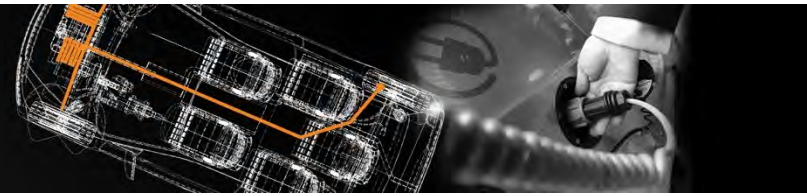
Mobilis Conference 2012

Customer Expectations and Technical Solutions for Third Generation Electric Vehicles

Mulhouse, 13 November 2012

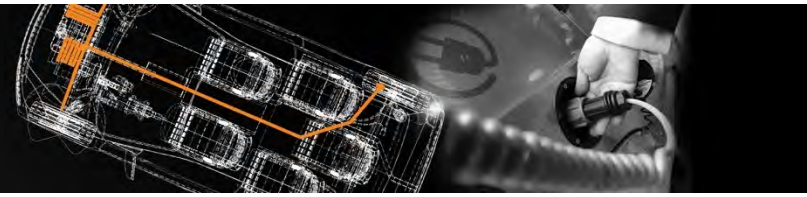
Micha Lesemann

Agenda



- Introduction
- Customer Expectations
- Technology Options
- Vehicle Concepts
- Summary & Outlook

Introduction
Project Approach



Customer requirements
- Usage patterns
- Requested features
- Trade-offs

Technology options
- Electric drivetrain incl. battery
- Lightweight design
- etc.

Basis specs

Brainstorming phase
- Project partners
- Selected designers
- High creativity

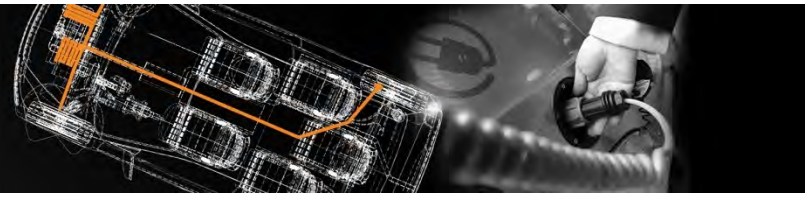
Design contest phase 1
- Few limitations
- Design brief

Broad collection of ideas

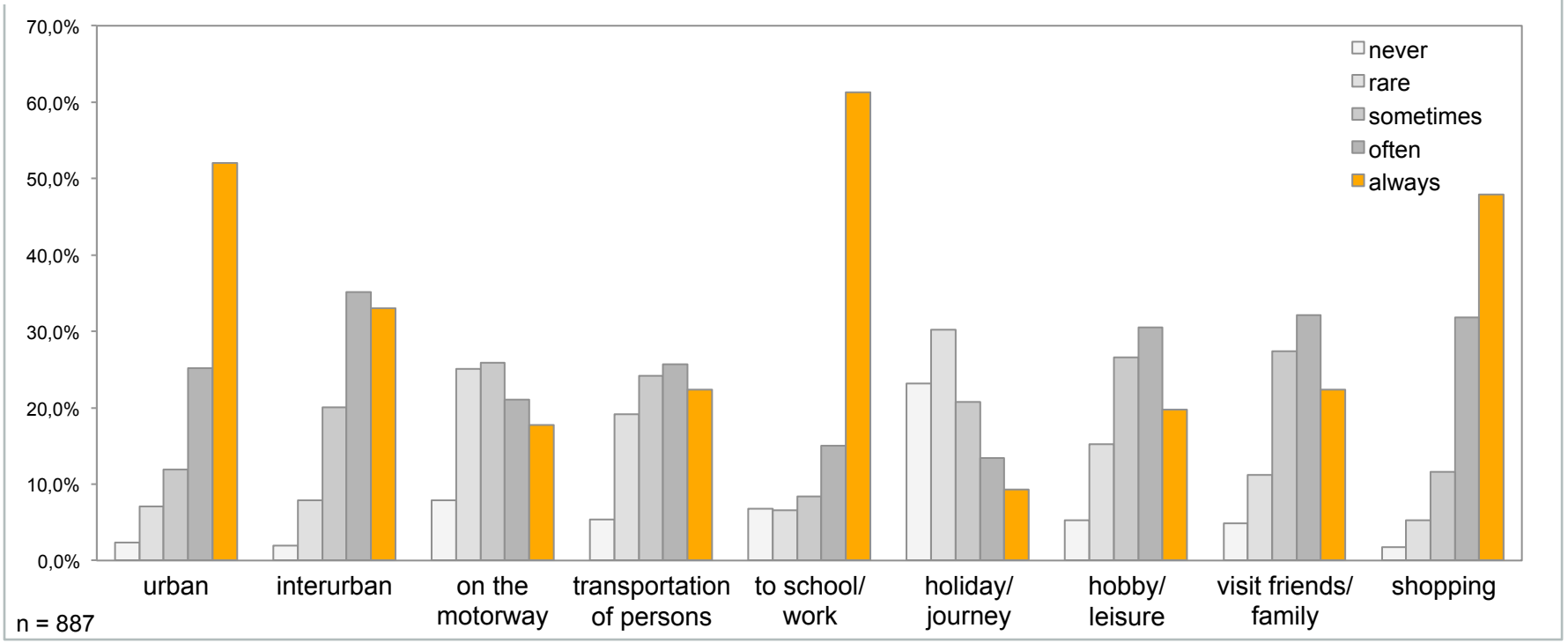
Analysis phase
- Feasibility, technical potential

