



France Update on Hydrogen and Fuel Cells Activities

Bernard.Frois@cea.fr



Hydrogen in France 60 mo/y R&D

- Health and Pollution
- Decarbonate Economy
- Integrates Renewable Energies:
storage
- Energy Security
- Create Jobs
- Create a competitive Industry

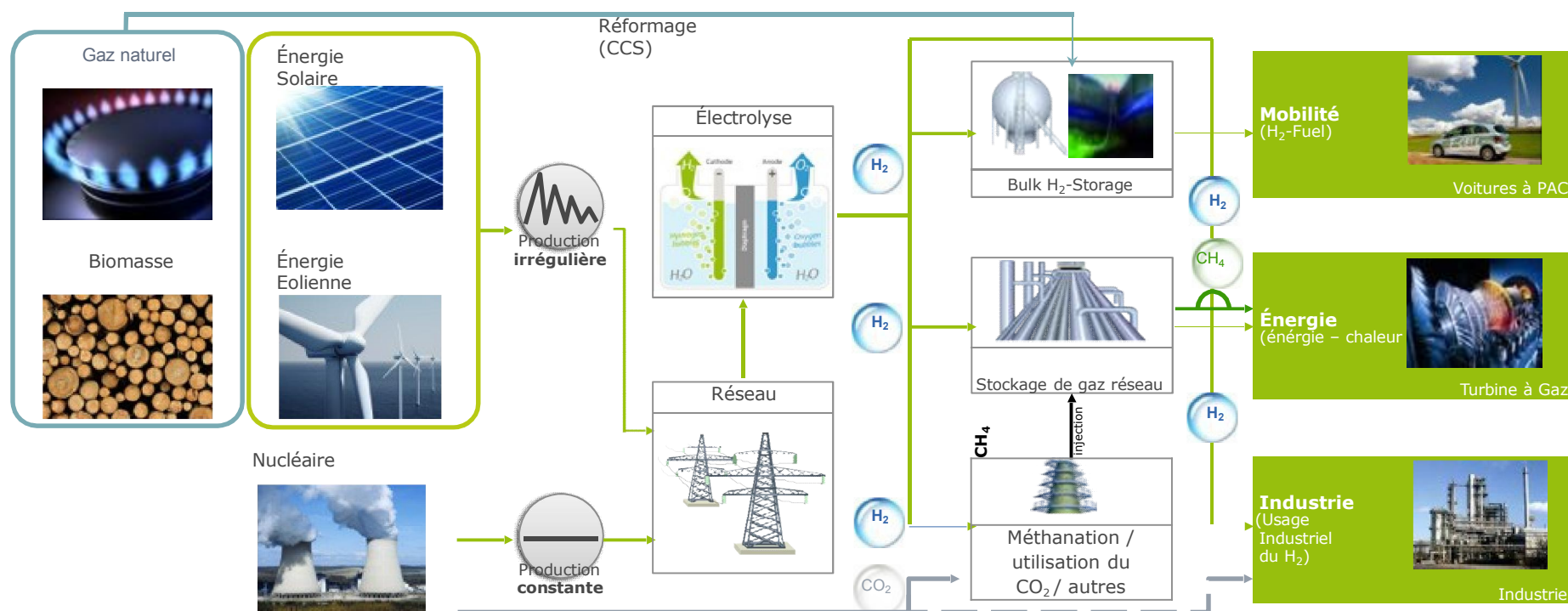
December 2014

A full report on FCH
activities in France
prepared by
AFHYPAC

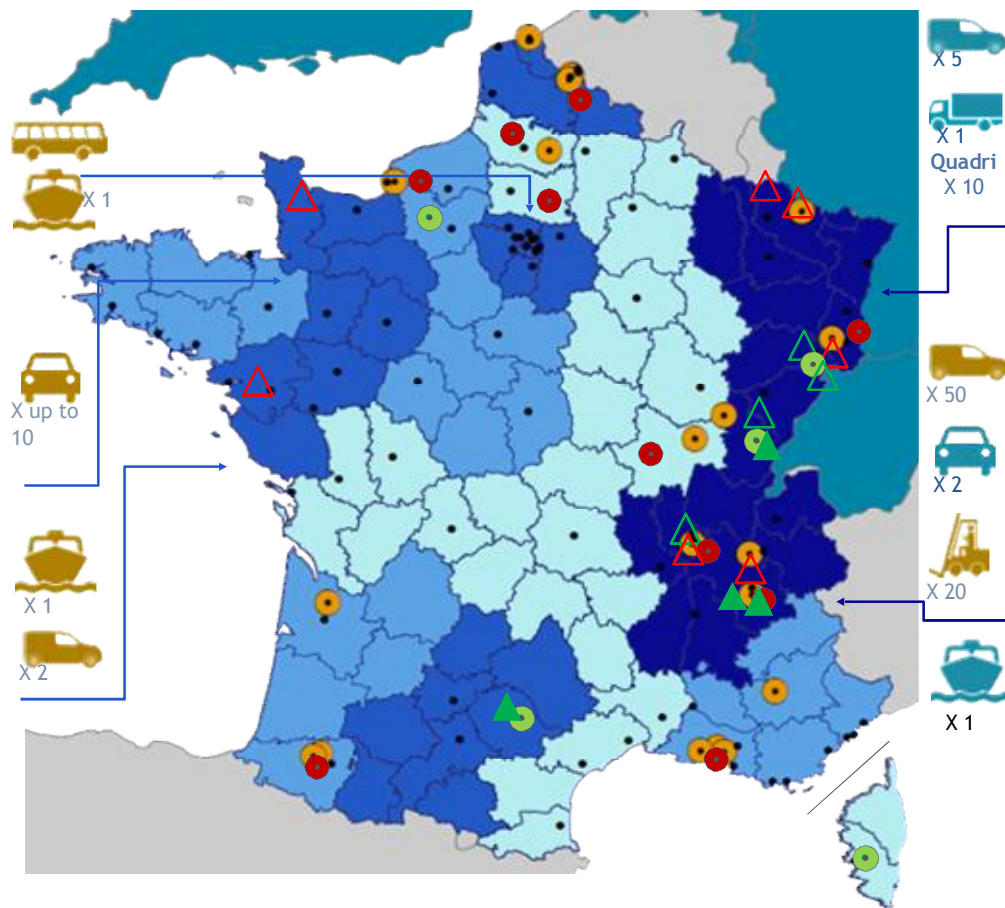
France has voted to
accept the EU
directive on
alternative fuels
and infrastructure



