

# **Activities in Nordrhein-Westfalen, Germany**

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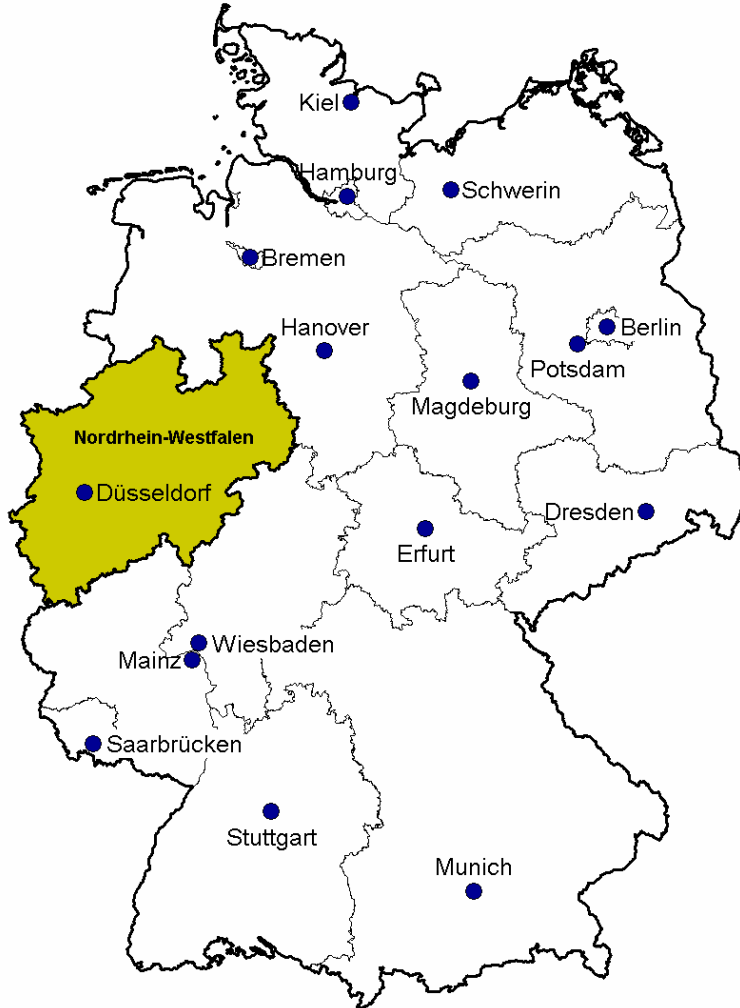
**Fuel Cell and Hydrogen Network NRW**

Workshop

Supporting Regions to Integrate Hydrogen

Brussels, Wednesday 4th October 2006

**The NRW region – some key facts**

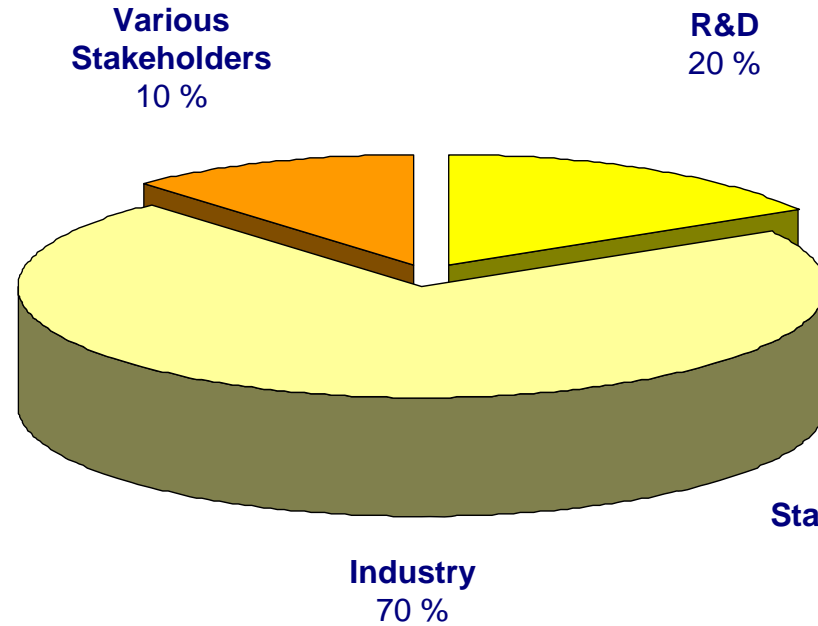


**Some Key Data (2004)**

<b>Area</b>	<b>34,082 km<sup>2</sup></b>
<b>Population</b>	<b>18.1 million</b>
<b>Population density</b>	<b>530/km<sup>2</sup></b>
<b>GDP</b>	<b>481 bn €</b>
<b>Gainfully employed</b>	<b>8.3 million</b>
<b>Exports</b>	<b>132 billion €</b>
<b>Imports</b>	<b>138 billion €</b>



