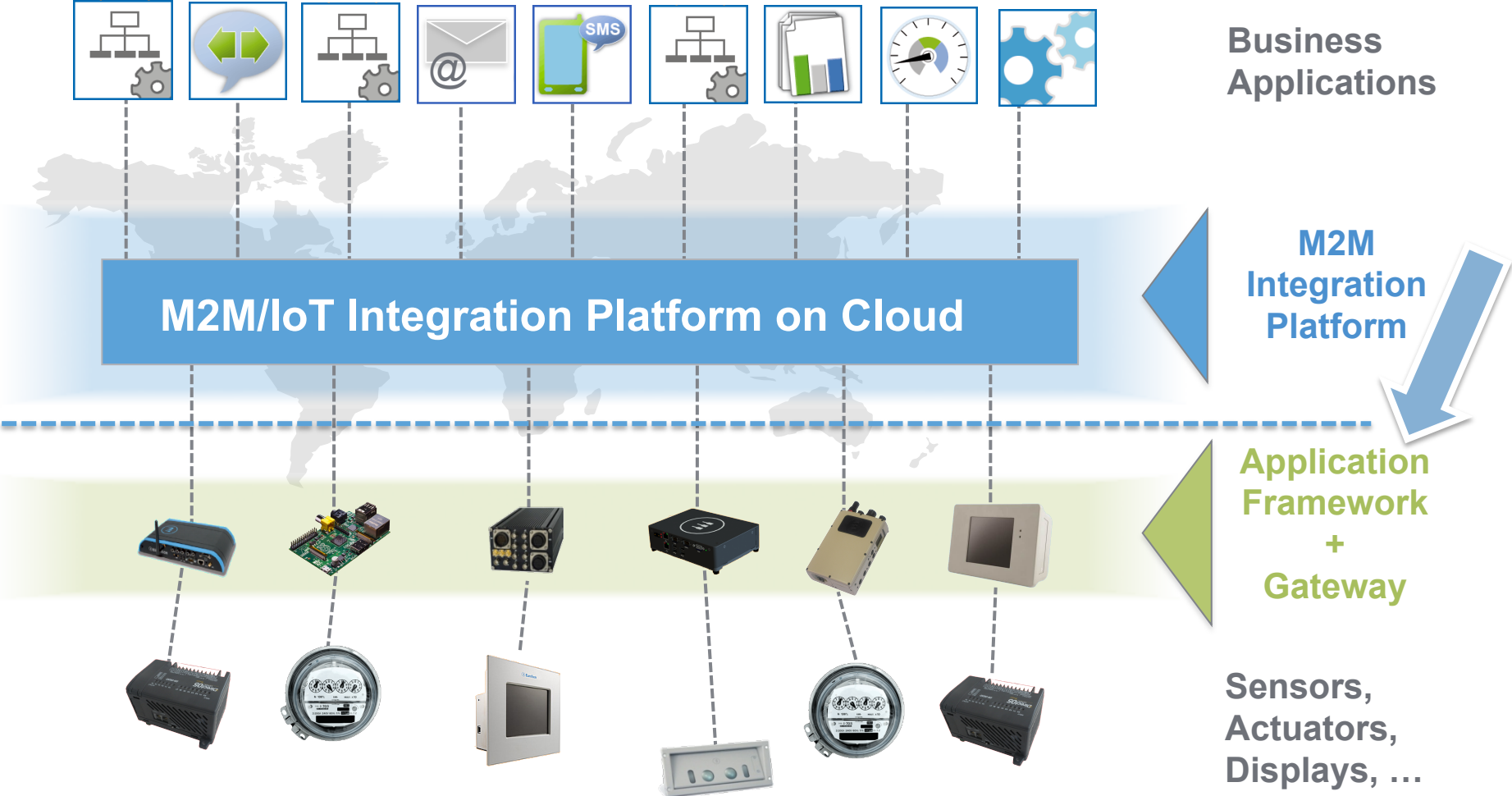


KURA M2M/IoT Gateway

*reducing the distance between embedded
and enterprise technologies*

IoT Architecture

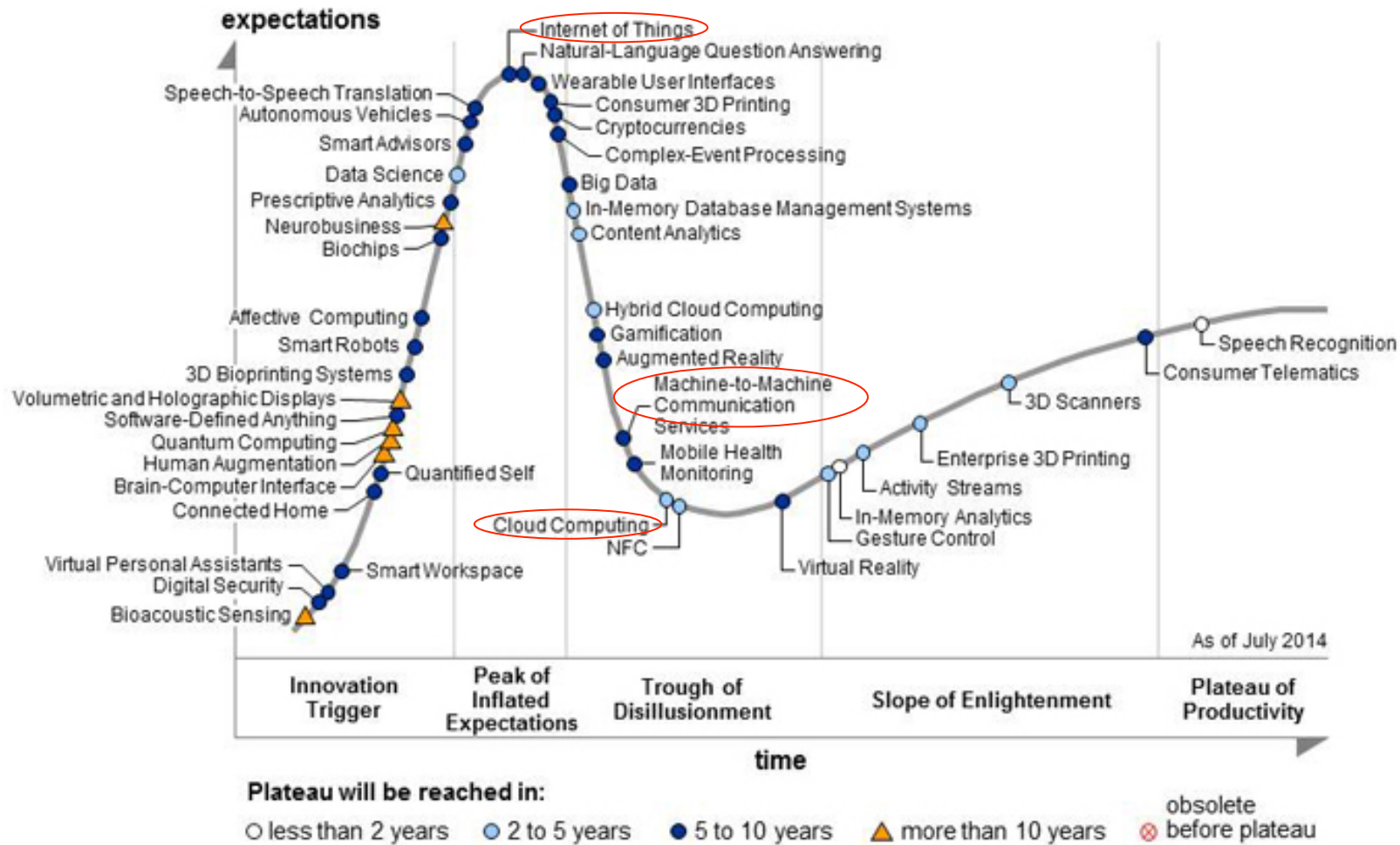




