Functional Vehicle Design for Urban Mobility
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)

Main Centres for Engineering, Testing and Homologation

**Brazil**
- São Paulo
- Betim
- Curitiba
- Resende
- Tatuí

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

**Czech Republic**
- Hradec Králové
- Brno
- Liberec
- Miada Boleslav

**Germany**
- Ingolstadt
- Munich
- Stuttgart
- Wolfsburg

**India**
- Pune
- Chennai
- New Delhi

**UK**
- Cambridge
- Nuneaton

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

**Other offices**
- Aichi
- Bangkok
- Brussels
- Gothenburg
- Jakarta
- Kuala Lumpur
- Lu Kang
- Maranello
- Nizhny Novgorod
- Penang
- Pretoria
- Riyadh
- Teheran
- Togliatti
- Tokyo
- Turin

Total: 2,239 people
Body Design & Passive Safety Engineering
Chassis Design, Active Safety & Powertrain Engineering
Product Certification & Homologation
Proving Ground Testing
Testing facility design
Development led by vehicle functionalities

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.
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
02_ About Car-Sharing: in Germany by BMW/Mini
02 About Car-Sharing: MIT’s Mobility-on-Demand

Multivehicle sharing system
Dynamic Pricing Policy

02 About Car-Sharing: MIT’s Mobility-on-Demand
Development led by functionalities

- Business model
- Mobility requirements
- Layout
- Energy efficiency
- Homologation frame
- Usability
- Active Safety
- Passive Safety
- Driveability
- NVH
- Fleet Management
- Maintenance
- Comfort
- Body
- Closures
- Trims
- Powertrain
- Chassis
- Glazing
- Lighting
- HVAC
- Seats
- Electrics
- Electronics

Parts, Systems & Components

Technical Functionalities

Basic Specifications

Key Functionalities

Development methodology
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
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
05_ iShare Predevelopment Phase

Dimensions: 2 x 2 m
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
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 YouTube

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