ICCPS
EU-US Institutional Panel

CPSWEEK 2010 STOCKHOLM

Ongoing Research and articulation with other initiatives

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Outline

- **Ongoing Research in FP7**
  - ICT   9.1 B€
  - Security Research   1.4 B€
- **Other Programmes**
  - CIP   3.6 B€
  - Capacities   4.1 B€
- **Other Initiatives**
  - ARTEMIS   2.5 B€
  - PPPs   3.5 B€
- **Other Players**
  - European Space Agency
  - European Defence Agency

FP7 (2007-13)

ICT

PASR

Embedded Systems and Control

- Embedded Systems Design
- Computing Systems
- Middleware
- WSNs

133.5M€/ 4Y

Embedded Systems and Control (Calls 1-5)

- Computing Systems

- Embedded Systems Design

- Networked Embedded and Control Systems/Complex Systems Engineering

195.5 M€/ 4Y

EU-funded Projects
Poster and Demo Session
13 April 2010

- 29 EU-funded projects
  - 17 Posters
  - 12 Demos

- Emerging CPS Applications, ICCPS
  - 5 EU-funded projects

FP7 Projects

NE&CS

ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/necs/booklet-necs_en.pdf

Portfolio of
**Networked Embedded &
Control Systems**
FP7 Projects

DG INFSO
G3 Embedded Systems and Control

SEVENTH FRAMEWORK
PROGRAMME

European Commission
Information Society and Media

WP 2011-12
(Call 7)

Publication: Sep 10
Deadline: Jan 11

- Computing Systems
- New paradigms for embedded systems, monitoring and control towards complex systems engineering

TBC

95 M€/ 2Y

SEVENTH FRAMEWORK
PROGRAMME
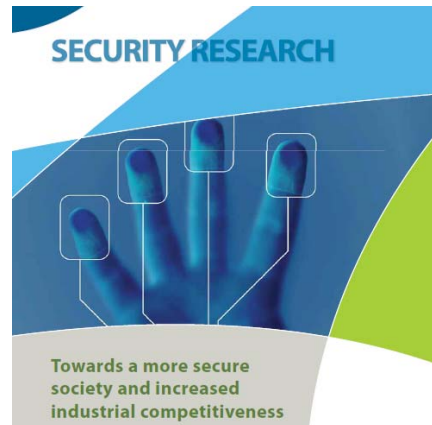
European Commission
Information Society and Media

Preparatory Action on Security Research

- **Overall Budget: 1.4 B€**

Objectives
- to develop technologies and knowledge needed to ensure the security of citizens from threats such as terrorism and (organised) crime, natural disasters and industrial accidents while respecting fundamental human rights;
- to ensure optimal and concerted use of available and evolving technologies to the benefit of civil European security;
- to stimulate the cooperation of providers and users for civil security solutions; improving the competitiveness of the European security industry and delivering mission-oriented results to reduce security gaps.

SECURITY RESEARCH

Towards a more secure society and increased industrial competitiveness

Preparatory Action on Security Research

Emphasis will be given to the following activities:
- **Increasing the security of citizens** - technology solutions for civil protection, bio-security, protection against crime and terrorism;
- **Increasing the security of infrastructures and utilities** - examining and securing infrastructures in areas such as ICT, transport, energy and services in the financial and administrative domain;
- **Intelligent surveillance and border security** - technologies, equipment, tools and methods for protecting Europe's border controls such as land and coastal borders;
- **Restoring security and safety in case of crisis** - technologies and communication, coordination in support of civil, humanitarian and rescue tasks;
- **Improving security systems integration, interconnectivity and interoperability** - information gathering for civil security, protection of confidentiality and traceability of transactions;
- **Security and society** - socio-economic, political and cultural aspects of security, ethics and values, acceptance of security solutions, social environment and perceptions of security;
- **Security research coordination and structuring** - coordination between European and international security research efforts in the areas of civil, security and defence research.

