M2M Standardisation: Needs, Challenges and Priorities from an Orange perspective

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summary

1 n M2M : Definitions and Ecosystem

2 n M2M : System Architecture

3 n M2M Communications : Standardization Requirements

4 n M2M Applications : Standardization Requirements

5 n Conclusions : Propositions to Unlock the Future

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M2M : Definitions and Ecosystem

Internet Revolution in 3 Phases

- Internet

1990-2000

Connecting Places

- Mobile Internet

Connecting People

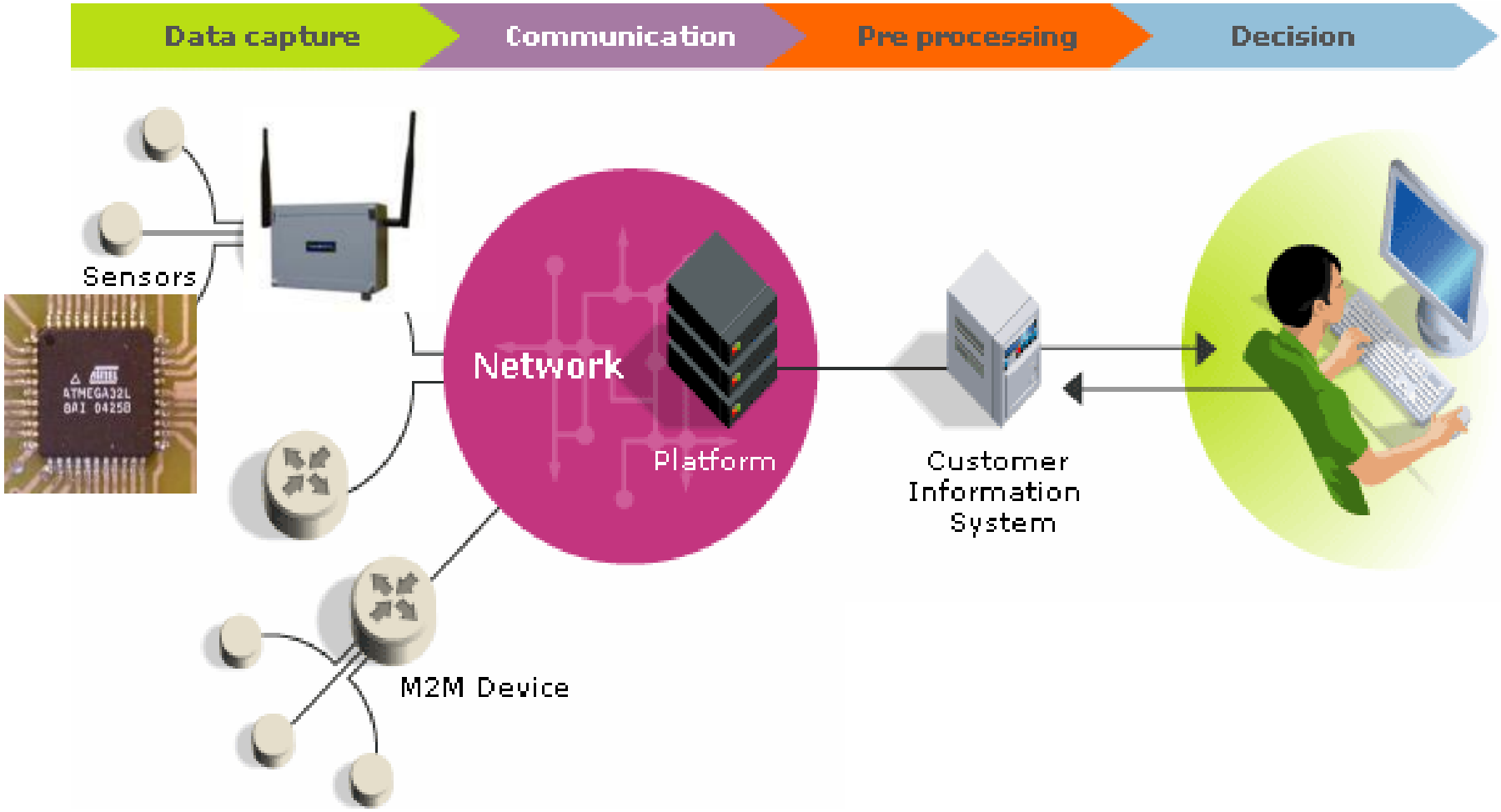
