

Welcome Address

18th International Forum on Advanced Microsystems for Automotive Applications

Dr. Stefan Mengel Federal Ministry of Education and Research (BMBF), Germany Unit Electronics Systems; Electromobility Berlin, June 23, 2014





Outline

Electric Mobility – Rethinking the Car

European and national Strategy for Microelectronics



Electric Mobility - Rethinking the Car...

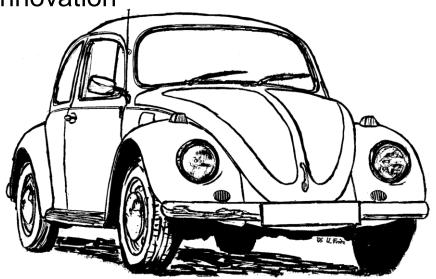
... is put forward by a 2009 National Development Plan for Electric Mobility

...is a joint endeavor by 4 federal ministries (economics, environment, transport, research)

...combines low carbon strategies with industrial and energy policy

...with a strong focus on research and innovation

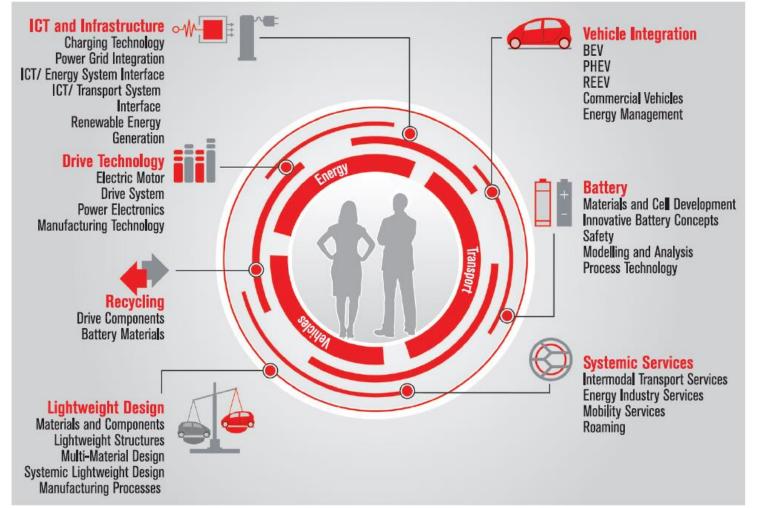
no subsidies for cars





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^{und Forschung} Electric Mobility - Rethinking the Car... ... needs a systemic approach





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^{und Forschung} Electric Mobility - Rethinking the Car The Scenario

	Phase 2011-2014	Phase II 2015-2017	Phase III 2018-2020
_	Pre-market	Market Ramp-up	Early mass market
	 high TCO differential 	 falling TCO differential 	Iow TCO differential
_	• small customer base with high	 larger potential customer base 	 stable growth/demand
_	disposable income and interest in environmental issues	• greater market segment	 diverse supply/market
	 limited supply (esp. from 	penetration/increasing supply	segment penetration
	German producers)	 increase in market size 	high visibility of xEVs
	• limited market size (growing	 decisive phase for market 	
_	slowly)	ramp-up	
_	incentives have limited	relatively modest incentives	increasingly self-sustaining
	absolute but high relative effect on vehicle numbers	have substantial effect on market growth	electric vehicles market
_		-	incentives stabilise market
	 limited supply restricts market penetration 	 increased supply aids market penetration 	growth, need for incentives declines
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_			
1,000 vehicles			



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^{und Forschung} Electric Mobility - Rethinking the Car

Strong focus on research and innovation

- 82 collaborative research projects with 1,2 billion Euro additional funding (BMBF 0,63 billion).
- Industry has committed an investment of 17 billion Euro
- Broad range of topics (battery technology, electric motors, light weight construction, innovative business models, standards, education, drivetrains, new vehicle concepts, charging infrastructure, power electronics for energy and thermal management, power grid integration, production technology)
- Broad range of <u>instruments</u> (classical R&D projects, cluster initiatives, show case demonstrators, international cooperation)
- Broad range of TRL, including higher TRL



Electric Mobility - Rethinking the Car

Research Examples

- Using NIR and FIR sensor data fusion developed within the project
 ProPedes, pedestrians at distances of up to 127 m can be detected with 93 % reliability – up from 78% for a single sensor
- A highly integrated powertrain with smart controls, developed within the ENIAC project MotorBrain, is projected to reduce energy losses by more than 24% and motor weight by 15% compared to the state of the art







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Electric Mobility – Rethinking the Car

European and national Strategy for Microelectronics



<u>Europe</u>

European Electronics Strategy launched 2013

Implementation by ECSEL-Initiative 2014

<u>Germany</u>

Implementation via a national strategy with strong entanglement with ECSEL.



<u>Germany</u>

Focus on More-than-Moore, power electronics, chip based security, design.

Hightech capability of industry in Europe and Germany is key to shape the future of manufacturing, mobility, health.



Current R&I Funding in the Field of Electronic Systems

- The BMBF's total funding since 2000 in micro- and nanoelectronics, microperiphery, and microsystems amounts to nearly € 2 Bln
- Our funding covers targeted research as well as projects on design and fabrication technologies, integration technologies, sensor systems and manufacturing equipment for electronics
- The BMBF provided more than € 70 M in funding for the last two national calls relating to power electronics, enabling more than 40 projects
- Based on an agenda process the funding program will be revised; first result: a national call addressing "Electronic and sensor systems for Industry 4.0"

(i. e., cyber-physical systems in an industrial context) in 2014



Selected Topics for Future Mobility

- Highly integrated and modular drivetrains
- Energy efficient and material efficient drives
- Battery management and safety
- Energy efficient electronics for automotive applications
- Energy efficient ECUs
- Efficient on-board energy and thermal management systems
- Secure Car-2-X communication units, methods and standards
- Advanced driver assistance systems
- Components and functions for automated driving and charging



Thank you for your attention



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