RADON

Project Title:
Rational decomposition and orchestration for serverless computing

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Project Coordinator:

Dr. Giuliano Casale,

Department of Computing, Imperial College London, UK

Find us: http://radon-h2020.eu/

Contact: info@radon-h2020.eu

Our Scope

RADON aims at creating a DevOps framework to create and manage microservices-based applications that can optimally exploit serverless computing technologies. RADON applications will include fine-grained and independently deployable microservices that can efficiently exploit Function-as-a-Service (FaaS) and container technologies. The end goal is to broaden the adoption of serverless computing technologies within the European software industry.

"Unlocking the benefits of serverless Function-as-a-Service computing for the European software industry"

Our Strategy and Objectives

RADON will release an **integrated framework**, which is centered on a **DevOps methodology**, to manage the lifecycles of microservices, data, and functions in FaaS-based applications. Through a **modelling environment**, we aim to graphically design dependencies and elicit requirements for serverless FaaS, microservices and data pipelines.

A **runtime environment** will be developed, which will address the automated model-driven orchestration, based on reusable templates and Infrastructure-as-Code-based configuration of deployable resources. To support this, we will define a **library of templates**, and a **FaaS abstraction layer** based on event gateways that can prevent proprietary lock-in in commercial FaaS platforms.

Finally, we aim to deliver a **quality assurance toolkit** (covering at least security, privacy, performance, cost, correctness) to manage quality in the design and runtime operation of FaaS-based applications, in compliance with requirements.

RADON will offer an advanced **DevOps framework** to help the European software industry to adopt **serverless FaaS technology**, while **avoiding lock-in** within a specific FaaS provider. The RADON framework will consist of an **integrated methodology** and an **open source toolchain** , to define, evolve, and operate event-centric applications that consume serverless functions, allowing a high-degree of **reuse** and **automation** of functions, services and associated **data pipelines**.

Our Targets

A number of markets will directly benefit from RADON, including **horizontal markets** (those pertaining to the commercialization of IT technology that is independent of the target application domain), and **vertical markets** (focusing on a specific segment of customer needs). Our target customer segments include: i) Cloud providers, System integrators, and Mobile developers; ii) Consulting firms and Telco providers;, iii) IoT and Software vendors, and iv) research scholars.

Our Use Cases

RADON will propose a DevOps framework for creating and managing microservices-based applications that can optimally exploit serverless computing technologies. This framework will be "crash-tested" in the development of three different applications, in the areas of:

- Travel and tourism technology;
- Ambient assisted living;
- Managed DevOps.

"Software created with RADON will be faster, easier, and cheaper to develop and operate than today thanks to function-level scaling and billing , automated orchestration , and reuse of functions, microservices and data pipelines"

Who we are

Imperial College London

JADS Jheronimus Academy of Data Science

XLAB

UNIVERSITY OF TARTU 1632

ATC ATHENS TECHNOLOGY CENTER

ENGINEERING

Universität Stuttgart

PRAQMA

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