Manuel Sattig, *project i*

THE FUTURE OF SUSTAINABLE MOBILITY. LEADING (E)-MOBILITY INTO A NEW ERA.

BMW GROUP

BMW GROUP'S EFFICIENT DYNAMICS STRATEGY.

TODAY

- Optimisation of fuel consumption and emissions.
- Lightweight construction.

TODAY

- Full and mild hybrid vehicles.
- Initial step towards electrification of the drivetrain.
- Plug-in Hybrid drive-trains.

NEAR FUTURE

- First limited electric vehicle production in 2008.
- MINI E on the road since 2009.
- BMW ActiveE in 2011.
- Introduction BMW i3 in 2013.

FUTURE

- Commitment to and validation of technology.
- Focus on Crucial Components: Optimization of Powertrain Components (Fuel Cell and ICE).
- Improvement of hydrogen storage and efficiency.

BMW Group's drive strategy provides **a broad technology spectrum for today and the future**.

Combustion engine | Hybrid technology | E-vehicle | Hydrogen

IN 2011, THE BMW GROUP WAS RANKED SUPERSECTOR LEADER IN THE DOW JONES SUSTAINABILITY INDEX FOR THE 7TH TIME.

The BMW Group is the most sustainable company in the automotive industry.

Ecology | Economy | Society

project i IS AN INITIATIVE OF THE BMW GROUP STRATEGY.

In the middle of 2007 the **BMW Group** established the strategy **„Number One“**. **Consistent profitability**, **sustainable growth** and **securing the independence** of the BMW Group are in the focus.

At the end of 2007 project i started with the mission to develop **sustainable and visionary concepts for mobility**.

The specific assignment was to **develop new and trendsetting products**, which fulfill the challenges and requirements of customers in an urban environment.

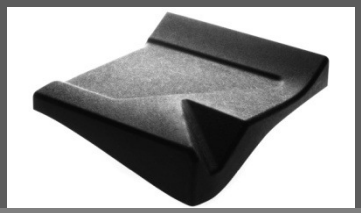
project i serves a **think tank** with the freedom of „lateral thinking“, however linked tightly with all departments of the BMW Group.

This results in **new** processes, **new** technologies, **new** vehicle concepts and a **new** approach to development, production and distribution.

SUSTAINABILITY DEFINES THE PRODUCT LIFE CYCLE.

