Program Review Days
FCH JU 2014
Portfolio Transport Demonstration Projects

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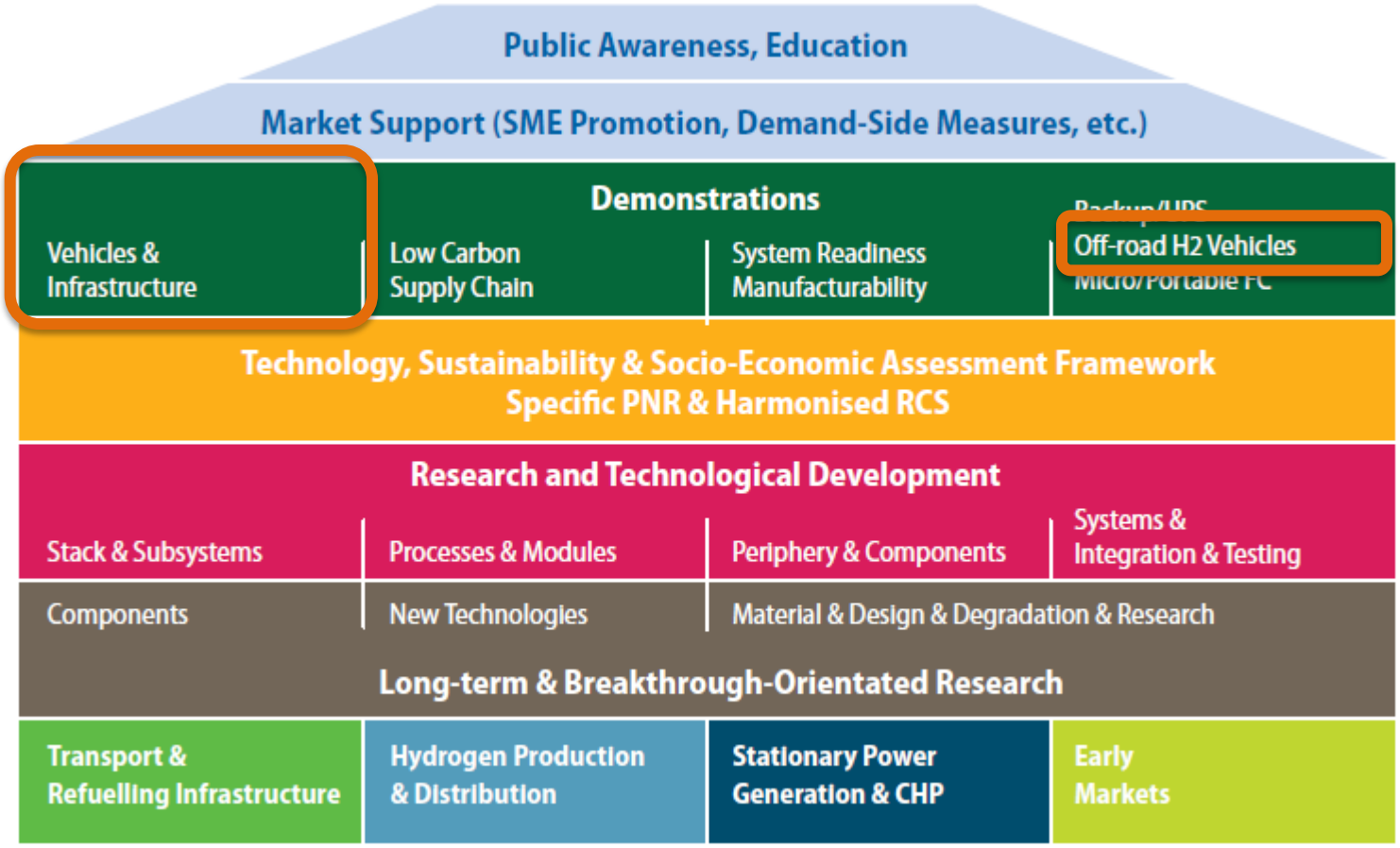
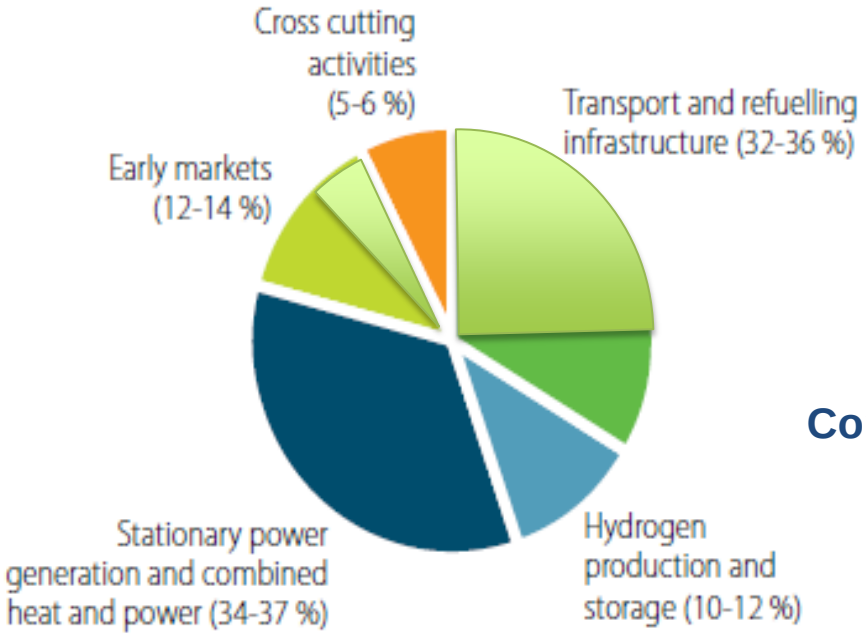
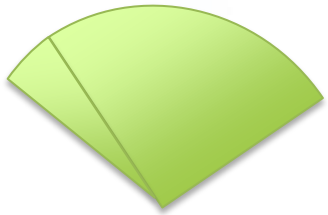
Enrique Girón, Project Manager

