Cross-Company Collaboration for Identifying Pre-Competitive Research Needs for Power Electronics

- Working Group 1: ClusterTeam 2 for Power Electronics -

DG-ENER Round Table, Brussels

4.09.2017

Overview

- Overview of the National Platform for Electric Mobility (NPE)
- Cross-Company Team for Power Electronics
- Power Electronics in Vehicle Systems
- Roadmap Overview of the „Need for Action“ for Pre-Competitive Research*

*) Note: Additionally these results will be actively shared with EU-Funded CSA FUTURE-RADAR

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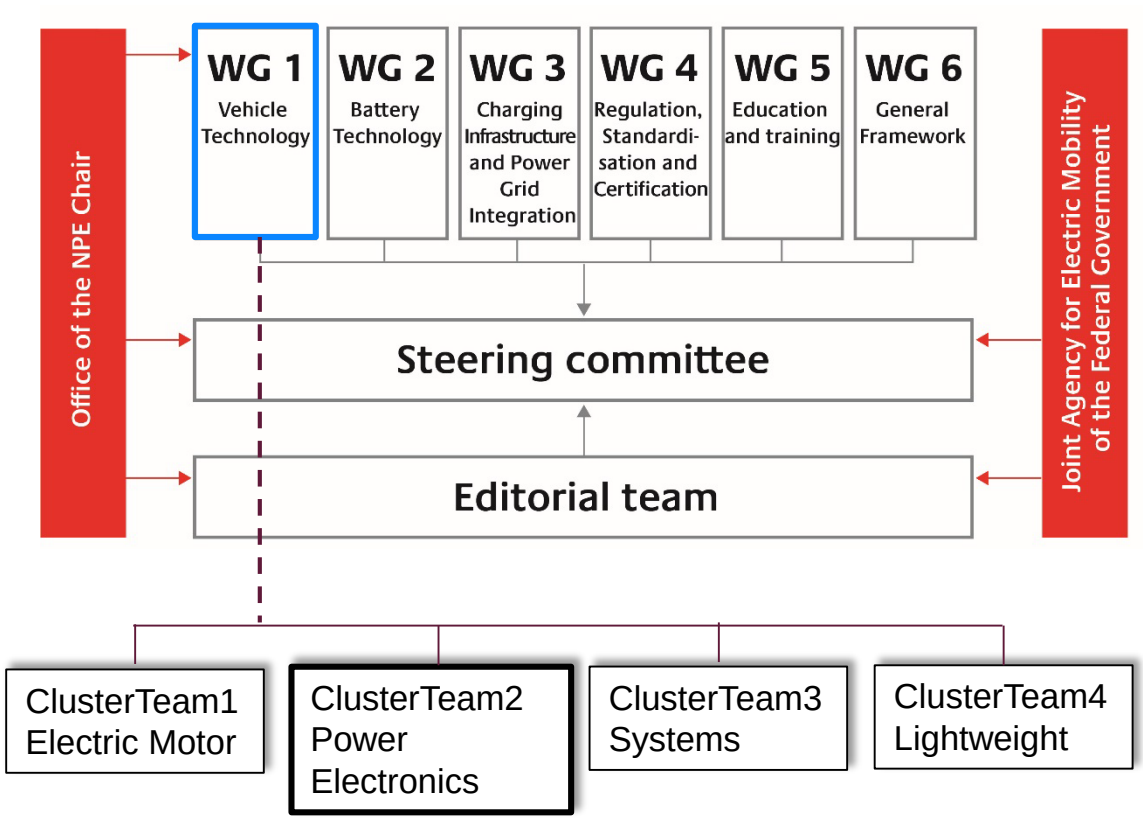
Funded under: H2020-EU.3.4. - SOCIETAL CHALLENGES - Smart, Green and Integrated Transport

ClusterTeam 2 in the Working Group 1 (AG1)

Establishment of the National Electric Mobility Platform in May 2010
150 partners from government, business, the research community and civil society