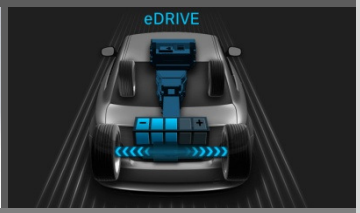
New vehicle concepts

New materials and recycling



Production concept of the future

New electric drivetrain

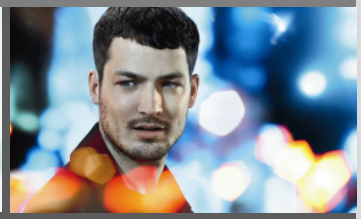


Integrated approach of project i

New processes

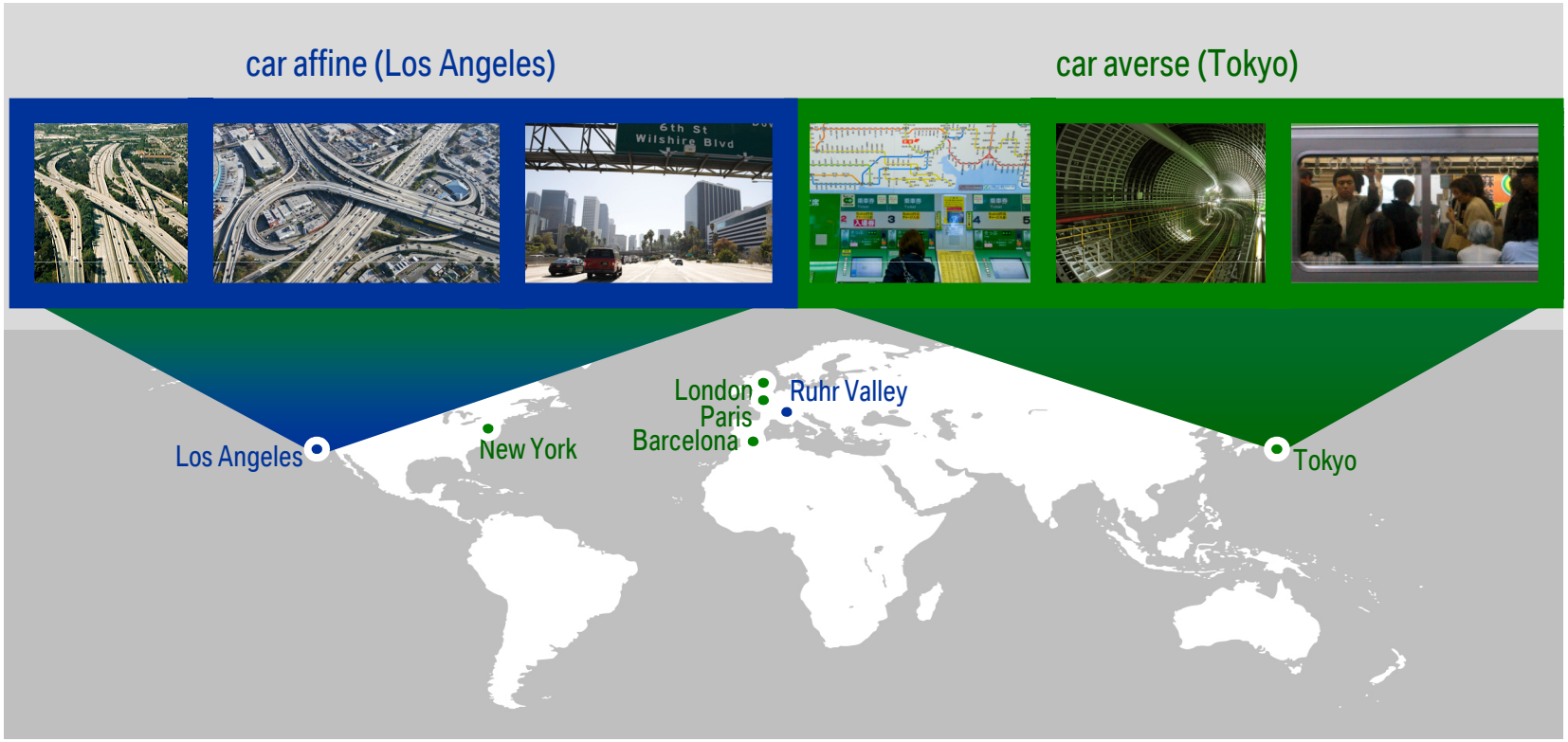
Employees

Pioneering design



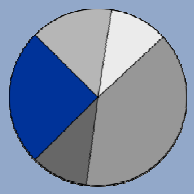
New customers

EXPERT INTERVIEWS AND MARKET RESEARCH IN THE MEGA CITIES AROUND THE WORLD.



MINI E AND BMW ActiveE SERVE AS KEY LEARNING PROJECTS FOR THE BMW i3.

Use of renewable energy.



Market-potential.

Transfer scenarios.

User behaviour.

Acceptance.

Demands of e-infrastructure.

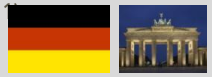
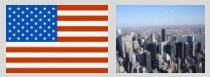
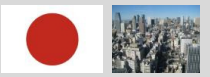
Strengths and weaknesses.

MINI E 2009

BMW ActiveE 2011

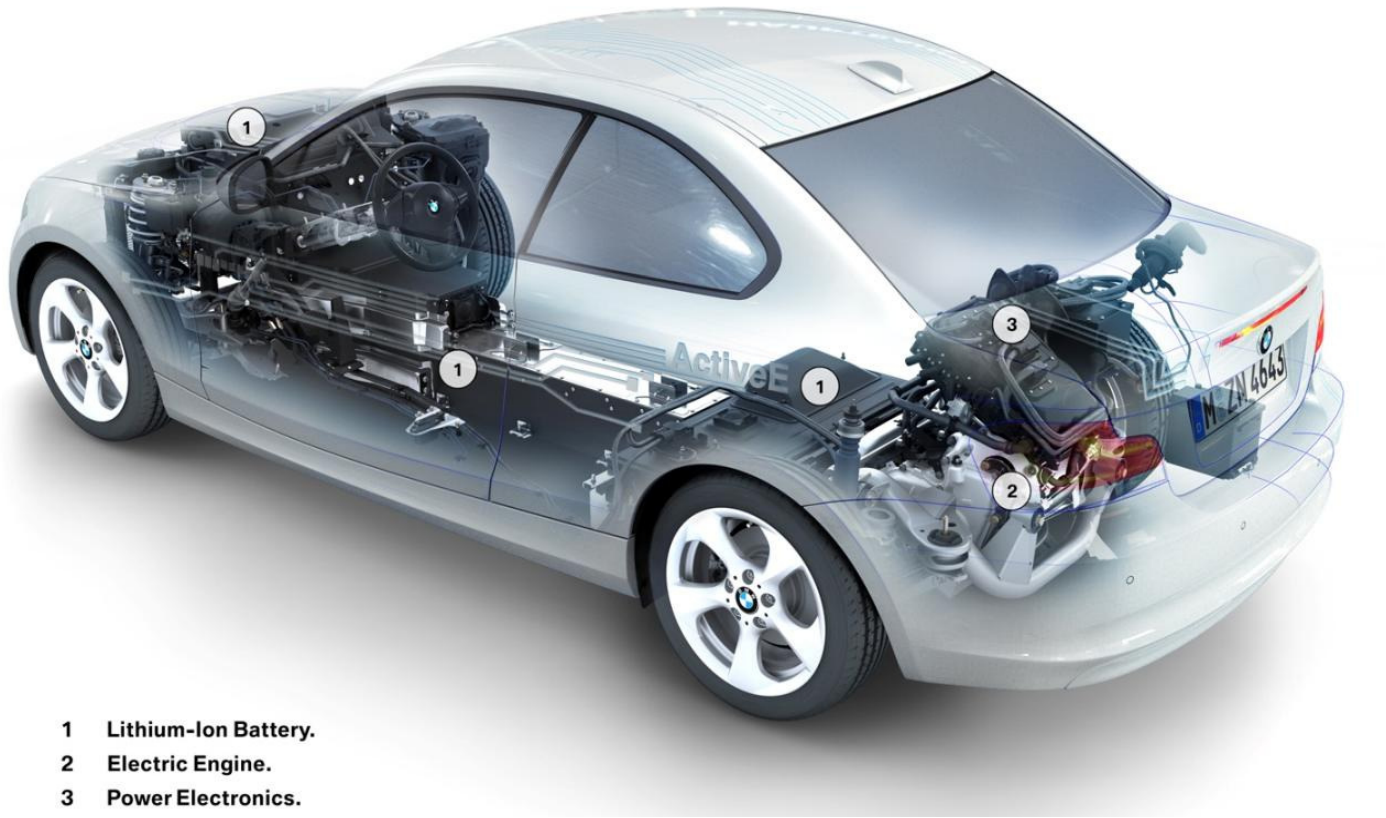
BMW i3 2013

OVERVIEW OF SCIENTIFIC PROJECTS WITH LEADING PARTNERS WORLDWIDE.

