



European Green Cars Initiative

Electrification Roadmap and Research Projects of the European Green Cars Initiative

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EU Policy for Clean Transport

- **Europe 2020 Strategy**

 - 20% cut of GHG emissions

 - 20% more renewable energy

 - 20% less energy consumption
(in 2020, compared to 1990)

- **Transport 2050 Strategy**

 - 60% cut of carbon emissions by 2050

 - 50% less conventionally fuelled cars in cities 2030

 - no more conventionally fuelled cars in cities 2050

- **EU Fleet Emission Standards for New Cars**

 - 130g CO₂/km (2012 – 2015, phase-in)

 - 95g CO₂/km (2020)





European Green Cars Initiative

- **Public Private Partnership (PPP)**
in the European Economic Recovery Plan
- **Total budget:**
1 bn EUR for research and development
- PPP of industry and European Commission
- **Implementation** through the instruments of the
7th Framework Programme (2010-2013)
- **Goals:** climate protection, energy security, zero local
emissions, safety, traffic fluidity, and global
competitiveness of the automotive industry
- **Major focus** on electrification (ca. 2/3 of budget)



European Green Cars Initiative

- **Three Pillars:**
 - Electrification / Fully Electric Vehicle
 - Long Distance Trucks
 - Logistics and Comodality
- Implemented by **European Technology Platforms**



EPoSS

European Technology Platform
on Smart Systems Integration



- **Industrial Advisory Board** established
- Supported by two **Coordination Actions**