**Why do we have to reduce
the distance between the
Embedded software and the
Enterprise software ?**

1-Gartner's Hype Cycle

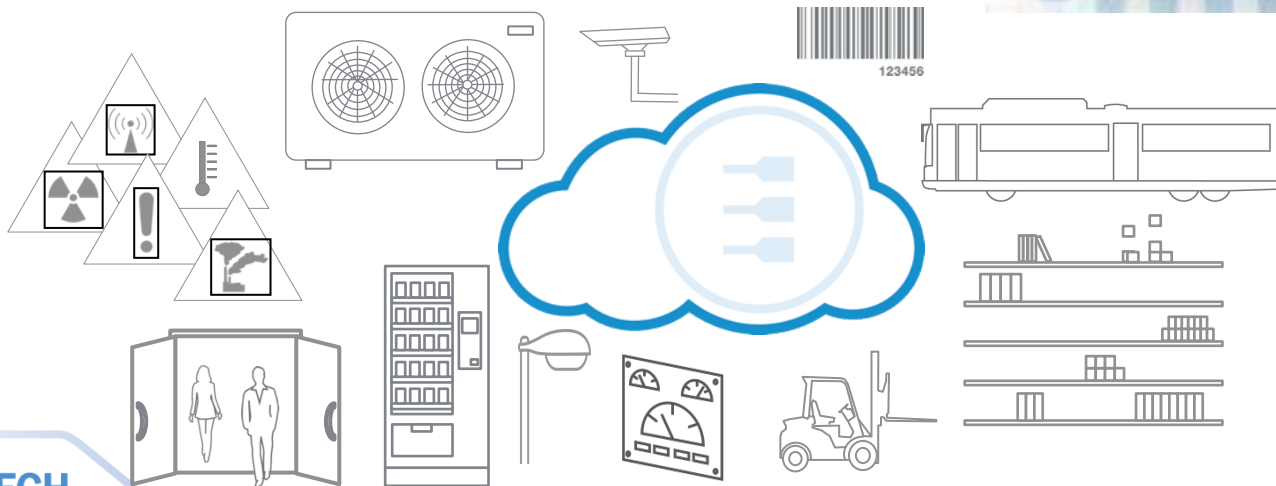
It tells that time is coming ...