**The Fuel Cell and Hydrogen Network Nordrhein-Westfalen (NRW)**



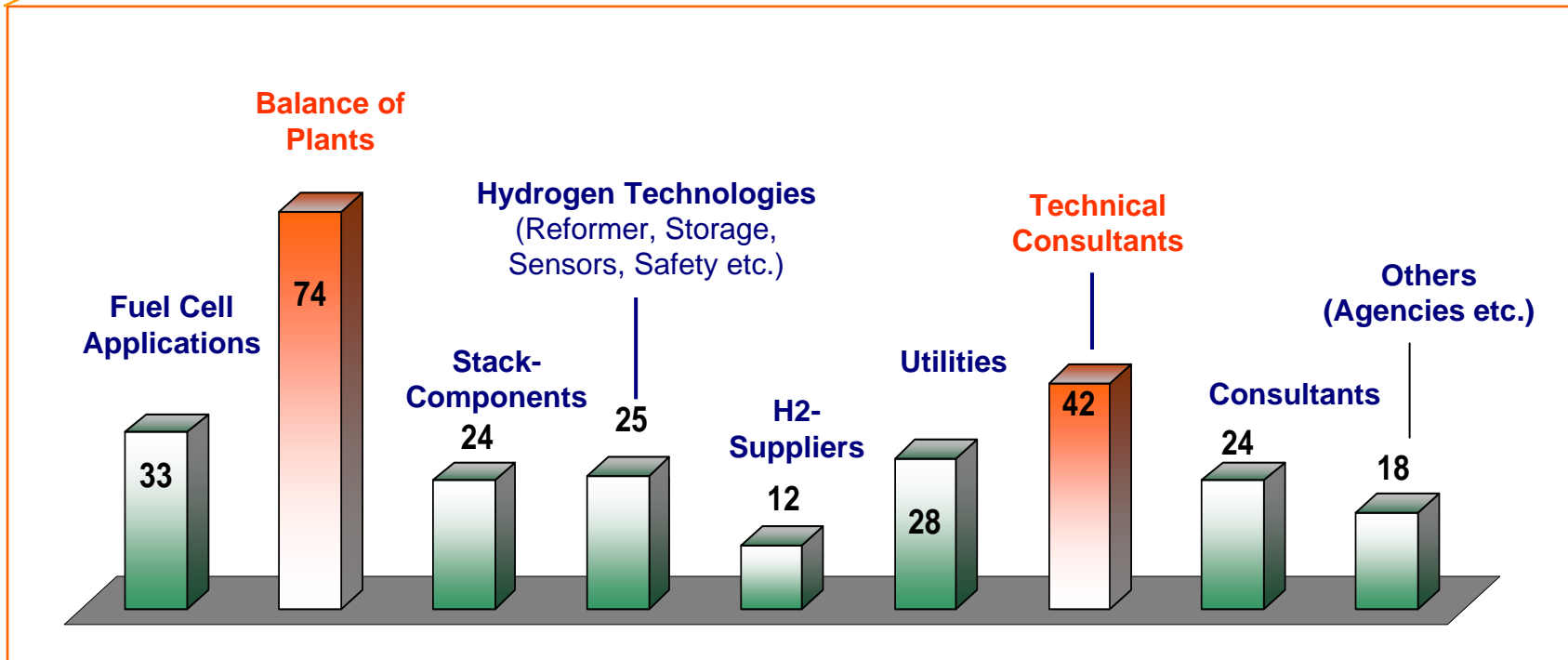
Status: 06/2006

**More than 300 members from industry, research and stakeholder organizations**



**KNBW NRW – Overview Industry Activities**

**Approx. 210 Companies**




Status: 06/2006



**NRW – Project Funding by the State Government**

**Part A** 

<b>Early Deployment Projects</b>	
FC Application Development	19
Component Development	15
Infrastructure Solutions	15
<b>TOTAL</b>	<b>49</b>