2000-2005

2005-201x

Connecting Things

- **Internet of things**
- **Pervasive Internet**
- **Ubiquitous Com**
- **M2M**

M2M Technical definition



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M2M : System Architecture

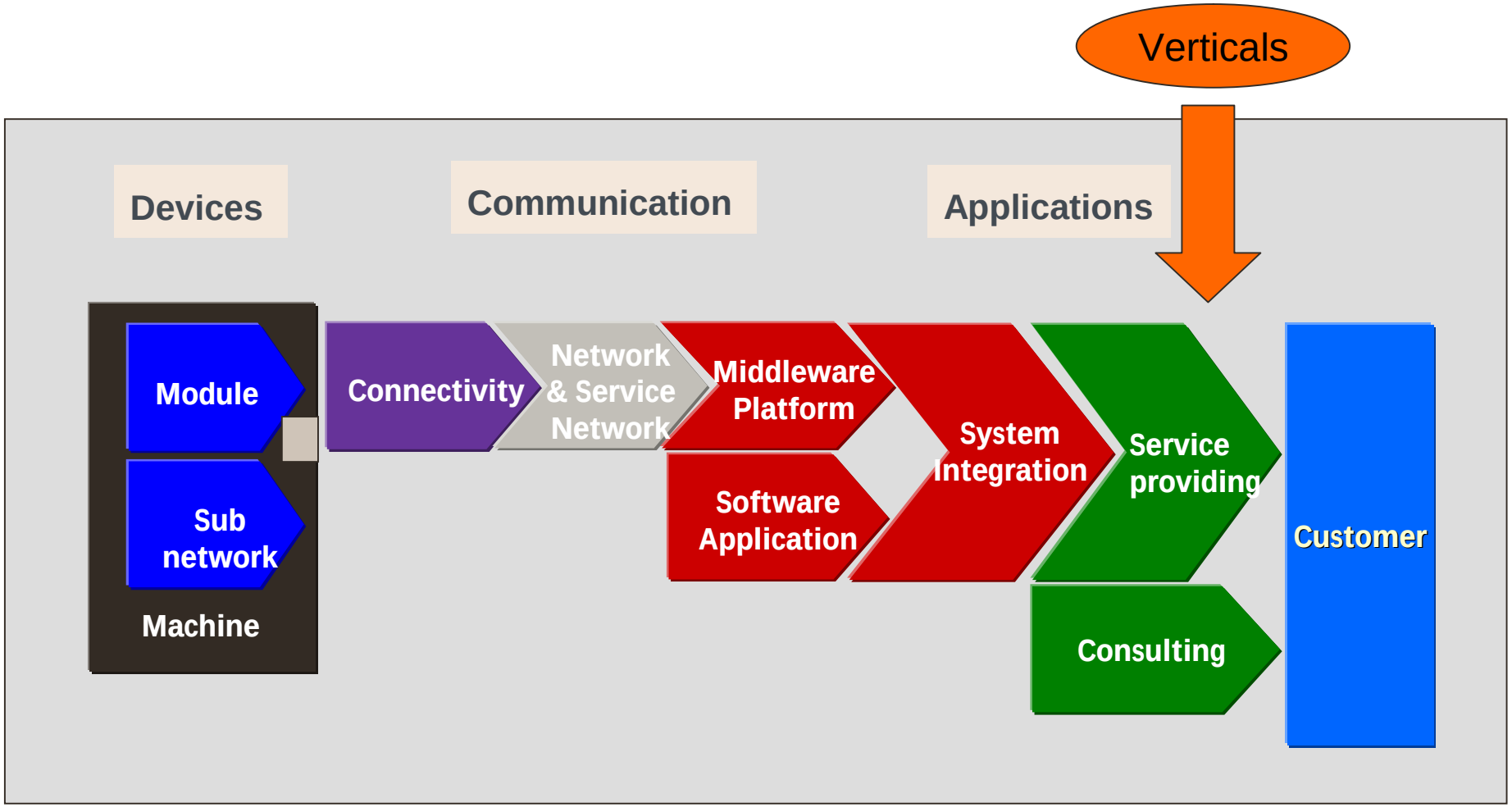
m2m communication

- m2m solutions are based on building blocks from the telecom, IT and electronics universe
- they often have to take into account legacy systems and must be designed for long life times
- additional complexity through multiplicity of network technologies involved, the varying requirements of the M2M applications and multitude of actors
