Information Society Technologies
in the 6th Framework Programme

IST Work Programme 2005-2006

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Embedded Systems

Outline of presentation

- IST in FP6
  - objectives and vision
- Results of IST Calls in 2003-04
  - projects and participation
- IST Work Programme 2005-2006
  - technology trends
  - embedded systems SO
  - budget

IST in FP6 - objectives & strategy

- Main objectives
  - Establishing Europe's leadership in the technologies at the heart of the knowledge economy and society
  - Strengthening Europe's competitiveness
  - Building the information and knowledge society for ALL

- Strategy
  - Concentration and focus, building critical mass
  - Visionary, forward looking (longer term / high risk)
  - Scope of activities: Core technologies & "pull-through" applications

The IST vision

- Moving to an era where “our surrounding is the interface” to IST applications & services
  - Bringing people to the foreground
  - Building trustful technologies for the background

- ICT will:
  - be embedded everywhere, in everyday objects (furniture, clothes, vehicles, buildings,…)
  - adapt to people and business needs
  - enable multi-sensorial interfaces (beyond PCs, screens & keyboards)
  - Allow seamless access to information and services

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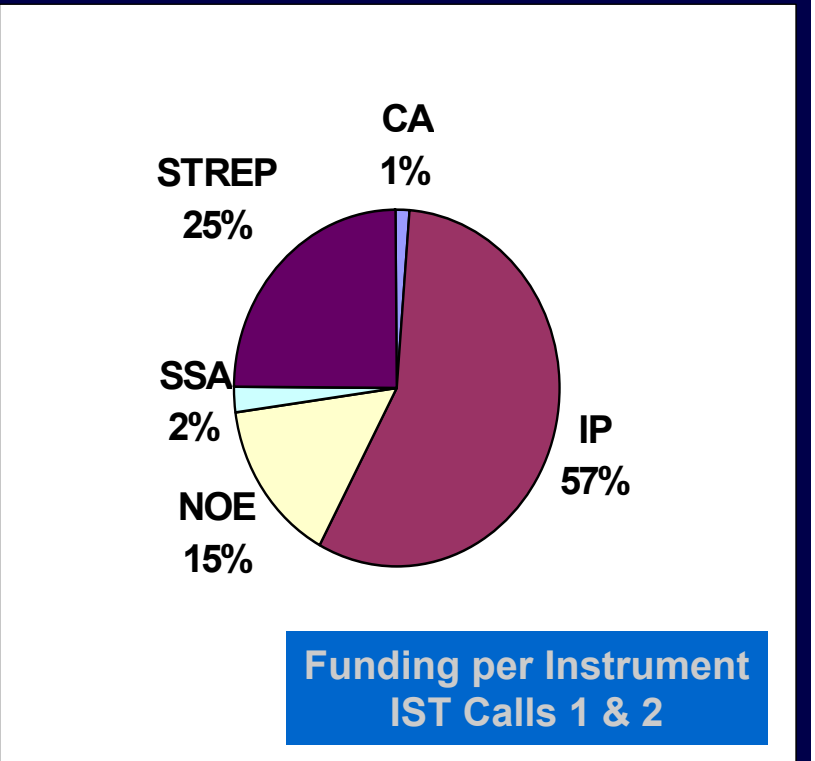
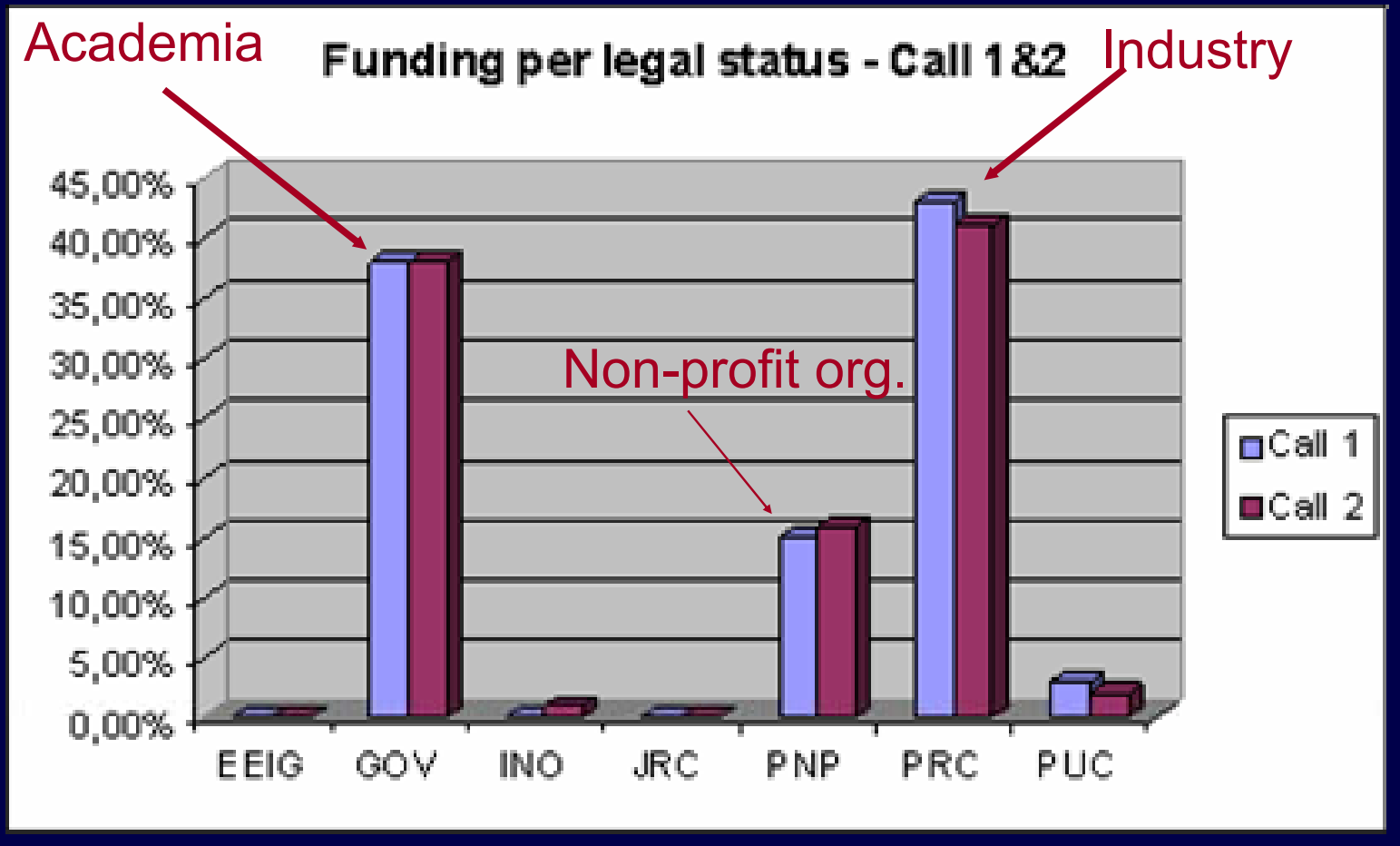
IST Calls 2003-04 : Implementation

- 1,9 out of 3,8 Billion € spent in calls in 2003-04
- More than 400 projects supported
  - Out of 2500 proposals received
- More than 6500 participations

