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# **Hightech Strategy 2020**

## ***Targets and Needs for Action in the Field of Mobility***

June 12<sup>th</sup>, 2012

Global Automotive Components and Suppliers Expo, Stuttgart

Jochen Feese,

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(member within the support group for the promoters of the field "Mobility" in the Industry-Science Research Alliance)

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# Agenda

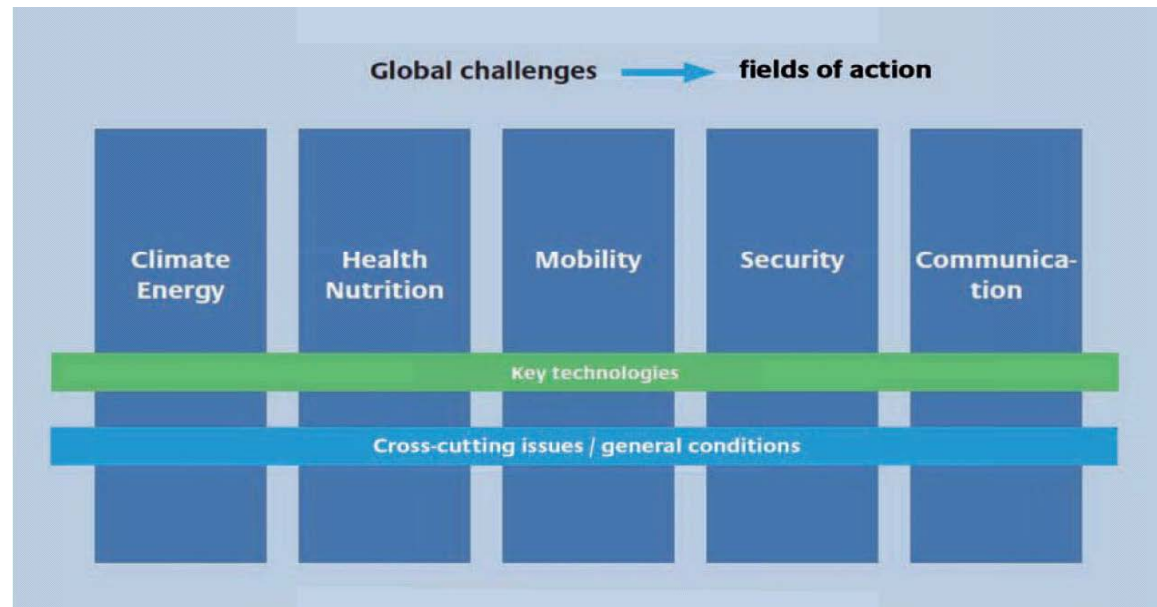
- 1 The Hightech-Strategy 2020 and the Industry-Science Research Alliance

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- 2 Mobility as a field of action and the forward-looking project "Sustainable Mobility"

