

# GREEN CAR TECHNOLOGIES ROADMAP



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**ICSAT 2010**

# AGENDA

- a few words on SportKreativWerkstatt
- concept and methodology of Holistic Innovation
- towards a future roadmap: innovation in green car technologies

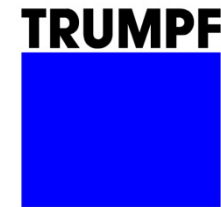
# OUR OFFER AND POSITIONING

We are “your partner for holistic innovation”

We are a bridge between well-founded research and successful innovation

We stimulate, structure, and moderate complex and/or radical innovation projects

# SOME OF OUR CLIENTS



**BOSCH**



# OUR CORE COMPETENCIES AND USPs

Dynamic utilization of our own innovation methodology

Theoretical and applied knowledge in user motivation, contextual embedding, system visioning, and determination of technological opportunities

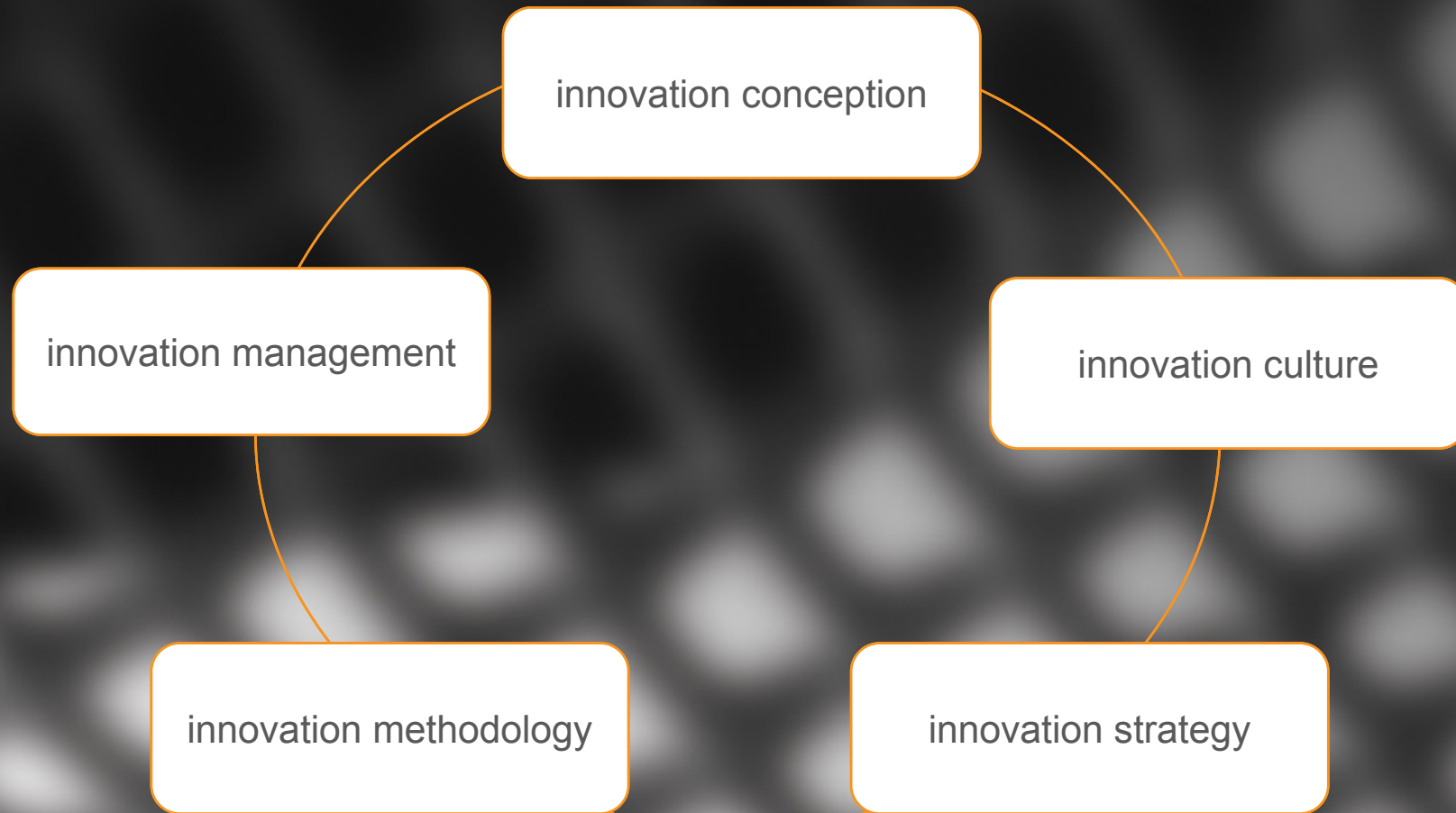
Theoretical and social experts network

Team experience in innovation projects

# OUR CORE COMPETENCIES AND USPs



# APPROACHES TO FOSTER HOLISTIC INNOVATION



# The Path to Innovation

**IMPULSE** \_\_\_\_\_ e.g. from an analysis of the innovation field

**START** \_\_\_\_\_ of an innovation venture

Determination of the \_\_\_\_\_ **VISION**

Elaboration of the \_\_\_\_\_ **CONTEXT** SYSTEM | users, protagonists, stakeholders  
environment and boundary conditions  
trends and zeitgeist

Exploration of the \_\_\_\_\_ **FUNCTIONS**

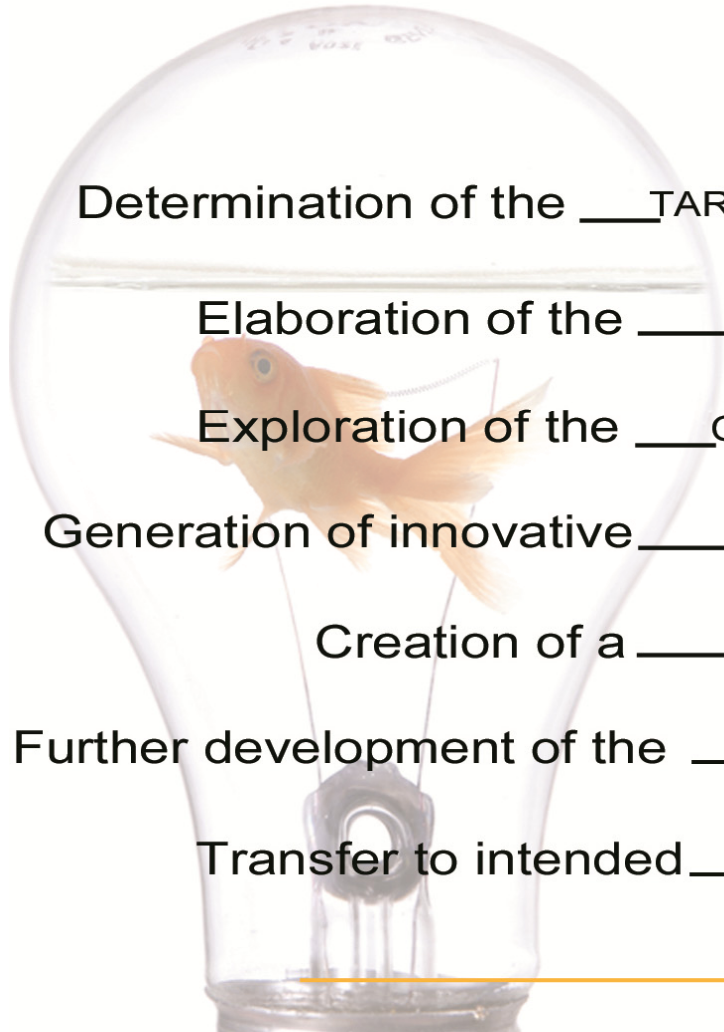
use scenarios  
motivations  
barriers  
critical analysis of status quo  
interfaces

