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IDIADA

YOUR DEVELOPMENT PARTNER



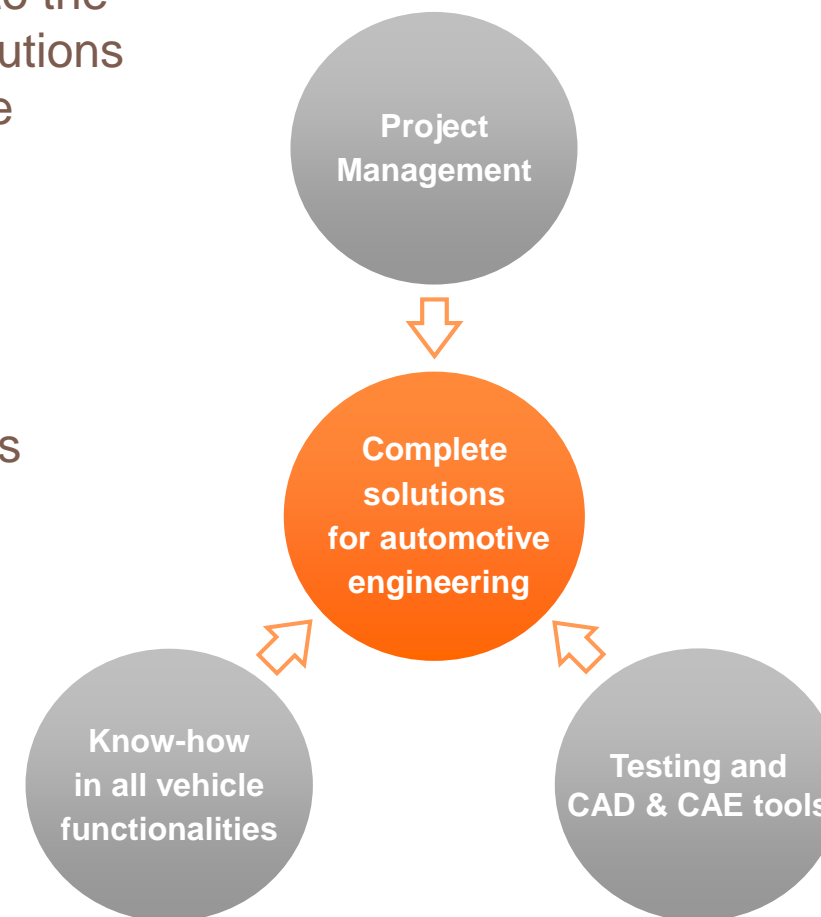
Functional Vehicle Design for Urban Mobility

Who we are & what we do

Applus IDIADA is an engineering partner to the automotive industry providing complete solutions for product development projects worldwide

Our assets:

- ⊕ Team of more than 2.200 professionals
- ⊕ First class state-of-the-art testing facilities
- ⊕ International presence in 25 countries with 55 local offices
- ⊕ Innovation in new services and technologies



International presence (as of 31st March, 2017)

Total: 2.239 people

Main Centres for Engineering, Testing and Homologation

Brazil

156

- São Paulo
- Betim
- Curitiba
- Resende
- Tatuí

China

221

- Shanghai
- Beijing
- Changchun
- Chongqing
- Guangzhou
- Liuzhou
- Qingdao
- Shenzhen
- Zhaoyuan

Czech Republic

200

- Hradec Králové
- Brno
- Liberec
- Mlada Boleslav

Germany

141

- Ingolstadt
- Munich
- Stuttgart
- Wolfsburg

India

128

- Pune
- Chennai
- New Delhi

UK

37

- Cambridge
- Nuneaton

Spain

1.230

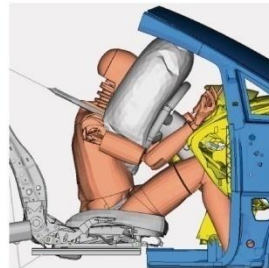
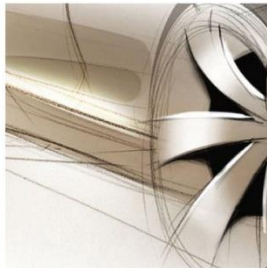
- **Barcelona** -
Headquarters &
Main Technical Centre
- Granada
- Madrid
- Mojácar
- Pamplona
- Vigo

Other offices

126

- Aichi
- Bangkok
- Brussels
- Detroit
- Gothenburg
- Istanbul
- Jakarta
- Kuala Lumpur
- Lu Kang
- Maranello
- Nizhny Novgorod
- Paris
- Penang
- Poznan
- Pretoria
- Puebla
- Riyadh
- Seoul
- Teheran
- Tokyo
- Togliatti
- Turin

- ⊕ Body Design & Passive Safety Engineering
- ⊕ Chassis Design, Active Safety & Powertrain Engineering
- ⊕ Product Certification & Homologation
- ⊕ Proving Ground Testing
- ⊕ Testing facility design



Main vehicle functionalities



Passive Safety



Active Safety



NVH



Powertrain



Comfort



Reliability

Body + Closures + Trims + Chassis + Powertrain + Electronics

01_ Project scope



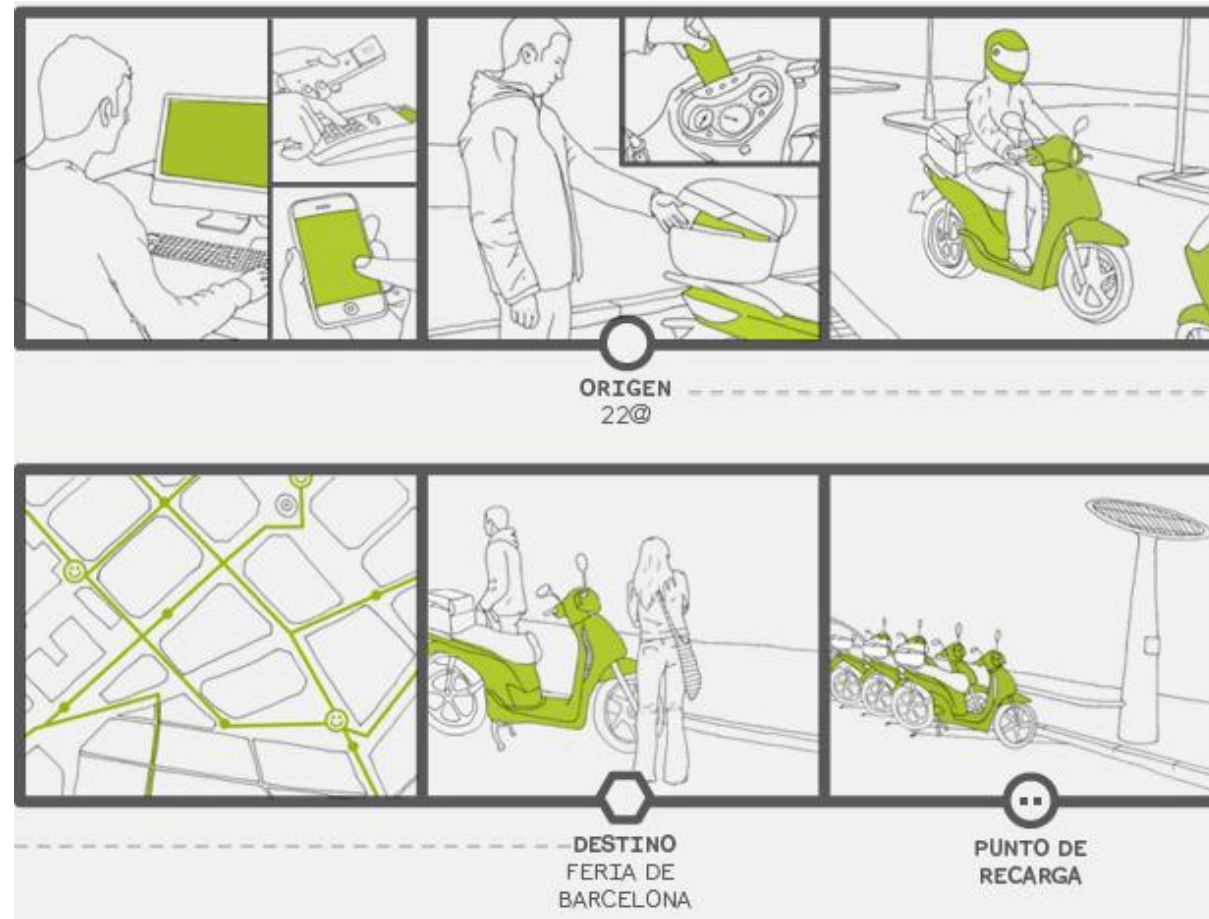
To demonstrate to our clients our capabilities in urban e-mobility projects

Project initial considerations

- ⊕ To develop a Urban Mobility Vehicle for Car-sharing
- ⊕ The results should be a fully-functional vehicle
- ⊕ To develop the vehicle using the principle of “Development Led by Functionality”

02_ About Car-Sharing

Car-sharing is a short-term rental business model in expansion in both Europe and the United States



02_ About Car-Sharing: in Paris, France

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Paris Tests Short-Term Rentals of Electric Cars



Thomas Samson/Agence France-Presse — Getty Images

Eric Besson, the French industry minister, using one of the electric cars from the new car-sharing program in Paris.

