



## **Strategies for Embedded Systems Research**

EU Project FP7-ICT-215594  
<http://www.cosine-ist.org>

**Deliverable**

### **D1.4.2 Expert Workshop on Strategies for Improving European Embedded Systems Education & Training**

Version 1.1  
UTIA  
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Public

## Introduction

This report described and summarized results of the projects' activities belong to field of ES education and training in the EU.

### **Task 1.4.2 Co-operation in ES education and training**

COSINE2 project aims to improve cooperation in the area of ES education and training, because it is rather isolated nowadays in the EU member states.

The measurable objective is a successful workshop on education with stake holders and the development of a joint position on ES education as well as the impact on national education and training strategies and initiatives.

#### **Task 1.4**

Educational and training topics in ES RTD have only rarely been addressed at a pan-European view so far. Some academic initiatives such as ARTIST have targeted this topic, but with only little impact at policy level. Based on a first workshop on this topic and expert discussions, COSINE2 will develop a joint position concerning European ES RTD education and training. This position will be disseminated in the relevant ministries, to EC services, and at the COSINE2 web site.

The Expert workshop is a follow-up to the COSINE2 Workshop on ES Education & Training held in Athens 5<sup>th</sup> June 2008. After due consideration, it was agreed to organized this workshop in parallel to the FET 2009 conference 21<sup>st</sup> April in Prague, day after the ICT directors and ICTC meetings in the same place.

The Expert workshop focused on discussion about concrete draft of European ES RTD education and training policy (ESET) measure included in this report.

Result of the Expert workshop, have been shortly presented to industry partners of Artemisia during the ARTEMIS Spring Event 2009 held in Nice on April 23 and 24, just after the FET 2009 conference.

The Expert workshop as well as Nice meeting led to meeting of representatives of the Artemisia working group on Education and training with COSINE 2 project 25.5.09 in Salzburg AT.

This report is documenting the content of the draft of European ES RTD education and training policy (ESET) measure and conclusions of the follow up discussion up to the meeting in Salzburg.

## **Acknowledgement**

Work reported here was funded by the Information and Communication Technologies Programme of the European Commission under the COSINE2 Grant agreement No. FP7-ICT-215594. COSINE2 stands for “Co-ordinating Strategies for Embedded Systems Research”.

The COSINE partners are:

- eutema Technology Management GmbH (Co-ordinator, AT)
- Finnish Funding Agency for Technology and Innovation (FI)
- Deutsches Zentrum für Luft- und Raumfahrt (DE)
- The Israel Directorate for EU FP6 (IL)
- Institute of Information Theory and Automation, Academy of Sciences (CZ)
- Swedish Governmental Agency for Innovation Systems (SE)
- Bundesministerium für Verkehr, Innovation und Technologie (AT)
- Nemzeti Kutatási és Technológiai Hivatal (HU)
- Flanders Institute for the Promotion of Innovation (BE)
- Ministry of Universities and Research (IT)
- Atomic Energy Commissariat (FR)

## **General information**

*Event:* COSINE2 Expert Workshop on Strategies for Improving European Embedded Systems Education and Training

*Event date and venue:* 21<sup>st</sup> April 2009, Clarion Hotel Prague, Czech republic

*Event organizer:* UTIA together with COSINE 2 partners

## **Workshop preparation**

Preparations for the workshop have begun in autumn 08. The first issue was to determine date and place. UTIA, the Task 1.4 leader proposed to arrange the event jointly with FET 09 conference 21<sup>st</sup>-23<sup>rd</sup> April 2009 in Prague. This was made on two assumptions:

- There would be a great opportunity to meet relevant authorities from the EC as well as scientist and academics (university lecturers) during the conference.
- ARTEMIS Spring Event 09 held in Nice on April 23 and 24 followed the FET 09 conference. The draft of the Joint position paper on Embedded Systems Education would be disseminated there.

All COSINE partners' final decision was to set up the Expert Workshop on Tuesday 21<sup>st</sup> April, the first day of the FET conference and the day after ICT Directors and ICT Committee meeting in Prague.

UTIA continued and finished all necessary arrangements.

## **Event promotion**

The event web page was created in January 09. Link:

[http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS\\_Prague\\_09-04-21](http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS_Prague_09-04-21)

Partners asked for the linkage:

IDEALIST project

Technology centre AS CR in Prague (CZ)

NINET Network (CZ)

## **Event programme preparation**

Information about the event was sent by Idealist mailing list to approx. 600 potential contacts.

*Target audience:* Researches from universities, research institutes and companies in the area of ES

## **Expert Workshop on Strategies for Improving European Embedded System Education and Training**

**Prague, April 21<sup>st</sup> 2009**

Embedded Systems often are technology enablers for new areas as well as dynamic accelerators in more traditional industries. This is why several countries have started Embedded Systems programmes and why the European Commission and member states support JTI Artemis in this field. Also, European member states should not stop their national Embedded System research programmes. This however poses the question for their co-ordination and co-operation with each other and with measures at EU level or internationally.

