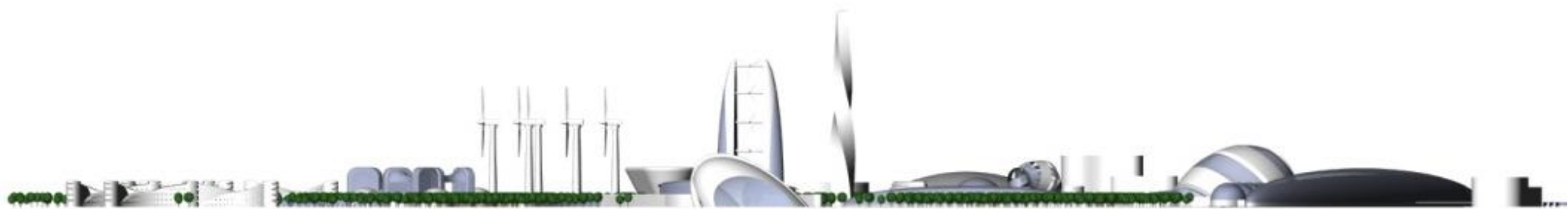


Elektrodrom

**International Competence Centre for Electromobility
and Future Technology**

An integrated model and showcase project



Concept by
e-motors – Events und Projekte UG

The international community faces major challenges:

- To preserve and protect the global ecosystem and biodiversity
- To reduce global CO₂ emissions by:
 - Undertaking a change of paradigm in motor vehicle engineering
 - Utilising energy-efficient building technology
 - Converting to renewable energy resources
 - Redefining nutrition (meat industry)
 - Recirculating goods into the production cycle (cradle to cradle)
- Preservation and development of economic power
- Global access to knowledge and transfer of technology

Electromobility represents an important strategy in facing the challenges and offering multiple-system solutions.

Current Situation regarding Electromobility in General

- Electromobility is set to play an increasing role in the future of our world, both in building technology and in urban development.
- Even today, billions are being invested, in Germany and in other countries, in the development of motor vehicles and the accompanying technology.
- There are still several obstacles to be overcome before society can be regarded as having embraced electromobility:
 - Improvements in battery technology in regard to energy density, charging times, charging cycles, weight, cost, recycling and reuse.
 - Development of vehicles and a suitable charging technology.
 - Building up an appropriate infrastructure including vehicles and building technology in smart-grid solutions.
 - Training new specialists in many new fields of work in all aspects of electromobility.
 - Increasing user acceptance by dismantling purchasing obstacles and creating a point of reference to new drive technologies, essentially by acquainting people with the vehicles and conveying their benefits both to the individual and to society.

Current Situation regarding Electromobility in Germany

- Germany wants to become the lead market and lead supplier of electromobility.
 - The federal government is currently promoting a total of eight model regions with partially redundant research objectives and highly varying degrees of success.
 - The National Electromobility Platform and industry representatives in the committees are demanding the centralisation of research activities and the setting up of a small number of showcases, designed to illustrate technology and applications to future users.
 - Despite the availability of funding, small and medium-sized businesses still often have insufficient money to develop products and services to marketable levels.
 - All businesses incur high costs when adapting to the new technology; these can be kept to a minimum by employing mechanisms with maximum efficiency.
- **Germany needs a central research and development facility to function as a nucleus for the successful launch of electromobility and future technologies.**

- Germany has to redouble its research efforts for it to make up the current deficit in battery technology and other fields.
 - Electromobility should not be considered in isolation but must also take into account the development of energy supplies, the housing situation in large urban areas and the smart interconnection of energy producers and energy consumers.
- Germany's goal of becoming the lead market and lead supplier of electromobility is currently endangered.



The Solution

By setting up the **Elektrodrom**, e-motors wants to create an international competence centre for electromobility, urban development and sustainability, in which future technologies can be developed and presented to the public.

In all fields, from R&D to initial and advanced training, sales and marketing, and to further a deeper understanding of electromobility, e-motors offers a solution which is not only integrated, central, efficient and productive, but will serve as a beacon with a wide and internationally radiant beam.

