



Accelerating the transition to electric cars:  
Private innovation + public partnership

# The driving systems: old vs. new



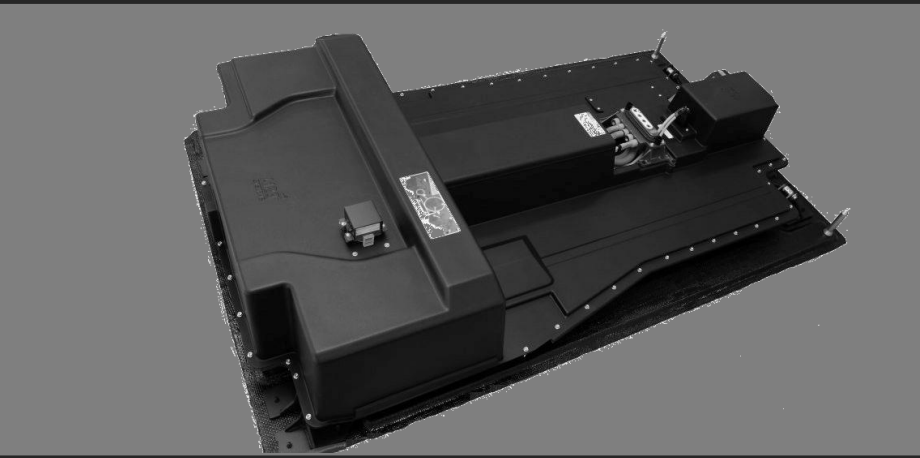
# What about the historical barriers to electric cars?



● Availability of charging



● Range limitations



● Cost / risk to consumers

The battery is at the heart of  
all of these issues

And the key is to separate the  
battery from the car, both  
**physically** and **financially**.



How does battery separation  
make electric cars more  
attractive to the mass market?

**Affordability:** reduced upfront cost of electric car

**Convenience:** instant range extension for long trips

**Sustainability:** avoid technological obsolescence by  
switching in newer batteries instead of  
buying an entire new car

## Guiding principle for mass-marketability

The alternative to petrol-powered cars must deliver a better driving experience without requiring sacrifice or compromise.

# 1. Charge spots widely deployed



- Available in advance of cars
- Personal charge spots installed for subscribers at home and at work
- Standards compliant
- Networked and intelligent
- User-friendly design



## 2. Instant range extension: battery switch stations



- Instant refill – swap out empty battery for full one < 5 min
- Fully automated, drive-through process
- Optimal thermal management for battery charging
- Available on-demand for drivers
- [Video](#)





### 3. Guided driving and energy management to complete EV driver experience

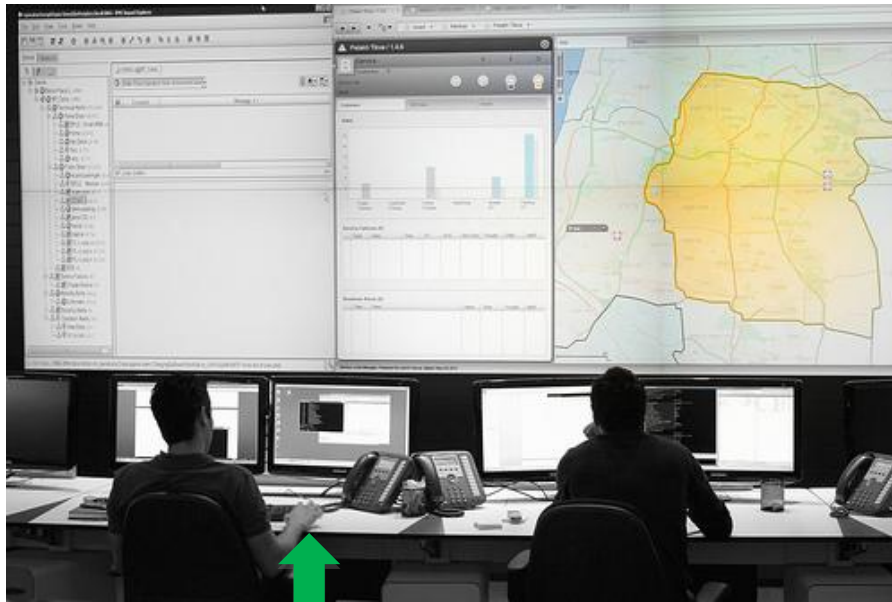
- Energy management (accessible via in-car unit, web, mobile)
- Intelligent, always-online navigation & route planning
- State-of-the-art multimedia display



- 24x7 customer care



## 4. Smart grid for EVs – active load management



- Intelligent, centrally monitored network
- Smart charging enabled
  - Optimized EV charging for utility and driver requirements + price signals
- Demand response facilitated
  - Dynamic response to planned and unplanned network events
- Grid services offered
  - Renewables following
  - Distributed energy storage

### Electric Utility



# Better Place has global reach





Active support for innovation  
+  
Clear policy direction to active  
private sector



# Investment in collaborative R&D to accelerate technology development and deployment



- Announced February 2011
- Australian government funds domestic auto manufacturing consortium on EV development
- Bosch, Continental, Futuris, Better Place, and Air International Systems
- Prototype and test Australia's #1 selling car, Holden Commodore, into switchable battery EV



- Announced March 1, 2011
- European Commission backs battery switch project with industry consortium
- Better Place, Continental, Renault Form "EASYBAT" Consortium with Ernst & Young, TÜV Rheinland, KEMA and leading research institutes
- Standardization and development to create "off the shelf" battery switch solutions for OEMs

# Investment in commercial deployment of zero-emission enabling infrastructure



- Trans-European Infrastructure initiative focused on deploying multi-model infrastructure including public transport and EV charge networks
- Endorsed by six European Ministries of Transport (Denmark, Netherlands, Austria, Spain, Belgium, Luxembourg)
- eMobility project funded out new “de-carbonization” category
  - Deployment of first battery switch stations
  - Inter-model service with rail
  - Studies on open access charge network creation

# Public-private partnership combining local and federal support for sustainable transportation



## Bay Area EV Taxi Program:

- Funded by Department of Transportation, local and strategic partners, and Better Place
- Network of 4 battery switch stations and fleet of 61 switchable battery EVs in San Francisco and Silicon Valley, creating driving corridor
- Consortium of partners: San Francisco, San Jose, Yellow Cab, Checker Cab, BAAQMD, CAISO, SVLG and other regional organizations and stakeholders

## Program Goals:

- Demonstrate scalable solution for zero-emission transportation in the region
- Showcase mass market potential of EVs via “instant charging” enabled by the battery switch station
- Drive consumer excitement and awareness of EVs with >1 million rides and educational tools





# Questions?

Contact: [ann.bordetsky@betterplace.com](mailto:ann.bordetsky@betterplace.com)