

# Public – Private Partnerships

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# Outline

- European Economic Recovery Plan
- The PPPs
  - Factories of the Future
  - Energy-Efficient Buildings
  - Green Cars
- The ICT contribution
  - for agile and environmentally friendly manufacturing
  - for energy-efficient buildings and spaces of public use
  - for the Fully Electric Vehicle



# European Economic Recovery Plan

- *“To support innovation in **manufacturing, construction** and in the **automobile** sector, .... which face significant challenges in the transition to the **green economy**...”*
  - A comprehensive plan to drive Europe's recovery from the current economic crisis
  - Endorsed by EU Council on 12 December 2008
  - A € 200 billion initiative
    - €170 billion from national budgets + €30 billion from EU and EIB
    - short-term measures to boost demand, save jobs and help restore confidence
    - "smart investments" for higher growth and sustainable prosperity in the longer-term

## *3 public-private partnerships to boost clean technologies through support for innovation*

- **Factories of the Future** (€1.2 billion)
- **Energy Efficient Buildings** (€1 billion)
- **Green Car** (€5 billion)



# Factories of the Future

- Help European manufacturing enterprises
  - in particular SMEs
  - adapt to global competitive pressures
  - improving the technological base of manufacturing
  - across a broad range of sectors
- Industry-driven R&D projects
- Co-ordinated calls
  - 7th Framework Programme
  - Themes ICT and NMP
  - 2010-2013

# Factories of the Future Funding

- Total 2010-2013: € 1.2 billion
- public funding:

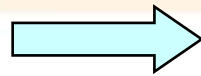
	2010	2011	2012	2013	Total
FP7 ICT	€35M	€70M	€70M	€70M	€245M
Total	€80M	€130M	€160M	€230M	€600M

- Private funding: € 600 million (in kind)

# Energy Efficient Building

## Problems addressed

40%



Responsible of EU energy consumption

- The present rate of construction of new buildings is below 2%, destruction rates are even lower, in the range of 0,5%
  - Refurbishing is key!!!
- Big sector (32 million jobs) heavily effected by the crisis
- Citizens energy use to be reduced by 20% by 2020 (lower energy bills!)



# Energy Efficient Building Objectives

- Reducing the energy consumption of buildings and its negative impacts on environment through integration of innovative technologies to low carbon economy
- Buildings cover their own energy needs contributing to EU energy independence and on long term will become even energy provider

Budget: € 1 billion in 4 years  
In 2010: ~ € 130 million Euro



Winston Churchill Tower - Rijswijk:  
Renovation with a double skin facade  
(internally ventilated)  
Source: Permasteelisa Group



# Energy Efficient Building

## Key players

### PUBLIC

- EUROPEAN COMMISSION

### PRIVATE

- Major Industries

ARUP, BOUYGUES, EDF, ACCIOANA,  
MOSTOSTAL, PHILIPS, STIEBEL ELTRON

- European Technology Platform  
Construction Platform (ECTP)  
connected to other ETPs (Solar, Thermal,  
Photo Voltaic, Steel, Sustainable  
chemistry, Wood, Hydrogen ...)



# Energy Efficient Building

## Expected results

Monitoring tools: Rapid on-site measurement of actual performances

The building envelope: highly efficient and smart windows

Systems and equipments: Integrated photovoltaic (PV) solutions and ICTs for energy efficiency

Environmental technologies: Retrofitting of historic buildings

Standardisation: Pre-normative research, standardisation

Demonstration: Integration of innovative technologies



Torre de Cristal Madrid  
Source: Emmer Pfenninger  
Partner

# European Green Cars Initiative

## *Context*

- a key industrial sector for Europe
- direct employment of over 2 million persons
- indirect employment of another 10 million persons
- one of largest RTD investors in the EU  
(over €20 B/year, ca.5% of its turnover)
- sector in deep crisis today
- ensure recovery - long term survivability