Generation of innovative \_\_\_\_\_ **CONCEPTS**

Creation of a \_\_\_\_\_ **SYSTEM** SOLUTION

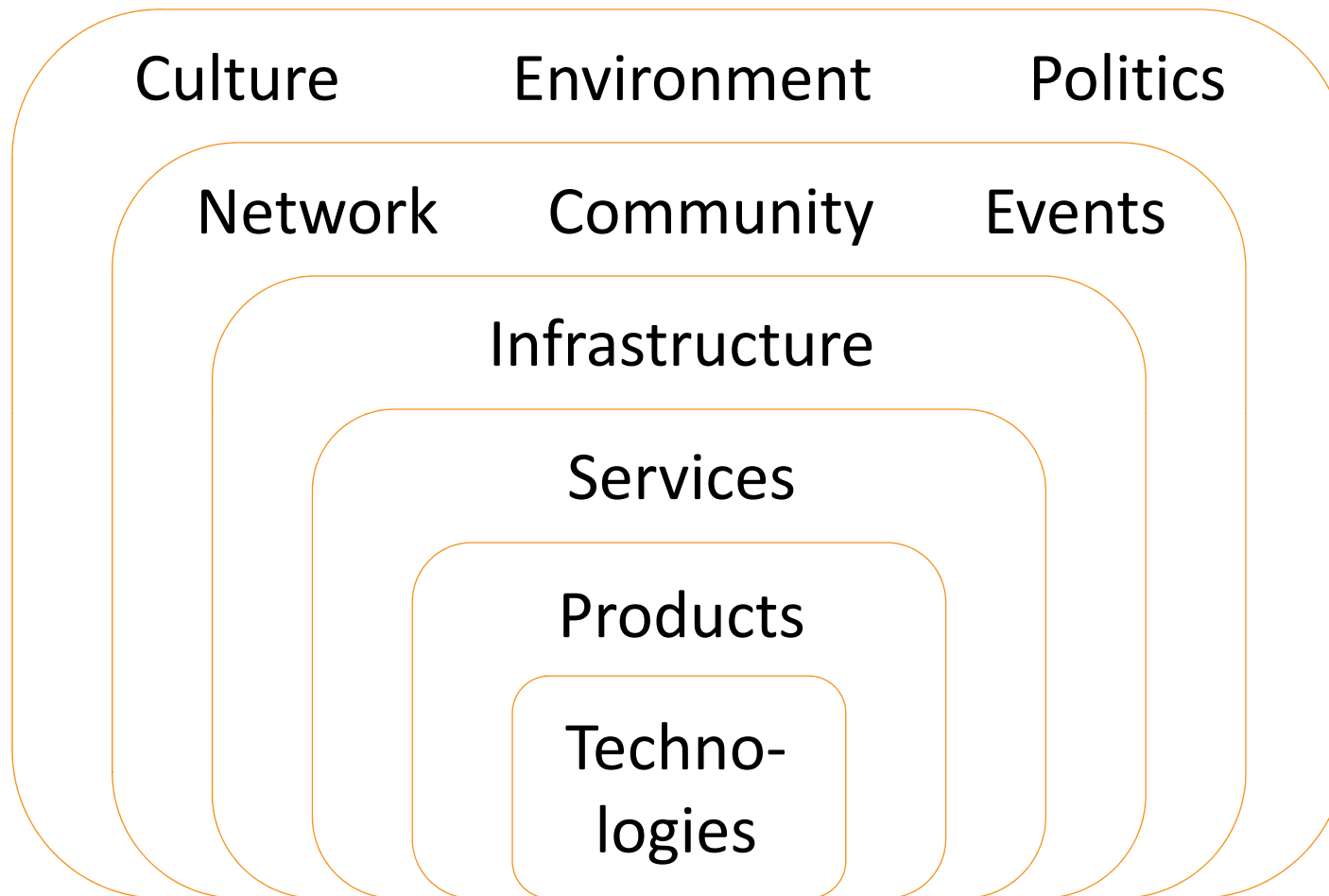
Further development of the \_\_\_\_\_ **PRODUCT**