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- 3 Next steps in 2012/2013

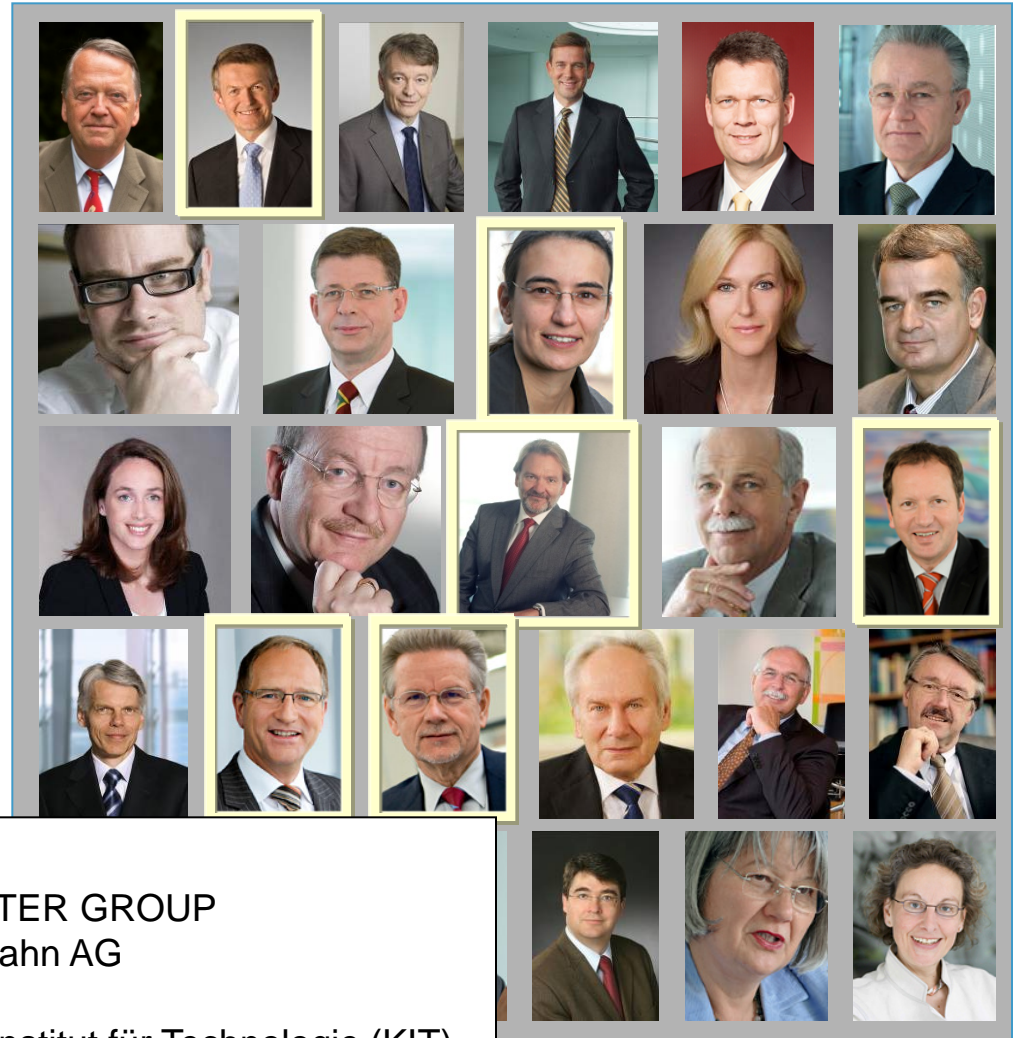
# The Hightech-Strategy of the Federal Government focuses on global challenges

- Funding of key technologies
- Providing a positive innovation climate and innovation-friendly conditions
- Strengthening knowledge and technology transfer
- Generating an interdisciplinary dialogue on innovation with society and the working world
- Promoting the HTS in Europe for a joint development of coherent innovation strategies
- Aligning research and innovation policies along the central missions ("forward-looking projects"/ "man-on-the-moon projects")



## The Industry-Science Research Alliance in a Nutshell

- The Industry-Science Research Alliance (ISRA) is a central advisory board for the Federal Minister of Education and Research, addressing innovation policy as well as the implementation and advancement of the Federal Government's Hightech-Strategy.
- It consists of 28 high-ranking representatives from private enterprises/industry and science as promoters. Chairmen are Prof. Dr. Bullinger and Dr. Oetker.



### Promoters Group for Mobility:

Dr. Lutz Bertling  
Dr. Volker Kefer  
Dr. Andreas Kreimeyer  
Prof. Dr. Gisela Lanza  
Prof. Dr. Thomas Weber  
Dr. Manfred Wittenstein

EUROCOPTER GROUP  
Deutsche Bahn AG  
BASF SE  
Karlsruher Institut für Technologie (KIT)  
Daimler AG (speaker of the group)  
Wittenstein AG

## The work of the Industry-Science Research Alliance (ISRA) is based on the Hightech-Strategy 2020



### ***»Where the new growth comes from«***

- Nomination of essential research & innovation policy-oriented fields of action, based on the results of the ISRA's work from 2006 onwards



### ***Hightech-Strategy 2020***

- 5 fields of action
- 10 forward-looking projects



### ***Promoters Reports of the ISRA***

- Roadmaps for the implementation of forward-looking projects
- Naming of innovation barriers and research topics
- Naming of need for action.