Public-Private Partnership

ERTRAC / EPoSS / SmartGrids ...
SRA and Long-Term Roadmaps

Private

Consultations ↑↓



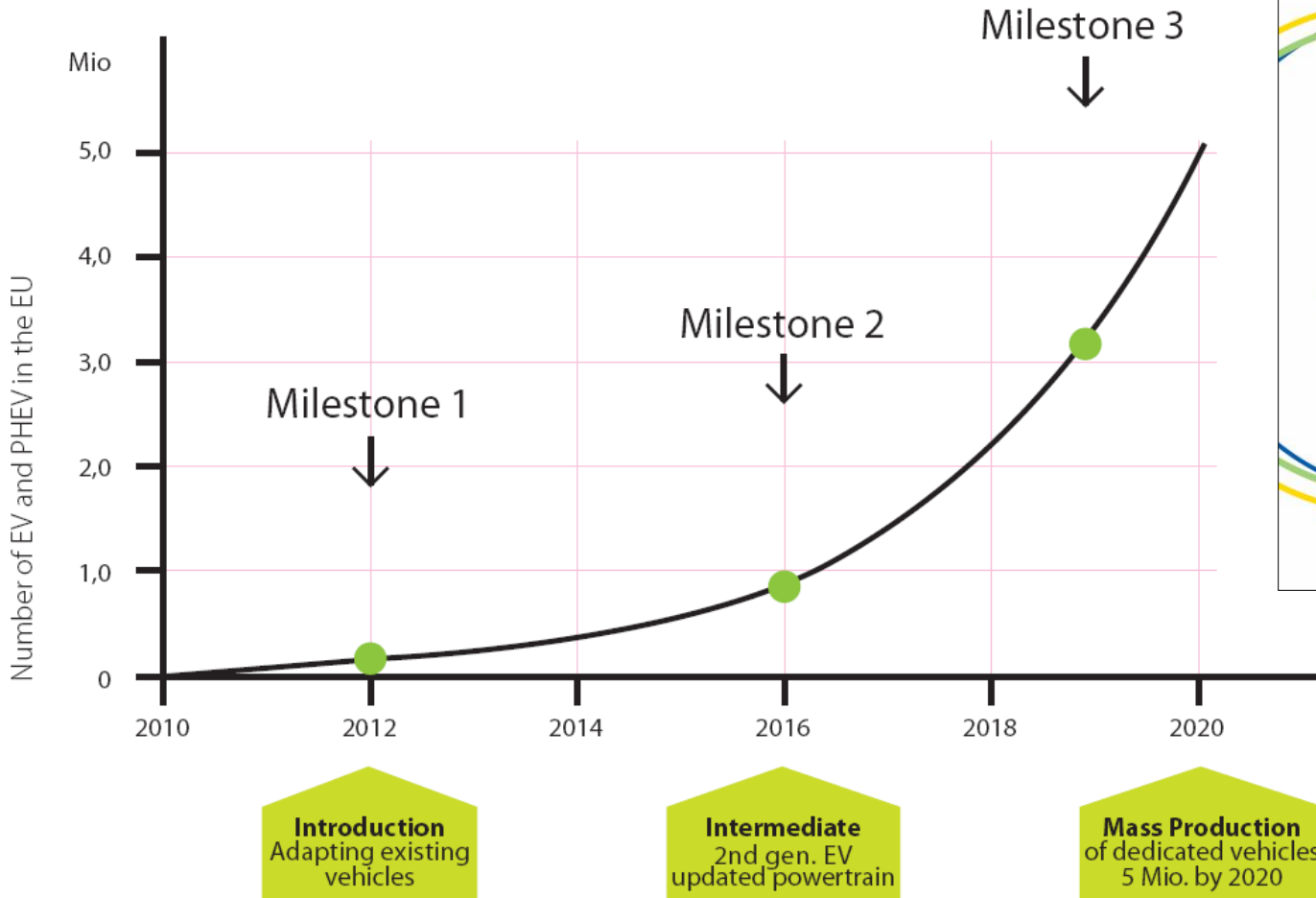
↑↓ *Proposal*

European Commission
Work Programmes and Annual Calls

Public



Electrification Roadmap



Drafted by an industrial task force
of ERTRAC, EPoSS, SmartGrids (2009)



Technology Roadmaps

Drive Train Technologies

- Develop Low-Cost/Weight
- Develop Highly Integrated
- Optimize Combustion Engines
- Develop Highly Integrated

System Integration

- Optimize System Efficiency
- Find new Solutions for H
- Design Electrical Architecture
- Create New Concepts for
- Research Light-Weight M

Grid Integration

Develop Adaptive On-Board/In-Plug Charging Dev.

- Create System for Information
- Develop Simulation, Monitoring
- Develop Protocols/Devices for
- Investigate Quick Charging
- Develop Contactless Charging
- Develop Bidirectional Charging
- Establish 1st Generation Charge
- Create Business Models for
- Connect Regions by Highways
- Establish Business Model for
- Create Network of Quick Charge
- Regulate Coverage with Charge
- Standardize Billing Concepts

Safety

- Improve Crashworthiness of Lightweight Cars
- Develop Acoustic Perception
- Develop Integrated Safety Concept (HV, Fire, ...)
- Setup Standards for Emergency Handling
- Create & Review Standards for Safety, EMI, Health

Transport System Integration

- Explore Potential of ITS for Energy Efficiency
- Provide Convenient Transition Between Modes
- Apply Sensors & C2X for Autonomous Driving
- Promote Green Image of Electric Vehicles
- EU Wide Signage of Roads and Vehicles





Call Recommendations

2010 Status

| | | EGCI Work Programme | | | | |
|---------------------|------------------------------|---------------------|-----|-----|-----|------|
| | | NMP | SST | ICT | ENV | MOVE |
| Industry Priorities | Energy storage systems | █ | █ | □ | █ | █ |
| | Drive train technologies | █ | █ | □ | █ | █ |
| | Vehicle system integration | █ | █ | █ | █ | █ |
| | Grid integration | █ | █ | □ | █ | █ |
| | Safety systems | █ | □ | █ | █ | █ |
| | Transport system integration | █ | □ | □ | █ | █ |

2011 Status

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2012

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2013

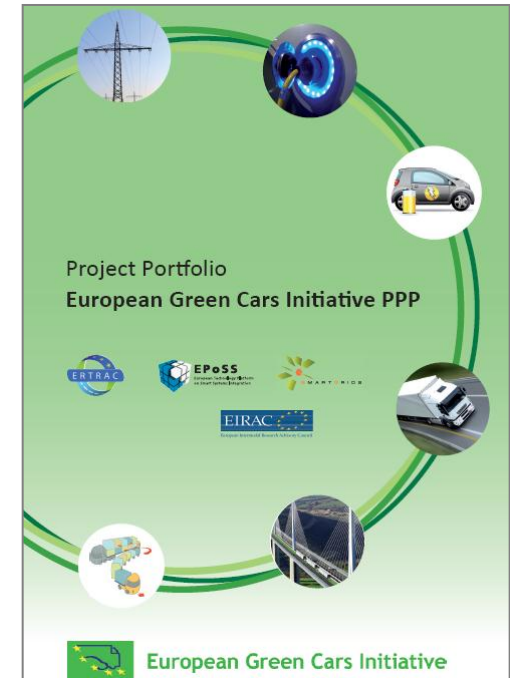
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| | Transport system integration | █ | █ | █ | █ | █ |