😐 Oversubscription



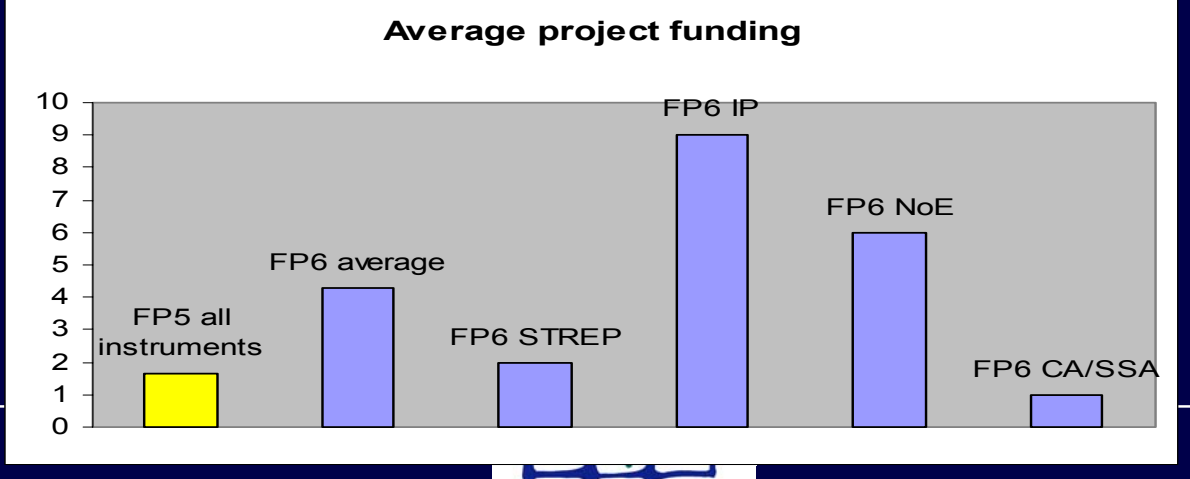
IST Calls 2003-04 : Participation



IST Calls 2003-04 : Concentration

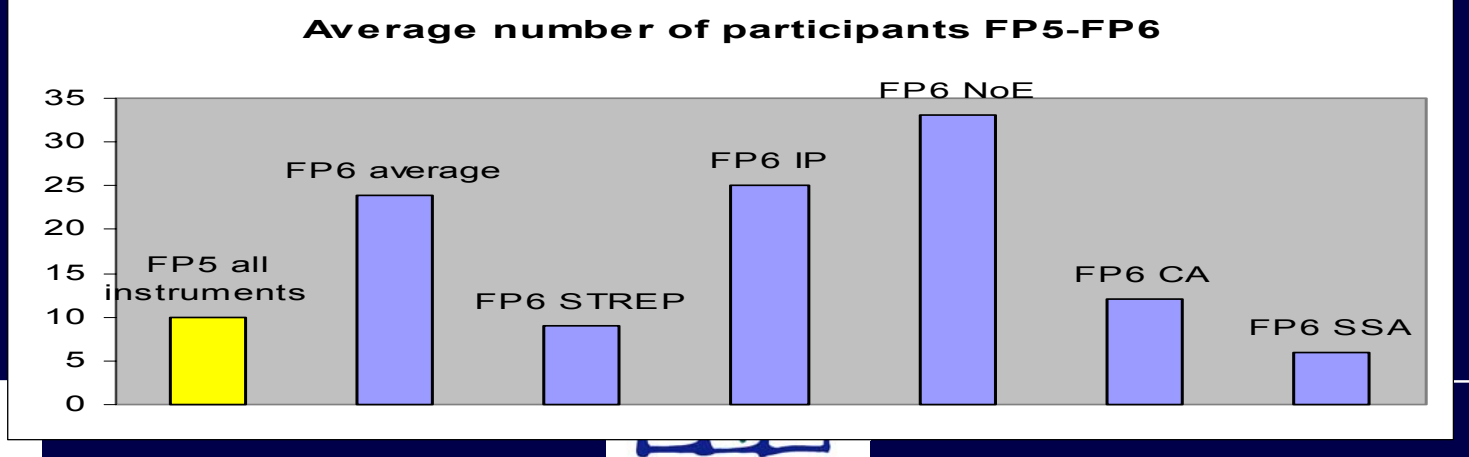
- Concentration of effort and building critical mass
  - Total number of projects selected :
    3 times less than FP5 for an equivalent budget
  - Average budget of Integrated Projects :
    5 times larger than FP5 projects

- 😐 Setting up & managing larger projects : a challenge



IST Calls 2003-04 : Integration

- More intensive collaboration between various actors
  - Integrated Projects: 2-3 times as many partners per project
  - From industry, academia and public research labs
- 😐 Concern over SME participation
- 😐 Integration of effort in an enlarged Europe important
- 😐 International co-operation



Outline of presentation

- IST in FP6
  - structure and budget
  - objectives and vision
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Technology trends

- Increasing pervasiveness of ICT
  - Innovation from ICT use in different fields
- Increasing convergence
  - Within ICT
    - Communications/computing/control/media, fixed/wireless, etc.
  - Between ICT and other fields
    - Info-bio-cogno-nano
- Higher levels of complexity
  - Combination of skills and know how
  - Building increasingly complex systems – that are simple for the user!

