



Presentation

Industry Grouping of the European Fuel Cell and Hydrogen Joint Technology Initiative

Brussel, March 23rd 2010

Agenda

- The JTI on Fuels Cells and Hydrogen
- Commercialisation plans
- How can Europe help?

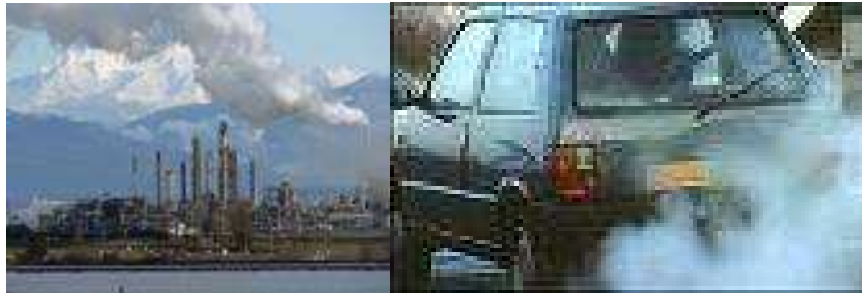
Context: EU Energy targets

- By 2020 – three 20's:
 - 20% reduction in GHG emissions
 - 20% reduction in global primary energy consumption
 - 20% share of renewable energy within total consumption, with 10% share in transport
- By 2050: 80% reduction of GHG in industrially developed countries – G8 in Aquila Italy

A critical challenge...

2010

- From 80% dependency on fossil fuels



2050

- To 80% reduction in GHG emissions in 40 years



1. A reinvention of our energy system
2. A need to move to a low carbon economy
3. Technology and the efficient use of resources are essential for this

Fuel cell and hydrogen technologies

- Contribute to tackling the challenges
 - Efficient energy conversion using fuel cells reduces in a range of applications the consumption
 - Hydrogen as a storage medium allows us to manage the use of renewables
 - In short, the technology helps to
 - › Improve Energy Efficiency
 - › Diversify Energy sources
 - › Reduce GHG
 - › Create jobs



Joint Technology Initiative: what does it?

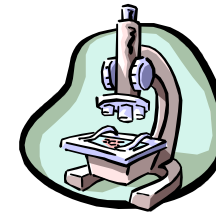
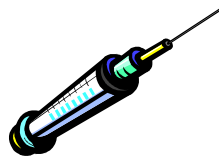
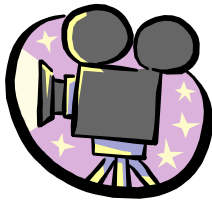
- To allow for a consistent execution of long-term strategy
- To ensure that the jointly defined research, development and commercialisation programs will better match industry's needs and expectations
- To scale-up and intensify the link between Industry and Research Community by complementing programs and resources



