

To the editor:

## Software workbench for interactive, Time Critical and highly self-adaptive cloud applications (SWITCH)

The EU funded research project SWITCH will develop an interactive and flexible software workbench that will bring significant and substantiated productivity increase from developing, testing, deploying and operating (executing) time critical applications in Cloud. The SWITCH project will be developed by 6 international partners and led by researchers at University of Amsterdam, Netherlands.



The SWITCH project (Software Workbench for Interactive, Time Critical and Highly self-adaptive Cloud applications) addresses the urgent industrial need for developing and executing time critical applications in Clouds. Time critical applications such as disaster early warning, collaborative communication and live event broadcasting can achieve their expected business value only when they meet critical requirements for performance and user experience. Often, development of such time critical applications is customised to dedicated infrastructure, leading to very high development cost and difficult usage of cloud services.

SWITCH addresses these problems by providing an interactive and flexible software workbench that, by using discovery tools at the networking level and QoS/QoE requirements from the application level, can provide the tools necessary to control the lifecycle for rapid development, deployment, management and dynamic reconfiguration of complex distributed time-critical Cloud applications.

Another important goal is to reduce development costs for time critical applications and in order to do this, software development in the SWITCH project will be managed as open source. Also, the development of the SWITCH environment, including code, semantic modelling, system integration framework, and data management, will be compliant to standards recommend by the initiative such as Research Data Alliance, International Organisation for Standardisation, Advanced Open Standards for the Information Society, IEEE and World Wide Web Consortium (W3C).

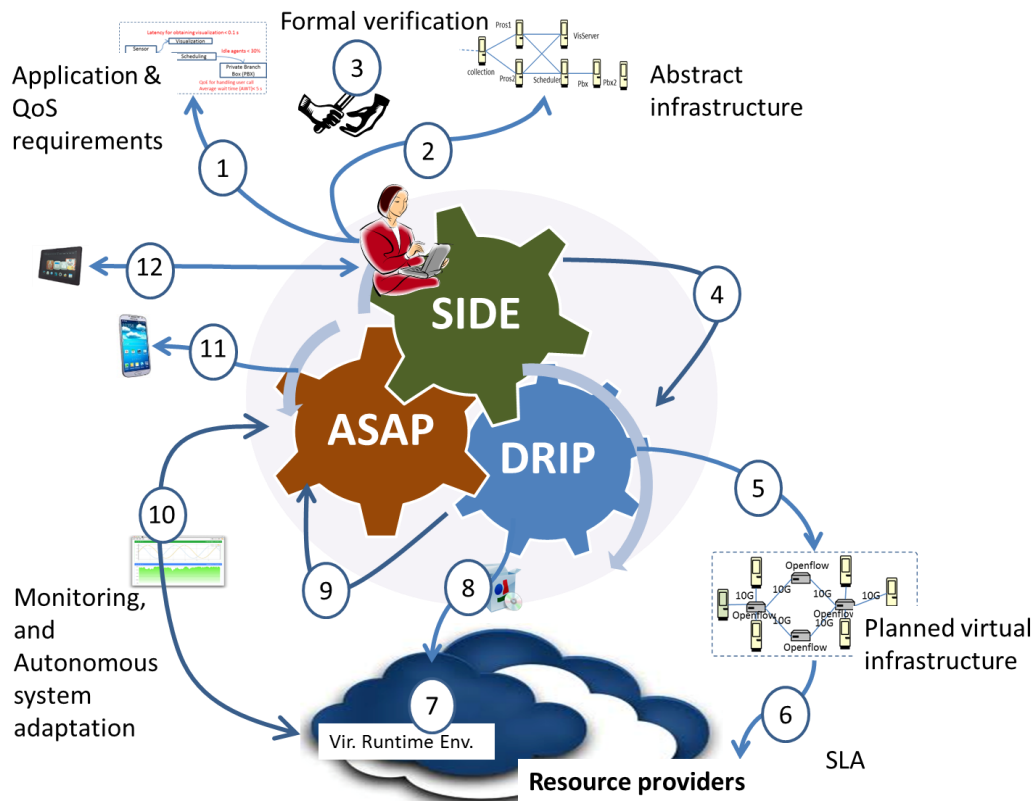
SWITCH aims at improving the existing development and execution model of time critical applications by introducing a novel conceptual model in which application QoS/QoE, together with the programmability and controllability of the Cloud environments, can all be included in the complete lifecycle of applications. Based on this conceptual model, SWITCH provides an interactive environment for developing applications and controlling their execution (SIDE), a real-time infrastructure planner for deploying applications in Clouds (DRIP), and an autonomous system adaptation platform for monitoring and adapting system behaviour (ASAP).

### Large scale impact

The programming and control model, and the software tools developed in the SWITCH project will make considerable impacts on

- Improving development productivity of time critical Cloud applications.

- Upgrading industrial technologies of time critical applications, such as early warning, live broadcast and business real-time communication, to use Cloud infrastructure.
- Improving deployment efficiency of time critical applications, bringing significant impact on the providers of time critical applications in relation to delivering and deploying services to their customers.
- Reducing operational cost of time critical services.
- Promoting business competitiveness of Clouds by providing time critical SLA negotiation mechanisms, and time critical software services (SWITCH SaaS) for optimal Cloud service utilisation.



**An example scenario of the SWITCH environment.** The image shows its impact on each step of the cycle of developing, testing, deploying and operating time critical applications in Cloud

## Partners

The consortium behind SWITCH counts 6 partners from 6 countries: University of Amsterdam, The Netherlands; Wellness Telecom SL, Spain; Cardiff University, United Kingdom; Univerza V Ljubljani, Slovenia; BEIA Consult International SRL, Romania; MOG Technologies SA, Portugal.

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