Overall, the Elektrodrom is conceived as a site that adapts to the future:

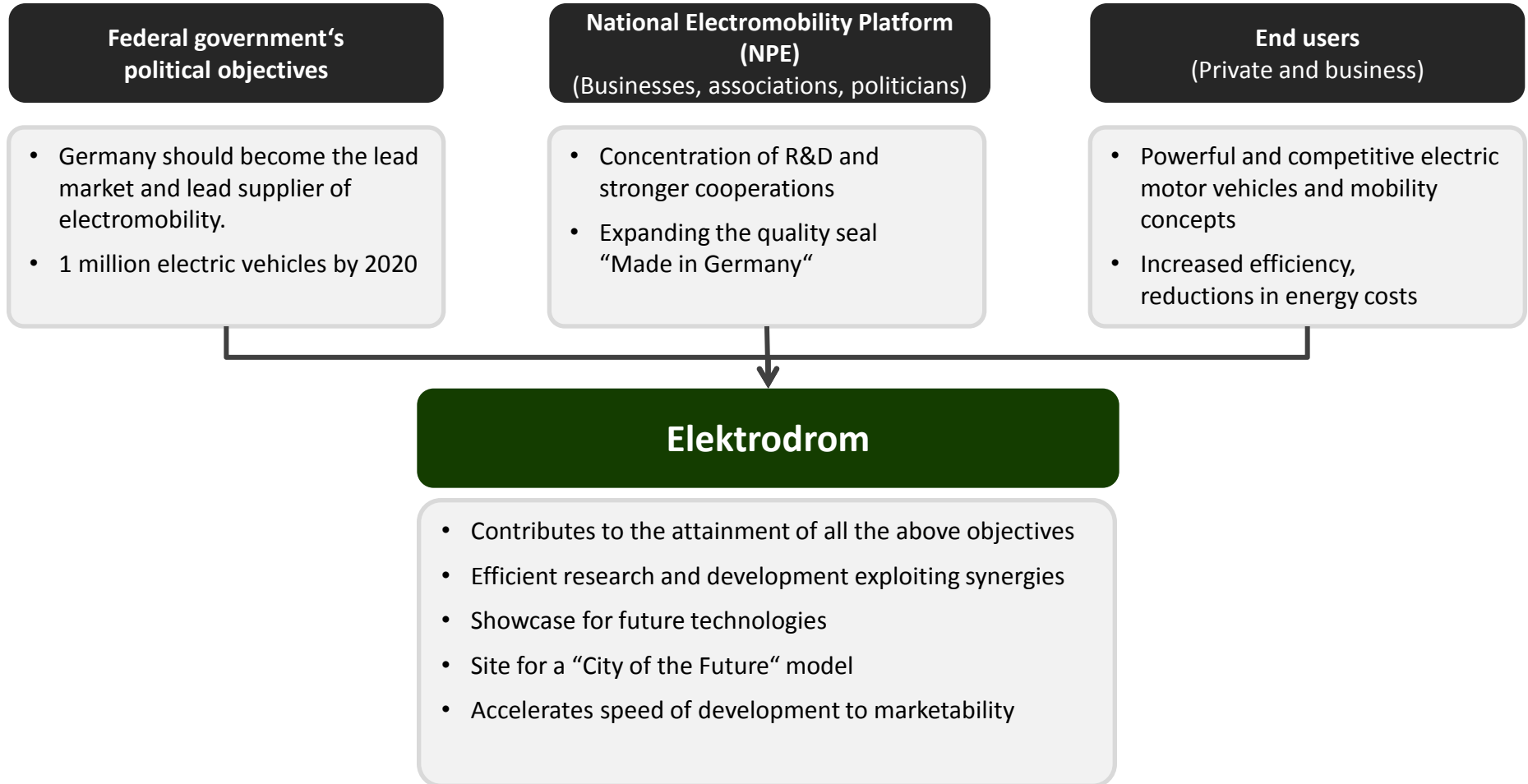
- Transport on the site is exclusively emissions free
- Local renewable energy supply with 100% self-sufficiency
- Construction of a smart grid integrating all energy producers and consumers
- Sustainable building and site development
- Constructed with maximum energy efficiency standards
- Fully interconnected with the latest information and communication infrastructure
- Minimal intrusion in the ecosystem/natural state preserved
- Use of best technologies available and ongoing development of research infrastructure