Other Programmes

CIP

Capacities

Competitiveness and Innovation framework Programme (CIP)

Overall budget: 3.6 B€

http://ec.europa.eu/cip/

- ICT Policy Support Programme

  ➤ Application oriented: Pilot cases

  – Energy Efficient Buildings and Spaces of Public Use

  – Water Management

Publication: July 10
Deadline: Nov 10

ICT PSP

- Aims at stimulating a wider uptake of innovative ICT based services and the exploitation of digital content across Europe by citizens, governments and businesses, in particular SMEs.
- **Objectives of the programme**
  - The focus is placed on driving this uptake in areas of public interest while addressing EU challenges such as moving towards a low carbon economy or coping with an ageing society.
  - The programme contributes to a better environment for developing ICT based services and helps overcome hurdles such as the lack of interoperability and market fragmentation.
- **Activities supported by ICT-PSP**
  - Funding goes mainly to pilot actions, involving both public and private organisations, for validating in real settings, innovative and interoperable ICT based services in areas such as:
    - ICT for health, ageing and inclusion;
    - Digital Libraries;
    - ICT for improved public services;
    - ICT for energy efficiency and smart mobility;
    - Multilingual web and Internet evolution.

http://ec.europa.eu/cip/ict-psp/index_en.htm

Intelligent Energy Europe Programme (IEE)

- Overall funding: ~ 730 M€
- Examples of projects funded under this programme include:
  - Training on new construction techniques that can lead to 50 percent or more energy savings compared with traditional buildings;
  - Improving the effectiveness of support schemes for electricity generation from renewable energy sources across Europe;
  - Helping Europe's cities to develop more energy-efficient and cleaner transport.

http://ec.europa.eu/energy/intelligent/

Capacities

- Overall Budget: 4.1 B€

- *eInfrastructures*
  - *new research environment in which all researchers have shared access to unique or distributed scientific facilities (including data, instruments, computing and communications), regardless of their type and location in the world.*

Other Initiatives

ARTEMIS

PPPs

ARTEMIS
Embedded Computing Systems Initiative

ADVANCED RESEARCH & TECHNOLOGY FOR EMBEDDED INTELLIGENCE AND SYSTEMS

https://www.artemis-ju.eu/

Total R&D budget (total R&D costs in projects):

– Community (FP7):   ARTEMIS up to 410 M€

– States: > 1.8 x Community contribution

– R&D actors: in-kind >50% of costs

Overall Budget: ~2.5 B€

Sub-Programmes in the Research Agenda

- SP1: Methods and processes for safety-relevant embedded systems
- SP2: Person-centric health management system
- SP3: Smart environments and scalable digital services
- SP4: Efficient manufacturing and logistics
- SP5: Computing environments for embedded systems
- SP6: Security, privacy and dependability
- SP7: Embedded technology for sustainable urban life
- SP8: Human centric design of embedded systems

Yearly Calls

ARTEMIS Sub-Programmes

- ### SP3: Smart Environments and Scalable Digital Services
  - New (service / software) architectures for *enhanced user experience* of (mobile) media and applications
  - Enable the *creation of new services* that bring the "Ambient Intelligence" experience to the user

- ### SP7: Embedded Technology for Sustainable Urban Life
  - *Sustainable delivery* of *energy* and other utilities
  - *Improved energy use* through cost-effective and intelligent embedded systems *(smart buildings)*

Economic Recovery Plan

Energy Efficiency

Broadband

R&D

COM(2008) 800 "A European Economic Recovery Plan", 26.11.2008

Two key pillars:

- *The first pillar is a **major injection of purchasing power into the economy, to boost demand and stimulate confidence**. The Commission is proposing that, as a matter of urgency, Member States and the EU agree to an immediate budgetary impulse amounting to **€ 200 billion** (1.5% of GDP), to boost demand in full respect of the Stability and Growth Pact.*

- *The second pillar rests on the need to **direct short-term action to reinforce Europe's competitiveness in the long term**. The Plan sets out a comprehensive programme to direct action to "smart" investment. Smart investment means investing in the right skills for tomorrow's needs; investing in **energy efficiency** to create jobs and save energy; investing in **clean technologies** to boost sectors like **construction** and **automobiles** in the low-carbon markets of the future; and investing in infrastructure and inter-connection to promote efficiency and innovation.*

d) Research and Innovation

8. Increase investment in R&D , Innovation and Education

- Member States and the private sector should increase planned investments in education and R&D (consistent with **their national R&D targets**) to stimulate growth and productivity. They should also consider ways to **increase private sector R&D investments**, for example, by providing fiscal incentives, grants and/or subsidies. Member States should maintain investments to increase the quality of education.