# European Green Cars Initiative

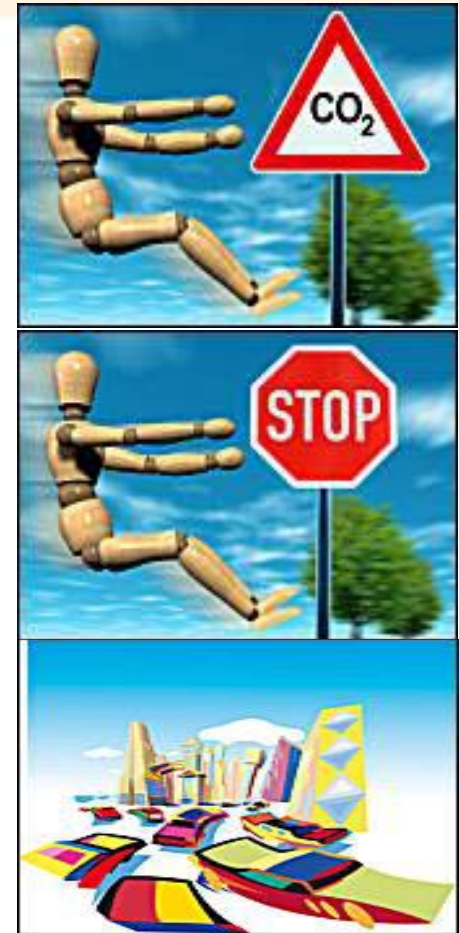
*a package of €5 billion*

- **Research on greening road transport : €1 billion**
- **EIB loans in support of industrial innovation: €4 billion (in addition to existing loans)**
- **Demand side measures: **regulatory** action by Member States and the EC on e.g. lower registration taxes, incentives for scrapping old cars and public procurement**



# European Green Cars Initiative: research & innovation

- The use of renewable & non-polluting energy sources
- Safety
- Traffic fluidity





# European Green Cars Initiative: What research?

## Scope

- Road vehicles: passenger cars, buses, urban vehicles, trucks
- Infrastructures: smart grid, distribution, recharging
- Optimisation of the overall transport system

## Research focus

- Heavy duty vehicles
- Electric and hybrid vehicles
- Logistics & co-modality



# European Green Cars Initiative: Electric and Hybrid Vehicles 2010-2013

## *Research areas*

- Power usage: electric car
- Power generation & smart grids
- Power distribution & recharging infrastructure

## *Research needs*

### Batteries

+autonomy, - weight, - cost,  
new chemistries & materials

### Electric motor

compact, T° & vibration  
permanent magnets

### Range extender

increased autonomy,  
compaction of batteries

### Advanced electric vehicle concepts:

New design of electric car  
safety, weight, ergonomics,  
aerodynamics)

### Advanced vehicle to grid Interface:

charges, metering, bidirectional  
routing,  
GPS telematics, new business models



# European Green Cars Initiative:

- EGCI is of public interest with industrial leadership (priority setting + road mapping)
- EGCI combines public and private money
- Today implemented through existing mechanisms of FP7



# European Green Cars Initiative: How will research be funded?

- Budget: €1 billion co-financed by the EC and the private sector (PPP)
- Implemented as a cross programme initiative:
  - 2010-2013
  - €500 million EC funding from NMP, ICT, Transport, Energy, Environment FP7 themes

# European Green Cars Initiative calls for €105 million

1. **Joint call (NMP, Energy, Environment, Transport): € 25M  
on batteries**

2. **Transport theme : sustainable surface transport**

by DG RTD with €40M on:

electrical machines , integrated electric auxiliaries and on-board systems, optimised thermal engine development and integration, smart storage integration, advanced electric vehicle concepts, coordination action - awareness of job potential

by DG TREN with €23M on:

integrated EU demonstration project on electromobility

3. **ICT theme : ICT for the fully electric vehicle with €20M**

# The ICT contribution

## Update of the Work Programme 2009-2010

- Objective ICT-2009-10.1: Smart Factories: ICT for agile and environmentally friendly manufacturing
- Objective ICT-2009-10.2: ICT for energy-efficient buildings and spaces of public use
- Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle