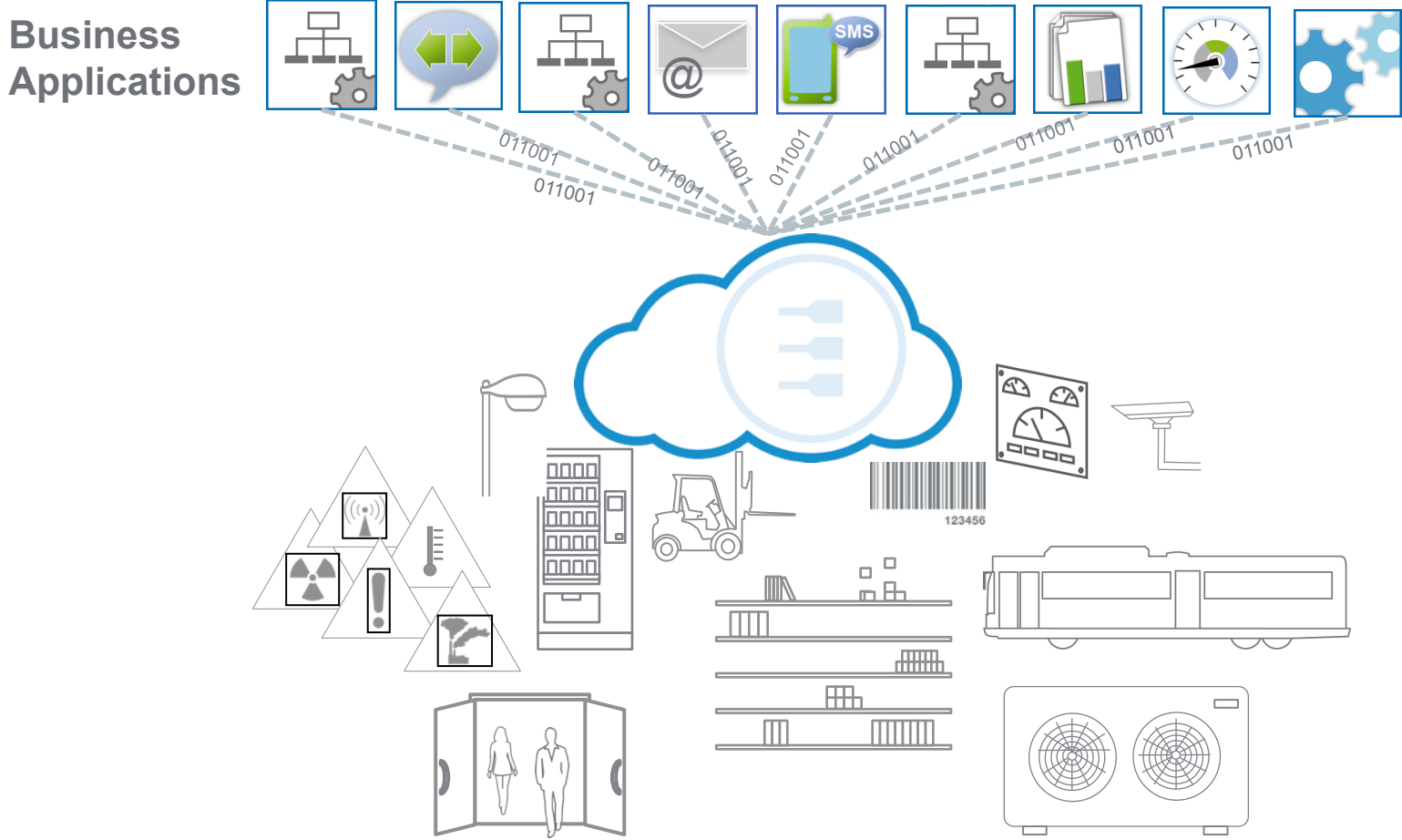
2-M2M & IoT : an industrial revolution



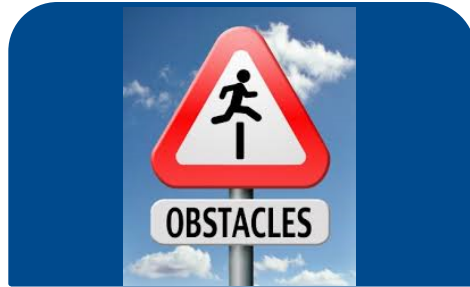
Gartner and other market analysts forecast IoT/M2M to reach **dozens of billions of connected devices by 2020**



3-Field Data are very good food for Business Applications



4-OBSTACLES?



Complexity can still be a strong barrier to close the gap

- Embedded software programmers ignore the complexity of enterprise applications and architectures
- Enterprise software programmers ignore the complexity of embedded applications and M2M communications.



**Is there any standard that
we can leverage?**

Java

The most used programming language for ENTERPRISE APPLICATIONS

9+ MILLION
JAVA DEVELOPERS



3+ MILLION
JAVA DEVICES



Java tomorrow

The most used programming language either for
ENTERPRISE & EMBEDDED & M2M/IoT applications

JAVA
EMBEDDED
APPLICATIONS

JAVA
M2M/IoT
APPLICATIONS

JAVA
ENTERPRISE
APPLICATIONS



More than 9+ MILLIONS
JAVA DEVELOPERS

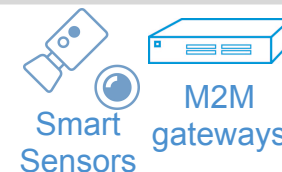




KURA is the open source Java and OSGi-based Application Framework for M2M Service Gateways.

Purpose

Simplify the design, deployment and remote management of **embedded applications**.

