

## CISTER SCORES BEST PAPER AWARD

The Ada-Europe International Conference on Reliable Software Technologies is a reputed international forum for providers, practitioners and researchers in all aspects of reliable software technologies. This year the conference was held in Madrid, Spain, with a strong participation of CISTER researchers, who managed to get three papers accepted to this conference, two of which within international collaborations.

The conference best paper award was handed during the banquet to the paper “An Execution Model for Fine-Grained Parallelism in Ada”, a collaborative work by Luis Miguel Pinho (CISTER), Brad Moore (General Dynamics, Canada), Stephen Michell (Maurya Software, Canada) and S. Tucker Taft (AdaCore, USA). The paper puts forward the execution model (and its extension for real-time parallel applications) of the fine-grained parallelism mechanism being proposed, by the authors, for Ada. The award recognizes thus the achievements of this international collaborative effort.

## CISTER PROGRESSES IN ECSEL AND PT2020



The Project Outline results for the ECSEL 2015 call for both RIA and IA projects have been announced and all proposals, with CISTER involvement as a consortium partner, have passed the required criteria, with the Full Project Proposal to be submitted by September.

CISTER proposals cover several areas where real-time embedded computing is a key player, namely: tools and algorithms for building complex Cyber Physical Systems; platforms for autonomous operations of Unmanned air vehicles in civil

airspace; comprehensive test and validation framework to increase dependability, safety and efficiency of automated and autonomous systems; development of integrated, safe and secured HW&SW solution through integrated sensor devices in Food production Industry and novel solutions for resource predictable networked many-core system architectures.

CISTER is leading one of the proposals, whose focus is the topic of software methods and tools to enable predictable high-performance execution on COTS multiprocessors or many-core architectures.



In parallel, CISTER was also involved in two proposals that have been submitted for calls from the Portugal 2020 program. These involve several companies and other research institutions from Portugal, including Embraer, CEIIA, GMV, Inova+, among others. The proposals cover application of real-time embedded computing in different scenarios: development, validation, and implementation of novel assisted living solutions for elderly citizens and patients affected by chronic diseases, and structures and certification & validation of avionic systems.

## NEW MEMBERS AND VISITING PROFESSORS

In the last few months, CISTER beefed up its international collaborations. First, Benny Akesson returns as a research associate of CISTER.

Benny works in Real-Time Embedded Systems with interests in resource arbitration, performance virtualization and analysis, power estimation, variability, and design automation. On behalf of everyone here: Welcome back Benny!



Benny Akesson  
Eindhoven University of Technology  
Netherlands



Per Lindgren  
Luleå University of Technology  
Sweden



Damien Masson  
Université Paris-Est  
France

Also, two resourceful researchers completed their stay at the lab, Damien Masson and Per Lindgren.

Per Lindgren is a chaired professor in Embedded Systems at EISLAB, Sweden, and manages the Sustainable IT systems Master's (SITS) program. He is a member of the ARTES++ reference group, and member of the ARTEMIS Architecture group, having contributed to the ARTEMIS Tools SRA. Per visited us between April and June 2015 and, together with CISTER's researchers David Pereira and Luís Miguel Pinho, continued an ongoing collaboration targeting the development of deadlock free programming for low cost embedded systems. They also worked on the application of formal verification in the construction of certified IEC 61499 toolboxes for the development of software for industrial automation systems. This joint work is part of the goals that are being address in the scope of the European Project EMC2.

Damien Masson is an associate professor in the Systems Engineering department (ISYS) of ESIEE, Université Paris-Est. He is also a member of the Gaspard-Monge computer science research laboratory (LIGM) in the LRT team. Damien visited us between January and June 2015, and together with CISTER's researcher Geoffrey Nelissen, they worked on designing new lightweight and low-complexity real-time scheduling mechanisms.

## CISTER PROJECTS PROGRESS

The CarCoDe project reached its completion in June 2015, and the partners of the project organized a final event in Castelo Branco, Portugal to discuss the final results internally, and to disseminate them to the general public. On June 2nd, the CarCoDe consortium held the General Assembly, attended by Michelle Albano from CISTER, which focused on preparing the final reports for the project, and setting up the workshop scheduled for the following day.

