

# Report on the First European Training Course on OSEK Systems for Microcontrollers

RETIS Lab  
Scuola Superiore Sant'Anna, Pisa (Italy)  
Pisa, March 26-28, 2007

URL: <http://www.artist-embedded.org/artist/Course-Programme.html>

## 1. Introduction

The course was aimed at:

1. providing the fundamentals concepts of real-time computing systems, including scheduling, resource management and timing analysis;
2. introducing the OSEK/VDX standards, taking as a reference implementation the Erika Enterprise kernel;
3. showing how to apply such concepts in practice, with examples based on the Altera Nios II and the Microchip dsPIC DSC microcontrollers;
4. teaching participants how to develop simple control applications using Erika Enterprise with code generation from functional models.

## Organizing Committee

- Giorgio Buttazzo - Scuola Superiore Sant'Anna, Italy
- Paolo Gai, Evidence Srl

## Local Arrangements

- Ettore Ricciardi – ISTI-CNR, Pisa
- Giorgio Buttazzo - Scuola Superiore Sant'Anna, Italy

## Teachers

- Giorgio Buttazzo (Scuola Superiore Sant'Anna, Italy)
- Paolo Gai (Evidence S.r.l., Italy)
- Simone Mannori (INRIA, FR)

## Technical Assistants

- Tullio Facchinetti (University of Pavia, Italy)
- Mauro Marinoni (University of Pavia, Italy)
- Gianluca Franchino (University of Pavia, Italy)

## 2. Practical laboratory experience

The practical part of the course required the participants to develop simple real-time control applications, using a number of FLEX embedded boards provided by Evidence. The FLEX boards are based on dsPIC microcontroller and control applications had to be developed under the Erika real-time operating system. The low level code for accessing the hardware was already provided as a number of library functions, so the participants had to develop only the code for sensory data processing and control.

### 3. Participants

The course hosted thirty participants, from universities, research centers and industries, coming from 10 different countries. Figure 1 and Figure 2 show them attending the lectures and working in the lab.

	<b>firstname</b>	<b>lastname</b>	<b>organization</b>	<b>city</b>	<b>country</b>
1.	Jean-Luc	Bechennec	IRCCyN	Nantes	FRA
2.	Francesco	Benzi	Univ. of Pavia	Pavia	ITA
3.	Antonio	Bersani	Microchip	Legnano	ITA
4.	Marko	Bertogna	SSSA	Pisa	ITA
5.	Luca	Capisani	Univ. of Pavia	Pavia	ITA
6.	Laura	Carnevali	Univ. of Florence	Firenze	ITA
7.	Filippo	Cavallo	Dip. Oncologia	Pisa	ITA
8.	Dario	Cazzaro	SSSA	Pisa	ITA
9.	Mangesh	Chitnis	RETIS	Pisa	ITA
10.	Francesco	Conversi	Marconi s.p.a.	Rome	ITA
11.	Dario	Di Stefano	Univ. of Pisa	Pisa	ITA
12.	Aldo	Dolfi	Accent S.p.A.	Vimercate MI	ITA
13.	Tullio	Facchinetti	Univ. of Pavia	Pavia	ITA
14.	Gianluca	Franchino	Univ. of Pavia	Pavia	ITA
15.	Luca	Invernizzi	SSSA	Pisa	ITA
16.	Camilo	Lozoya	TU of Catalonia	Vilanova i la Geltru	ESP
17.	Simone	Mannori	INRIA	Le Chesnay	FRA
18.	Mauro	Marinoni	Evidence S.r.l.	Pontedera	ITA
19.	Walter	Nesci	Magneti Marelli	Bologna	ITA
20.	Oleg	Parshin	Saarland Univ.	Saarbruecken	DEU
21.	Ettore	Ricciardi	ISTI-CNR	Pisa	ITA
22.	Antonio	Romano	SSSA	Pisa	ITA
23.	Luca	Santinelli	SSSA	Corinaldo	ITA
24.	Ugo	Sitta	Magneti Marelli	Bologna	ITA
25.	Yifan	Wu	SSSA	Pisa	ITA
26.	Gang	Yao	SSSA	Pisa	ITA

### 4. Conclusions

All the participants highly appreciated the course, since they learned not only novel methodologies in the field of real-time embedded systems, but also had the unique opportunity to apply theory into practice, by developing real control applications.

Setting up the embedded boards for the practical experiments took the major effort in the preparation of the course and the course could have never be implemented without the helpful support of the laboratory assistants, who worked hard, before and during the course, to facilitate the job to the participants and guarantee that all hardware devices were fully operational.