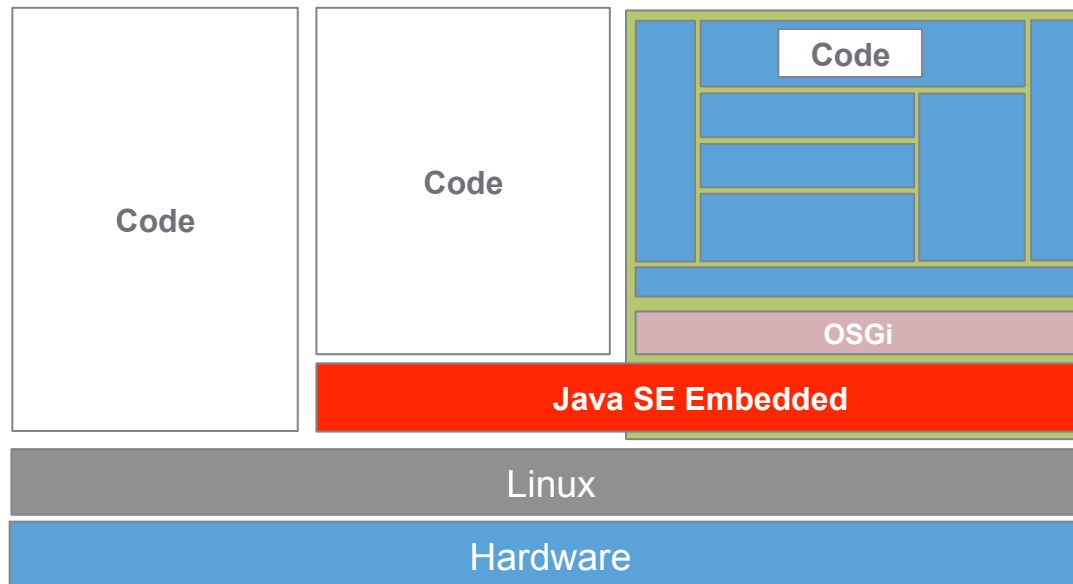


- Raspberry PI
- BeagleBone Black

IoT Gateway Stack

Increase productivity and lower time to market

Developer's Productivity






Kura's Benefits

- **Reduced development time** → Shorter time to market
- **Focus on the application** → Differentiate your offering and products
- **Portable, robust code** → Higher quality software
- **Less required resources** → Reduced development costs
- **Hardware virtualization** → Better investment protection
- **More deterministic project execution** → In time market introduction
- **Standard based** → Future-proofed, Investments protection
- **Remote app management** → Extended product lifecycle

Kura Developers' Experience

Designed from ground-up for developers

Emulate on PC 	Deploy on Target 	Cloud Managed 
<p>Start developing your M2M application in the comfort of your PC.