



G4V- Grid for vehicles

European Roadmap Towards the Infrastructure Enabling the Mass Market of Electric Vehicles

***Presentation of the final results
30 June 2011, Brussels***

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London**



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Welcome and introduction

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Energy and Research Aspects in Relation with EV Integration

Henrik DAM
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Research and energy policy aspects in relation to EV mobility

European Commission, DG Research & Innovation

Henrik Dam

Research Programme Officer



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Important EU energy policies

- ✓ **An Energy Policy for Europe (Spring 2007 European Council)**
 - ✓ *- 20% green house gases, 20% Efficiency, 20 % renewables*
 - ✓ *2050 objectives*
- ✓ **European Strategic Energy Technologies Plan – SET Plan (November 2007)**
 - ✓ *Communication: Investing in Low Carbon Technologies (autumn 2009)*
- ✓ **Recovery Package (2008-2009)**
- ✓ **3rd Internal Energy Market Package (2009)**
- ✓ **Communication: Smart Grids: from innovation to deployment, 12th April 2011**
- ✓ **Energy efficiency directive, 22nd June 2011**



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Important EU energy policies

- ✓ **20% Renewable Energy by 2020**
 - ✓ *Translates to about 35% of renewable electricity*
 - ✓ *Developing grid infrastructure*
 - ✓ *Providing priority access or guaranteed access to RES-electricity*
 - ✓ *Guarantee transmission and distribution of RES-electricity*
 - ✓ *Priority to RES-electricity in dispatching*
 - ✓ *Market and Operations to minimise curtailment of RES-electricity*



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Important EU energy policies

✓ Recovery Package

✓ *Private-Public Partnerships – Green Car, Efficient Buildings, Factories of the Future*

✓ *FP7 Calls to be published 19/7-2011*

✓ 3rd IEM Package

✓ *Cross-border issues, ACER, ENTSO-E*

✓ *Promotion of Smart Metering*

✓ *Provision for financing R&D through tariffs*



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Important EU energy policies

- ✓ **Smartgrid communication, 12th April**
 - ✓ *Actions on Smart Grids standards*
 - ✓ *request to Member States on action plans with targets for the implementation of Smart Grids*
 - ✓ *Continuous support for innovation and its rapid application*
- ✓ **Energy efficiency directive, 22nd June 2011**
 - ✓ *giving fresh momentum to energy efficiency*
 - ✓ *Incl. enabling metering data to be made available to a third party acting on behalf of the final customer*
 - ✓ *Incl. enabling final customer to consult and use the applicable time-of-use tariffs with realtime pricing, peak time pricing and peak time rebates*



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Main framework, smartgrids, EV & Research

- ✓ **FP7 Programme and projects**
 - ✓ *E.g. MERGE, Green eMotion*
- ✓ **SET Plan European Electricity Grids Initiative (EEGI)**
 - ✓ *Roadmap 2010-18 and detailed implementation plan 2010-12. Total budgeted costs for RD & D: 2 B€*
 - ✓ *D8 of this roadmap targets "Integration of electric vehicles" with an estimated budget of 100 M€.*
- ✓ **Smartgrid European Technology Platform (Smartgrid ETP)**
- ✓ **European Green Car Initiative (EGCI)**
 - ✓ *PPP from recovery package (2008-9)*
 - ✓ *Developed a European Roadmap for Electrification of Road Transport*
 - ✓ *Projects co-funded by FP7*



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In summary

- ✓ **EC policies on energy and research support electric vehicles**
- ✓ **Smartgrids are necessary to reach the objectives**

Thanks for your attention !!