						
Government	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit	Technology Strategy Board; SEEDA; Oxford City Council	CA.GOV California Environmental Protection Agency AIR RESOURCES BOARD	NDRC MOST MIIT	ADEME Agence de l'Environnement et de la Maîtrise de l'Energie	経済産業省; 国土交通省 Ministry of Land, Infrastructure, Transport and Tourism; 環境省 Ministry of the Environment
Scientific monitoring	Chemnitz University of Technology; Öko-Institut e.V. Institut für angewandte Ökologie; Technische Universität Berlin	Oxford Brookes University	UC Davis University of California	CATARC China Automotive Technology and Research Center	INRETS Institut national de recherche sur les transports et leur sécurité; eesar	Waseda University
Field trial	50 Units, 40 Private / 10 Fleet	40 Units, 20 Private / 20 Fleet	450 Units, 246 Private / 204 Fleet	50 Units since 03/2011.	50 Units, 25 Private / 25 Fleet	20 Units since 03/2011
Infrastructure and energy	VATTENFALL	Scottish and Southern Energy	Numerous energy partners	China Southern Power Grid Co., Ltd. State Grid, Southern Grid	EDF	Numerous energy partners

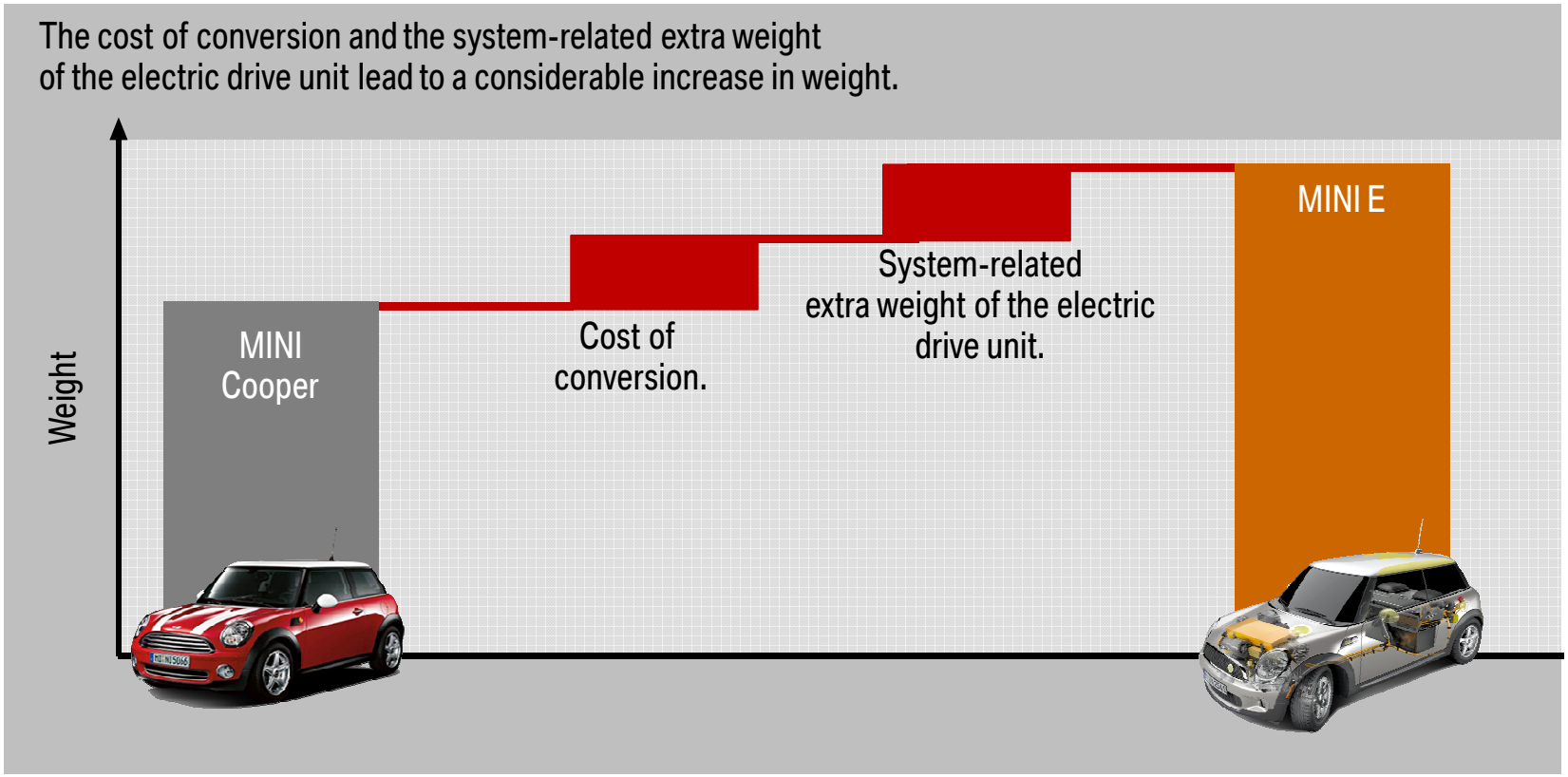
1) Not included the MINI E field trial with Siemens and the SWM in Munich 09/2010.