</p> <ul style="list-style-type: none">• Full Eclipse Integration• Target Platform Definition• Emulated Services• Run/Debug from Eclipse• Support Mac/Linux Hosts	<p>When you are ready, deploy your application on the gateway.</p> <ul style="list-style-type: none">• One-click Deployment• Eclipse Plugin• Remote Debugging	<p>Provision your application to field devices from the Cloud.</p> <p>Manage your application configuration and lifecycle from a Cloud infrastructure. No more field visits!</p> <ul style="list-style-type: none">• Web-based Console• REST API Integration• Smart Alerts



**Are we closing the gap at
least a bit?**

IoT spontaneously closing the GAP between EMBEDDED & ENTERPRISE SW platforms

Same language

- JAVA

Same IDE

- ECLIPSE

Same Reference Architecture

- DECOUPLING LAYERS

Same Standards & Protocols

- OSGi, JSON, API REST

Same Tools

- Application Builder

Same Middleware

- Brokers, Containers,...



Thank You!



www.eurotech.com

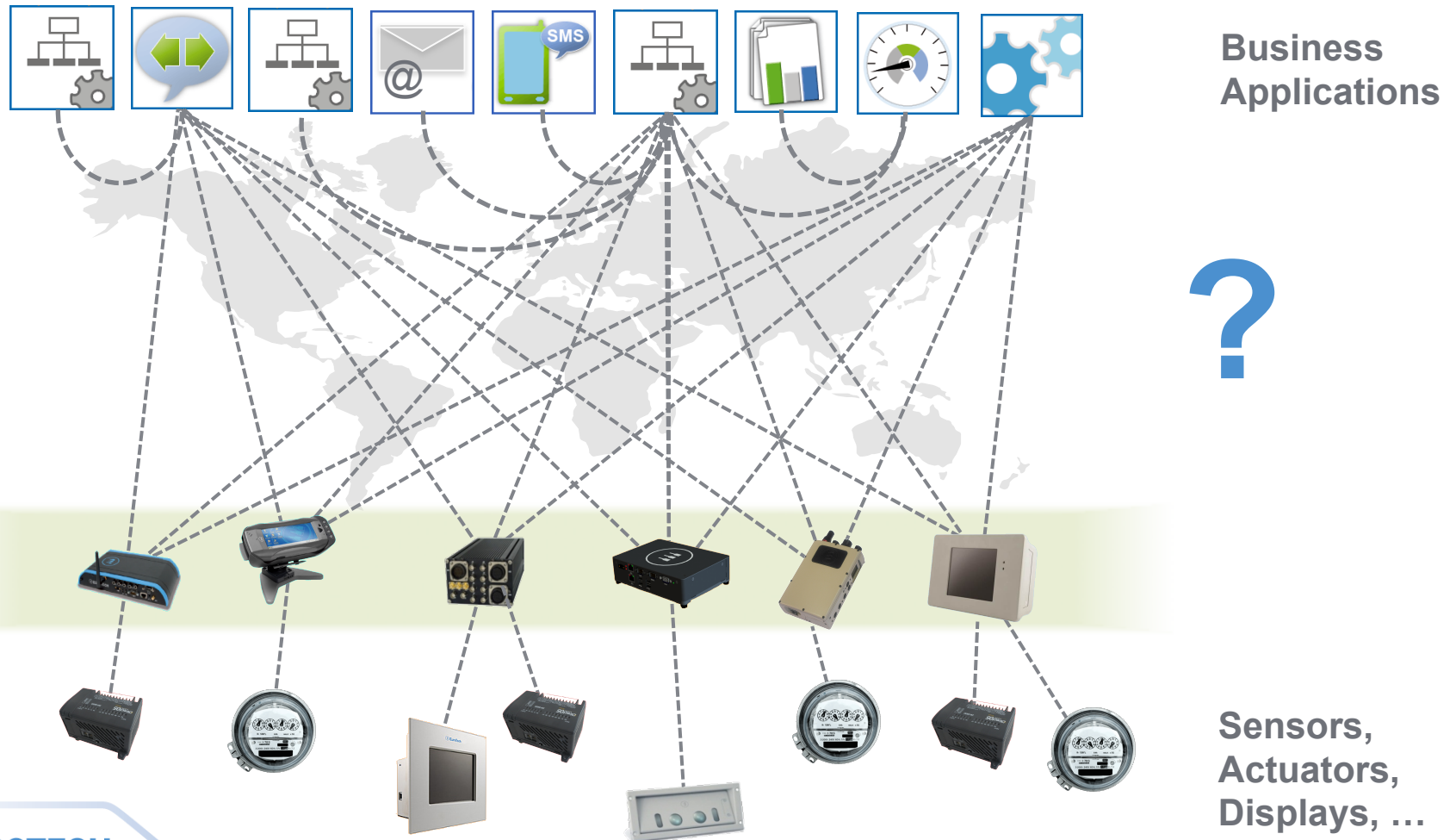
So, three things...