The Elektrodrom

International Competence Centre for Electromobility and Future Technology (Example)

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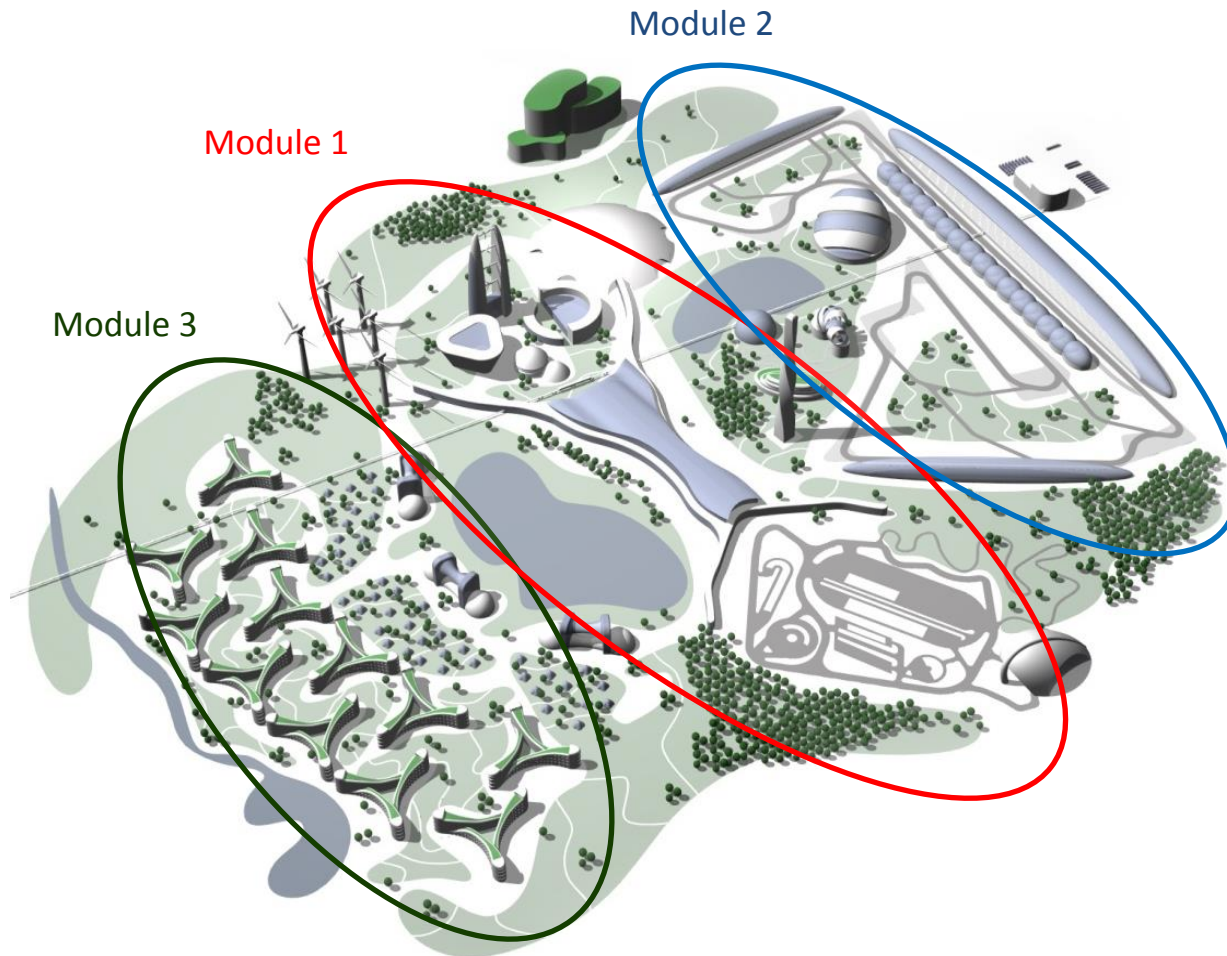




The Elektrodrom in Detail

International Competence Centre for Electromobility and Future Technology (Example)

