SHORT TERM SCIENTIFIC MISSION (STSM)
SCIENTIFIC REPORT

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

Action number: CA15127, "Resilient communication services protecting end-user applications from disaster-based failures" (RECODIS)
STSM title: Wireless Communications Under Weather-Based Disruptions. Study of Beehive Equipped With Different Sensors for Resilient Autonomous Beekeeping System.
STSM start and end date: 05/03/2019 to 18/03/2019
Grantee name: Antons Patlins

PURPOSE OF THE STSM:

(max.200 words)
During the MC-meeting in Ghent it was discussed with Rasa Bruzgiene and Nadezhda Kunicina, that it would be good to make better our book chapter. One of the good possibilities is to participate STSM to achieve previous researches and, together with colleagues-co-authors - to prepare publication for dissemination the results of our COST-Action. The main aim of my STSM is – to collect the information for providing the research about: "Wireless Communications Under Weather-Based Disruptions. Study of Beehive Equipped With Different Sensors for Resilient Autonomous Beekeeping System" for making better our book chapter and together with colleagues-co-authors - to prepare draft of publication for dissemination the results of our COST-Action.
This visit also gave me the experience of collaboration with researches of different cultures and expand my network of colleagues with similar area of interest and at the same time also encourage me for more intensive collaboration with foreign colleagues.This STSM is also a good possibility for me – for young researcher, 6 years ago defended my PhD thesis, to enrich my experience in international level.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

(max.500 words)
Following Steps (activities) has been carried out during my STSM:
- Together with colleagues we have made a little bit better our book chapter.
- It was identified the preliminary research agenda for preparing the scientific publication.
- The materials have been collected for international scientific publication to disseminate the results of our COST Action.
- Together with colleagues-co-authors the draft of publication have been written.
- The experience of Kaunas University of Technology in the field has been obtained;
- The experience, targets and research area of Faculty of Mechanical Engineering and Design, Kaunas University of Technology has been studied;
- Defined theme has been discussed with experts and colleagues from Kaunas University of Technology;
- Results of my STSM has been discussed with international experts for making conclusions based on own opinion and suggestions from experts.
- An adequate list of references for topic: "Wireless Communications Under Weather-Based Disruptions. Study of Beehive Equipped With Different Sensors for Resilient Autonomous Beekeeping System" has been collected.
-A scientific report about STMS results for the host institution and MC Chair (or the STSM coordinator) has been prepared.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

There are a lot of scientific papers and other references have been reviewed and discussed during current STSM.
Current scientific report (approved by HOST) have been prepared.
- It was identified the preliminary research agenda for preparing the scientific publication. The materials have been collected for international scientific publication to disseminate the results of our COST Action.
Together with colleagues-co-authors the draft of publication has been written. First draft has the structure listed below:
Introduction – shows State-of-the-Art and define the the goal of the research - to test the quality and reliability of WSN network using developed bee hives monitoring system.
Chapter 1 – gives the answer to the question – how different weather condition affects wireless signal. A lot of researches has found that different weather phenomena effect the wireless links in a variety of ways.
Chapter 2 - Wireless Sensor Networks (WSN) are widely used for implementation of Internet of Things (IoT) concept the main challenges by providing a reliable IoT architecture. Autonomous Beekeeping System with a lot of wireless sensors have been tested in this chapter in different weather conditions.
Testing of the smart monitoring for bee hives, autonomous energy supply for smart monitoring, test bed layout: beehive monitoring system, different kind of measurements as well as environment factor and RSSI Correlation have been discussed here.
The conclusions also have been made at the end of the article.
Hopefully, using these research, we have also made a little bit better our book chapter.

FUTURE COLLABORATIONS (if applicable)

Discussions about possible further cooperation between Riga Technical University and Kaunas University of Technology has also been performed.
Hopefully, possible further cooperation with colleagues from COST Action CA15127 "Resilient communication services protecting end-user applications from disaster based failures" (RECODIS) will bring very best experience.