Project overview

CASPER has just completed 16 months. During this period, technical work on all relevant work packages has progressed sufficiently. In terms of outreach and dissemination activities, the first CASPER leaflet was released. Additionally, a talk at the National Documentation Centre in Greece was given, where the CASPER project was presented. What is more, the consortium submitted a workshop proposal to IEEE CAMAD 2017 conference. The proposal was accepted and all the partners worked hard for the organization of the workshop. After the acceptance, the workshop’s Call For Papers (CFP) was disseminated successfully, attracting papers from researchers outside the project. In terms of training, new secondments among partners have already been initiated. During the second year of CASPER, we expect to achieve high-quality technical contributions to recognized conferences and journals, as well as to continue the project’s outreach commitments to especially young people in Europe.
CASPER main scientific achievements so far

- Description of the major CASPER scenarios
- KPIs identification and analysis per scenario
- Requirements analysis per scenario
- CASPER middleware architecture description and per scenario configuration
- Description of the QoE management support framework
- Abstract integration of this framework into CASPER architecture
- Analysis of parametric QoE models

CASPER brochure

user-Centric middleware Architecture for advanced Service
Provisioning in future Networks

CASPER at a glance
Project Title: User-centric Middleware Architecture for Advanced Service Provisioning in future Networks
Start date: 01/01/2018
Duration: 48 months
Type: MSCA-RISE-2014
Marine Environment and Ocean Research Staff Exchange (RISE)
Partnerships:
National and regional expertise from University of Athens
University of Lappi (Finland)
Riga Technical University (Latvia)
Waseda University (Japan)
ADAPTeR (Germany)

INTRODUCTION
What is CASPER?
- A Research and Innovation Staff Exchange (RISE) project under Marie Skłodowska Curie Actions (2015-2020)

General objectives:
- To foster and promote the industry-academia cooperation
- To conduct top-notch research complemented by practical experiments
- To identify career plans, personalized to the needs of the innovation

CASPER aims to study, design and optimize:
- QoE estimation mechanisms for multimedia services
- QoE monitoring protocols
- QoE-driven service management policies

CASPER aims to develop:
- A System Level Simulator (SLS)
- A hardware platform for experiments
- QoE exploration functionalities for real devices

KEYWORDS
- Quality of Experience
- Middleware
- Service-oriented
- QoE-driven
- Network
- Multimedia
- Security

MOTIVATION
The current paradigm in service provisioning to future communication networks looks through end-to-end experiments from the quality viewpoint, with the end-users’ expectations and preferences 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 engaging the service or giving it up, and the key parameter for enabling advanced customer experience management (QoE). The main objective of CASPER is to combine academic and industrial forces towards leveraging the expected benefits of the cooperation to future networks.

In particular, CASPER will apply the most recent approaches in communication networks, such as the software defined networking (SDN) and the Network Functions Virtualization (NFV), to design and implement middleware architecture for QoE-driven service provisioning. The architecture will consist of these two main modules, one devoted to supports the three instrumental functionalities required for the delivery of QoE in future networks:

- Enabling secure and adaptive QoE monitoring of softwarized, dynamic and diverse QoS parameters and Web services based on real-time QoE measurement management.

The main goal will be achieved via an advanced, integrated solution, in close collaboration with the adoption of advanced network-centric management, the conversion of this effort will be a successful model of service-oriented architecture and management models to the improvement of the traditional QoS mechanisms.

The consortium, currently expected to foster the exchange of knowledge and strengthen the collaboration among emerging and industry-oriented technological knowledge sharing approaches, where the academic beneficiaries will contribute by engaging the industrial stakeholders. This activity will provide their expertise in service development and software implementation.

TECHNICAL APPROACH
Phase-1 Middleware architecture and QoE analysis and exploitation scenarios
Phase-2 Analysis and specification of the QoE provision scheme for scenarios
Phase-3 Implementation, proof-of-concept study, and experimental assessment
Phase-4 Product integration in commercial devices and realistic experiments

DISSEMINATION ACTIVITIES
Development of dissemination material in newsletters, video clips, etc. Participation in conferences and workshops, publication of scientific papers, participation in standardization activities, organization of workshops and dissemination days, distribution of multimedia material, public talks, interaction with broader communities and initiatives, etc.

www.casper-h2020.eu
rise.casper@gmail.com
casper_project
CASPER was presented in an open event

A workshop for the 20 years of the MSCA program for the career and mobility of researchers was held in Athens, Greece, at the premises of National Documentation Centre, on 14/3/2017. CASPER was there, sharing our MSCA experiences with the audience.

