



# Welcome to the World of Standards



## **M2M INTEROPERABILITY DEMONSTRATIONS**

**Closing session**

Presented by Milan Zoric

for M2M Workshop, Sophia Antipolis, October 2011

# Main message from interoperability demonstrations



- Demos attracted very many (all?) Workshop participants
  - Companies providing demos pleased to have had such interested audience
  - Workshop participants pleased to have witnessed M2M equipment in action



# Facts to remember



- 5 comprehensive interoperability demos
- involving in fact more than 13 companies
- Smooth interactions with Plugtests™ service before and during the event
- The technical side worked
- The video from the demo is being edited and will be available shortly



# Future evolution



- Looking forward to having an even bigger set of demos in the M2M Workshop next year
  - Additional companies and application domains
  - Enhancements in highlighting M2M capabilities implemented
- Other opportunities to collectively demonstrate M2M solutions (other events and trade shows) to be considered
- Interoperability testing events and/or development of standardized M2M test specifications are to follow
- Consultations and discussions on M2M testing issues will proceed in TC M2M



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Thank you!



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## **CLOSING SESSION**

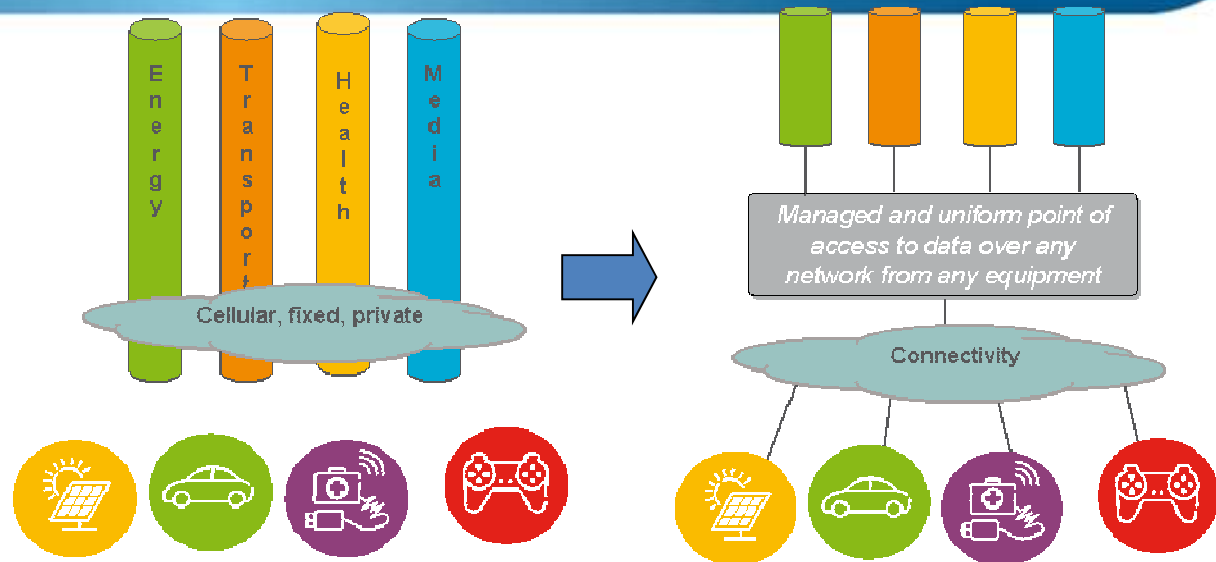
**Session title : Introducing M2M**  
Presented by Enrico Scarrone