Multi-Annual Implementation Plan 2008 - 2013



MAIP objectives
Budget distribution



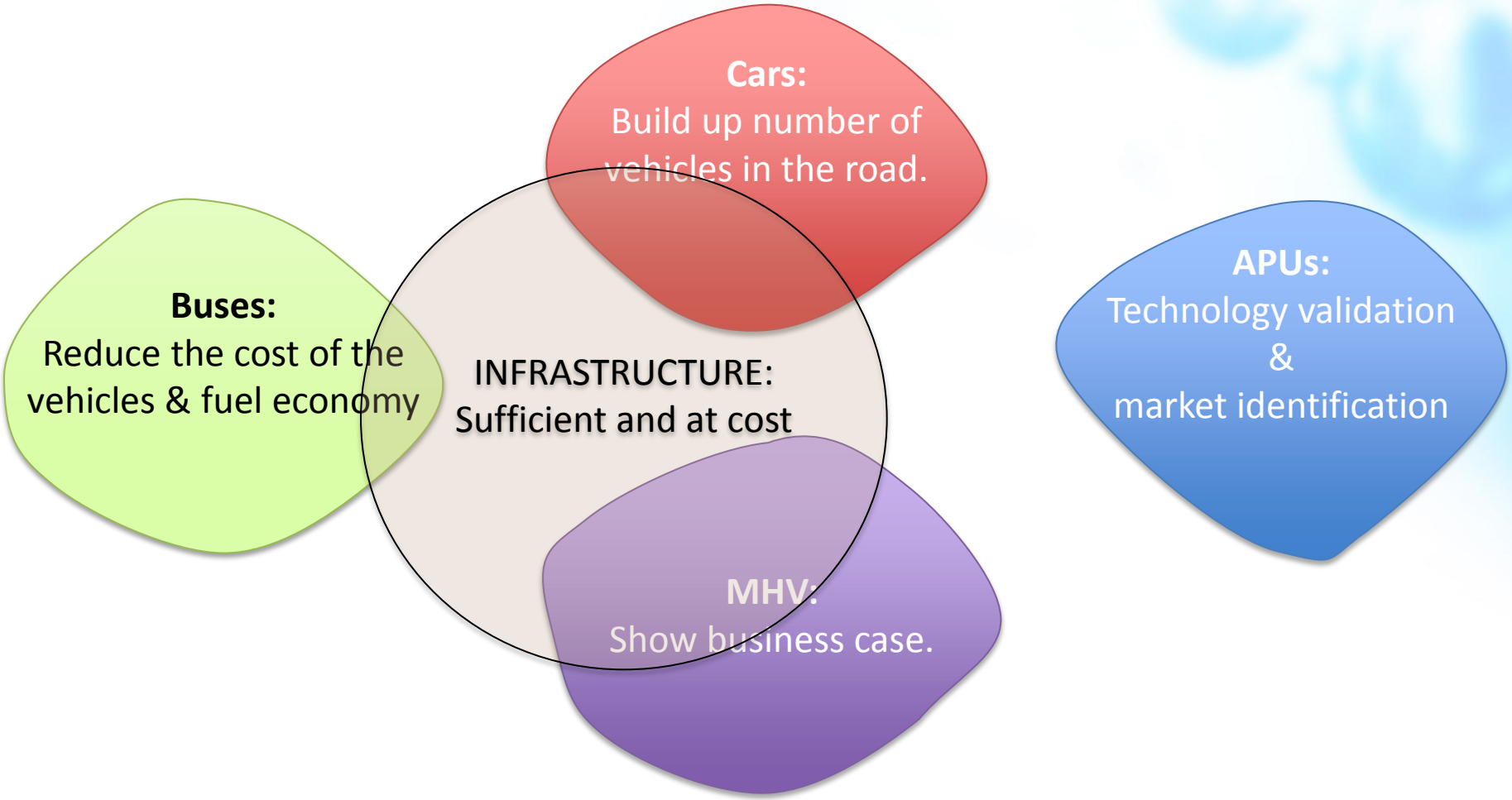


Combined expected budget of 120M€

MAIP objectives
Technical objectives

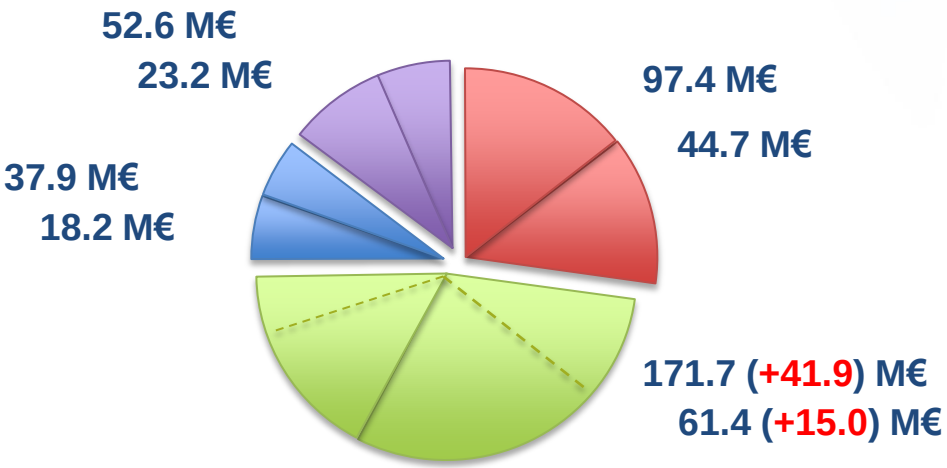
Market application		2010 baseline	2015 mid-term	2020 long-term
Cars:	Vehicle PEM-FC System	>100 / 0.5M€ >1,000€/kW	>5,000 / <50k€ 100€/kW	500,000 /<30k€ 50€/kW
Busses:	Vehicle PEM-FC System	>10 / 2M€ >3,500€/kW	500 / <1M€ <3,500€/kW	1,000 / <500k€ <400€/kW
Hydrogen refuelling stations		<75 / 1 - 3 M€ (depending on size of filling station)	<300 / 0.6 - 2.5 M€ (depending on size of filling station)	>2000 / 0.6 - 1.6M€ (depending on size of filling station)
APU's	for truck applications (5kW)	3,000€	1,000€	500€
	for aircraft applications (20-120kW)	Lab test units only	flight validation supply	early operation (hundreds) / 500 €/kW
	for maritime applications (50-500 kW)	single demonstrations	some tens / 3000-4000 €/kW	hundreds / <2000 €/kW
Heavy duty material handling vehicles		*<50 units | <3,500€/kW fuel cell system*	*>1,500 units | <1,500€/kW fuel cell system Anticipating supported deployment from 2013+*	*>20,000 units | <1,000€/kW fuel cell system Anticipating commercial introduction beyond 2015+*

