



**EPOSS**  
European Technology Platform  
on Smart Systems Integration



# European Technology Platform on Smart Systems Integration - EPOSS and the Research Framework Program

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# Outline



**EPoSS**  
European Technology Platform  
on Smart Systems Integration



- **NCP – at a glance**
- **The Role of EPoSS**
- **Lessons learnt**
- **Next Steps**

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# Network of National Contact Points



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- **National / regional structures established and financed in all Member States and Associated Countries**
- **NCPs give information and personalised support to participants to FP7 and related measures**
- **Relay between the EC and the national / regional actors**
- **Connections between national & int'l Community !**



- **Provide local guidance, practical information and assistance on all aspects of participation in the framework programs**
- **Circulate information in the national community**
- **Opinion formation and formulate points of view**
- **Events, Proposers Days, Workshops, Meetings**

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# The idea behind it



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**“The 7th Framework Programme is tailored to better meet industry’s needs. Where industrially relevant, the definition of work programmes will draw on the strategic research agendas developed by industry-led technology platforms.”**

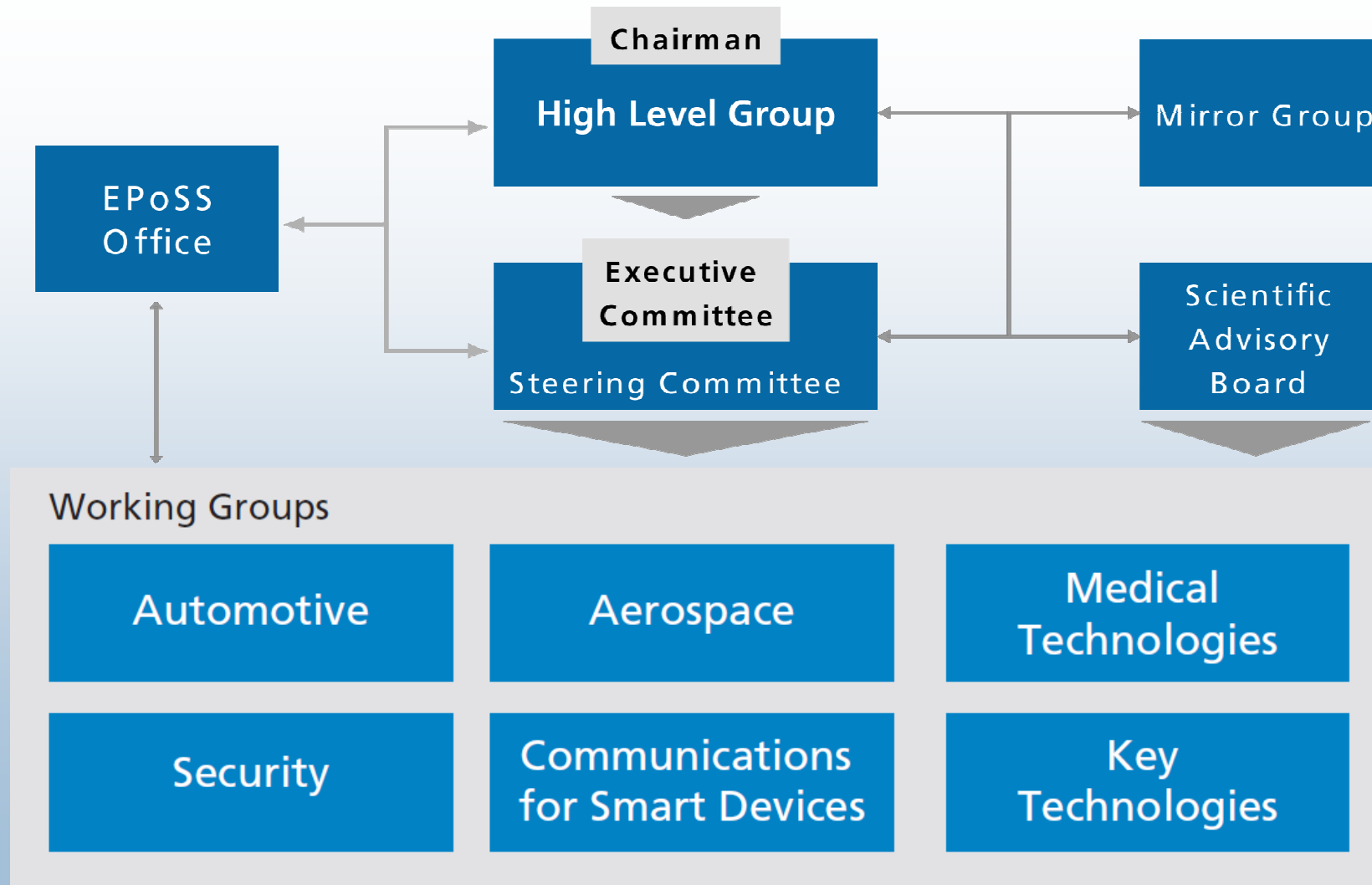
“Building the ERA of Knowledge”, COM(2005) 118, p. 8



# EPoSS Organisation



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# EPoSS Funding Members



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# Miniaturisation doesn't only mean Nano



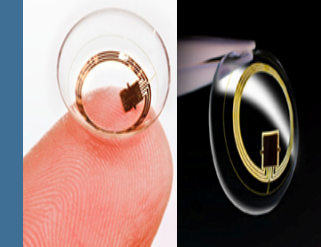
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**Miniaturised Systems are much more....**

**The decisive step forward: Smart Systems...**

- offer new sophisticated functionalities which replace entire perceptive and cognitive human functions
- are whenever possible energy autonomous and interact in a wireless environment
- reach a level of complexity which requires entire new processes and redefine criteria of robustness and reliability



**Medical**



**Internet of Things**



**Mobility**

**Smart Systems require a thinking beyond the Chip!**

# EPoSS

## Member Structure



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- 72 Organisations
- 402 Individuals
- 20 European Countries

Large-scale Enterprises	22
SMEs/R&D	43
Universities	7

Members from...			
Austria	Greece	Norway	Spain
Belgium	Ireland	Poland	Sweden
Finland	Israel	Portugal	Switzerland
France	Italy	Romania	Turkey
Germany	The Netherlands	Slovakia	Great Britain