Background, Objectives and Structure of the G4V Project

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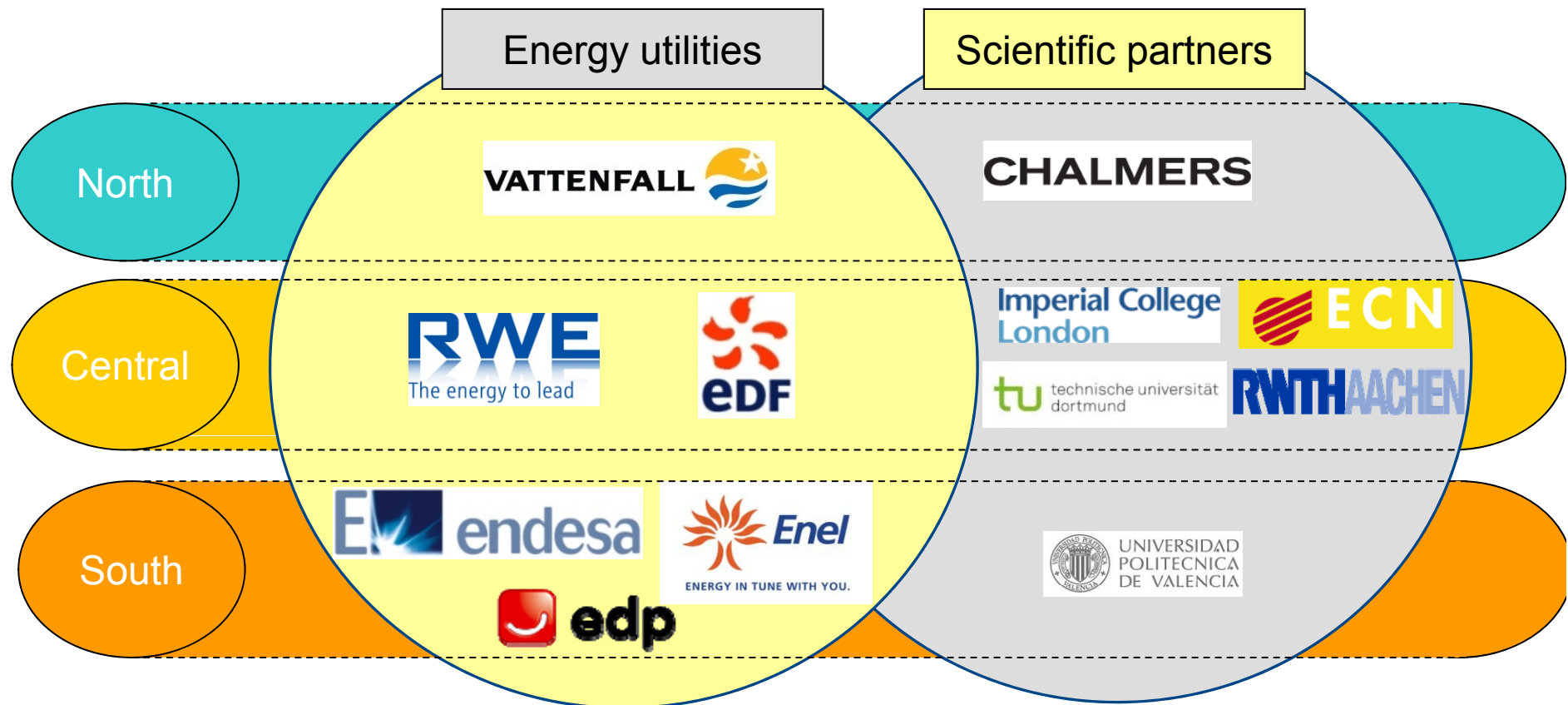