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

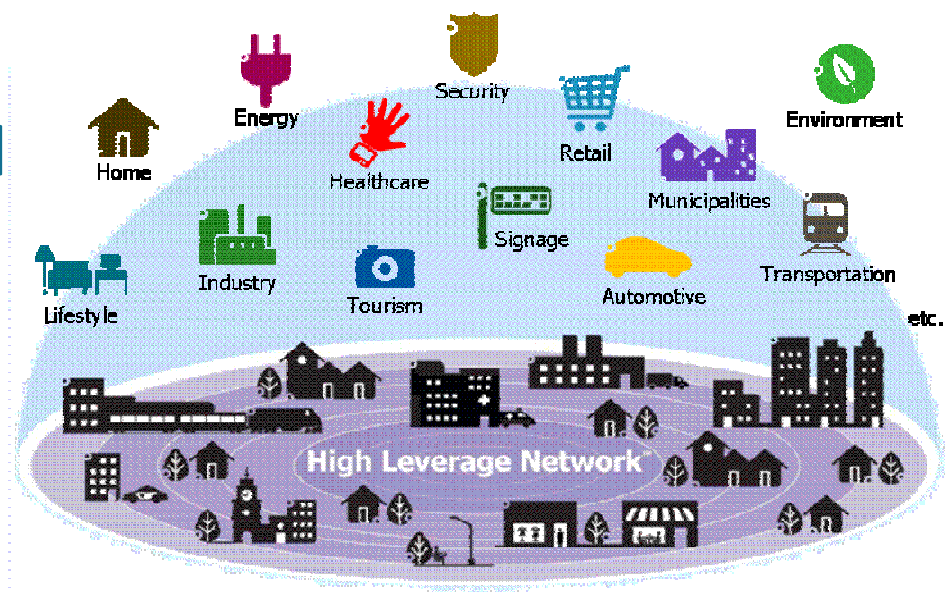
# Highlights from the Session



Form vertical solutions to Horizontal Multiservice Platform



M2M is a fundamental component of Internet of Things





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## **CLOSING SESSION**

**Session title : The ETSI M2M STANDARD**

Presented by Omar Elloumi

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

- ETSI M2M Standards Direction is at center of the transformation taking place in the market place as confirmed by the industry presentation (previous session):
  - Horizontal platform
    - Open API
    - Device Management
    - Security and privacy
    - Location
- ETSI M2M is the only available standard to date for such an horizontal platform
  - It is building on proven and industry wide accepted standards an technologies
    - OMA DM and TR069
    - IETF HTTP and CoAP
  - It works over any IP based network
- e2e picture is being addressed to allow bridging the gap with existing technology: e.g. ZigBee

- What appropriate charging mechanism for M2M Services (new charging paradigms)
- Link to OSS/BSS standards from bodies such as the TMF
- What motivation for the current installed base to move to such a platform
- ETSI M2M Platform is data structure agnostic, does it make sense to consider data interpretation as a means to add value (fusion, aggregation, etc)
- Reliability and resiliency
- The need for gateway to gateway communications
- Power-constrained devices/constrained networks
- Acceptability/adoption of the standard
- Link to industry alliances work

- Standards collaboration and consolidation is key!
  - Vertical
  - Telco oriented
- Aspects for consideration in R2
  - Charging
  - Link OSS/BSS in particular the TMF
  - Reliability and resiliency
  - Expand the scope of use case as a means to achieve multiservice
  - Consider use cases:
    - HGI use case on home energy management
    - NGMN market driven / new use cases pertaining to M2M
  - Further optimizations
    - Network resource usage
    - Constrained devices
    - Etc.

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## **CLOSING SESSION SUMMARY**

### **Feedback from Session 3 : M2M Cooperation.**

Presented by Session Chair; Joerg Swetina.

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

# Session 3 - M2M COOPERATION



- Introduction by chair (Joerg Swetina, NEC)
  - Short overview how external standards can interwork with ETSI M2M.
- Broadband Forum – Machine-to-Machine (M2M) solutions (Jason Walls, BBF)
  - TR-069 – CPE Wan Management Protocol - integrated in ETSI M2M system. Recently enhanced with Execution Environment support (OSGi, OMA ..). Management of non-TR-069 Devices.
  - Current M2M related activity: OD-278 (management plane), OD-282 (Control Plane)