By DAVID JOLLY
Published: October 3, 2011

PARIS — If Parisians can share bicycles, why not cars, too?

Bertrand Delanoë, the Socialist mayor of Paris, and the billionaire investor Vincent Bolloré think they will. To that end they have begun an ambitious new [electric-vehicle](#) partnership called Autolib, extending the city's effort to reimagine urban mobility and improve air quality with alternatives to exhaust-spewing cars.

On Sunday, Autolib rolled out 66 ultracompact Bluecars at charging stations for a two-month trial period to help familiarize the public with the system and work out the bugs before it fully goes live. Officials hope to have 3,000 of the zero-emission, four-seater Bluecars on the streets and

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02_ About Car-Sharing: in Germany by BMW/Mini

DriveNow Car Sharing von BMW i, MINI und SIXT.

Städte | Fahrzeuge | Tarife | So funktioniert's | Hilfe & FAQ | Blog | Newsletter abonnieren

Suche Alle Fahrzeuge

München, DE
Berlin, DE
München, DE

POI anzeigen: Tankstellen Geschäftsgebiet

einfach. Auto finden Auto fahren Ein Tarif 29 cent/min

DriveNow Carsharing
DriveNow bald auch in der Rheinmetropole

Sagt uns eure Meinung
Ihr habt Ideen wie man DriveNow noch

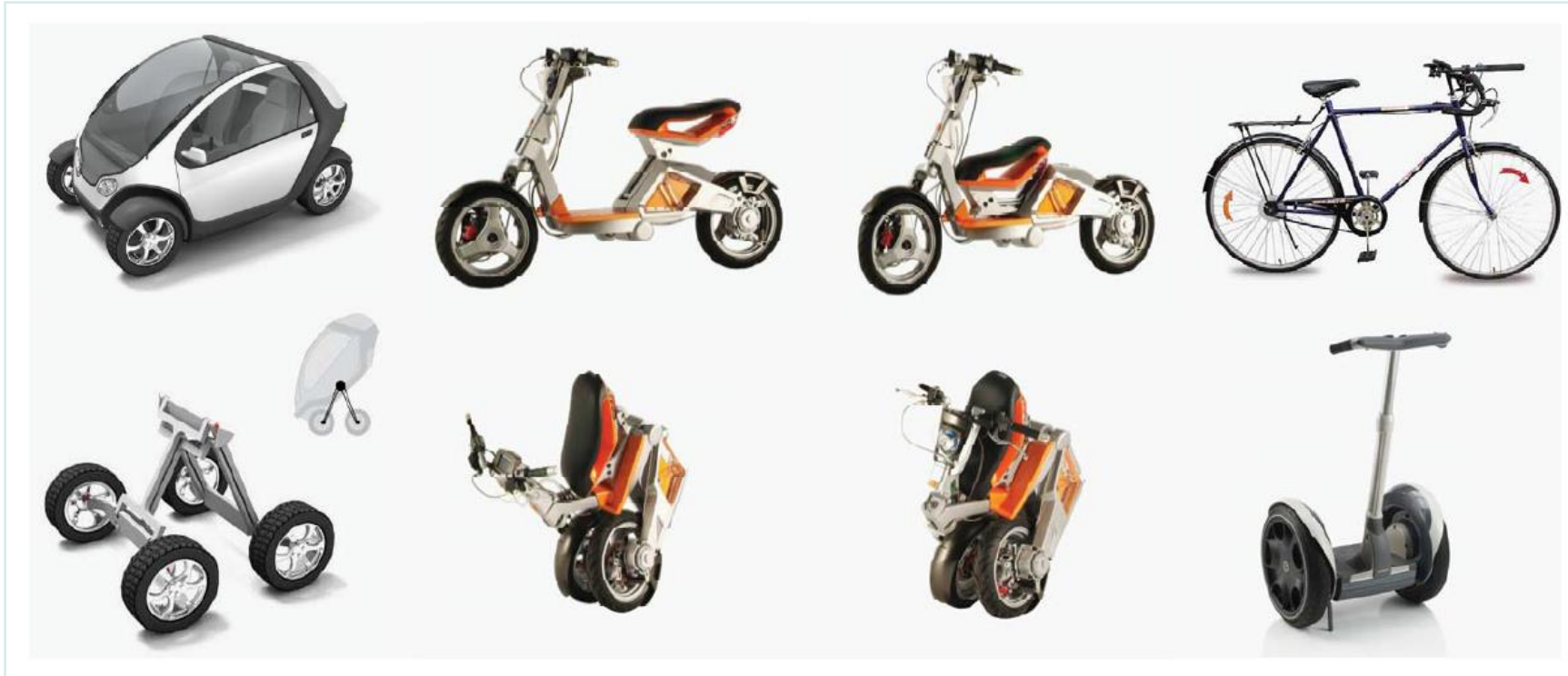
Login
E-Mail
Anmelden [Passwort vergessen?](#)

Sie haben noch keinen Account?
Schnell und einfach registrieren.
Einmalige Anmeldegebühr 29 Euro.
JETZT REGISTRIEREN

Sonderangebot für ADAC Mitglieder
Hier sparen Mitglieder.
ADAC Vorteilsprogramm
ADAC Mitglieder können bei DriveNow sparen!
Hier zu den Vorteilsangeboten für ADAC Mitglieder