Recommendations for Implementation in Calls



Collaborative Projects

| Topic | # of Projects |
|-----------------------------|---------------|
| Energy Storage Systems | 14 |
| Drive Train Technologies | 8 |
| Vehicle System Integration | 12 |
| Grid Integration | 4 |
| Safety | 6 |
| Transport Syst. Integration | 5 |



Project
Portfolio



EV Market Launch in Europe



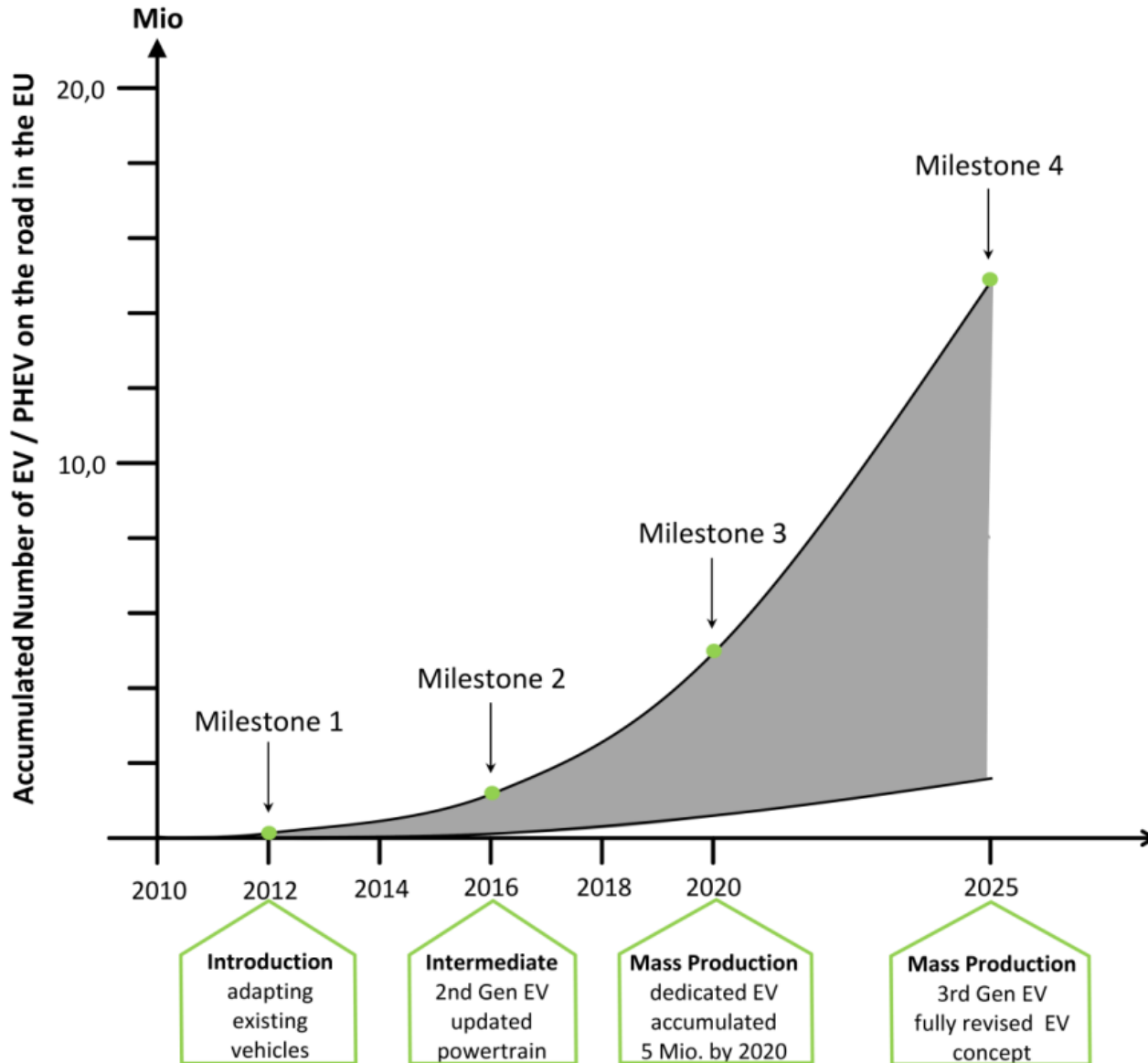
Renault Zoe
(2012)