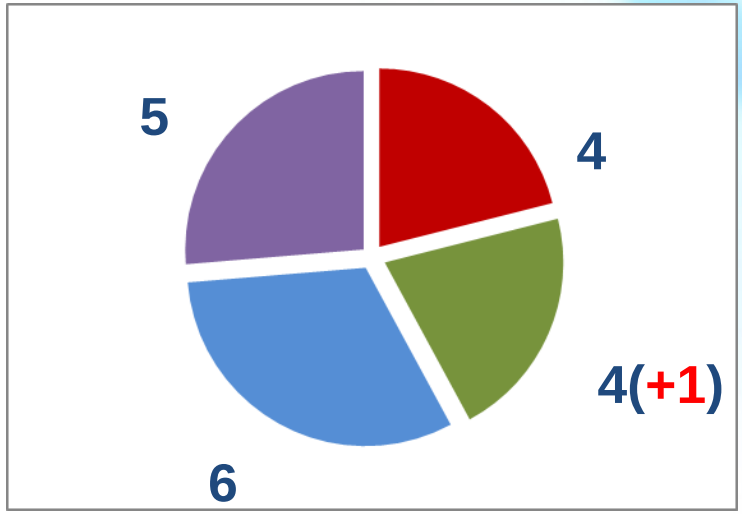
MAIP objectives



MAIP Coverage

- **Budget distribution**
  - Combined financial contribution: 132.3M€(+15.0M€)
- **Projects and budget**