Lessons learnt from previous calls

- Oversubscription
  - Need for more focus and precision
    - Action: no specific topic on control in Embedded Systems SO, 2005-06
- SME participation
  - Call1: 16%; Call2: 17%; NoEs: 7%; IPs: 15%; STREPs: 24%
    - Action: more budget allocated to STREPs and specific action on SMEs
- Participation of new Member States and Associated Candidate Countries
  - Calls 1 and 2: 3 and 4 %
    - Action: A dedicated Strategic Objective: "Strengthening the integration of the ICT research effort in an enlarged Europe" (63 MEuro) -Calls for STREPs in eGov, eBus, eLearning and eHealth
- International co-operation
  - Domain-specific approaches are needed
    - Action: call 3 was used to set-up specific actions on this. International co-operation is also possible in Call 4+5

Embedding intelligence everywhere

- Embedded Systems (= electronics + software) underpin Europe's industrial strongholds
  - Automotive, avionics, consumer electronics, telecommunications, plant automation, medical,…
- Enormous potential for the future
  - Key enabler for competitiveness and innovation
  - Creation of new markets and societal-scale applications
- Major challenges
  - In science, technology, education, infrastructures

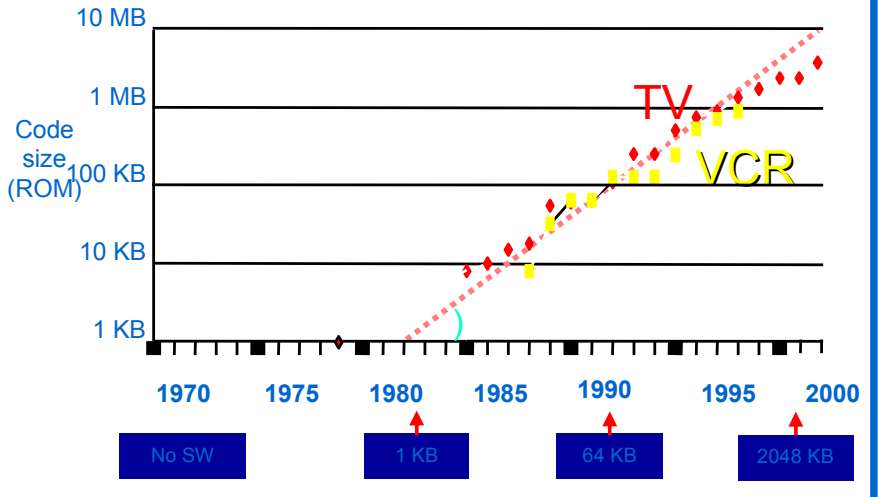
Embedded systems provide the added value of European products

Embedded systems facts and figures

- 18 of top 25 EU companies rely on embedded systems
  - Overall R&D spending: 50 billion annually
- Embedded Systems feature strong growth
  - Number of embedded components expected to grow to 16 billion worldwide by 2010
  - Electronics will account for up to 40% of a vehicle's value by 2010
  - A smart phone contains millions of lines of code
  - Annual growth rate 10.3%
- Embedded systems – a European strength

