Multifunction Innovative Vehicle

V.I.P. Project Filoni-Argos-Cabel-Agresti/Calamai

Firms committed in V.I.P. Project

ARGOS ENGINEERING S.r.l. Via S.Alessio 64/B 51100 Pistoia Italy Tel.+39 0573964242 Fax +39 0573965035 www.argos-it.com email webmaster@argos-it.com	Industrial, Mechanical, Plant and Railway Design Studio operating with innovative graphical techniques for the development of Drawings and 3D Modelling. As an option, prototype realization. As an Ansaldobreda Design partner, ARGOS has been committed for many years in the design of Urban Mobility Vehicles, Metros and Tram Sirio Vehicles. Design activity is integrated with simulations and F.E.M. Analysis. ARGOS has been on the market for more than twenty years.
FILONI SRL Via degli Opifici, 229 Loc. Maresca 51028 S. Marcello P.se (PT) Italia Tel. +39 0573 64576 Fax +39 0573 64674 info@filoni.eu	Filoni srl is active in many sectors from 1952. Filoni collaborates with designers and prestigious firms for several meaningful projects. The firms has been certificated according to UNI EN ISO 9002 since 1997 for manufacturing of models and prototypes of vehicles, electrical household appliances, agricultural machines built with wood, metals and plastics.
CABEL COSTRUZIONI ELETTRONICHE S.R.L Via M. Nannini, 169/1 51100 PISTOIA Tel. 0573 534247 Fax 0573 536573 info@cabelettronica.it	Firm committed in advanced electronics and plant design. Cabel is more than 30-years expert in Railway and Medical sectors. Cabel uses and develops GSM/GPS and satellite tracking systems. Cabel is also a specialist in control systems for automatic vehicles driver. Currently it has acquired skills in visual control systems working with the Institute of Computer vision of the faculty of Engineering, University of Florence.
CENTRO SVILUPPO PROGETTAZIONE, RICERCA E ATTIVITA' INDUSTRIALI CALAMAI E AGRESTI S.R.L. Via Mazzini, 47 - 51100 Pistoia Tel. 0573 34861 - Fax 0573 506212 info@calamai-agresti.it	Firms committed in design and calculation of structures, machines, plants, mechanical and fluid systems. Researches and feasibility studies for mechanical, pneumatics, hydralics plants. Functional and Structural Calculations, both classical and F.E.M. in various sectors of mechanics. Design and conception of railway vehicles. Design, complete of functional and structural calculations, of railway bogies.

V.I.P.

Basic Idea for V.I.P. Project

The project raises from the need of a complete renewal of the Mobility Conception, for environmental, economical and practical reasons.

International studies have shown the non-sustainability of the present transportation sector development growth, and the absolute need of a new deal able to avoid great wastes of resources.
The main goal of these studies (that are developped in this project) are:

- Reduction of circulating vehicles
- Reduction of environment and acoustic pollutions
- Increase of available urban spaces
- Reduction of environment resources exploitation
- Meaningful savings in family economics.

This Project has been totally studied and driven to realization through the capability of the four-firms above mentioned.
These firms are an important component of the Ansaldobreda External Design System for Railway Sector in Pistoia: in the V.I.P. Project all the experiences acquired in many years of this co-operation are employed.
V.I.P. Projects aims to introduce an innovative way for singles and small groups mobility so that mass transit mobility systems (airplanes, trains, metros, buses) can be encouraged without penalizing areas like historical downtowns and others in which the transportation is frequently limited to private means.
V.I.P. (Innovative Multifunctional Vehicle) has raised for a mainly urban use (example for car-sharing), it's totally electronically assisted for Public Traffic Management. The vehicle is quite adaptable to many configurations depending on the passengers flow.
The vehicle is designed for, at least, a15 years-long life with low Maintenance; it is also equipped with several safety systems for passengers.

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Today situation

Recent studies and analysis in " automotive" enviroment show that today there are millions of private vehicles used for lit distances and for a short period of time (not over 6-7% of their real potential use), which occupy public space making practicability difficult and dangerous.
These veicles are very expesive (both in production and during the operation) and use often highly polluting fuels.
For instance, second cars,often old and little maintened because less used, have their original performance reduced with more flue consumption and worse quality atmospheric emissions. In fact, using extremely less the vehicle makes it absolutely inefficient catalytic converters, that causes extensive damage to the environment during its use and even after their disposal.
The resources required to produce and then to dispose of the vehicles are not absolutely proportionate to the benefits to procure such means.