Transfer to intended \_\_\_\_\_ **USE**





# Green Car Technologies in a System Perspective





Sustainability



Polarization



Individualization



Mass Customization



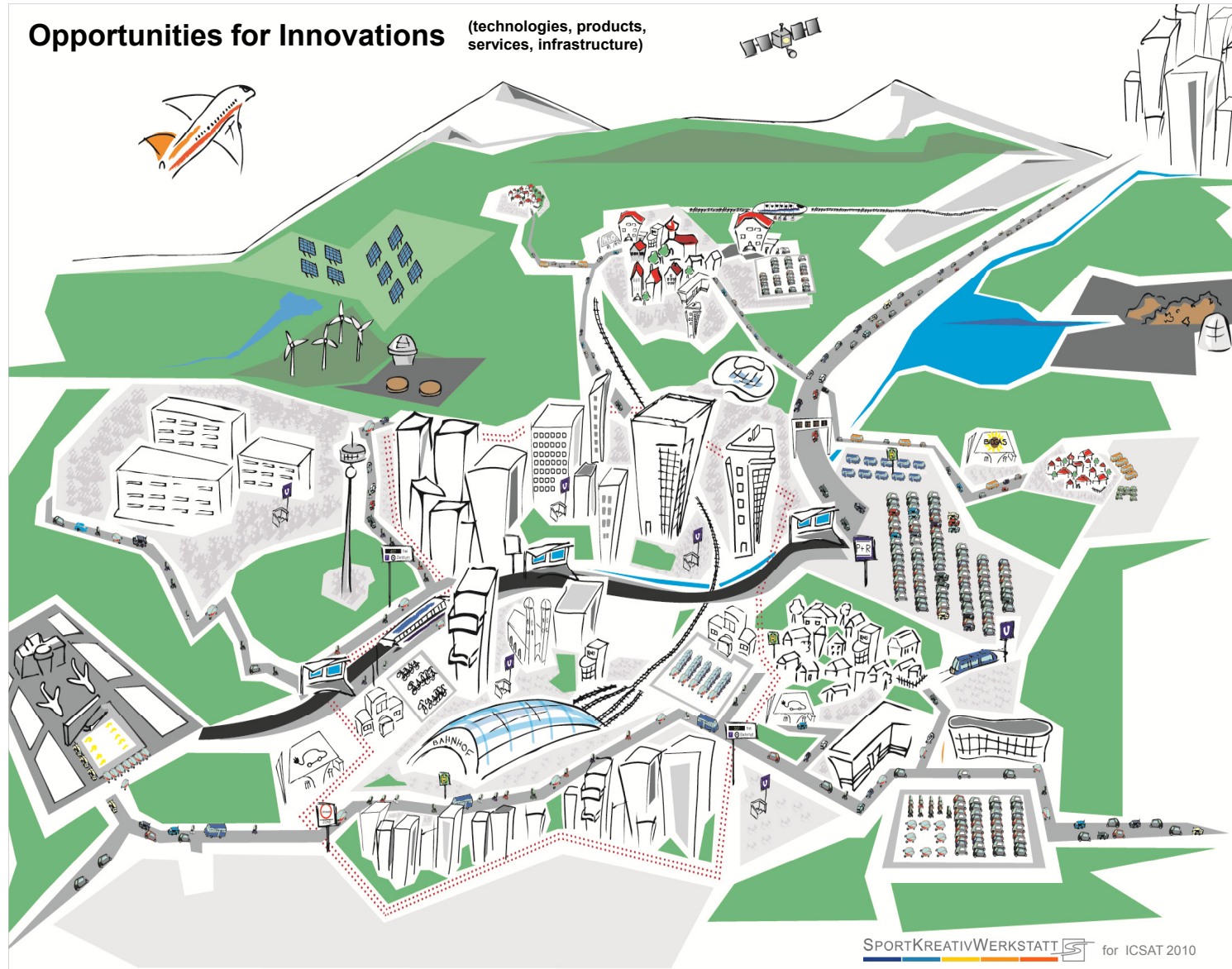
New Materials



New Drives

# Respective Consequences for Green Car Technologies

## Opportunities for Innovations (technologies, products, services, infrastructure)



Climate Change



Mobility Demand



Urbanization



Renewable Energies



ICT



Mobility Providers

## Structure of the Workshop

The Workshop is organized in four stages:

**Stage One: Boundary Conditions and Innovation Potentials**

**Stage Two: Respective Consequences for Green Car Technologies**

**Stage Three: Opportunities for Innovations**

**Stage Four: Green Car Technologies Roadmap**

# Stage One: Boundary Conditions and Innovation Potentials

**Task:** Please reflect upon the boundary conditions and innovation potentials written on the outer shell of the worksheet, and complement whatever you think is lacking but is of potential relevance! Write your input directly onto the worksheet!

