

Innovation in Electric Mobility in the Netherlands

2010 - 2020

International Electric Car Conference

November 2010 - Groningen



Innovation in electric mobility in the Netherlands

- **Main drivers for electric mobility until 2020**
- **Main challenges and innovations needed**
- **Innovation strengths and roadmaps in the Netherlands**

E-Mobility Drivers 2010 - 2020



Drivers for electric mobility in NL

- **Reduction of air pollution (NO_x, fine particles) and improving environmental quality in densely populated areas**
- **Reduction of CO₂ emissions of mobility and transport**
- **Security of energy supply (oil and gas)**
- **Greening of the energy production system (wind, solar)**
- **Economic growth and growth opportunities**

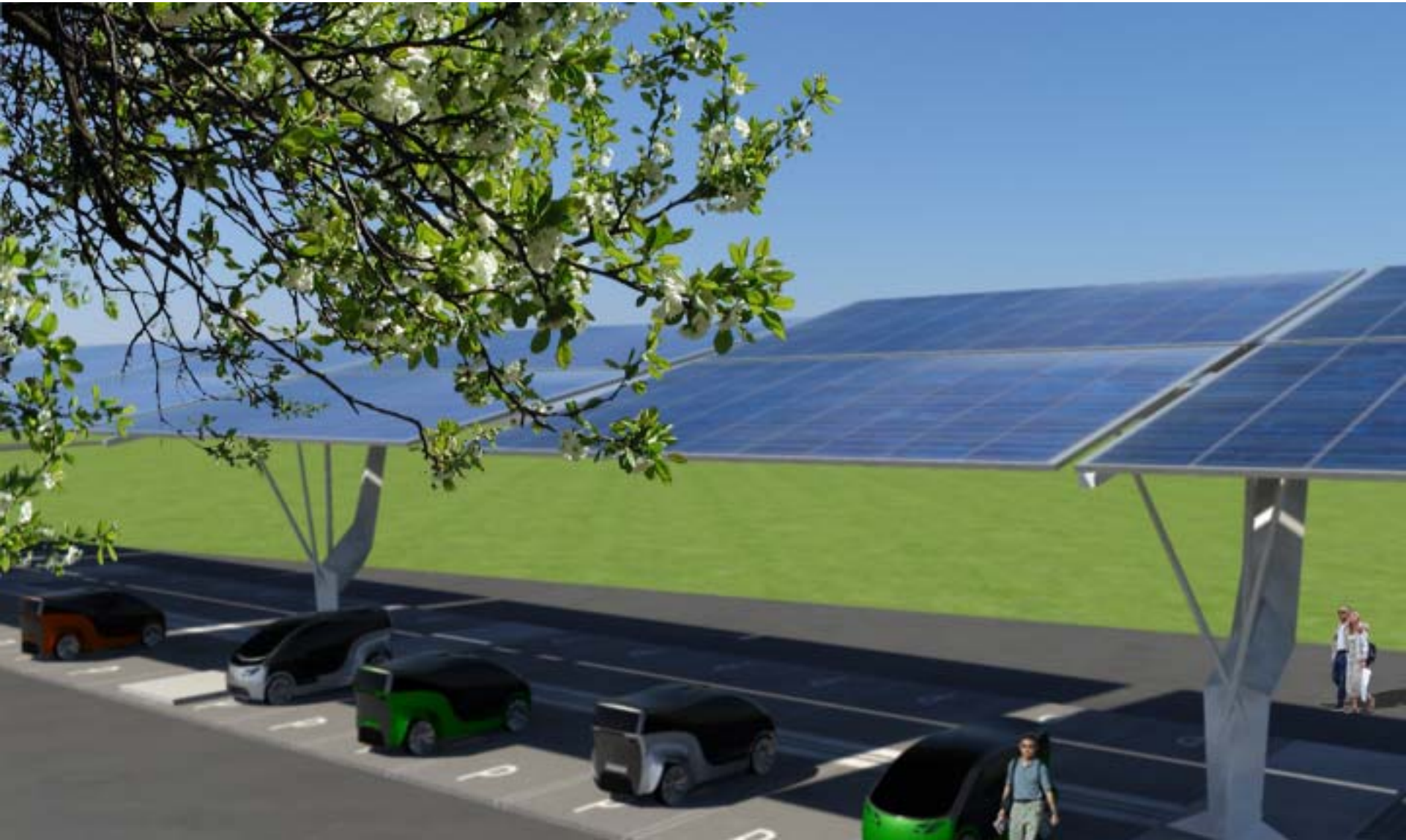
E-Mobility Challenges 2010 - 2020



Main challenges 2010 - 2020

- **Safe, reliable, comfortable, lower-cost, fit-for-use (PH)EVs**
- **Intelligent and safe charging technology and smart grids**
- **Transparent Total Cost of Ownership and payment structures**
- **Minimal environmental impact (PH)EVs over lifecycle**

