M2M IWG

Eclipse, M2M and the Internet of Things

Overview

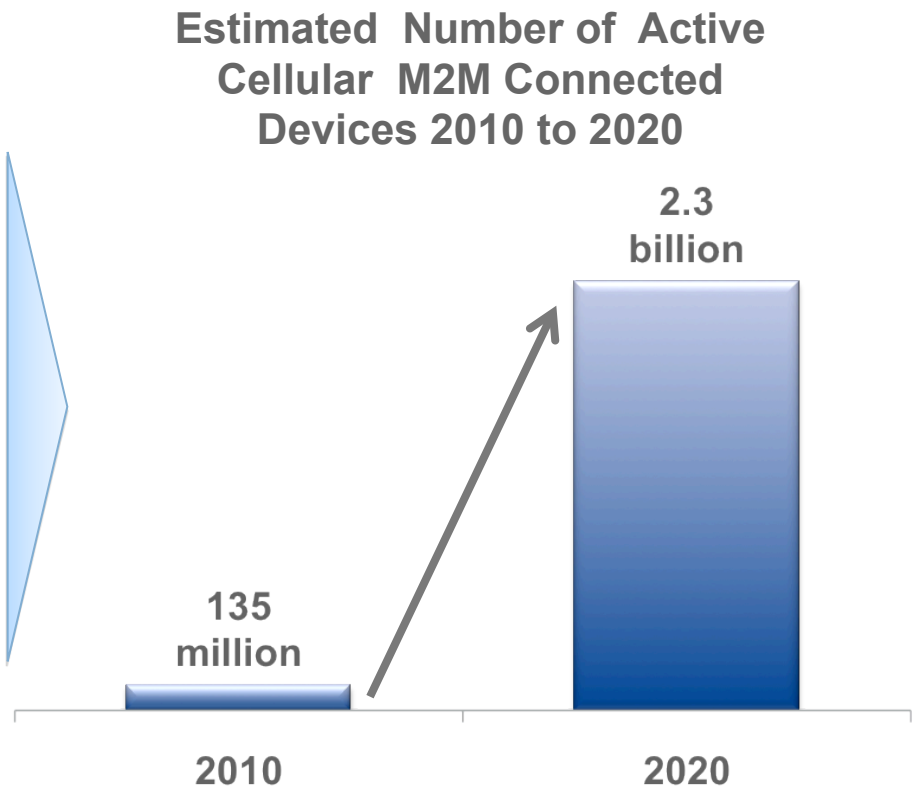
M2M?

"Technology that supports wired or wireless communication between machines." *(TechTarget)*

M2M Market Opportunity

Key Trends

1. New connected devices, applications and services
2. Lower system costs
3. Simplified development
4. Network operator focus and investment



Source: Machina Research, July 2011

However…

- **The market is fragmented**
  - Hardware, software, protocols…
    all different, independent
  - Lack of integration…
    between devices, to enterprise systems

- **M2M development is complex**
  - Many different skills required…
    Hardware, Embedded, IT network, Telecom, web
  - No common architectural guidelines

- **Current options are closed**
  - Monolithic solutions…
    device specific, app specific, market specific
  - Proprietary SDKs, protocols, potential vendor lock-in

The M2M Market

B2B Market Segmentation / Devices

Single Purpose / Single Service M2M Devices

- Lowest cost per node
- Single purpose devices
- Performance optimized coding
- Embedded approach necessary

Multi Purpose / Multi Service M2M Devices

- Lowest cost per service
- Multi service systems / gateways
- Abstracted coding (Java, OSGi, Lua)
- IT centric approach feasible

