

## Short-Term Scientific Mission (STSM) Report

My name is Borislav Nikolic, and I am a PhD student at the Cister Research Centre in Real-Time & Embedded Computing Systems (<http://www.cister.isep.ipp.pt/>).

On October 4<sup>th</sup> 2013 I sent a request for the STSM (**reference number 15521**), related to the COST action **IC1202**. The request has been approved on October 21<sup>st</sup> 2013. The additional details about the STSM are available in the attachment file "registration\_form.pdf".

My STSM included a 3-month visit to the Real-Time Systems Group of the University of York (06.01.2014 – 31.03.2014). My host and supervisor during the STSM was Dr Leandro Soares Indrusiak.

Below is the list of activities that I performed during STSM:

1. I held a 30-minute talk which was attended by the PhD students as well as the academics of the Real-Time Systems Group of the University of York. The purpose of the talk was twofold. First, I introduced the Cister institute to the hosts, in order to inform them about our research activities and identify the topics for the potential future collaborations. Second, I presented the work I have done during my PhD and also discussed the potential topics for the collaboration.
2. I actively participated in all activities, including the talks by researchers, as well as the group and individual meetings with the supervisor Leandro.
3. During the individual meetings, Leandro and I made a plan of my research activities during the STSM. First, we focused on the existing real-time communication analysis for wormhole-switched priority-preemptive NoCs, developed by Zheng Shi and Alan Burns [1]. Then, we identified two sources of pessimism in the existing analysis, one of which we extensively studied. Finally, we proposed a novel, less pessimistic (tighter) analysis, and submitted it to the Network-on-Chip Symposium ([www.nocsymposium.org](http://www.nocsymposium.org)). Due to the double-blind format of the revision process, the title and additional details of the work have been withheld.
4. Moreover, Leandro and I identified several topics for the future collaboration, such as: to derive a novel real-time communication analysis which decreases the number of preemptions among traffic flows, to derive a novel analysis which unifies, in an efficient way, the schedulability analysis (on-core) and the communication analysis (network). Both these works would be valuable contributions to the multiprocessor-based real-time systems.

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April 14<sup>th</sup> 2014, Porto, Portugal

[1] Z. Shi and A. Burns. **Real-time communication analysis for on-chip networks with wormhole switching**. In International Symposium on Networks-on-Chip, 2008.