IoT,
Open Innovation and
Open Source Communities

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Today, IoT looks like this: “Internet of Silos”
We would like to see IoT look like that:
Internet of Things

Interoperability
Open Standards
One way to create a standard: Make your own!
Another way:
Involve adopters of these standards!

Developers!
THE NUMBER OF IOT DEVELOPERS 2014–2020

Source: VisionMobile estimates, 2014
Which operating system(s) do you use for your IoT devices?

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>73.1%</td>
</tr>
<tr>
<td>No OS / Bare-metal</td>
<td>23.1%</td>
</tr>
<tr>
<td>FreeRTOS</td>
<td>12.7%</td>
</tr>
<tr>
<td>Other</td>
<td>11.1%</td>
</tr>
<tr>
<td>Windows Embedded</td>
<td>9.5%</td>
</tr>
<tr>
<td>mbed</td>
<td>7.4%</td>
</tr>
<tr>
<td>Contiki</td>
<td>6.0%</td>
</tr>
<tr>
<td>TinyOS</td>
<td>6.0%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>5.8%</td>
</tr>
<tr>
<td>RIOT</td>
<td>5.6%</td>
</tr>
</tbody>
</table>
What messaging protocol(s) do you use for your IoT solution?

- HTTP: 61.2%
- MQTT: 52.4%
- CoAP: 21.2%
- HTTP/2: 19.2%
- In-house / proprietary: 15.5%
- AMQP: 13.9%
- XMPP: 13.2%
- I don’t know: 7.4%
- Proprietary vendor protocol: 6.2%
- Other: 5.3%
- DDS: 3.5%
- None: 2.3%
Key Findings

Open IoT

58% actively participate in open source projects for IoT

52% use open hardware for deployment or prototyping
Why do they use Open Source?

• Because they make money with it!!
  – Maturity of the model
  – Investment
    • Cost of acquisition
    • Team training
  – Mutualized maintenance
    ➔ Lower total cost of ownership

➔ Time to Market!
THE STORY OF MQTT

Albert Anker - Grandfather tells a story, 1884
Invented by IBM and Arcom back in 1999

IBM Open Sources Messaging Client for Embedded Devices

Open Source Community built the Standard

MQTT Now an ISO/IEC Standard

By Steve Borsch | January 31, 2016 | 0

By Joab Jackson, IDG News Service
Nov 3, 2011 12:30 PM

Interest over time

Google Trend
LET’S TALK ABOUT ECLIPSE
Eclipse is all about Building Communities


...
Eclipse is all about Open Innovation

“Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as well as internal ideas... The Open Innovation paradigm treats R&D as an open system. Open Innovation is sometimes conflated with open source methodologies for software development... While open source shares the focus on value creation throughout an industry value chain, its proponents usually deny or downplay the importance of value capture.”

Close Innovation vs Open Innovation

http://bock-pm.com/service/open-innovation/
80 / 20 rule for Open Source

Focus on your added value
Co-develop the platform / standards in collaboration with others

Business Friendly!

KEEP CALM AND STAY FOCUSED
eclipse.org

WORKING GROUP

Founded in late 2011 by
• IBM
• Eurotech
• Sierra Wireless
Eclipse IoT by Numbers

- 2 MLOC
- 22 projects
- 150+ developers
- 100K monthly visitors
Projects

Our open source projects provide implementations of IoT standards, as well as horizontal and industrial frameworks.

Standards

4DIAC
4DIAC in its current form has been started 2007 as an open source project fostering the further development of IEC 61495 for its use in distributed IPMC and further distribute research results from the...

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Californium
Californium (CF) is an open source implementation of the Constrained Application Protocol (CoAP). It is written in Java and targets unconstrained environments such as back-end service infrastructures...

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Concierge
Concierge is a small-footprint implementation of the OSGi Core Specifications RS standard optimized for mobile and embedded devices.

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Leshan
Leshan is an OMA Lightweight M2M (LWM2M) implementation in Java. Eclipse Leshan relies on the Eclipse IoT Californium project for the CoAP and DTLS Implementation. It is tested against...

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Milo
OPC Unified Architecture is an interoperability standard that enables the secure and reliable exchange of industrial automation data while remaining cross-platform and vendor neutral. The...

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Mosquitto
Eclipse Mosquitto provides a lightweight server implementation of the MQTT and MQTT-SN protocols, written in C. The reason for writing it in C is to enable the server to run on machines which do not...

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OM2M
The OM2M project is an open source implementation of the ETSI M2M standard. It provides a framework for developing services independently of the underlying network and aims to facilitate deployment of...

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Paho
The Paho project provides reliable open-source implementations of open and standard messaging protocols aimed at new, existing, and emerging applications for Machine-to-Machine (M2M) and Internet of...

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Paho Incubator
A permanent incubator for Paho. A permanent incubator is a project that is intended to perpetually remain in the incubation phase. Permanent Incubators are an excellent place to innovate...

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And much more...

http://iot.eclipse.org/projects
Commercial Ecosystem

Open IoT Stack
AGILE:
Adaptive Gateways for diverse multiple Environments

• AGILE builds a modular hardware and software gateway for the Internet of Things with support for:
  – protocol interoperability,
  – device and data management,
  – IoT apps execution,
  – and external Cloud communication,
• Featuring diverse Pilot Activities, Open Calls & Community building.

For further information:
http://www.agile-iot.eu
@agile_iot
MEET THE ECLIPSE COMMUNITIES!

Toulouse, France · June 7 - 9, 2016

https://www.eclipsecon.org/france2016

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THANK YOU