HORIZON 2020 - Research and Innovation Staff Exchange (RISE) project under Marie Skłodowska-Curie Actions

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Newsletter
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Project Overview

The current paradigm in service provisioning lacks thorough end-to-end interpretation from the quality viewpoint, while the end-users'/customers' profiles and preferences are mostly not taken into account. The subjective perception of a provided service, known as Quality of Experience (QoE), is one of the most important factors for a user's decision on retaining the service or giving it up, and the key parameter for enabling advanced customer experience management (CEM). The main objective of CASPER is to combine academic and industrial forces towards leveraging the expected benefits of QoE exploitation in future networks. In particular, CASPER will exploit the most recent approaches in communication networks, such as the Software Defined Networking (SDN) and the Network Functions Virtualisation (NFV), to design and implement a middleware architecture for QoE-driven service provisioning. The architecture will consist of three interlinked modules, one-to-one mapped to the three instrumental functionalities required for the beneficial exploitation of QoE: i) reliable, secure and passive QoE monitoring, ii) efficient, dynamic and objective QoE estimation, and iii) robust and real-time QoE-driven service management. The three modules will be optimised and released as an integrated solution, in order to accelerate the adoption of QoE-driven network service management. The cornerstone of this effort will be a carefully-planned inter-sectorial secondment programme for Experienced Researchers (ERs) and Early Stage Researchers (ESRs). Under this programme, CASPER is expected to foster the exchange of knowledge and strengthen the collaboration among academia and industry through a bidirectional knowledge-sharing approach, where the academic beneficiaries will contribute by conveying their knowledge in QoE analysis and modelling, while industrial beneficiaries will provide their expertise in service development and software implementation.

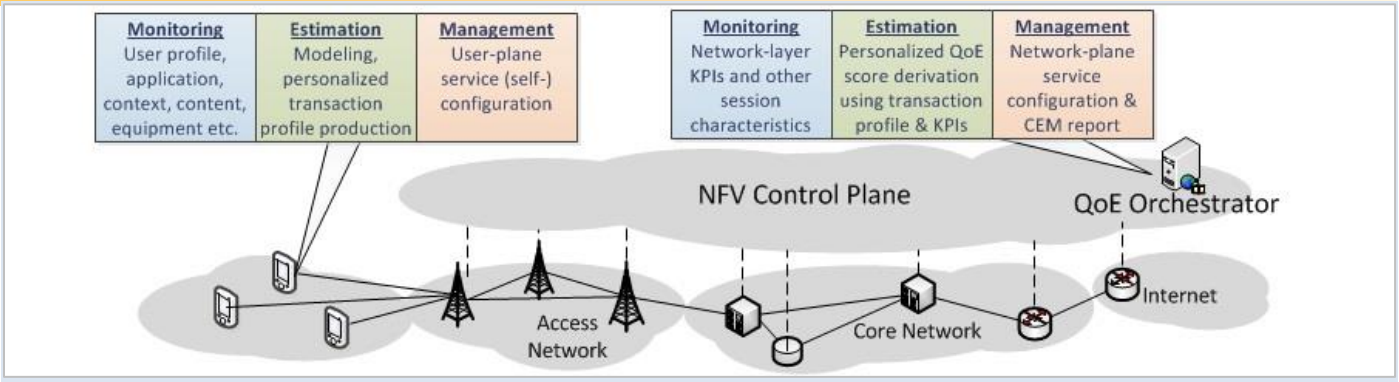
Participants

The CASPER consortium is formed of 2 Universities and 3 SMEs, distributed to three European countries, namely, Greece, Spain, and Italy. National & Kapodistrian University of Athens is the project coordinator.

Kick-off meeting

CASPER's kick-off meeting took place on the 12th of February 2016 in the National and Kapodistrian University of Athens, Greece. Representatives from all the partners have attended this meeting. Left to right: Panos Georgatsos (ADAPTERA), Nikos Passas (UOA), Fabio Graziosi (WEST), Luigi Pomante (UNIVAQ), John Vardakas (IQU) and Stefanos Anastasiou (ADAPTERA).

Objectives and structure



Research Objective 1

Study, design and optimise QoE estimation mechanisms for multimedia services, with the ambitious target to enhance and optimise QoE estimation models, to thoroughly study and evaluate key indicators that affect the QoE, and to design efficient and dynamic schemes for QoS to QoE translation.

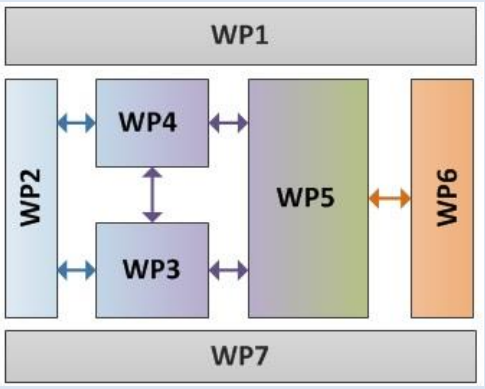
Research Objective 2

Study, design, and optimise QoE monitoring protocols, including thorough study of next generation network architecture and protocol stack towards defining the anchor points from where key QoE indicators can be acquired and the communication protocols for gathering these indicators at network and user plane.

