Nurturing Business Friendly Open Source Ecosystems

Gaël Blondelle
Director of European Ecosystem Development
gael.blondelle@eclipse-foundation.org

ROS-Industrial Conference
Stuttgart, Dec 13th, 2017
The Eclipse Ecosystem

Copyright (c) 2017, Eclipse Foundation, Inc. - Made available under the Eclipse Public License 2.0 (EPL-2.0)
Eclipse Community by the Numbers

130M lines of code per year
320+ projects
267 members
1 400+ developers
2M monthly visitors
Open Source adoption

0 DENY
1 USE
2 CONTRIBUTE
3 CHAMPION

VALUE APPROPRIATED
VALUE CO-CREATION
VALUE APPROPRIATION
COUPLING MANAGEMENT

SINGLE PROJECT
SCOPE
MULTIPLE PROJECT
ENGINEERING DRIVEN
BUSINESS DRIVEN

2017
Copyright (c) 2017, Eclipse Foundation, Inc. | Made available under the Eclipse Public License 2.0 (EPL-2.0)
Transparency  Openness  Meritocracy
A business friendly ecosystem
Based on extensible platforms

Products Added Value

- Compete on products and services

Platform

- Build this in and with open source, even if that means working with your direct competitors.

Organizations compete and collaborate in an open source ecosystem.
Pillars of open collaborations

Governance
- IP Mgt & Licensing
- Projects & Process
- Ecosystem Dev.
- Infra-structure
Today, GitHub hosts Millions of repositories
Intellectual Property and Project Development Process enable collaboration

“The Gears” by Alexander Svensson is licensed under CC BY 2.0
The purpose of the Eclipse Foundation IP Policy is to set forth the general principles under which the Eclipse Foundation shall:

a) accept Content,
b) redistribute Content,
c) host Content, and
d) manage other intellectual property matters.

Type A
- license certification

Type B
- license certification
- provenance check
- code scan
Becoming a platform for collaboration and innovation
Potential Working Group Structures

Vendor-led
• Create a common platform
• Driven by vendors
• Grow marketshare and strength in competitive market

Consumer-led
• Get technology built for user’s purposes
• Share funding of R&D in OSS
• Simple procurement process
Eclipse Working Groups

- Licensing
- IP Management
- Project model
- Governance

Eclipse gives you these “out of the box”
Eclipse IoT is an open source community aimed at building and promoting open source software, open standards & open collaboration models needed to create an Open Internet of Things.
Eclipse IoT Community

- 2.4 million lines of code
- 30* projects
- 250+ developers
- 110K monthly visitors
Our members
Eclipse IoT...

from building blocks ... to stacks
The 3 IoT Software Stacks

**Constrained Devices**
- Communication
  - Field protocols
  - IoT protocols
- Hardware Abstraction Layer (HAL)
- OS / RTOS

**Gateways and Smart Devices**
- Communication
  - Field protocols
  - IoT protocols
- Remote Management
  - Network Management
- Application Runtime
  - OS / RTOS

**IoT Cloud Platform**
- Connectivity
- Message Routing
  - Application Enablement
  - Event Management, Analytics & UI
  - Data Management
  - Device Management
  - Device Registry
- OS / PaaS

**Tools & SDKs**
- Security
- Ontologies
- Remote Management
- Data Management & Messaging
- Connectivity
  - Field protocols
  - IoT protocols
  - Network Management
- Application Runtime
  - OS / RTOS

**Copyright © 2017 The Eclipse Foundation. All Rights Reserved**
The 3 IoT Software Stacks

**CONSTRAINED DEVICES**
- Hardware Abstraction Layer (HAL)
- OS / RTOS

**COMMUNICATION**
- Field protocols
- IoT protocols

**SECURITY**
- Vorto
- ONTOLOGIES

**TOOLS & SDKs**
- tinyDTL
- Keti

**IOT CLOUD PLATFORM**
- Connectivity
- Message Routing
- OS / PaaS
- Application Enablement
- Event Management, Analytics & UI
- Device Management

