European Green Cars Initiative

ICT for Fully Electric Vehicles
4th call for proposals
Objective GC-ICT-2013.6.6 Electro-mobility

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European Green Cars Initiative
ICT focus: "**Fully Electric Vehicle** and its infrastructure" 2010-2013

Calls	M€	
	ICT	**FP7 (target)**
2010	20	105
2011	30	115
2012	30	140
2013	40	140
Total	120	500

- Package of 5B€: 4B€ EIB loans, 1B€ R&D funding (500M€ EC grants)
- Research Roadmap by ETPs: ERTRAC, EPoSS, SMARTGRID
- <u>Benefits</u> of the **fully electric vehicle**:
  - At least 40% **energy saving** (engine + transmission)
  - Reduced fossil fuel **dependence & environmental** impact
  - **Socio-economic impact:**
    12 million jobs & international competitiveness are at stake
- <u>Challenges</u>:
  - From 1 combustion engine to 2 or 4 **in-wheel electric motors**
  - **Energy recovery from braking**
  - Batteries: **cost & business model, driving range, lifetime, energy management**
  - **Power electronics and safety**
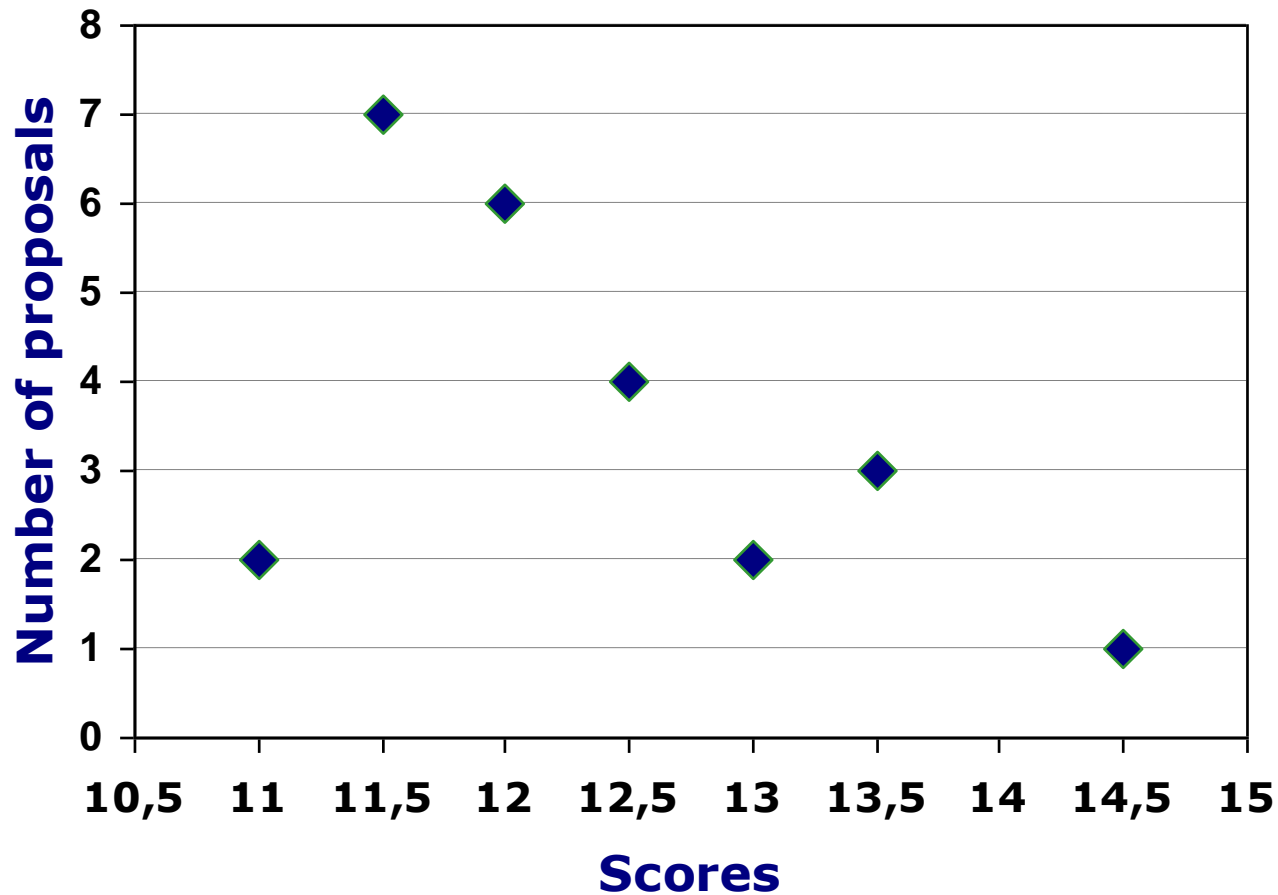 - **Standards / interoperability**

ICT for FEV – where do we stand ?

