RAINBOW NEWSLETTER

ISSUE 9, JULY 2022

RAINBOW is a Research and Innovation Action funded under the EU Horizon 2020 framework programme, focusing on producing an open, trusted **fog computing platform** facilitating the deployment, orchestration and management of scalable, heterogeneous and secure IoT services and cross-cloud apps.

RAINBOW EVENTS & TRAINING

The last couple of months the RAINBOW team has been **active in supporting and organising** a series of events and activities. The activities included the organization of workshops and training webinars delivering **live demonstrations** of services and functionality available through the integrated **RAINBOW Fog Computing platform**.

The focus of these events was on promoting the project's main achievements and **encouraging stakeholders** to closely examine the results available and consider how they can apply them in other settings and incorporate them into their own workflows and environments.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871403

PROJECT INFORMATION

TITLE: RAINBOW - *A fog platform for secured IoT services*
GRANT AGREEMENT NO: 871403
CALL ID: ICT-15-2019-2020
CALL TOPIC: Cloud Computing
START DATE: January 1st, 2020
END DATE: December 31st, 2022
COORDINATOR: UBITECH Ubiquitous Solutions

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Look for our hashtags!

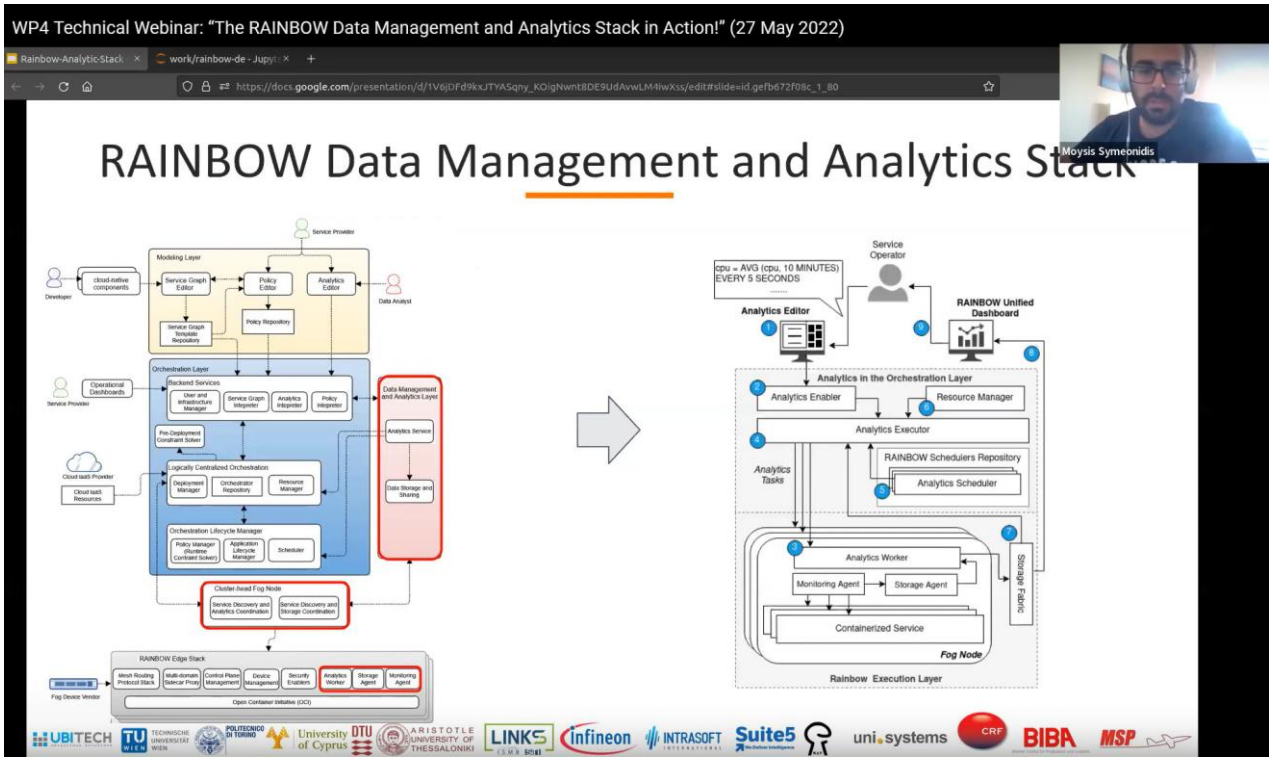
#RAINBOW_H2020
#FogComputing
#EdgeComputing
#Industry40
#secureIoT

https://rainbow-h2020.eu

RAINBOW TECHNICAL WEBINARS

The RAINBOW Data Management and Analytics Stack in Action!