Research Objective 3

Analyse, design and optimise advanced QoE-driven service management policies. An innovative representation of the future networks, including the recent advances in SDN/NFV for orchestrating service provisioning will be proposed and used for designing cross-layer QoE-driven service management policies.

CASPER is organised into 7 work packages (WPs), as shown in the figure. WP1 and WP7 are concerned with management and dissemination respectively, running for the whole duration of the project. The rest WPs, from WP2 to WP6, are the technical WPs of the project. More specifically, WP2 is concerned with the definition of the overall middleware architecture and the requirements for exploiting QoE in future networks; WP3 focuses on the analysis of key quality indicators, and the design of QoE estimation mechanisms and QoE monitoring protocols; WP4 performs the design and optimisation of the QoE-driven service management policies; WP5 deals with the implementation and validation of algorithms/protocols in the system level simulator and the testbed; and finally WP6 handles the final integration and proof-of-concept in a real-working environment.



Secondments

A well organised set of secondments supports the CASPER's objective of knowledge sharing among beneficiaries of the consortium, and endorses the joint research work and collaboration of researchers in different sectors and with different backgrounds. The joint research work will combine traditional academic research (state-of-the-art assessment, development of analytical models, computer simulations, etc.) with more hands-on development supported by testbed platforms. **Secondments for 21 researchers, including Experienced Researchers (ER) and Early Stage Researchers (ESR) have been planned**. Seconded and local researchers will work synergically to provide valuable knowledge sharing on their specific fields of expertise.

21 seconded researchers:

- **5 from UOA:**
  - 1 ER>10y, 3 ERs 4-10y, and 1 ESR
- **5 from ADAPTERA**:
  - 1 ER>10y, 3 ERs 4-10y, and 1 ESR
- **5 from IQU**:
  - 1 ER>10y, 3 ERs 4-10y, and 1 ESR
- **5 from WEST**:
  - 1 ER>10y, 3 ERs 4-10y, and 1 ESR
- **1 from UNIVAQ**:
  - 1 ER>10y

Till month M8 of the project (August 2016), two secondments have started. In the current issue, we present one of the secondments implemented by Luigi Pomante, Professor at University of L'Aquila. Luigi moved to Spain on July 7, 2016, to collaborate with Iquadrat engineers and researchers towards CASPER middleware architecture design.

Luigi Pomante at IQU premises

Luigi Pomante, short CV

Luigi Pomante received the BSc and MSc Degrees in Computer Science Engineering from Politecnico di Milano (Italy) in 1998, the 2nd Level University Master Degree in Information Technology from CEFRIEL (a Center of Excellence of Politecnico di Milano) in 1999, and the Ph.D. Degree in Computer Science Engineering in 2002. He has been a Researcher at CEFRIEL from 1999 to 2005 and, in the same period, he has been also a Temporary Professor at the same University. Since 2006, he is an Academic Researcher at Center of Excellence DEWS ("Università degli Studi dell'Aquila", Italy). Since 2008 he is Assistant Professor at "Università degli Studi dell'Aquila". His activities focus mainly on Electronic Design Automation (EDA), Electronic System-Level Design (ESL) and Networked Embedded Systems (in particular Wireless Sensor Networks). Since 2010, he has been in charge of scientific and technical issues on behalf of DEWS in several European and national research projects. In CASPER, Luigi leads the efforts towards the preparation of Deliverables D2.1 and D2.2 on CASPER requirements definition and architecture description.

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Wiki
Casper Wiki (only for members)

We're on the Web!
See us at:
http://casper-h2020.eu/

Dissemination

The dissemination plan of CASPER includes the organization of three workshops, a set of public talks to present to a wide audience the CASPER project, active presence of CASPER activities in social media, preparation of brochures and multimedia content to communicate CASPER achievements, and publication to top rated scientific journals and conferences in the CASPER's research area.

In the first eight months of the project, a number of contributions from project fellows have been published or have been submitted and pending for acceptance. Some of them are the following:

- D. Tsolkas, E. Liotou, N. Passas, and L. Merakos, "A Survey on Parametric QoE Estimation for Popular Services", Elsevier Journal of Network and Computer Applications (JNCA), accepted for publication.
- E. Liotou, R. Schatz, A. Sackl, P. Casas, D. Tsolkas, N. Passas, L. Merakos, "The Beauty of Consistency in Radio-Scheduling Decisions", IEEE Global Communications Conference (IEEE GLOBECOM) 2016, Washington, DC USA, December 2016.

Other planned dissemination activities to be reported in CASPER's next newsletter issue are:

- CASPER presentation in public events during the first year of the project.
- Statistics on CASPER social media accounts (Twitter and Linkedin), currently used to allow direct access to wide audiences and two-way interaction.

CASPER in Social Media

Follow us on Twitter **@casper_project**
and join CASPER group in Linkedin to
keep up to date with the project progress!