BMW i3 - pure electric
(2013)



Roadmap Update





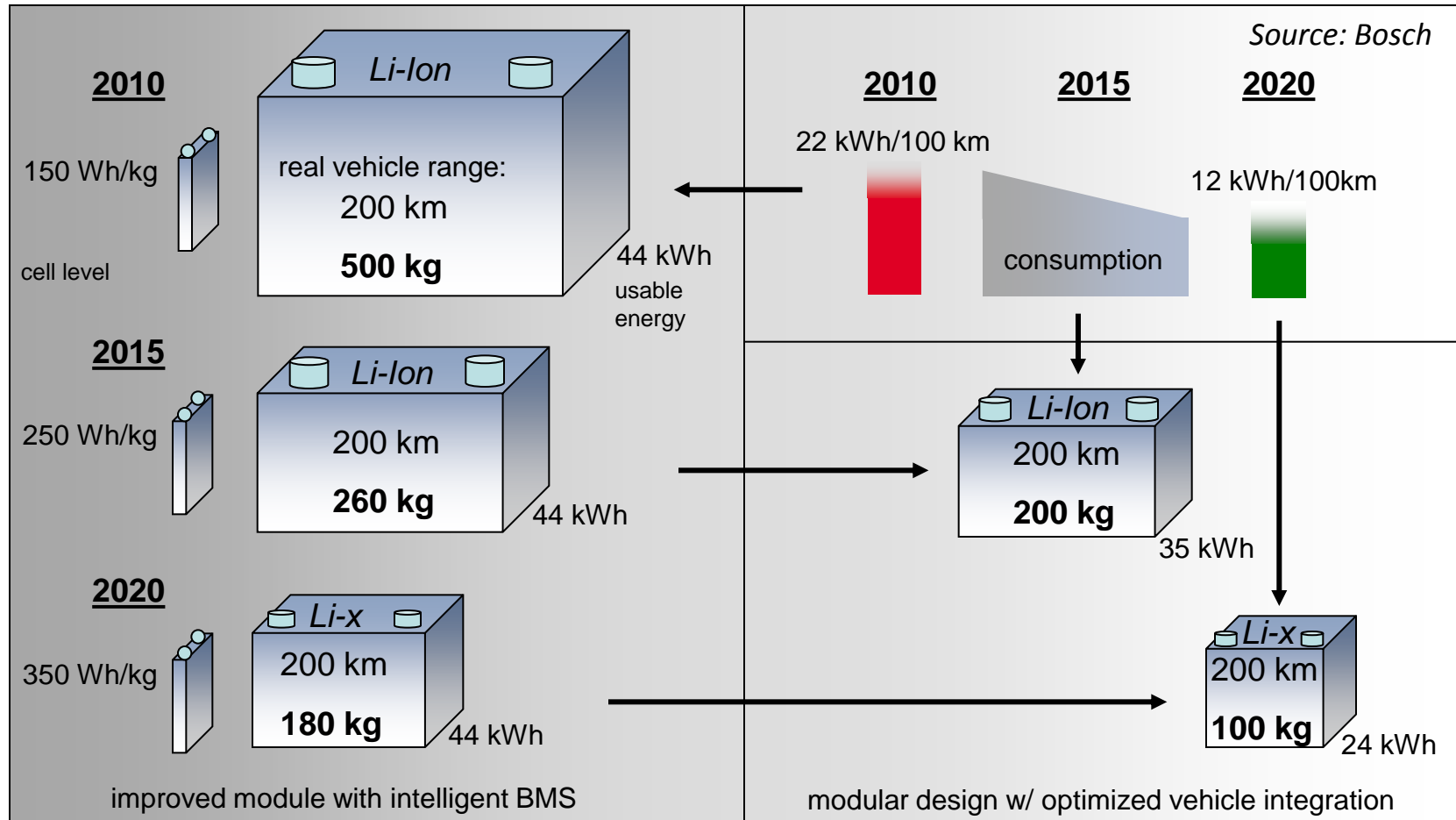
Milestone 4 (2025)



