

# Fuel cells and hydrogen

## Joint undertaking

### *Program Review Days FCH JU 2013*

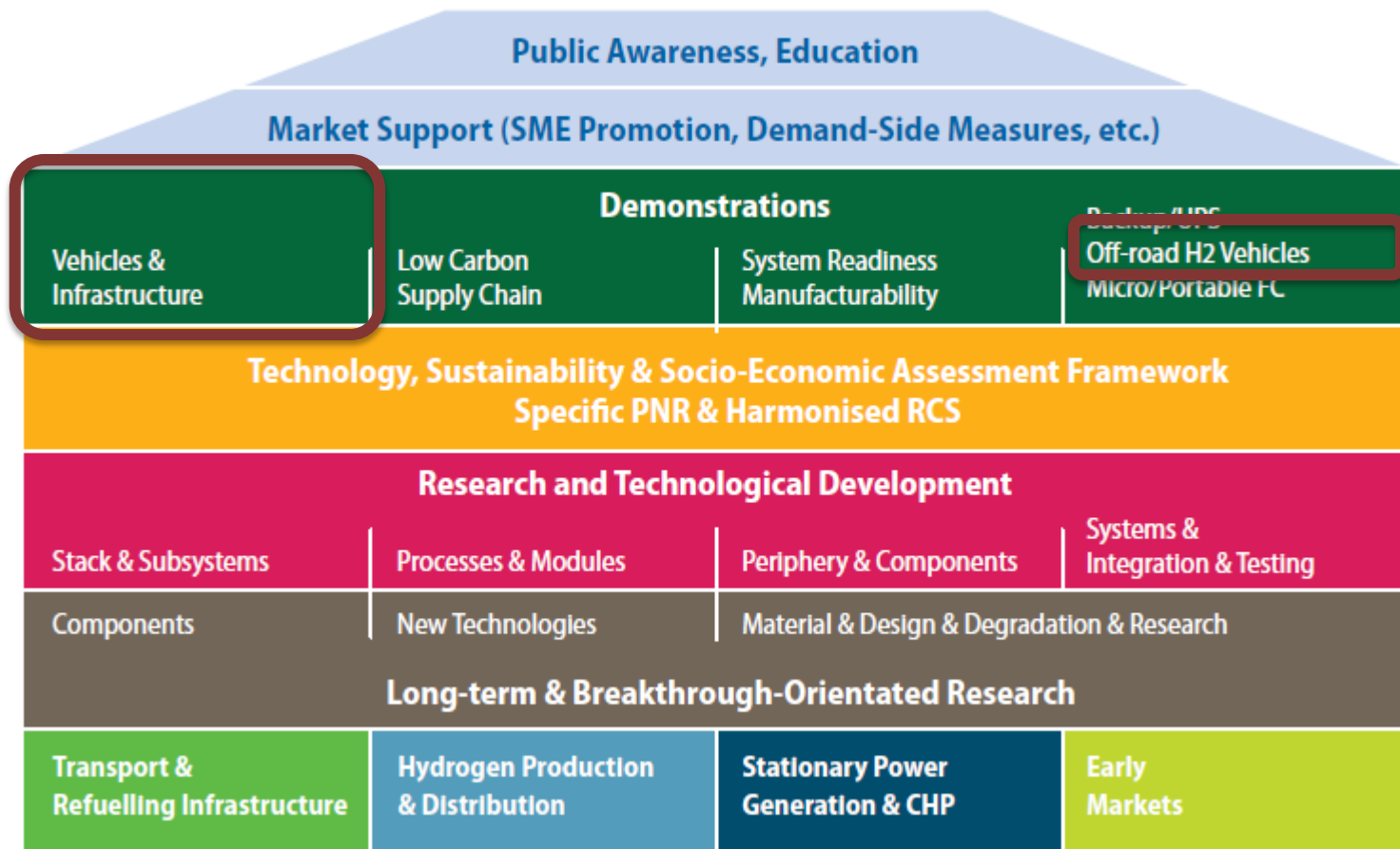
### *Portfolio Transport Demonstration Projects*