**Part B** 

<b>R &amp; D Projects</b>	
Material Development	5
Local Electrochemistry, Analytics	3
Fuel Cell Design	4
<b>TOTAL</b>	<b>12</b>

**TOTAL** 

**since 04/2000**

**Total Budget ~ 115 mill. €      NRW funding ~ 60 mill. €**



**NRW – FIFA WM 2006 in NRW with Hydrogen and Fuel Cell Technology**



**250 W Cargobike (Masterflex)**



**10 kW Fuel Cell Shuttle (Hydrogenics)**



**H2Trail Mobile Filling Station (Linde Gas)**



**5 kW UPS System (Rittal, AEG)**



**250 W Web Terminal (IdaTech GmbH)**



**250 W Phone (IdaTech GmbH)**

## NRW – Project Examples

### Reults

P 52 I

- Low floor midi bus (length 5,30 m, width 2,10 m)
- Passenger capacity (9 seats, 12 – 16 standing)
- Maximum speed 33 km/h (by law), autonomy 250 km
- 10 kW PEFC, hybrid technology, hydrogen storage @ 200 bar
- First prototype on the road since July 8<sup>th</sup> 2005
- TÜV certification End of November 2006



## NRW – Project Examples

### Results

P 53 I

- Flexible light duty vehicle including innovative propulsion
- Numerous possible designs depending on application
- Electronic transmission incl. generator (no chain)
- No certification required (due to new EC regulation for bicycles)
- 250 W FC system for propulsion, lighting, cooling, power ...
- Bike already on the road during FIFA World Cup 2006 by German T-COM for stadium service



## NRW – Project Examples

## Targets

P 56 I

- Development of hybrid (FC/battery) propulsion for industrial trucks
- Identification of the most suitable battery technology for the different vehicle classes with their corresponding load and drive profiles
- Project partner: 



## NRW – Project Examples

### Development of Mobile Hydrogen Refueller

- Independent supply for CGH2 and LH2 test fleets
- Low required space, fast filling
- Use of innovative components

Project partner: NRW, Linde TÜV-Sued

Targets

P 57 I



## NRW – Project Examples

### Targets

P 59 I

#### Development of independent power supply for IT applications

- 250 W Fuel Cell System
- 200 hours operation time (full power)
- Use of innovative energy saving components
- 20 systems already in place