THE BMW ActiveE, OUR NEXT STEP TOWARDS THE INTRODUCTION OF THE MEGACITY VEHICLE.

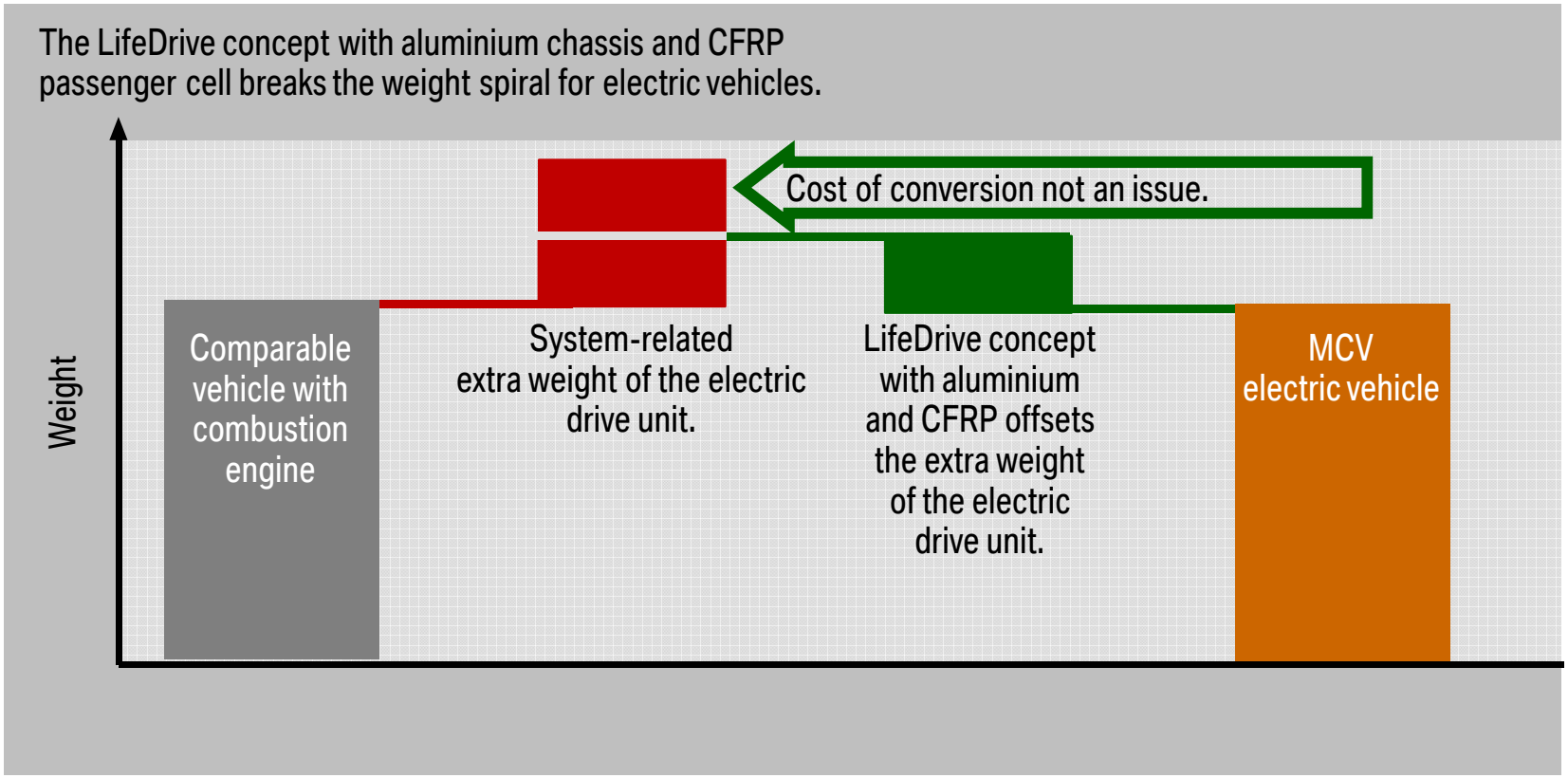


1 Lithium-Ion Battery.
2 Electric Engine.
3 Power Electronics.

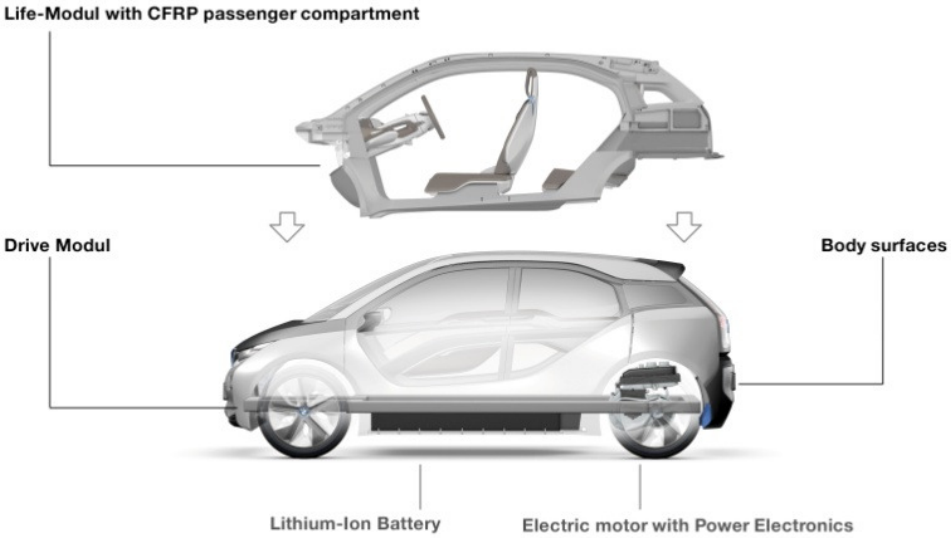
INCREASE IN WEIGHT.