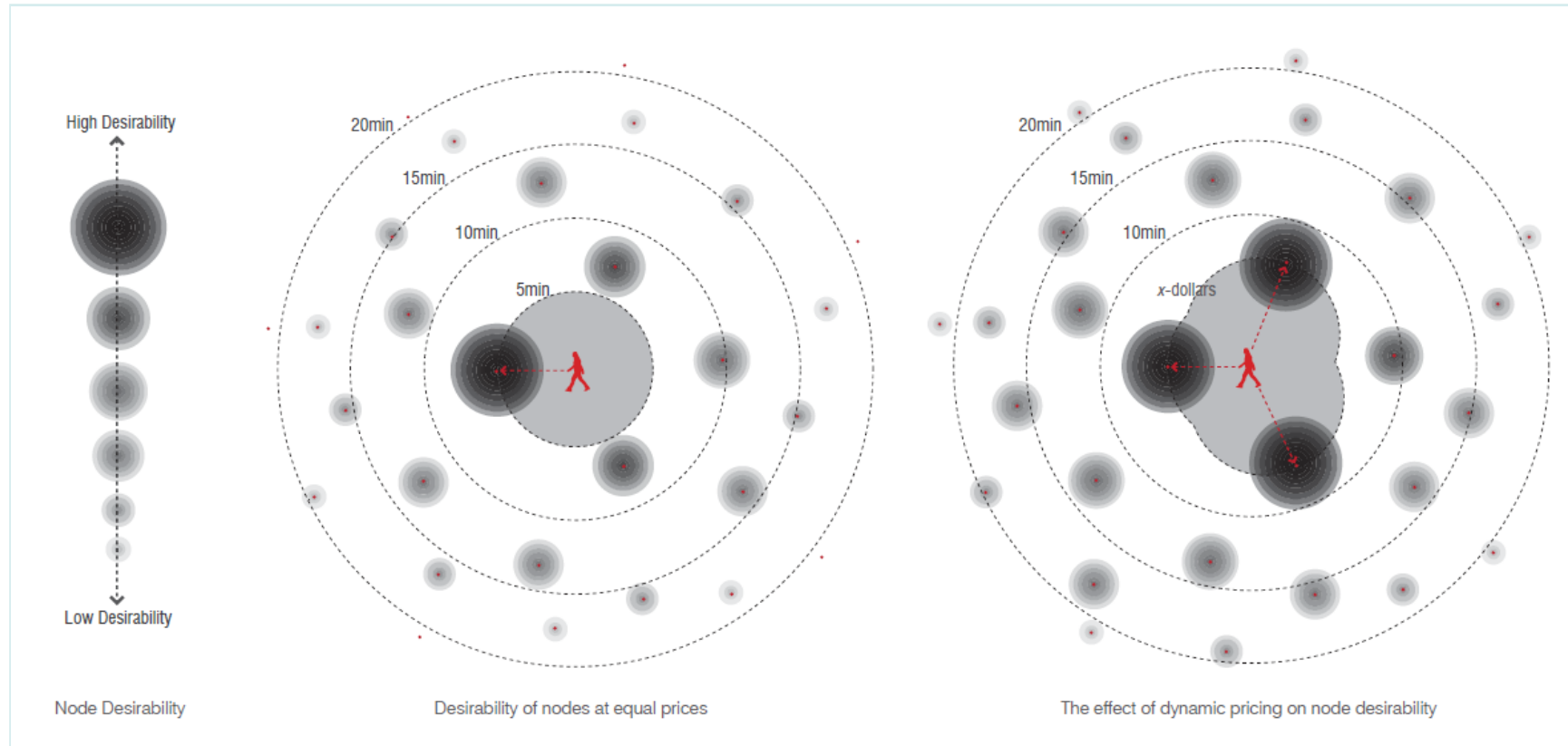
So funktioniert's

02_ About Car-Sharing: MIT's Mobility-on-Demand



Multivehicle sharing system

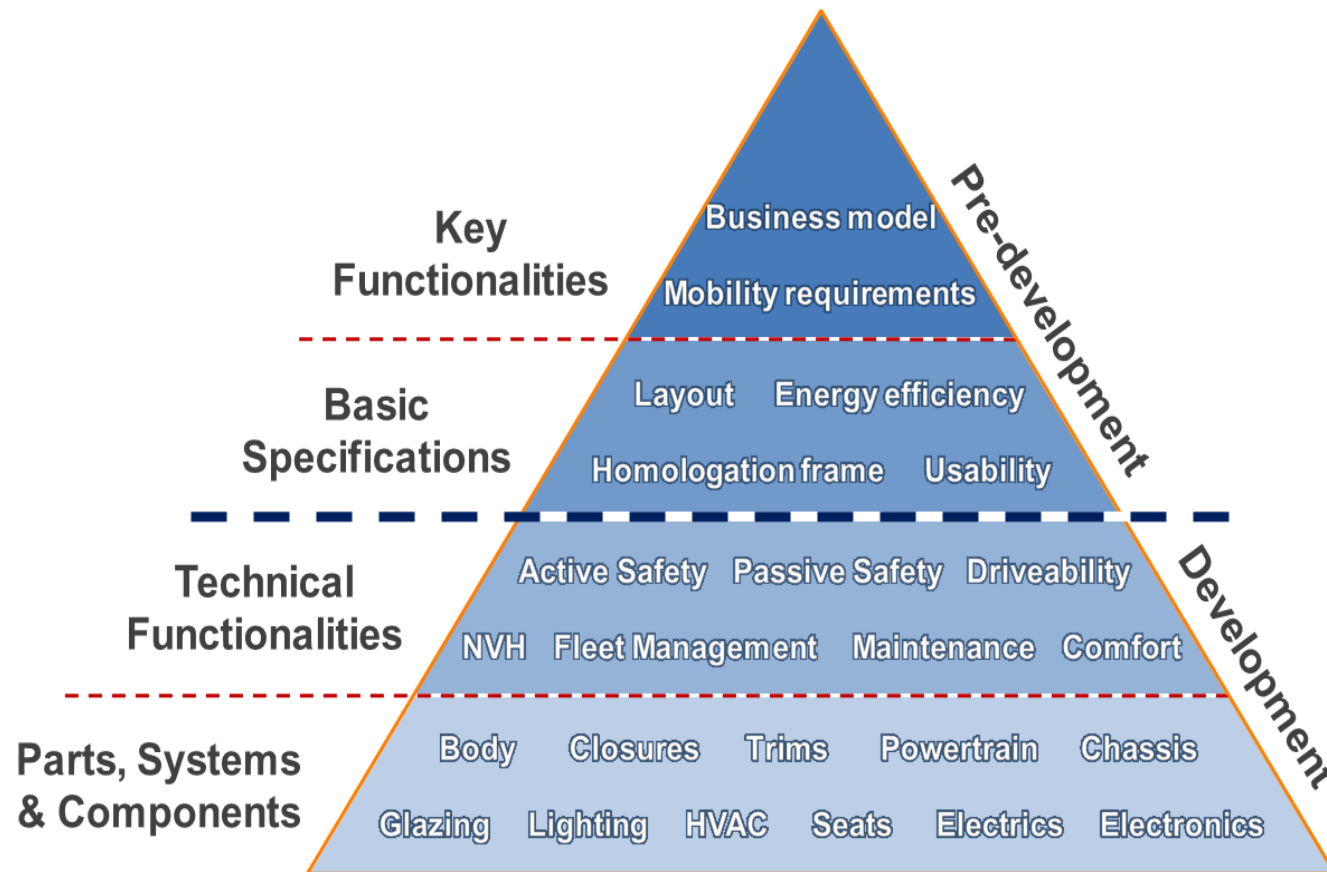
02_ About Car-Sharing: MIT's Mobility-on-Demand



Dynamic Pricing Policy

03_ Development methodology

Development led by functionalities



05_ iShare Predevelopment Phase

- ⊕ Mobility needs research
 - ➔ Public survey on mobility (400 questionnaires)
 - ➔ Internal Brainstorming Workshop (>150 people)
 - ➔ Benchmarking

- ⊕ Concept definition
 - ➔ Vehicle dimensions: 2m x 2m
 - ➔ Chassis concepts
 - ➔ Passive Safety: structural concept and Occupant and Pedestrian protection strategies
 - ➔ Powertrain concepts
 - ➔ Electronics concepts
 - ➔ Usability concepts

03_ Vehicle characteristics

- ⊕ Vehicle type: Heavy Quadricycle
- ⊕ Weight: 400 kg + batteries
- ⊕ Power: 15 kW
- ⊕ Range: 100 km of urban range
- ⊕ Max Speed: 80 km/h
- ⊕ Seats: 2 with 1 integrated CRS
- ⊕ Luggage capacity: 2 cabin bags
- ⊕ Battery recharge: Full recharge in 1 hour and battery swap
- ⊕ Dimensions: 2 m long x 1.4 m wide (parking ratio 2.5:1)
- ⊕ Other: Integration with smartphones
Restoration process

04_ Development methodology

ACTIVITIES

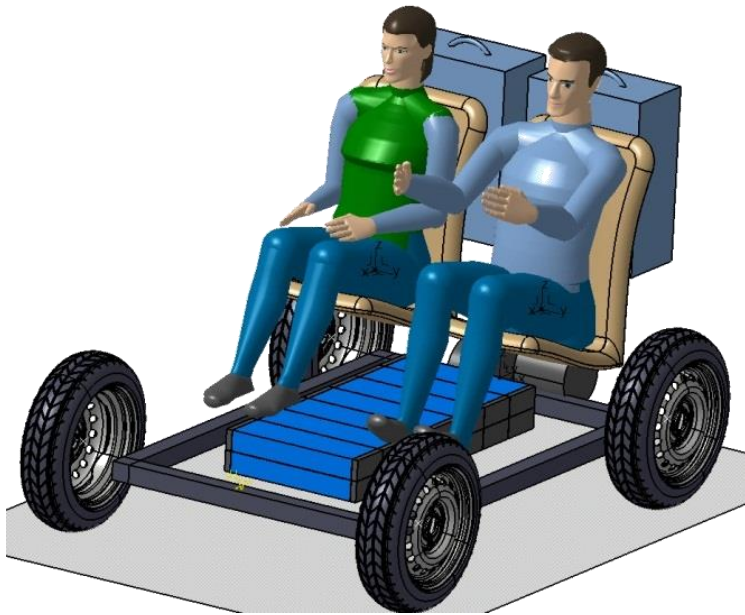
- ⊕ Concept definition
- ⊕ Style
- ⊕ A-class Surfacing
- ⊕ Component dev. & selection
- ⊕ CAD:
 - Body & Trim dev.
 - Chassis dev.
 - System integration
- ⊕ CAE & Validation Testing:
Functional dev.