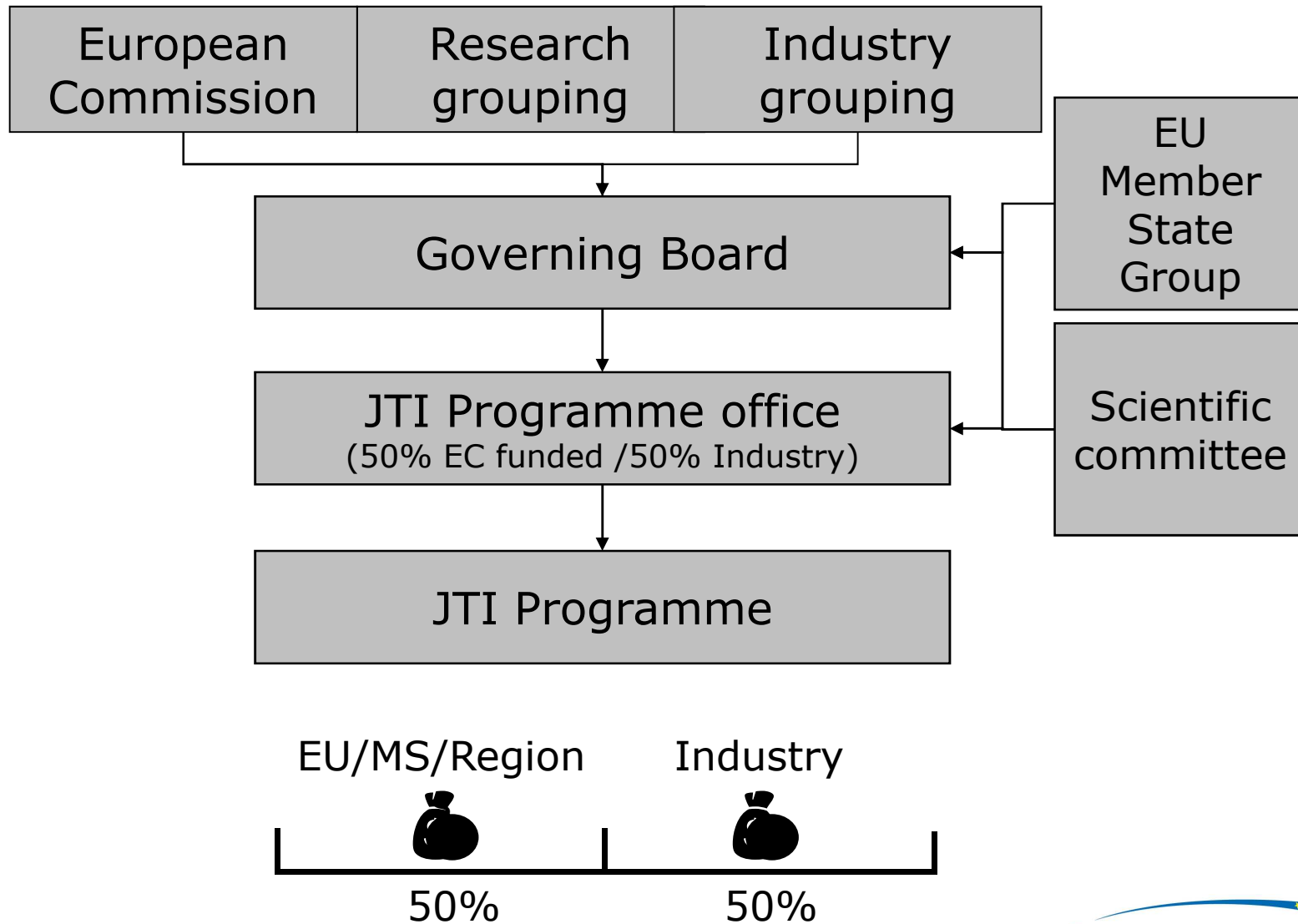
To facilitate collaboration

There are currently six JTIs ...

• Name	•GMES	•Clean Sky	•IMI	•NEW?	•ENIAC	•Artemis
•Type	•Monitoring envir. and security systems	•Clean air transport	•Innovative medicines	•Fuel cells and hydrogen	•Nano electronics	•Embedded computing systems
•Public funding (EUR)	•2.3 B	•1.6 B	•1B	•0.47B	• 0.45B	•0.42B
•Start	•2009	•Feb 2008	• Feb 2008	•May 2008	• Feb 2008	•Feb 2008