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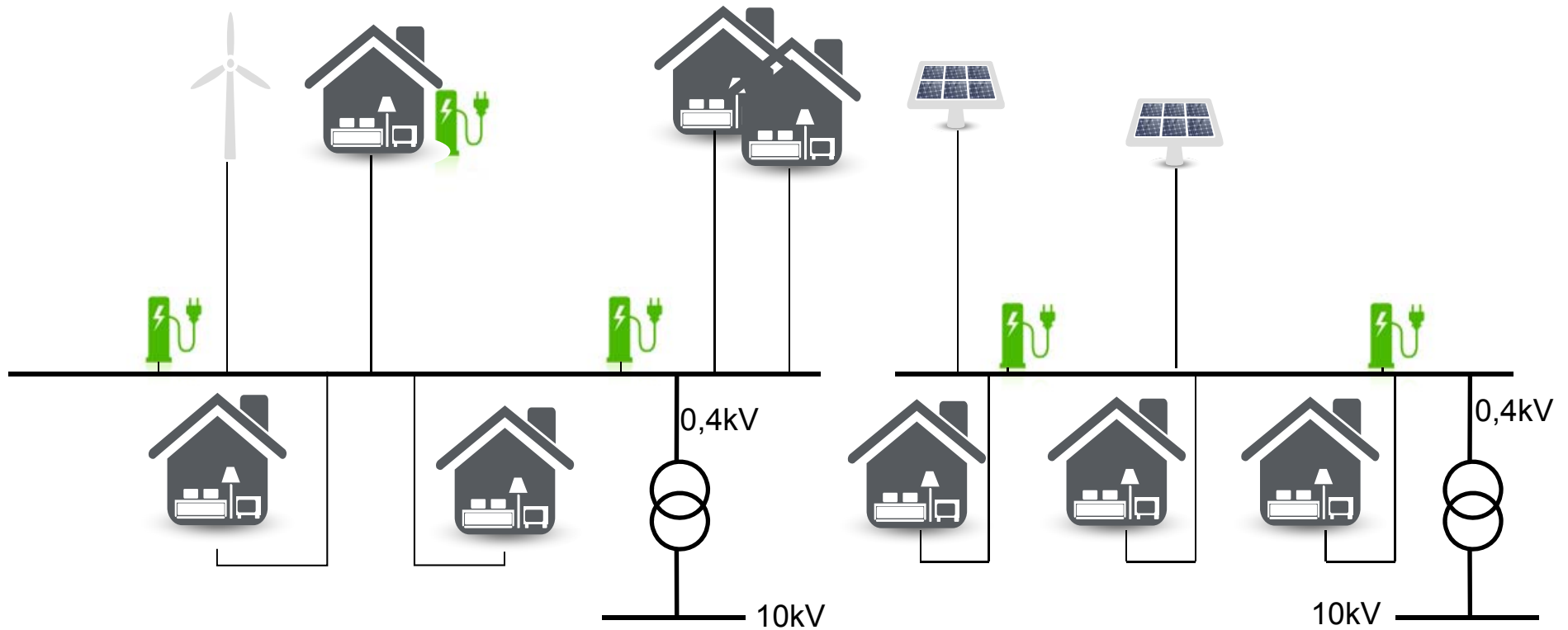
The G4V consortium



