

## SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: COST 15127

STSM title: **Resilient networking among Fog, Edge and IoT devices**

STSM start and end date: 13/12/2018 to 22/12/2018

Grantee name:

### PURPOSE OF THE STSM:

(max.200 words)

The purpose of this STSM was related to preparation of chapters 2.3 and 4.3 of the RECODIS book entitled correspondingly "Postdisaster and Emergency Networks" and "Resilient cloud networking and fog computing for CPS and IoT" within WG2 and WG4 including analysis of topics of edge, fog and dew computing are used for resilient networks.

Resilience was analyzed in solutions for Internet of Things (IoT) and/or Cyber-Physical Systems (CPS). In addition, the architectural concepts of cloud-based solutions, including various edge computing implementations include extensive network communications and need special focus on analysis and network design in order to obtain resilient solutions.

### DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

(max.500 words)

We have analyzed and drafted sections for resilient implementations targeting the cloud, edge, fog and dew computing in the following book chapters:

Chapter 2.3 - Post-disaster and Emergency Networks,

Chapter 4.3 - Resilient cloud networking and fog computing for CPS

### DESCRIPTION OF THE MAIN RESULTS OBTAINED

Chapter 2.3 - Post-disaster and Emergency Networks,

Redesigned the complete book chapter, including reorganization of the proposed content, and drafting new sections, as follows:

New subsection heading introduced 1.2 Use cases

Subsection 1.2.3 updated with new draft material

New subsection introduced 1.3 Communication and information requirements and drafted

Section 2.3 and 2.4 merged and updated with new draft material

Section 3.4 now updated and transferred as 2.4

Chapter 4.3 - Resilient cloud networking and fog computing for CPS

Drafted the Section 1. Introduction, including Section 1.1 IoT and CPS, and Section 1.2 Computing and

networking architectures, and 1.3 Motivation problem

Drafted Section 2 Related Work, including 2.1 Resilient network solutions, for IoT and CPS, and Section 2.2 Existing disaster and emergency services

Updated the content and directions for other partners to contribute in Section 3 Resilient cloud-based IoT and CPS

Updated the content and directions for other partners to contribute, and drafted Section 4 Resiliency challenges of edge/dew solutions, with details on Section 4.1 Possible network communication failures, Section 4.2 Energy and processing resilience, Section 4.3 Resilient solutions in case of limited resources

During my stay I held a presentation at the faculty of Electrical and Computer Engineering entitled "On the borders of resilient edge IoT computing"

#### **FUTURE COLLABORATIONS (if applicable)**

Several ideas were discussed to design possible protocols to be used in edge computing architectures, especially in serverless approach I the context of resilience of network communications.