On May 27, 2022 RAINBOW hosted a technical webinar focused on the RAINBOW data management and analytics stack. During the webinar, RAINBOW's partner **University of Cyprus**, provided a hands-on tutorial to showcase how IoT services can take advantage of in-place data management and distributed data processing offered by RAINBOW to derive analytic insights that can be used to enhance QoS and optimize resource management. By following through a realistic use-case of a smart transportation service it was demonstrated how one can setup the RAINBOW services, configure monitoring and storage, and then explore smart data placement, resource- and energy-aware scheduling and finally quickly submit ad-hoc queries packaged as streaming analytic jobs.



The presented material along with the webinar video recording are available in RAINBOW's website:

https://rainbow-h2020.eu/wp4-webinar-the-rainbow-data-management-and-analytics-stack-in-action-2/

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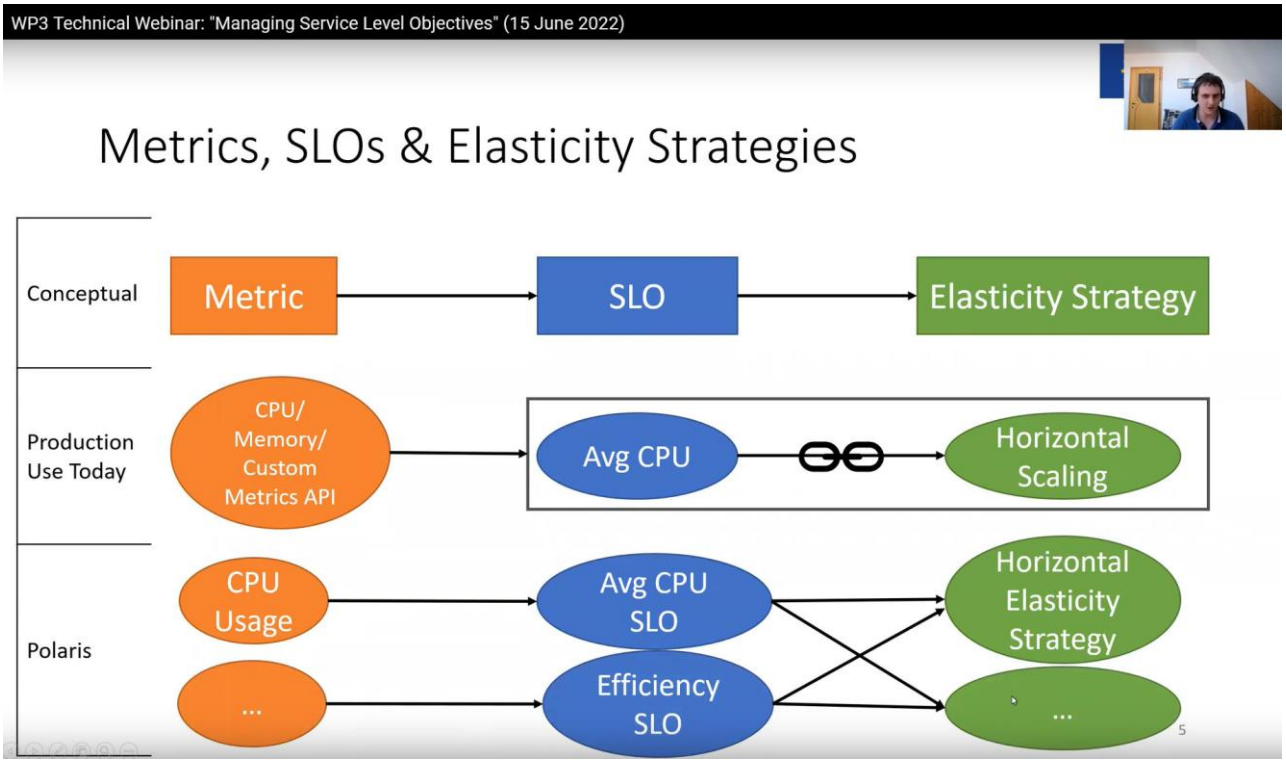
Managing Service Level Objectives

On June 15, 2022 RAINBOW hosted a technical webinar on managing Service Level Objectives (SLOs). The webinar aimed at providing an overview of the capabilities of the Polaris Framework, which is used to implement the SLO controllers and elasticity strategies in RAINBOW. RAINBOW partner, **TU Wien**, presented the concepts of the Polaris Framework and its approach to high-level SLOs. Due to the loose coupling between SLOs and elasticity strategies, Polaris and RAINBOW allow end users to choose which elasticity strategy, e.g., horizontal or vertical scaling, to use with an SLO.

