A3PS

Rethinking Propulsion.

A3PS: R&D-support for industry and research institutions cooperating with public authorities on a strategic level of technological development

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A3PS – who we are - what we do

- Public Private Partnership between industry, research and technology policy for the development and market introduction of alternative propulsion systems and fuels.
- Strategic platform with a joint mission to develop efficient, competitive and clean vehicles as well as their energy carriers and infrastructure.
- Stimulating the co-operation of complimentary partners in order to overcome the “chicken and egg problem”.
- Providing a broad portfolio of services creating innovative framework conditions beyond funding separate R&D-projects.
- Clear distinction from the operational duties of the FFG.
- Coordination of regional activities in Austria avoiding duplication and achieving critical mass in national and international perception.
- A3PS supports industry and research through development-, cooperation- and information-management but runs no own research.

A3PS – Objectives and Tasks

- **Networking:** Stimulation of R&D co-operations embedding Austrian industry and research institutions into national and international value chains.
- **Information:** Strengthening the competence of Austrian enterprises and research institutions by collecting, compiling and dissemination of information in a targeted way to the members of the agency.
- **Know-How Demonstration**: Presentation of technological know-how, engineering competence and products of the A3PS members in national and international conferences and policy initiatives.
- **Safeguarding interests**: Supporting the representation of Austrian interests in international committees and initiatives of the EU and the IEA.
- **Orientation**: Establishing a common view between industry, research institutions and technology policy by developing common strategies and roadmaps for the development and market introduction of alternative propulsion systems and energy carriers.
- **Explanation**: Providing well-founded and balanced advice for policy makers to support the optimisation of their policy instruments and to inform the public about the opportunities and perspectives of these technologies.

A3PS – Member institutions

A3PS Members – Industry

- AVL
- FRONIUS
- KTM
- MAGNA STEYR
- MIBA
- OMV

A3PS Members – University Institutes

- TU Graz – IVT – Inst. for Internal Combustion Engines and Thermodynamics
- TU Graz – CEET – Inst. of Chemical Engineering and Environmental Technology
- TU Graz – EMT – Inst. of Electrical Measurement and Measurement Signal Processing
- TU Wien – IFA – Inst. for Powertrains and Automotive Technology
- TU Wien – ICE – Inst. of Chemical Engineering
- TU Wien – ESEA – Inst. of Energy Systems and Electric Drives
- BOKU – NAS – Department of Sustainable Agricultural Systems
- Montanuniversität Leoben – Chair of Physical Chemistry

A3PS Members – Research Institutes

- AIT Austrian Institute of Technology
- Bioenergy 2020+
- CEST – Competence Centre for Electrochemical Surface Technology
- Fraunhofer Austria Research
- HyCentA – Hydrogen Center Austria
- JOANNEUM RESEARCH
- PROFACTOR
- VIRTUAL VEHICLE Research and Test Center

A3PS Members – SMEs and Automotive Clusters

- ACstyria
- Automobil-Cluster Oberösterreich GmbH
- Alset
- Biovest Consulting
- RIC / BRP Rotax
- THIEN eDrives

A3PS – Services for the members of the agency 1/3

Procurement, compilation, analysis and distribution of information for the A3PS-member institutions

- Technology foresight and assessment, comparative assessment of studies, analysis of international R&D-trends and strategies, internal workshops, organization of professional lectures and seminars, information about dates and results of international conferences, information about relevant EU, national and regional funding opportunities.

Stimulation of cooperation and international networking

- Organization of workshops to initiate co-operation and linking up of complementary partners.
- Stimulation of interdisciplinary research projects and co-operation between technology providers and users in demonstration projects.
- Support for the participation of Austrian research institutions in IEA- and EU-technology platforms, projects and programs.