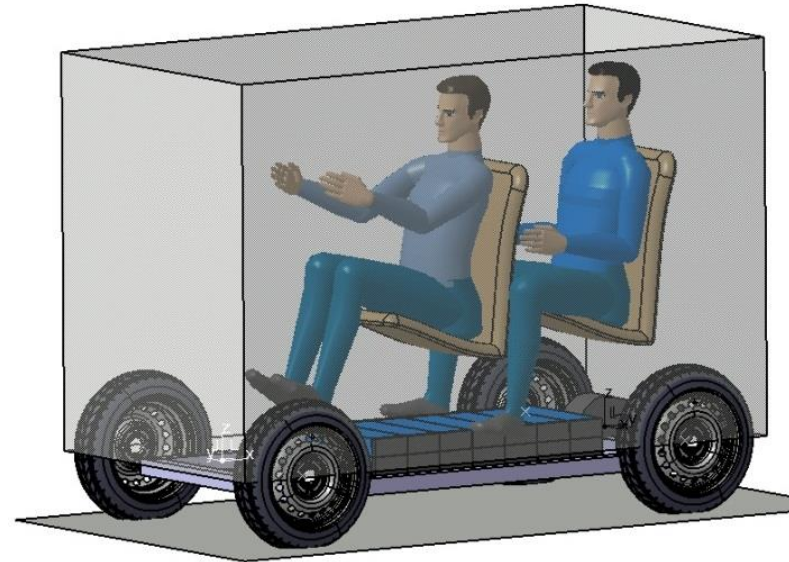
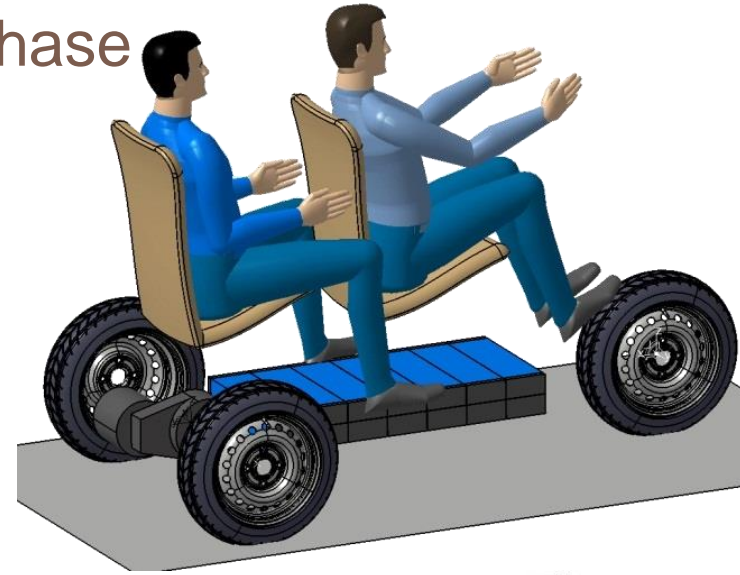
FUNCTIONALITIES

- ⊕ Active Safety
- ⊕ Passive Safety
- ⊕ Powertrain Performances
- ⊕ NVH
- ⊕ Mobility
- ⊕ Homologation