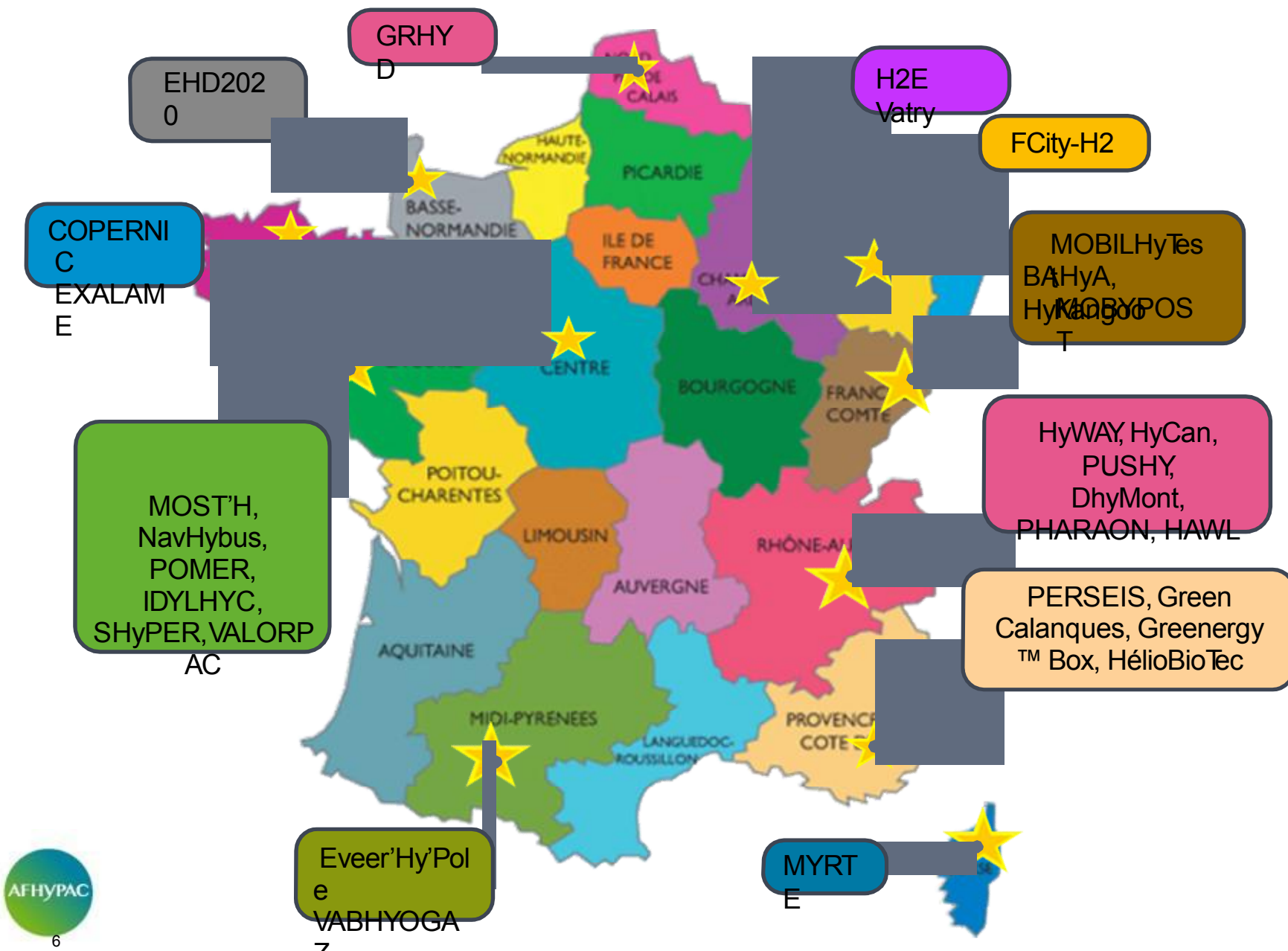
A new energy vision in France



Important developments in Regions



A major importance of Regions



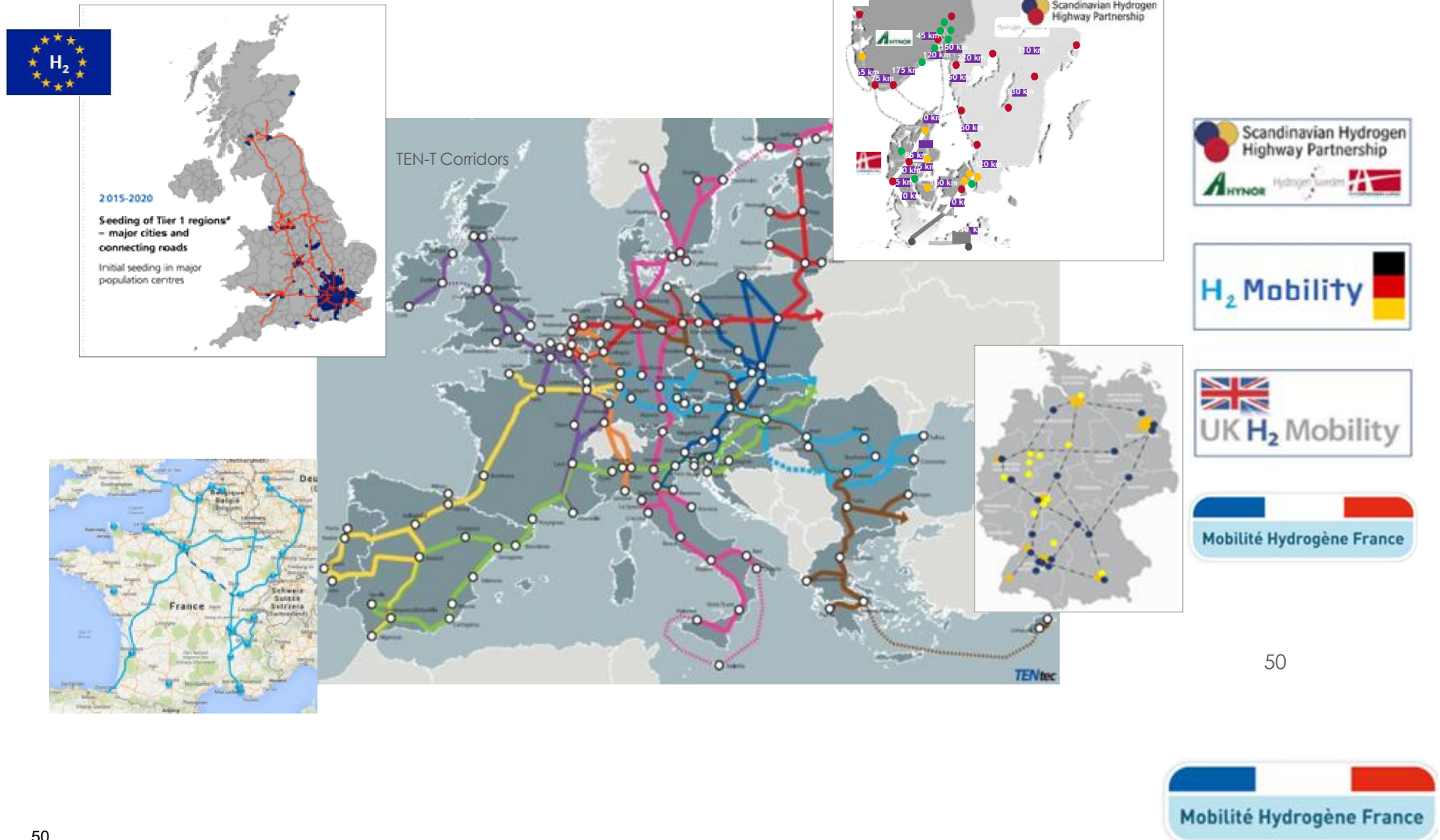
Transport Strategy



- National Implementation Plan
- Hydrogen Mobility FR
- Developed with EU (HIT + FCH-JU)
- Captive Fleets (Range extenders and Full Power)

Gouvernement	
Entreprises de l'énergie	
Producteurs d'hydrogène et stations	
Véhicules et systèmes pile à combustible	
Electrolyseurs	
Centres de Recherche	
Associations régionales-et-pôles	
Associations européennes et françaises	