Based on these topics and expert discussions, a Joint draft of position paper concerning European ES RTD education and training will be discussed. This text will be disseminated within the relevant ministries and EC services, as well as the ARTEMISIA University / Research Chamber.

**Focus:** Joint draft of position paper concerning European ES RTD education and training

**Format:** Expert presentations followed by discussions

**Date:** **Tuesday 21<sup>st</sup> April 14:15 – 15:15**

**Venue:** Clarion Congress Hotel Prague  
Freyova 33  
Prague 9 - Vysočany  
phone: +420 211 131 125-39  
website: <http://www.cchp.cz/>

**Organizer:** COSINE 2 project <http://www.cosine-ist.org>  
COSINE 2 brings together policy makers from national authorities and research agencies funding the national embedded systems research, including ARTEMIS and EUREKA calls.

Workshop is one of the side-meetings linked to the FET 2009 Conference in Prague (21. – 23. April 2009): [http://ec.europa.eu/information\\_society/events/fet/2009/index\\_en.htm](http://ec.europa.eu/information_society/events/fet/2009/index_en.htm) .

- **Event link:** [http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS\\_Prague\\_09-04-21](http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS_Prague_09-04-21)

***Input to the policy discussion from the Cosine 2 workshop in Athens:***

- Participants recognized relation to the new Artemisia working group on education of ES.
- There's a good trans-national overlap in the current assessment of the needs of the ES industry and of ES researchers.
- Factors such as shortness of skilled ES RTD staff, vocational training etc. could be found across countries.
- New member states are facing a number of specific challenges that suggest some changes in policies.
- Participants emphasized that the national authorities have to play important part in the coming discussions because they can directly influence priorities and format of the national education programs.

***Expert Workshop on Strategies for Improving European Embedded System Education and Training***

Target audience: Researches from universities, research institutes and companies in the area of ES

Format: Presentation of the "Draft of European ES RTD education and training policy measure" (enclosed) followed by discussions

***Needs identified during the Prague workshop:***

- Easy access to teaching materials, starter kits and development tool and design tool chains for the education institutions and the training courses for professional from industry.
- Applications must be light-weight and related to concrete course or project associated to concrete group of students teacher and related to a training project with the "Best Practice" or "First Use" character.
- Possible support measure should be managed by few respected research laboratories and universities together with Artemisia.
- The equipment (starter kits), tool chain and training material should be designed and manufactured by European companies, even if parts used in the kits can be manufactured elsewhere.
- The sub-project results shared in a common open repository managed by few core partners including Artemisia.

***Time frame discussed during the Prague workshop:***

- Modalities of possible support activities needs to be consulted with the key stake holders during first halve of 2009.
- Possible action needs to be discussed and possibly agreed and included in the 2010 Artemis annual work-program.
- Education and Training activities can be funded from January 2011 for several years.
- This could provide opportunity for ARTEMISIA companies to prepare teaching material, kits and tools already during 2010.
- The action might replicate the best elements of the proven EUROPRACTICE model of support for HDL software for the Embedded Systems.

***Follow up action: ARTEMIS Spring Event 2009 Nice 24-24.4.09***

Result of the Prague expert workshop, have been shortly presented to industry partners of Artemisia during the ARTEMIS Spring Event 2009 held in Nice on April 23 and 24, just after the FET 2009 conference (presented by M. Danek)

[https://www.artemisia-association.org/spring\\_event\\_2009\\_programme](https://www.artemisia-association.org/spring_event_2009_programme)

***Follow up action: Meeting of Artemisia working group on Education and training with COSINE 2 partners, Salzburg 25.5.2009***

The Expert workshop as well as Nice meeting led to meeting of representatives of the Artemisia working group on Education and training with COSINE 2 project 25.5.09 in Salzburg AT.

The Artemis WG Education was represented by Dr. Erwin Schoitsch and Dr. Martin Danek from UTIA.

The objective was to consult with some of the EU public authorities the possibilities to support the education activities in Artemis as well as the Artemis Orchestra Contest.

At a short pre-meeting between E. Schoitsch and M. Danek it was concluded that the weak point of the current organization of the Artemis Orchestra Contest is the very limited support of participating teams in terms of parts costs and other local expenditure. To improve this situation it is desirable to formalize the current state by finding a situation where prospective teams can come and ask for funding on the promise of delivery of a system that will enter the contest.

Dr. Erwin Schoitsch presented a summary of discussions at the Nice Artemis Spring Event 2009, and outlined these open points for discussion:

- A possibility to propose in 2010 Artemis Annual Work Program a call for Education support projects.
- A possibility to propose in 2010 Artemis Annual Work Program a call for project supporting teams preparing for Artemis Orchestra Contest.