05_ iShare Predevelopment Phase



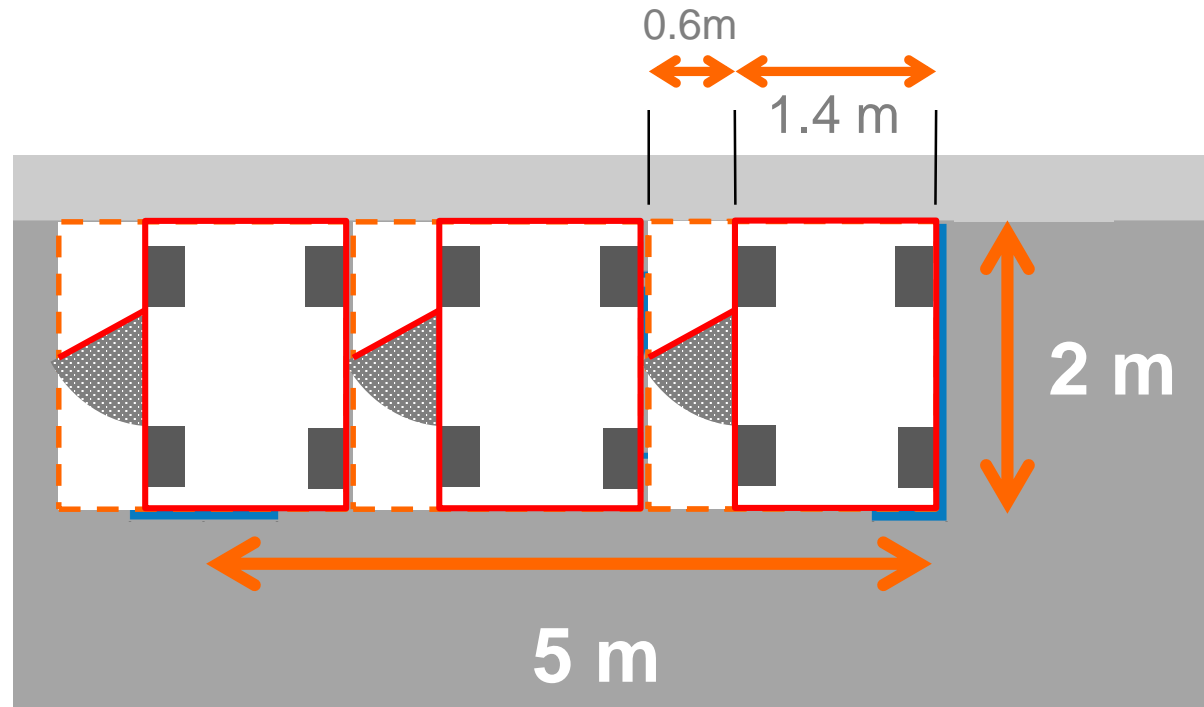
Selected concept



Discarded concepts

05_ iShare Predevelopment Phase

⊕ Dimensions: 2 x 2 m

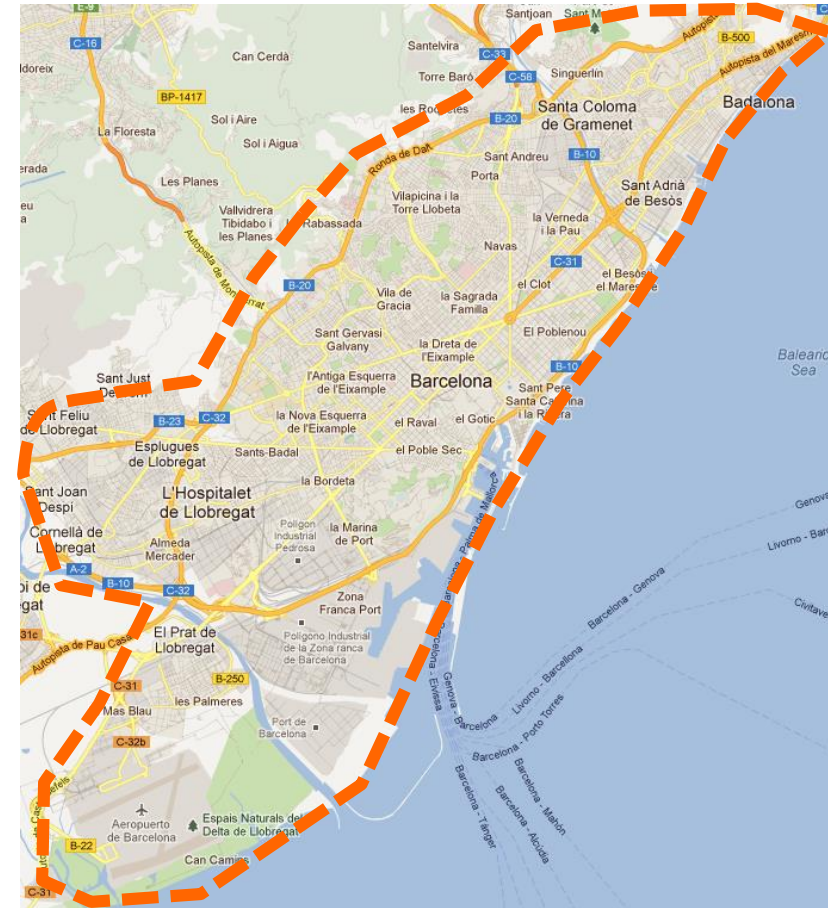


05_ iShare Predevelopment Phase



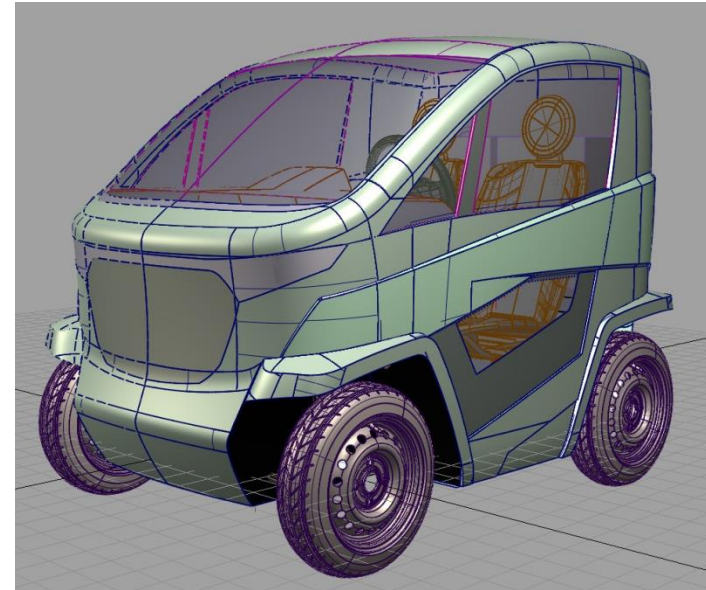
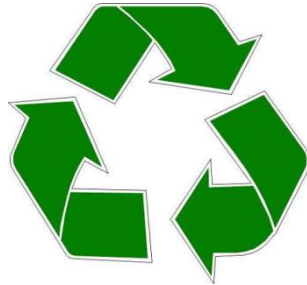
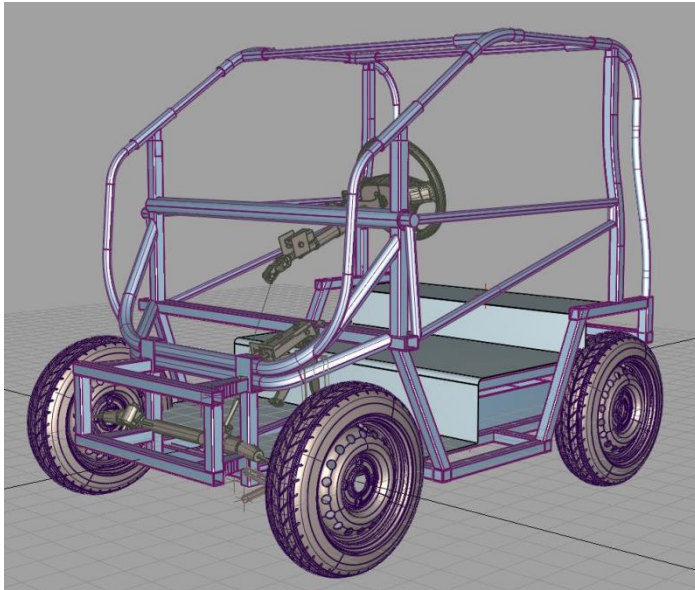
05_ iShare Predevelopment Phase

- ⊕ V max 80 km/h
- ⊕ Range 100 km
- ⊕ Driving license from 16 years-old
- ⊕ 2 seats + 2 cabin luggage
- ⊕ Recharge by:
 - Battery replacement
 - Induction
 - Cable (normal and fast)