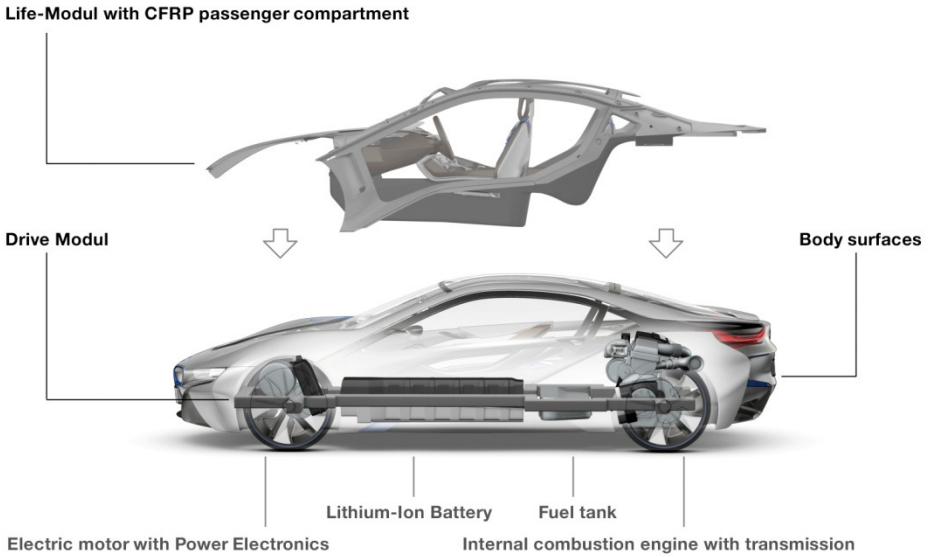


LIFEDRIVE CONCEPT.