EU coordinated deployment plan

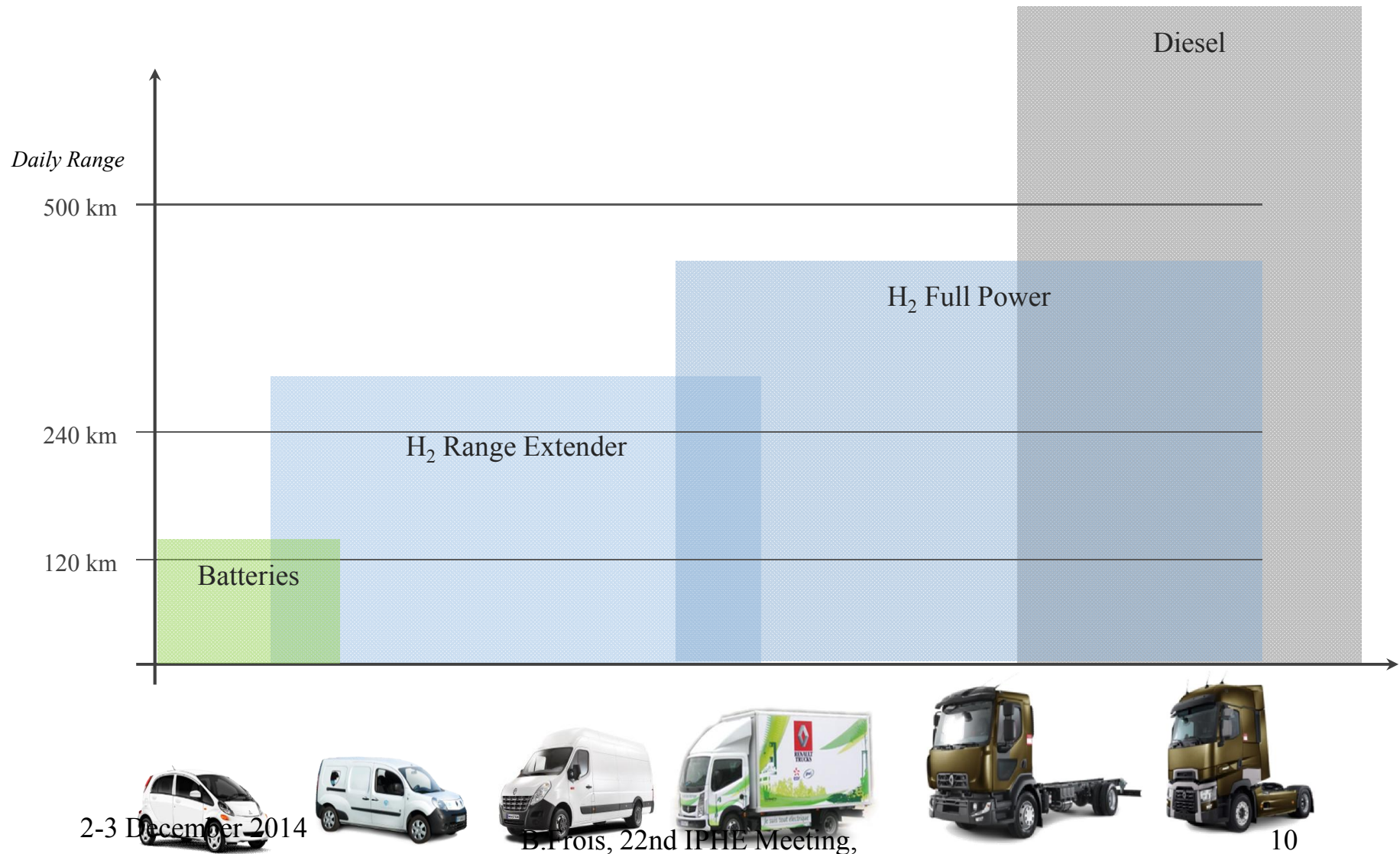


2014 – 2020

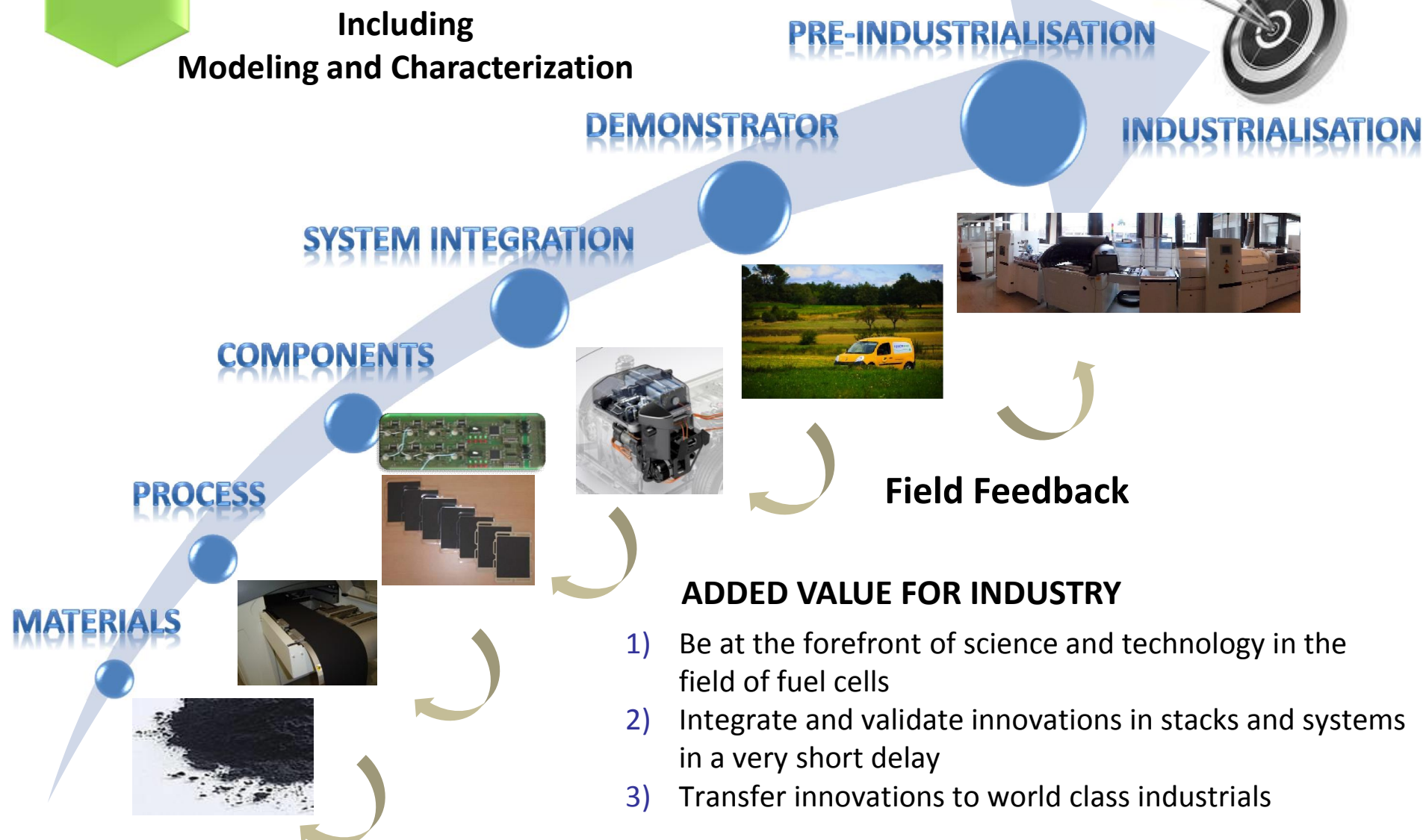
- Customers identified
- 500-700 light commercial vehicles
- 15 - 20 HRS
-