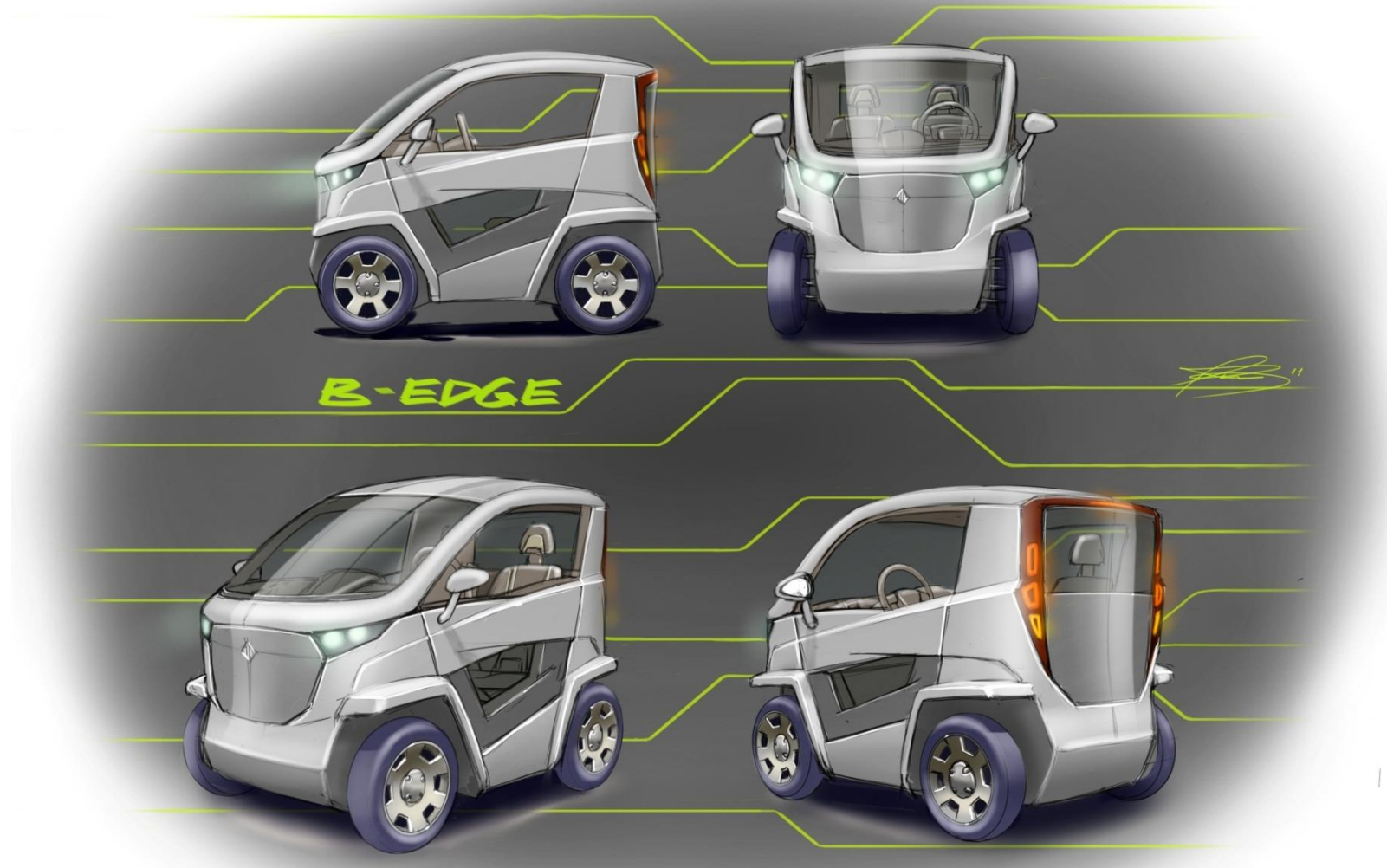


05_ iShare Predevelopment Phase

- ⊕ Vehicle restoration



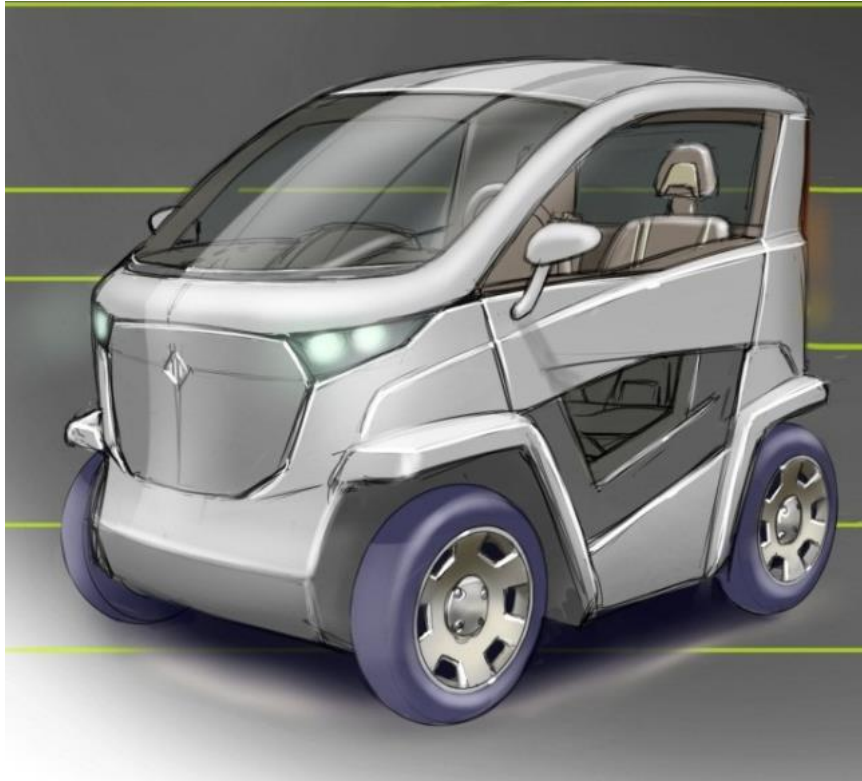
06_ iShare Development Phase: Style



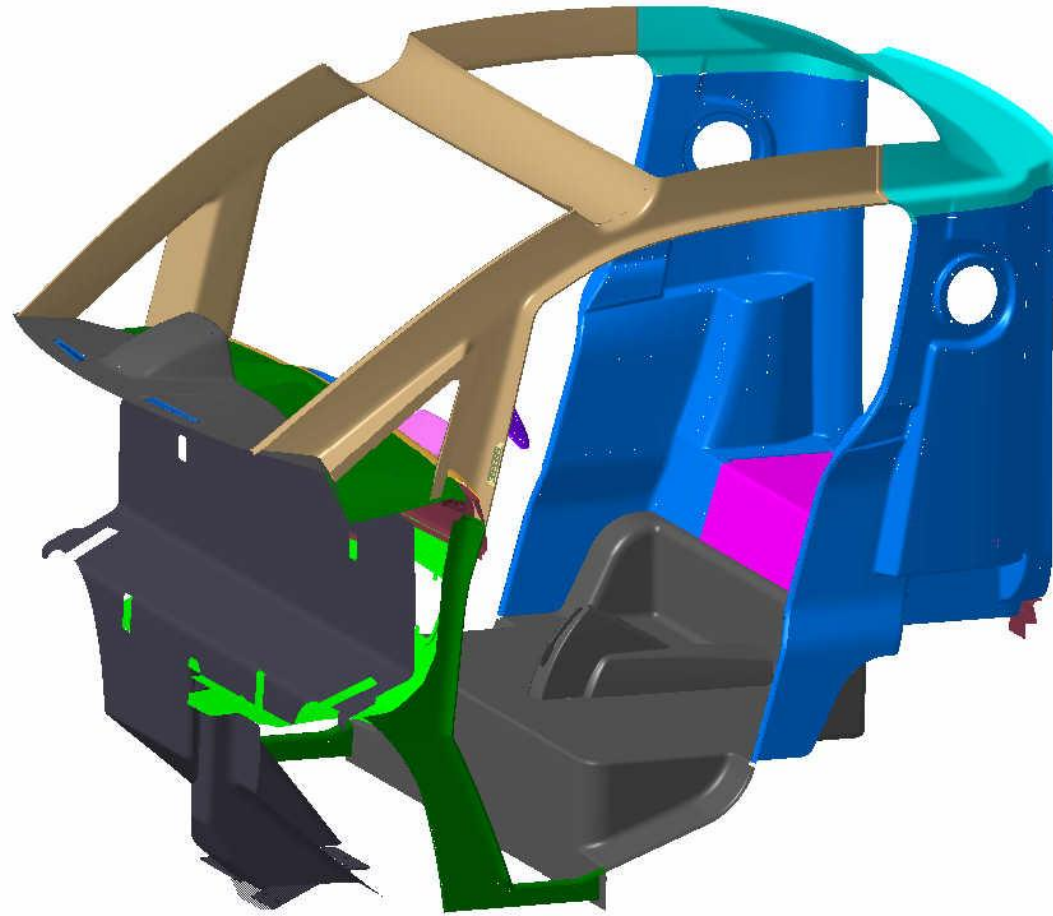
06_ iShare Development Phase: Surfacing



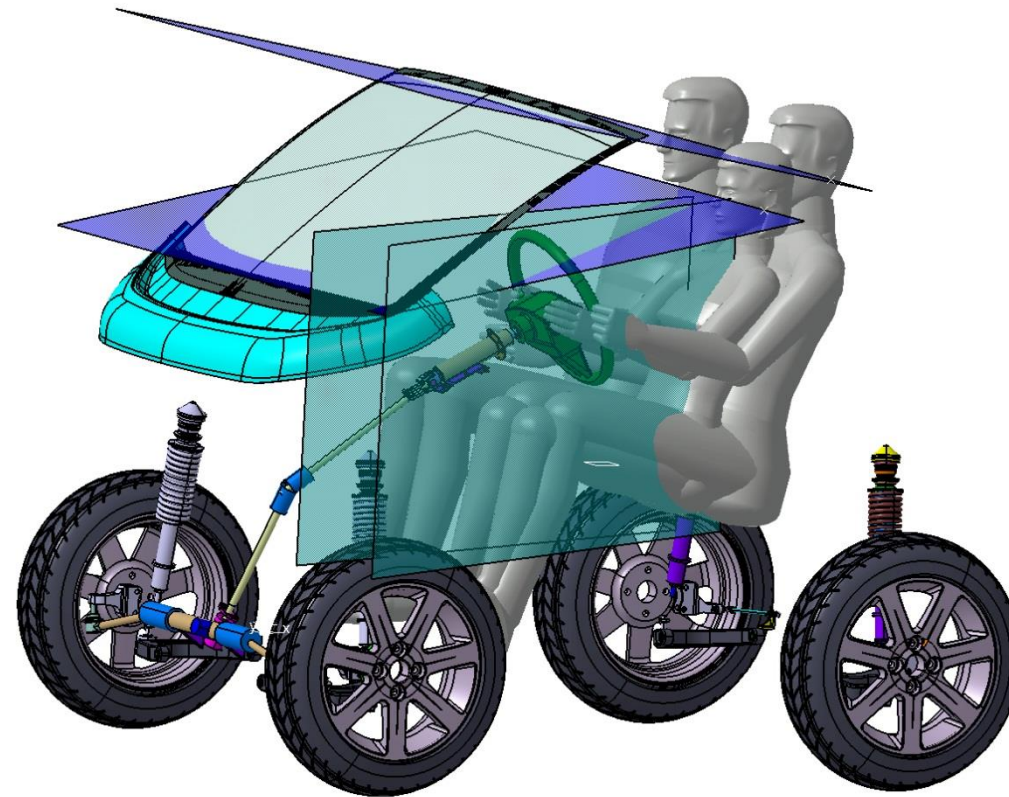
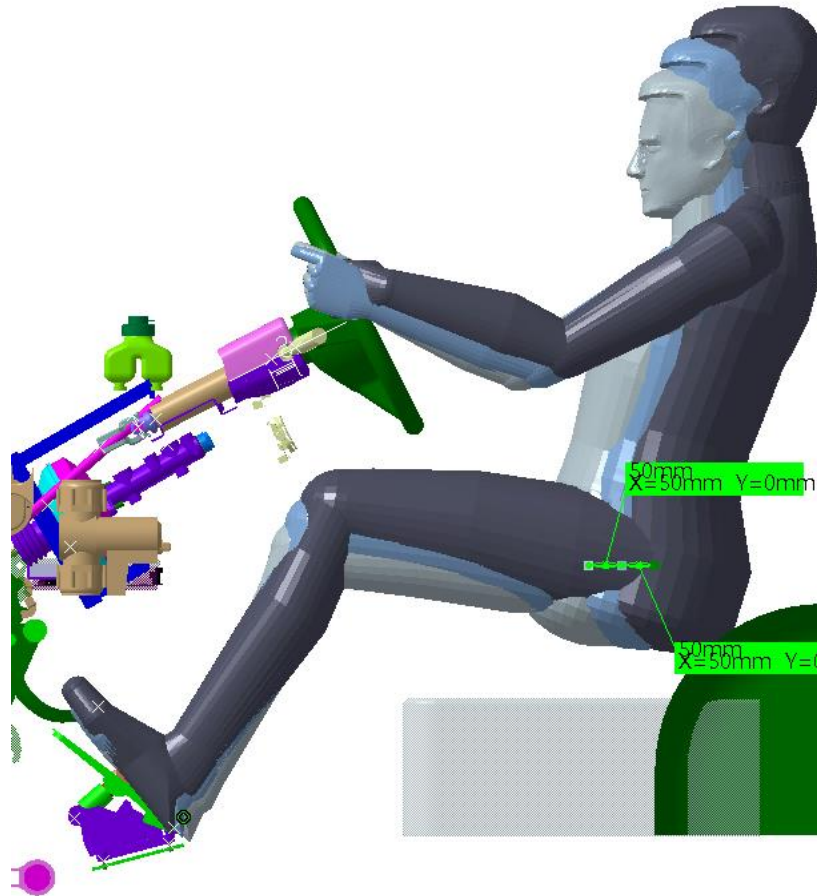
06_ iShare Development Phase: Surfacing