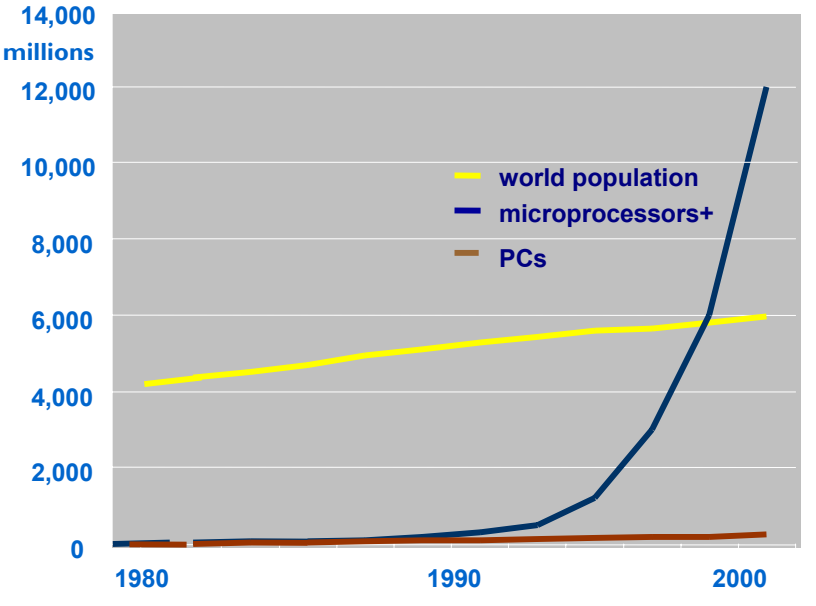
Exponential growth of embedded systems

embedded software

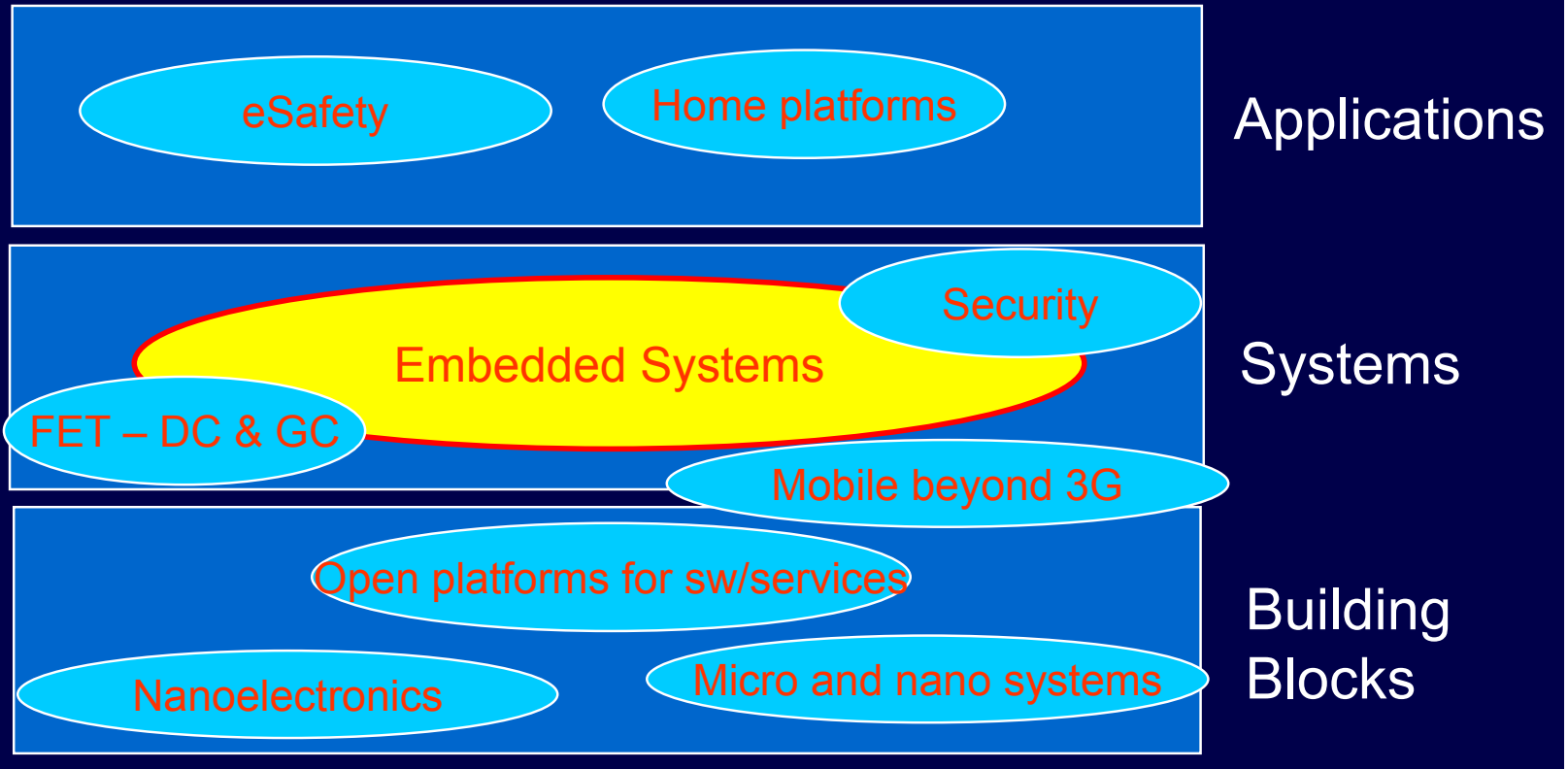


Source: Philips Research

embedded electronics



Embedded Systems - relation to other areas



+ ITEA, MEDEA, DG RTD,...

Project inventory

System Design

- **12 projects; 5 from 2nd call; 4 new instruments**
  - ARTIST2 (NoE): virtual centre of excellence in Embedded System Design
  - HiPEAC (NoE): design and implementation of high performance embedded computing
  - DECOS (IP): generic composable hardware and software components for TTA
  - ASSERT (IP): new system and software development approach based on proof obligations at each step
  - ICODES (STREP): design technology for embedded systems containing many heterogeneous communicating components in hardware and software

Networked Embedded System

- **10 projects; 8 from 2nd call; 1 new instrument**
  - RUNES (IP): adaptable networked embedded systems everywhere by adaptive, self-configurable middleware layer
  - 7 STREPs from call 2

Advanced Control

- **12 projects; 3 from 2nd call; 1 new instrument**
  - HYCON (NoE): virtual institute in the area of Hybrid Control integrating tools and centres of excellence
  - 2 STREPs from call 2
  - Joint call 3: 1 integrated project

Embedded systems

68 MEuro

- Key Objectives
  - Hardware/software systems embedded in intelligent devices
  - Cost-efficient ambient intelligence systems with optimal performance, high confidence, reduced time to market and faster deployment
- Focus
  - System Design (IPs, STREPs, SSAs, CAs)
    - Model-based system design, validation and testing.