9. Developing clean technologies for cars and construction

- **3 major partnerships between the public and private sectors [PPPs]** to **support innovation in manufacturing, in particular in the construction industry and the automobile sector** which have recently seen demand plummet as a result of the crisis and face significant challenges in the transition to the green economy:
  - **a 'green car' initiative (>5B€ out of which 1 B€ for R&D)**
  - **a 'energy-efficient buildings' initiative (1 B€)**
  - **a 'factories of the future' initiative (1.2 B€) to increase the use of technology in manufacturing**

Green Car Initiative

involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy sources, safety and traffic fluidity.

- The partnership would be funded by the Community, the EIB, industry and Member States' contributions with a combined envelope of **at least 5 B€ (**out of which 1 B€ for R&D+D).

- In this context, the EIB would provide cost-based loans to car producers and suppliers to finance innovation, in particular in technologies improving the safety and the environmental performance of cars, e.g. fully electric vehicles.

Factories of the Future Initiative

to help EU manufacturers across sectors, in particular SMEs, to adapt to global competitive pressures by increasing the technological base of EU manufacturing through the development and integration the enabling technologies of the future, such as **engineering technologies** for **adaptable machines** and **industrial processes**, ICT and advanced materials

Energy Efficient Buildings Initiative

to promote green technologies and the development of **energy-efficient systems** and materials in new and renovated buildings with a view to reducing radically their energy consumption and CO_2 emissions.

- The initiative should have an important regulatory and standardisation component and would involve a procurement network of regional and local authorities.

- The estimated envelope for this partnership is 1B€. The initiative would be backed by specific actions proposed under actions 5 and 6 on infrastructure and energy-efficiency.

Future Internet Initiative

targeted to enable early availability of a framework (specification, standards, implementation and research/usage validation trials) to ease and speed up the development, deployment and take-up of novel and innovative added-value services in Europe, based on Internet-enabled smart infrastructures.

The main result will be a pan-European demonstration of Future Internet services, targeting facilitation of early uptake of the results in the European marketplace, benefiting European citizens, and a competitive advantage for European industry in the global marketplace.

Typical targeted validation environments include "Integrated Smart Cities" or "smart regions". Future "Smart Cities" or regions will be penetrated by a multitude of Internet technologies enabling real time communication and processing of massive volumes of data making it possible to cover innovative applications and typically covering several use cases.

- **Technology foundation: Future Internet Core Platform**
- **Use Case scenarios and pilots**
- **Capacity Building and Infrastructure Support**
- **Programme Management and Support**

ICT contribution to the PPPs

- Energy Efficient Buildings
- Green Car > Fully Electrical Vehicle
- Factories of the Future
- Future Internet

➢ **Networked Monitoring and Control Systems** have a major role to play in all these PPPs

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Other Players

ESA

EDA

Slide 1

- Space Systems Engineering
- System of Systems Architecture Studies

Slide 2

European Defence Agency

- European Security Research and Innovation Forum (ESRIF) report
  - **Security of critical infrastructures**
  - **Crisis Management**
  - **Situation awareness and role of space**

    ➢ Complex system engineering

  - http://www.esrif.eu/documents/esrif_final_report.pdf

Upcoming Events

**4th Monitoring and Control
Concertation Week**
2-4 and 7-8 June
Brussels

http://cordis.europa.eu/fp7/ict/necs/events_en.html

4th Monitoring and Control Concertation Week

- 2 June 2010
  - Water Management: from M&C to Integration
- 3 - 4 June 2010
  - WSNs & Cooperating Objects
  - Smart Buildings Cluster Meeting
- 7 - 8 June 2010
  - Control of Large-Scale Systems

Open to non-project participants

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