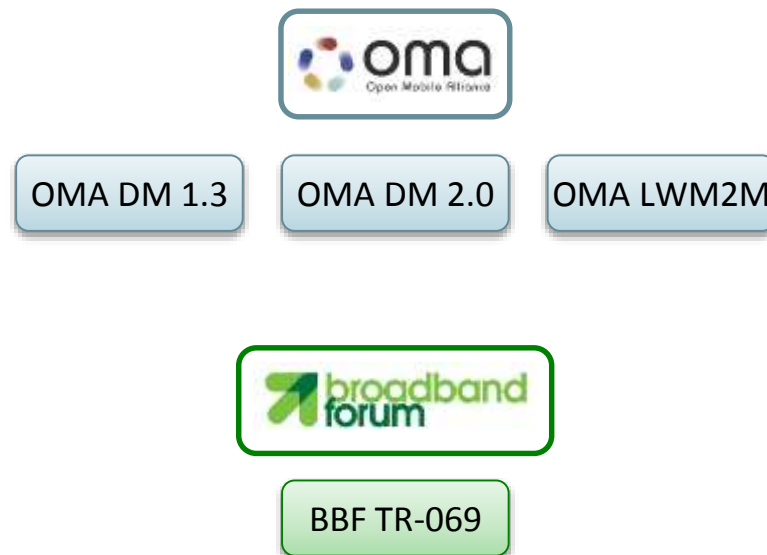on which OBJECT under which CIRCUMSTANCES
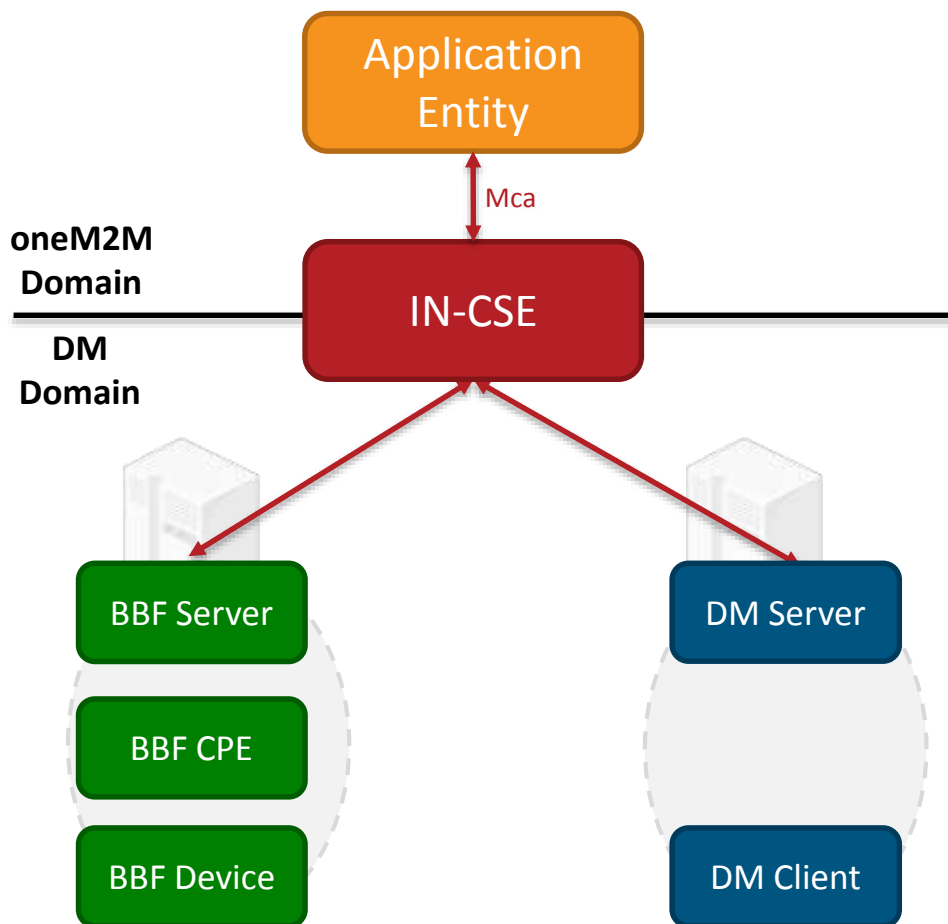
More details