Organisation of the fuel cell and hydrogen JTI



Agenda

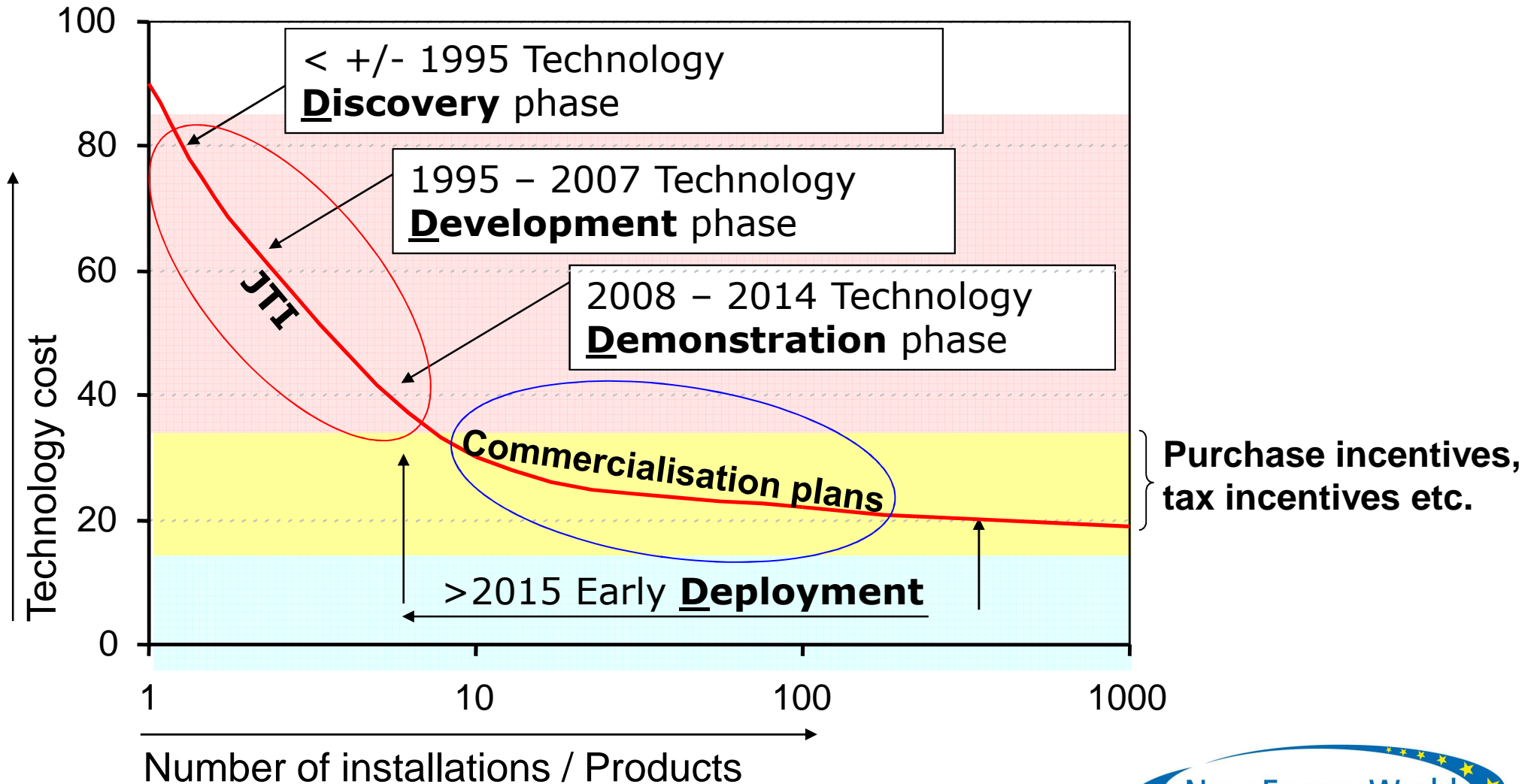
- The JTI on Fuels Cells and Hydrogen

- Commercialisation plans

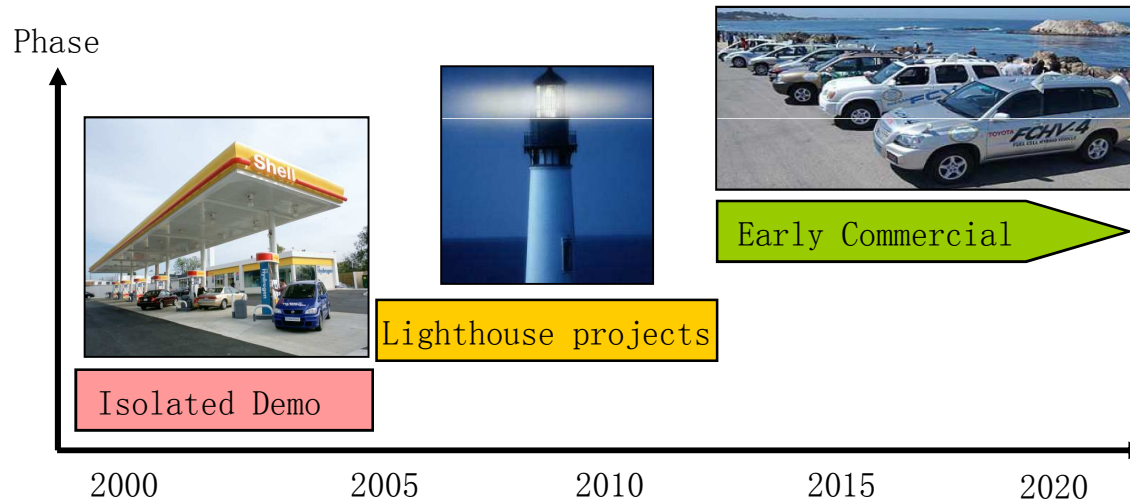
- How can Europe help?