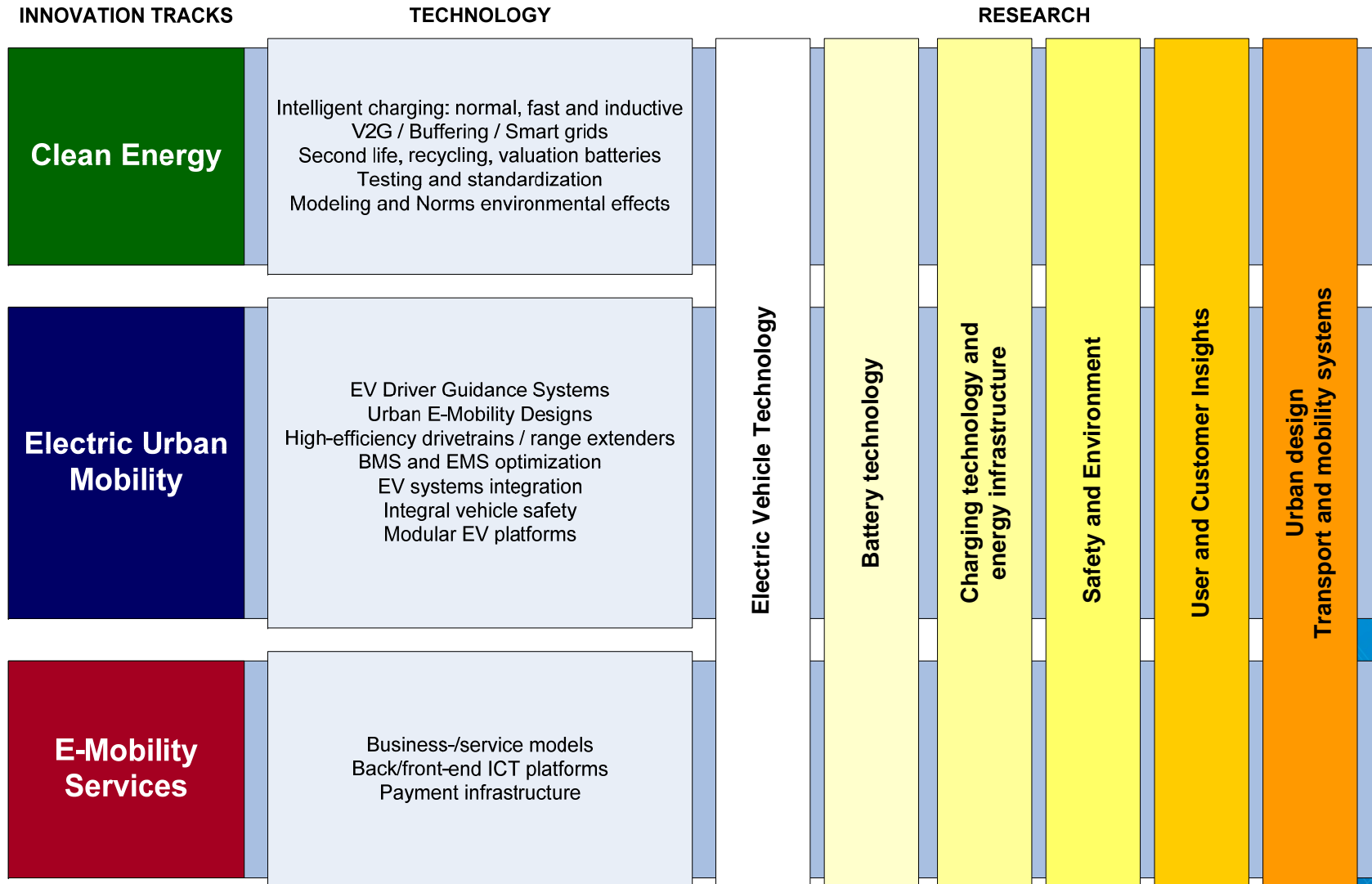
Innovation roadmaps 2010 - 2020



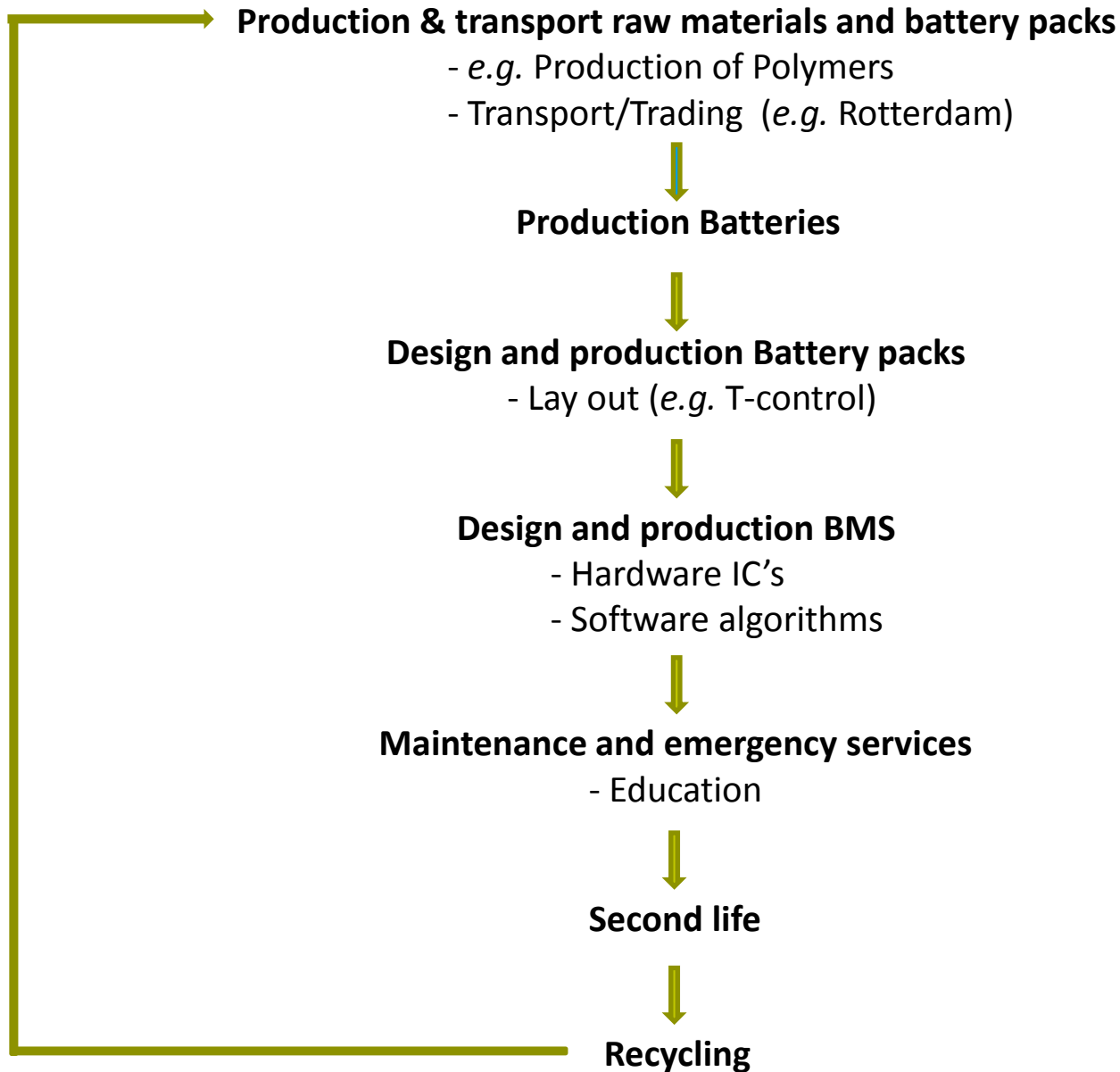
Three innovation roadmaps:

1. **Electric Urban Mobility**
2. **Clean and Convenient Energy**
3. **E-Mobility Services**

Interdisciplinary / User-centered / 10-year focus



Value chain battery technologies



Battery research and education in The Netherlands

- Battery Materials research
- Battery Technologies
- Battery Modeling
- Battery Management Systems (BMS)

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INNOVATION TRACKS

PRODUCTS and SERVICES