The Internet of Things

Technology Implementation Challenges

Goal

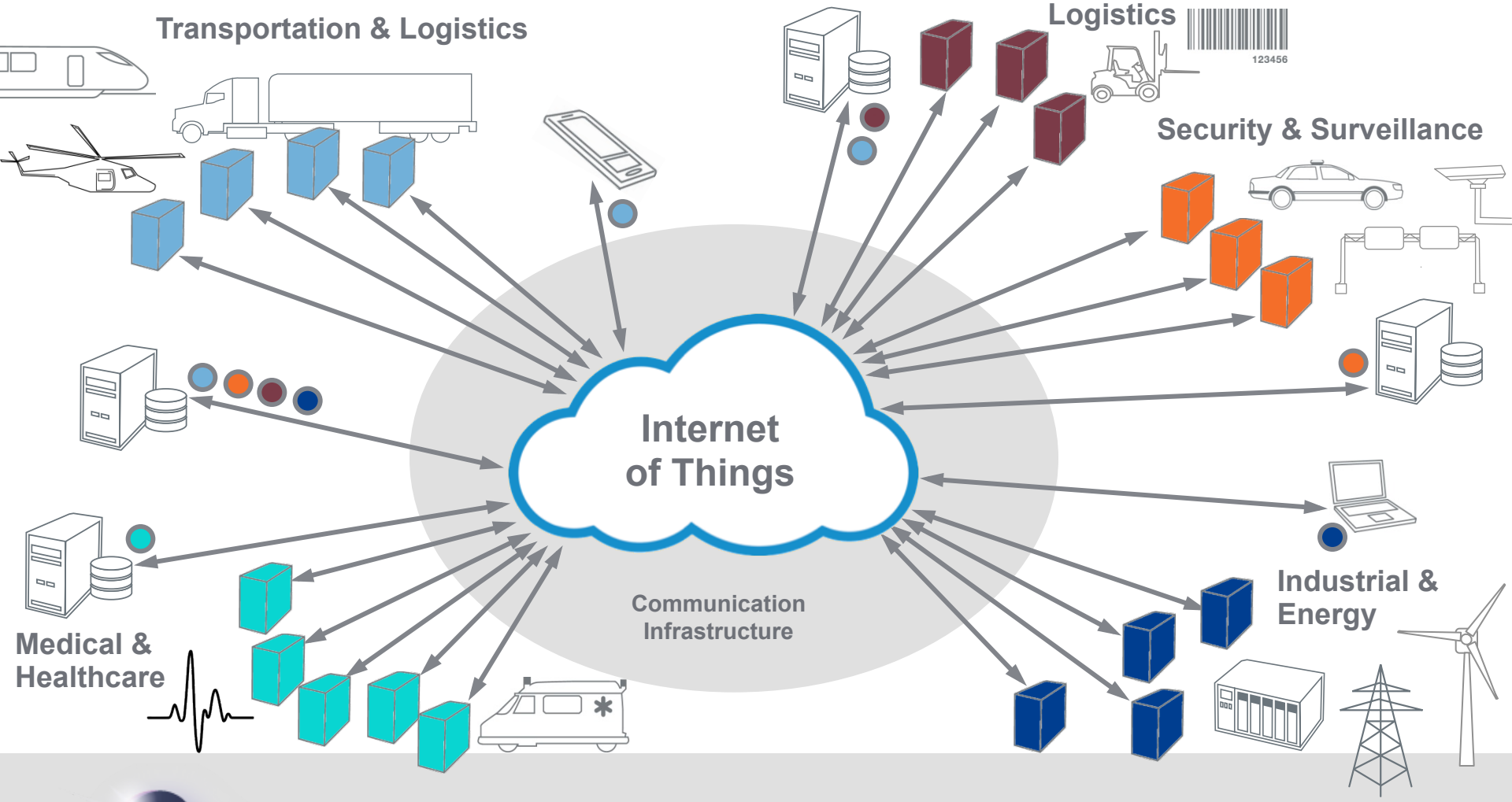
- Decoupling Producer/ Consumer implementations
- Adoption of open, IoT focused message transports
- IT and developer centric application frameworks & tooling
- Cost effective, agile, and low power hardware platforms
- Public/private cloud deployment infrastructures
- Scaling beyond single solutions

Result

- Many to many, not one to one
- Efficient, bidirectional, QoS, payload agnostic
- Tools for the development community
- Flexibility in device options
- Zero config deployment
- Interconnecting platforms