# EPoSS contribution to the grand challenges:



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Health & Ageing

Sustainable Mobility

Safety & Security

Communication

Sustainable Consumption & Production

Energy & Resource Efficiency

**Medical Technologies**



- > Health & in-vivo monitoring
- > Assisted therapy
- > In-vitro diagnostics
- > Assisting the independence of living

**Automotive**



- > Electric Vehicle
- > Energy efficiency
- > Driver assistance
- > Autonomous sensors
- > Smart actuation
- > HMI
- > Wireless communication

**Aerospace**



- > Structural monitoring
- > Communication/networks
- > Safety functionalities
- > RF solutions

**Security**



- > Biometric technologies
- > Infrastructure security
- > Safety

**Communications for Smart Devices**



- > Machine-to-machine communications
- > Internet of Things
- > RFID
- > Sensors & actuators networks
- > Power management

**Key Technologies**



- > Materials & processes
- > Micro-Nano-Bio integration
- > Device & system level packaging
- > Design tools & methodologies
- > Reliability

# Priorities of the EPoSS Working Groups



## Automotive



- > Electric Vehicle
- > Energy efficiency
- > Driver assistance
- > Autonomous sensors
- > Smart actuation
- > HMI
- > Wireless communication

## Aerospace



- > Structural monitoring
- > Communication/ networks
- > Safety functionalities
- > RF solutions

## Medical Technologies



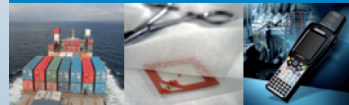
- > Health & in-vivo monitoring
- > Assisted therapy
- > In-vitro diagnostics
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## Security



- > Biometric technologies
- > Infrastructure security
- > Safety

## Communications for Smart Devices



- > Machine-to-machine communications
- > RFID
- > Sensors & actuators networks
- > Power management

## Key Technologies

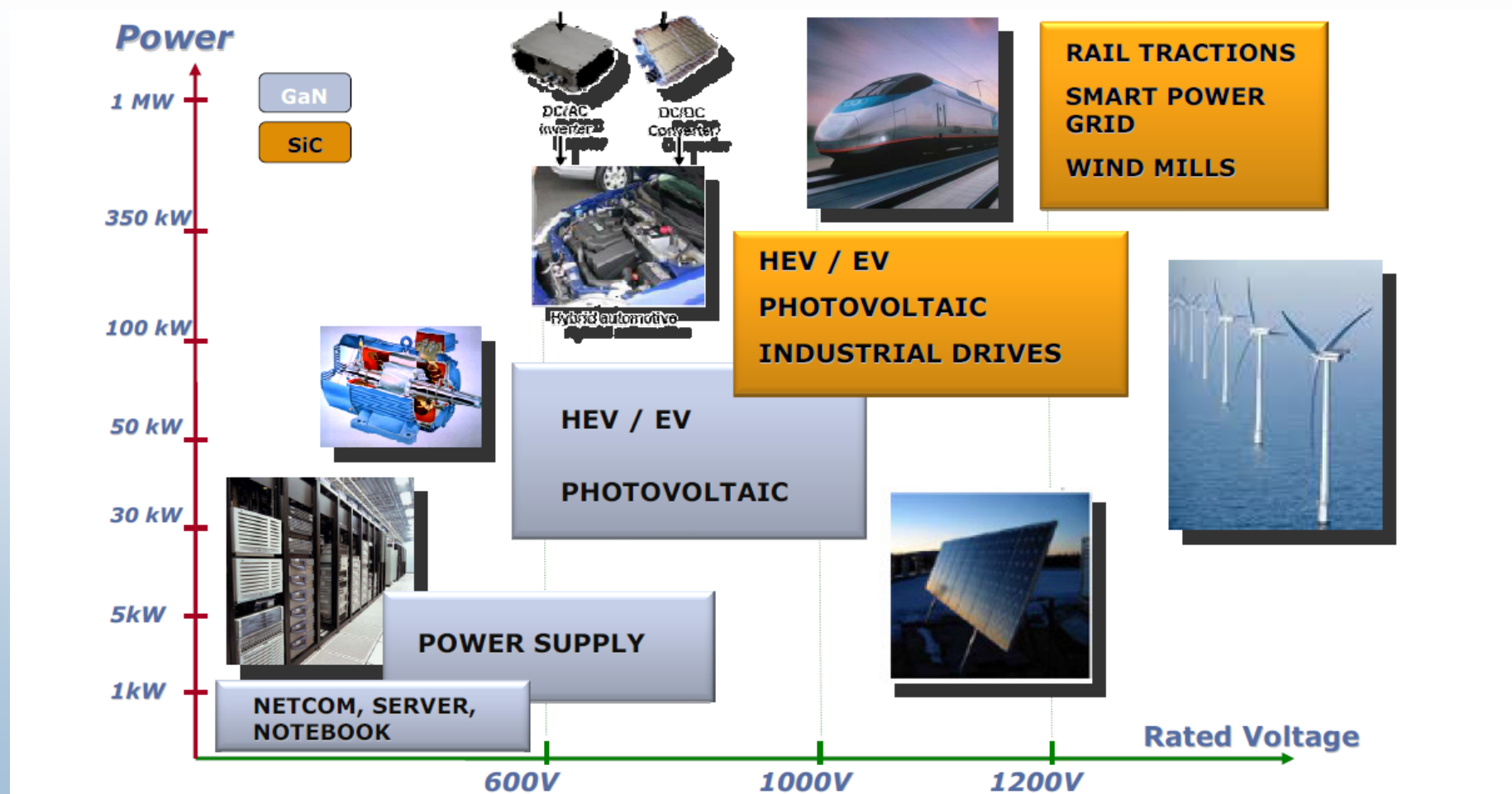


- > Materials & processes
- > Micro-Nano-Bio integration
- > Device & system level packaging
- > Design tools & methodologies
- > Reliability

# SiC & GaN: a mapping on power applications



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# Smart Power Systems:

## Integrating intelligence with power for energy optimisation



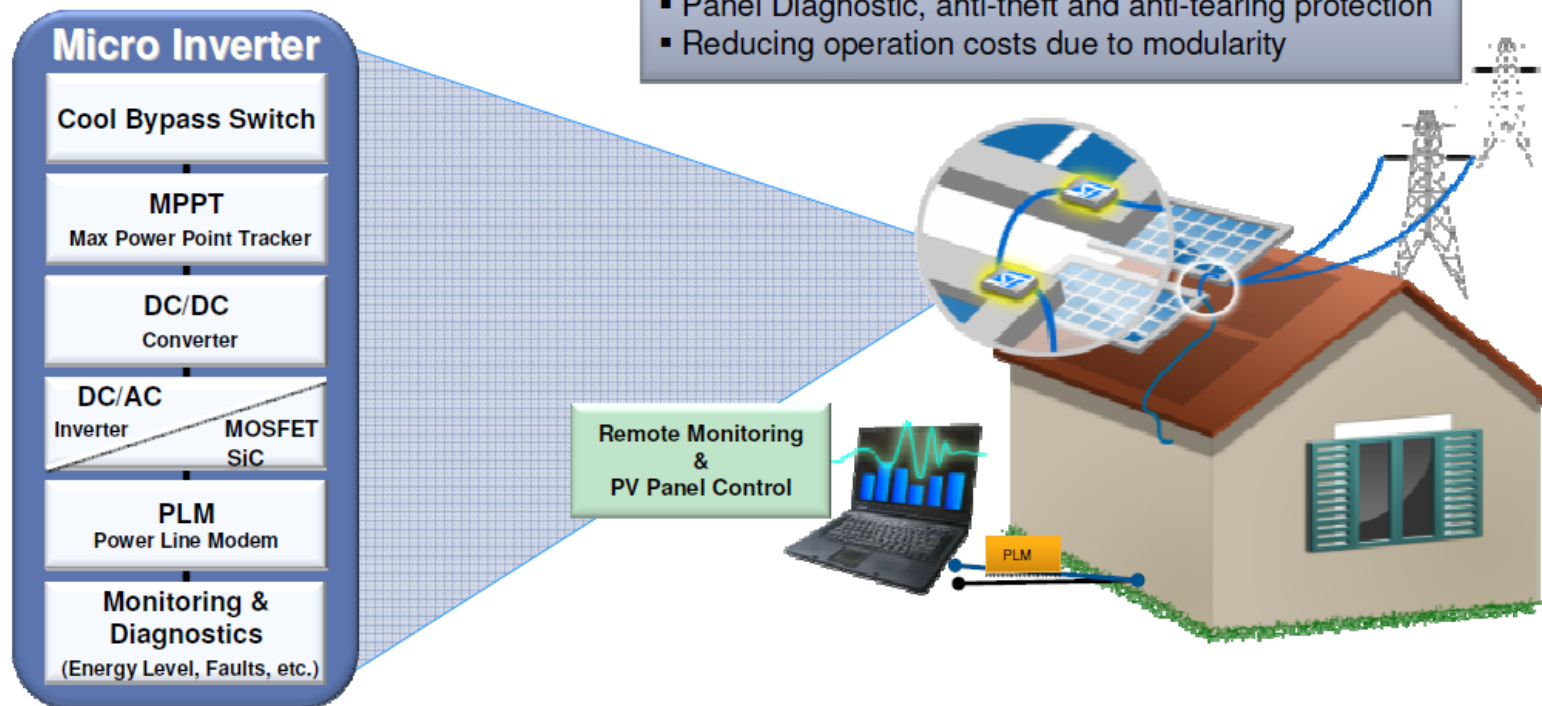
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### An example in Microinverter Modules for PV applications

#### Benefits

- Maximizing energy output (MPPT)
- Energy monitoring (daily, monthly, yearly, etc.)
- Panel Diagnostic, anti-theft and anti-tearing protection
- Reducing operation costs due to modularity



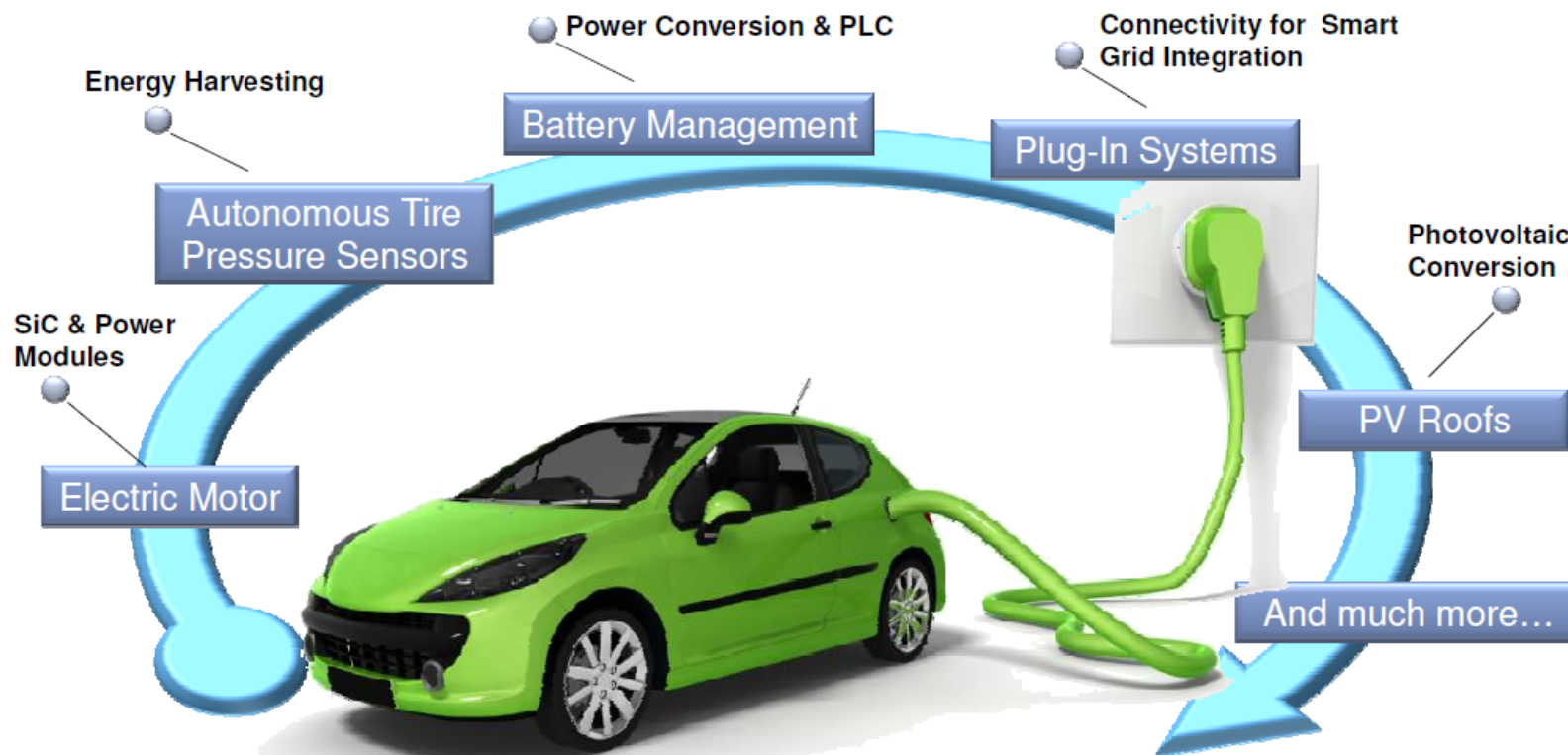
# Smart Power Systems: mixing Hybrid technologies for energy management



