


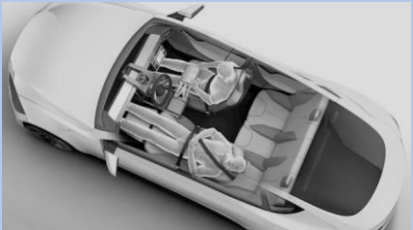
Innovative Photovoltaic Technologies in Future Mobility Solutions

Context and Objectives

The seeker is engaged in Sustainable Mobility, and wants to identify new products and services with significant potential. It is looking for PV (Photovoltaic) applications that bring:

❖ Customer experience improvements


→ Bring much more value to the user

How PV can bring more functionalities, services, connected services, etc. in future mobility vehicles?

❖ Additional features for mobility

→ Taking advantage of the versatility of PV



What kind of accessories could be paired or designed with PV ?

For example : GPS with PV for bikes, integrated air conditioning for cars, printed electronics ...

Mobility Scope

Road	Cars (Autonomous vehicles, self-driving cars, ...)
	Motorcycles, Bikes
	Buses, trucks
Tracks	Trains, tramway
Air	Planes, flying cars, drones
Sea	Boat, boat taxi

Detailed Description of the 2 Areas of Interest

❖ Customer experience improvements

- Photovoltaic **systems** used for new integrated functions that **bring value** to vehicles and transportation
 - New services
 - New physical functions
 - Sensors - Micro-electronics (like sensors that would give additional functionality)
 - User's comfort improvement, Enhancing the comfort or user experience (human factors)
 - Maintenance
 - Energy efficiency for commercial vehicles

❖ Additional features for mobility

- **Low-cost photovoltaic solutions** that allow adding applications or functions and increase user satisfaction and/or reduce energy consumption
- PV can supply power to
 - Grid-integrated devices
 - **"Small island"** systems (**standalone systems**, not connected to the main battery) operating independently from the main battery and the main energy provider

○ Comments

- New PV-fueled features for mobility can be **inside/outside** of the vehicles or **movable**
- All photovoltaic technologies and geometry can be considered
- These new PV solutions could be associated/combined with the future **smart cities for mobility only**

Existing Solutions

(solutions already identified, not in the scope of this challenge)

The seeker is not looking for classic electric energy supply for the vehicles

Usage of PV to supply energy to the vehicles, for example:

- Panels to recharge the battery
- Integrated solar cells to a bike / car / truck / train / plane to charge its on-board batteries
- Attach solar cells to electric vehicle charging stations or vehicle parking lots
- Integrate solar cells into transport infrastructure: roads, noise barriers, etc.
- Use of photovoltaics to produce hydrogen for transport / mobility

PV IN MOBILITY TODAY

Today's vision is limited to supply additional electricity by PV module integration into vehicles and infrastructure without other functionality





Main Rules :

reward, expected format, constraints, and selection criteria

Reward	
For each selected idea	<u>3 000 €</u>

Constraints	
Applications	Propose innovative ideas for new features for improving the customer/user experience, and not in the field of electric propulsion
Environmental	Preferably (but not a blocking point): no toxic component, recyclable, eco-design,
	Easy to maintain/repair and durable
Financial	No constraint considering that costs for solar keep decreasing. PV could be more cost effective than integrating a battery and cables
Technical	Open, no limit as long as it offers a new service / application / function
	Ensure safe operation/comply with safety standards

Proposed format for drafting the ideas (1-3 pages)	
Benefits for Mobility Users (most important part)	
Principle/Mechanism	Technical description and feasibility
	Estimated technical maturity and market
Business/Market potential (big picture/estimated)	

Selection criteria	
Innovation level	All level of maturity will be considered but ranked by Novelty/Disruptivity (IP)
Technological leap	Complexity/Ability to be integrated into the vehicle/ user environment
	Short term vs long term technology development
Market entry	Market size estimation
	Marketing needs
	User acceptance