A3PS – Services for the members of the agency 2/3

Policy advice, media work and international representation of the members' interests

- Well-balanced technical support for policy makers based on the comprehensive know-how of A3PS members for the planning of bmvit-strategies and optimization of its funding instruments. Development of roadmaps for the successful implementation of these technologies.
- Support for the planning innovation-friendly framework conditions: regulatory policy and fiscal policy, energy taxation, endowment of funding instruments, technical and safety standards, emission limits, garage regulation, differentiated access restrictions to sensitive areas).
- Creation of position papers as a basis for the representation of Austrian interests by the bmvit in international committees and initiatives as well as the representation of the bmvit in the IEA.
- Information of the public on the potentials and the state of development of alternative propulsion systems.

A3PS – Services for the members of the agency 3/3

Presentation of the members' competence

- Organization of the annual A3PS-conference for the demonstration of Austrian technology competence.
- Marketing for the members' engineering know-how and products at conferences through posters and presentations.
- Publications in scientific journals and mass media for the broader public.
- Informing European and IEA-partners on Austrian technology developments and successful R&D-results.

International Cooperation and Networking

Support for the members as delegate in following committees:

- 7th EU-Framework Program and Horizon 2020
- EU-Technology Platform ERTRAC (Vice-Chairman)
- EU-JTI “Fuel Cells and Hydrogen” (Scientific Committee)
- EU-Technology Platform BIOFUELS (MSR-Chairman)
- IPHE (International Partnership for H_2 and FC in the Economy)
- ERA-NET TRANSPORT
- IEA-Implementing Agreement “Hybrid & Electric Vehicles”
- IEA-Implementing Agreement “Advanced Motor Fuels”
- IEA-Implementing Agreement „Advanced Fuel Cells“

A3PS – Strategy and Orientation

- Promoting **all** alternative propulsion systems and fuels (including hybrid and electric drivetrains, batteries, fuel cells, CNG-vehicles, hydrogen, electricity and liquid / gaseous biofuels,…).
- Focus lies on automotive engineering and vehicle technologies but including ICT, material research as well as production and energy technologies.
- Mutual opportunities from and to other technology areas and fields of application (cryoengineering, nanotechnology, electronics, electric motors, generators, aerospace, rail-industry,…).
- Early phase of the innovation-cycle gives smaller countries and enterprises the possibility to gain a key role in the development of these technologies.
- A3PS supports its member to find a fitting niche in the international development process.

A3PS – a success story

- A3PS was founded 2006 and includes around 30 member institutions from industry, universities and research institutes.
- The participation and the co-financing of A3PS through its member institutions is a strong signal towards the ministry for a strong interest in this field.
- Co-funding of the A3PS through the ministry provides a long-term security in planning investments due to a clear public commitment beyond election terms.
- bmvit is a neutral partner for all stakeholders and facilitates the participation in R&D-projects and the integration of technology users in demonstration projects by public procurement.
- Pursuing a technology breakthrough in a key area of the energy and transport industry through a strategic partnership between industry, research institutions and policy makers the ministry offers an opportunity to participate in R&D-cooperations and strategies.