<http://www.fch-ju.eu/>

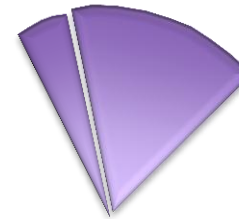
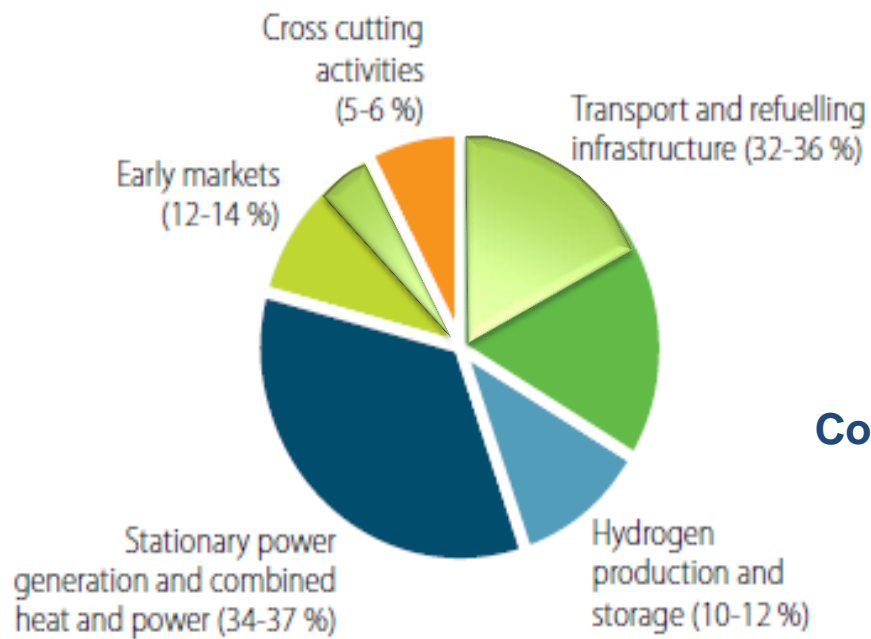
*Enrique Girón, Project Manager*