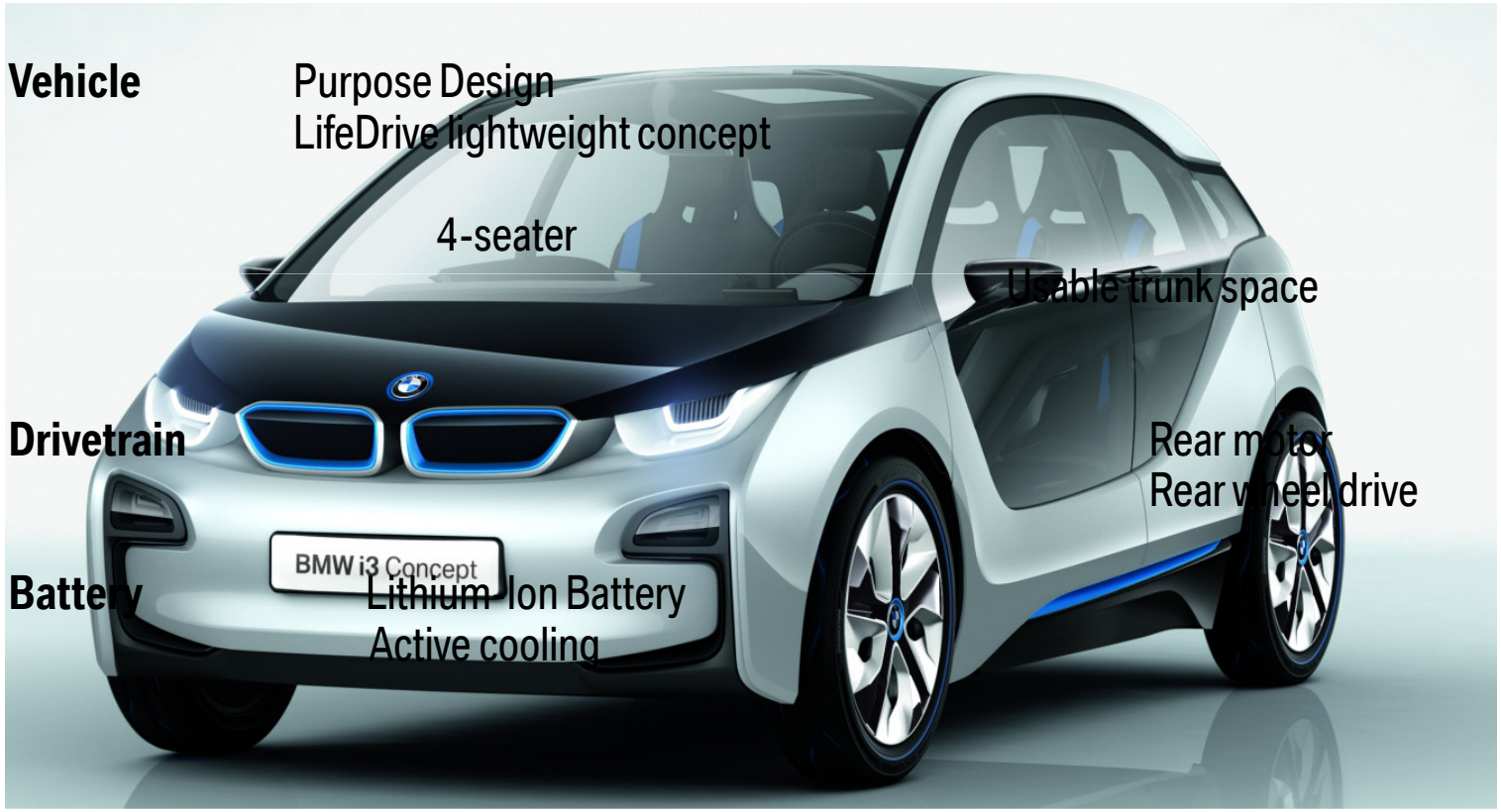


LIFEDRIVE ARCHITECTURE.