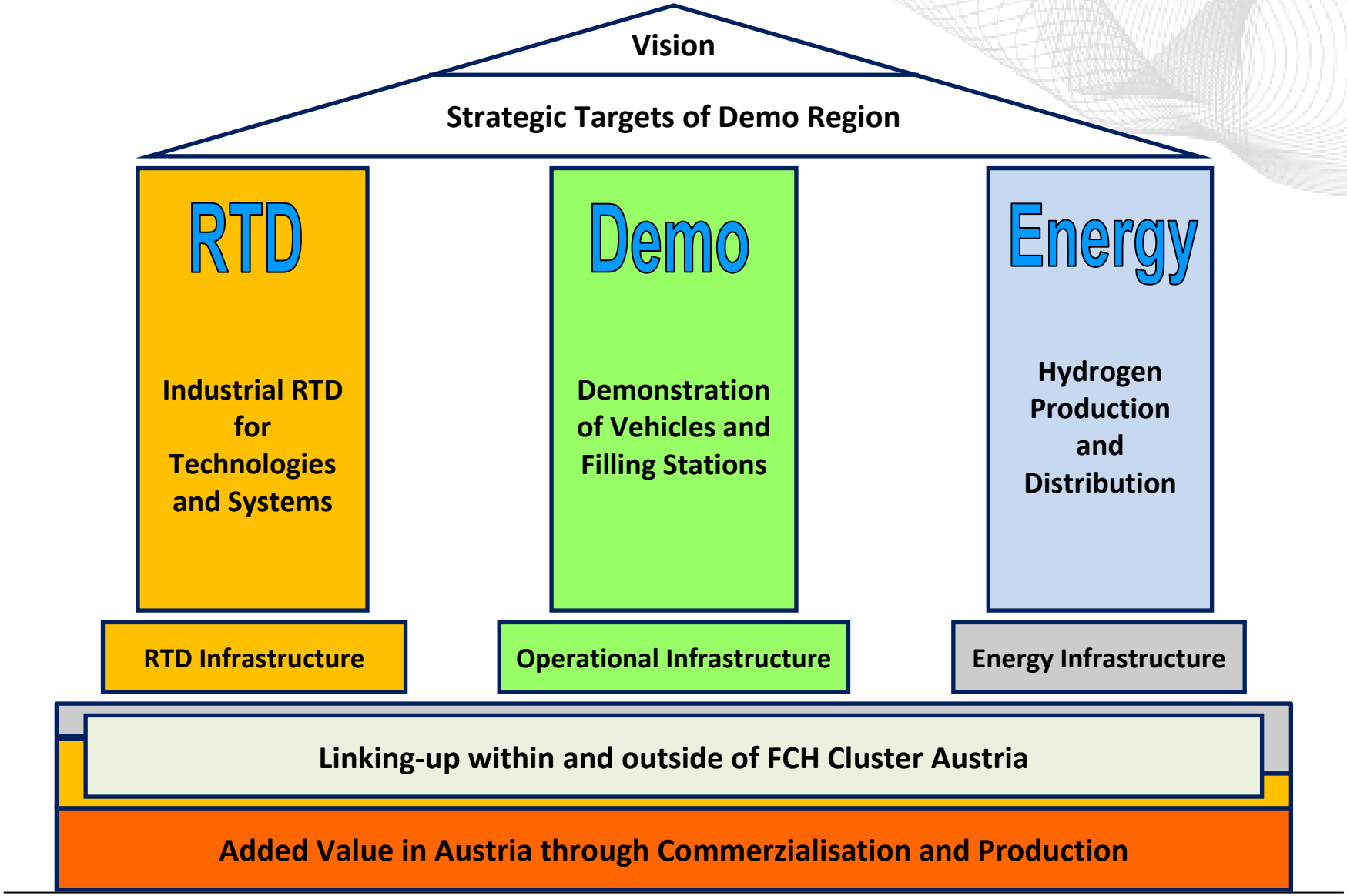
FCH-Cluster-Austria: Why and Why Now?

- crucial for CO_2-, pollution, and fossil combustion free automotive technologies
- high potential in Austria to use renewable energy (sun, wind, hydropower, biomass,...) for energy production, storage and in mobility
- hydrogen is suitable for storing unsteady produced renewable energy
- Austrian industry and research institutions are highly qualified in the field of hydrogen and fuel cells
- FCH-technologies are feasible – topics are now: operating safety, durability and practical validation for implementation in high quantities
- production costs must be reduced

FCH-Cluster-Austria: Why and Why Now?

- for a successful introduction of FCH-technologies the infrastructure must be implemented in the next 2 to 3 years.
- fast fuelling (< 3 min) = high availability
- light weight drive train (specific energy and specific power)
- broad operating conditions -30 to +50 °C
- application of different types of renewable energy
- sustainable life cycle
- besides mobile applications, Austrian industry and research institutions can provide stationary and portable technologies which are ready for serial production