Our Objective

Our project is to develop a new type of vehicle with electric drive Railway concept and a high technological value. The first prototype will be presented in static form within Summer 2011. By Autumn 2011 it will be made it fully functional. The vehicle is built with different and more technologically innovative materials than those traditionally used in the automotive industry, with a high recyclability and low environmental impact. The prototype vehicle is built to be used as a car-sharing, with the objective of reducing the fleet assets. It is expected that potential customers are government and common utilities, but not to exclude any other type of subject.

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Technical features:

The Vehicle can get several configurations:
- 5 seats or 2 + HK
- 7 seats or 6 + HK
- 2 seats with rear loading space.

- Advanced Electrical Motors with Proportional management of Battery Charge
  The batteries are recharged by solar panels - regenerative braking - standard electrical outlet

- High Distance Batteries (from 150 to 200 Km)

- Aluminium alloys Frame

- Interior lining in anti-bacterial materials

- Automatic HK uploading and downloading system

- GPS controlled Maximum Speed of 70 Km/h

- Touristic info and entertainment onboard system equipped with monitor

- Vehicle Safety anti-alcohol and narcotics assumption control systems.

- Driver's attention control system with active intervention

- Street borders projection on front window for visibility in case of fog.

- Onboard system with messages projected on the front window.

- Internal system for air moisture management

- Bacterial Automatic Sanitization System

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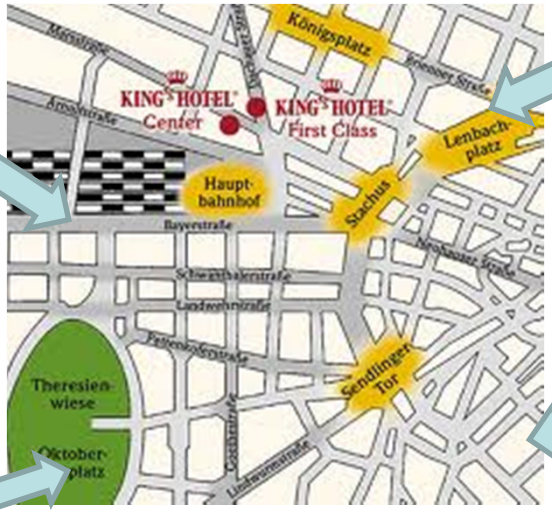
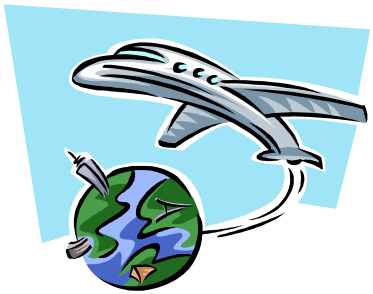
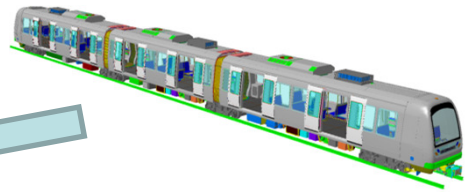
Application examples

THE INTERMODAL TRANSPORT
DETERMINING THE CONCENTRATION
ITEMS IN MARGINAL TO THE CITY '
HIGH FLOWS OF PERSONS THEY NEED 'MOBILITY'
STAFF OR A SMALL LIMITED GROUP OF PEOPLE.
NOT ALWAYS THE MEDIA OR URBAN TAXIS ARE
SIZE OR SIZES FOR FLOWS THE PEOPLE THAT
HAVE DIFFERENT NEEDS.







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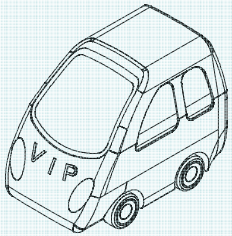
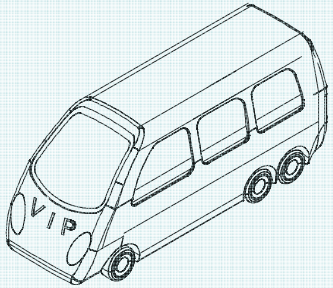
Examples of composition



Vehicle 4 seat
or 2 seat + hand.



Vehicle 8 seat
or 6 seat + hand.