- Management and provisioning of M2M devices for a connected world (Musa Unmehopa, OMA)
  - Device Management (OMA DM):
    - extended to Gateways and devices behind GWs
  - Converged Personal Network Service (CPNS)
  - Need for a lightweight protocol for M2M
    - support capability constrained M2M devices
  - OMA API Program (Network- and Device APIs)
    - access Management Objects supported by the OMA DM Client

- Interconnecting ZigBee & M2M Networks (Larry Taylor, ZigBee Alliance)
  - ZigBee as a wireless standard and a standard for application areas (Profiles for Smart Energy, Health Care ...)
  - mapping between ZigBee objects, commands & attributes to M2M resources (ETSI TS 102 966)
- Mobile Network Innovations for Machine Type Communications (Toon Norp, TNO)
  - 3GPP Release 11 Priority assigned to:
    - Numbers and addressing (including no E.164 and PS only)
    - Improvements of device triggering
    - Interfaces between MTC Server and mobile network
    - External identifiers

# Some Key Points



- Broadband Forum and OMA both will support management devices behind gateways
- ZigBee: Current activity of mapping between ZigBee objects, commands & attributes to M2M resources
- 3GPP: developing interface between MTC server and mobile network
- Can 3GPP handle devices that are rarely active to keep a context outside of 3GPP
- BBF is looking into M2M related activity in the control plane (OD-282). There seems to be potential overlap with ETSI M2M
- A lot of air interface standards exist but none are perfectly tailored to M2M
- ETSI M2M will in future need to rely on OMA and BBF for management purposes (e.g. devices behind gateways)
- Addressing vertical markets (e.g. via ZigBee energy profile): to what level – topological – syntactical – semantical – need standards for vertical market segments interwork with ETSI M2M ?

# Q&A Panel discussion



- Can 3GPP handle devices that are rarely active to keep a context outside of 3GPP ? → there are ideas but no consensus yet.
- A lot of air interface standards exist but none are perfectly tailored to M2M. Will there be one?  
→ Probably no. (would have to be aware that a lot of M2M devices are already on the market)
- Can there be cooperation on management across layers to handle interference (e.g. service layer doing low voltage measurement but network layer is unaware and uses high power radio transmission) ?  
→ TG28 is looking at it currently in the context of alarms.
- Does capillary networks interworking interface/proxy need to be specified by each involved SDO separately?  
→ There is the need of interworking device but it will have to be an implementation rather than a standard

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## **CLOSING SESSION SUMMARY**

### **Feedback from session 4 : M2M experiences**

Presented by Session Chair; Marylin Arndt

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

## Highlights from the Session 4.



- Large deployments based around M2M are coming, mainly driven by strong regulated markets (i.e. energy, Health).
- Slow down expected (business models and status of the economy).
- Experiences from early implementation and trials coming back into standardization now.
- Very good example of Japanese ecosystem.

# Key Issues Raised during Session 4



- The need for ...
  - standards and best practices
  - Telcos to find their way, becoming service providers and not only pipe providers.
- Missing ...
  - open interfaces and interoperability
  - consumer in the center of the loop
  - M2M used for the human being
- Verticals make money who needs horizontals?
  - horizontal a business opportunity to allow Telcos to get out of “pipe providers only” (lower costs, provide open APIs, modularity)
  - strong needs / ecosystem and strong regulatory constraints in some countries (ex 1 Japan : recovery after earthquake and tsunami, ex 2 : Germany and BSI security requirements for Smart grid)
  - horizontal approach will help access to open interfaces and APIs
  - Need of standards and best practices books

- Prime Applications for M2M
  - B2B2C Energy Smart Grids / Smart meters / Energy efficiency
  - B2C / Home
- Upcoming mandate on IoT
  - first step
  - look carefully to privacy / security concerns at each stage of the value chain
- M2M Standards consolidation is happening
  - strong need to put all the stakeholders around the table