- 3 calls for proposals (+ 1 upcoming call)
- 80M€ spent so far (out of 120M€ in FP7)
- 25 projects launched (STREPs + 2 CSAs)
- **high success rate: 40-50%**
- **high industrial participation: 66%**
- SME participation 20-30%
- fast Time to Grant: 6-8 months
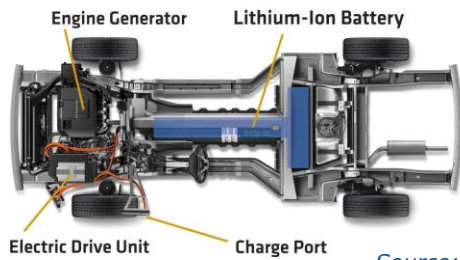
ICT for FEV – first 3 calls
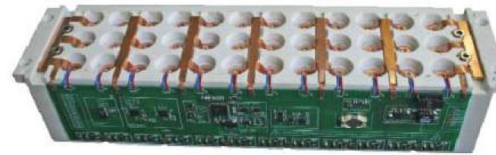
25 Ongoing Projects @ DG ConNECT

+1 study

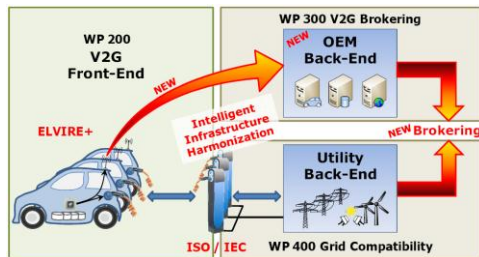## Electric Power Trains

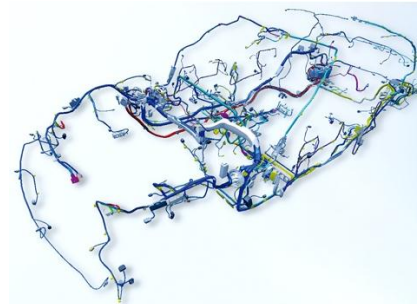Source: GM Volt

Battery Management

Source: Fraunhofer IISB

Vehicle Dynamics

Source: Siemens VDO

Cooperative Systems & V2G Technologies

Source: VW/ERPC

E/E Architectures & Auxiliaries

Source: Intedis
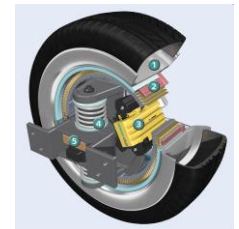
Safety

NEW CALL 2013

a)

Advanced System Architecture

b)

Comprehensive Energy Management

c)

CSA - International Dimension + SMEs

(39M)   **(1M)**

40 M€ - STREP & IP + CSA

Fully Electric Vehicle – Definition

- *electrically-propelled vehicles that provide* **significant driving range on purely battery-based power**

- *incl. vehicles with* **range extenders**

- *incl.* **small light-weight** *passenger and duty vehicles*

Call Scope

i.e. PROJECTS SHOULD ADVANCE

*… research, development and **integration** of major **building blocks for the FEV**, and for **its infrastructure integration***

a) Advanced System Architecture

- new or expanded **functionality** of **existing hard and software architectures** for electronics to radical **cost** reduction, reduced **complexity**, increased **reliability** and **flexibility** and higher energy **efficiency**

- smart subsystems for **energy storage**, **traction**, and **power control** including e.g. **bi-directional energy transfer**, **energy recovery** and improved **road handling**

a) Advanced System Architecture

- **re-design of the electric and electronic architecture**

- assessing **safety**, **security**, **reliability** and **robustness** of the electric power train operation including **EMC** and the development of related **international standards**