# Multi-Annual Implementation Plan 2008 - 2013



# MAIP objectives

## Budget distribution



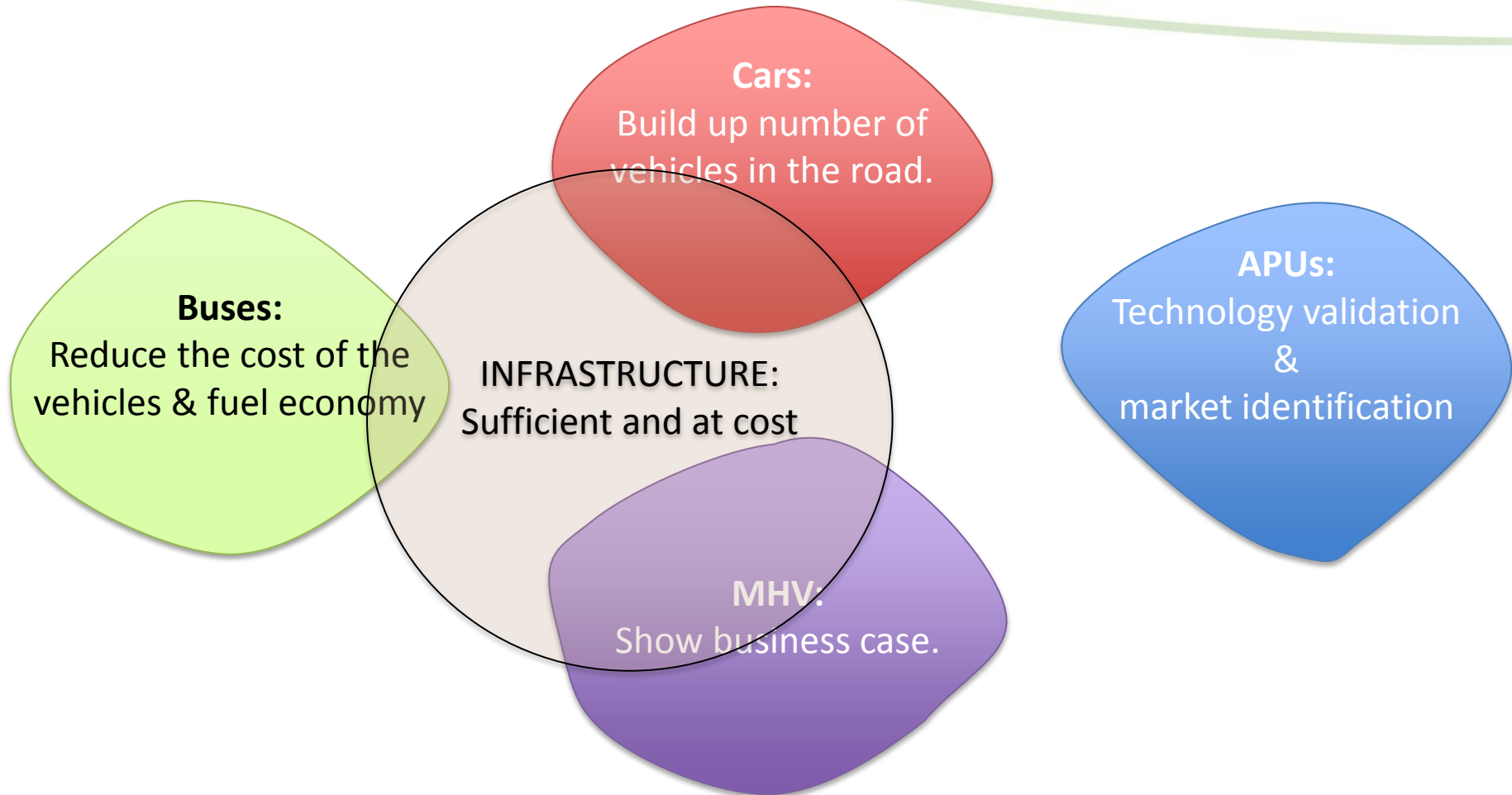
**Combined expected budget of 120M€**

# 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 <i>fuel cell system</i>	>1,500 units / <1,500€/kW <i>fuel cell system</i> <i>Anticipating supported deployment from 2013+</i>	>20,000 units / <1,000€/kW <i>fuel cell system</i> <i>Anticipating commercial introduction beyond 2015+</i>

# MAIP objectives



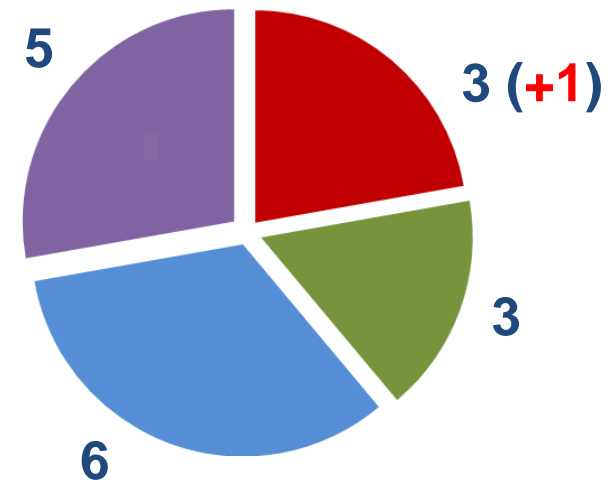
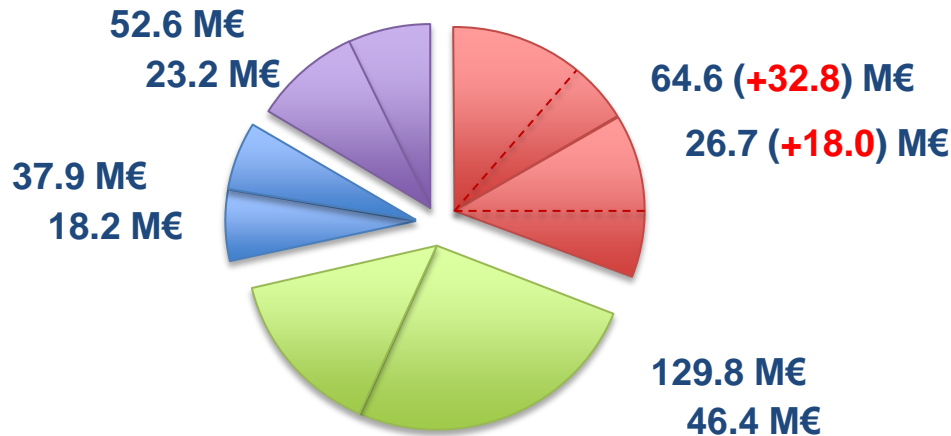