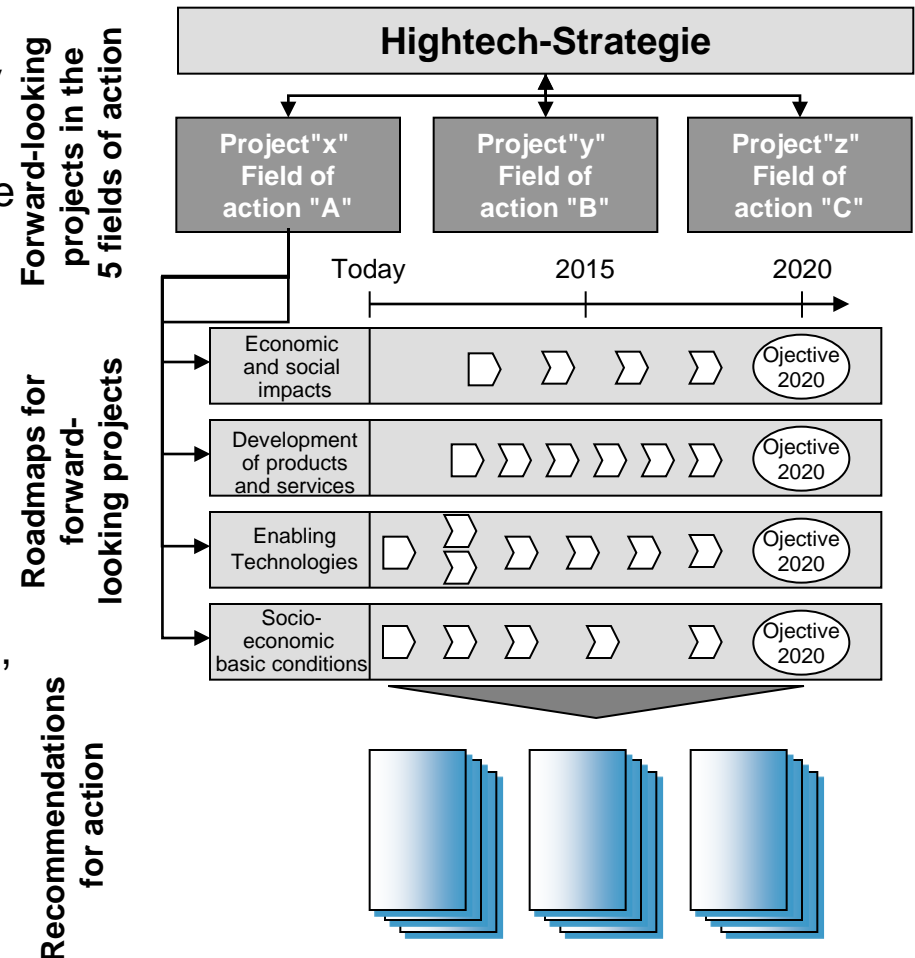


### ***»Plan of Action« by the Federal Government***

- »Response to the Promoters Reports by the Federal Government«
- Published in March 2012
- Basis for funding policies by the Federal Government

## Forward-looking projects are the contentual leading instrument for the work of the Industry-Science Research Alliance

- Based on the Hightech-Strategy, forward-looking projects are developed by the promoter groups.
- Roadmaps for the implementation of these projects are developed.
- In the roadmaps, innovation drivers and barriers are identified, research tasks are formulated and recommendations are made. Interdisciplinary issues (e.g. key technologies, internationalization, new talents ...) are addressed.
- The outputs are presented and discussed in the Industry-Science Research Alliance, and if necessary, revised subsequently.
- Results are published in an appropriate and unified way.