    - Design methods, programming models and compilation tools for reconfigurable architectures
  - Networked Embedded Systems (all instruments)
    - Middleware for wireless objects
    - Scalable and self-organising platforms
  - SME embedded tool developers and vendors

Embedded Systems in WP 2005–2006

Other issues:

- ***SME's***
  - Interoperability and complementary of design and software tools to increase integration of the tool chain
- ***International co-operation***
  - United States, Korea, Japan or other countries
- ***Cooperation with EUREKA***
  - Mainly ITEA and MEDEA+

Embedded Systems Information day – 16 March 2005

International cooperation

- Participation from third countries is possible
- Funding is available for developing countries, Mediterranean, Western Balkan, Russia and NISs
- Normally no funding for developed third countries
- 2 possibilities for embedded systems exists:
  - a) to join European research project
  - b) preparatory action for international cooperation
    - SSA or CA
    - preparation of joint research agenda on topics that would require joint effort

Budget Distribution

- Total budget for WP2005-06: 1,8 B€
- Pre-allocation of 90% of budget
- Embedded Systems: 68M €
- Instruments IP and NoE: 60% of budget
- Instruments STREP/CA/SSA: 40% of budget
- Call is expected to open on: 17 May 2005
- Call is expected to close on: 21 September 2005

For Further Information

General FP6:

http://europa.eu.int/comm/research/fp6/

http://www.cordis.lu/

IST:

http://www.cordis.lu/ist

Embedded Systems:

http://www.cordis.lu/ist/directorate_c/ems

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