



Jerker Delsing, Professor in Cyber-Physical systems at Luleå University of Technology, Sweden, and coordinator of Arrowhead fPVN, Johnny Sundström, Manager of Technology & Investment Plant data at Stora Enso Fors Bruk.

35M€ -project makes European industry more efficient

A new digitalisation project involving 43 partners in 12 countries will revolutionise the industrial efficiency in Europe by automated communication in the entire production network. The project, led by Luleå University of Technology and with a budget of 35M€, builds upon over 20 years of successful research results. The vision is to double the productivity within the car and aviation industry of today, the green transition and the processing industry in Europe.

“It is really exceptional. We have already made technology tests in a high number of sectors, and all of them show 30–95 percent cost and time savings. And this in sectors where you usually are impressed by an efficiency rate between 0,3–0,9 percent,” says Jerker Delsing, Professor in Cyber-Physical systems at Luleå University of Technology, Sweden, and coordinator of the project.

The background of the comprehensive project Arrowhead fPVN is that digitalisation within the industry sector has not yet made the enormous breakthrough that it has true potential to do today. In large parts of industrial Europe, there has been no increase in productivity for nearly 20 years. A major bottleneck is that different actors, systems and equipment do not communicate automatically with each other, but still require a human being to translate data between them, despite the fact that automatised capacity exists. The forest industry group Stora Enso, one of the industrial project partners, emphasises the importance of implementing automated communication in the industry.

“In today’s document-centered ways of working, files are sent in digital format, which means that each information exchange is unique and dependant on the persons involved. By automatising this process, new opportunities to accelerate the digitalisation are created. At the same time, the risks of manual data management are reduced,” says Johnny Sundström, Manager of Technology & Investment Plant data at Stora Enso Fors Bruk.

The technology that is implemented will automatise the communication in entire value networks, that is, not only within a single factory, but also between its suppliers, customers and other actors. Machines should themselves understand what other machines tell them to do – without knowing in advance which “data language” the latter use.

“I think that all of us are familiar with moving data between a system and Excel. To automatise this, without any human involvement, is what our project Arrowhead fPVN now offers and then we are talking about huge efficiency gains,” says Jerker Delsing.

Stora Enso is one of the project partners envisaging big efficiency gains if information exchange can be made automatically. To digitise established industries is a complex thing, it requires large technological leaps rather than small stages.

“The project fPVN is the missing piece when it comes to finding new standardised ways of working for managing site information. This would not only free up internal resources, but also increase the interoperability between different systems and stakeholders with maintained quality. Moreover, it would reduce risks during the life span of a site,” says Johnny Sundström.

Other project partners are, for example, Leonardo, AVL, Multivers, Granitor, AFRY, CEA, Eurotech, Siemens, Eurostep, Semantum, and Developair. The three-year project is financed by the EU body KDT-JU, participating nations and partners.

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FACTS, Arrowhead fPVN

The Arrowhead technology is based on three pillars:

- 1. A new microservices paradigm**

An open, flexible and evolvable information architecture is created and comprises a platform for implementation within industry. It enables different industrial units to communicate and work together seamlessly.

- 2. Industrially accepted and standardised digital data models**

By means of the microservices paradigm and what is known as ontologies and semantic languages, automated translation of information may be simplified and lead to updated standardised data models for important industrial segments.

- 3. Automated translation between data and information models**

Machine translation of information models enabling machines to understand machines in flexible production networks, without human involvement.