#### Partner:

Rittal

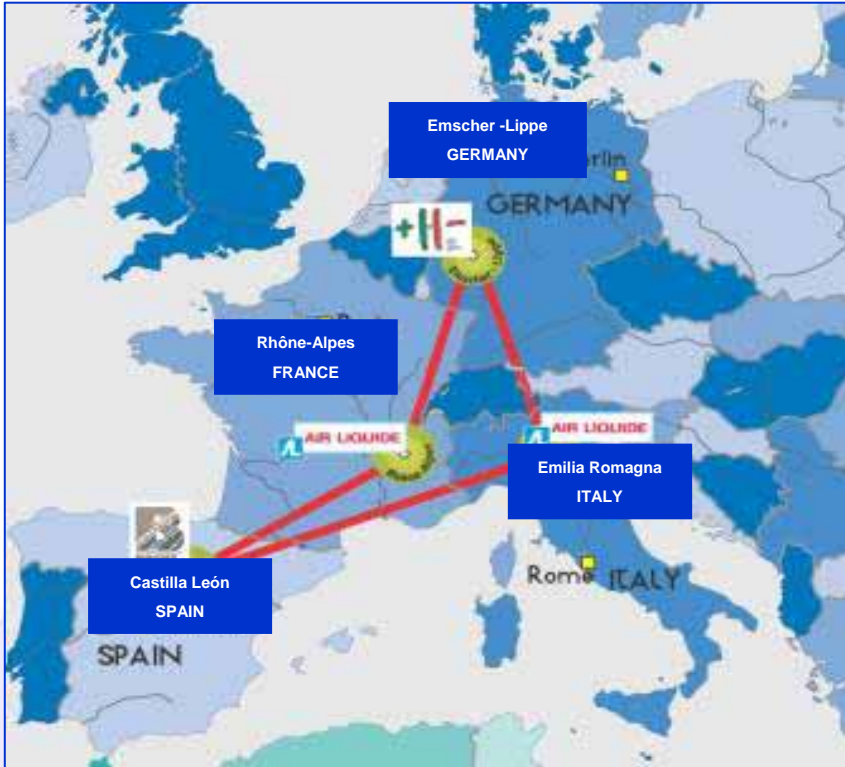
Idatech GmbH

T-COM





# HYCHAIN MINITRANS - OVERVIEW



**H<sub>2</sub>**

- Fuel cell scooters
- Fuel cell Wheelchairs
- Fuel cell utility cars
- Hybrid minibuses
- Fuel cell Tricycles
- Fuel Cell portable generator
- Hydrogen infrastructure

KEY DATA	
Project Coordinator	Air Liquide France
Project Start	2006
Project Budget	17.000.000 €
Project Duration	2006 - 2008



# The 18WEC2010 Chair Proudly Announces

18<sup>th</sup> World Hydrogen Energy Conference 2010  
in Essen, Germany, May 16 - 21, 2010

Under the auspices of:



International Association for Hydrogen Energy

## Hydrogen Energy

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In cooperation with:



Deutscher Wasserstoff-Verband



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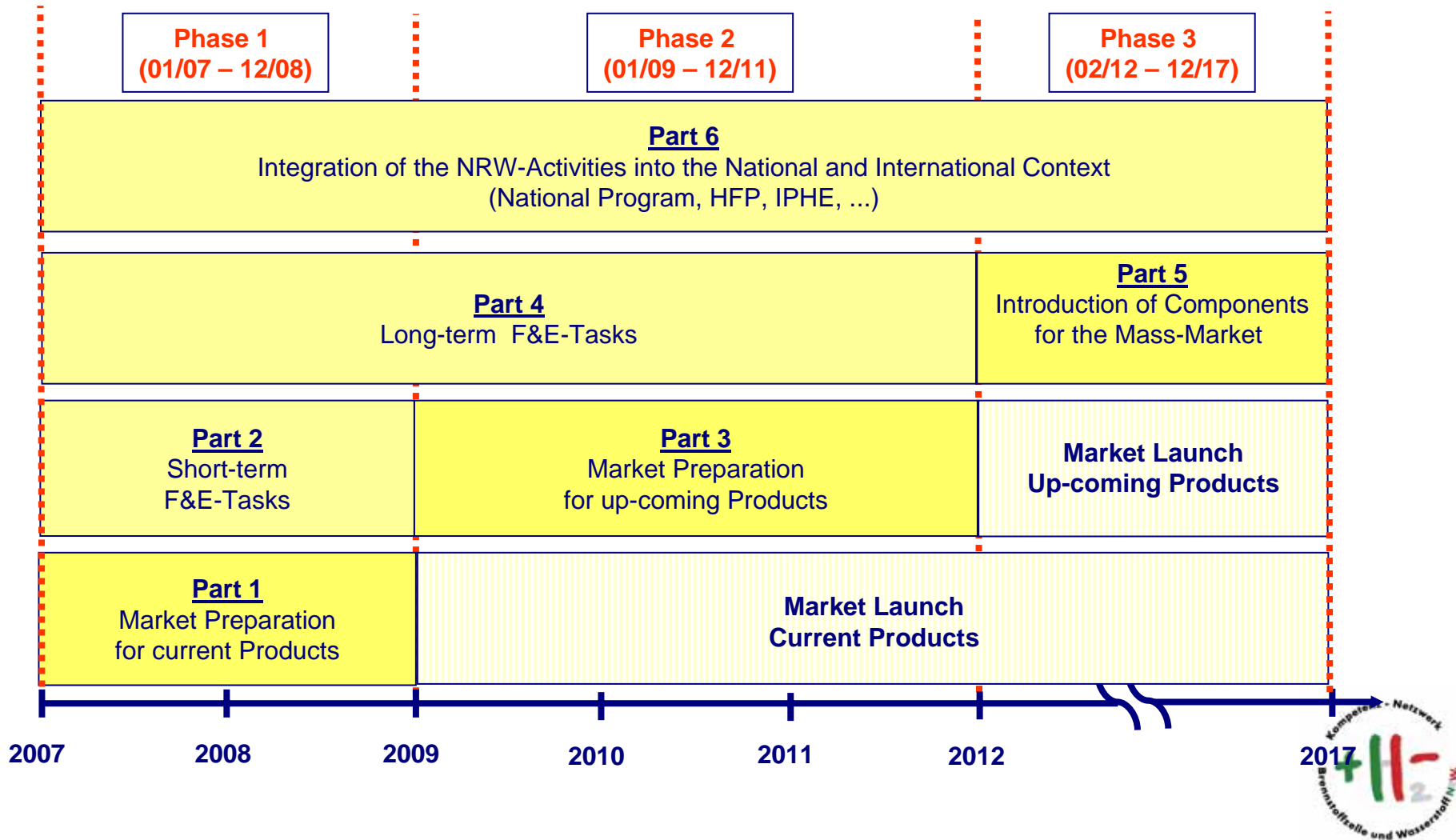
Place of Events