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# The forward-looking project "Sustainable Mobility" - based on Objectives and Fields of Action.

## 3 Objectives

## 9 Fields of Action (AL I – AL IX)

Zukunftsprojekt »Nachhaltig bewegt, energieeffizient mobil«			
Ziele und Aktionslinien für eine vernetzte und energieeffiziente Mobilität			
Objective 1: Lead Market Germany 2020		Objective 2: Social Acceptance	Objective 3: Lead Provider
AL I: Neue Mobilitätskonzepte für veränderte Mobilitätsbedürfnisse		AL IV: Nachhaltige Schaufenster für Mobilität und Schaffen eines durch die Politik unterstützten Rahmenwerks	AL VI: Bedarfsnahe Forschung und Bildung
AL II: Internationale Wettbewerbsfähigkeit – politische Rahmenbedingungen		AL V: Akzeptanzstudien: Veränderte Nutzungsprofile und Kosten	AL VII: CO <sub>2</sub> -optimierte Mobilität
AL III: Normung und Standardisierung			AL VIII: Verkehrsflussoptimierte Mobilität 2020 - Vernetzung und Optimierung der Nutzung der verfügbaren Verkehrsträger - Vernetzte Fahrerassistenzsysteme / koordinierte autonome Fahrfunktionen
			AL IX: Skalen- / Großserienflexible Produktion



## Objective 1: Establishing a lead market for sustainable mobility in Germany

Changing mobility and customer needs are the main challenges for mobility of the future



Creeping mobility:  
life in traffic jams!

Driving in dense traffic and with low speed  
will be a major part of everyday life



Digital natives:  
Will driving be a necessary evil ?

Working and communicating  
is more important than driving

Lack of parking spaces:  
Where to leave your car?



Journeys by car will be avoided due to the  
lack of parking spaces at the destination.

Ageing Society:  
How to maintain mobility?



Support & relief  
e.g. at ticket vending machines

**There is a need for technical solutions as well as  
new mobility concepts to face these challenges**

## Objective 1: Vision "Lead Market Germany 2020"

**In 2020, mobility in Germany will be connected holistically and energy-efficiently advanced with 1 million e-vehicles on our roads.**

### Recommendations

- Provision of subsidies for the development of new (intermodal) mobility concepts and corresponding business models for holistically connected traffic.
- Securing internationally competitive market conditions by using international benchmarking & derivation of monetary and non-monetary incentive measures.
- Pushing standardization through an intensified consideration of the overall systemic approach
- Public authorities display procurement plans for products and offers of an energy-efficient and sustainable mobility – Governmental role model function.

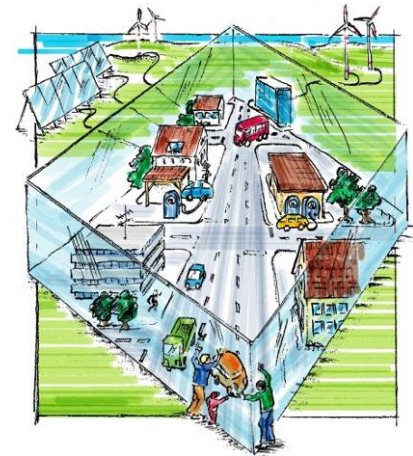
**Lead Market Germany for a connected and energy-efficient mobility as a central element in order to maintain jobs, value creation and prosperity.**

## Objective 2: Vision "Social Acceptance"

New mobility concepts and technologies for a sustainable and energy-efficient mobility are socially accepted in Germany