Design contest phase 2
- More limitations

Customer Expectations Survey Results (Example)

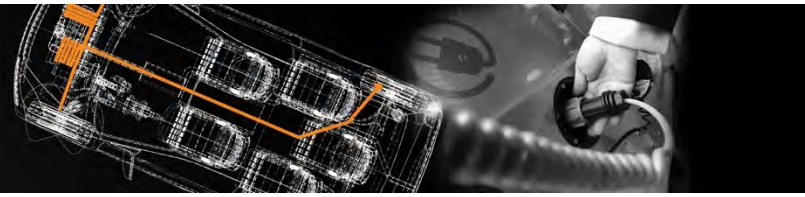


How would you use an electrical car?

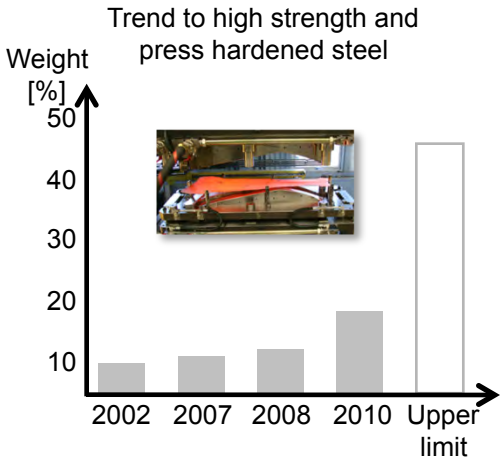


Difference current to electrical usage

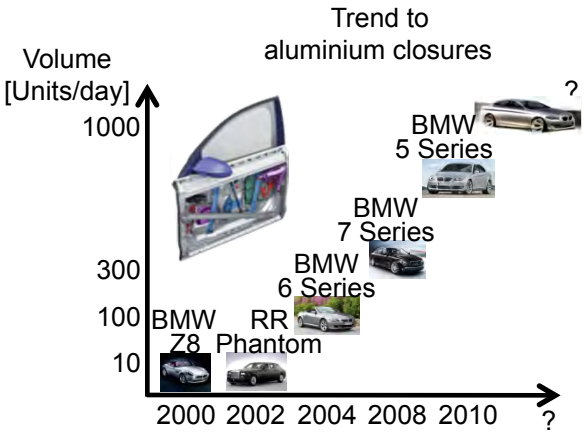
Technology Options Example: Materials



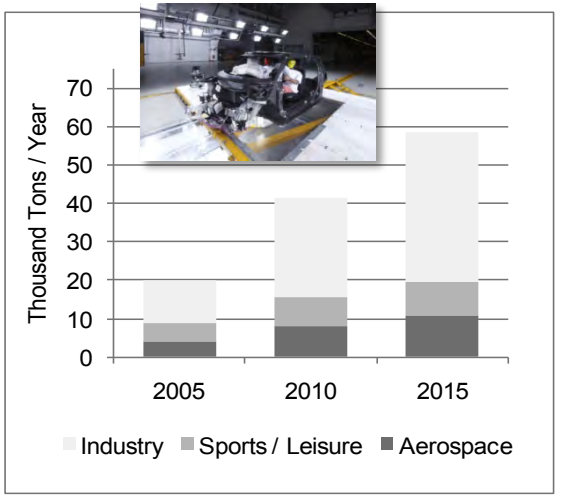
Trend 1: High Strength Steel



Trend 2: Aluminium Closures

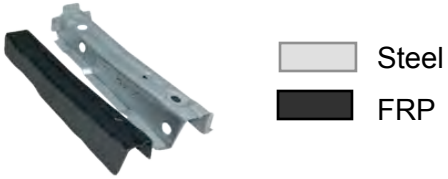


Trend 3: FRP Application

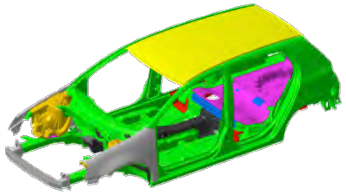


Trend 4: Sandwich and Insulating Materials Including Glazing (Thermo Management, NVH)