The webinar featured two live demo sessions. First the generation and implementation of composed metric and SLO controllers using the Polaris CLI was showcased, followed by the configuration of an SLO mapping, which associates an SLO to a particular target workload and elasticity strategy. In the second demo session the ability of creating predicted metric controllers using AI prediction models for proactive scaling was also demonstrated.



The presented material along with the webinar video recording are available in RAINBOW's website:

https://rainbow-h2020.eu/wp3-webinar-managing-service-level-objectives/

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RAINBOW WORKSHOP

On June 21, 2022 the RAINBOW consortium hosted an online workshop on Edge Orchestration, focused on platforms for managing Cloud-Edge infrastructures and applications deployed on them. In the first session, RAINBOW member **Ubitech** presented an overview of the RAINBOW Platform and gave the audience a taste of its innovations. Subsequently, RAINBOW member **TU Wien** presented the Polaris Framework, used for implementing high-level SLOs and elasticity strategies in RAINBOW. This presentation was followed by a live demo of the Polaris CLI, showcasing how easy it makes building new SLO controllers and elasticity strategies. In the fourth session, **Futurewei Technologies, USA,** presented the open-source Centaurus platform for building unified and highly scalable distributed cloud-edge systems. Finally, the workshop concluded with an experts' panel discussion on current questions in fog computing with Prof. **George Pallis** from the **University of Cyprus** and **Deepak Vij** from **Futurewei Technologies**.

The presented material along with the webinar video recording are available in RAINBOW's website:

https://rainbow-h2020.eu/rainbow-workshop-on-edge-orchestration/

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PARTICIPATION IN EVENTS

RAINBOW was presented in a poster session during the **4th Summit on Gender Equality in Computing** (https://gec22.auth.gr), a hybrid event hosted by Aristotle University of Thessaloniki on June 16-17, 2022 and co-organized with the Greek Chapter of ACM-Women. Our project manager, **Christina Stratigaki** from **Ubitech**, presented the RAINBOW fog computing platform paradigm and its potential in IoT services and cross-cloud applications.

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The **4th International Workshop on Cyber-Security in Software-defined and Virtualized Infrastructures (SecSoft)**, a joint initiative from EU projects: **GUARD**, **SIMARGL**, **RAINBOW**, **PALANTIR**, **INSPIRE-5Gplus**, **SIFIS-Home**, **ELECTRON** and **SDN-microSENSE**, is co-hosted at the 8th IEEE International Conference on Network Softwarization that took place in Milan, Italy, from June 27 to July 1, 2022. The workshop was held in hybrid format, with 20 attendees in presence and 17 connected remotely. The programme is available at https://secsoft-workshop.org/program.html

The main purpose of the SecSoft workshop was to integrate the "Security, Safety, Trust and Privacy support in virtualized environments" conference topic. Beyond security mechanisms at the hypervisor or domain level, the softwarization of legacy security appliances, and federation schemes between multiple domains, this Workshop looked ahead to more dynamic, agile, and autonomic forms of detection and reaction of advanced threats, including the persistence ones. The specific focus was on secure and trustworthy digital services, including pure virtual services as well as cyber-physical systems. The objective was to stimulate a constructive discussion on overall frameworks and specific aspects that are necessary to build wide situational awareness and to timely counter cyber-attacks: pervasive monitoring and deep inspection, cross-correlation in time and space dimensions and detection, automated control and management of complex orchestratable systems, forensics and legal investigation, trustworthiness and privacy.

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RAINBOW PLENARY MEETING

After more than two years of intense online collaboration, representatives of the RAINBOW consortium gathered together at the 7th plenary meeting of the RAINBOW project that took place physically in Athens, Greece on 28-29th of June 2022. During the meeting, all RAINBOW partners had the chance to present the progress of their tasks, along with the challenges, potential opportunities and future plans related to their implementation.

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