### Recommendations

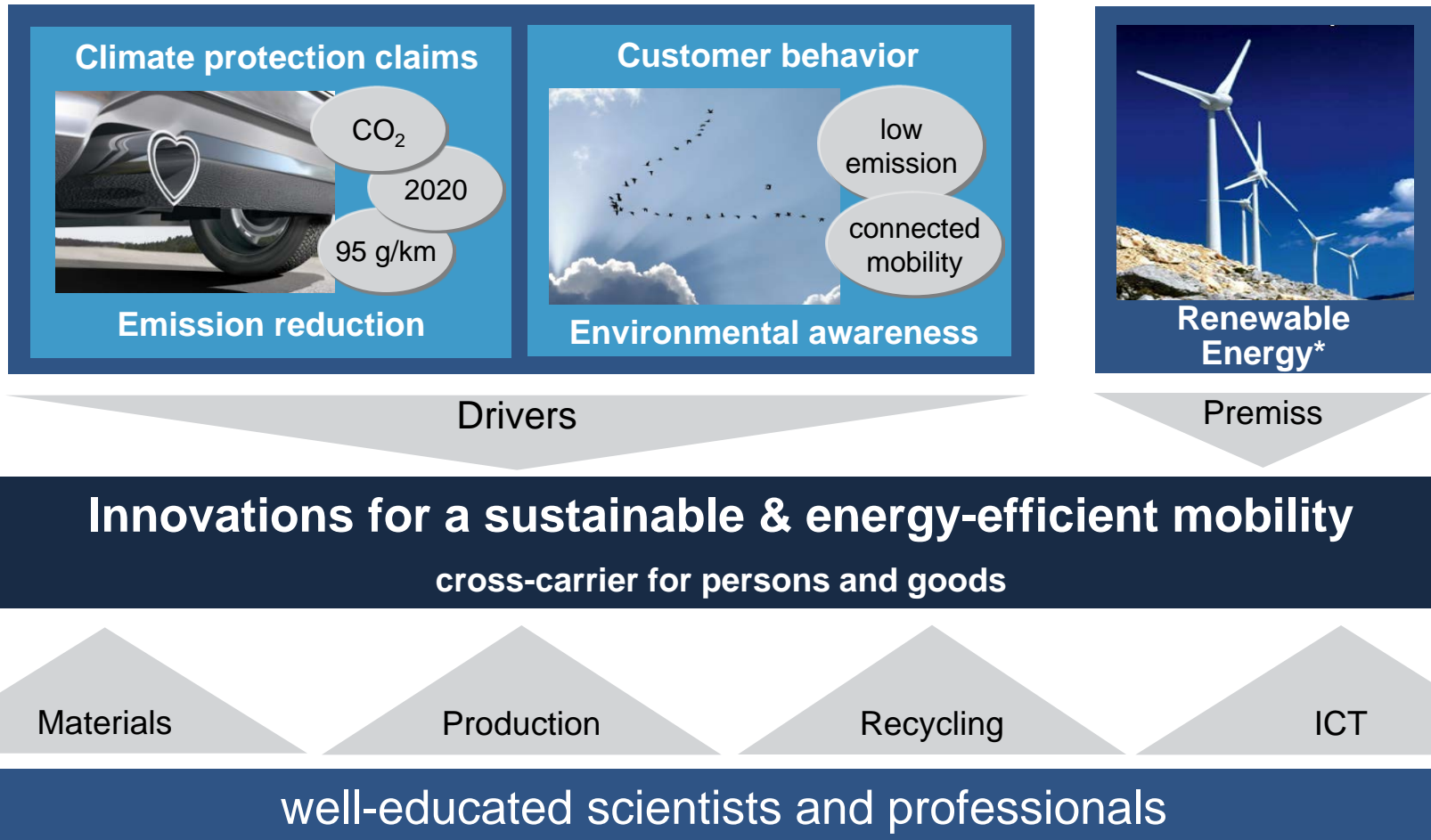
- **"Showrooms for future mobility":** Testing and presentation of visionary mobility concepts for a cross-linked and energy-efficient traffic between all transport carriers in "NPE Display Windows" (passenger & goods traffic).
- **Communication strategy:** Inform society and display advantages of new mobility concepts, including the point of an integration of renewable energies.
- **Acceptance surveys:** Consumer behavior at changed user profiles and costs in consideration of present knowledge.