# Objective 10.1 - "Smart Factories: ICT for Agile & Environmentally Friendly Manufacturing"

1. Relevant to "Factories of the Future":
  - Focus in 2010 is on "Smart Factories"
  - Industry-driven projects
2. Projects should:
  - Focus on the use of advanced ICT-based technologies
  - Contain a strong validation element
  - Have quantifiable targets
3. Funding: € 35 million
  - Mainly collaborative projects: IPs and STREPs
  - 1 European "ICT for Factories of the Future" Coordination Action
4. Expected impact:
  - Higher level of intelligence & environmental consciousness on the shop floor
  - Introduction of advanced automation into mainstream manufacturing
  - Develop European market for advanced shop floor technologies
  - Higher productivity of customised manufacturing paired with reduced emissions & waste



€ 35 M

# Objective 10.1 - "Smart Factories: ICT for Agile & Environmentally Friendly Manufacturing"

## a) Integrated process automation & optimisation for sustainable manufacturing:

- Shopfloor-based platforms & systems in seamless cooperation with enterprise software (MIS, ERP, MES)
- High yield, high quality paired with low energy consumption, low waste

IP

## b) Context-aware ICT applications & scalable networks of sensors integrated in machines & factory-level infrastructure

- "Self" sensors: wireless, energy autonomous, self-diagnosing & -repairing
- To support real-time monitoring of energy use & material flow

IP

## c) Robotics-enabled production processes tested & validated in real-world environments

- To test & validate robotic prototypes in smart factory environments
- Projects in food processing, packaging, service & lightweight goods industries

STREP

## d) Laser applications: To integrate, test & validate lasers & laser systems

- In energy efficient processes and/or
- For the production of environment-friendly products

STREP

## e) European "ICT for Factories of the Future" Coordination Action:

- Facilitate industrial learning across industries
- Elaborate European vision & roadmap "ICT for Factories of the Future"

CSA

# Objective 10.1 - "Smart Factories: ICT for Agile & Environmentally Friendly Manufacturing"

## European research on the web:

<http://cordis.europa.eu/fp7/>

<http://cordis.europa.eu/fp7/ict/>

[http://ec.europa.eu/research/industrial\\_technologies/index\\_en.html](http://ec.europa.eu/research/industrial_technologies/index_en.html)

## FoF Contacts:

ICT: Erastos.Filos@ec.europa.eu

NMP: Andrea.Gentili@ec.europa.eu

Manufuture: chris.decubber@agoria.be



### a) Integrated ICT-based management and control systems

- all energy-efficient sub-systems
  - solid state lighting, heat exchange or air treatment,
- interoperation with other ICT sub-systems
  - security, safety and comfort
- inside, exterior and surrounding space
- systems integration, validation phase
- contributions to/from standardisation and regulation
- guidelines for future procurement schemes



b) European "ICT for Energy-efficient Buildings"  
Forumall

*"coordination action should bring together all relevant stakeholders to identify and review the needs in terms of research and systems integration"*

Tasks should include:

- editing and up-dating the research roadmaps (REEB)\*
- organisation of expert hearings
- dissemination and networking events
- contribution to standardisation and regulation

\*European Strategic Research Roadmap to ICT enabled Energy-Efficiency in Building and Construction,  
<http://www.ict-reeb.eu>

# ICT for energy-efficient buildings and spaces of public use

## Expected impact:

- Contribution to the opening of a market for ICT-based customized solutions integrating numerous products from different vendors and offering services from design of integrated systems to the operation and maintenance phases.
- Establishment of a collaboration framework between the ICT and buildings and construction sectors aimed at exploiting opportunities for the development of ICT-based systems in compliance with the Energy Performance of Buildings Directive.
- Radical reduction of energy consumption and CO2 emissions, in line with the policy framework for facilitating the transition to an energy-efficient, low-carbon economy through ICT