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## An example in Electric Cars



# EPoSS Focus on Societal Challenges



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## EPoSS Focus

### Smart Systems for Health & Ageing

Health  
Monitoring  
& Control,  
Artificial Organs,  
Assisting the  
Independence of  
Living

### Smart Systems for Sustainable Mobility

Clean &  
Full-Electric Car,  
All-Electric  
Aircraft

### Smart Systems for Safety & Security

Detection of  
dangerous  
substances,  
biometric  
technology,  
infrastructure  
security

### Smart Systems for Communication & Ambient Intelligence

Internet of  
Things,  
Future  
Communication  
& Networking

### Energy & Resource Efficiency / Sustainable Consumption & Production

Optimization of Processes, Equipment, Material, Emission, Energy Consumption & Supply Chain, Digital Factory, Smart Goods, Life Cycle Monitoring, Logistics

# EPoSS R&D Priorities



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- 1 Smart miniaturised devices with advanced functionality and performance**
- 2 Autonomously operating, power efficient and networked smart devices**
- 3 Robust systems, compatible and adaptive to environment and lifetime requirements**

# The Evolution of Smart Systems



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## 1st Generation Smart Systems

**Integrated, miniaturised systems with advanced functionality.**

- Driver Status Monitoring
- Piezo Injection Valve
- Object Recognition

## 2nd Generation Smart Systems

**Predictive & reactive systems matching harsh environments and equipped with advanced energy management capabilities.**

- Smart Pill
- Retina implant
- Simple Artificial Organ

## 3rd Generation Smart Systems

**Self aware, autonomous systems interfacing physical w/ virtual world, adaptive to environment, ubiquitously connected, with cognitive abilities**