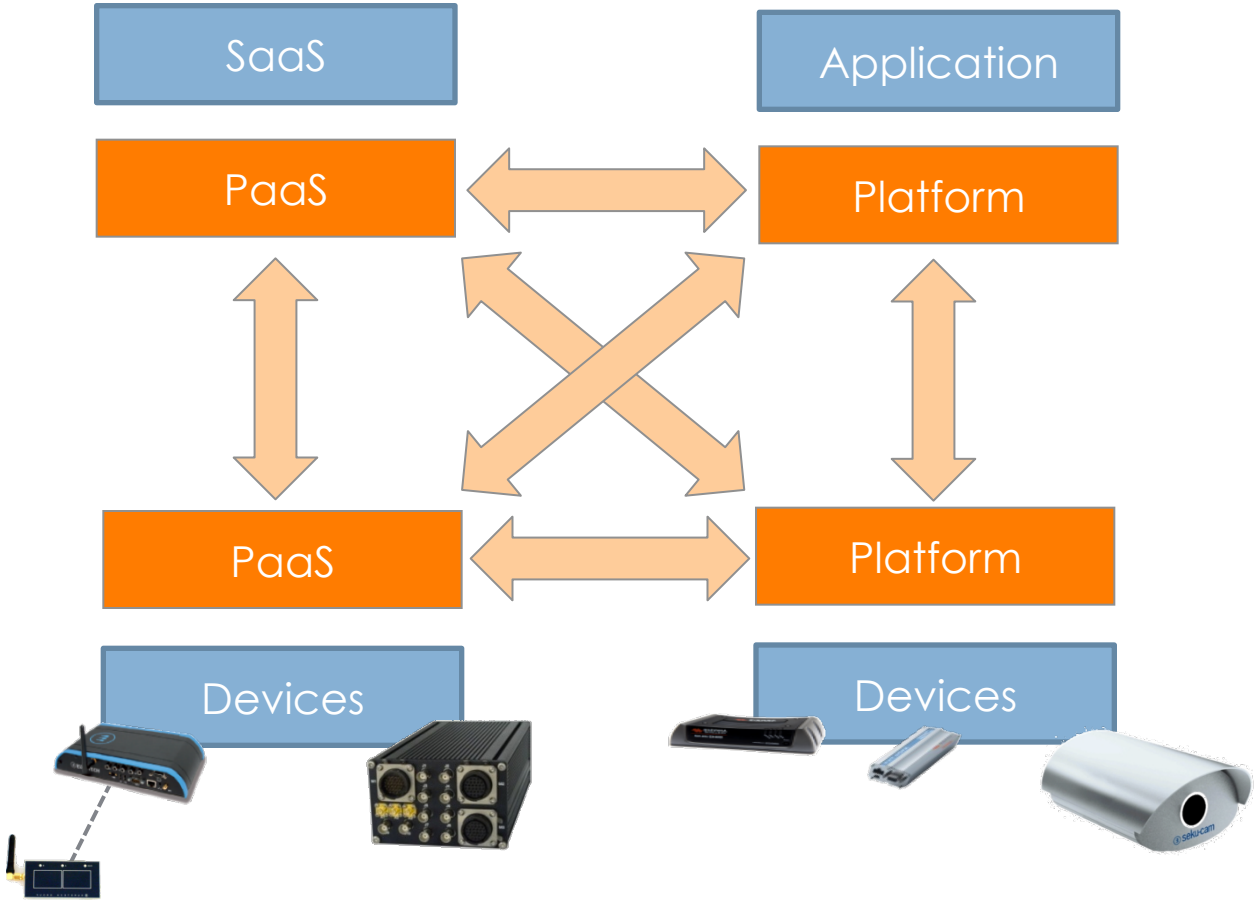
IoT – Integrated Solutions

Public/Private Cloud Deployment Infrastructures



IoT - Scaling M2M Solutions

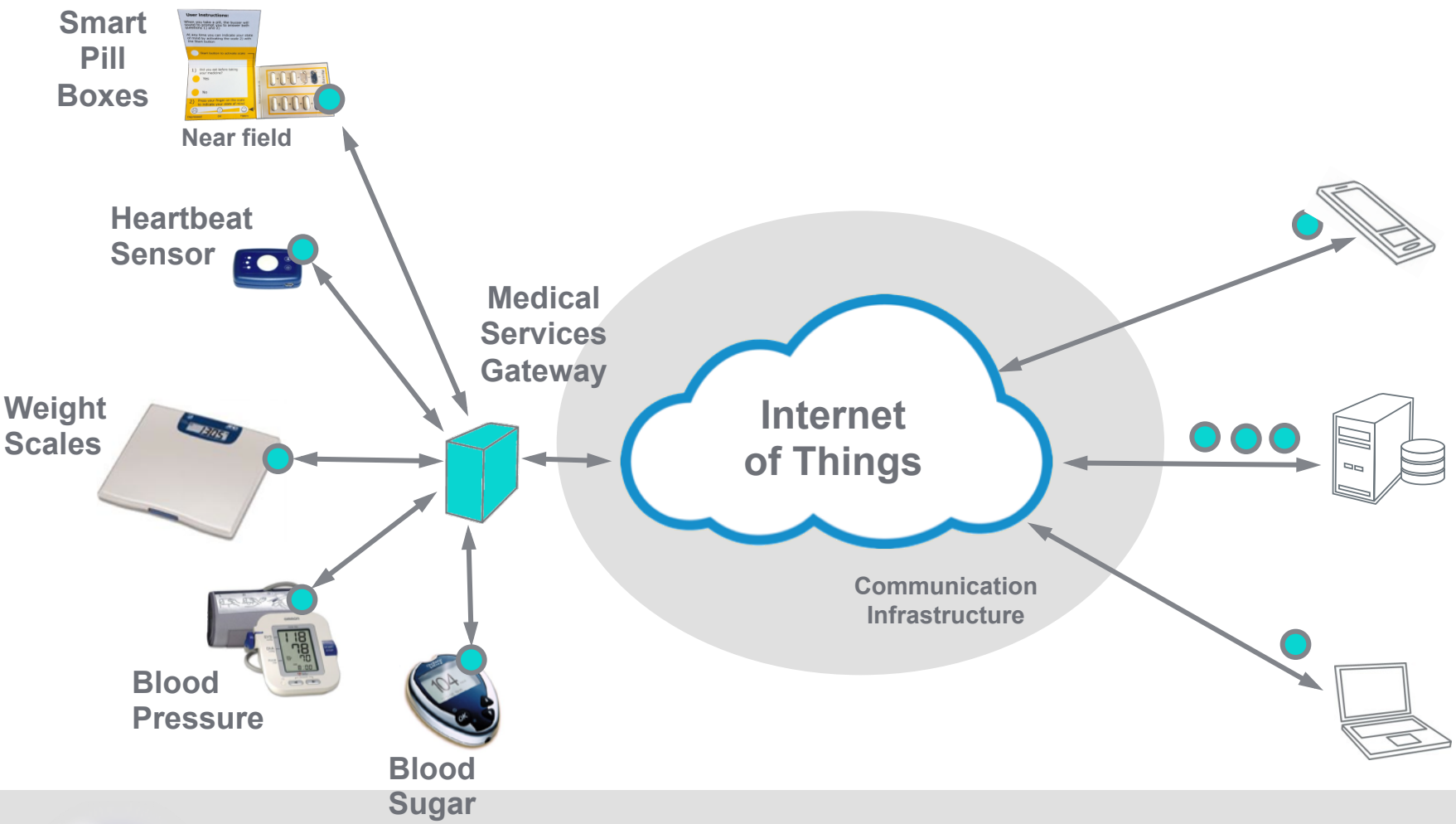
Connecting Platforms – Why Standardization Matters