Dr. Nikos Passas (CASPER Technical Manager) presenting during the National Documentation Centre’s open event about MSCA
IEEE CAMAD 2017
Workshop on
User-Centric Communications and Content Delivery

Name and affiliation of organizers:

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Luigi Pomante</td>
<td>Università degli Studi dell'Aquila</td>
</tr>
<tr>
<td></td>
<td>Center of Excellence DEWS, Italy</td>
</tr>
<tr>
<td>Dr. Dimitris Tsolakis</td>
<td>Dept. of Informatics &amp; Telecommunications</td>
</tr>
<tr>
<td></td>
<td>University of Athens, Greece</td>
</tr>
<tr>
<td>Dr. Kostas Ramantas</td>
<td>iquadrat,</td>
</tr>
<tr>
<td></td>
<td>Barcelona, Spain</td>
</tr>
</tbody>
</table>

Scope of the Workshop

The rapid growth of multi-modal media services, ranging from conventional video conferencing to interactive immersive experiences, necessitates user-centric methodologies and approaches in order to assess and evaluate the perceived multimedia quality. Towards this direction, the key challenge is to understand Quality of Experience (QoE) notion and define QoE provisioning chains in the era of 5G networks, by incorporating advanced capabilities on: i) storage/computing/network resource management; ii) central service and network orchestration; iii) network softwarisation; and iv) Big data analytics. Although some important steps have been made in this direction, new solutions are required towards: i) best match network performance metrics to end-consumers’ satisfaction level; ii) fully exploit QoE insights to take advantage of new technologies and networking tools; and iii) well define QoE-orientated business models and marketing schemes.

In this context, the workshop focuses on bringing together researchers from academia and industry to identify and discuss technical challenges and novel ideas, regarding a variety of topics, including, but not limited to:

- QoE evaluation methodologies and metrics
- QoE-based network monitoring and troubleshooting
- QoE-based service and network management
- QoE provisioning over SDN/NFV
- QoE-based adaptive video streaming
- QoE for emerging interactive applications (immersive/360 video, gaming, haptics)
- Prediction and learning algorithms for QoE provisioning
- QoE-oriented applications and platforms
- Testbeds and online tools for QoE evaluation (crowd-sourcing, field testing, etc.)
- Datasets for QoE validation and benchmarking
- Media analytics from QoE Big Data

The workshop is organized by Marie Curie RISE project CASPER (http://casper-h2020.eu/)

Email and contact details:

Dr. Luigi Pomante, Email: Luigi.pomante@uniuag.it
Dr. Dimitris Tsolakis, Email: dtsoakis@di.uoa.gr
Dr. Kostas Ramantas, Email: kramantas@iquadrat.com
Meetings

CASPER Plenary Meeting

The 3rd plenary meeting of CASPER took place on the 27th of April, 2017. The meeting was held by UOA at the premises of the Department of Informatics and Telecommunications, Athens, Greece.

Secondments

Vasilis Tsolaks (UOA → WEST)

Researcher from UOA, Vasilis Tsolkas has been seconded to WEST starting from February 2017. The work he has conducted during the secondment includes:

- Study and classification of the KPIs per CASPER scenario.
- Analysis of QoE estimation models for popular services.

Andrea Colarieti (WEST → UOA)

Researcher from WEST, Andrea Colarieti has been seconded to UOA starting from January 2017. The work he has conducted during the secondment includes:

- Set and configure the simulation environment for QoE estimation, monitoring, and management solutions.
Dissemination

New Publications

➢ Journal papers


Upcoming Events where CASPER will participate

➢ CAMAD 2017 conference
➢ EuCNC 2017 conference

Follow us on Twitter @casper_project

Join CASPER group in LinkedIn to keep up to date with the project progress.

And visit out Research Gate page “CASPER”!