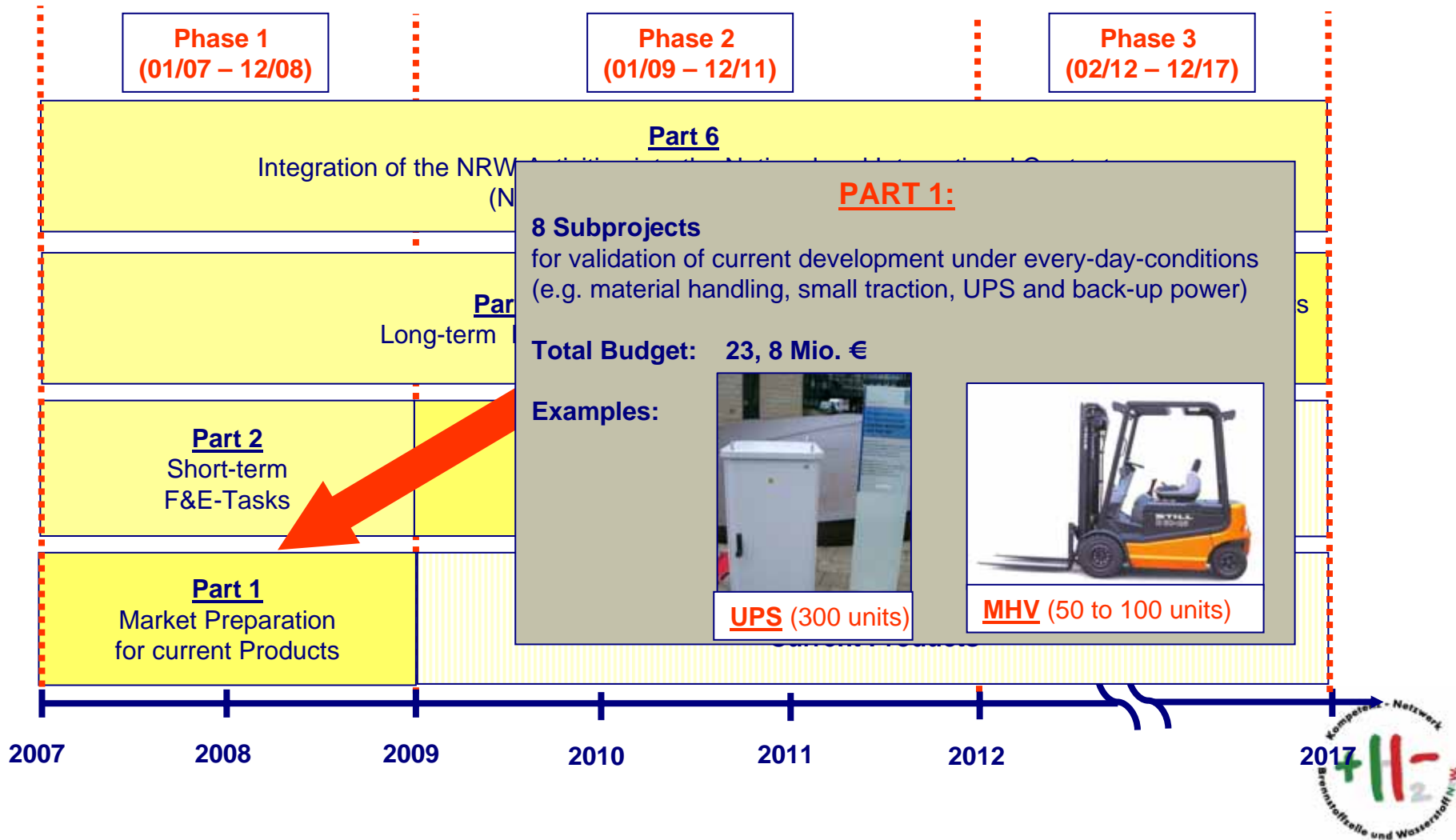
EHA  
EUROPEAN HYDROGEN ASSOCIATION

*See you 2010 in Germany,  
please mark your calendar!*