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## SESSION 5

**Session title: M2M SERVICES**

Presented by Josef Blanz / Joachim Koss

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

## Highlights from the presentations

- Feasibility & value of e/mHealth shown in case studies/prove-of-concept
- e/mHealth will reduce health care cost and improve life quality
- Consortia defining detailed use cases / architectures / procedures
- Key challenges for e/mHealth:
  - Acceptance
  - Business Models for Reimbursement
  - Fragmentation
  - Lack of Standards & unclear regulatory framework
  - Convergence with horizontal M2M Service Layer
- Agriculture use cases impose quite special requirements on M2M
  - Need to monitor / control a diverse set of equipment and processes
  - Measure wide range of parameters, integrate accurate local weather info
  - Need to integrate with logistics management and market information
- Even though agriculture special, horizontal platform could be used

## Highlights from the presentations

- The pan-European launch of e-call and road toll systems needs a neutral and trusted application platform architecture, which will enable a large number of potential new services for automotive systems
- The introduction of trusted elements and services protects customers' privacy and payments
- A consortium was formed to develop, test and certify the pan-European interoperability management of end2end-managed M2M services and to operate all necessary trusted service elements and billing facilities
- Analysis how the ETSI M2M specification package can be utilized to build a "standards" based solution, results: quicker implementation of M2M solutions, interoperability of different technologies, facilitates fulfilling regulator's demands
- No single technology can fit the needs of all applications, interoperability and open standards available worldwide are the key
- DECT is a wireless access technology example characterized by easy installation/maintenance, technology maturity and economies of scale

- e/mHealth:
  - Acceptance is key, change of existing manual processes very difficult
  - Need to start verify TC M2M's horizontal M2M Service Layer for e/mHealth
- Agriculture:
  - Not managed like industrial environment, distributed, not technology affine, very limited investment possible, yet would benefit from M2M greatly
- Energy: Telco/utility clash, security solutions incoherent, fragmented
- Seamless integration of already deployed customer services into new M2M applications required
- Missing business structures in M2M area
- Many M2M applications are not trusted or secured
- Many communities are developing their own vertical M2M concepts than using best practice experiences and already available solutions  
Consolidation required to save resources

## e/mHealth

- Acceptance possible if added value / benefits versus status quo is evident
- Avoid further fragmentation, focus on putting use cases on available standards

## Agriculture

- Optimize level of automation, minimize interaction, focus on robustness.
- M2M SL could help in achieving the above goals

## General: Market and disseminate available & emerging standards

## Include potential users of M2M standards in the standardization process

## Focus on privacy and data protection

## Including already deployed M2M equipment in the M2M architecture

## Ensure easy upgradeability (new features, regulations, long product lifetime)

## **Consolidation** within and across market segments, standardization may serve as a consolidation platform



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## SESSION 6

# TELCO TECHNOLOGY ENABLES M2M

Presented by Raymond Forbes    Standards: **ETSI M2M Workshop** 25-26 October 2011

## Highlights from the presentations

### **M2M content & context data & metadata management**

Gilles Privat, Orange – France Telecom

### **Conclusions**

- Data-centric M2M : mid to high-level generic data management models :
  - sensors as database
  - sensors as context sources, with multistage fusion aggregation
  - assorted sensor metadata models

## Highlights from the presentations

### Conclusions (continued)

- Thing-centric M2M
  - physical things as primary entities addressed and modelled
  - for complex devices/appliances, hybrid state model with as relevant intermediary for monitoring and control
- Space-centric M2M
  - Global space context abstractions
  - may be modelled in a way similar to devices, with hybrid state abstraction

## LTE for Mobile Consumer Devices

Yuichi Morioka, Sony Europe Limited

- M2M market and applications
- Communications technologies for M2M
- Standards bodies working on M2M

## Conclusions

- M2M is a growth area, and operators around the globe are seeking a share
- Wireless communication technology is useful for M2M applications
- Wide Area Networks will enable ubiquitous connection for M2M
- Various standards bodies are addressing these problems
- 3GPP LTE is a promising standard for wireless M2M, attracting much attention

## **The SIM (r)evolution: secure M2M deployments and evolving market demands** Benoît Jouffrey, SIMalliance

### **Conclusions**

- **Security** : leverage one of the key assets of the SIM, a tamper-resistant hardware
- **Identity** : the thin-client approach carrying the subscription data, today and tomorrow
- For **Machines**: SIM adapted itself to the specificities of the m2m market (small is beautiful), with new form factors and new features.

