

# Eclipse Arrowhead Roadmap and New Features

Jerker Delsing



# Release roadmap

V4.3.0 release April 2021

v4.4.0 release Oct 2021

v5.0.0 planed for Jan 2022

v5.1.0 targeted for april 2022





## eclipse-arrowhead

Overview Repositories 3 Packages People 8 Teams 2 Projects

### Repositories

Find a repository...

Type

Language

Sort

#### roadmap

Public

TeX 1 EPL-2.0 3 21 0 Updated 13 days ago

#### profile-library-sysml

Public

SysML 1.6 profile for Eclipse Arrowhead enabling modelling of System of Systems based on SOA/Microservice architecture based on Eclipse Arrowhead view. A library of Eclipse Arrowhead core systems is provided and templates for much needed models are provided.

D 1 EPL-2.0 0 0 0 Updated 13 days ago

#### core-java-spring

Public

Java 18 EPL-2.0 35 42 (3 issues need help) 10 Updated 22 days ago

View all repositories

### People



### Top languages

Java D TeX

## Arrowhead Consortia

Overview Repositories Packages People Projects

Find a repository...

Type

Language

Sort

### core-java-spring

Public

Forked from eclipse-arrowhead/core-java-spring

Java EPL-2.0 35 2 0 3 Updated 3 days ago



### client-library-python

Public

Arrowhead Client Library in Python

iot-application arrowhead

Python EPL-2.0 7 4 4 0 Updated 12 days ago



### application-library-java-spring

Public

Arrowhead Java Application Library

java application library spring

Java EPL-2.0 8 0 4 2 Updated 23 days ago



### application-library-csharp

Public

Arrowhead C# Application Library

C# EPL-2.0 0 0 0 0 Updated 29 days ago



### sos-examples-spring

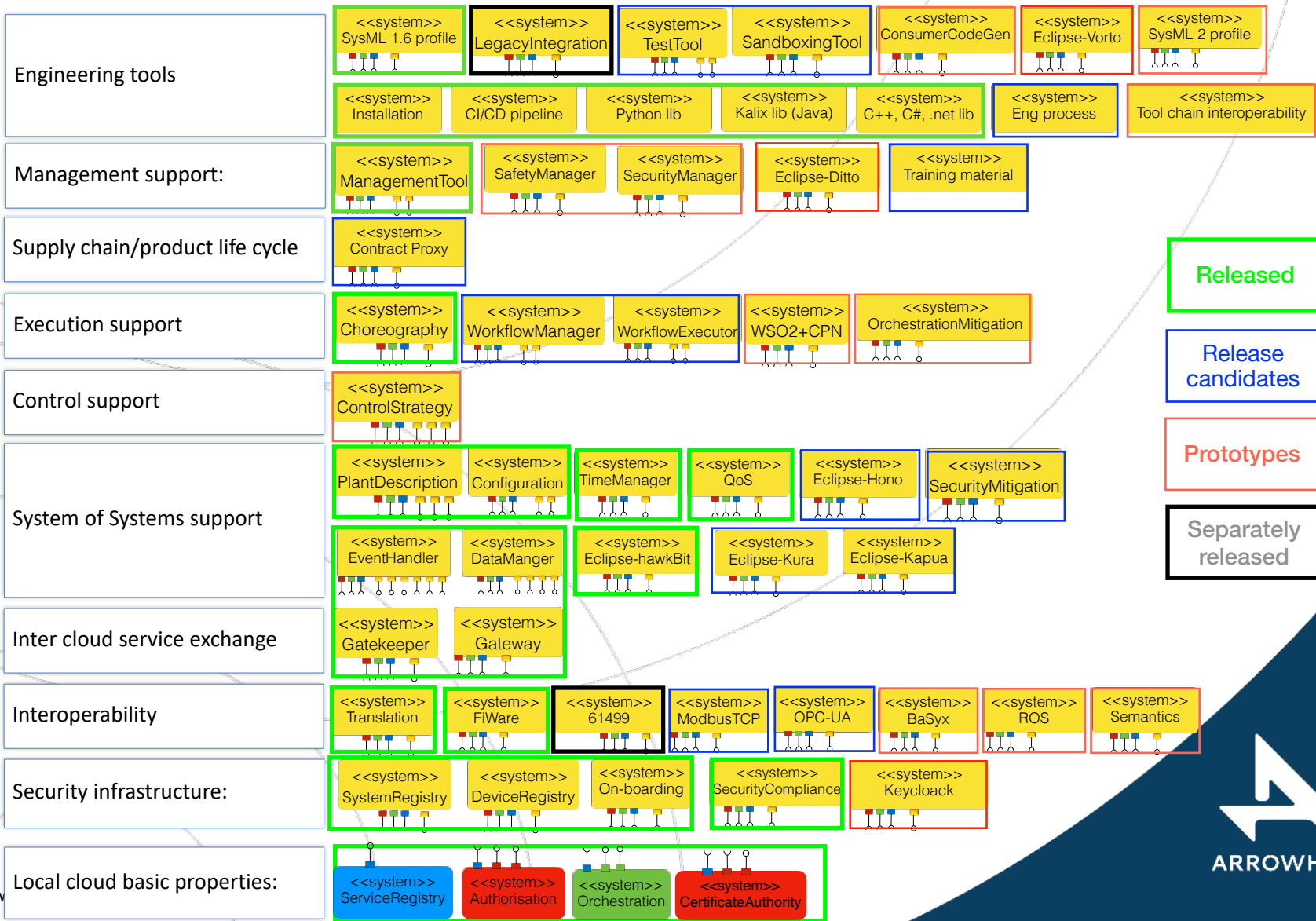
Public

Java 6 2 1 2 Updated on 6 Sep



# Eclipse Arrowhead v4.4.0

5



# Where to find

[www.github.com/eclipse-arrowhead](https://www.github.com/eclipse-arrowhead)

[www.github.com/arrowhead-f](https://www.github.com/arrowhead-f)



# Active roadmap discussions

# Roadmap discussions

[www.github.com/eclipse-arrowhead/roadmap](https://www.github.com/eclipse-arrowhead/roadmap)





# Eclipse Arrowhead Roadmap WG

Agenda 210915



# Agenda (MoM from last meeting in red)

1. v4.4.0 release - what can be released now?  
On its way waiting for Eclipse review.
2. CI/CD + Jenkins server for generation of packages for different OS and HW.  
Will continue after the 4.4.0 review.
3. Move of code from arrowhead-f to eclipse-arrowhead  
Move only IP okayed by Eclipse repositories and working with v4.3.0. Naming convention of repository names. Proposal of names and repos to move.  
First lib approved to move by Wayne Breton
4. Lowering the entry step - status reports
  1. Gabor - VirtualBox on any environment, core systems + providers and consumers.  
The virtual box environment is updated to the 4.4.0 version.  
Work in progress. Time line is a first try out version within Sept.  