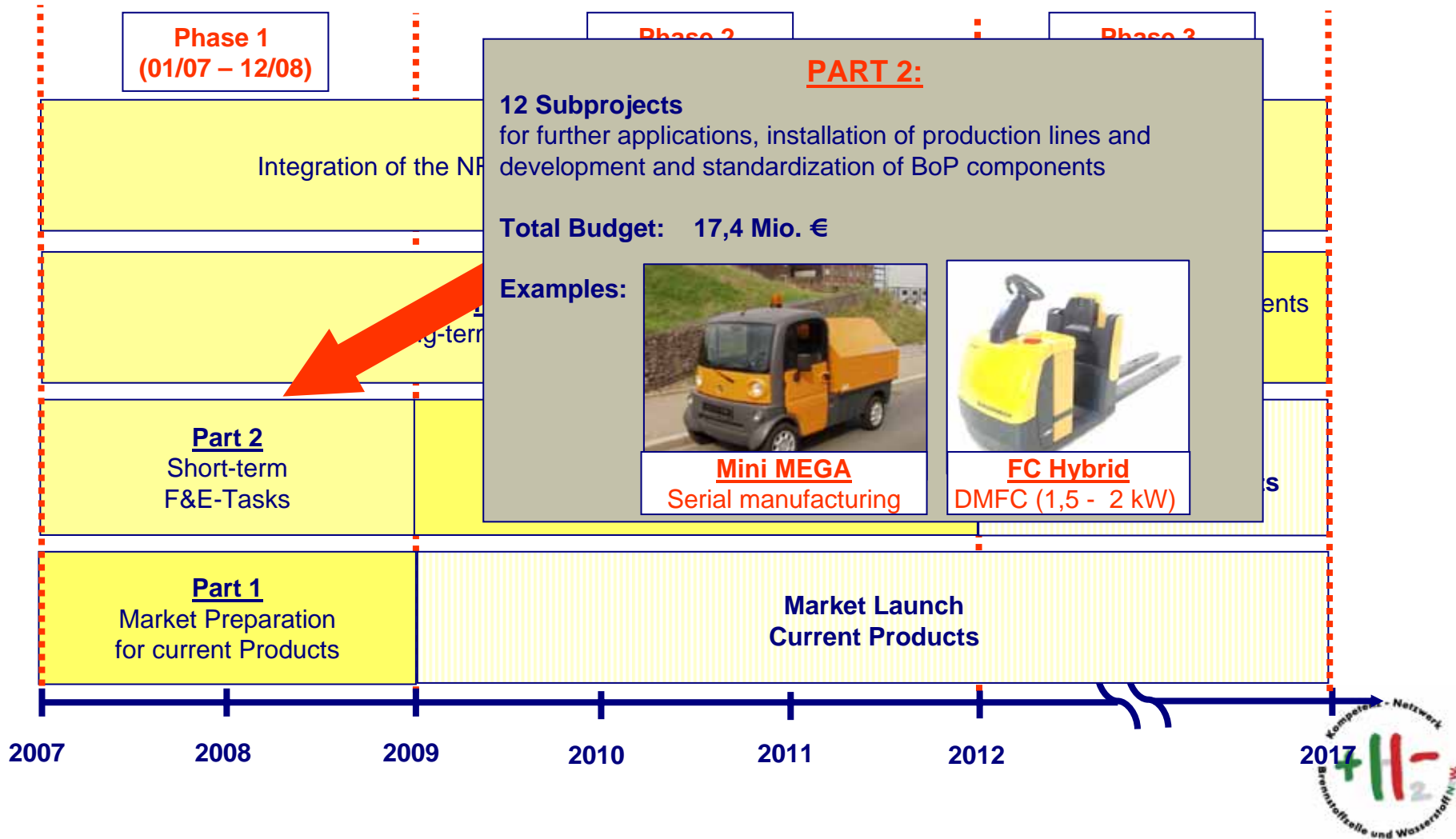
**NRW Contribution to the German National Innovation Programme H2 and FC**