Trend 5: Hybrid Design



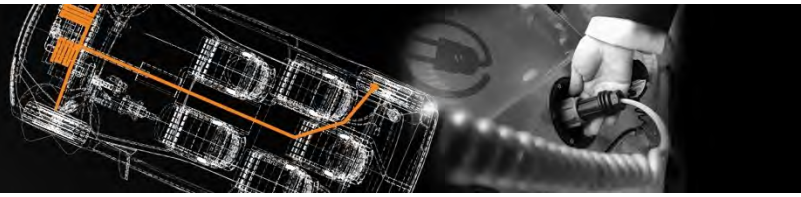
Trend 6: Multi-Material Design

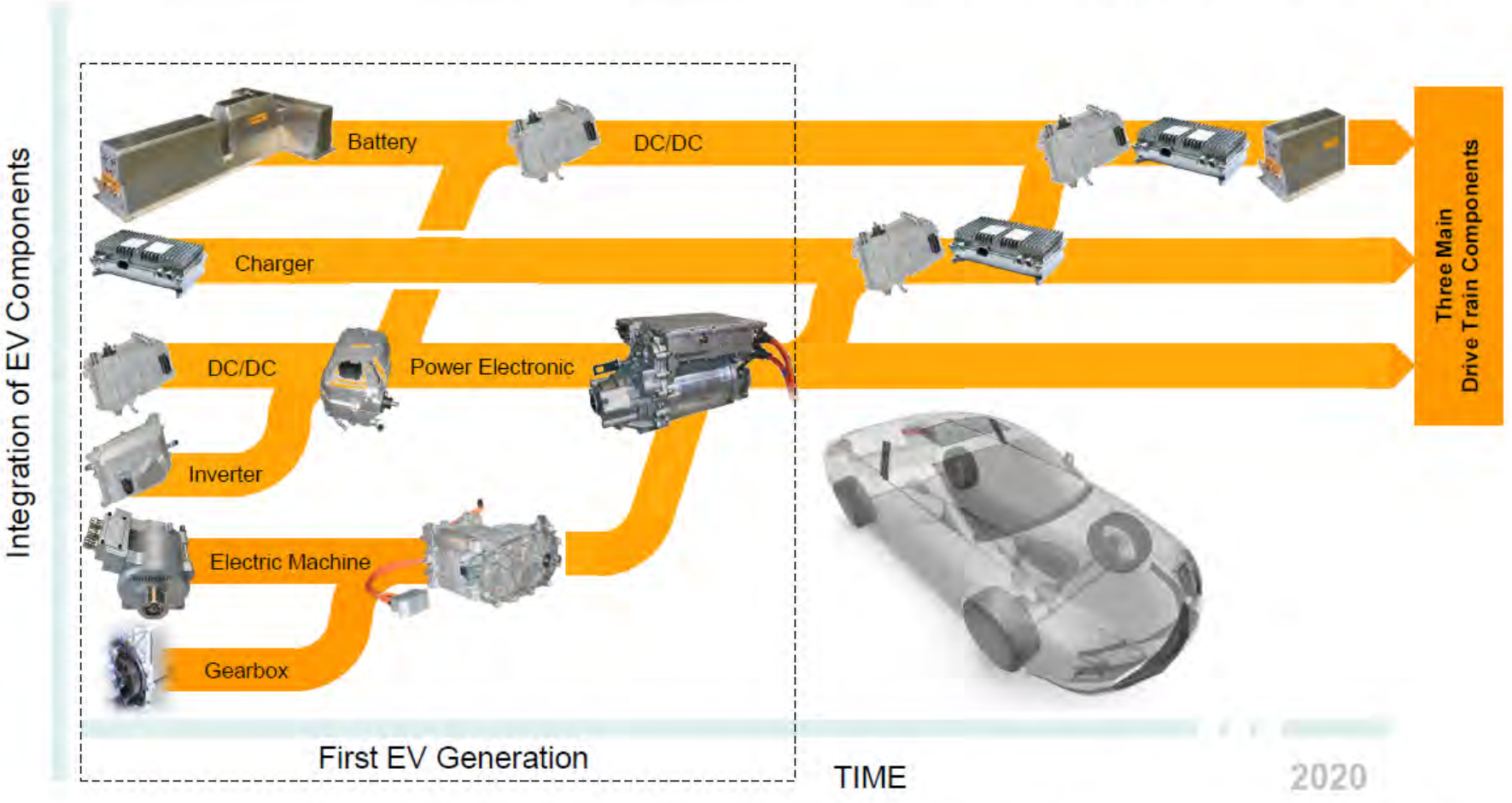


Weight Distribution

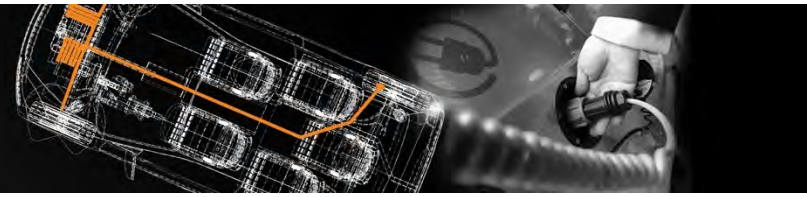
Aluminium	96 kg (53 %)
Steel	66 kg (36 %)
Magnesium	11 kg (7 %)
Plastics	7 kg (4 %)

Technology Options
Example: Electric Drive



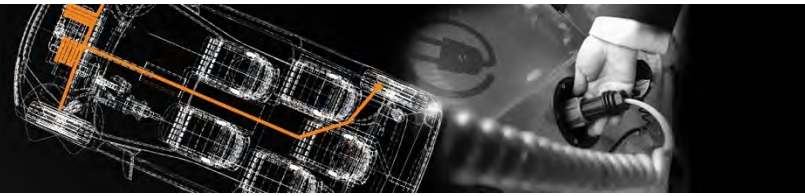


Vehicle Concepts
Basic Specifications



- Use case: urban/commute
- Seats: 2+2
- Range: 200 km
- v_{max}: 110 km/h
- Weight: 800 – 1,000 kg
- SOP: 2020