Demo at Lubeck.
  2. Emanuel - Device daemon, Local cloud daemon, Local cloud management - will work on this as consultant to LTU
  3. Cristina - From models to code and deployment -  
Plugin to IDE and Papyrus to select Local clouds and systems you like to include, current development of producers and consumers.  
Working on plug-ins use connection to generate SQL scripts to populate the Orchestration store with such info.  
Presentation at next bi-weekly and Lubeck.
5. Documentation strategy  
Mats proposed a discussion on documentation strategy. We may move from text documents to some type of tool which can be used for validation of implementation. A move in this direction is a future point. When to push this is still an open question.
6. Walk through current discussion points - Jerker
7. Issue lists in GitHub
  1. Issue in Roadmap to be created by Szvetlin regarding on data base question for ServiceRegistry, SystemRegistry, DeviceRegistry, ....
  2. Issue on Changelog/release-note is moved to Roadmap from java-spring-core directory.
8. [arrowhead.eu](http://arrowhead.eu) certificate server, #302 proposal from LTU in a couple of weeks time
9. Eventhandler discussion, Gabor to start an issue in the Roadmap repo
10. Next meeting: Oct. 28 at 15.00 - 16.30

# Eclipse Arrowhead architecture - core systems

1. How shall serviceConsumers be registered in SystemRegistry?  
WG report by Jan. Initial discussion started. Discussion will be hosted as an issue in GitHub roadmap repo. Targeted for decision at Lubeck WS. BnearIT open the discussion on use of other ServiceRegistry like CONSUL. CONSUL is the leading open source ServiceRegistry. Supports high availability through a number of means.
2. MetaData, mandatory and optional, for Service, System and Device registries?
  1. Proposal for discussion from Cristina. Cristina and Jerker to prepare a discussion for the Roadmap WG, time line end of August. Eventual integration with ServiceRegistry WG.
3. Necessary updates to Orchestration and Authorisation system -
  1. Arrowhead X.509 certificate documentation as part of Authorisation SysDD - #11, Emanuel reported. Requirements is currently being discussed.
  2. Format for Orchestration policy and Authorisation policy data, Jerker to ask Ulf/Olov to prepare a Roadmap WG discussion in the topic. Still to be made.
4. GateKeeper and Gateway systems
  1. Scenarios for § 4, 5, and 6, Mario sequence diagram from Marios scenario 2a. Contact to WAPICE and BnearIT, look for decision next meeting. Jerker to extend the dialog with Fredrik B (BnearIT) - Mario to check in resources for hosting a WG.
5. Possible change of core system database - ON HOLD
  1. Light database is a request - WAPICE, On hold until item 1.1 is a closed