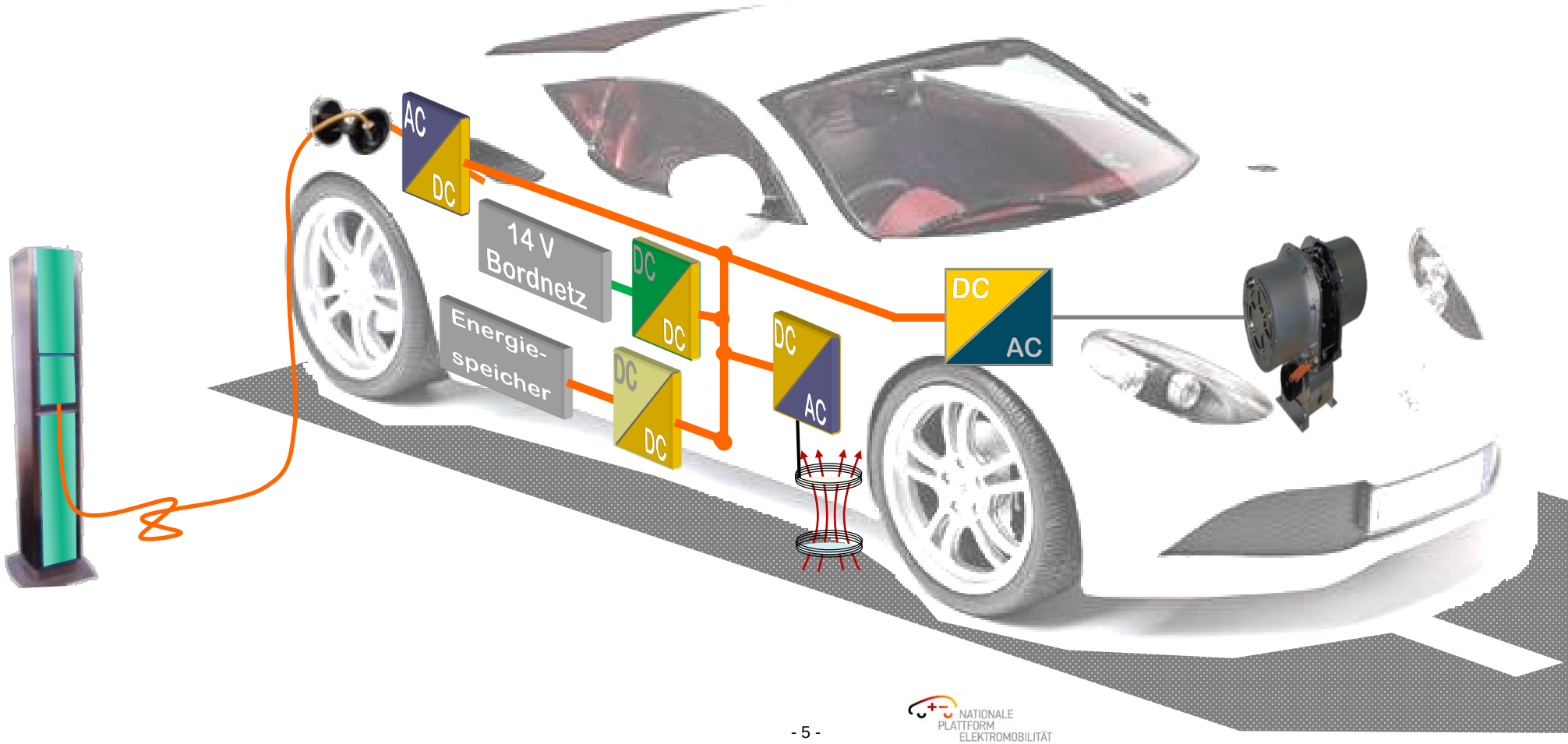
Working Members of ClusterTeam 2

Infineon
Lenze
Daimler
Leibniz Universität Hannover
Volkswagen
BMW
Siemens
ZF Friedrichshafen AG
Fraunhofer IISB
Bosch
Continental
AVL
RWTH ISEA
Heraeus

Cross-Company Collaboration for Power Electronics

Power Electronics is Key Technology for Electric Mobility

More than just the Drive Train!