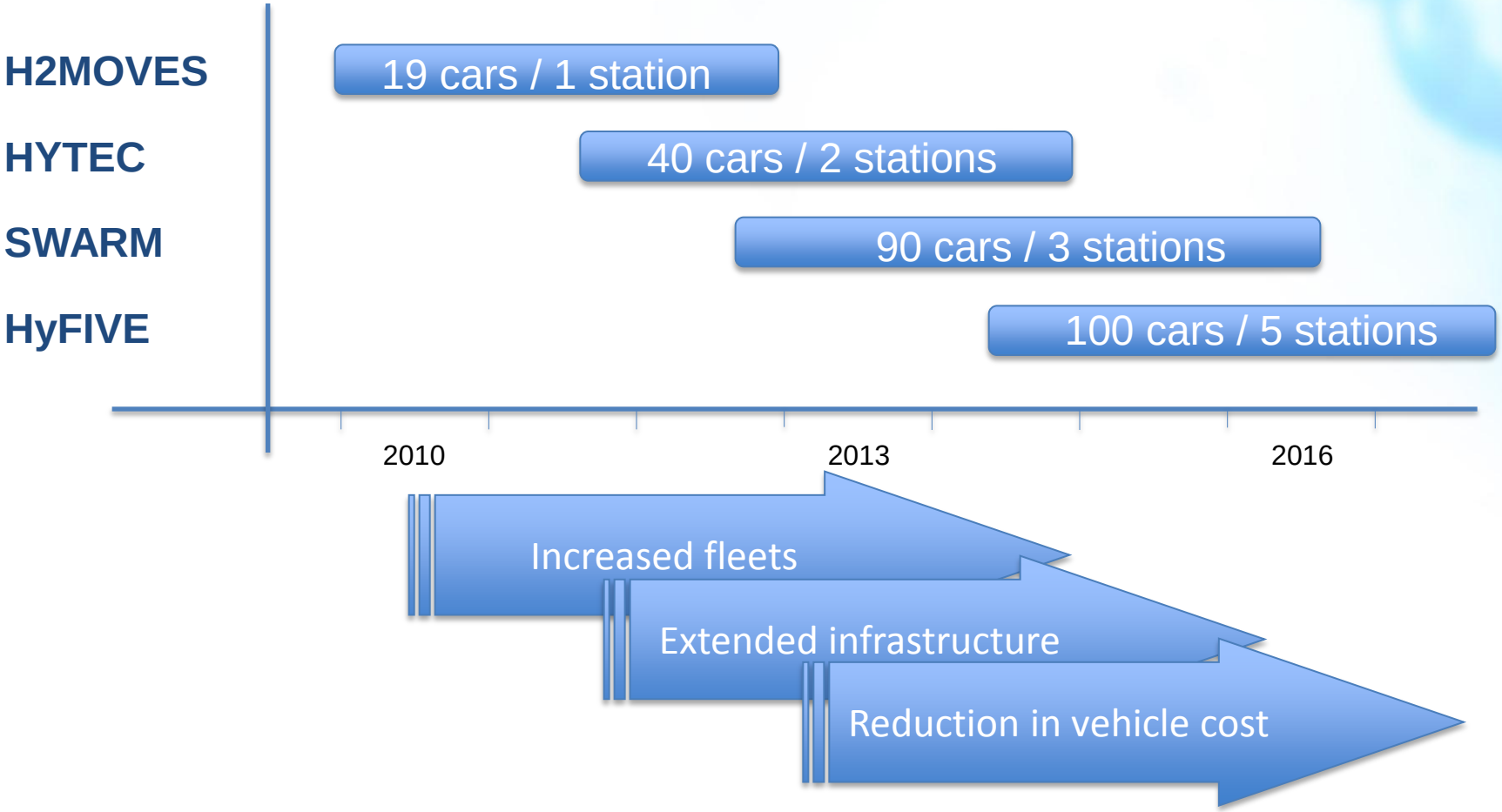




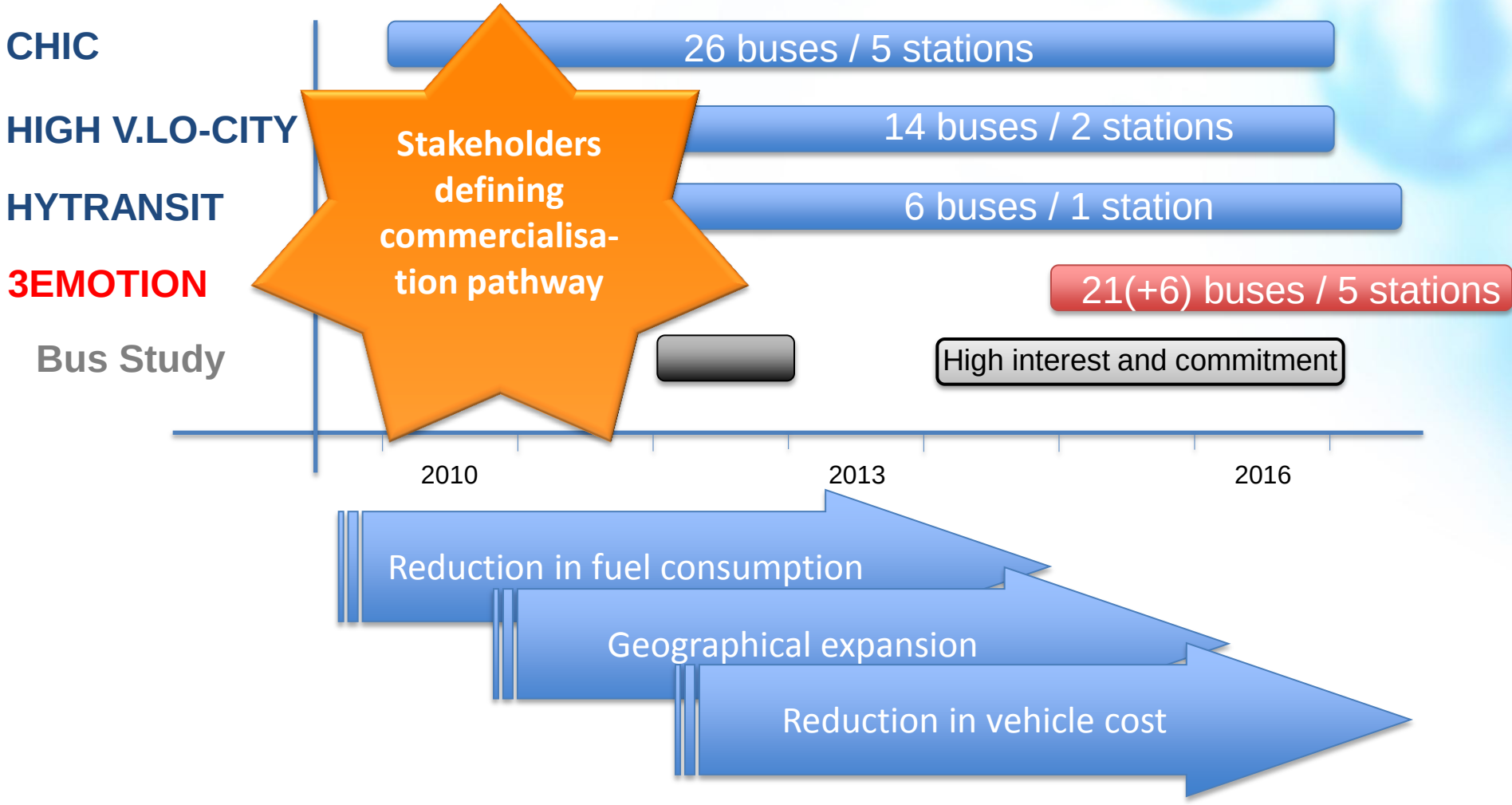
- **Main technical achievements**

>250 cars	>45 buses	>400 MHV	4 APU applications
