Eclipse Arrowhead consists of what is needed for anyone to design, implement and deploy Automation System of Systems according to the concepts of Industry 4.0 and RAMI 4.0. The framework of Eclipse Arrowhead aims at enabling all of its users to work in a common and unified approach – leading towards high levels of interoperability.

# Eclipse Arrowhead Ecosystem

30 March 2022, webinar - 2hours, 14:00-16:00 CET Registration: Click here

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Interested in actual 30-95% cost reduction compared to current industrial state of the art?

Using open, publicly available and international standards to create your Digital Twin that is reusable, scalable and will work in the supply chain and over the lifecycle.









The Arrowhead Framework is addressing IoT based automation. The approach take is that IoT's are abstracted to services. This to enable IoT interoperability in-between almost any IoT's. The creation of automation is based on the idea of local automation clouds. A local Arrowhead Framework cloud can compare to global cloud provide improvements and guarantees regarding:

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Integrating OT automation with IT is made feasible by the Eclipse Arrowhead architecture and implementation platform.

Featuring realtime capabilities, multi protocol interoperability, scalability, security, flexibility. The technology is based on Service Oriented Architecture and Micro Services. A set of core micro services enables the design of automation and digitalization solutions.

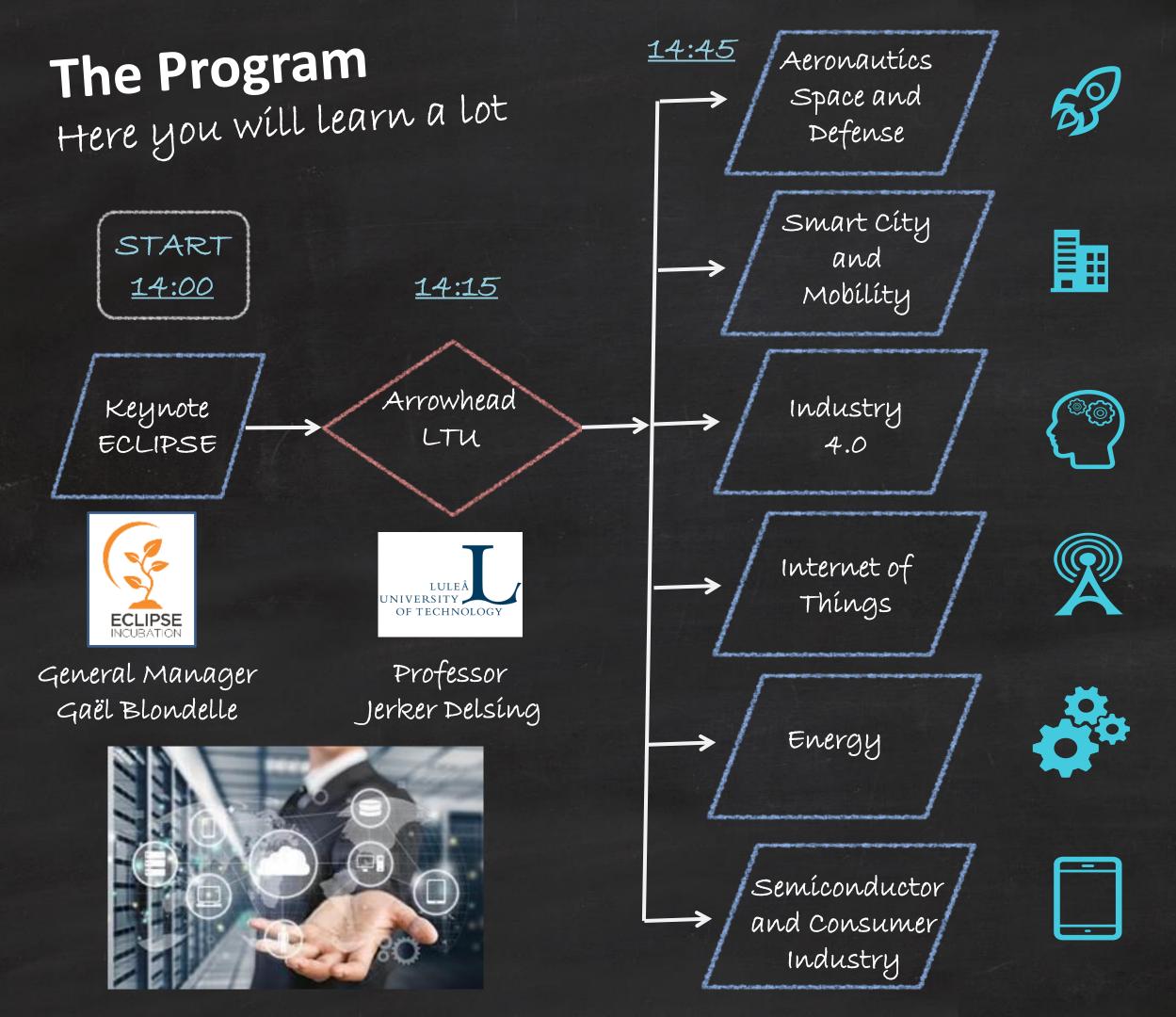
Security: X509, Interoperability between major SOA protocols, e.g. http, COAP, MQTT. Tools for interoperability for legacy protocols like OPC-UA, MODBUS, Z-wave also connected to ISO 10303 (STEP)

## This is Eclipse Arrowhead

Real time data handling Data and system security Automation system engineering Scalability of automation systems













Maurízío Gríva



Fredrik Blomqvist

Gabor Singler



Jens Elíasson



UNIVERSITÄT ZU LÜBECK Institute of computer engineering

Javad Ghofraní



Questions <u>15:45</u>



### Presenter's Bio





Jotne



Gaël Blondelle joined the Eclipse Foundation in 2013 where he is now Managing Director of Eclipse Foundation Europe GmbH and VP, Ecosystem Development, of the Eclipse Foundation. Gaël joined the Eclipse Foundation with the desire to help companies to work in open source as the best way to implement open innovation and open collaboration. Gaël has been involved in open source for more than 17 years in various roles, including as the co-founder of a startup developing an open source project, as a business developer of an open source systems integrator, and as a manager of a research project aiming to create an open source ecosystem for industrial players.