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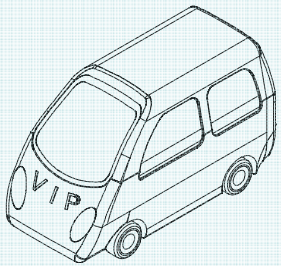
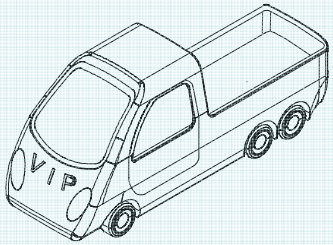
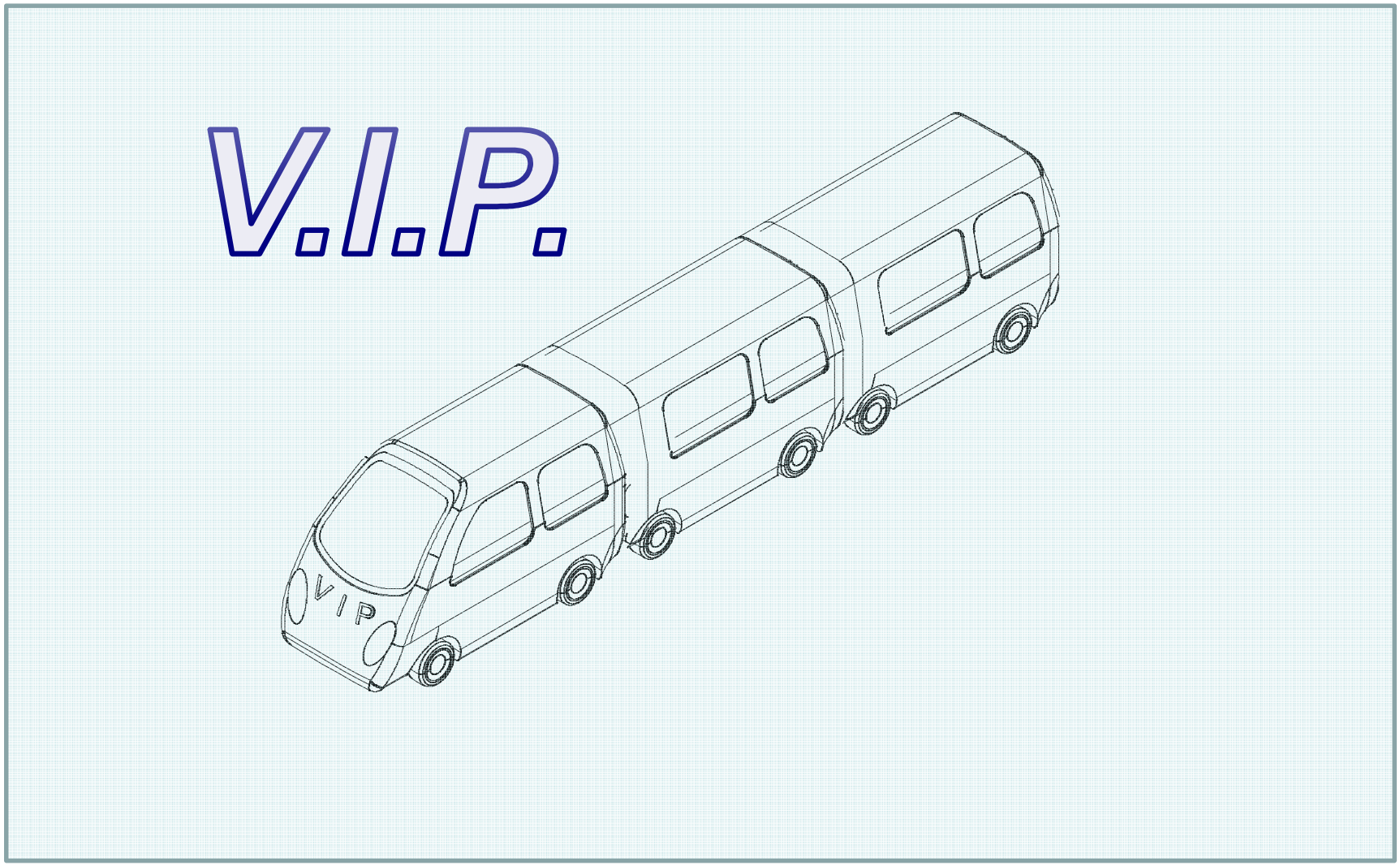


Vehicle 6 seat
o 4 seat + hand.