Where do fuel cells and hydrogen sit in the four "D" model?

Generic Technology development curve for Fuel Cells



How to expand hydrogen infrastructure?



- 'Bridge the Gap'.
- Fleets of >100 vehicles.
- Networks of 4-6 integrated sites.
- Focus on urbanised markets.
- Partnership with government/ind.

Isolated demonstrations:

- Learning & Awareness
- Operations & Safety

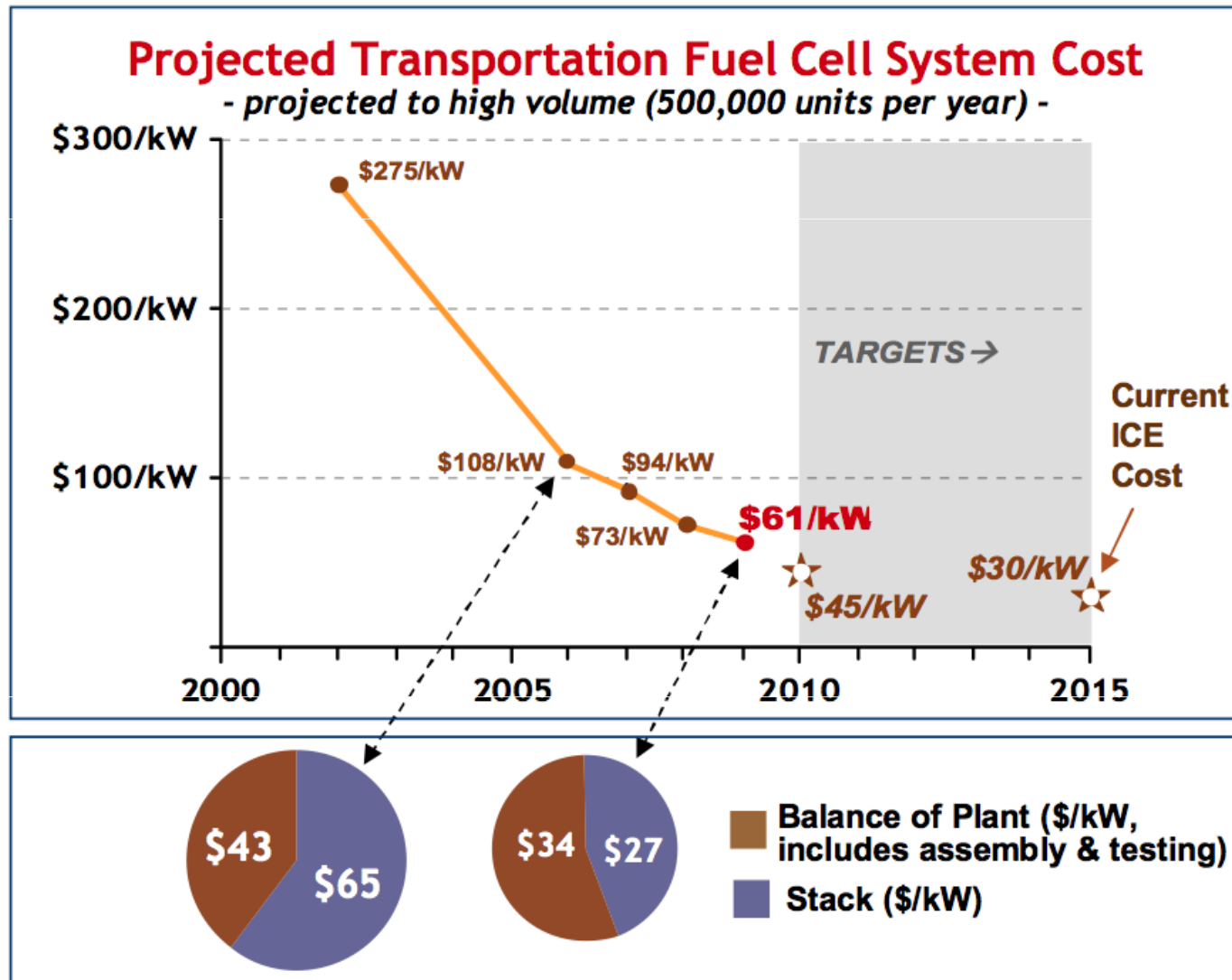
Lighthouse projects:

- Proof of concepts
- Basis for expansion
- Coordinated Approach

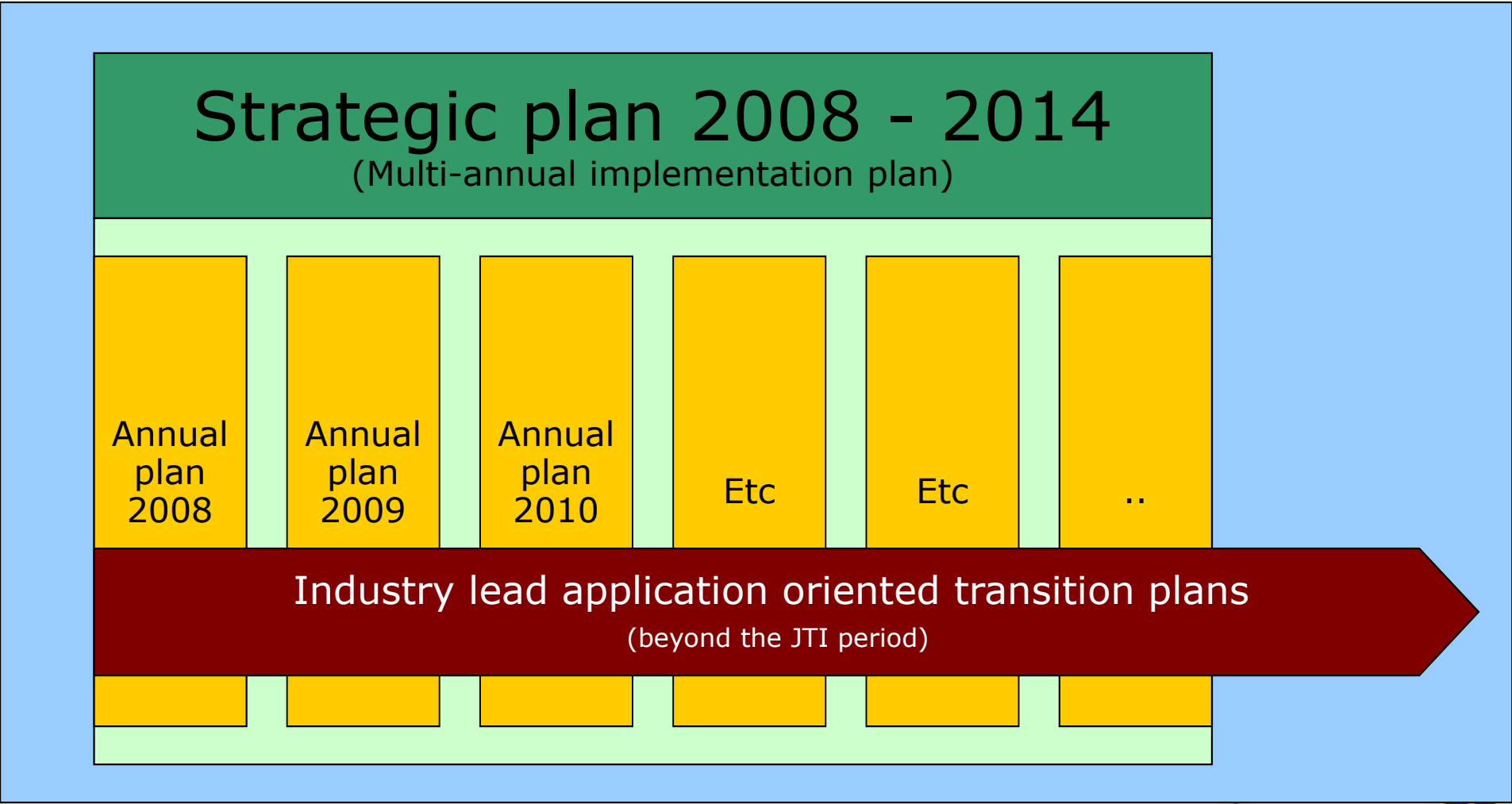
Early commercial:

- Commercial roll-out
- Public-Private Partnerships

Recent DOE estimates show a much improved outlook for the cost per KW of fuel cells



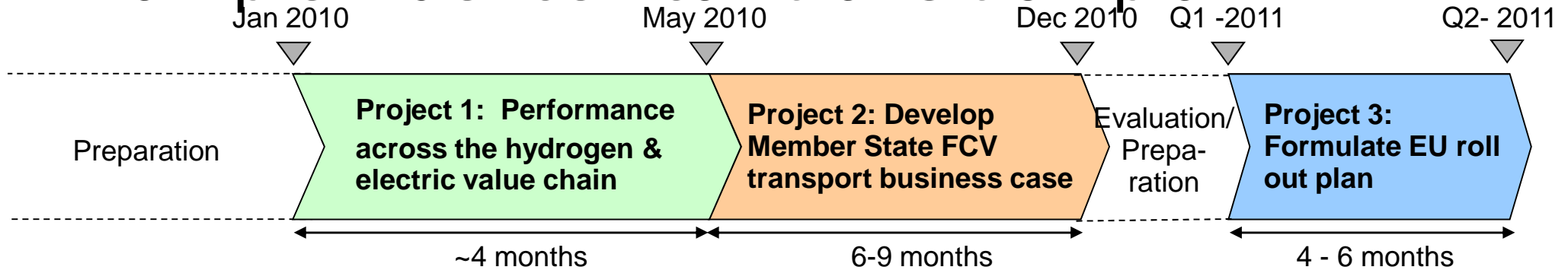
Therefore, the JTI has launched application oriented transition plans



Status of industry developed transition plans

	1st draft presented	Plan agreed	Coalition created	Start of first phase	Comments
• FC cars and infrastructure	✓	✓	✓	✓	• First project with global strategy consultant started
• FC Busses and infrastructure	✓	✓			• Plan presented on Jan 27 th , agreed with Hyramp
• Forklifts and infrastructure	✓				• Plan presented to the NEW IG Board
• Stationary applications					• Update expected end of February
• Other applications possible					

Example: fuel cell car transition plan



Process

- Companies validate basic data on current and future cost and performance of BEVs, PHEVs, and FCVs by segment
- Regular steering committees and workshops
- Led by external consultant
- Companies do the analysis for major parts of the work and jointly build business case
- Chaired and managed by NOW, with help of external consultant
- Open to new comers
- Strong involvement MS, EC and EU bodies (JTI)
- Joint process of developing insights and recommendations
- Led by consortium, facilitated by external consultant

Deliverable

- Fact based report on H₂ performance along value chain, authored by coalition and/or consultant
- To plan commercialisation and adjust R&D agenda
- Business plan, FC vehicle and infrastructure roll out plan, incentive schemes, JV set up
- Report with H₂ business case for EU, EU roadmap, and funding requirements



= private funding



= private + Member State funding



= private + JTI funding

Fuel cell car coalition status

Study participants	Europe	US	Asia
Car OEMs	2	1	4
Oil companies	5	-	-
Gas companies	2	1	-
Utilities	2	-	-
Electrolyser companies	2	2	-
Other suppliers & equipment manufacturers	3	1	-
NGOs	1	-	-
Government	2	-	-
Total	19	5	4

Total = 28

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How can Europe help?

- Fuel cell vehicles, busses, forklifts, scooters are ready to go to market and should be an integral part of the Clean and Energy efficient Vehicle Strategy of Europe
- Fuel cell vehicles are anticipated to be commercially rolled out by 2015. They will contribute to reducing CO2 only a few years after electric vehicles have become available
- Hydrogen refueling infrastructure is not set up due to a “*market failure in the classic economic theory sense*”. The JTI would like to work with the MS and the Commission to address this with a good set of policy measures
- As concrete next step, the German National Innovation Program (NOW) will invite the German government the German regions, DG Move and DG Industry to participate in a study to look into policy measures and funding mechanisms for hydrogen infrastructure

Thank you for your attention