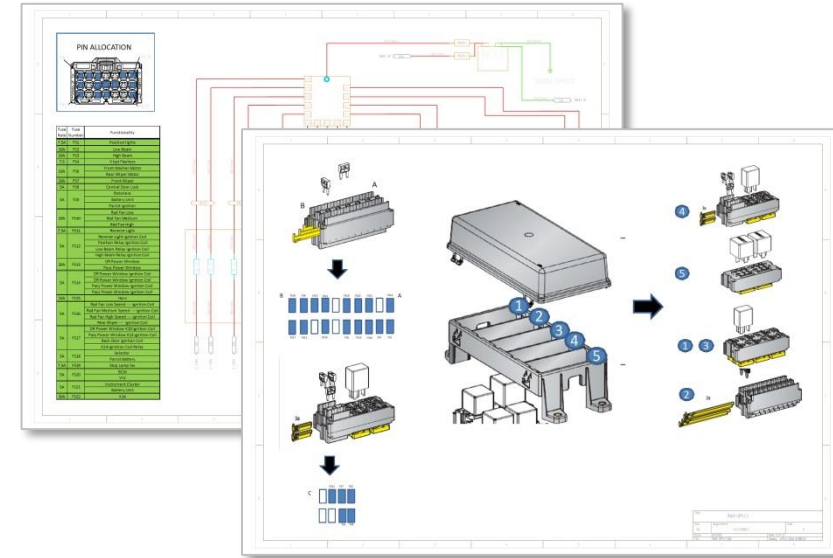
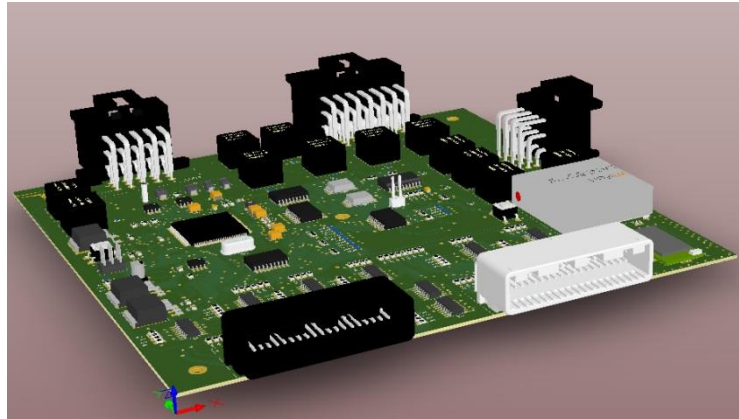
06_ iShare Development Phase: Body & Int/Ex Trims



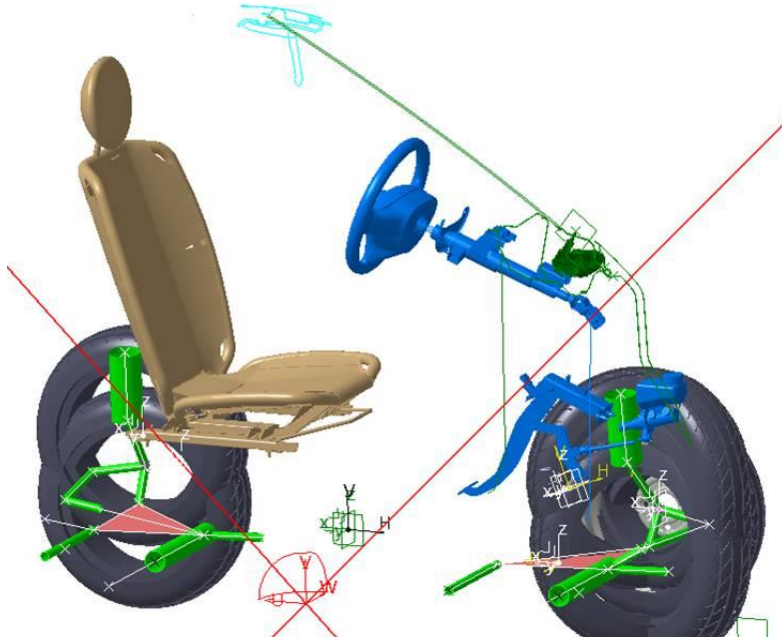
06_ iShare Development Phase: Packaging & Ergonomics



06_ iShare Development Phase: E&E



06_ iShare Development Phase: Chassis Development

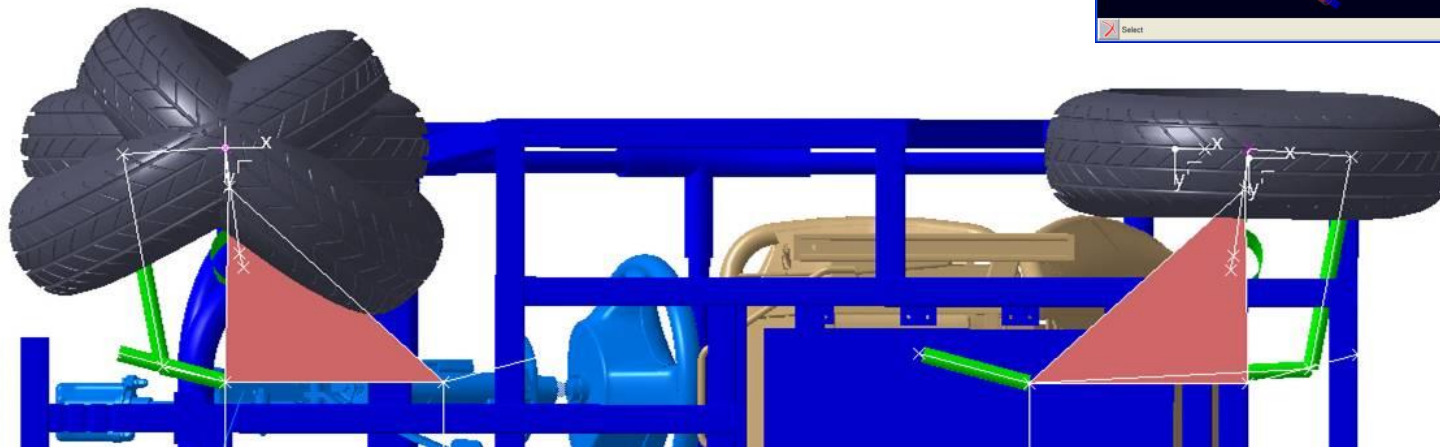
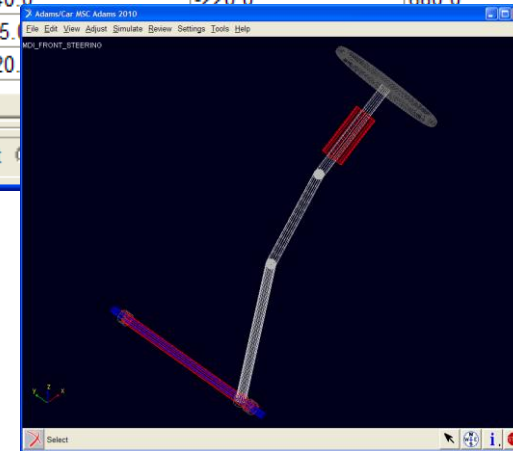