Vehicle 2 seat
goods transport

Integrated composition of vehicles as possible development project



Design studios

Initial phases based on the Design and
Relative interior ergonomics

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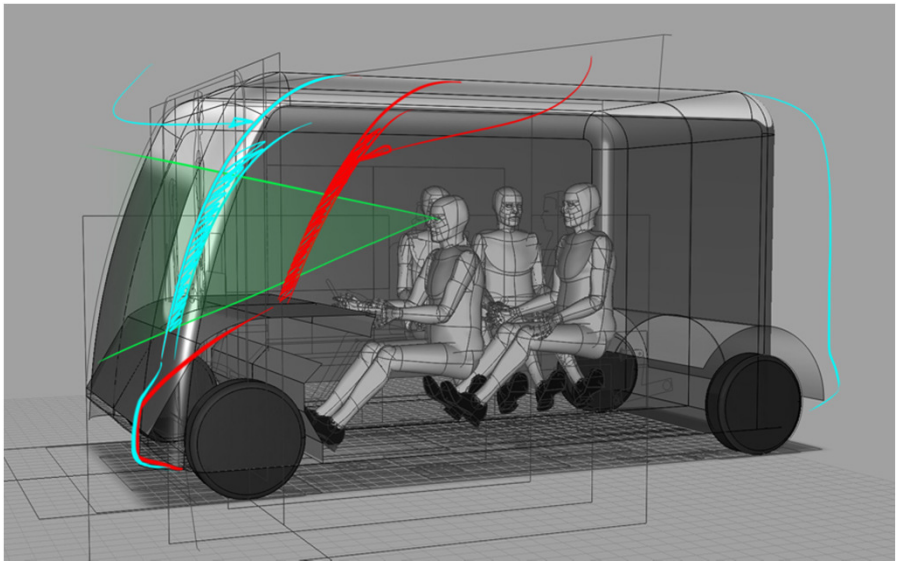
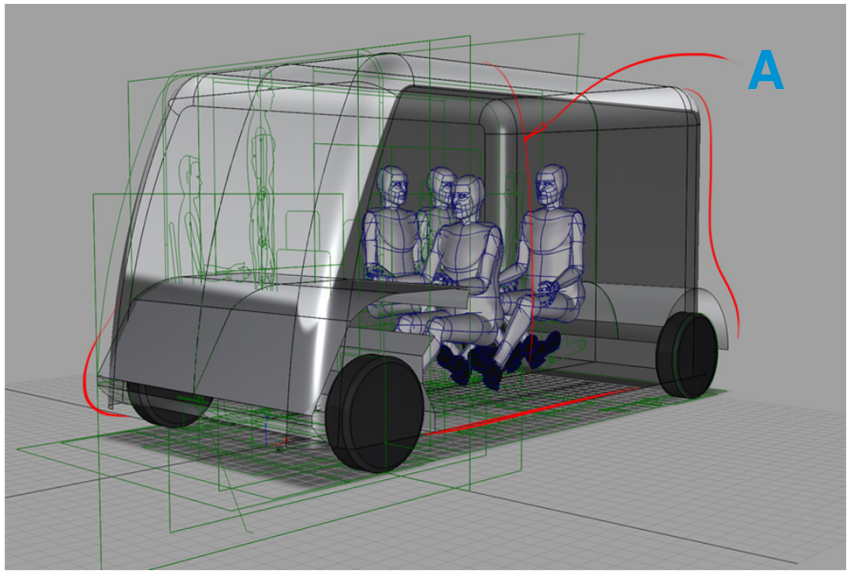
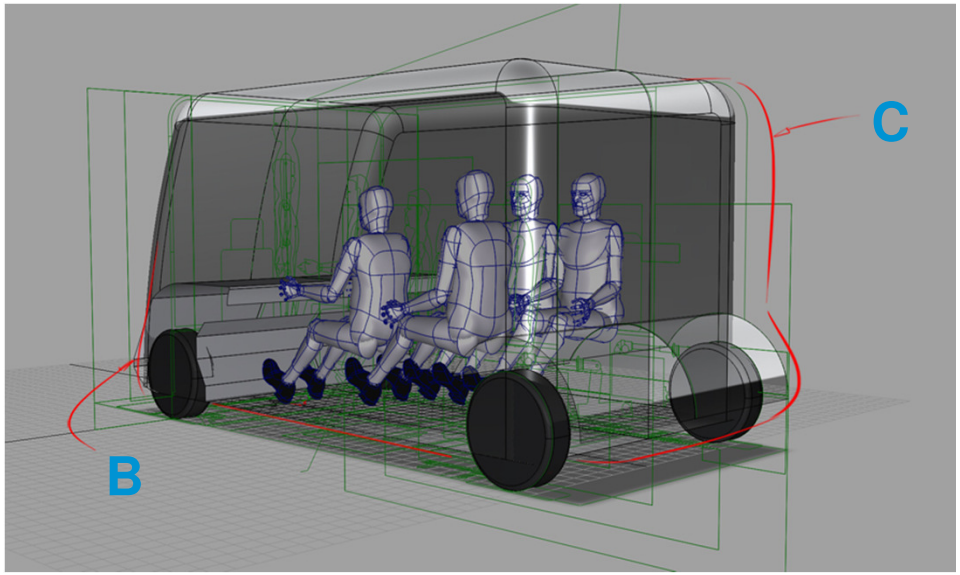
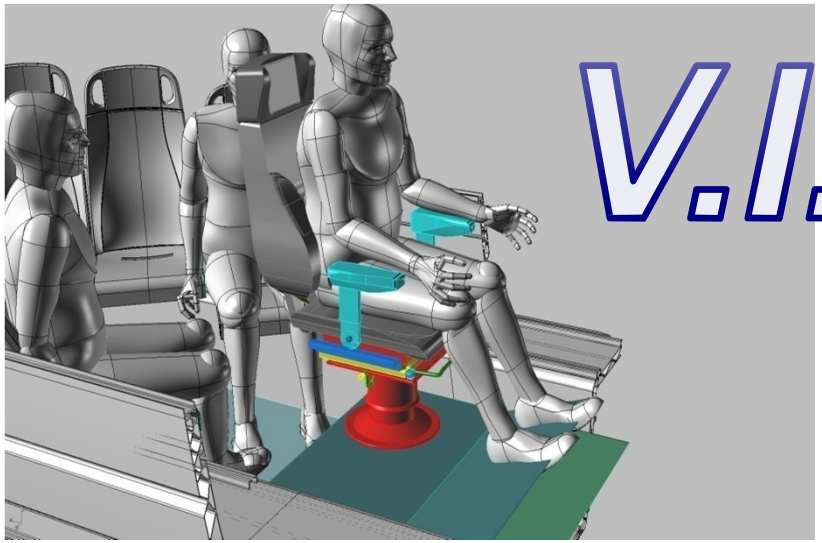