- Autonomous Bio-Robot
- Swarming Agent
- Internet of Things

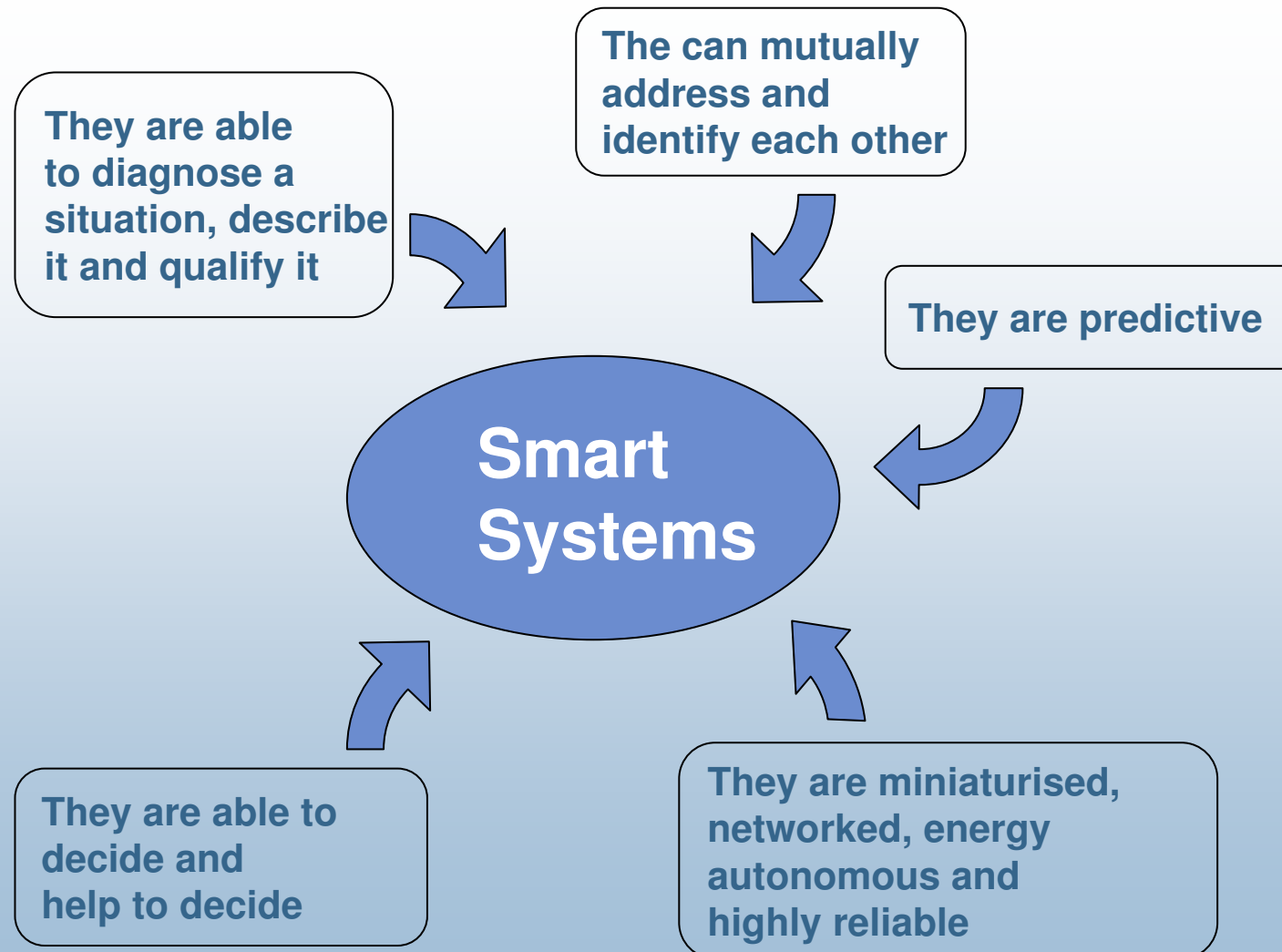
***Functions***

***Examples***

# Smart Systems - Properties



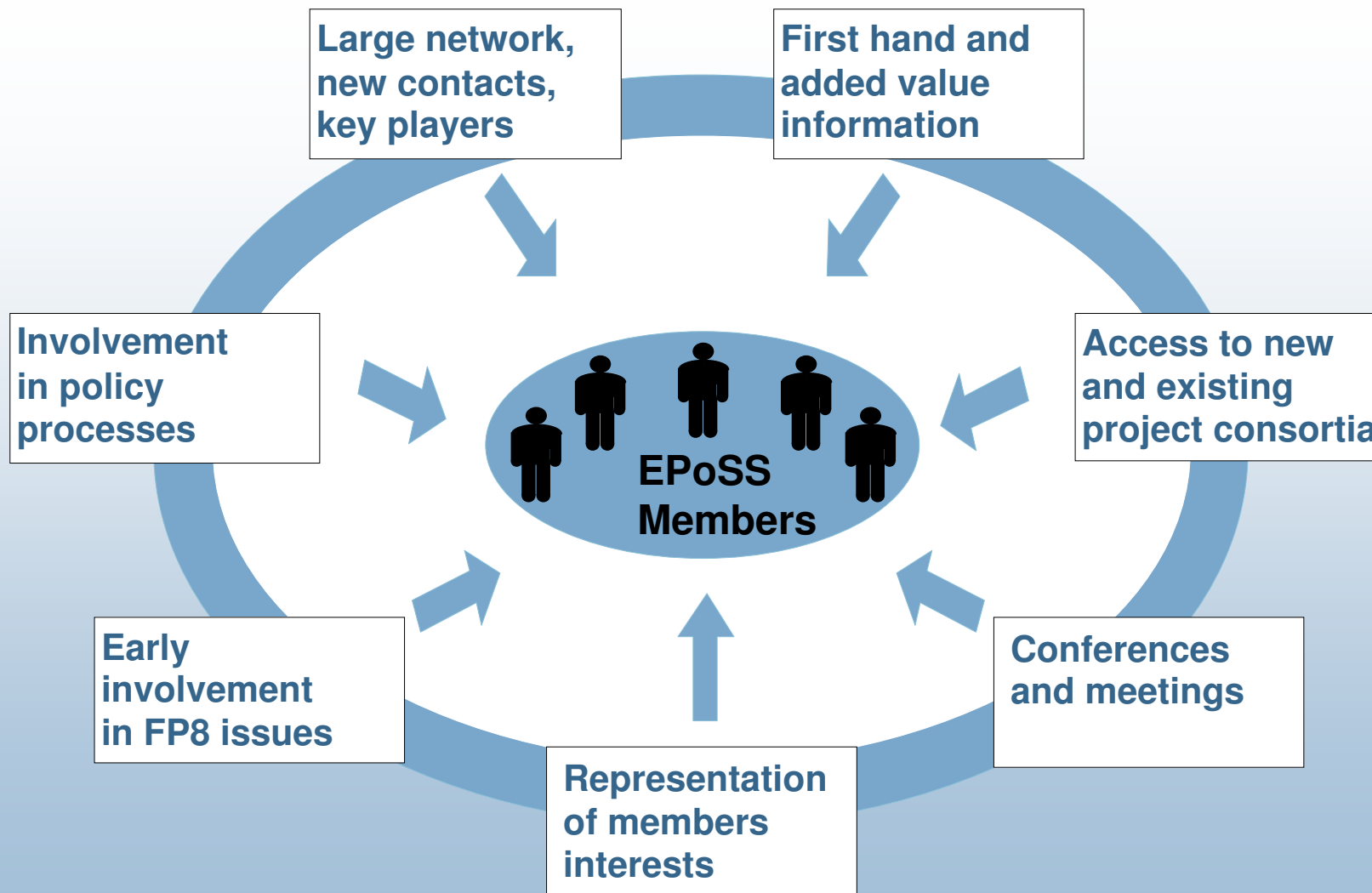
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# ETP Members' benefits



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# The Role of EPoSS – Results of Call 5