# MAIP Coverage

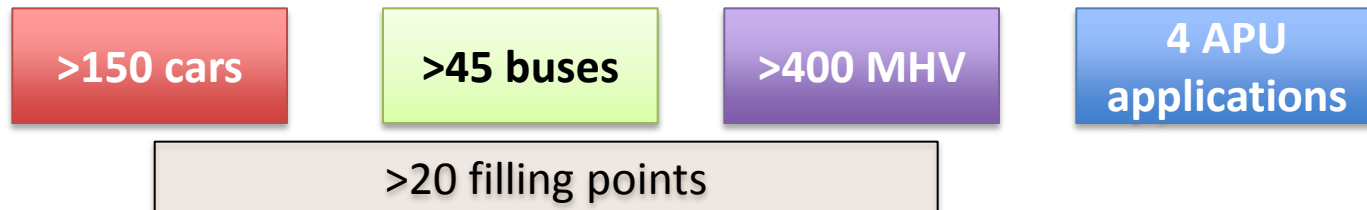
## – Budget distribution

- Combined financial contribution: 114.3M€(+18.0M€)

## – Projects and budget



## – Main technical achievements



# Achievements

## Cars

H2MOVES

19 cars / 1 station

HYTEC

40 cars / 2 stations

SWARM

90 cars / 3 stations

XXX

100 cars / 5 stations

2010

2013

2016

Increased fleets

Extended infrastructure

Reduction in vehicle cost

# Achievements Buses

CHIC

HIGH V.LO-C

HYTRANSIT

Bus Study

Stakeholders  
to define  
commercialisa-  
tion pathway

26 buses / 5 stations

14 buses / 2 stations

6 buses / 1 station