12 partners from eight countries



Why a project as “GRID-for-vehicles”?



- EV's as new **mobile** and **flexible** loads (and generators?)
 - opportunities and challenges



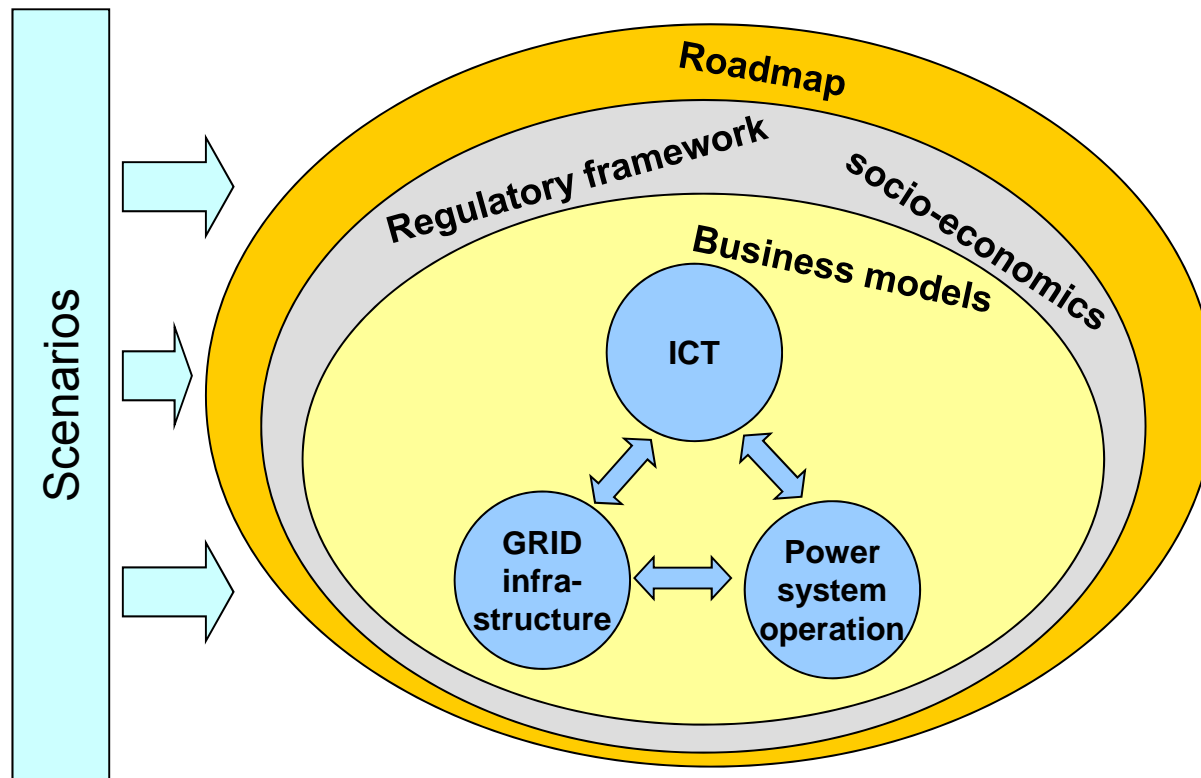
Overview – the G4V-project



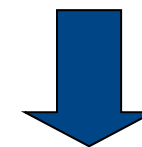
time-horizon: 2030 and beyond

Key – Question:

What needs to be started **now** in order to enable a mass market of EV?



- technical issues
- legal framework
- business model
- customer convenience
- environmental aspects



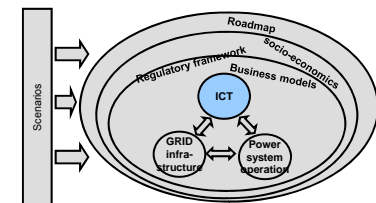
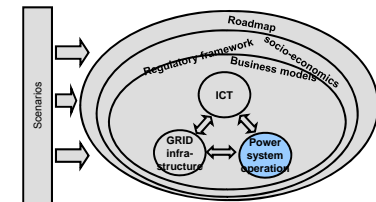
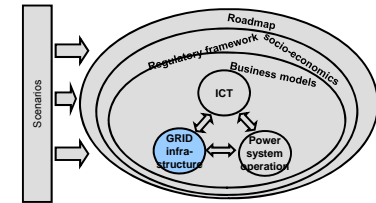
Recommendations



Key questions addressed in G4V...(I)

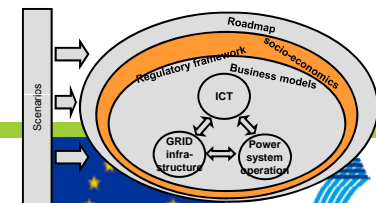
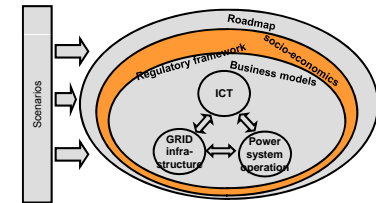
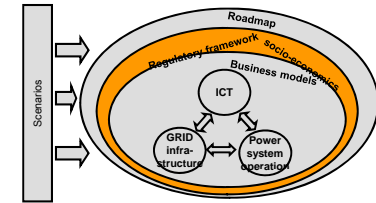
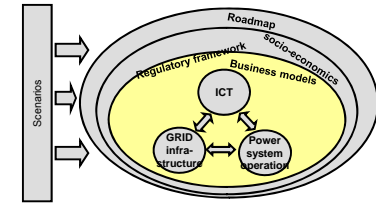


- What impact on the grids can be anticipated for a large number of EV's?
 - critical grid assets
 - potential problems (overloads, voltage violation,...)
 - influencing parameters (location of CIS, connection power,...)
- How could different charging strategies look like?
 - centralised vs. decentralised approaches
 - rather simple vs. more sophisticated strategies
 - different objectives: technical driven (e.g. congestion management) vs. market driven (e.g. aggregation for reserve markets)
- What is the most suitable (functional) ICT?
 - requirements depending on charging strategies, business cases as well as customer convenience
 - data privacy and security issues