Vehicle Concepts
Design Contest Entries



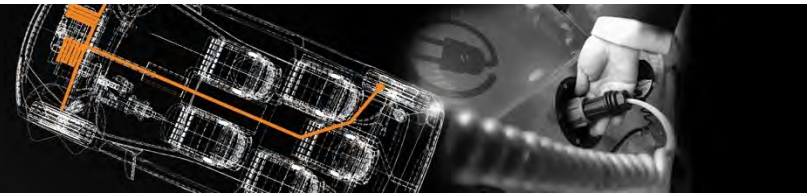
Vehicle Concepts
Design Contest Winners

Runner-up
Bugaboo by L. Fogarasi-Benkö

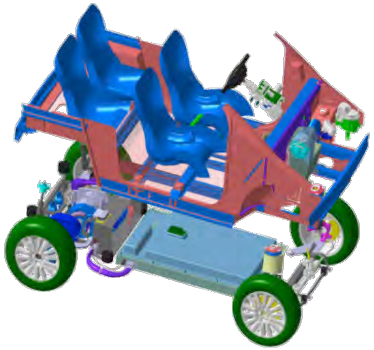
Winner
worm-e by J. Biosca

Runner-up
Kabuki by E. Gatto

Vehicle Concepts Overview

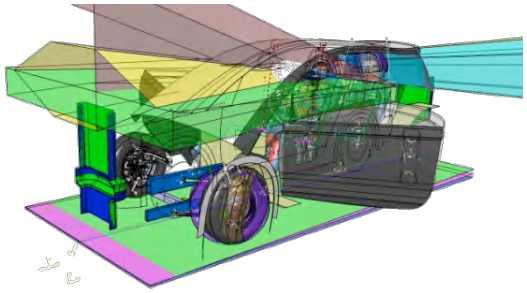


Renault Concept



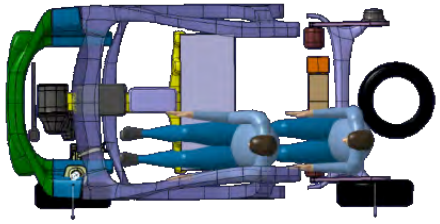
- Affordable lightweight car
- Target weight: 800 kg
- No expensive materials
- Easy to manoeuvre
- 3+1 seats
- Rear-wheel drive
- Batteries under floor

VW Concept



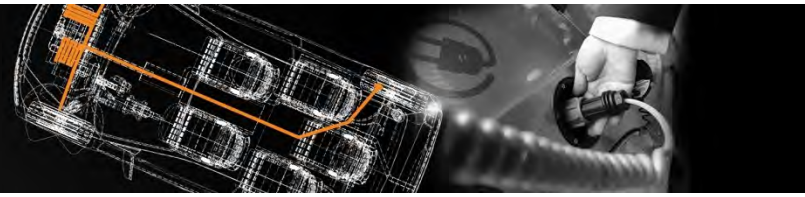
- Two propulsion options (2WD/4WD)
- Potential platform for SUV and roadster
- Mono volume
- “Polo plus”
- Steer by wire
- Progressive material mix

Fiat Concept



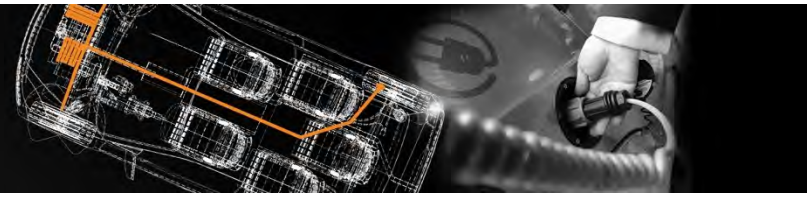
- A-segment car
- Modular electric powertrain for shorter and longer range
- Two identical batteries
- Four-wheel drive
- Central motors w/ gearbox
- Short turning circle
- High metal application

Summary & Outlook



- Electric vehicles most promising for urban traffic and commuting
- Customers are ready, but expectations to be met
- ELVA project hence works on convincing vehicle concepts
- Design contest was performed, now working on three detailed vehicle concepts
- Final results to be presented in April 2013
- Urban delivery promising category for electrification

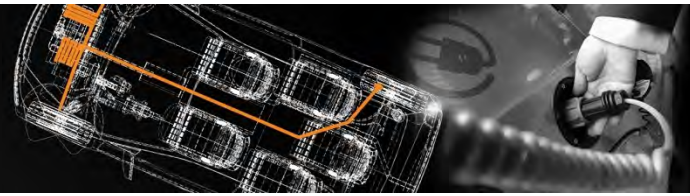
Summary & Outlook
Complementary Project



Thank you very much for your attention!

www.elva-project.eu

Contact



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