Optimize Battery

PLUS

Optimize Vehicle System



Synergies in various technology fields

lead to increased energy efficiency and cost reductions



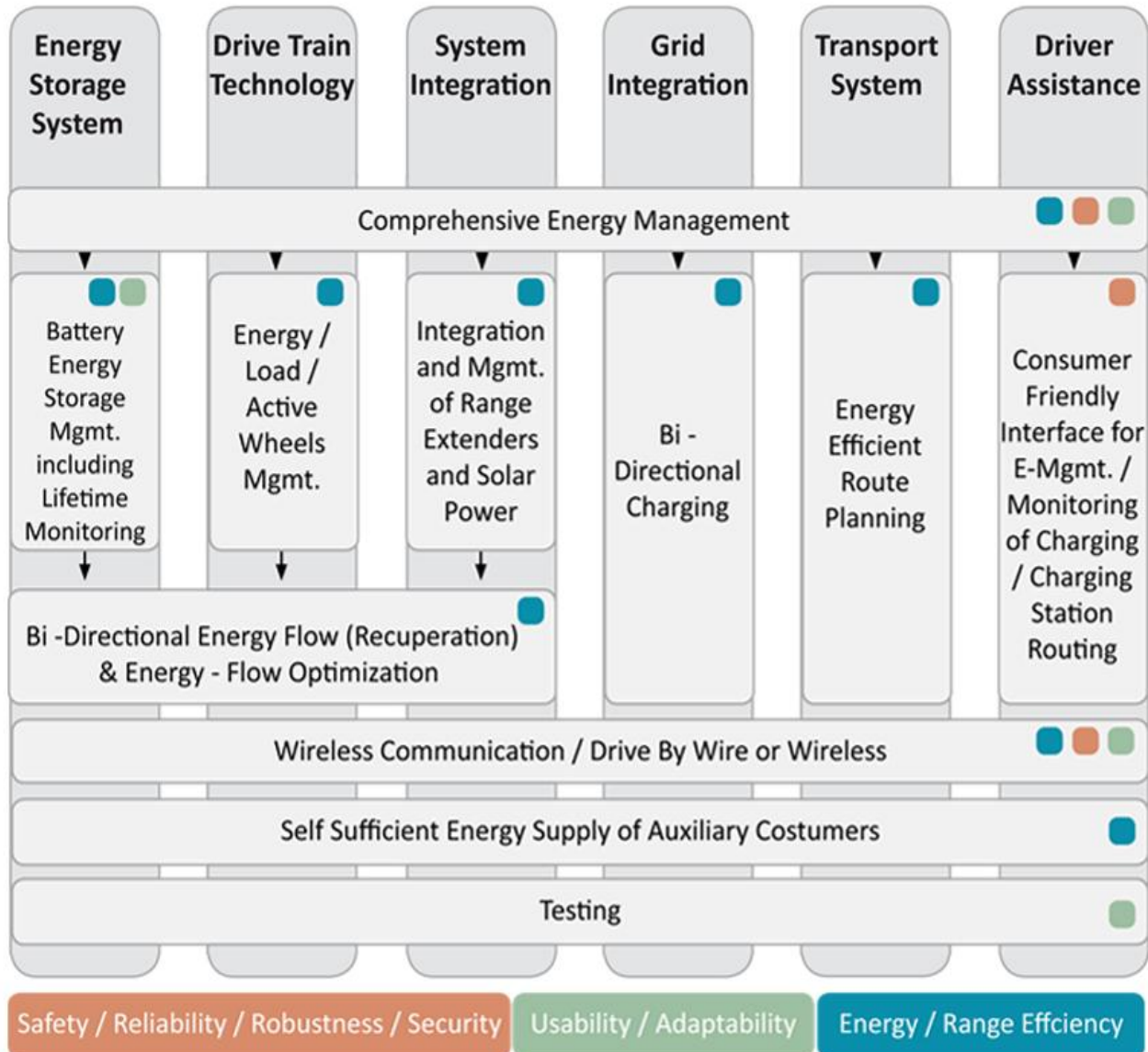
Roadmap Update



- **Transversal Topics**
 - Smart Grid
 - Information and Communication Technologies
 - Simulation and Testing
 - Manufacturing Technologies
 - Materials