- first difficulty: identify a common architecture

m2m market

- market for technical solutions concerning M2M is very fragmented
- multitude of technical solutions and absence or fragmentation of standardization activities result in slow development of the market
- Standardization can be identified as a key enabler for the defragmentation and thus the development of the market

M2M Building Blocks in the Value Chain



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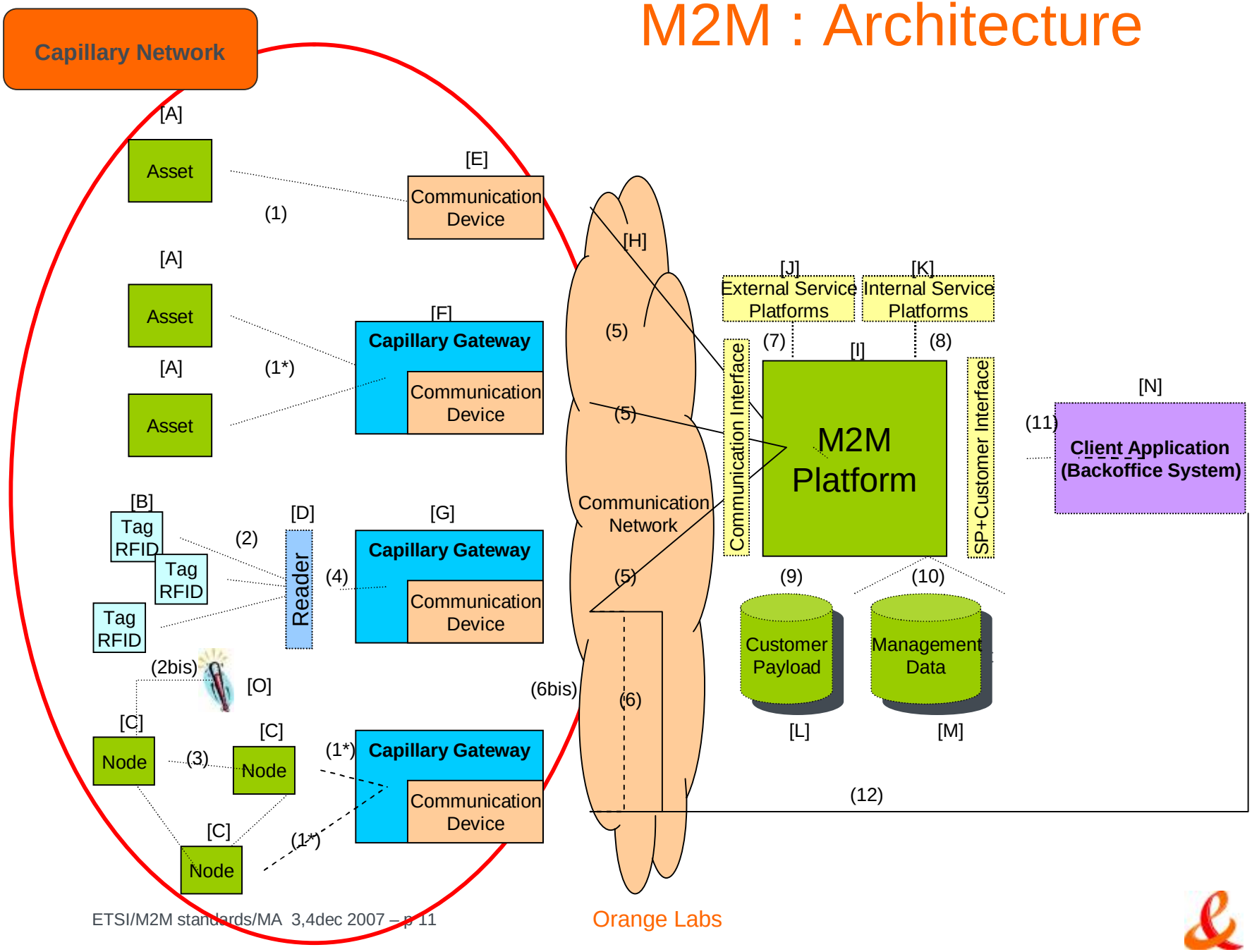
M2M System Architecture