***Recommendations from the discussions of Artemisia working group on Education and training with COSINE 2 partners:***

- Cosine 2 partners, indicated that it is currently very difficult and often impossible for their Ministries to finance Education-only type of projects in Artemis.
- Cosine 2 partners suggested to issue in 2010 Artemis Annual Work Program minimal requirements for an educational module within big Artemis projects.
- Cosine 2 partners suggested formulating minimal requirements for a module to be eligible as an educational module within Artemis project (to link with the concept of platform).

***Conclusion***

Under the current circumstances it does not seem possible to include in Artemis Annual Work Program 2010 a category of projects that could focus solely on education.

Artemis WG Education will ask Chamber B members at the Artemis Summer Camp 8-9.6.2009 in Brussels to discuss possible means of implementing educational activities within Artemis projects so as to build an ecosystem around platforms developed within Artemis.

## ***Embedded System Education and Training (ESET)***

The aim of this draft white paper is to formulate framework for coordinated support of embedded system education and training (ESET). The objective is to discuss with the public authorities involved in ARTEMIS, with the ARTEMISIA association members and EU the optimal format for possible horizontal activity in the Artemis annual work-program 2010 dedicated to the coordinated support of ESET.

This draft has been prepared as outcome of the *COSINE 2 Workshop on Embedded Systems Education and Training* in Athens 5.6.2008.

[http://www.oko-ist.cz/index.php?ids=events&id=events08/CosineWS\\_Athens\\_08-06-05](http://www.oko-ist.cz/index.php?ids=events&id=events08/CosineWS_Athens_08-06-05)

It will be discussed at the *COSINE2 Expert Workshop on strategies for improving Embedded Systems Education and Training* in Prague 21.4.2009.

[http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS\\_Prague\\_09-04-21](http://www.oko-ist.cz/index.php?ids=events&id=events09/CosineWS_Prague_09-04-21)

The outcome of this second expert workshop will be presented in the *focussed session on education and training* at the ARTEMISIA general assembly meeting in Nice 24.4.2009.

[https://www.artemisia-association.org/spring\\_event\\_2009\\_programme](https://www.artemisia-association.org/spring_event_2009_programme)

The key characteristic if the proposed ESET action:

- Objective is to provide easy access to teaching materials, starter kits and development tool and FPGA design tool chains for the education institutions for the undergraduate, postgraduate courses on embedded systems as well as to the training courses for professional from industry.
- Application for participation from the education institutions must be light-weight and related to concrete course or project associated to concrete group of students, teacher and related to a training project with the Best Practice or First Use character. ESET will organise light-weight selection of applications (with the EU and Artemis involved).
- Educational institution can apply for ESET support as a single partner with the scope of the project limited to 1 calendar year.
- ESET should be managed by few respected research laboratories and universities together with Artemisia.
- The equipment (starter kits), tool chain and training material should be *designed and manufactured by European companies*, even if parts used in the kits can be manufactured elsewhere.
- The application results coming out from training projects should be shared in a common open repository managed by ESET core partners including Artemisia.

Modalities of ESET needs to be consulted with the key stake holders during first halve of 2009. Call for ESET type of action needs to be agreed and included in the 2010 Artemis annual work-program. Selected proposal for the ESET type of action can be funded from January 2011 for several years. This could provide opportunity for ARTEMISIA companies to prepare teaching material, kits and tools already during 2010. The ESET action can

replicate the best elements of the proven EURO PRACTICE model of support for HDL software for the Embedded Systems.

### Points for discussion

- Should ESET type of action be considered at all ?
- Should ESET co-finance design cost of starter kits ?
- Should ESET co-finance and manufacturing of boards ?
- Should ESET co-finance preparation of unified educational package ?
- Should ESET co-finance part of personnel cost of teachers running the courses ?
- Should ESET co-finance part of personnel cost students running the courses ?
- Should ESET co-finance part of personnel cost for teachers supervising project work ?
- Should ESET co-finance part of personnel cost for students working on projects ?
- Should ESET include additional modalities proved in national support schemes ?
- Should ESET type of action get support from industry in current economic situation ?
- Should ESET get support from public authorities in current economic situation ?

### ***Expert Workshop on Strategies for Improving European Embedded System Education and Training 21<sup>st</sup> April 2009***

#### *List of participants:*

Dr. Jiri Kadlec	UTIA Prague, CZ
Dr. Aviv Zeevi	The Israel Directorate for EU FP7, IL
Prof. Lenka Lhotska	CTU Prague, CZ
Doc. Dr. Ing. Pavel Zemcik	Brno University of Technology, CZ
Prof. Ondrej Novak	Technical university of Liberec, CZ
Dr. Jan Schier	UTIA Prague, CZ



Dr. Martin Danek

UTIA Prague, CZ