# The big picture



# Eclipse Arrowhead roadmap - big picture

Core systems

Fundamentals, Robustness, Documentation

Interoperability

Packages

Libraries

Engineering

Extensions - new or updated core systems

Traning



# Core systems - Fundamentals

ServiceRegistry - v5.1.0?

- SystemRegistry, DeviceRegistry

- Other protocols

- Use of other ServiceRegistries e.g. Consul

Robustness

- Local cloud monitoring and management

  - Arrowhead Device Agent - v5.1.0 Emanuel

  - Arrowhead Device Supervisor - v5.1.0 Emanuel

- Virtualisation of resources, e.g. mandatory core systems



# Core systems - Fundamentals

Documentation - updates ready for V5.0.0 release

- Fundamentals concepts in Arrowhead,
- Arrowhead relations to [Reference Architecture Model Industrie 4.0 \(RAMI4.0\)](#),
- Arrowhead in relation to OASIS [Reference Architecture Foundation for \[SOA\]](#)
- Reference list to publication e.g.
  - *IoT Automation: Arrowhead Framework (Delsing, 2017)*
  - ....
- Arrowhead Documentation Reference



# Interoperability

## Adaptors

OPC-UA, Aparajita - v5.0.0

Z-Wave, Salman - v5.0.0

Modbus-TCP, Salman - v5.0.0

IO-link, Infineon/HTW - v5.0.0



# Packages

HW/OS	Linux	Windows	OS-X		
Desktop					
Laptop					
Raspberry PI					
STM32					



# Libraries

Move of libs from [www.github.com/arrowhead-f](https://www.github.com/arrowhead-f)  
to [www.github.com/eclipse-arrowhead](https://www.github.com/eclipse-arrowhead) in process fully done for v5.0.0

- Java
- Kalix
- C# .net
- C++



# Engineering

Simplicity - lowering the entry step: **Code developers**

Arrowhead Device Agent - v5.1.0 Emanuel

Arrowhead Device Supervisor - v5.1.0 Emanuel

Graphical local cloud management tool - v5.x.0 Emanuel

VirtualBox on any environment, core systems + providers and consumers  
- v5.0.0 Tamas

Engineering automation: **Automation/solution engineers**

SysML models to executable code - v5.0.0 Cristina

Application system from SysML to code - v5.0.0 Saadia, Fawda, Cristina

On-line SysML tool - v5.1.0 Geza



# Engineering

Engineering process - v5.0.0

Documentation - Gianvito/Jan

Tools chains - v5.0.0

Documentation - Marek/Federica

SysML

Papyrus profile and library SysML1.6 - v5.0.0 Fawda

MagicDraw SysML 1.6 updates - v5.0.0 Jerker



# Extensions - new or updated core systems

ContractProxy enabling M2M business - v5.1.0 target

Workflow management and execution - v5.1.0 target

WorkflowManager, Workflow Executor - Jaime

Choreography updates - Daniel

NodeRed - Felix

Autonomous re-orchestration - Hua

Security

X.509 profile - V5.0.0 Emanuel

Security mitigation tool - v5.0.0 Silia/Mario

Security compliance tool - v5.0.0 Silia/Mario

NGAC - v5.1.0?



# Extensions - new or updated core systems

Integration/Interaction with Eclipse projects

Eclipse HawkBit - v5.0.0 Bosch Lucas

Planned

Eclipse Hono - v5.1.0 Bosch

Eclipse Vorto - v5.1.0 Bosch

Eclipse Kura - v5.1.0 EuroTech

Eclipse Kapua - v5.1.0EuroTech

Eclipse 4diac - update to latest Arrowhead version





# Training

Studio4Education - v5.0.0 Sebastian

Training catalog - v5.1.0 Emmanuel

Literature

Tools

Videos





# Web resources - targeted audience

High level introduction: Managers and application developers

[arrowhead.eu/eclipse-arrowhead](http://arrowhead.eu/eclipse-arrowhead)

Application and Code developers

[eclipse.org/arrowhead](http://eclipse.org/arrowhead)

Code developers

[GitHub.com/eclipse-arrowhead](https://github.com/eclipse-arrowhead)



# Long term

Semantics interoperability