in the oneM2M webinar#3
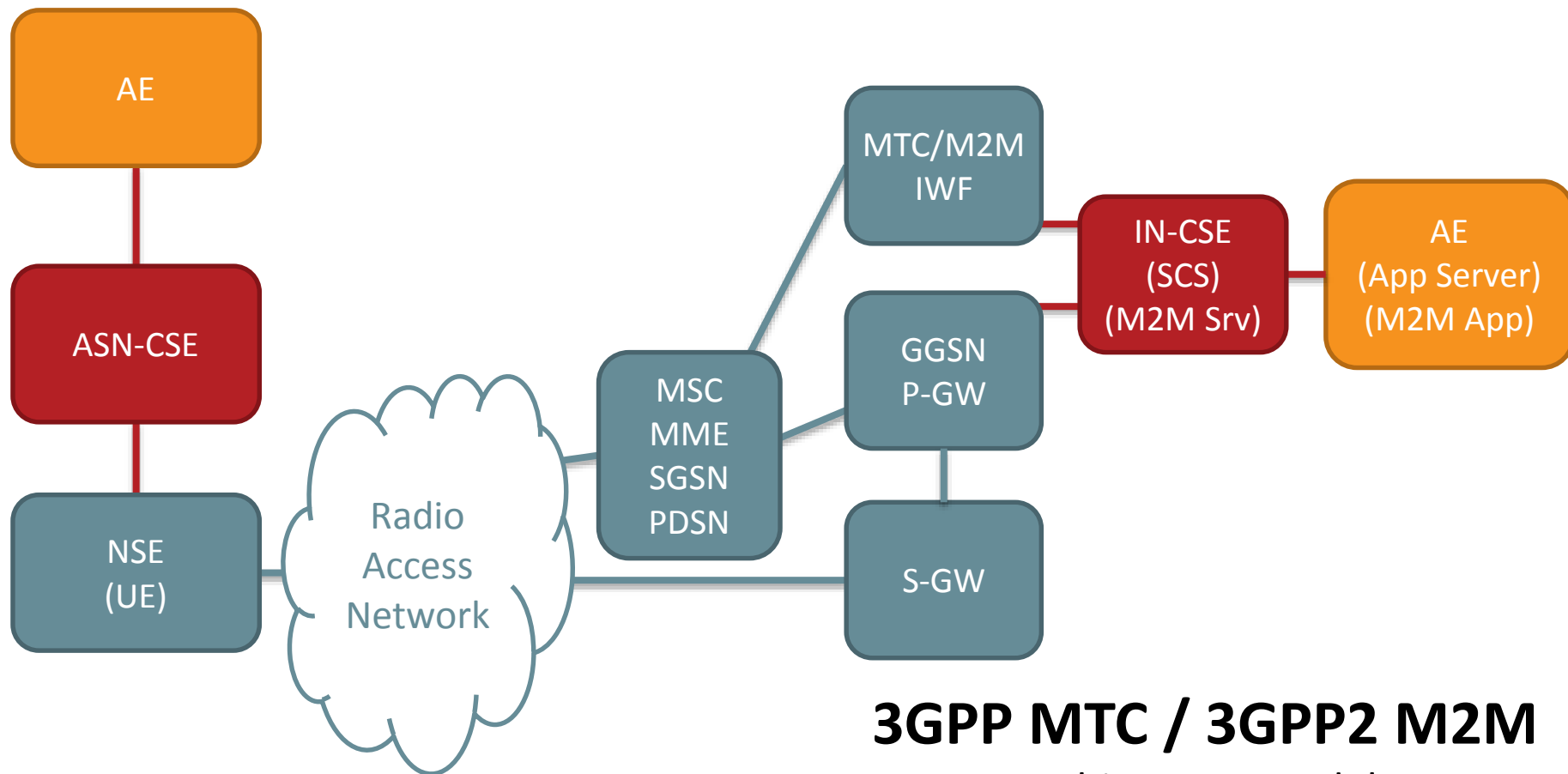November 14th 2014