- **Budget**

- STREP      €14 M
- CSA        €1 M

€ 15 M

## Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle

- ERTRAC (EUCAR+CLEPA), EPoSS, SMARTGRID
  - industry roadmap on electrification of urban mobility and transport
- Research areas and research needs :
  - energy storage
  - drive train
  - *vehicle concepts and integration*
  - grid integration and interfaces
  - EV integration in transport system

ICT WP  
2010



Objective ICT-2009-10.3:  
ICT for the Fully Electric Vehicle  
Target outcomes:

a) Highly energy-efficient ICT components and solutions

- for Fully Electric Vehicles (FEVs)
- adaptive and distributed control
- new architectures
- infrastructure interfaces (road & power grid)
- overall system optimization

*"Projects should address optimization at vehicle and system levels, derive requirements and define standards ... for subsystems, components, communications and closed-loop control, making components and subsystems work together in synergy."*

# Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle

Target outcomes: a)

- Implementation and testing of overall systems and components
- Breakthroughs in performance, efficiency, complexity management, system integration, safety of components and cost reduction
- Robustness and reliability, modeling, simulation
- Life-cycle assessment and
- Well-to-wheel analysis
- Electromagnetic compatibility, high voltage components, and standardisation (voltage, current, temperature, communication and data protocols).
- Safety procedures, qualification and validation tests, and adaptation of safety systems for electric vehicles
- Projects should preferably address several topics, and consortia should represent a critical mass along the value chain.

Objective ICT-2009-10.3:  
ICT for the Fully Electric Vehicle  
Target outcomes: a)

Research Priorities

STREP

1. New solutions for overall efficiency gains in the electric vehicle :
  - i. smart ICT solutions and models for electrical and thermal management
  - ii. development of energy efficient and lightweight electrified auxiliaries (e.g. air conditioning, steering, lighting, brakes)
  - iii. closed-loop control and cooperative interaction of distributed subsystems
2. Safe and robust sub-systems
3. Advanced fail-safe systems and electrical architectures, new concepts for vehicle-to-road infrastructure integration



## Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle

Target outcomes:

### b) European Fully Electric Vehicle Coordination Action:

Coordination of FEV research activities to identify and review the needs of research, components, and systems integration. Includes editing and regularly updating a European FEV roadmap, the organisation of expert hearings and networking events, and coordination with FEV-related activities at the national and global levels.

Additional coordination activities can include assessment of energy efficiency and life cycle impact, infrastructure and regulations enabling and leveraging the technologies for FEVs and their convergence with regenerative energy sources, road and passenger safety as well as standardisation.

## Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle

### Projects should:

- Be industry-led
- Be built by consortia along the value chain

# ICT-related calls and topics

**Microsystems and  
Smart Miniaturised  
Systems**

(ICT-2009.3.9 in Call 5)

**ICT for Mobility  
of the Future**

(ICT-2009.6.2 in Call 5)



European Commission  
Information Society and Media



# Take a seat in the green car !



PPP Information day July 13, 2009  
Brussels focussing on the three PPPs

Call 5 Information day June 23 2009 Brussels  
focussing on:

3.9 Microsystems

10.3 ICT for fully electric vehicle

Info : <http://cordis.europa.eu/micro-nanosystems>

## Objective ICT-2009-10.3: ICT for the Fully Electric Vehicle

- European research on the web:
  - <http://cordis.europa.eu>
  - <http://cordis.europa.eu/fp7>
  - <http://ec.europa.eu/comm/research/future/>
- Information Society and Media:
  - [http://ec.europa.eu/information\\_society/](http://ec.europa.eu/information_society/)
  - <http://cordis.europa.eu/ist>
  - <http://cordis.europa.eu/micro-nanosystems>
- Green Car contact: [Griet.van-caenegem@ec.europa.eu](mailto:Griet.van-caenegem@ec.europa.eu)

# *Thank you! ...*

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