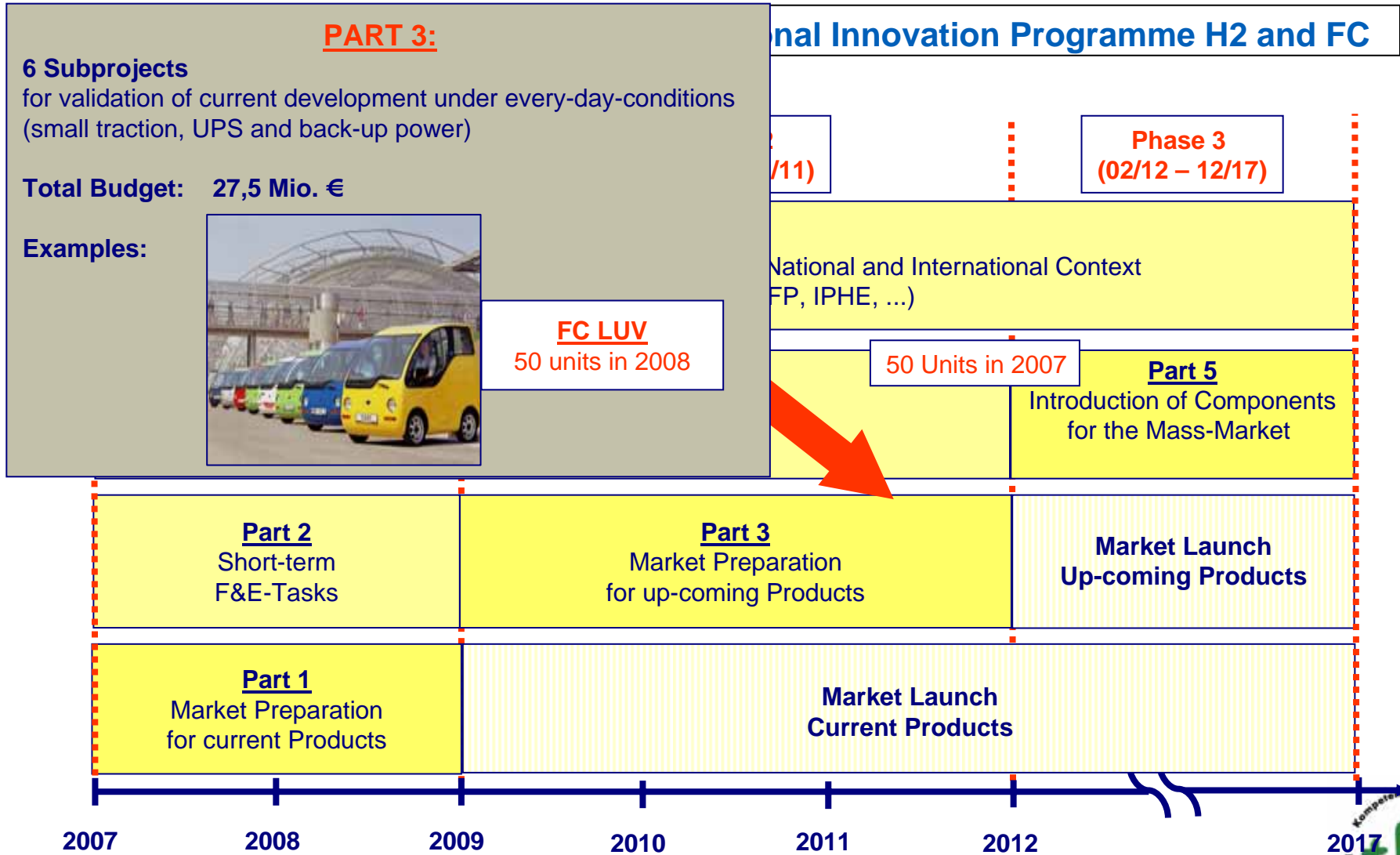


**NRW Contribution to the German National Innovation Programme H2 and FC**



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