>20 filling points			

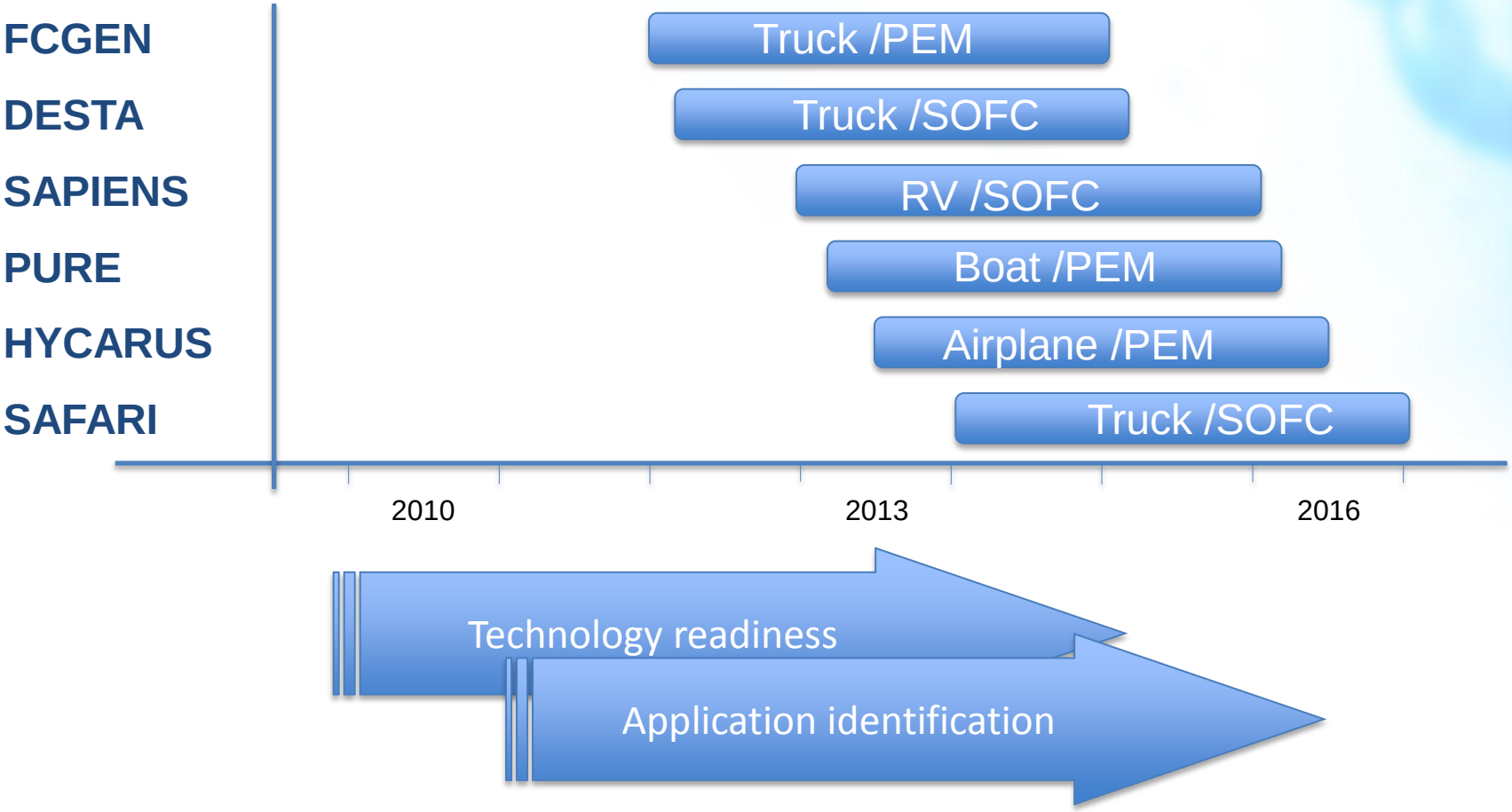
Achievements
Cars



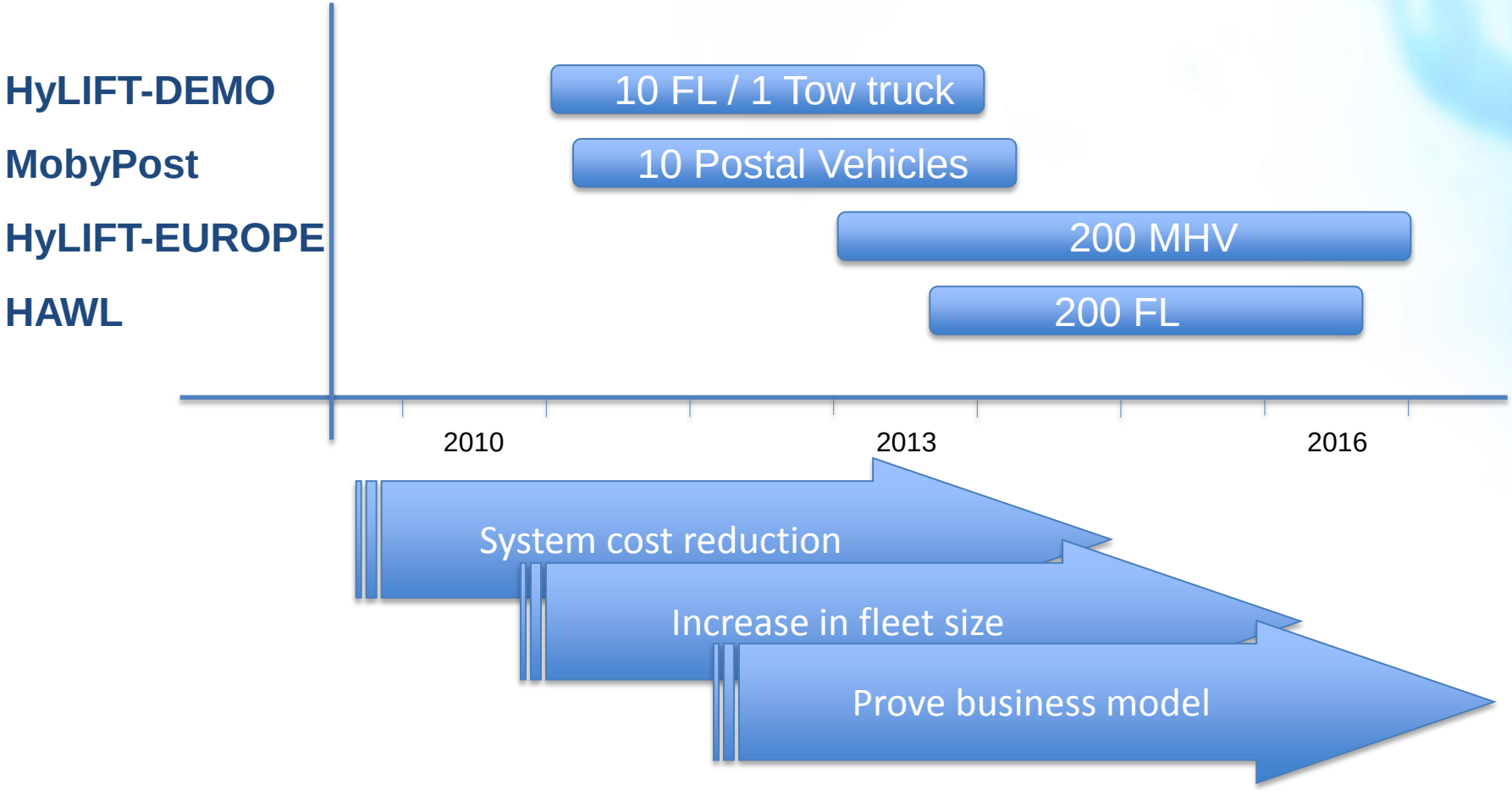
Achievements
Buses



Achievements APUs



Achievements MHVs



Multi-Annual Wroking Plan 2014 - 2020

Transport

- Road vehicles
- Non-road vehicles and machinery
- Refuelling infrastructure
- Maritime, rail and aviation applications

Energy

- Hydrogen production and distribution
- **Hydrogen storage** for renewable energy integration
- Fuel cells for power and combined heat & power generation