1. Download it
2. Design
3. Contribute



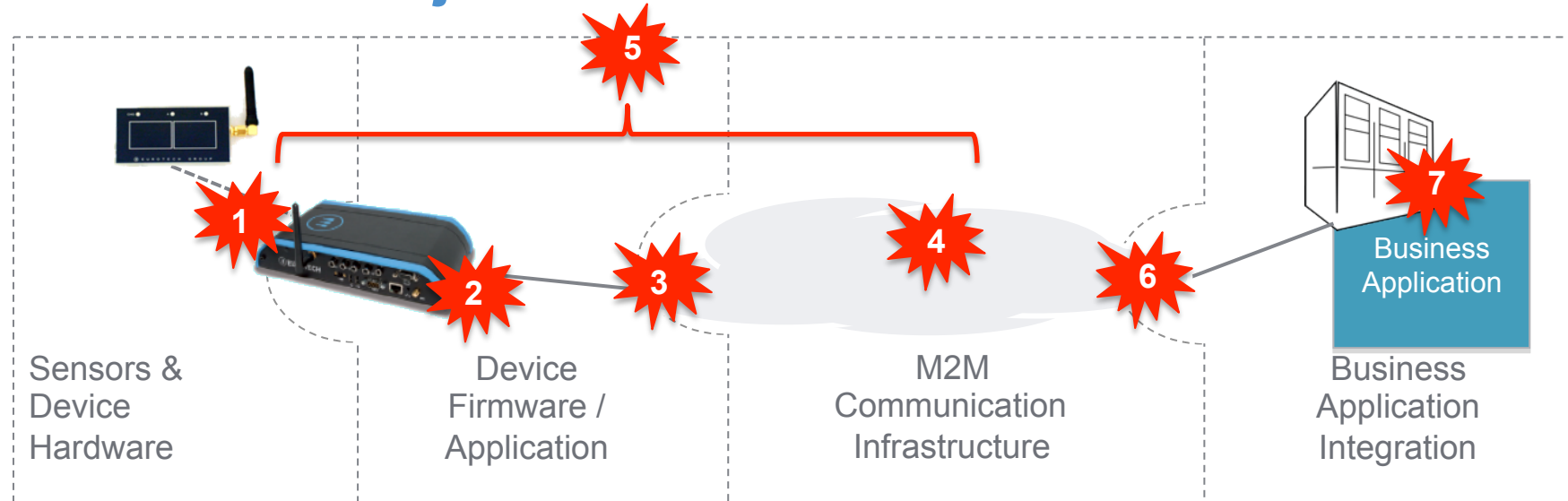
Business Issue

... and with more than one Consumer of the Device Data



Device Cloud Solutions

Where M2M Projects most often fail...