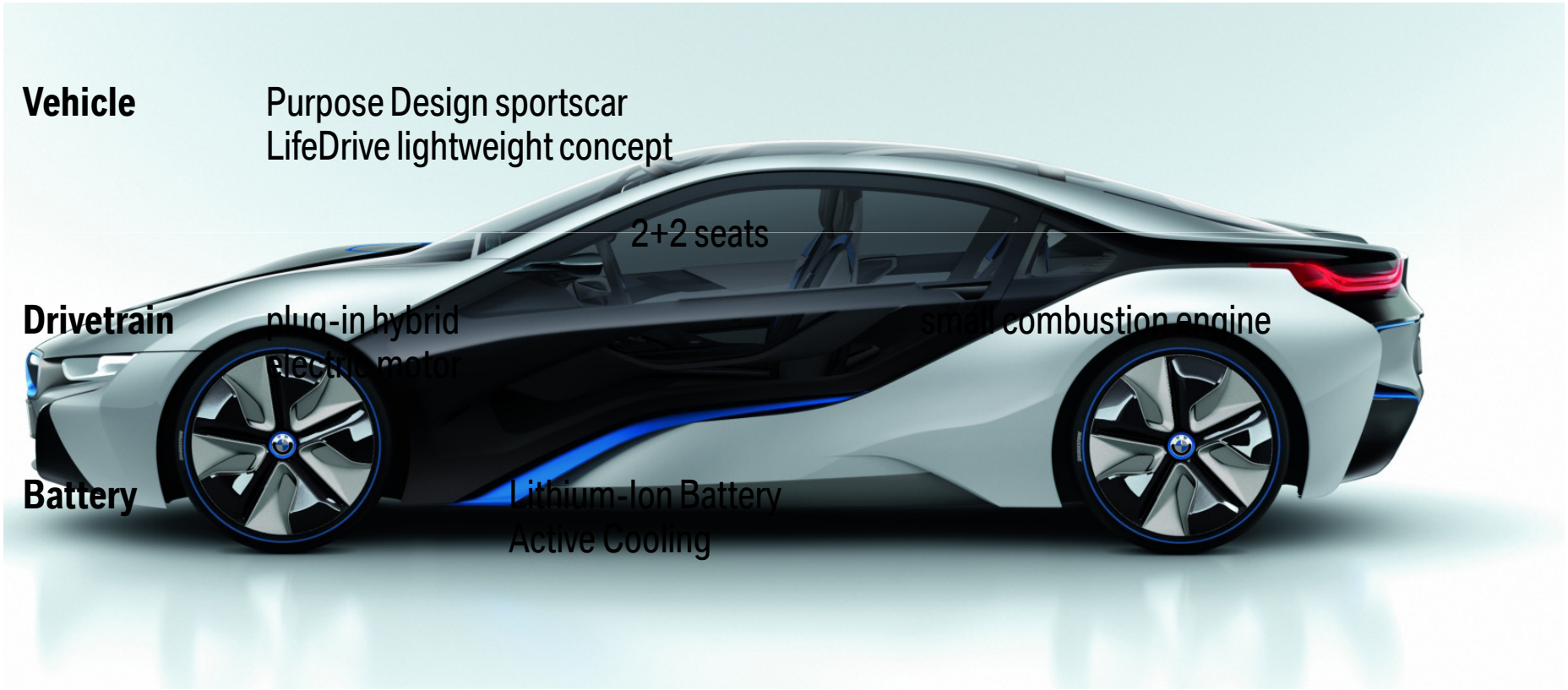




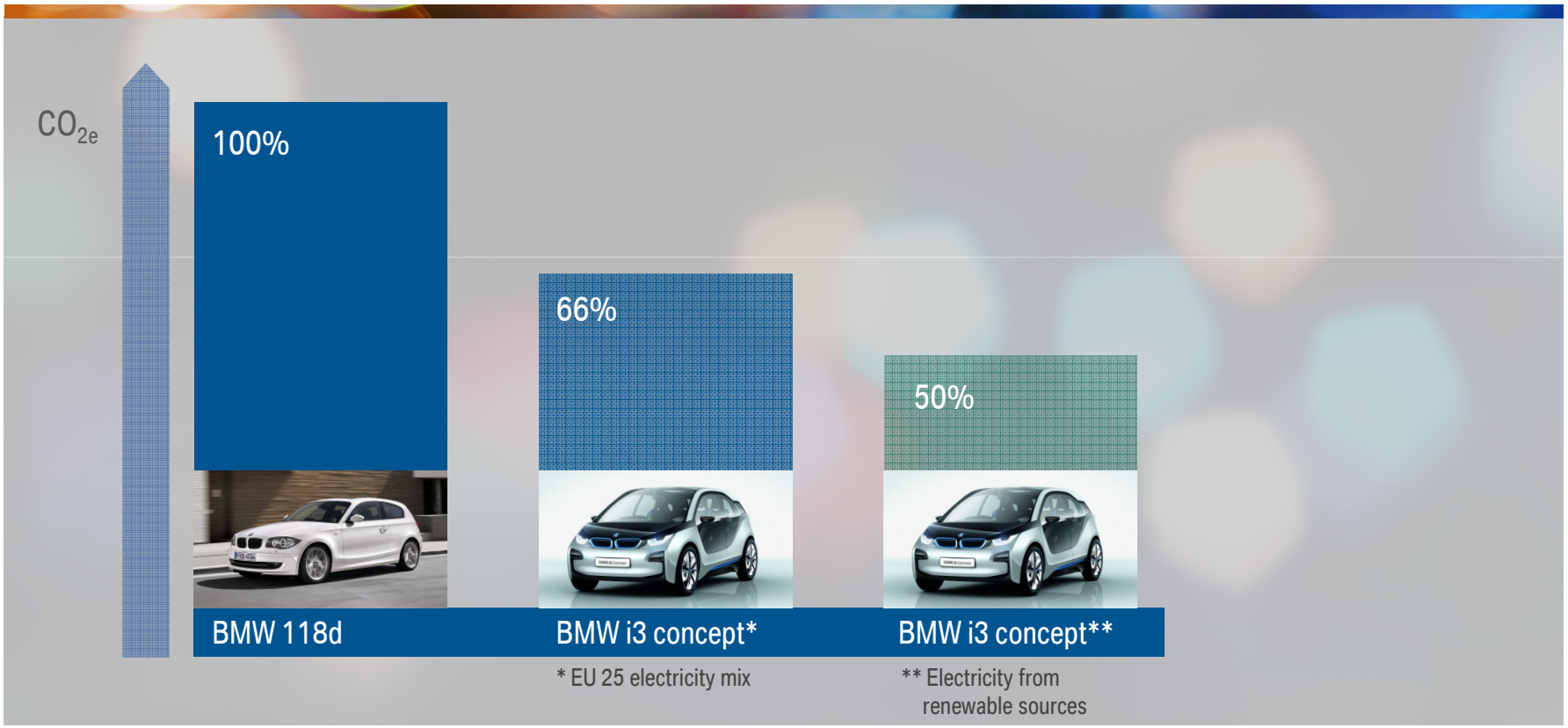
THE BMW i3 – OUR MEGACITY VEHICLE.



THE BMW i8 – THE MOST PROGRESSIVE SPORTSCAR.



GLOBAL WARMING POTENTIAL IN THE PRODUCT LIFE CYCLE SIGNIFICANTLY LOWER.



80% OF THE ALUMINIUM USED IS EITHER RECYCLED OR PRODUCED WITH RENEWABLE ENERGY.

Secondary aluminium

2 kg CO_{2e}

Primary aluminium produced with renewable energy

5 kg CO_{2e}

Conventional primary aluminium

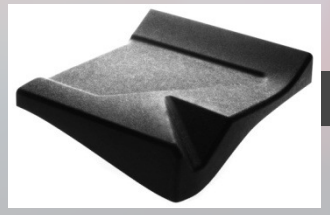
10 kg CO_{2e}

25% OF THE WEIGHT OF THERMOPLASTICS USED IS REPLACED BY RECYCLED/RENEWABLE RAW MATERIALS.

Recycled materials

Savings
80 kg CO_{2e}

Renewable raw materials



Savings
40 kg CO_{2e}

50% LESS CO_2 (EQUIVALENT) EMISSIONS IN BMW i CFRP PRODUCTION COMPARED TO CONVENTIONAL CFPR PRODUCTION.

PRODUCTION OF BMW i MODELS IN LEIPZIG IS SETTING BENCHMARKS IN THE AUTOMOTIVE INDUSTRY.

– 50% energy

– 70% water

100%
renewable energy

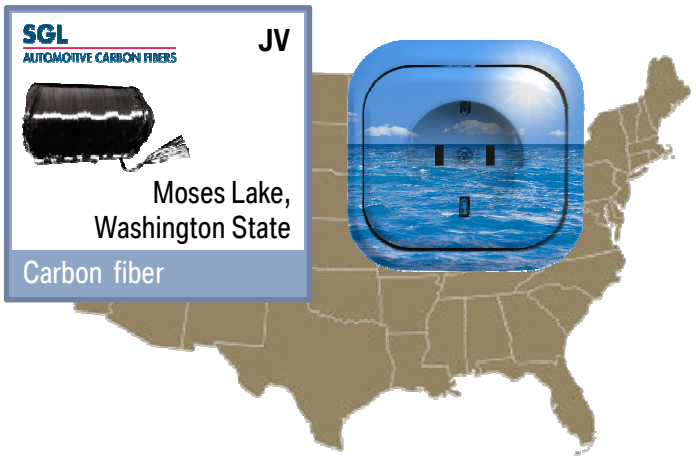
THE SOCIAL ASPECTS OF SUSTAINABILITY WERE TAKEN INTO ACCOUNT AT AN EARLY STAGE OF PRODUCT DEVELOPMENT AND DESIGN.