High interest and commitment

2010

2013

2016

Reduction in fuel consumption

Geographical expansion

Reduction in vehicle cost



# Achievements APUs

**FCGEN**

**DESTA**

**SAPIENS**

**PURE**

**HYCARUS**

**SAFARI**

Truck /PEM

Truck /SOFC

RV /SOFC

Boat /PEM

Airplane /PEM

Truck /SOFC

2010

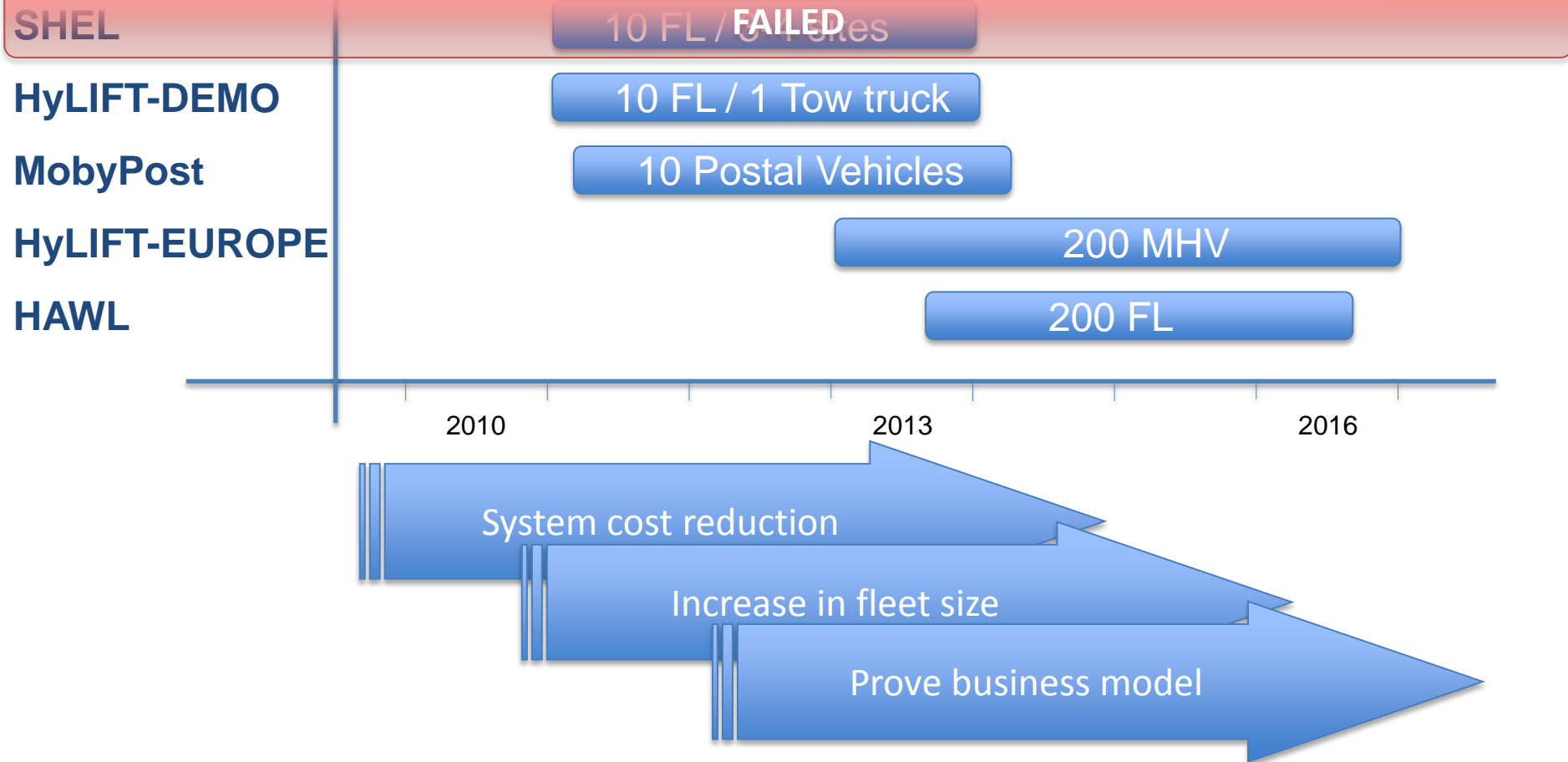
2013

2016

Technology readiness

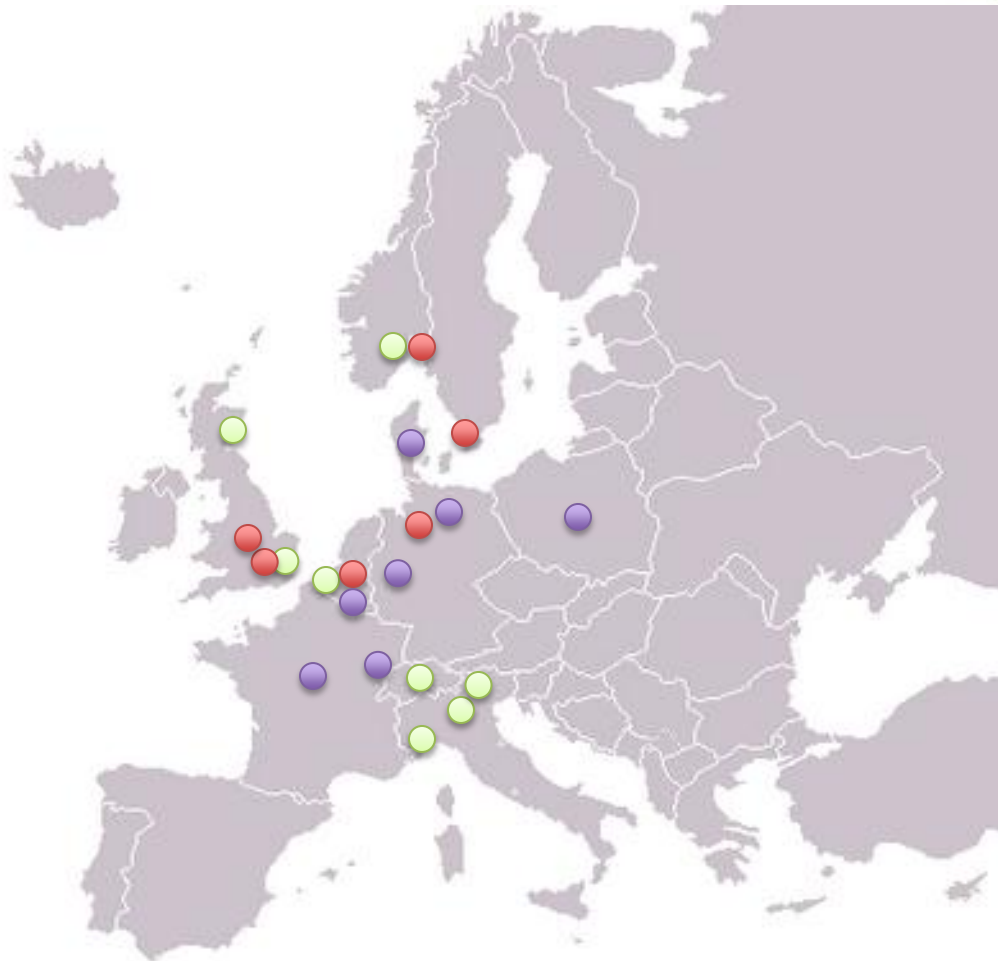
Application identification

# Achievements MHVs



# Achievements

## Map of demonstration sites



- Cars
- Buses
- MHV



# 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>