USE CASES

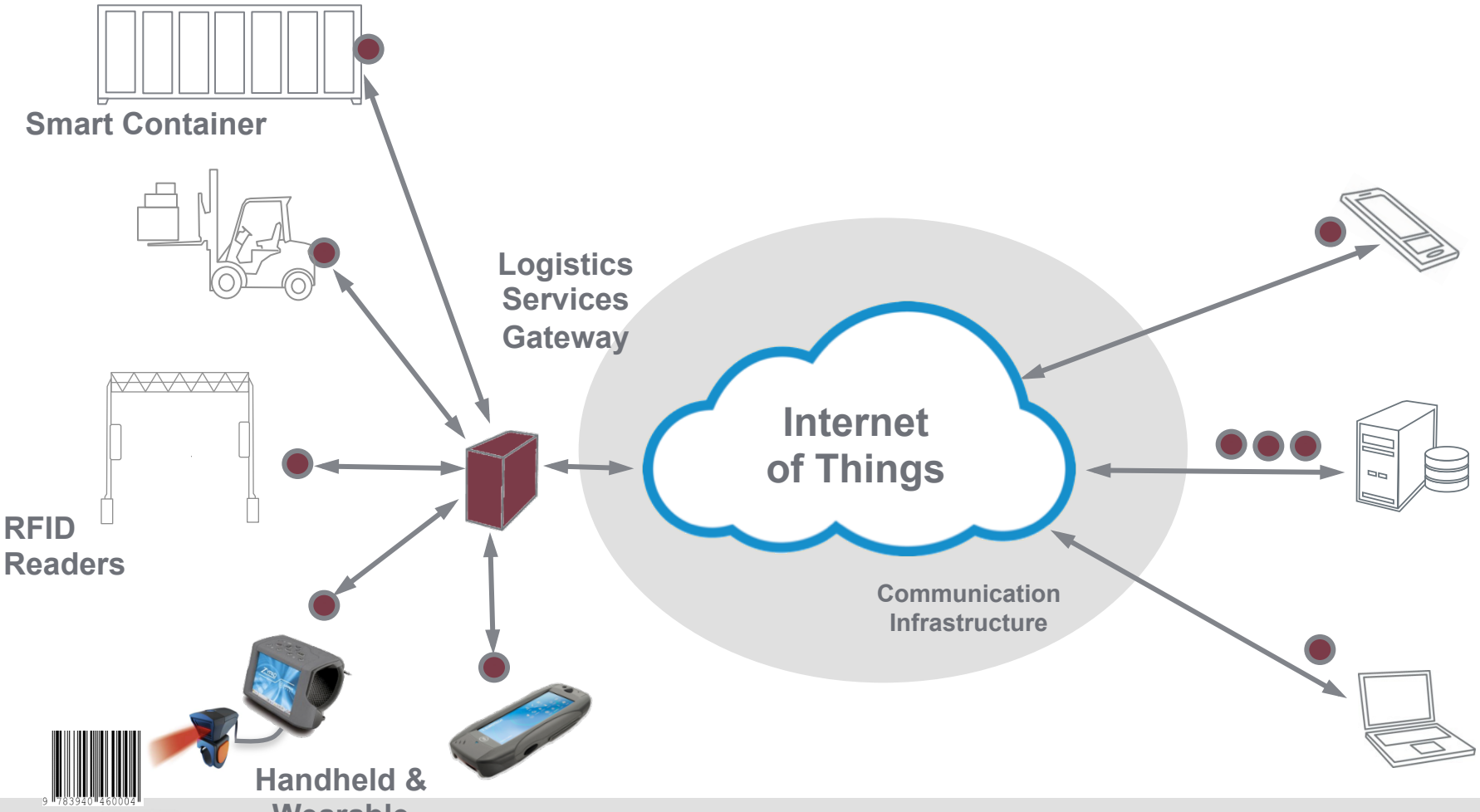
Vertical Market Application Scenarios

Medical Services Gateway



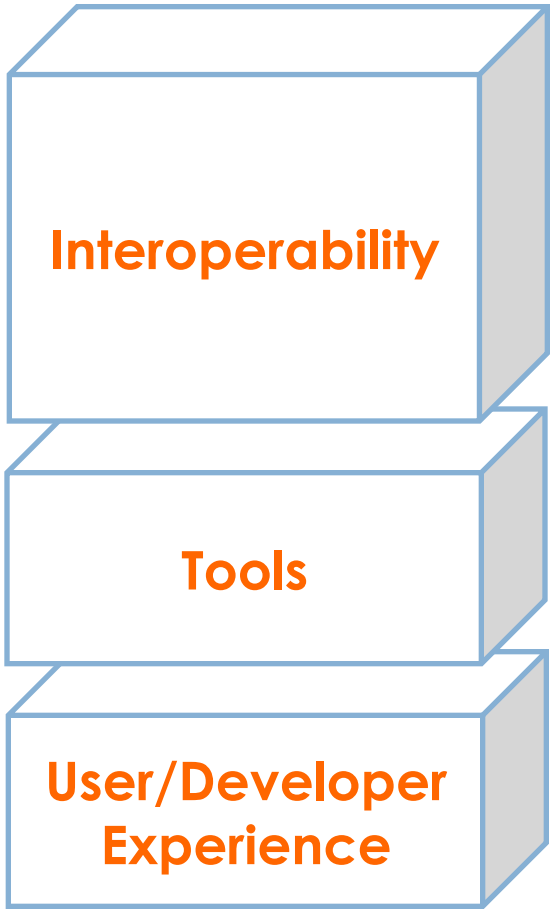
Vertical Market Application Scenarios

Logistics Services Gateway