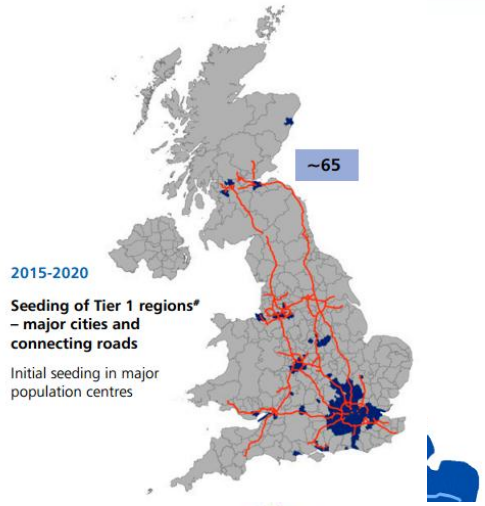
Cross-cutting Issues

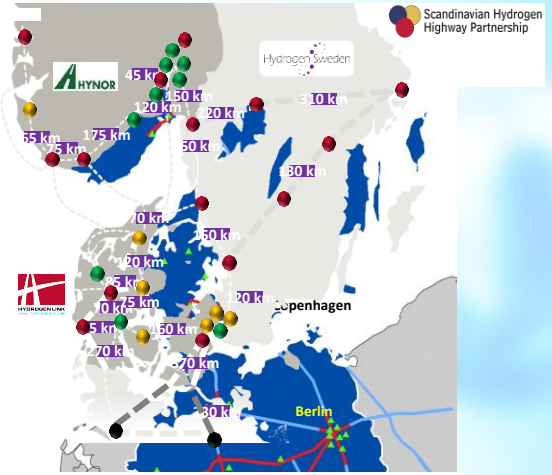
(e.g. standards, consumer awareness, manufacturing methods, …)

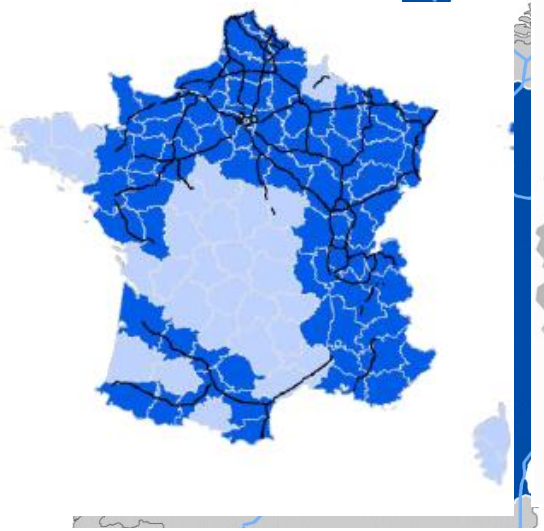
Strategy
Fuel Cell Electric Vehicles (cars)

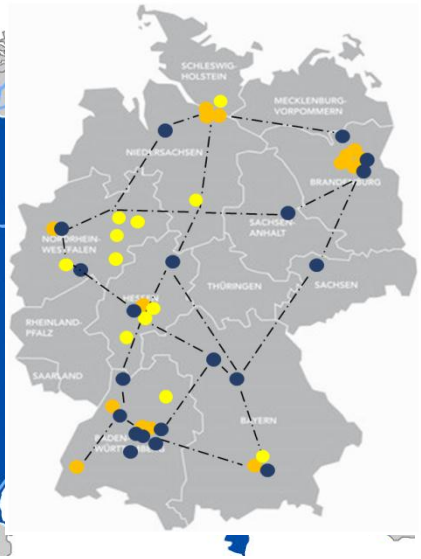
Advanced FCEV and HRS programs

- Germany – the first H2Mobility project has already signed a "term sheet" linking six industrial players to deploy stations to 2023
- UK – a consortium with significant Government presence has agreed a strategy based on seeding a national network of 65 stations
- France – a large private consortium has agreed a strategy based on a transition from captive fleets to nationwide infrastructure for FCEVs
- Scandinavia – an initial network provides coverage for FCEVs, which can be purchased at an equivalent ownership cost









Similar initiatives in early stages in other countries: NL, AT

Grouping the existing H2Mobility initiatives to create the start of a European hydrogen network

Strategy
Fuel Cell Electric Buses

Study

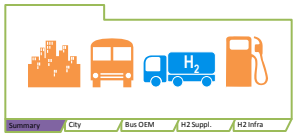
→ Local high-level cost analyses

→ Mobilisation of interested locations

→ Preparation joint procurement

→ Engineering of H_2 refueling infrastructure

2014-2015



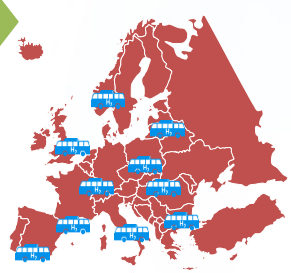
→ Detailed cost analyses

JTI

→ Grant application for demo project

→ EU roadmap/ discussion on regulation

2016



→ Execution of demo projects

→ Local, national and EU funding schemes for demos

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→ Regulations framework to support roll-out

2017-2020

Scale effects
Incentives
Regulation

VISION –
FC electric buses commercially viable and rolled-out in Europe

2020 onwards

Strategy
MHV and APU

- APUs
  - Consolidate the currently identified applications
  - Search for new applications in other transport applications
- MHVs
  - To be defined based on the results of (to be established) study

Thank you for your attention !

Further info :

- **FCH JU : http://fch-ju.eu**
- **NEW-IG : http://www.new-ig.eu**
- **N.ERGHY : http://www.nerghy.eu**