**New mobility products and technologies that are accepted by society.**

## Objective 3: Positioning of Germany as the lead provider of sustainable mobility technologies & concepts

Changed climate protection requirements & customer behavior as a challenge



\* addressed in the promoters group „climate/energy“

### AL VI: Vision "Requirement-oriented Research and Education"

Germany is a role model in research, education and connecting of mobility-relevant professions. German MINT-specialists are in demand worldwide.

#### Recommendations

- **Maintenance of skilled workers** e.g. by intensification of MINT-university courses
  - ⇒ Universities: Definition of contents, interdisciplinary collaboration, postgraduate training, dual study courses etc.
  - ⇒ Job education: Adaptation of existing qualified jobs, further education, teaching and learning media etc.
- Optimizing the **funding of collaborative projects**, relevant to the future's mobility.
- Introduction of a fiscal research funding (open to various technologies & with broad impact).
- Strengthening of the **Industrial Joint Research** ("IGF" – Industrielle Gemeinschaftsforschung)

**High qualification of scientists and professionals as a base for globally recognized products "Made in Germany". Academic as well as on-the-job education and training need to be aligned to the requirements of future mobility technologies and systems.**

## AL VII: Vision "CO<sub>2</sub> and energy efficient Mobility 2020"

Germany is technology leader of environmentally friendly & sustainable mobility

### Recommendations

Materials and technologies for a  
Reduction of emissions and fuels

- Low temperature catalysts & exhaust gas after-treatment
- Tribological optimization
- Fuel injection systems&dual-fuel motors

Fuels

- Synthetic kerosine & bio fuels
- Fuel additives

NPE Key Projects & NOW GmbH

- Lightweight construction & simulation
- Energy management & consumption
- Storage technologies (H<sub>2</sub>, Electricity)



**Expansion of R&D funding programs around technology topics mentioned & promotion of a cross-carrier transfer of technology.**

## AL VIII: Vision "Traffic flow-optimized Mobility 2020"

Development of an holistic approach for connecting traffic carriers for a situative-optimal utilization of Germany's mobility chains



- **Developing methods** for an **individual traffic distribution**
- **Development of new services** for a dynamic routing based on real-time
- **Investigation** on approaches and technological modular steps for „**autonomous driving functions**“ including the integration of vehicles and infrastructure.
- **Accompanying legislative and regulatory work**, for the implementation of autonomous driving functions and for the establishment of a nationwide traffic strategy amongst others.

**Optimize existing, isolated and partial solutions and merge them to a complete system – foundation for Germany's position as leading provider.**



## AL IX: Vision "Flexible Production at large-scale/ -Volume 2020"

Germany remains leading industrial nation

### Recommendations

- Scalable, technology-flexible production structures in multi-use-factories (e.g. combustion motor / e-actuator)
- Production expertise for electrical components energy storages as well as standardization and classification
- Technology-flexible machinery and automating solutions
- Generative production methods, light-weight technologies, recycling and resource efficiency.
- Implementing the contents of "Production Research 2020"



Bild: © European Batteries/M+W Group

**Innovative production systems as a central enabling function for all industries -  
Basis for value creation and maintaining of employment in Germany**