- first difficulty: agree on a common architecture to identify standardization requirements

- And defining specifc M2M access sub networks named capillary networks

M2M : Architecture



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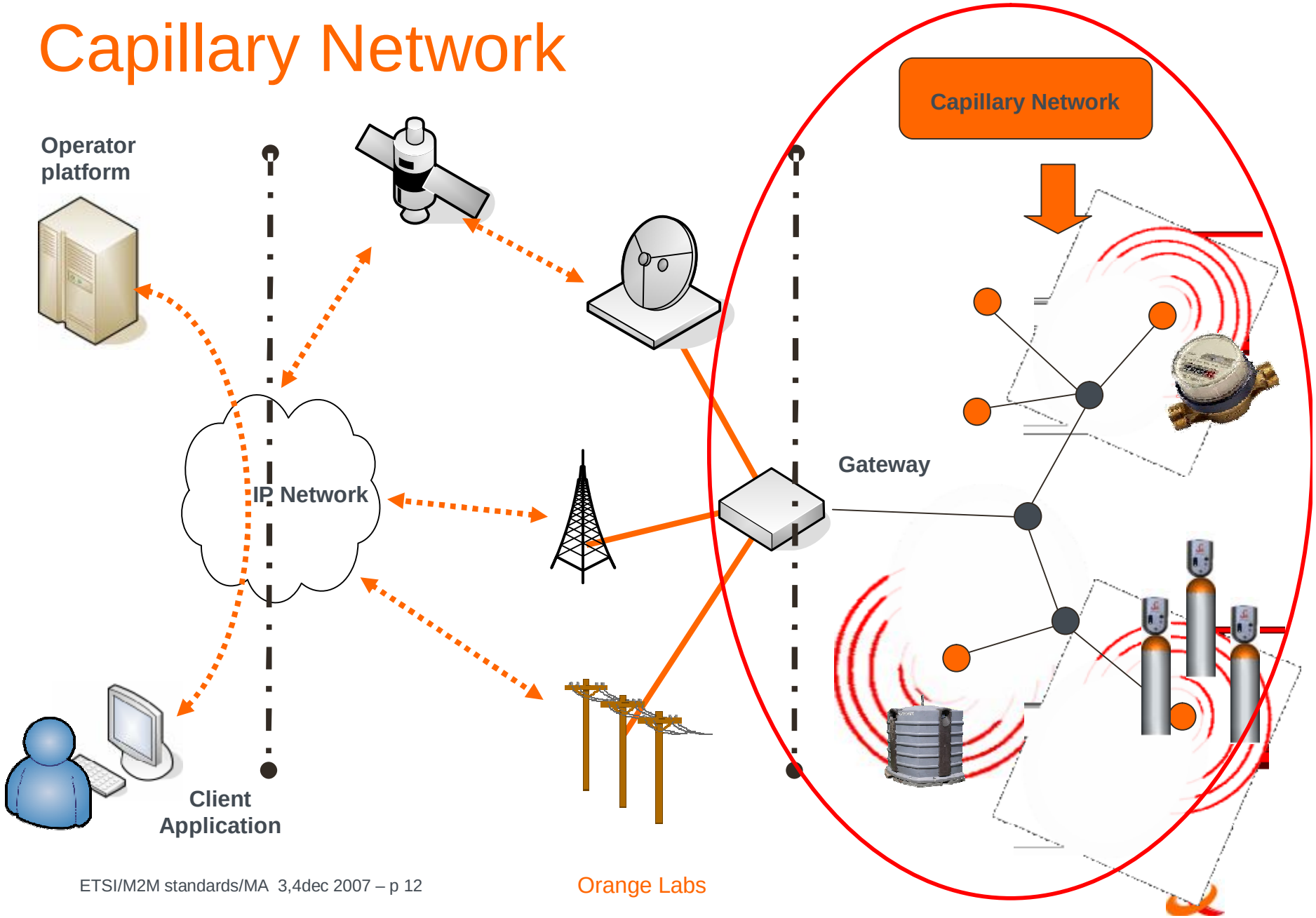
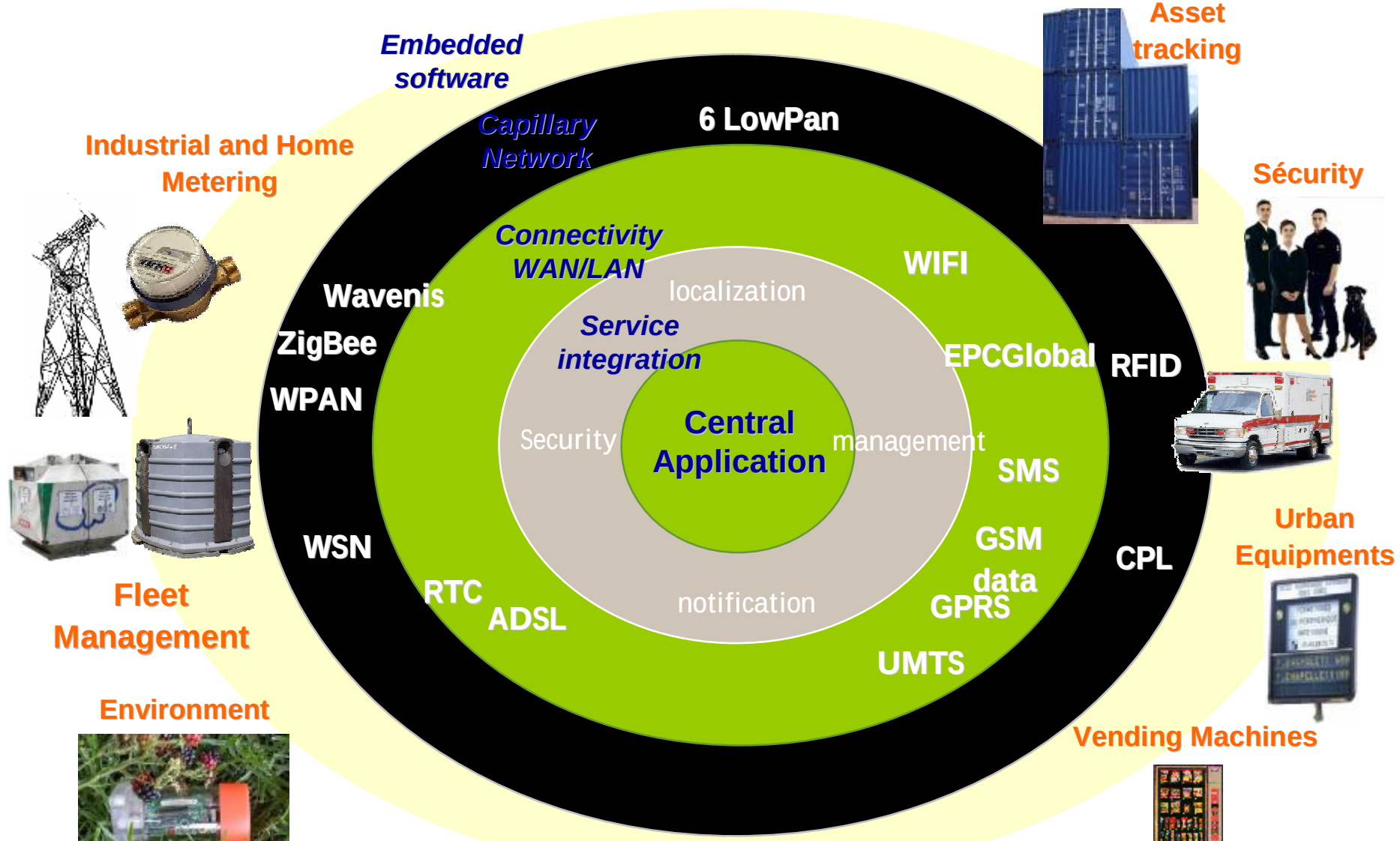
Capillary Network