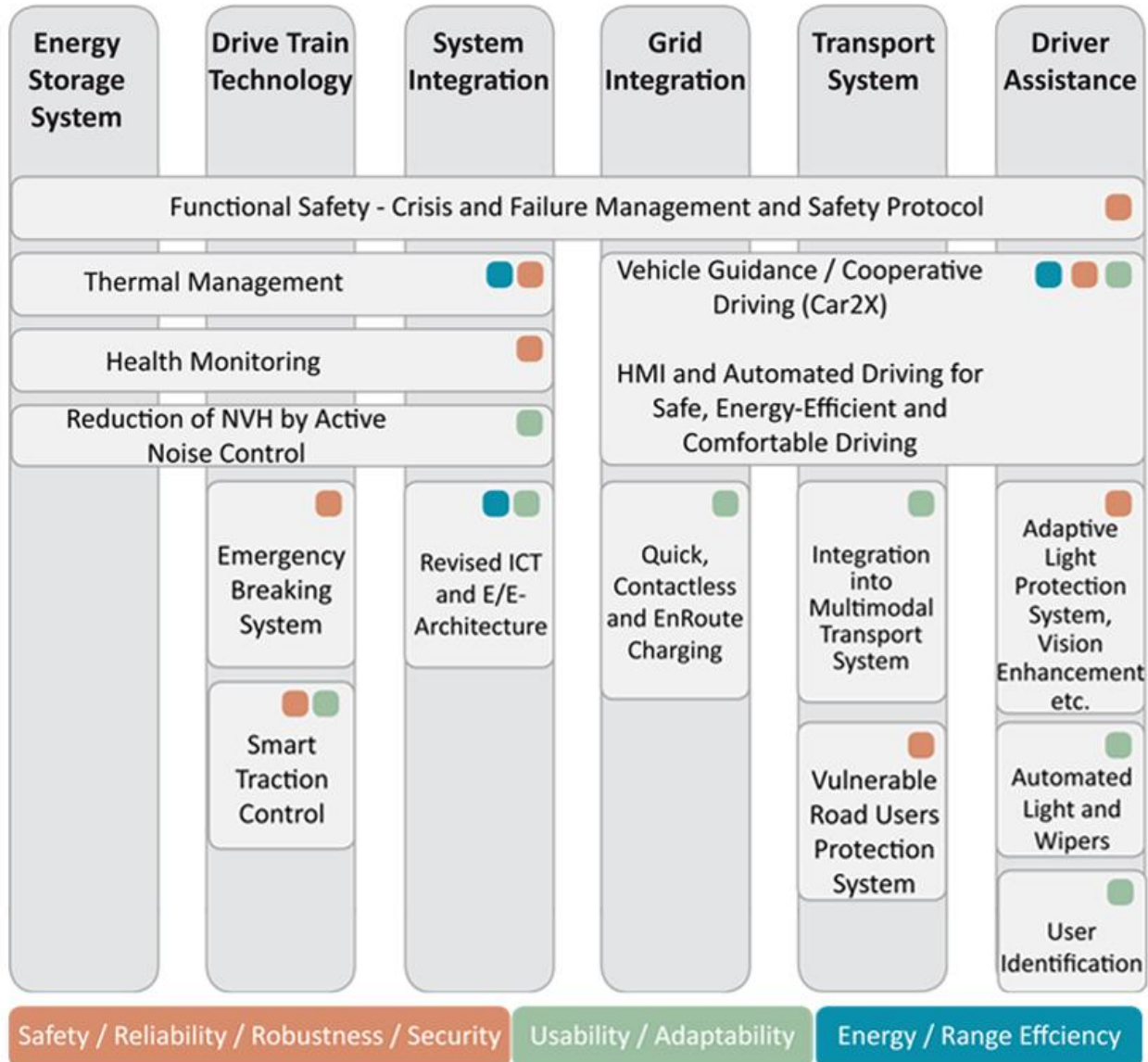


Annex: ICT for the EV





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**New Coordination Action
(as of October 2012):**



www.green-cars-initiative.eu