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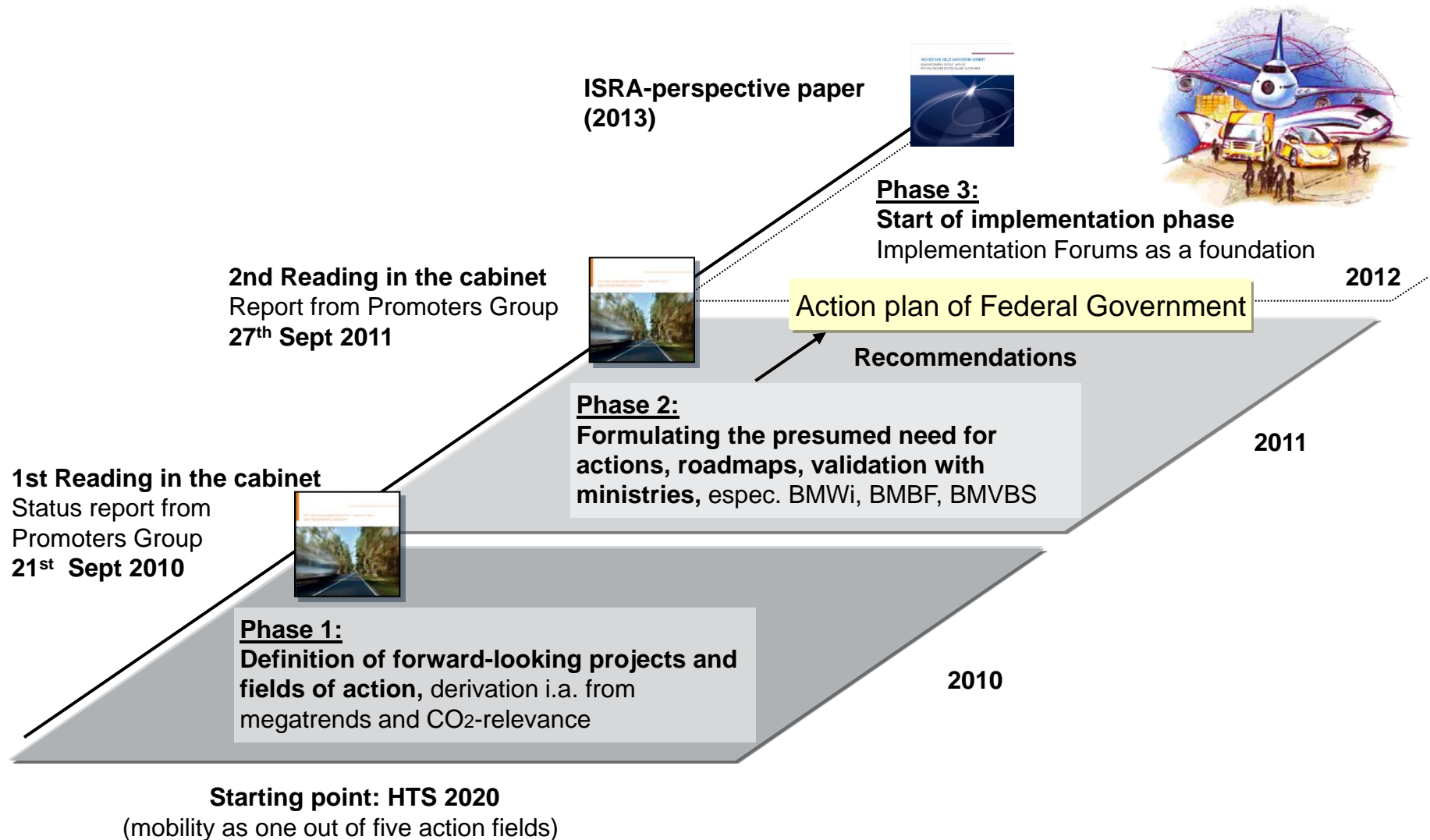
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# Forward-looking projects will be specified via Implementation Forums, Research-political actions fields will be named in the Perspective Paper



# Thank you very much for your attention!

For further details (in German) please go to <http://www.forschungsunion.de/>

# Forschungsunion

Wirtschaft und Wissenschaft  
begleiten die Hightech-Strategie

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- Themen und Bedarfsfelder
- Aktivitäten
- Mitglieder
- Veröffentlichungen**
- Kontakt

## Veröffentlichungen

Publikationen aus der Forschungsunion zum kostenfreien Download

Bericht der Promotorengruppe Mobilität



Handlungsempfehlungen zum  
Zukunftsprojekt "Nachhaltig bewegt,  
energieeffizient mobil" mit einem  
Ausblick auf die nächsten Schritte  
(vorgelegt von der Promotorengruppe  
Mobilität in der Forschungsunion im  
Februar 2012)

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