Flex4Apps

Optimising performance monitoring in cyber-physical systems

The ITEA Flex4Apps project aims to enable the monitoring and optimisation of complex cyber-physical systems by providing a cloud-based flexibility framework that interfaces with infrastructures and applications. The ultimate objective is to achieve system-wide performance criteria, in particular in terms of reliability, resilience and quality of service.

ADDRESSING THE CHALLENGE
Nowadays, a great number of applications run on heterogeneous, distributed and shared infrastructures containing cloud servers, telecommunication networks or IoT devices. Incidents affecting the behaviour of these applications and underlying infrastructure components are very difficult for both system providers and application developers to locate because they become obscured within these complex systems. In addition, systems can change constantly, such as the presence and absence of resources or the density and variation in traffic, and ensuring a sufficient quality of service becomes even more challenging.

PROPOSED SOLUTIONS
The market domains addressed by Flex4Apps include cloud computing, telecommunication and IoT whereby optimisation in these huge global markets, which are also important enablers for other sectors, could result in significant cost savings. First of all, the Flex4Apps platform will utilise Big Data technologies to tackle the challenge of applying performance monitoring to distributed cyber-physical systems. Most importantly, the Flex4Apps platform will be specially designed for low disturbance and low overhead for monitoring and data acquisition by tracing with Smart Infrastructure and Application Probes. The Cloud-based Flexibility Framework will avoid resource overload in individual target components of the cyber-physical system and will also facilitate smart and secure monitoring of distributed cyber-physical systems that is adaptive to the various types, formats and contents of the data as well as the varying system payload conditions.

PROJECTED RESULTS AND IMPACT
In providing a solution to manage the high data volumes and complexity of system monitoring whilst causing the least possible disturbance to the target system, Flex4Apps targets primarily the application developers and technology providers (including infrastructure) that, in turn, influence market domains like telecommunication, media distribution and cloud services. Software as a Service product management will be brought to a higher level while a technology platform specifically tailored to the needs of SaaS product managers will enable the deployment of a data and experiment driven living lab aimed at maximising the growth and valorisation potential of this domain.
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ITEA is the EUREKA Cluster programme supporting innovative, industry-driven, pre-competitive R&D projects in the area of Software-intensive Systems & Services (SiSS). ITEA stimulates projects in an open community of large industry, SMEs, universities, research institutes and user organisations. As ITEA is a EUREKA Cluster, the community is founded in Europe based on the EUREKA principles and is open to participants worldwide.

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