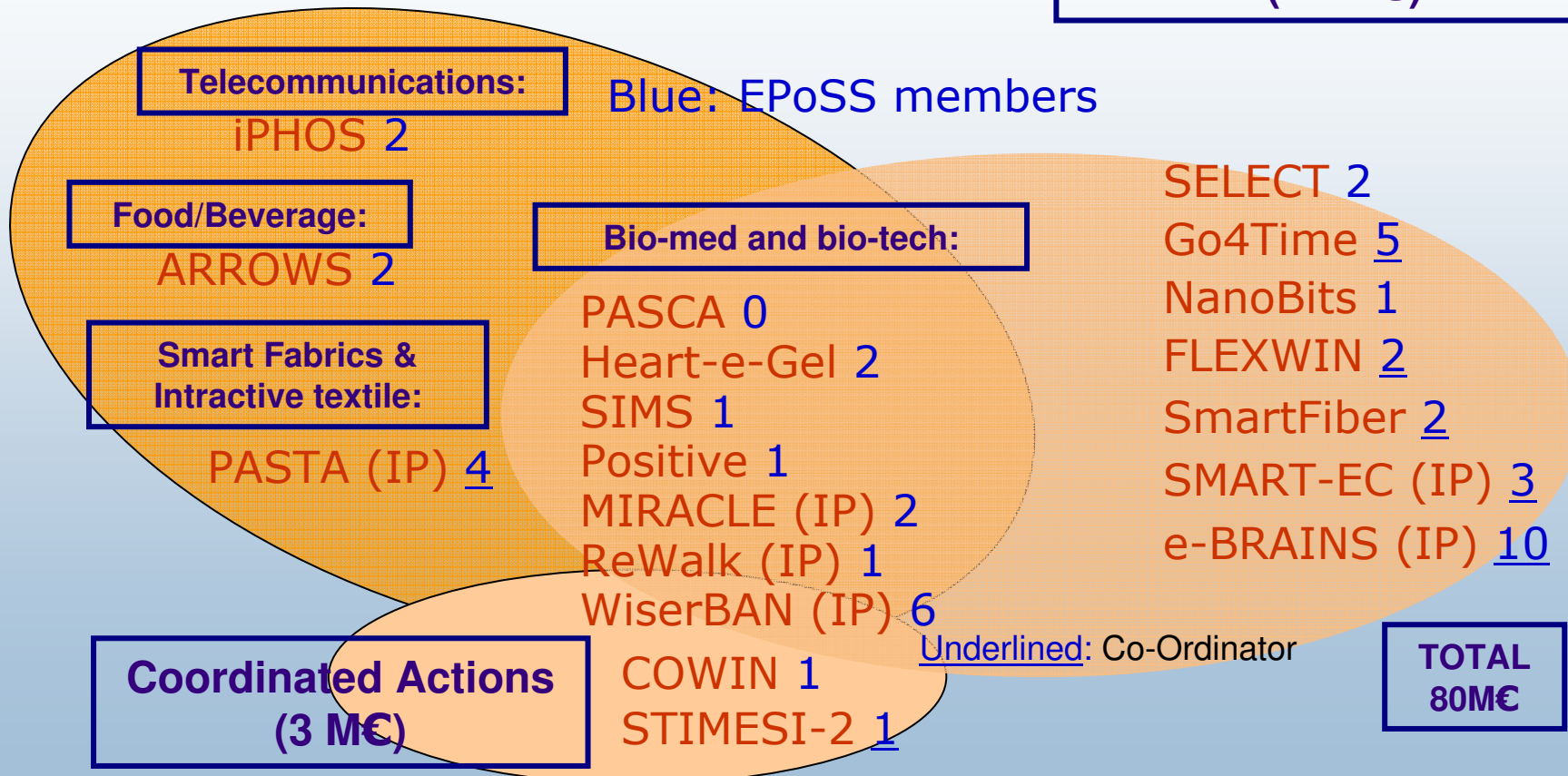


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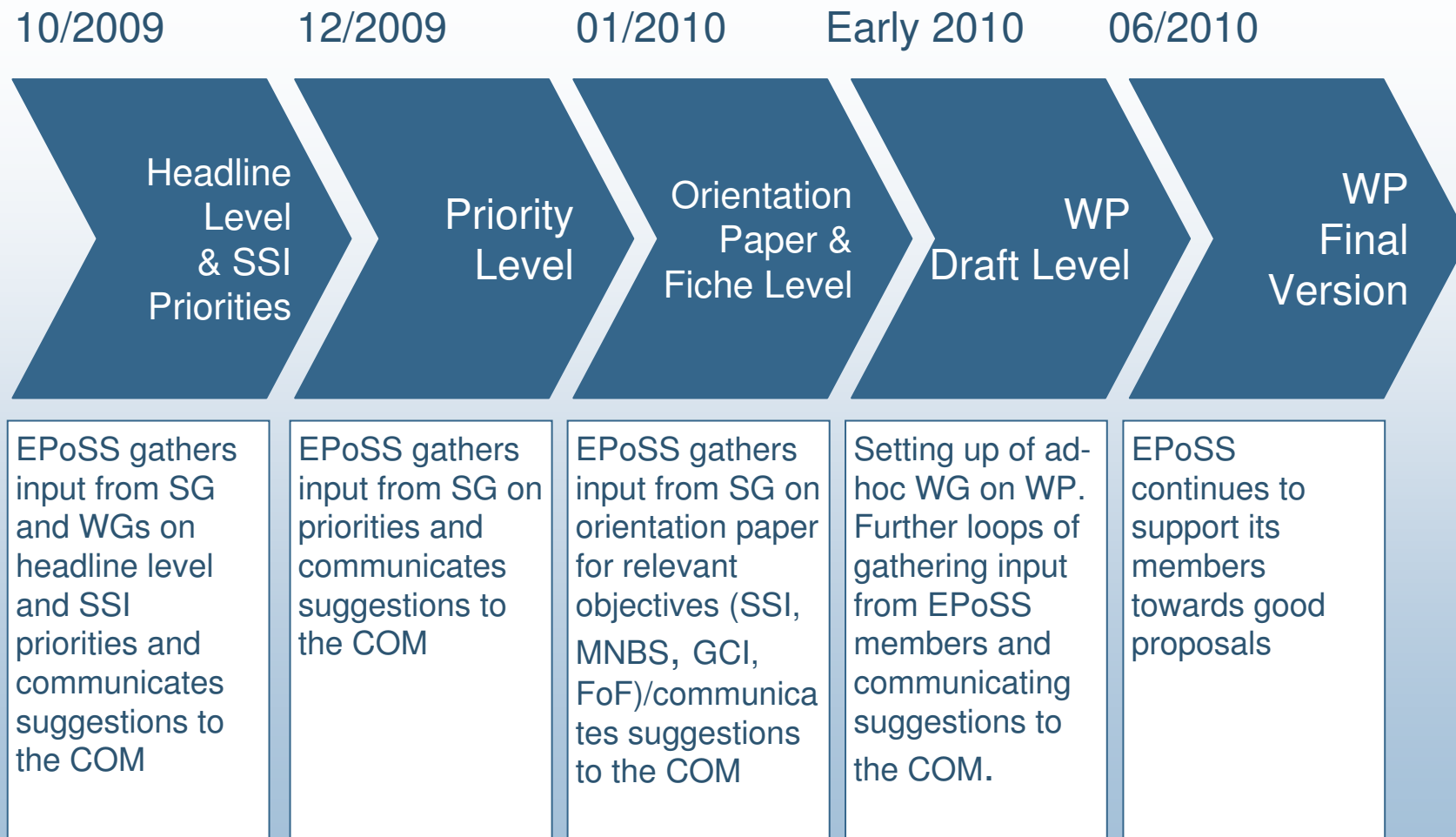