The workshop was attended by important actors in the Portuguese and international automotive industry and PAs, such as BMW, Toyota, the European Commission, Airbus, Portugal Telecom, Alcatel-Lucent, the Municipality of Castelo Branco, and Business Association of Beira Baixa. The workshop had media coverage by both the national television SIC, and the magazine Exame Informática.

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CISTER - Research Center in  
Real-Time & Embedded Computing Systems

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CISTER leads the ISEP participation in the European Project MANTIS. ISEP's participation counts also with solid contributions from GECAD. CISTER's Luis Lino Ferreira represented ISEP in the MANTIS kick-off meeting that was held in San Sebastian, on the 3rd and 4th of June. The meeting involved several project partners in a very intensive set of work sessions aimed at

coordinating the activities. ISEP is part of a Portuguese consortium integrating INESC-TEC, UNINOVA and ADIRA. The overall concept of MANTIS is to provide a proactive maintenance service platform architecture based on Cyber Physical Systems that allows to estimate future performance, to predict and prevent imminent failures and to schedule proactive maintenance.

In this project CISTER leads two work packages, one related to dissemination and another related to the development and integration of sensors into industrial equipment (development of sensors for maintenance, their communication protocols and middlewares). CISTER will also collaborate with the Portuguese consortium on an industrial pilot.

On May 4-6, Luis Miguel Pinho and Vincent Nelis, from CISTER, attended the second review meeting of P-SOCRATES, organised in Oslo, Norway, within the block review week, organized by the European Commission (CNECT A3) which brought together the "Advanced Computing project cluster": the group of FP7 projects working in the area of Advanced Computing and financed by the European Commission under ICT Call 10. During the meeting the consortium presented the current status of his work, with the progress and results achieved so far. The overall feedback was that the P-SOCRATES project has successfully met all its objectives in developing individual software/analysis components, the integration of those components being the target for the next milestone next year. The official review report, received last week, provides very positive remarks, both on the technical outcomes of the period, as well as in the proactive and collaborative work of the project partners.

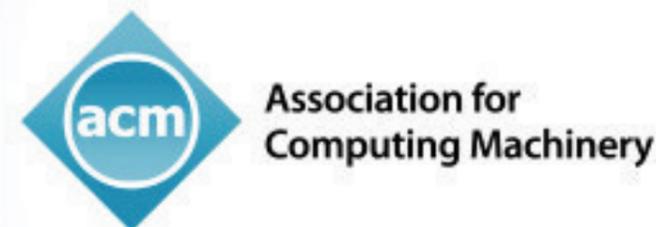


## EMBRAER VISITS CISTER



On June 23rd, Sérgio Penna, head of R&D at the Flight Test Division of Embraer, Brazil, had a series of meetings at CISTER in his role of member of CISTER's Industrial Advisory Board. The meetings aimed at fostering the collaborations between the two institutions and to share his views on the status of some of the research activities currently conducted in the Lab. Three CISTER topics were discussed with him: (1) the runtime monitoring & verification for hard real-time systems; (2) the contribution of CISTER to the

ARTEMIS project DEWI (Dependable Embedded Wireless Infrastructure); and finally (3) the contribution of CISTER to the FP7 project P-SOCRATES (Parallel Software Framework for Time-Critical Many-core Systems), with a focus on the development of the measurement-based timing analysis tool being developed by the Lab.



## EDUARDO TOVAR ELECTED VICE-CHAIR OF ACM SIGBED

Eduardo Tovar, Director of CISTER lab, was elected Vice-Chair of the ACM SIGBED – Special Interest Group on Embedded Systems, for the term of 1 July 2015 – 30 June 2017.

ACM SIGBED is a focal point within the Association for Computing Machinery (ACM) for all aspects of embedded computing systems, including both software and hardware. SIGBED sponsors major scientific events such as CPSWEEK and ESWEEK.

This election is the recognisance of the international leadership role that CISTER gained in the area of real-time and embedded computing systems through the years.



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