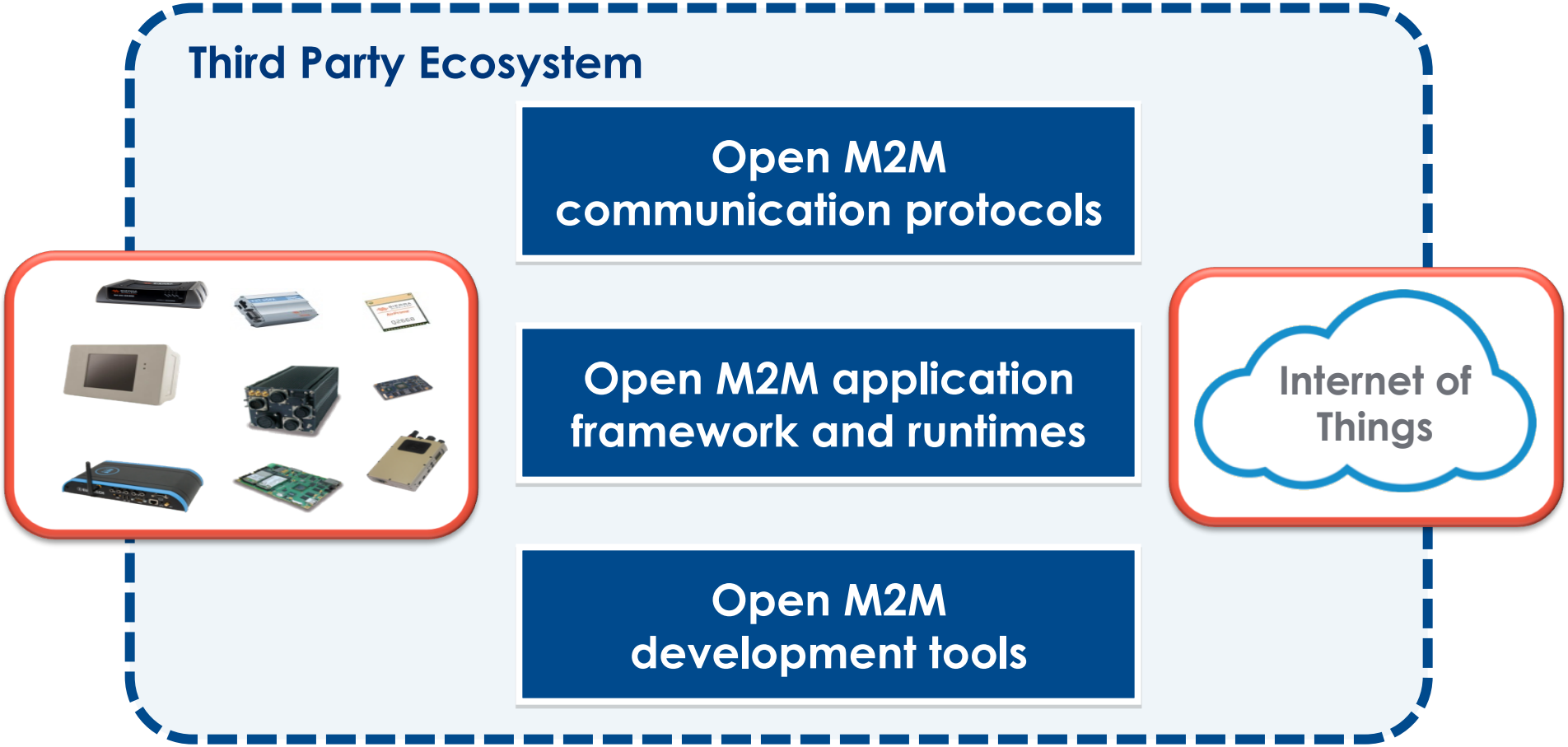
Eclipse M2M IWG Solution

M2M Industry Working Group pillars

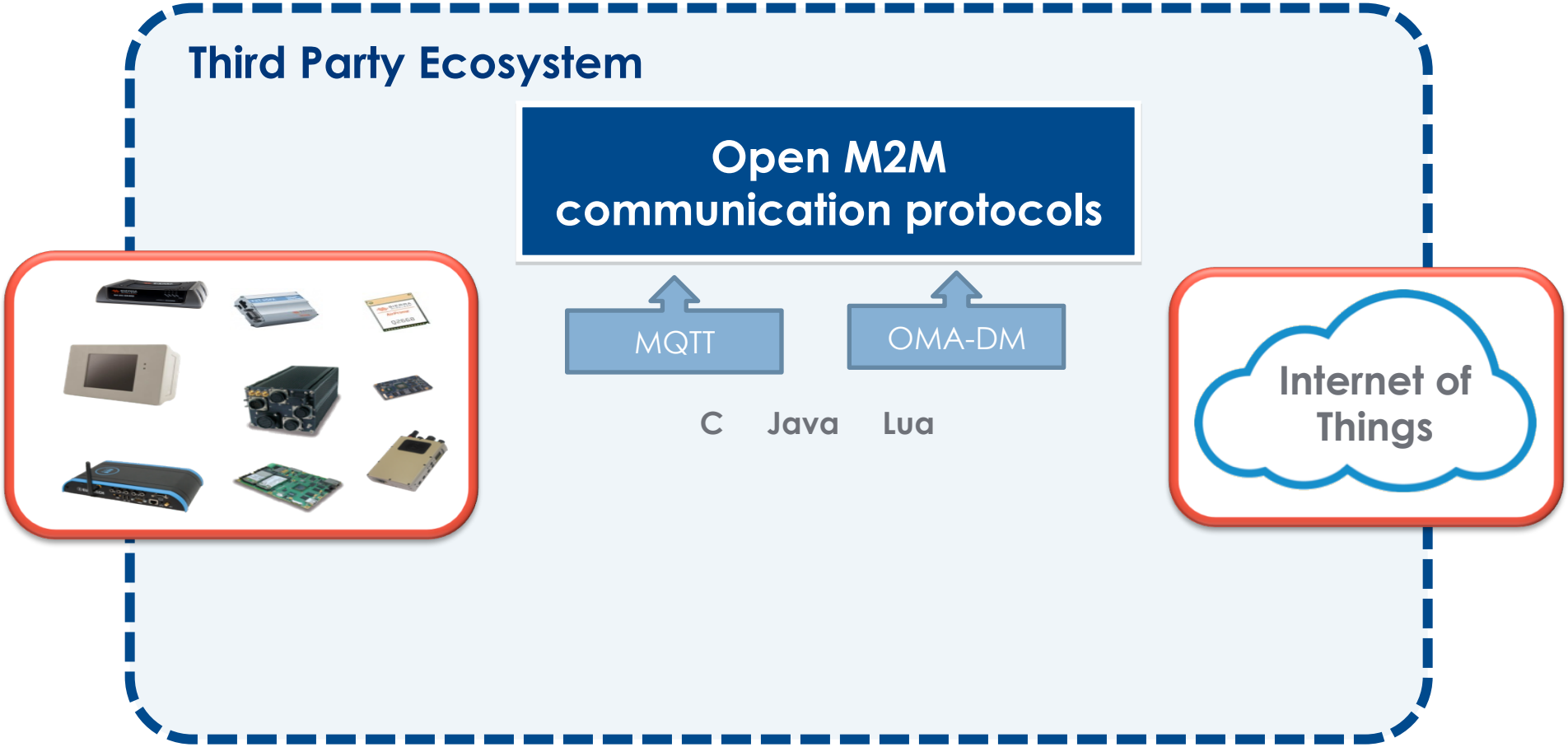


- Promote **open interoperability** between the M2M gateways and M2M server, and between M2M servers and servers supporting Web and Enterprise middleware and application models.
- Provide **tooling** for M2M gateways development including integration with M2M servers
- Provide samples, examples, testing environments and technical documentation via a **developer hub**.