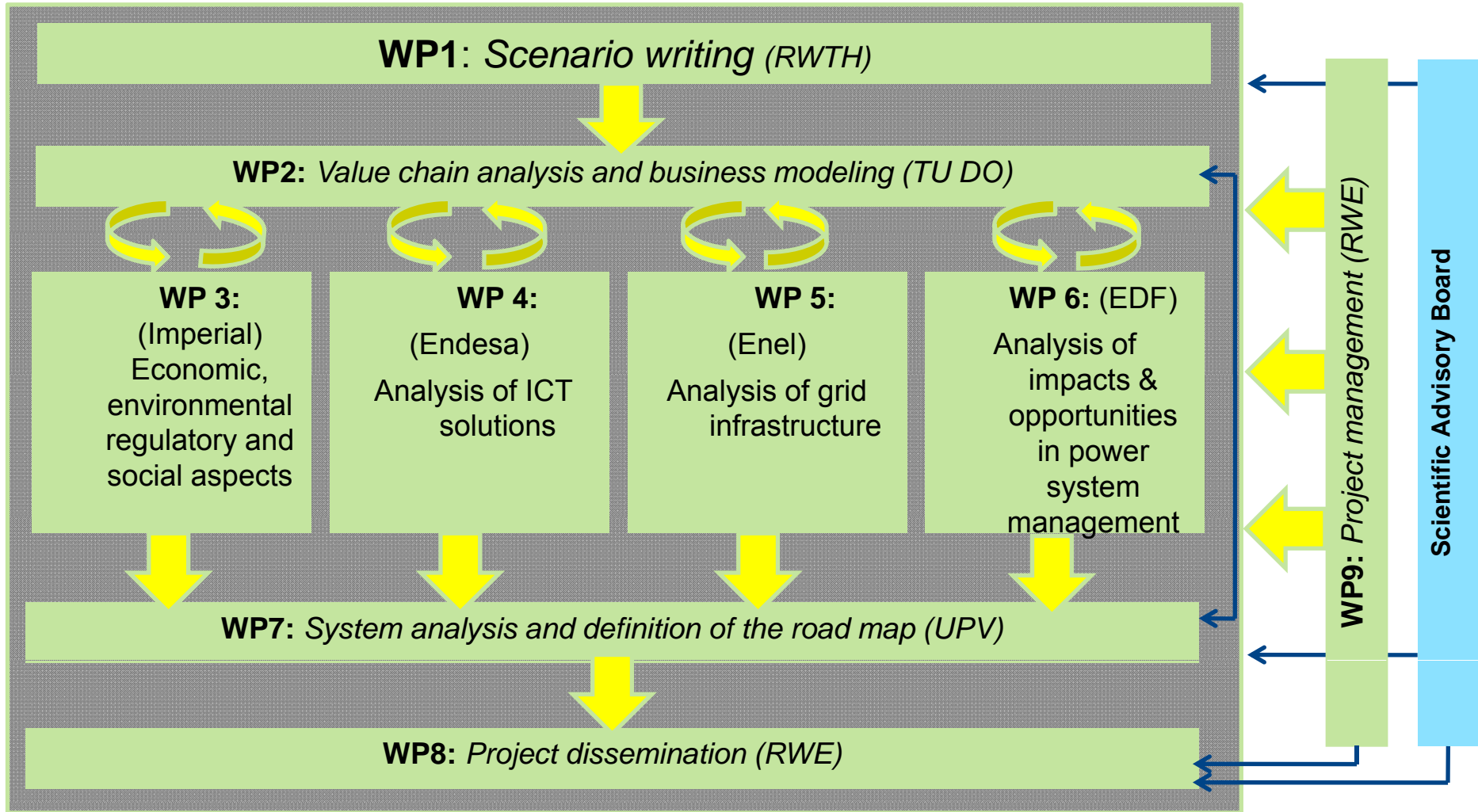


Key questions addressed in G4V...(II)

- How will the business world be affected by EV'S?
 - new products and services
 - new business models
 - new stakeholders vs. traditional stakeholders
- What is the potential impact of EV's on the generation mix?
 - integration of Renewables
 - avoidance / reduction of wind-curtailment
 - potential for CO2-reduction
 - dispatching
- What are the costumers' views on EV's?
 - expectations, needs and concerns
 - behaviour and willingness to participate in particular charging schemes (incentivation)
- Is the regulatory framework enabler or barrier for an evolving EV market?



Work Plan



Thank you very much for
your attention!

Enjoy the conference!