Hardpoint Modification Table

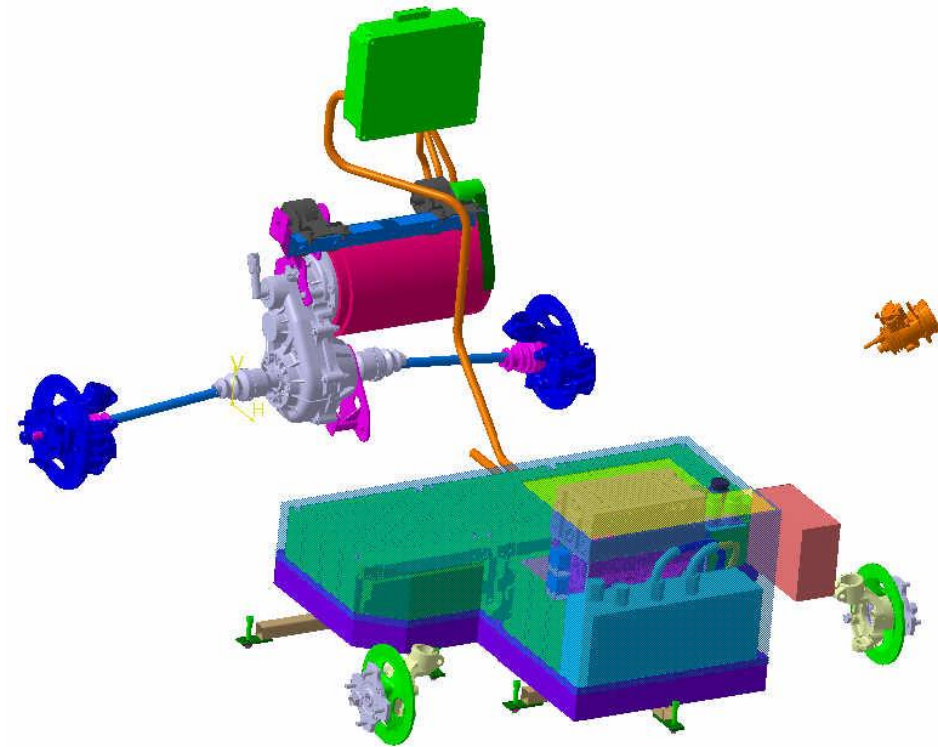
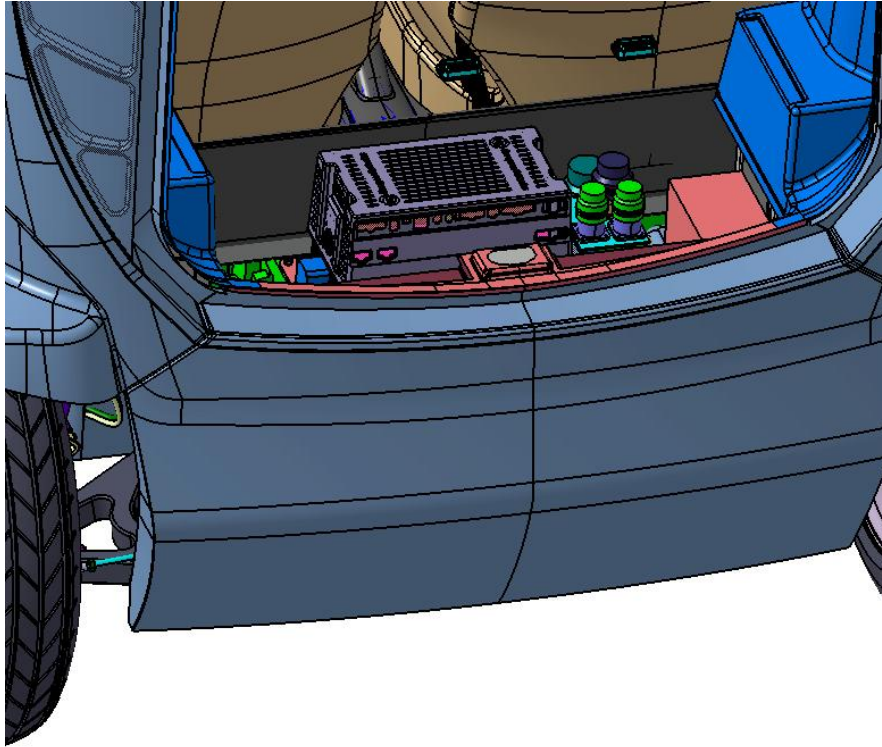
Assembly Subsystem MDI_FRONT_STEERING

	loc_x	loc_y	loc_z
hpr_rack_house_mount	-85.0	260.0	-25.0
hpr_tierod_inner	-85.0	310.0	-25.0
hps_intermediate_shaft_forward	40.0	-220.0	450.0
hps_intermediate_shaft_rearward	240.0	-220.0	680.0
hps_pinion_pivot	-85.0		
hps_steering_wheel_center	520.0		

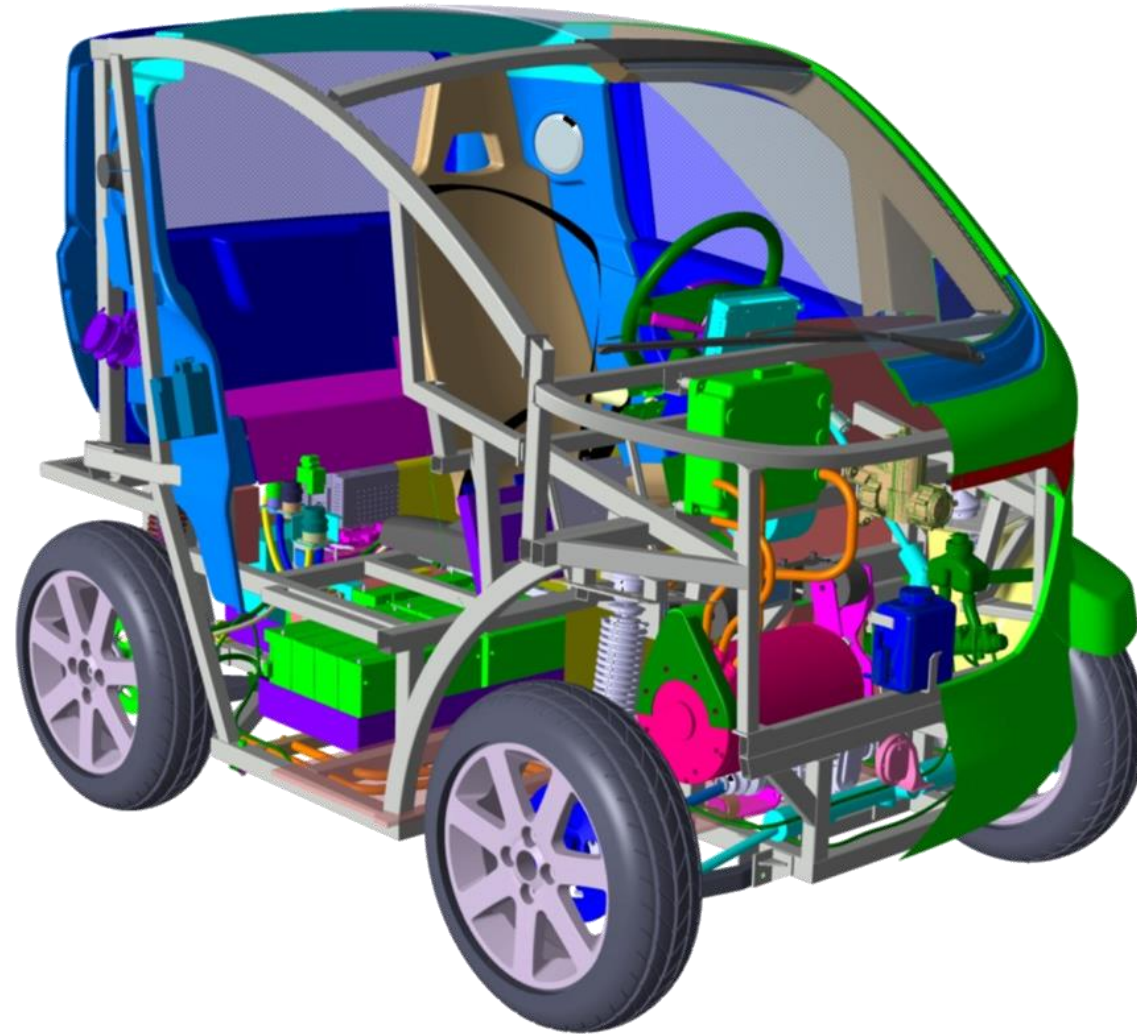
Display: Single and Left Right



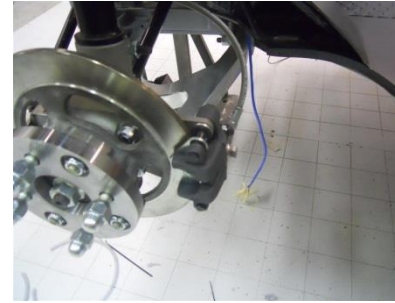
06_ iShare Development Phase: EV PWT Development



06_ iShare Development Phase: System dev. & Integration



06_ iShare Development Phase: Vehicle construction



Thank you very much for your kind attention

For further information, visit us in **You**  **Tube**

<https://www.youtube.com/user/ApplusIDIADAGroup>



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