FCH-Cluster-Austria: 3 pillars of the FCH Cluster Austria



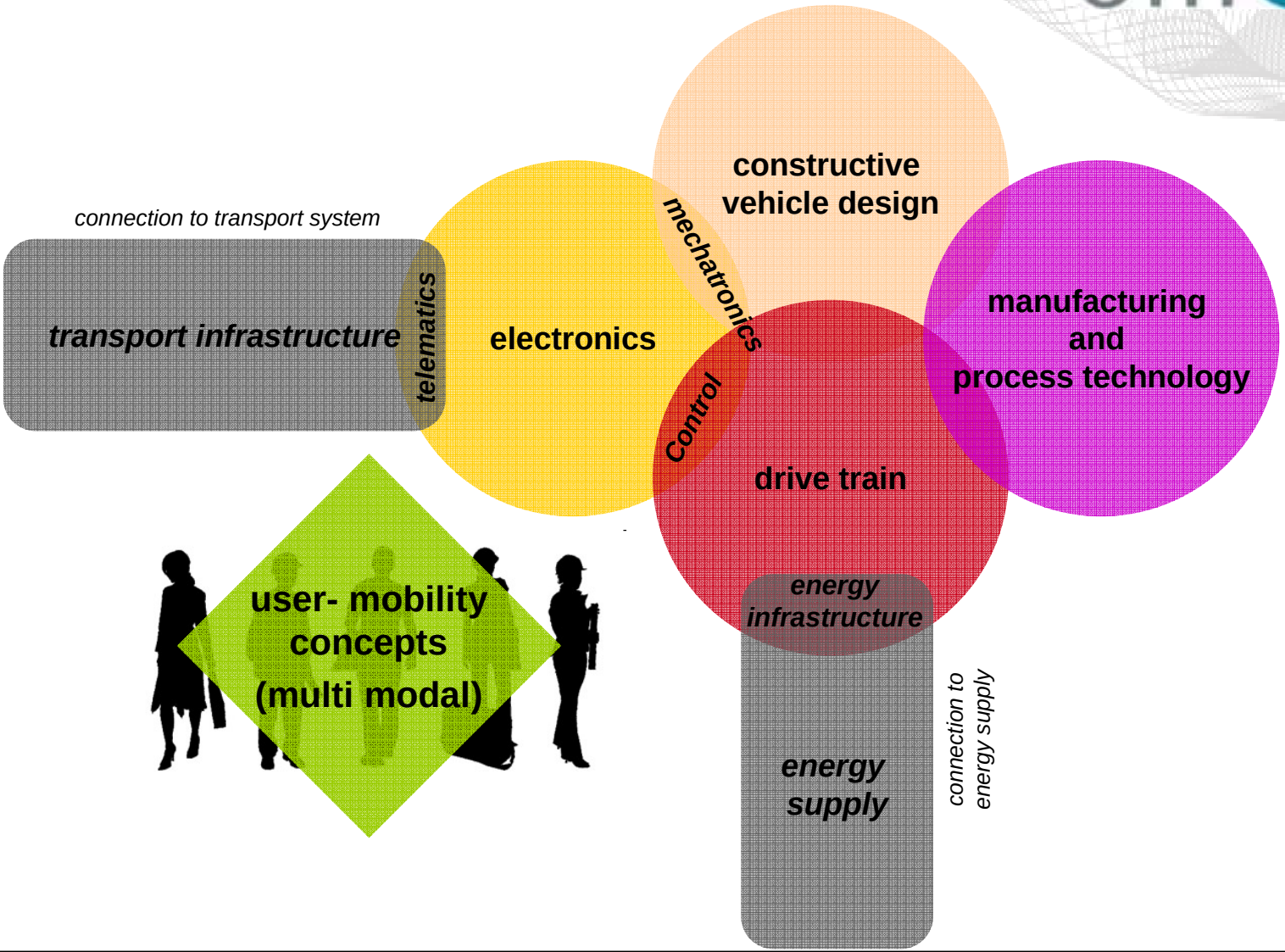
Participating Austrian Institutions

Mobility and Transport Technologies in Austria

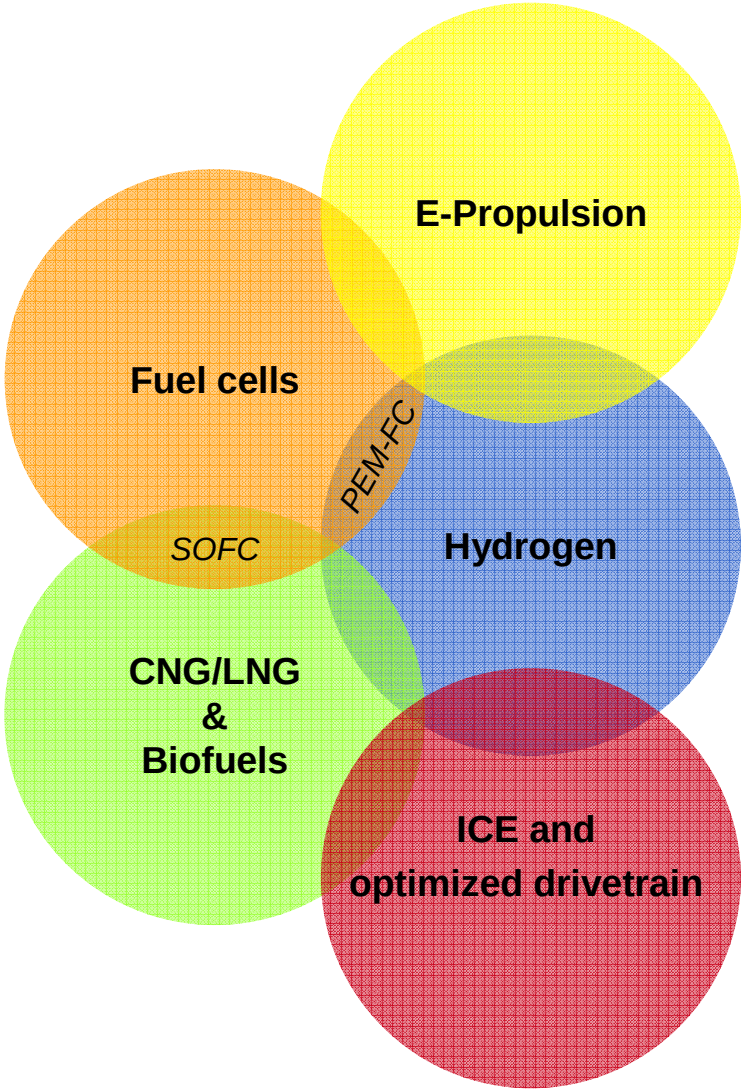
Austrian Federal Ministry for
Transport, Innovation and Technology

Strategies and R&D-funding instruments

Austrian Automotive FTI-strategy



Thematic fields of the drivetrain:



BMVIT funding follows the following principles

- Broad Selection of funding schemes for individual R&D-needs
- Neutral position concerning different technological options and applicants.
- Confidentiality during evaluation process in order to secure Intellectual Property Rights of applicants.
- Grants are in most cases awarded according to the competitive principle through calls for proposals.
- Stimulation of synergies from the cooperation of complementary partners (industry, SME, universities, research centers).
- Integration of know-how beyond the automotive industry in the engineering process.
- Integration of user needs in the development process.

BMVIT funding follows the following principles

- Funding not only incremental technological improvements but preparing fundamental and disruptive changes towards new technologies.
- Promotion of the whole innovation cycle from studies to demonstration projects, creation of new education concepts, preparation of the public for technological changes.
- Optimizing the overall vehicle system and not only improving subsystems.
- Optimizing the entire transport system through intermodal and interoperable connection of transport modes.