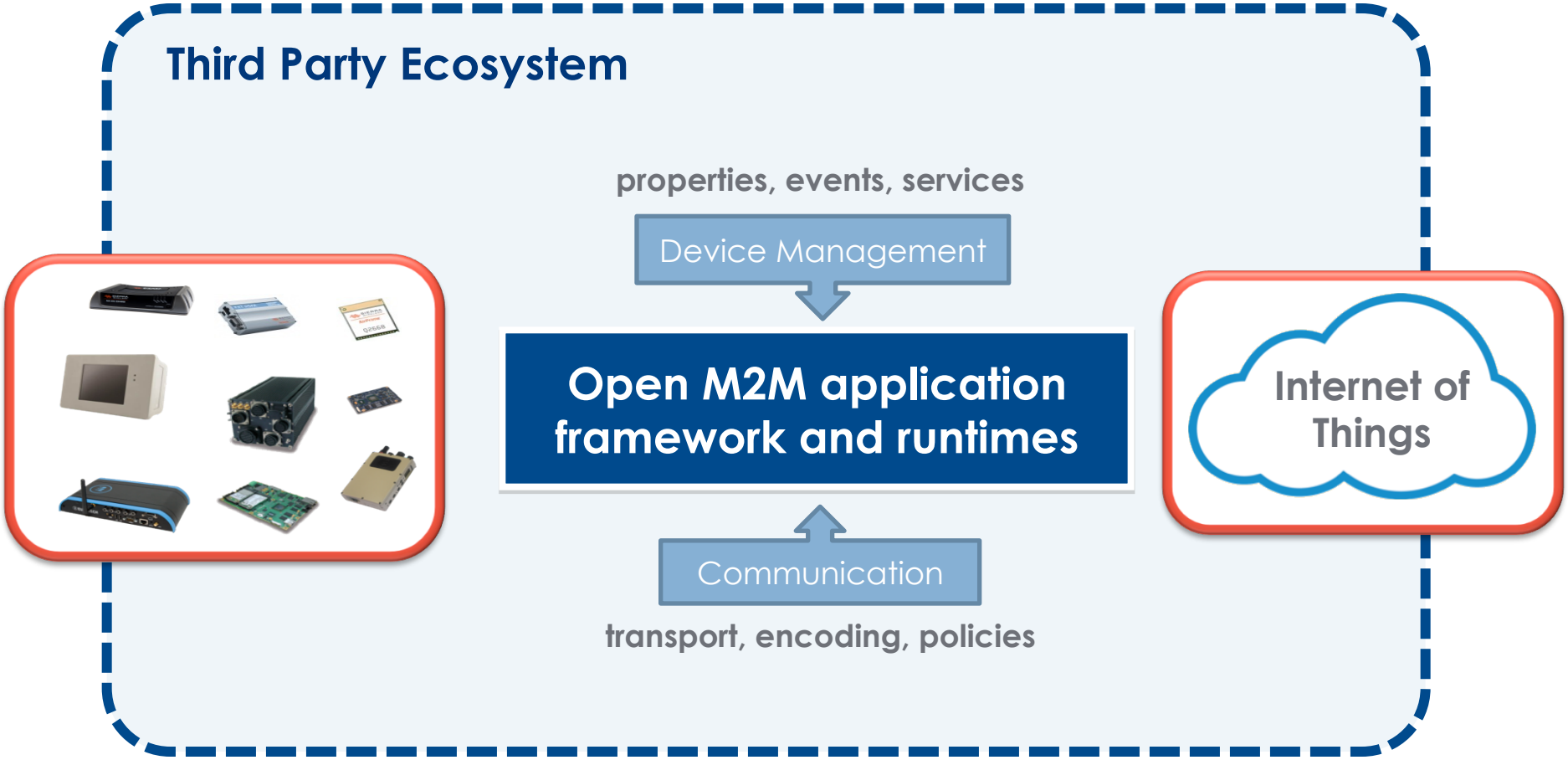
Open Ecosystem for M2M



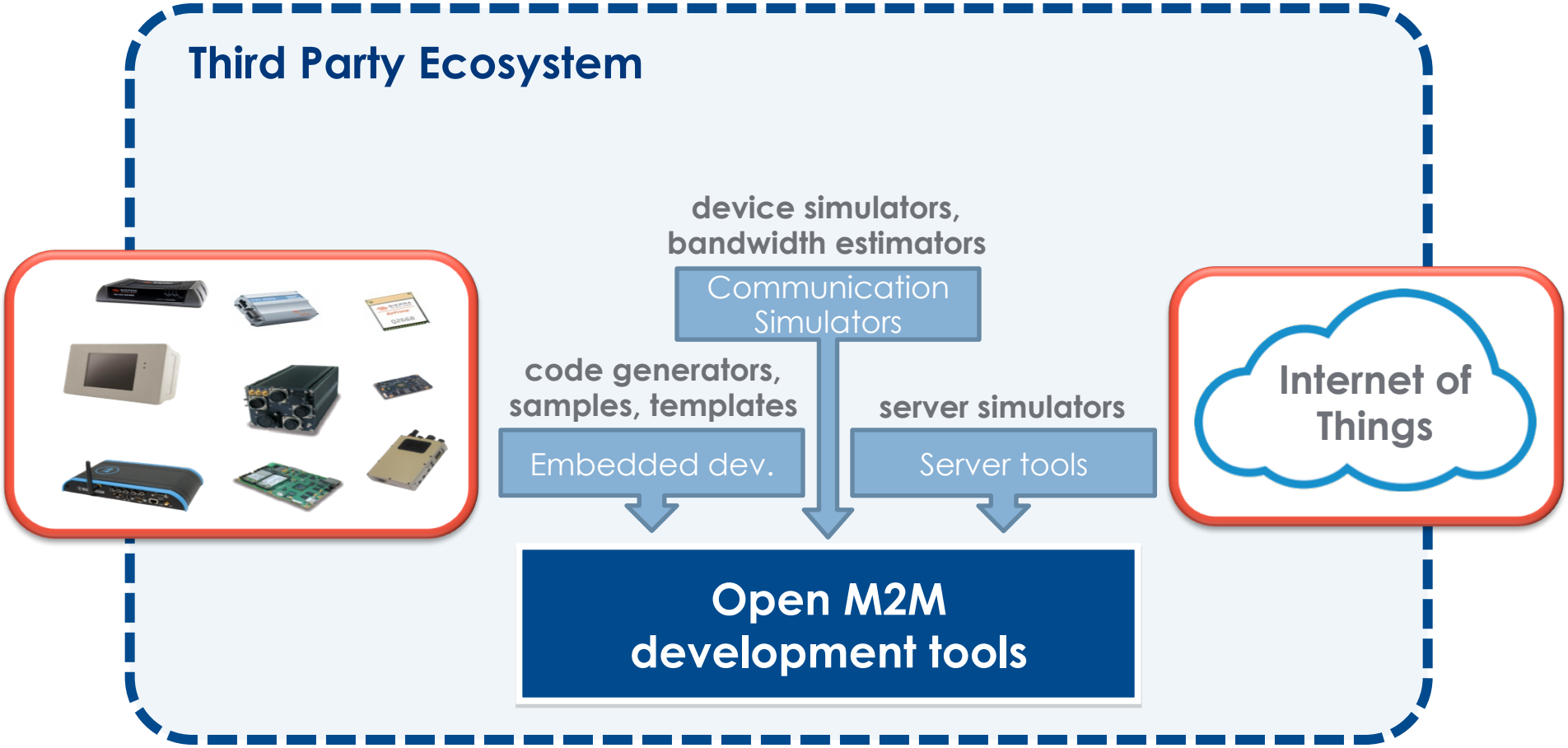
Open M2M Communication Protocols



Open M2M Framework



Open M2M Tools



M2M Developer Portal

m2m.eclipse.org

collaborative development hub for m2m developers

Development Tools

Examples, Tutorials

Technical documentation, Forum

Developer kits

Sandbox

open m2m runtimes

libraries & frameworks for m2m development

Embedded frameworks

Device Management, ALM, …

Communication libraries

m2m and industrial protocols

Server

data brokers, *API, …*

open m2m tools

consistent & extensible development tools

Embedded development

target management, emulation, …

Communication protocols

simulation, bandwidth estimation, …

Server

API discovery, deployment, …

Eclipse projects mentoring

- Koneki | http://www.eclipse.org/koneki
  - **Provide tools to ease M2M applications development**
  - Initial contribution includes an IDE for the Lua language
  - Next milestones: OMA-DM tools, code generators, simulators, …
- Paho | http://www.eclipse.org/paho
  - **Provide implementations (client & server) of open & standard messaging protocols**
  - Initial contribution includes Java and C client-side implementations of the MQTT protocol, and sample applications

Who?


BANDXI
INTERNATIONAL


EUROTECH
Imagine. Build. Succeed.


IBM


SIERRA
WIRELESS

More information

- M2M Portal http://m2m.eclipse.org
- Mailing list https://dev.eclipse.org/mailman/listinfo/m2m-iwg
- Eclipse Wiki http://wiki.eclipse.org/Machine-to-Machine

Thank You!

www.eclipse.org