### **Convergent Strategy for M2M Networks and Opportunities**

Bruno Tomás, Portugal Telecom

- Will New Network Technologies and Internet of Things concept lead to M2M massive deployments?
- What strategy and prioritization method for M2M potential applications in virtually limitless number of industries?
- Defining transversal and time phased requirements for the following years

## Highlights from the Session 6



- Gilles of Orange told us about the need for data model to encourage value added services?
- Yuichi of Sony provided examples of M2M applications from the consumer devices world, and how the 3GPP LTE technology can meet many of the requirements for M2M.
- Benoit of the SIMalliance expressed thoughts on specific SIM needs and solutions for M2M.
- Bruno of Portugal Telecom presented a convergent strategy for M2M.

## Key Issues Raised during Session 6



- Management of large amounts of data from M2M will be a challenge.
- Operators seek to provides M2M service offerings, why not through an M2M apps store?
- Need for low cost LTE for some M2M services or savings from mass market?
- M2M form factor is important to the M2M market.
- SIMs are inherently secure and can carry functionality.
- Embedded SIM impact on handheld devices (phones)?



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## **CLOSING SESSION**

**Session title : Wrap up and Conclusions**

Presented by David Boswarthick , *ETSI M2M Technical Officer.*

M2M, from Standards to Implementation. 26<sup>th</sup> – 27<sup>th</sup> October 2011

# Highlights from the workshop



- ETSI and M2M are connecting more and more people through such workshops (+230 H2H).
- Moved beyond the M2M promise of things to come of the 2010 workshop, to the delivery of the first set of end to end M2M standards on the market.
- 5 live demos of prototypes based to some extent upon M2M specifications with over 13 companies involved.
- Wide range of participants to the workshop, with very precise questions more related to potential implementation issues than in previous events.

# Some key issues raised in the workshop



- Awareness of TC M2M activities, some key vertical areas are not aware.
- Specific example of eHealth, many standards, do not re-invent more.
- Security of data, and communication is primordial. Privacy is a concern.
- How will M2M services be monetized in the future (mechanisms and offer)? Charging for some services may scare off potential users – care needed.
- With the “many Billions” scenario how do we plan for the future to avoid network overload?
- Evolution of the M2M SIM, and the management of very large numbers of SIMs will be a challenge, standards will help, (ETSI M2M/SCP).
- 2G vs 3G vs Dual mode devices, what are the operators plans?
- Need for “structure in the value chain” vs “competition and innovation”.
- Challenge to avoid proprietary solutions running away with the market, and creating a world of bit pipes. Standards will help.