Funding instruments for promoting alternative propulsion systems and fuels

Overall funding volume: ~ 60 Mio. EUR per year

- Mobility of the future/A3plus-technology program: funding of cooperative R&D projects regarding the development of alternative propulsion systems and fuels
- FFG basis program: Bottom-up product-optimization
- FFG-Headquarter program
- Research infrastructure (e.g.: Hydrogen Center Austria)
- Centers of competence (e.g. K2-Mobility, ViF)
- Climate & Energy fund: R&D-Program e!Mission
- Climate & Energy fund: Lighthouse-projects for electromobility (Demonstration projects for market introduction)
- Operational agencies: FFG, KPC, AWS,…
- International networking (7. EU-FWP, Horizon2020, ETPs, ERA-NETs, IEA)

Program Intelligent Transport Systems and Services:

Funding Budget: 2002-2006 52,2 million €

2007-2012 46 million €

iv2splus

Strategy Programme
Intelligent Transport Systems and Services plus
2007 - 2012

Impulse Programme
a3plus
Alternative Propulsion Systems and Fuels

Impulse Programme
i2v
Intermodality and Interoperability of Transport Systems

Action Line
ways2go
Technologies for Changing Mobility Demands

Action Line
impuls
Basic Research for Innovations in Transport

European Research Area Network
ERA-NET TRANSPORT

Impulse Programme Alternative Propulsion Systems and Fuels

- Alternative propulsion systems and components
- Vehicle electronics for energy efficient system management and control
- Innovative storage concepts for gases, liquids, electricity
- Alternative fuels (liquid, gaseous / fuel combinations)
- Development of necessary supply infrastructures for alternative propulsion systems

A3plus: Funding Program for Alternative Propulsion Systems and Fuels

4 calls for proposals (2002-2006):

152 proposals received
78 projects selected by international evaluation
Total project volume: 39.6 Mio. €
Funding: 20.4 Mio. €

2 calls for Lighthouse Projects (2005 and 2006):

25 proposals received
8 projects selected by international evaluation
Total project volume: 7.4 Mio. €
Funding: 3.4 Mio. €

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4 calls for proposals (2007-2009):

89 proposals received
64 selected projects (including 3 lighthouse projects)
Total project volume: 33.3 Mio. €
Funding volume: 19 Mio. €

A3plus

Lighthouse Projects – Demonstration and Pilot Projects

- Funding instrument of the Climate and Energy Fund of the Austrian government to support the **market introduction** of electromobility through demonstration.
- Vehicle related goals:
  - **Optimization** of **electric vehicles** under real life conditions through a close cooperation of developers and users
  - **Preparation** of the **public** for **technological change**

- Call 2009 (Budget: 11 M€)
- Call 2010 (Budget: 8 M€)
- Call 2011 (Budget: 6 M€)
- Call 2012 (Budget: 5 M€)