**GATEWAY AND SMART DEVICES**
- Remote Management
- Application Runtime
- Data Management & Messaging

**APPLICATION ENABLEMENT**
- Vorto
- Eclipse Che

**APPLICATION ENABLEMENT**
- UNICEF
- Eclipse Che

**DATA MANAGEMENT & MESSAGING**
- paho
- Milo

**DEVICE MANAGEMENT**
- LEMAN
- HawkBit

**APPLICATION ENABLEMENT**
- diac
- Kapua
- Eclipse Che
Open standards at Eclipse IoT

CoAP
DTLS
IEC 15118
IEC 61499
OMA LWM2M
MQTT
OGC SensorThings
oneM2M
OPC UA (IEC 62541)
PPMP
Open IoT Testbeds

> Focus on an industry solution
> Showcase a technical solution + vendor ecosystem

Examples:

- Waste management
- Asset tracking
- Smart manufacturing
Production Performance Management

PPMP* - Production Performance Management Protocol

Bridge heterogenous systems (Modbus, OPC-UA, ...) to a common data model

Expose consolidated performance data over standard APIs for integration with 3rd party systems

Monitoring Dashboards

Predictive Maintenance

* PPMP = Production Performance Management Protocol
High-level Architecture

More at https://iot.eclipse.org/testbeds
Eclipse IoT Programs

Virtual IoT

Open IoT Challenge

IoT Marketplace

Testbeds
Need more info?

https://iot.eclipse.org

2.4 million lines of code
30* projects
250+ developers
T10K monthly visitors

* and counting!
Automotive

Eclipse Sumo

OpenADx Automated Drive Tools
Working Group

The story…
Reusable building blocks for Measurement Data Management systems

• Store,
• Archive,
• Annotate,
• Index data

Copyright (c) 2017, Eclipse Foundation, Inc. - Made available under the Eclipse Public License 2.0 (EPL-2.0)

https://commons.wikimedia.org/wiki/File:Audi_S6_Engine.JPG
AUDI AG, BMW Group and Daimler AG are driving open source metrology data management

The automobile manufacturers AUDI AG, BMW Group and Daimler AG have teamed up in the openMDM® Working Group for an initiative under the umbrella of the Eclipse Foundation (www.eclipse.org) to develop and distribute open source tools for measurement data management based on the Standards ASAM ODS (www.asam.net) wants to promote. Other founding members are the software companies GIGATRONIK GmbH, science + computing ag, Canoo Engineering AG, HighQSoft GmbH and Peak Solution GmbH.

Securing developments through testing generates an ever-increasing volume and diversity of data in the automotive industry. So that the measurement data of the different test systems can always be meaningfully interpreted and compared elsewhere or at other times, they must be documented independently of the manufacturer, together with their descriptive information - the so-called metadata. The industry-accepted format for this is the Open Data Service (ODS) standard of the Association for Standardization of Automation and Measuring Systems (ASAM), ASAM ODS for short.
2017: Open Collaboration!

OpenMDM Dev. Team:
- 3 developers
- 1 scrum master / tester

Today we started our development sprint for the Eclipse mdmb1 project version 0.7. The sprint will end on 21th July 2017 (42 days). Four developers are assigned from the openMDM(R) Eclipse Working Group.

The way we want to do our work:
- We will work transparent and in the open
- Design decisions will be documented on the mdmb1-dev mailinglist
- New features will be described in Eclipse Bugzilla issues [1]

Development is done on dev-branches, not on the git master (last stable version 0.6).

Subscribe to the the mdmb1-dev mailinglist: [https://dev.eclipse.org/mailman/listinfo/](https://dev.eclipse.org/mailman/listinfo/mdmb1-dev)

Best regards
Angelika Wittek
openMDM(R) EWG toolkit manager

[1] [https://bugs.eclipse.org/bugs/buglist.cgi?quicksearch=mdmb](https://bugs.eclipse.org/bugs/buglist.cgi?quicksearch=mdmb)
Since June 2017:

Regular Releases,
Regular Communication,...

Intensive Collaboration!
Eclipse Foundation as a partner of RobMoSys

- Help promote the results of the project
- Recruit new technology in the robotics domain
- Connect the robotic ecosystem to Eclipse technologies in tooling and IoT
- Enable a platform for tooling in robotics
- Avoid re-inventing the wheel

Potentially creating a Working Group
Free….

...just like puppies