Prof. Jerker Delsing received the M.Sc. in Engineering Physics at Lund Institute of Technology, Sweden 1982. In 1988 he received the PhD. degree in Electrical Measurement at the Lund University. During 1985 - 1988 he worked part time at Alfa-Laval - SattControl (now ABB) with development of sensors and measurement technology. In 1994 he was promoted to associate professor in Heat and Power Engineering at Lund University. Early 1995 he was appointed chaired professor in Industrial Electronics at Lulea University of Technology where he currently is chaired professor in Cyber Physical Systems. His present research profile can be entitled IoT/SoS Automation, with applications to automation in large and complex industry and society systems. Prof. Delsing and the EISLAB group http://www.ltu.se/eislab has been a partner of several large EU projects in the field, e.g. Socrades, IMC-AESOP, Arrowhead (coordinator), FAR-EDGE (WP lead), Productive 4.0 (WP lead) and Arrowhead Tools (coordinator). Delsing holds positions as Vice President and board member of INSIDE Industry Association (formerly ARTEMIS-IA) and board member of ProcessIT.EU and ProcessIT Innovations.



Kjell Bengtsson, Jotne: is a Vice President at Jotne, has a Mechanical Engineering background and a diploma in Marketing. He started out at Volvo Car and General Electric doing CAD/DB applications and later management positions and is now VP at Jotne EPM Technology. Kjell has been exposed to ISO 10303 (STEP), and other related standards for the last 25 years and is actively involved in Open Standards Based Digital Twin implementation projects in the most complex defense and aerospace sector projects. Kjell is a Member of the Board of PDES Inc and supports other industry organizations like AIA/ASD, NIAG (NATO), FSI, CENSSS, AIOTI, NAFEMS and more. Further, Kjell also manage the Jotne extensive R&D portfolio at EU and the European Space Agency (ESA).

Maurizio Griva: senior manager in Concept Reply, company belonging to the REPLY Group specialized in industrial, automotive, sustainable IoT. He has consolidated a multi-year experience in managing complex technology project in the areas of embedded software, consumer product development, innovative solution design and applied research projects. In previous companies, he has covered the role of software products' operation manager, process&quality manager and IT manager being a certified Six Sigma Belt and trained IT professional.







### Presenter's Bio

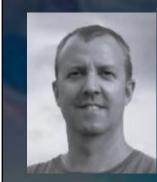




Fredrik Blomstedt, Sinetiq; is an expert in the field of data communications with focus in service oriented solutions and real-time systems. He is the head of System Architecture at Sinetiq AB and has held roles as Solution & Software Architect, Lead developer and Integration expert among others. Fredrik has an M.Sc in Computer Science and 20 years of experience in architectural work with focus on system integration and communication, development and practical implementation of service-oriented systems to both government and industry. Sinetiq are system integration experts with extensive experience of service oriented architecture, Eclipse Arrowhead and the practical implementation of it at large market leading industrial organizations, governments as well as smaller forward-thinking software companies.



Gábor Singler, Evopro; is the leader of Industrial Software Solution Business Unit at evopro Innovation Ltd. He received the B.Sc. degree in software system development from the Széchenyi István Technical University in 2005. He worked five years as software developer and integrator of SCADA systems in the field of industrial combustion control systems and industrial manufacturing systems. He worked as system tester and later as customer project consultant of Siemens SIMATIC IT Production Suite for Siemens A.G. in Genoa and in Nuremberg. He started his work at evopro Innovation Ltd. in 2012 as Research Software Developer and he has been participated in European research programs, such as Arrowhead, Productive4.0 and Arrowhead Tools. He was the team leader and operative project manager of the four years long test software development project for the reactor protection system in the Hungarian Nuclear Power Plant. Since 2019, he has been working as business leader for evopro Innovation Ltd.



Dr. Eliasson is currently the CEO of ThingWave AB, a spin-off from Luleå University that focuses on the Industrial Internet of Things, Smart Cities, Cloud and AI, and 5G solutions. ThingWave has won several awards, and perhaps the most prominent one is the 1st place in IPSO Challenge in Silicon Valley in 2015. ThingWave is today collaborating with market leaders in the digitalization domain such as IBM, ABB, Telstra, etc. in developing novel IoT solutions for energy-efficient cities, industries and mines.



Dr. Javad Ghofrani is leading the intelligent systems lab in the Institute for Computer Engineering at the University of Lübeck. His main research interests include distributed software systems and microservices architectures. In the last couple of years, Dr. Ghofrani was a part of several research projects like ENTRIA, Arrowhead Tools, NEUPA, DAIS . He is teaching several courses such as parallel computer systems, Industrial automation, and software engineering.











## The Ecosystem Mission

Open minded organizations have come together to support customers to leverage the new opportunities to implement the next generation capabilities in their Digital Transformation projects using Open systems, preventing them from vendor lock-in.

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Overview of supported applications, industrial domains and geographical areas, you can review at: <u>Arrowhead EcoSystem</u>

The Eclipse Arrowhead ecosystem provides local support in your business vertical.

Mail: ecosystem@arrowhead.eu Registration: Click here