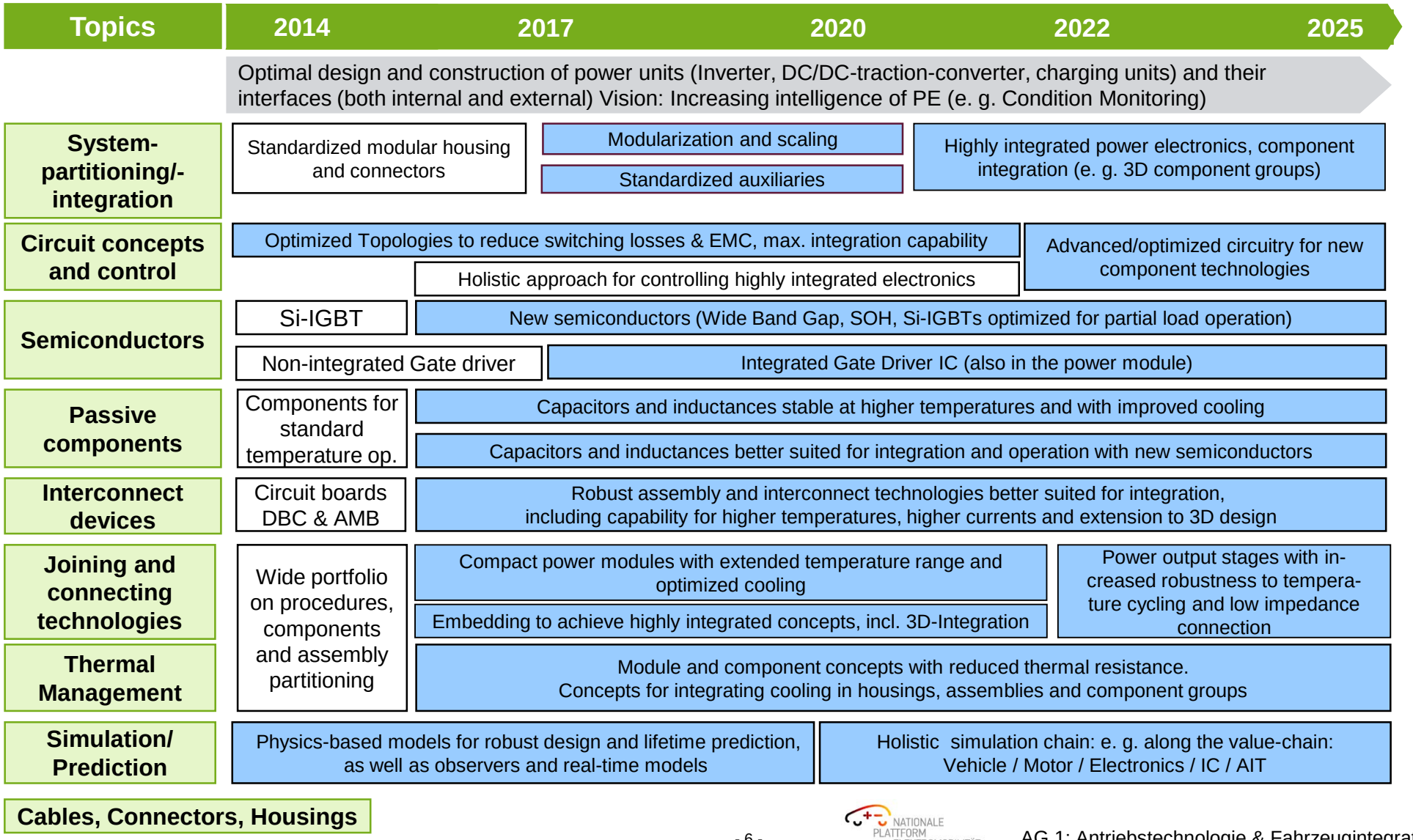


NATIONALE PLATTFORM ELEKTROMOBILITÄT

Roadmap Power Electronics / Cluster 2

DRAFT

Overview



Summary: Research areas of action for highly integrated systems

- **Robust and safe systems**
  - System reliability
  - EMC / Design rules / 3D
  - Diagnostic capabilities
  - Acceptable fault tolerance / „Limp-always“ functionality capability
- **System integration and miniaturization**
  - Assemblies for higher voltages >400V
  - Assemblies for higher currents >500A
  - System design based on new power semiconductor materials (GaN, SiC)
- **Efficient development and manufacturing processes**
  - Holistic simulation environment (mechanical, electrical and thermal)
  - Standardization / principle of common/shared parts
  - Reduction of “margin stacking” by leveraging system knowledge (today concerns leading to “add-on” technical margins).