Interworking – OMA & BBF

Reuse existing Device Management technologies

Interworking – 3GPP/3GPP2

3GPP MTC / 3GPP2 M2M
Architecture Models

Interworking – AllJoyn
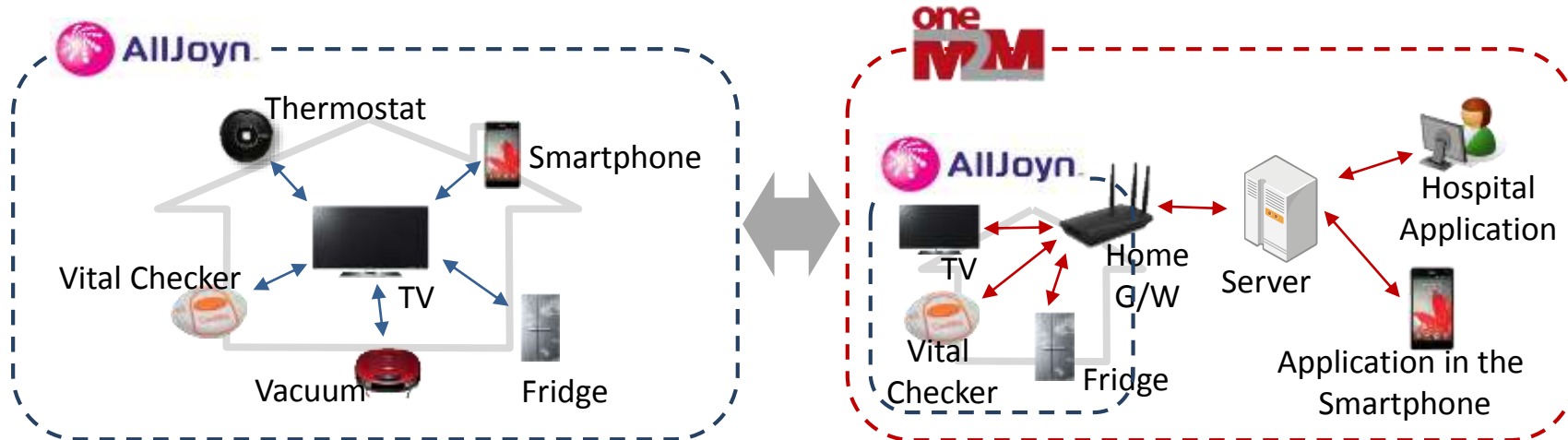
	AllJoyn	oneM2M
Network Architecture	Peer-to-Peer in LAN	Server-to-Client in WAN
API Style	RPC(RMI) API	Resource-based API
Discovery Style	Proactive Discovery	Passive Discovery

Join us for the next webinar

**Facing the Challenges
of M2M Security and Privacy**

by Philip Hawkes
Principal Engineer
at Qualcomm Incorporated

14 November 2014 at 1PM AEDT = 2AM UTC

http://www.onem2m.org/btchannel.cfm

Join us at the oneM2M showcase event

- OneM2M project partners, rationale and goals
- OneM2M Service Layer Specification release
- Showcase demos that demonstrate oneM2M "live"

9 December 2014, Sophia-Antipolis, France

(free of charge, but online registration is required)

http://www.onem2m.org/Showcase

Followed by the ETSI M2M workshop

Thank You!

Q&A