- 1**
- Selecting and integrating sensors, devices, sensors, human machine interfaces (HMI), Meters, legacy field busses & actuators
 - Ensuring long life support
 - Meeting certification requirements

- 2**
- Selecting and integrating operating system, device support / drivers
 - Implementing the business logic

- 3**
- Optimum M2M protocols
 - WAN cost reduction
 - Security

- 4**
- Decoupling of producers and consumers of data
 - Write speeds
 - Real-time data streams
 - Data storage

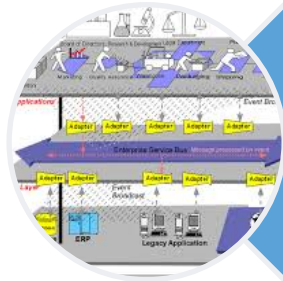
- 6**
- Standard APIs
 - Ready to use adapters for standard applications
 - CEP / Complex Event Processing capabilities

- 5**
- Device data management
 - Device life cycle management
 - Security

- 7**
- Application development & life cycle management
 - Dashboards, user interaction & interfacing
 - Integration (Big Data, social networks, enterprise IT)

Make it SIMPLE !

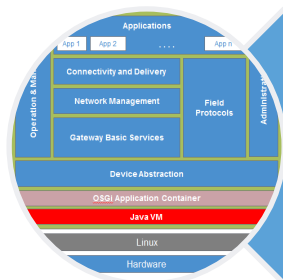
... but not stupid



Normalize the communication



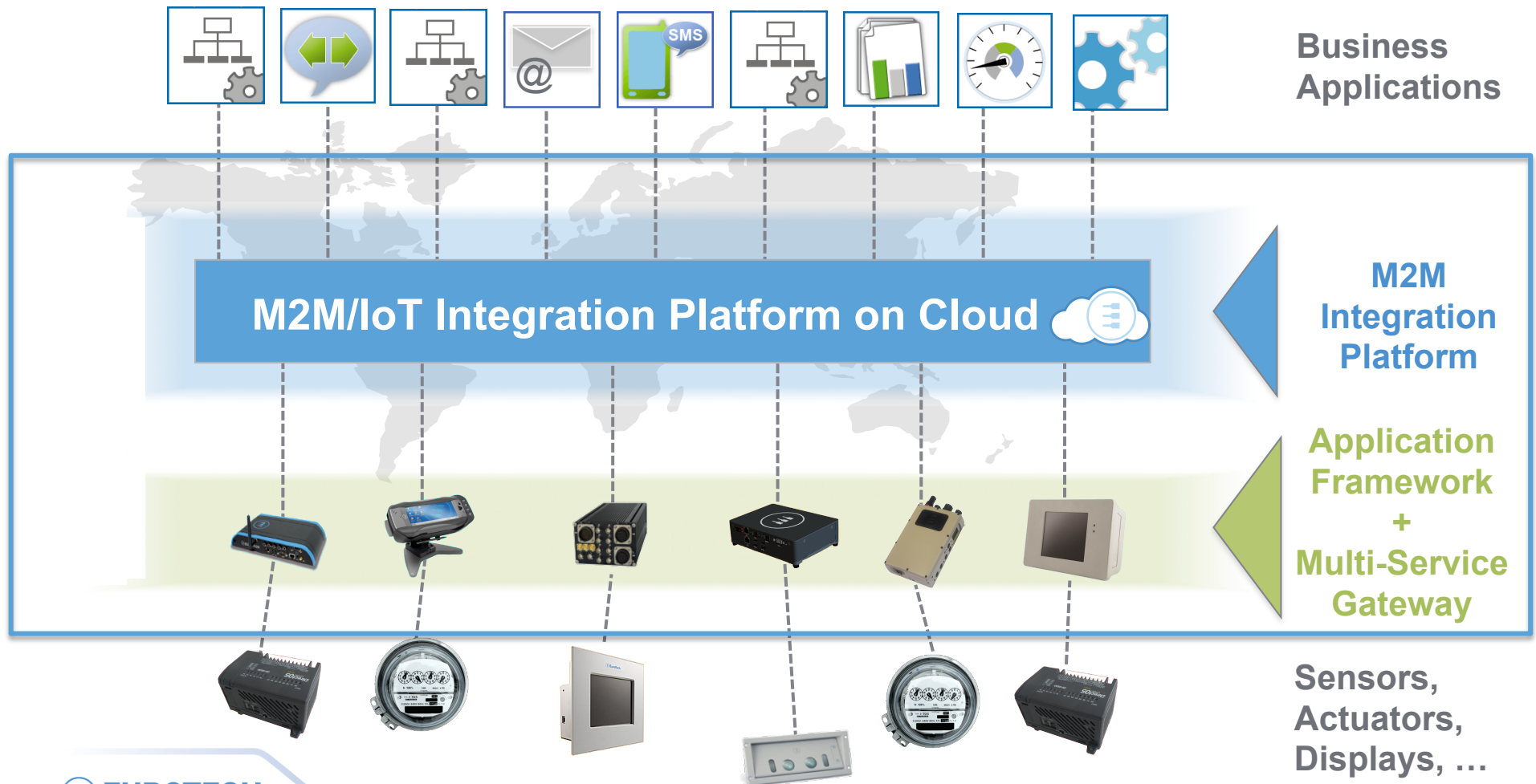
Encapsulate the complexity



Decouple the architectural layers

Normalising the communication ...

The ESB architecture for M2M integration platforms on Cloud



Connecting the field at the Enterprise

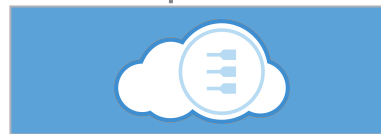
De-coupling Architectural Components

Business Applications



Enterprise Interfaces

M2M Integration Platform



Integrate
Act
Store
Connect & Control

M2M Protocol

+

Multi-Service Gateway



Collect
Elaborate
Communicate

Field Data

Field Interfaces



Encapsulating the complexity

An entire end-2-end M2M/IoT communication in a simple API REST

GET