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Module 1:

- Research & development centre
- Test track
- Training centre

Module 2:

(poss. at separate location)

- Race track
- Experience park
- Museum for future technology
- Marketing and sales

Module 3:

- Residential complexes

Other:

- Transshipment area for delivery vehicles
- Hotel
- Renewable energies
- Smart grid

The Elektrodrom gathers all aspects of a future with electromobility under one roof

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Research and development

- Technology centre
- Research centre
- FIA-compliant test and race tracks
- Prototype production
- Building technology
- Smart-grid solutions

Marketing and sales

- Electric Boulevard (showrooms for international vehicle manufacturers)
- Transparent workshops and factories
- Eco-energy centre (solar, photovoltaic, fuel cell, etc.)
- Residential district in contemporary design

Elektrodrom

Initial and advanced training

- Training centre
- Training site
- Test site
- Off-campus university
- Careers centre

Experience

- Racing events (e-race series)
- Electromobility museum
- Technology world
- Bio-wellness hotel
- High-tech simulation hall (for experiencing future trends)

Advantages of centralised R&D activities

- Interdisciplinary research
- Synergies from joint use of infrastructure
- Accelerating development processes
- Cooperation between developers, suppliers and OEMs at a single site
- Technology transfer through universities and research institutes
- Hands-on testing of innovations
- Development of products and services to marketable level in pilot projects on the Elektrodrom model site
- Latest technologies always available
- Demonstration platform for future-oriented developments
- Test track, crash and simulation halls, etc.
- Nucleus for practical applications in bi-directional flow of knowledge

Possible areas of research

- Lightweight construction
- Battery technology
- Charging technology
- Drive systems
- Tyres
- Road surfaces
- Electronics
- Communication technology
- Smart grid/microgrid/smart metering
- Renewable energies
- Recycling
- Logistics
- Traffic control/guidance systems
- Efficiency of energy and resources
- Efficiency of buildings residential areas that are healthy to live in

Initial and advanced training

- Centre for initial and advanced training
- E-vehicle training, etc.
- Careers centre for interconnecting innovation and know-how sources, essentially universities, research institutes and industry
- Platform for active knowledge exchange
- Passing on knowledge, e.g. in information events
- Early-childhood development
- Training site and practice track for drivers

Marketing and sales

- Electric Boulevard with showrooms for manufacturers, suppliers, developers and service providers for
 - Electric vehicles and accessories
 - Renewable energies
 - Efficient technologies
 - etc.
- Congress and exhibition areas for conferences, trade exhibitions and other events
- Exclusive events
- showcase for presenting comprehensively and sustainably realised living and working environments
- E-vehicle test track for customers
- Transparent production lines
- Innovative sales and marketing concepts

Experience and events

- High-level electric racing events
- Events in the fields of culture, music, sports, experience, etc.
- Technological and future worlds
 - Future simulations
 - Experience rides in test phase
 - Electromobility and technology museum
 - Design centre
- Passenger and goods transport of the future
- Bio-adventure world
- Wellness hotel
- Catering facilities
- Media centre

Interfaces and extended use

- Transshipment facility for loading goods onto electric vehicles for subsequent emission-free delivery
- E-vehicle shuttle service for bringing guests to and from the site
- Connection to model regions and cities with “Electromobility”
- Service hub for vehicles and infrastructure
- Park & Ride for commuters changing over to electric vehicles or public transport

Electric motorsports – technological drivers

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- Racing series for electric vehicles are arising worldwide
 - TTXGP (since 2009); FIM ePower (since 2010)
 - FIM eRoad Racing World Cup (since 2013) (promoted by TTXGP)
 - Formula E (from 2014) to be realized in urban areas
Electrical New Energy Championship Commission (ENECC)
 - ADAC mountain race Osnabrück/Germany (from 2013)
- Car manufacturers as well as suppliers want to participate
- New race tracks are planned (without focus on electric mobility)
 - Mallorca, planning and operation in a sustainable way
 - Bilster Berg (Germany), test and presentation
- To date, no race track offers a suitable opportunity for testing and representing electric mobility in a sustainable and effectively communicated way.



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