**Note:** Boundary conditions are developments and trends that have to be taken into account when generating innovations with long-term effect; innovation potentials are technologies, materials and structures that may be utilized to generate innovative solutions.

# Stage One: Boundary Conditions and Innovation Potentials

## Boundary Conditions:

- rising energy costs
- decreasing available time
- limited waste disposal
- limited raw materials
- changing legislation
- perception
- spatial resistance
- profitability
- consumer buying power
- changing markets
- changing geopolitical situation
- demographic change
- oil price

## Innovation Potentials:

- sustainable materials
- C2C-communication
- energy storage, carriers
- energy distribution
- energy conservation, efficiency
- new vehicle concepts
- making your own car
- virtual driving
- rapid manufacturing
- new concept for using renewable energies
- new infrastructure concepts
- new driving concepts

## Stage Two: Respective Consequences for Green Car Technologies

**Task:** Please write into the space in the white frame which consequences individual boundary conditions and innovation potentials may or will have to shape future innovations in green car technologies.

Example: The demographic change means that there will be increased demand for vehicles for elderly (however, the elderly tomorrow will be different from the elderly today...).

## Stage Two: Respective Consequences for Green Car Technologies

vehicle sharing, leasing vs. buying

may not require car

government tax regulation

must sell: safety, ease of care, ease of access

limited use of materials

smaller cars

opportunity for distributed energy, leasing, charging

common platform with individualized options

lightweight structure, adaption, modular vehicles

fuel cells, optimized ICE, gas

no more accidents

magnetic platoon driving

## Stage Three: Opportunities for Innovations

**Task:** Please write ANY related ideas for specific innovations in technologies, products, services, and infrastructure in the inner space in the worksheet!



## Stage Three: Opportunities for Innovations

quiet vehicles

congestion charge, incentives, car pooling, clean vehicles etc.

offer of mobility packages, find a way for attractive car-sharing

vehicles for older people

inductive power transfer

advisory speed for maximum efficiency

social carpooling, city shared cars

smart pts

H2-cars

zoning

car-to-car-communication

docking stations for charge of electric cars

organic solar cells

new vehicles: scooters, 3-wheelers, etc.

continuous public transport

multi-fuel stations

## Results after stage 3: Group 1





## Stage Four:

**Task:** Please develop a green car technologies roadmap! Please specify...

1. ... the core innovation projects that you see in a 5, 10 and 20 years horizon,
2. ... the research needs, and
3. ... the action plan for their realization.

## Group 1: Project “Better better place” (5 years horizon)

### Project idea:

Attractive mobility package: car sharing, car pooling, car to go, public transport, different levels

### Research needs:

- organization
- market research
- IT platform, easy access
- logistics (disposition etc.)
- integration of air traffic

### Action plan:

- study: existing suppliers, where are gaps ? (in different markets) business plan
- fill gaps with best practices (most efficient cars etc.)
- change public perception
- who? U.S. DOE, National Science Foundation, Rocky Mountain Institute

## Group 2: Core innovation projects in green car technologies

5 years	10 years	20 years
<b>distributed docking stations</b>	platooning	intelligent zoning
distributed multi-fuel filling stations	organic solar cells integrated into vehicle body	continous public transport
car sharing/ownership: standard vehicle at distributed locations	fuel cell vehicles in high numbers	
new vehicle concepts: scooters, 3-wheelers, etc.	hydrogen refueling stations	
	smart grid	

## **Group 2: Project “distributed docking stations” (5 years horizon)**

### **Project idea:**

Sustainable, intelligent, distributed charging docking stations

### **Action plan:**

- explore and identify options (functional, locations)
- explore interfaces
- identify stakeholders, focus groups
- identify potential investors
- concept design
- communication and demonstration
- detailed design and prototype development