**Application-specific  
Microsystems (50 M€)**

**Microsystems and Smart  
Systems Technologies:  
(27 M€)**



# EPoSS Input to and Influence on ICT Work Programme 2011-2012



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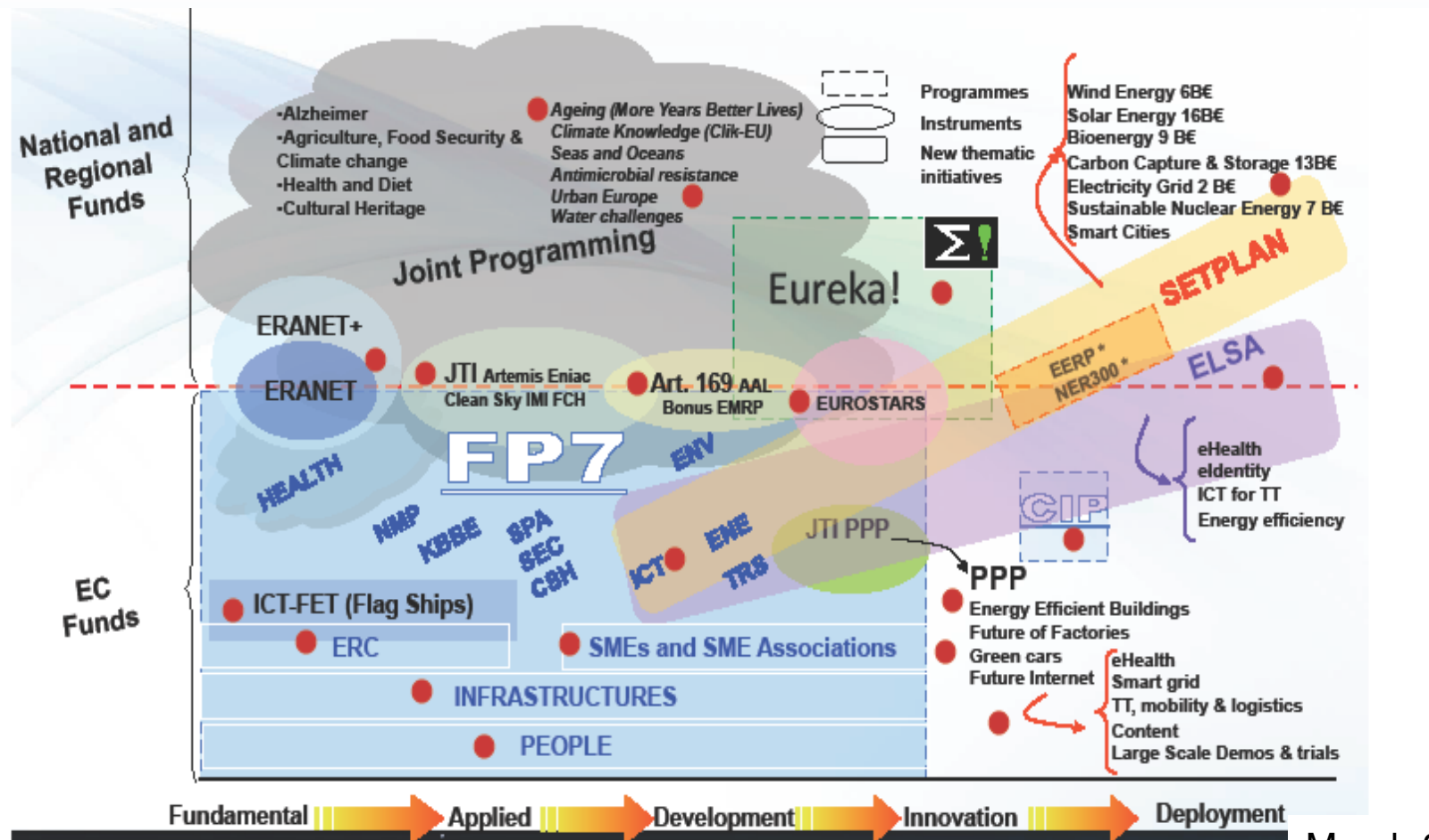


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# The European Research and Innovation System – Simple, isn't it?



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March 2011



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# Lessons learnt



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- EU **financial contribution** to initiatives **outside** the immediate range of the FP should be limited to exceptional cases
- The management of EC **budgets** should strictly follow the **rules of the Framework Programme**
- The **PPPs** set-up under the European Recovery Package may serve as **blueprints** for further joint initiatives with stakeholders
- The **current set of instruments** within the FP (STREP, IP, PPP, etc...) has **sufficient breadth** to address the differing challenges of industrial research
- It should be up to the “**customer**” to decide upon **which instrument** will be used
- An optimised **set of a reduced variety of instruments** has to be defined for Common Strategic Framework for EU Research and Innovation, binding across all the DGs in the Framework Programme.
- The FP **Rules for Participation** should be implemented in an identical manner

# Lessons learnt



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- There has to be one and only **one interpretation of regulatory details** across all DGs.
- Activities for **simplification** have to be assessed according to their **real benefits for users**.
- The definition of **thematic priorities** has to be the result of a **continuous and transparent process** following a set of criteria, the most important of which would be the existence of a critical mass of R&D capacity in Europe in a given technology sector, a realistic expectation of medium-term returns of R&D investments (production/ business/ employment) in Europe, the consequent global competitive advantages for European industry and reasonable cost/benefit performance for public expenditure.
- In order to identify “research of excellence” the **expertise of the evaluators** has to be increased.
- **Remote evaluation should be limited** to exceptional cases.

