

IoD

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www.celticplus.eu/project-iod

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Internet of DevOps

The IoD project aims at addressing pain-points from large organizations in applying Continuous Integration (CI) methodologies and technologies for enhancing automation, lifecycle visualization tools, support for continuous developer feedback on software quality, and Big Data analytics of software development processes.

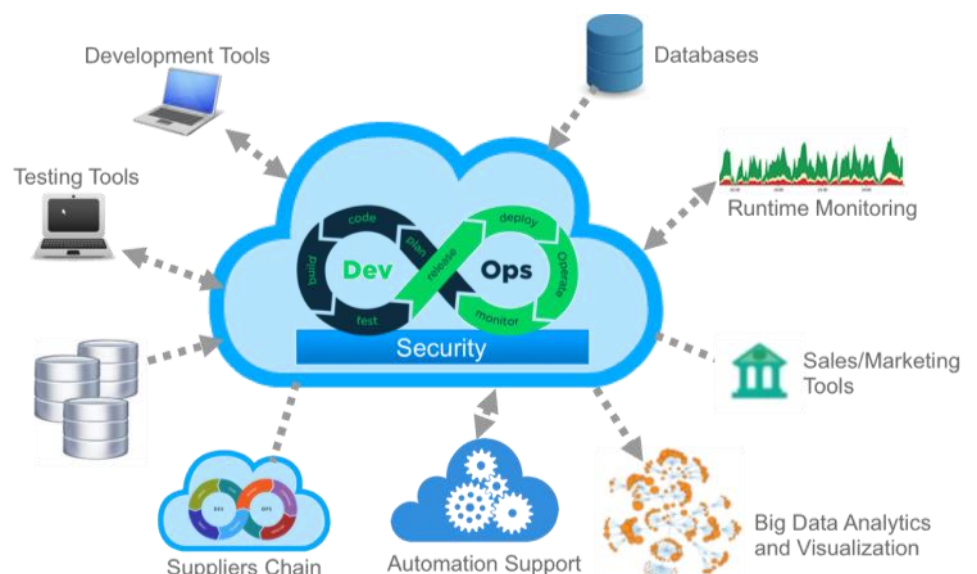
Main focus

This project focuses on the use and enhancement of DevOps within large organizations developing Telecom & Cyber-Physical Systems (CPS). “DevOps” was introduced a decade ago to emphasize the integration between “development” and “operational” phases of the software design & delivery process. Important aspects of DevOps include communication and collaboration between involved stakeholders, and the adoption of agile development processes. DevOps is today a standard practice in IT systems, but this is not yet the case for Telecom & CPS. The proposal has the ambition to provide DevOps solutions for Telecom and CPS, thus addressing their specific require-

ments and pain-points, while drawing upon experiences with existing DevOps concepts from the IT domain. This proposal focuses on key application domains (from telecom & 5G applications, aerospace & defense industries, consumer electronics, and digital marketing sectors) with system examples. Developing, operating and managing such CPS will also result in increasingly complex IT environments.

Approach

DevOps has gained more traction in the US than in Europe and has been mainly applied in the context of “pure IT” systems. In consequence, a concern is raised that European companies may be “missing the train”, and a special emphasis must be put on the development of CPS for which software engineering workflows are more conservative (due to strong dependencies to hardware and manufacturing, and their needs to fulfil safety standards). The IoD consortium covers the main stakeholders of the value chain, i.e., problem owners (large companies from defence, consumer electronics,



digital marketing and telecommunication sectors), and DevOps solution providers, and knowledge providers. These stakeholders are working together following a top-down approach for addressing the DevOps industrial requirements from the large companies. These requirements encompass targeting the lack of knowledge and guidelines on how to apply DevOps principles in these organizations; the lack of traceability across development artefacts; the lack of DevOps quality metrics and automation support; the lack of continuous developer feedback and visualization tools; and the lack of connectivity across the CPS development tools and the operational ones.

Main results

The IoD project is industry-driven and is therefore strongly focused on the following business concerns from our industrial partners: shorter release cycles to deliver products to customers, early detection and faster correction of defects, improved continuous integration and monitoring of software development processes, and increased interactions with suppliers. From a technical perspective, the project will deliver a methodology on how to apply DevOps principles in large CPS organizations, enhanced DevOps and domain-

agnostic integration services to be deployed on Internet & Cloud technologies, added-value methods and tools for collecting, aggregating, visualizing and analysing DevOps metrics and meta-data. Last, but not least, our technical assets will be used to build demonstrators from our partners' industrial use cases.

Impact

Understanding detailed and delicate aspects of the DevOps lifecycle will aid in a fast and sustainable transformation of the CPS industries. It is not only strategic to embrace this way of working, it is essential. The expected impact will be faster deliveries to customers, and more adaptive changes possible with a much higher speed. Not only to maintain a strong research and innovation leadership that is currently challenged, but also to contribute to new innovation within the European partners with faster adaption. Our project will also impact on the streamlined orchestration of various tool chains used across the DevOps value chain, and enhanced viewpoints of the various DevOps metrics that are summarised via the use of advanced data analytics. The momentum around the outcomes of the project will also be used to feed new academic courses on DevOps in order to increase the

competencies and competitiveness of junior developers and managers on these crucial topics at European level.

About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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