Symbio Fuel Cells Plan 2014-2020



R&D at all levels of the value chain



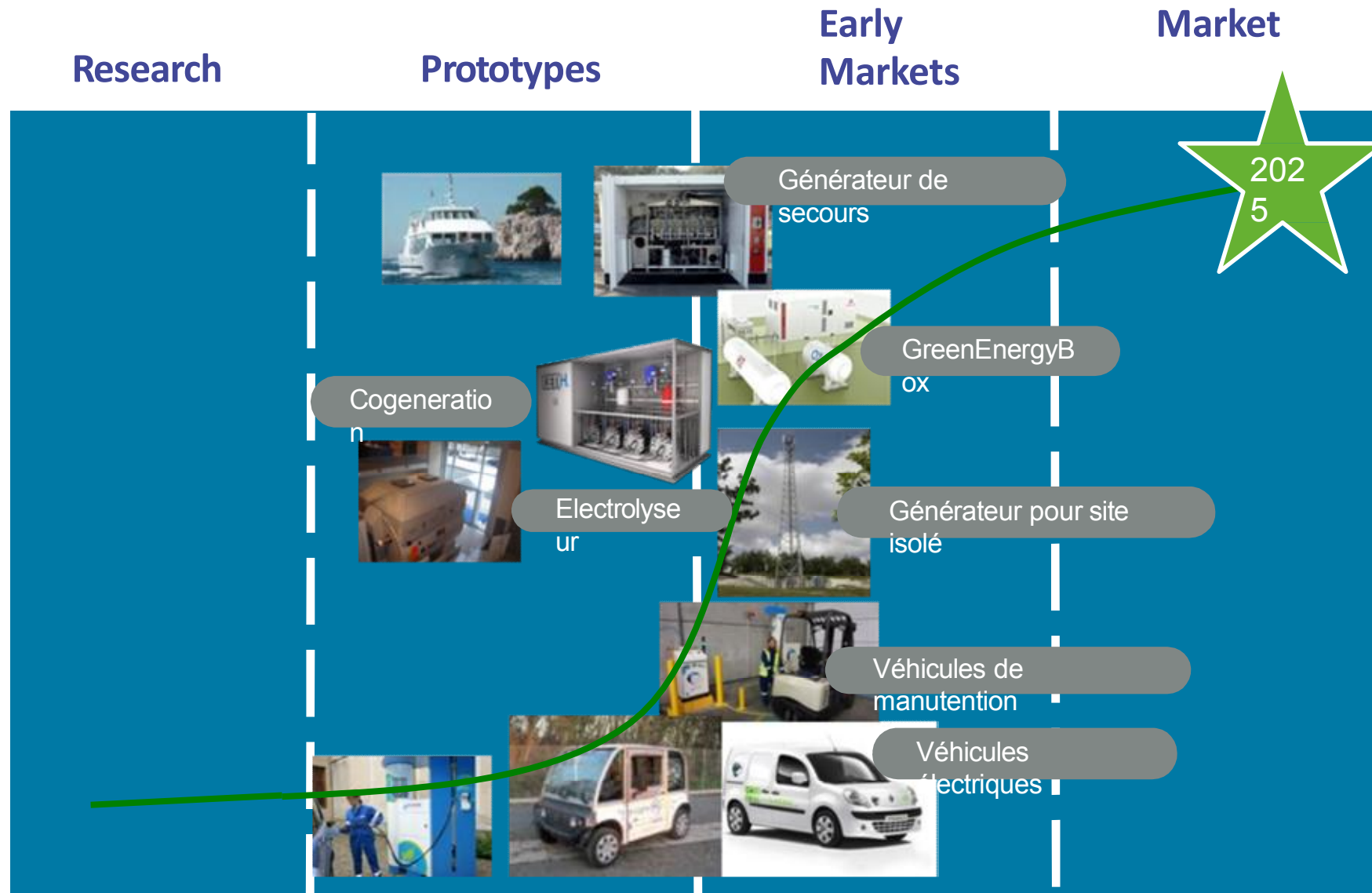


2-3 December 2014

B.Frois, 22nd IPHE Meeting,

12

French Deployment Plan



Project H2E



7 years (2008-2014) leader Air Liquide

Budget : 200 M€, 68 M€ Public (BPI France)

19 partners, (5 in Rhône-Alpes: Air Liquide, HyPulsion, Axane, CEA, LMOPS)

Demonstrations :