National Implementation Plan for Electric Mobility

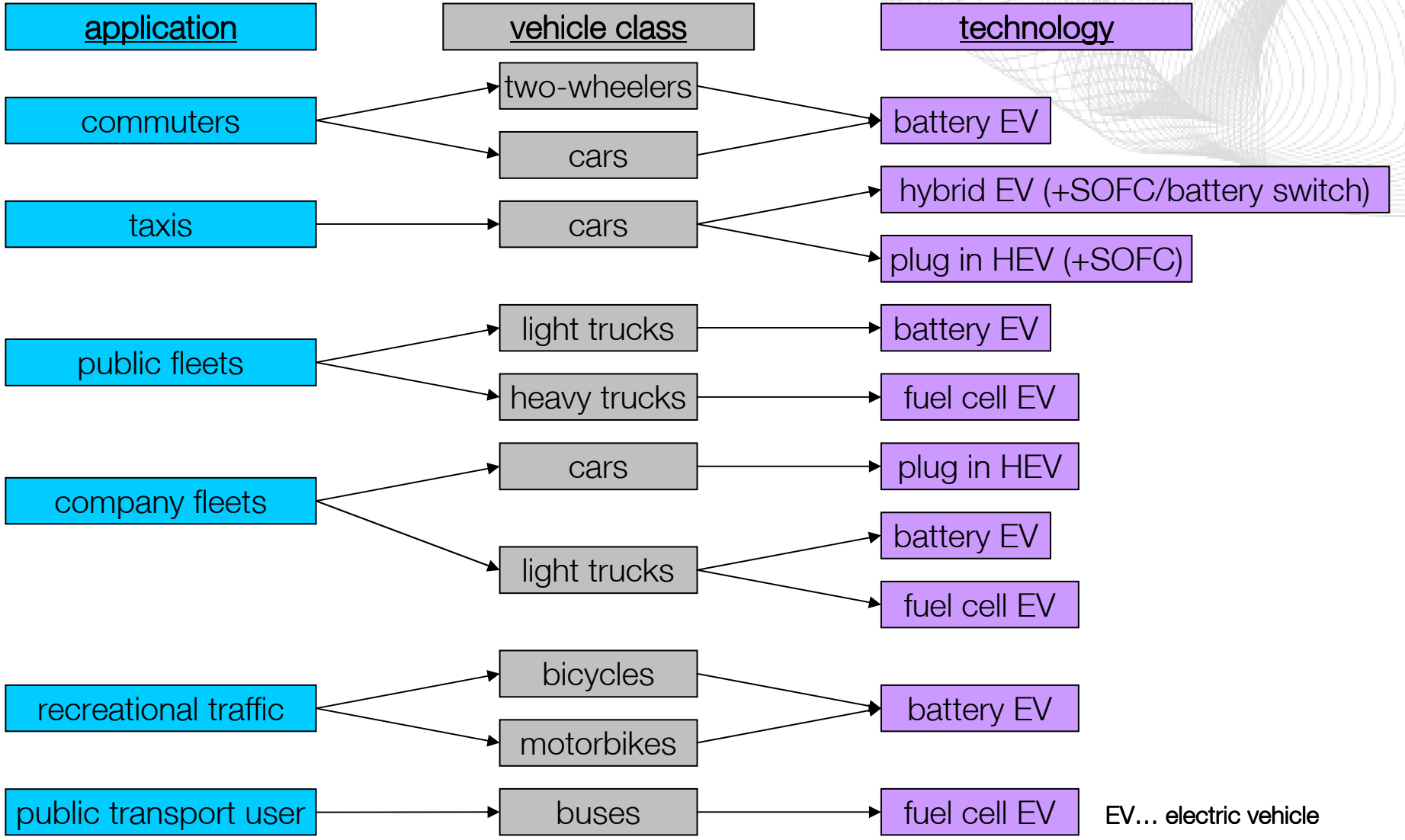
The implementation of electric mobility supported by the bmvit provides opportunities for:

- Clean road traffic
- Supplied by renewable energies
- Imbedded into an optimized, intermodal traffic system linked to public transport
- Demonstration of Austrian R&D competence securing the competitiveness of Austrian industry and its broad product and engineering know-how

Dimensions of Electromobility

Application	*commuters*	*taxis*	*Urban public transport user*	*recreational traffic*	*public fleets*	*company fleets*	*city logistics*	*long distance freight*
Vehicle class	*pedelecs*	*e-scooters*	*e-motorbikes*	*cars*	*light trucks*	*buses*	*heavy duty vehicles*	
Technology	*full hybrid*	*plug in hybrid*	*battery electric vehicle*	*fuel cell vehicle*				
Region	*urban*	*Urban agglomeration*	*transport corridor*	*rural area traffic*				
Intermodal links	*pedestrians, bicycles*	*rail short distance*	*rail long distance*	*Buses*	*aviation, shipping*			
Instruments & fields of action	*implementing regions*	*legislative measures*	*R&D-fundng*	*infrastructure*	*ministry internal*	*synergies with public transport*		
	public procurement	*transport policy*	*intermodal links*	*public relations*	*International cooperation*			
	education and training	*financial assistance and compensation measures*	*business models*	*energy supply*	*mobility management*			
takeholders	*ministries, provinces, communities*	*Companies*	*R&D-institutions*	*automotive industry*	*energy suppliers*	*transport service providers*	*Infrastructure Companies*	
Time horizon	*short term*	*medium term*	*long term*					

Main Focus for implementing electromobility



EV… electric vehicle
HEV…hybrid electric vehicle

bmvit - strategy for priority fields of application:

- Commuters
- Taxis
- Public transportation
- Business fleet
- (Young) users of electric 2-wheelers
- Regions of implementation

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