Natural lighting in production facilites

Optimised workplace conditions

50% reduction in noise emissions in the body shop

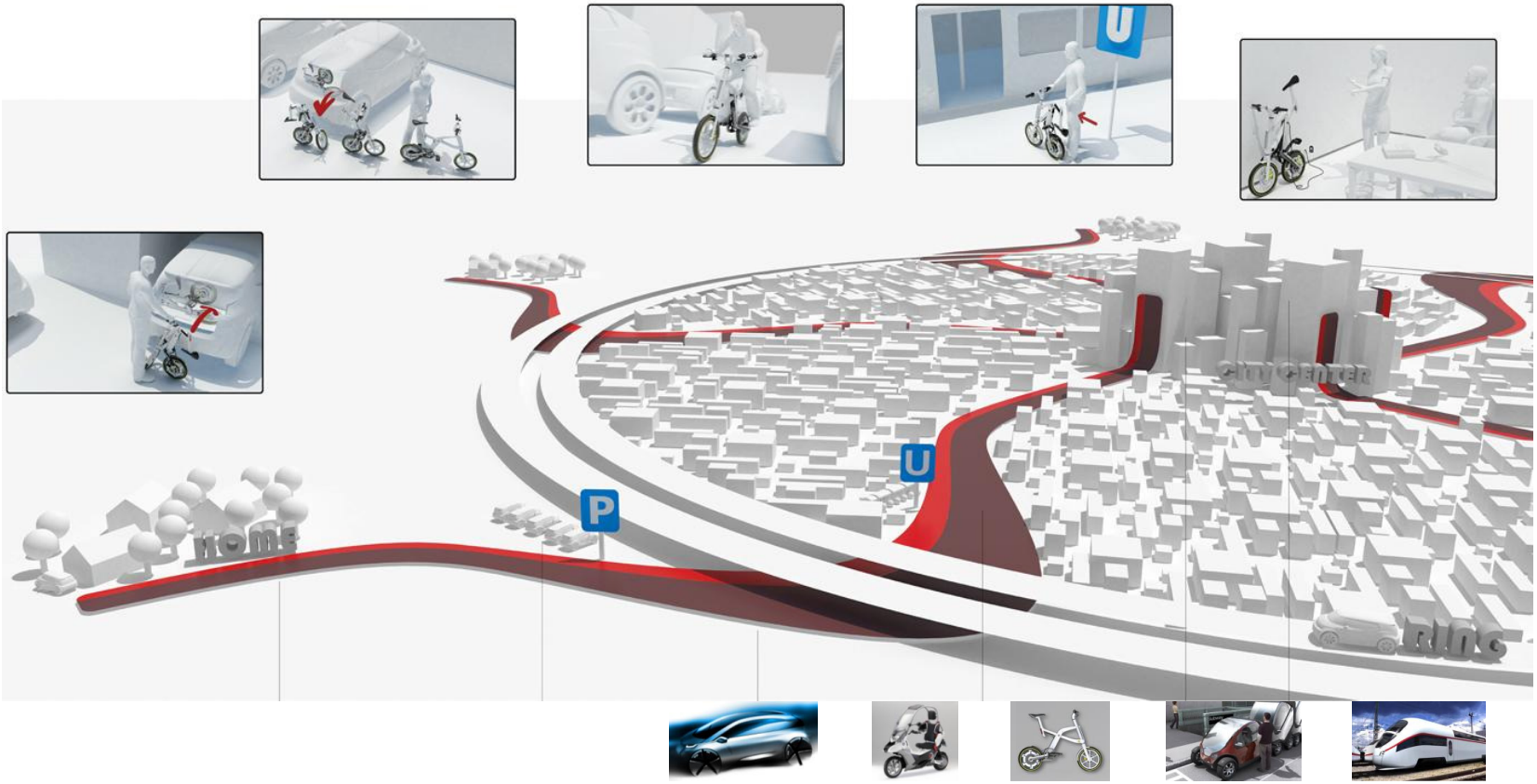
PLANT NETWORK AND APPLICATION OF REGENERATIVE ENERGY.



The BMW Group and the joint venture set up with the SGL Group are investing a total of €530 million in the project. A total of over 1.000 jobs will be created as a result of this investment.

In the plant Moses Lake 100% hydro energy is applied.
Leipzig provides the necessary energy for the CFRP fabrication in the plants Leipzig, Landshut and Wackersdorf by wind power.

THE CUSTOMER DEMANDS ON ELECTROMOBILITY REQUIRE MORE SOLUTIONS THAN JUST A CAR.



MOBILITY SERVICES.

	Car-dependent mobility Services	Car-related mobility services	Car-independent mobility services
BMW and MINI driver			
Car driver			
Mobile user			

MOBILITY SERVICES.

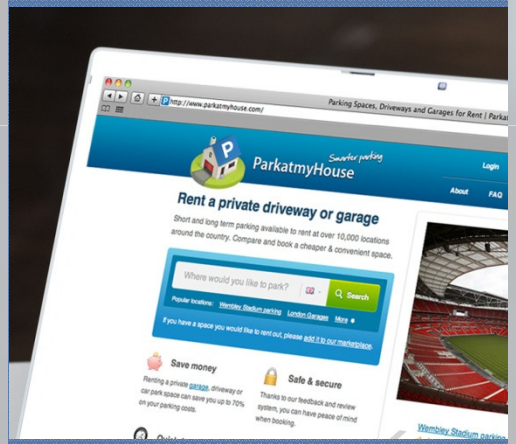
DriveNow

Premium car sharing
independent of hire points

MyCityWay

Local real time information
on cities

ParkatmyHouse



Marketplace for parking


THANK YOU VERY MUCH.
BMW i3 Concept