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# Common Strategic Framework for EU Research and Innovation Funding

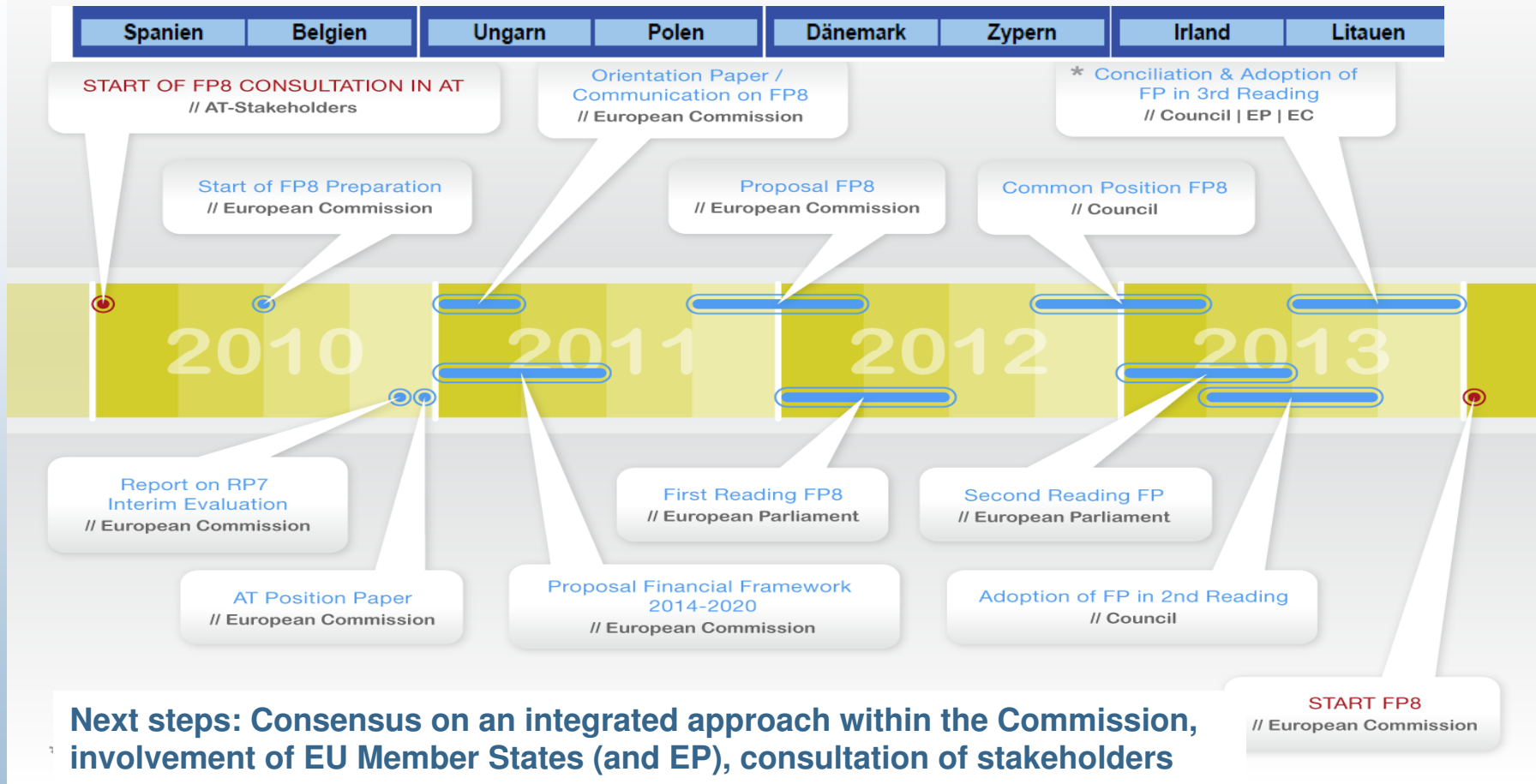


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## Consultation & Decision Process

## EU Council Presidency



# The next Tasks



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- Take an active part in the current Consultation Process ‘From Challenges to Opportunities: Towards a Common Strategic Framework for EU research and innovation funding’
- Consultation on major improvements to be made to EU research and innovation funding for post 2013 period
- Use EPoSS’ as an instrument for opinion making and tool for consensus finding – Concept Paper!
- Pay attention to the deadline for contributions: 20 May 2011

And don't forget the “daily business”!

# ICT WP 2011-2012

## Next Relevant Objectives and Calls for EPoSS Community



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Call	SME Initiat.	Call 8	GC, EEB, FoF PPP 2012	Call 9	Futurre Internet PPP 2012	FET Open
<b>Date of publication</b>	1/2/11	26/7/11	30/7/11	18/1/12	18/5/12	20/7/10
<b>Call deadline</b>	28/4/11 (short) 28/9/11 (full)	17/1/12	2/12/11	17/4/12	29/10/12	Cont. to 31/12/12
<b>1. Pervasive and Trusted Network and Service Infrastructure</b>						
2.1 Cognitive Systems and Robotics				82		
<b>3. Alternative Paths to Components and Systems</b>						
3.1 Very advanced nanoelectronic components: design, engineering, technology and manufacturability		60				
3.2 Smart components and smart systems integration		39				
3.5 Core and disruptive photonic technologies		92				
3.6 Flexible, Organic and Large Area Electronics and Photonics						



## ICT WP 2011-2012

### Next Relevant Objectives and Calls for EPOSS Community (cont'd.)

Call	SME Initiat.	Call 8	GC, EEB, FoF PPP 2012	Call 9	Future Internet PPP 2012	FET Open
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<b>6. ICT for a Low Carbon Economy</b>						
6.1 Smart energy grids		30				
6.7 Cooperative systems for energy efficient and sustainable mobility		40				
6.8 PPP GC: ICT for fully electric vehicles			30			
<b>7. ICT for the Enterprise and Manufacturing</b>						
7.1 PPP FoF: Smart factories: energy-aware, agile manufacturing and customisation			40			
7.2 PPP FoF: Manufacturing Solutions for new ICT products			20			



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# Thank you!