M2M : Sectors and Services



Standardization and Verticals

Sectors	Supply Chain	Housing	Buildings	Industry	Transport	Commerce	Health	Airline Industry	Utilities
Type of service	Tracability	Home Automation	Building Automation	Equipe-ment Monito-ring	Fleet	Vending Machine	Desease Monito-ring	Bagage Tracking	Automated Meter reading
Vertical organization and standards	EPC Global GS1 IUT-T 3GPP	Wavenis	Zigbee Alliiance, IETF		GST Telematics Forum	European Vending Association	Continua	IATA	
Protocol type / standard	ONS JCA-NID SA1	IO Control	Modbus, Racnet, Lonbus 6 LowPan	Modbus, …	Bus Can, FMS				

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M2M Communications : Standardization Requirements

M2M communication – introduction

- existing communication networks are already well standardized but not specifically with M2M applications in mind
- M2M solutions are based on multiple networks, e.g. fleet or container management using mobile and satellite networks
- Some applications require long-term visibility about availability in 10 to 15 years
- other particularities include absence of human users, diversity of applications and associated requirements

M2M communication – standardization needs

- the interworking between capillary networks (e.g. Zigbee) and WANs (e.g. mobile networks)
- the addressing of machines and devices, independently of their current position in the M2M architecture and the communication network used
- adaptation of existing solutions to resource constraint devices (energy consumption, processing power, ….)
- network must be capable of providing service levels appropriate for a given M2M application (high priority vs. low priority transmission)
- scalability of networks to answer M2M needs

M2M communication – existing activities into standards organizations

- 3GPP SA1 has started to identify specific network requirements for M2M
  - simplify charging for M2M
  - addressing mechanisms for M2M: do machines require an MSISDN?
  - questions of Denial-of-Service and security
  - SIM and subscription handing
  - etc.

- SensorLogic and BitXML propose (proprietary) protocols dedicated to M2M in an open-source environment

- ITU-T published a report on the "Internet of Things" and hosted a workshop on "Networked RFID" in 2007.
- EPC Global launched a call on ONS routing and naming

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Application layer – standardization requirements

Application layer requirements

Other needs for standardization appear now for :

- The Gateways with IP networks
- Protocols for machine remote management (proprietary at the moment)
- Security / Identification / Protection / qOS

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Conclusions : Propositions to Unlock the Future.

How to Unlock the Future ?

- Key Role of Telcos and Integrators : Vertical Partnerships with Industry Specific Players
  - Fleet, Health (distant monitoring), Equipment Monitoring, Video Monitoring , Home automation remote control…
- Why ?
  - To Make it Easy to Develop For All
  - Hide Network heterogeneity and complexity of historical proprietary solutions
- Integrating M2M into he NGN (Next Generation Network)
  - Acceptability, Usages
  - qOS
  - Security, Trustability

Axes of progress

- Capillary Networks :
  - **Energy Savings Protocols** for Capillary Networks
  - Develop Open Interfaces (**APIs**) with heterogeneous Access Networks : Universal gateways
  - Propose Methods for **Heterogeneous Networks Management**
  - End to End **IP Networks**
  - Integrate RFID communications
- M2M Applications :
  - Objects **Naming**
  - **Addressing** objects
  - Defining **semantic** characteristics for the objects (list of parameters defining the object independant of the context, and of the Acces Network)

conclusion

- in order to defragment the market and make M2M progress, standardization is a key enabler
- however, standardization in the domain of M2M is very fragmented by vertical applications
- a **global approach to M2M standardization** seems the most appropriate way to tackle the issue

à Let's Work Together


Thank you !
Questions ?