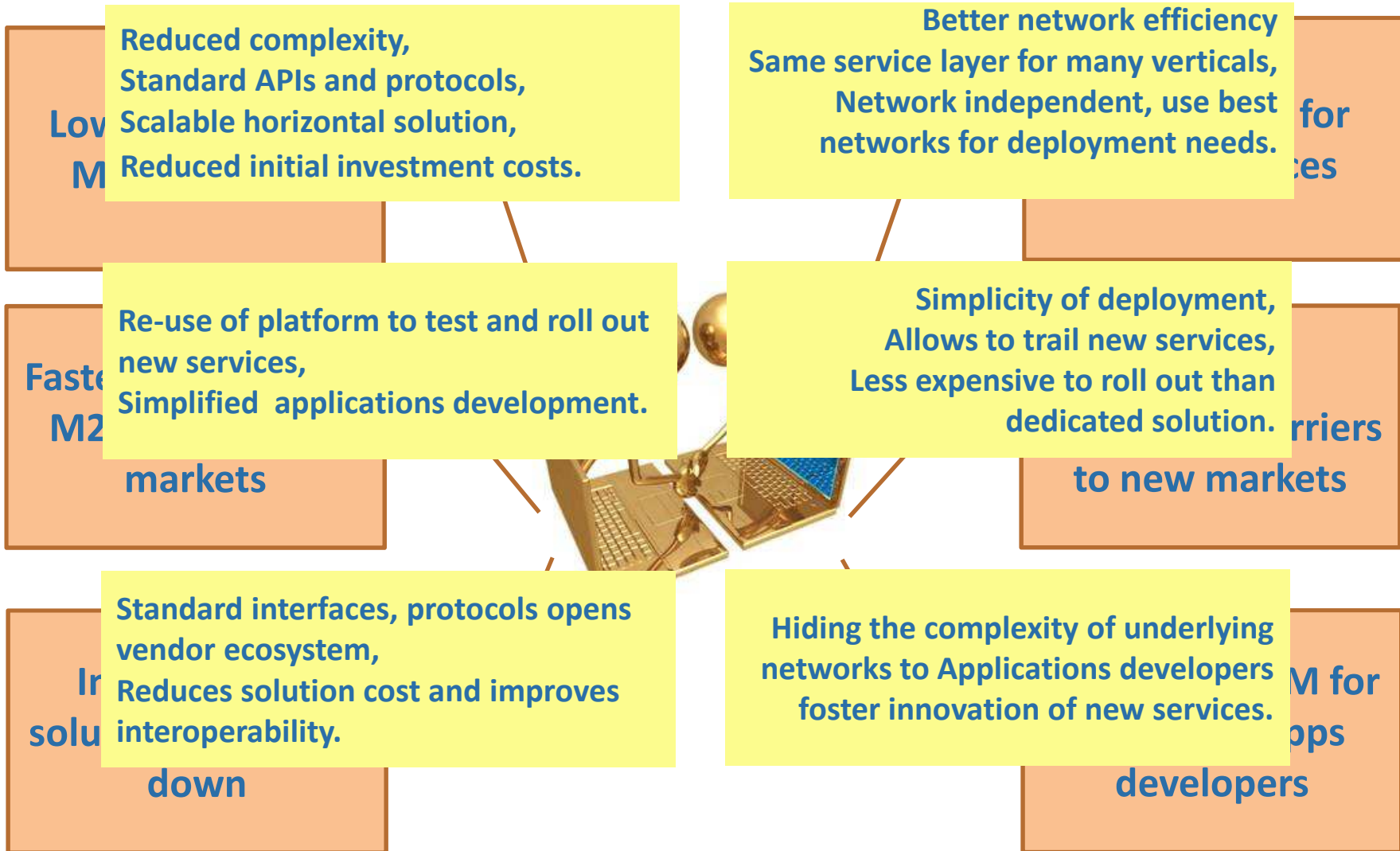
- Application of M2M service layered approach to the ICT elements of Smart Metering and Smart Grids.
- Opening of ETSI M2M Release 2, input from all industrial players welcomed.
- Feedback from industry into standards (Rel-1 / Rel-2) as products are tested / rolled out.
- More M2M scenarios and use cases, M2M platform being applied to more 'vertical' domains.
- Sharing of use cases between standards groups.

# Looking to the Future of TC M2M



- M2M Standards groups are converging and cooperating more than ever.
- Need one global M2M standard, why not start from work done in ETSI?
- Opportunity for interoperability testing and multi-vendor Plugtest(s) in 2012.
- Closer links between innovative R&D projects and formal standards making.
- Upcoming mandate on IoT, M2M is a key element, but not the only one.

# Value of a standardized horizontal M2M service layer



- Thanks to all participants for a vibrant and dynamic workshop.
- If you are interested in making the M2M standard, come to ETSI and participate!
- See you again in M2M Workshop in 2012, same date, same place. <Focus on practical experience, and involvement from the various market segments>