- Decentralized Power for Telecom:
- Forklifts

Examples of Demonstration projects funded by ADEME



Forklifts IKEA



La Poste : 3 vehicles, Renault Kangoo ZE with Symbio Range Extender H2



Hythane® bus fleet in Dunkerque GRHYD



Hybrid boat shuttle in Nantes,

2-3 December

B.Frois, 22nd IPHE

Project HYWAY



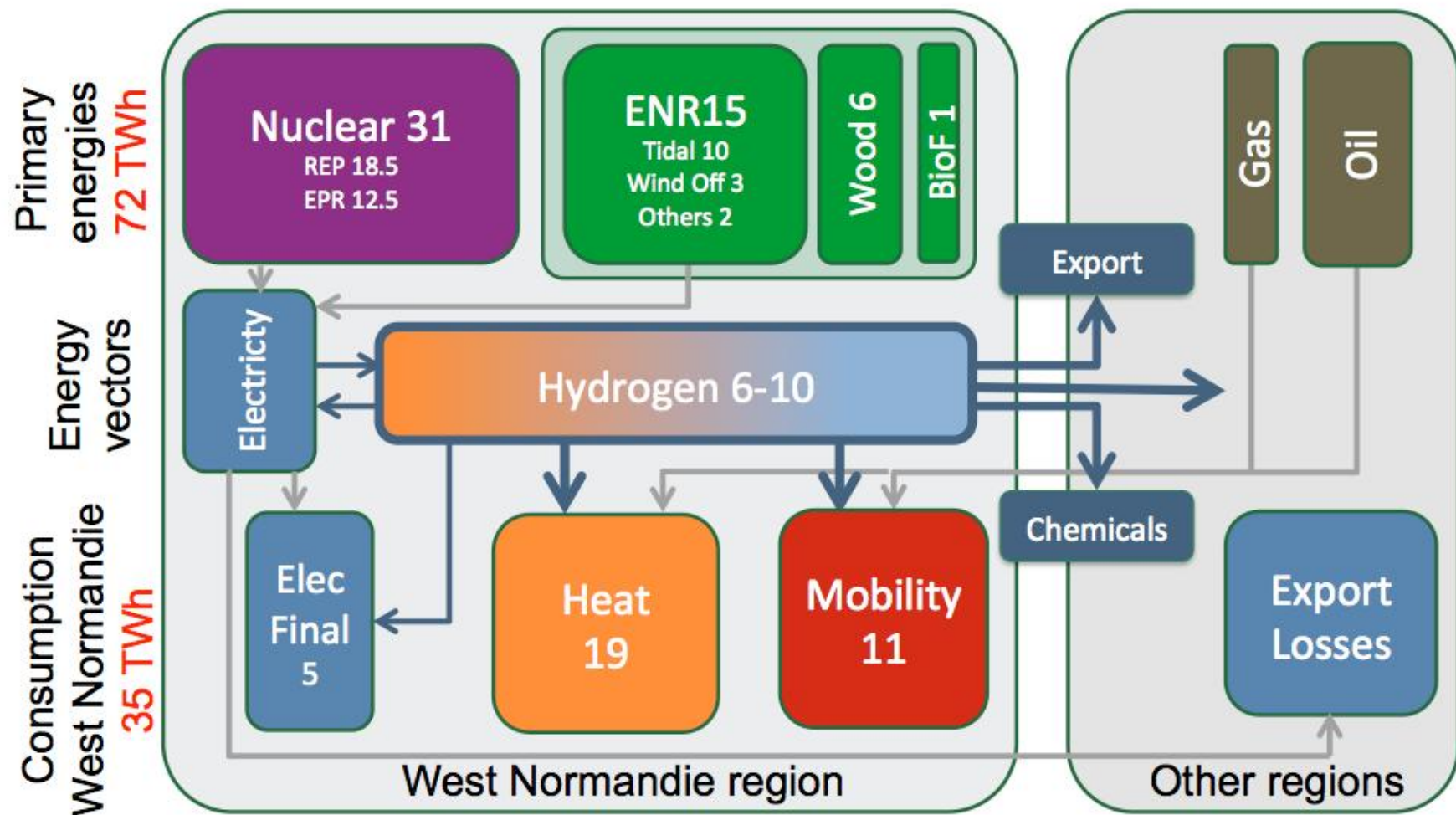
Light commercial vehicles

50 vehicles in the region of Lyon et Grenoble,

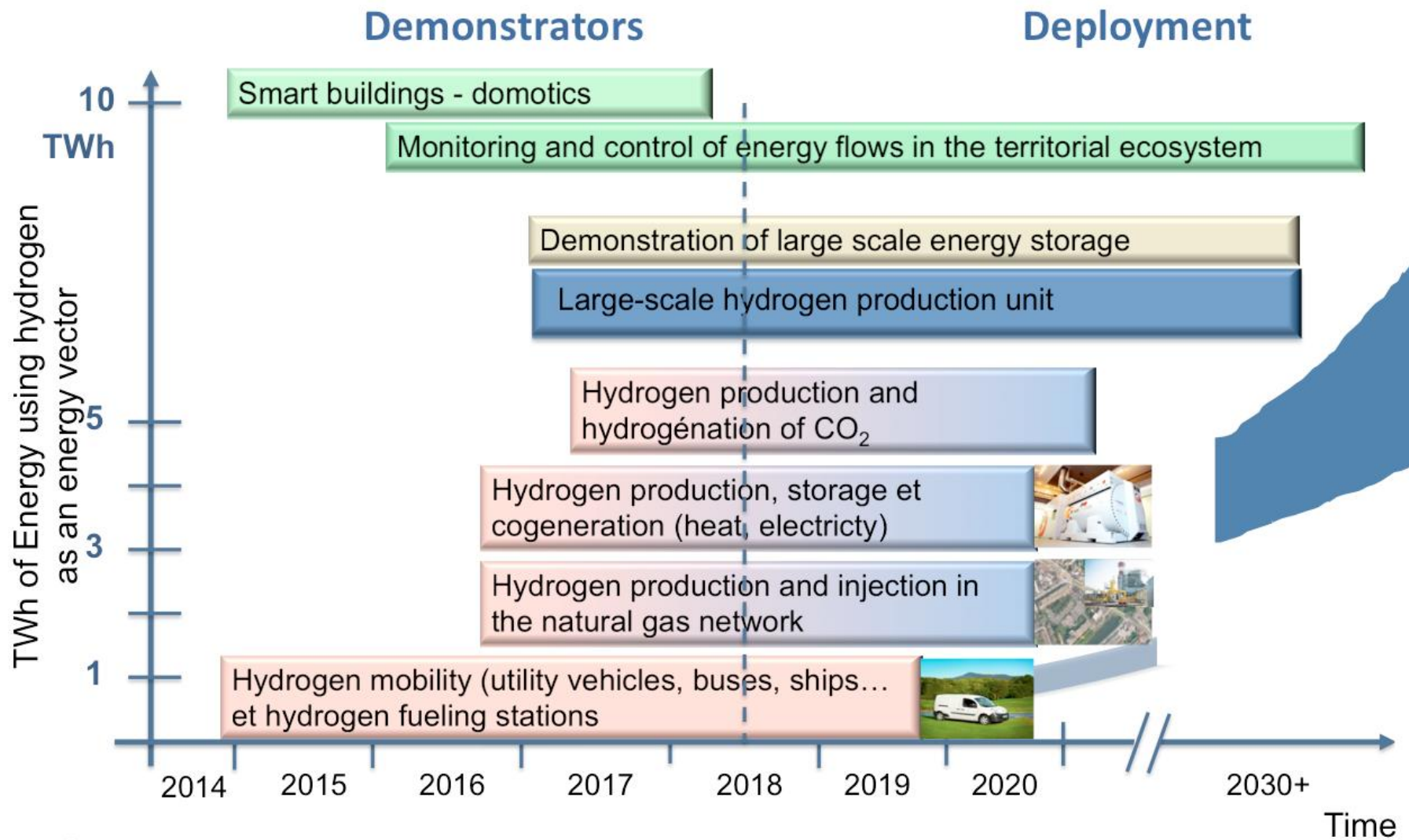
Targets:

- ❖ Launch industrial production of components
- ❖ Validation of business model using captive fleets (HRS + Vehicles)





Energy balance and energy flow in West Normandie Region 2030



West Normandie planning . Demonstrations and deployment

2-3 December 2014

B.Frois, 22nd IPHE Meeting,

18

GDF SUEZ R&D Power to gas GRHYD

GRHYD « Power to Gas » project introduces hydrogen as a flexible solution to store, transport and valorize intermittent renewable energies through « green » natural gas

- ❑ Sustainable Hydrogen production and injection into the gas grid
- ❑ Use of the mixture in final appliances (stationnary and Hythane® fuel)

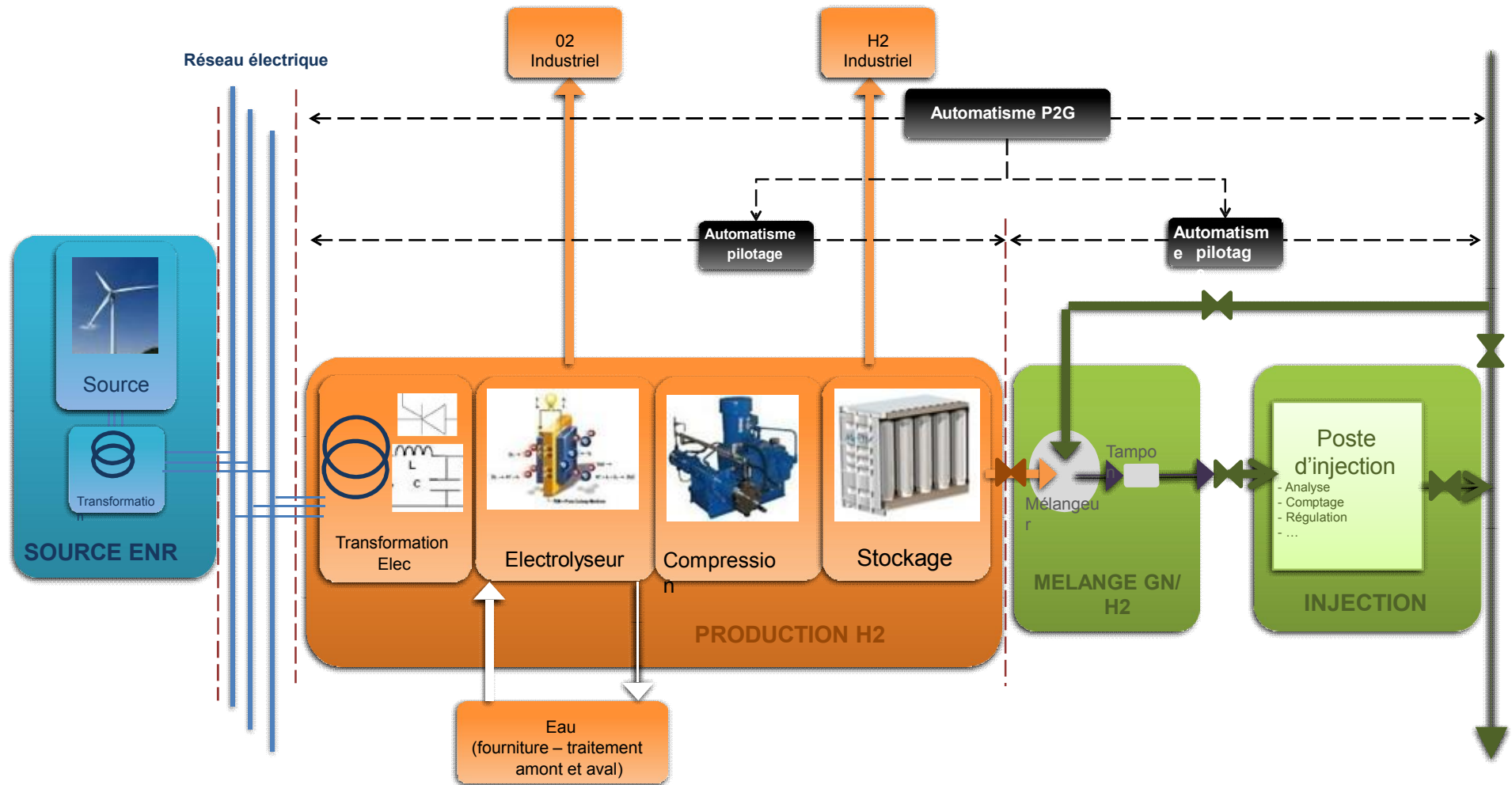
French Program for future Investments 12 Partners representing the value chain



2-3 December
2014

B.Frois, 22nd IPHE Meeting,

GRT GAZ Demonstration Project





France Country Update

IPHE is important

- IPHE continues to be the only world wide forum on FCH
- IPHE needs increased visibility
- Integrating workshops as a public event of the IPHE meeting would have more impact
- Stakeholders should be integrated in IPHE activities
- Many good signs encourage increased efforts at policy level
- A ministerial IPHE conference in 2015 would be welcome