- **low power consuming cooperative systems** for cost efficient, real-time and safe operation of the vehicle.

a) Advanced System Architecture

- **technical solutions** facilitating
  - **recycling and reuse** of components
  - standardised, cost-efficient and reproducible **testing concepts** for vehicles and subsystems
  - ICT solutions for cost efficient, flexible **production** of small volume, customised (sub-)systems and vehicles driven by the different requirements of different customers

b) Comprehensive Energy Management

- ICT for to **optimising the energy system** **inside the FEV** and the **connectivity** of the FEV
  - efficient **vehicle-based solutions** for **grid and road integration** taking into account aspects of **autonomous driving** and integration in **cooperative systems**
  - **synergies** of **electric traction**, **autonomous driving** and **cooperative road-vehicle systems** for energy-, cost- and time-efficiency as well as **safe operation** of the vehicle including **autonomous positioning** or **guiding**

b) Comprehensive Energy Management

- **ICT-based solutions** for
  - optimised **recharging interfaces and methods** (inductive; continuous; fast; en route)
  - vehicle-based **energy harvesting**
  - management of combinations of **different energy sources and storage**
  - management and optimisation of **energy storage ageing, charge monitoring and certification of energy content**

b) Comprehensive Energy Management

- assessment of related **safety and health** concerns
- **common user interfaces** including **privacy and data security standards** for **flexible subsystems and mobile devices** (smart phones, tablets etc.)
- contribution to **standards** e.g. for dynamic and bi-directional **energy exchange** between the vehicles and the smart grid

c) Coordination and Support Actions

- **business models** for the **deployment** of FEV in public, personal, and freight transport
- pilot **educational and training programmes** and curricula
- stimulation of the **international dimension** and impact for European FEV and the **global presence of SMEs**
- contribution to the setting of **standards**
- **Proposals should predominantly address SME activities**

IMPACT

- Improved **energy efficiency** and extended **driving range** of the FEV
- Increased **performance** and reduced **costs** of the **electronic components** and the overall **FEV produced in Europe**
- Better **integration** of the FEV in the **smart grids** and cooperative **infrastructure**
- Significant improvement of FEVs' **safety and comfort**
- Strengthened **global competitiveness** of the European **automobile, ICT** and **battery sectors**; **market penetration of key components** of FEVs

- a), b) IP, STREP: It is expected that **at least one IP is selected per target outcome**

- Individual proposals **may address both target outcomes**

- Projects under b) are expected to establish **cooperation and to coordinate with relevant projects** under NMP, Environment, Energy and Transport to jointly support the EGCI PPP

… and to keep in mind

- **Vehicle-based ICT solutions**
- **Strong industrial pull**
- **Vehicle integration**
- **Focused projects**
- **Address and exemplify impacts**
- **Quantified goals**
- **High exploitation potential**

The views expressed in this slide are the sole responsibility of the author and do not replace under any circumstances the official evaluation criteria.

… some "Tips and tricks"

- Markus Korn:
"Ingredients for successful Photonics proposals"

- Henri Rajbenbach:
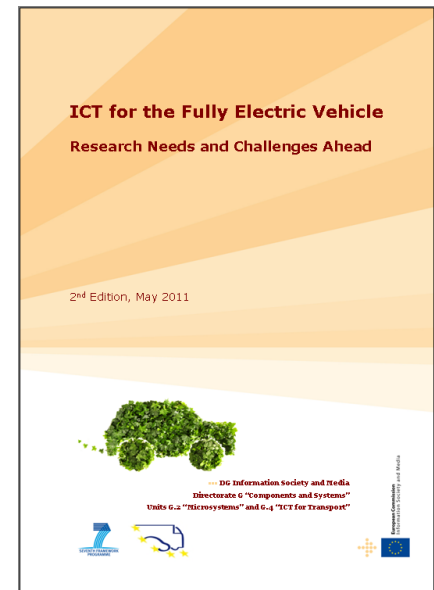**"How to write a bad proposal"**

Future events

- PPP Infodays 9-10 July in Brussels
- ICT Proposers Days
  26-27 September in Warsaw

Brochure

- 3rd edition to be published
- ICT for FEV Cordis website:
  http://cordis.europa.eu/fp7/ict/micro-nanosystems/ict-for-green-cars_en.html

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Thank you and good luck !