Returns the list of all the Alerts published under the account of the currently connected user.

Example of query in CURL :

```
curl --user 'clientId:client password' -k https://api-sandbox.everyware-cloud.com/v2/alerts.xml?severity=CRITICAL" | xmllint --format -
```

Parameters

name	description	type	default
limit	Maximum number of entries to be returned.	query	50
offset	Starting offset for the entries to be returned.	query	0
startDate	Start date of the date range requested. The parameter is expressed as a long counting the number of milliseconds since January 1, 1970, 00:00:00 GMT. The default value of 0 means no start date. Alternatively, the date can be expressed as a string following the ISO 8601 format.	query	0
endDate	End date of the date range requested. The parameter is expressed as a long counting the number of milliseconds since January 1, 1970, 00:00:00 GMT. The default value of 0 means no end date. Alternatively, the date can be expressed as a string following the ISO 8601 format.	query	0
severity	: can be one of the following CRITICAL, WARNING, INFO	query	
source	: can be an asset name or System	query	
category	: eg Performance, Security, Other etc ...	query	

Business Issue

Sometimes M2M Solutions look simple ...

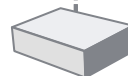
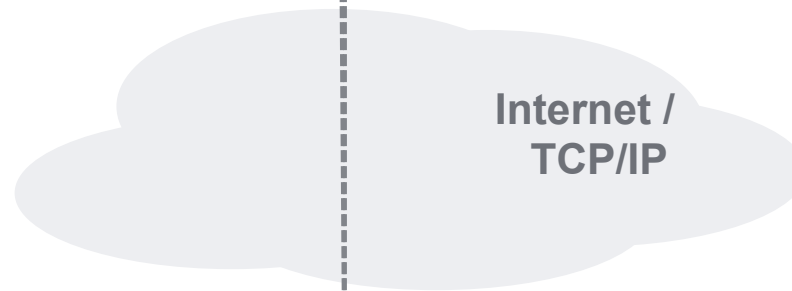
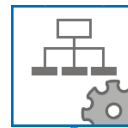
A single application to communicate with

No connectivity options required

Single or no special application on gateway

Only one type of Gateway HW & SW

Only one type of device / sensor



Business Application

Internet / TCP/IP

Service Gateway

Sensors, Actuators, Displays, ...

Business Issue

... Geographically Dispersed ...