Ergonomic analysis based on standards
International applied software 3D simulation



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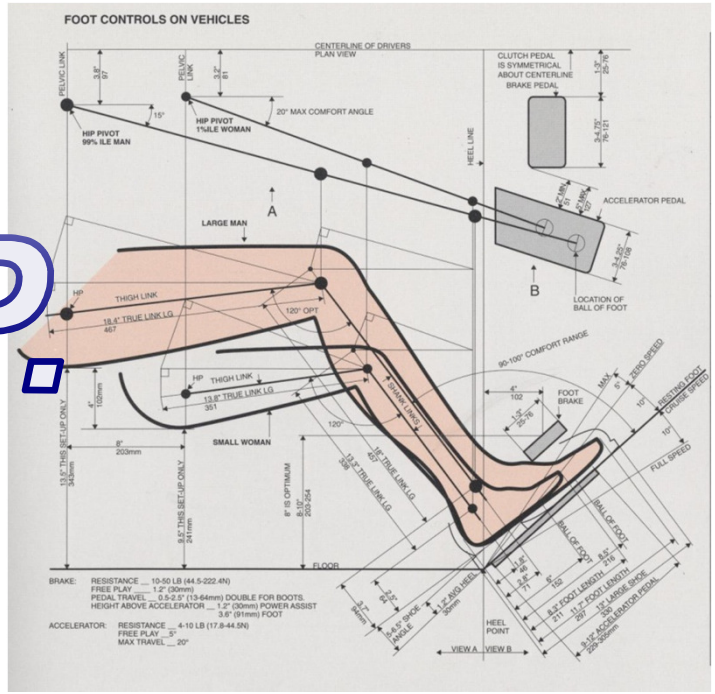

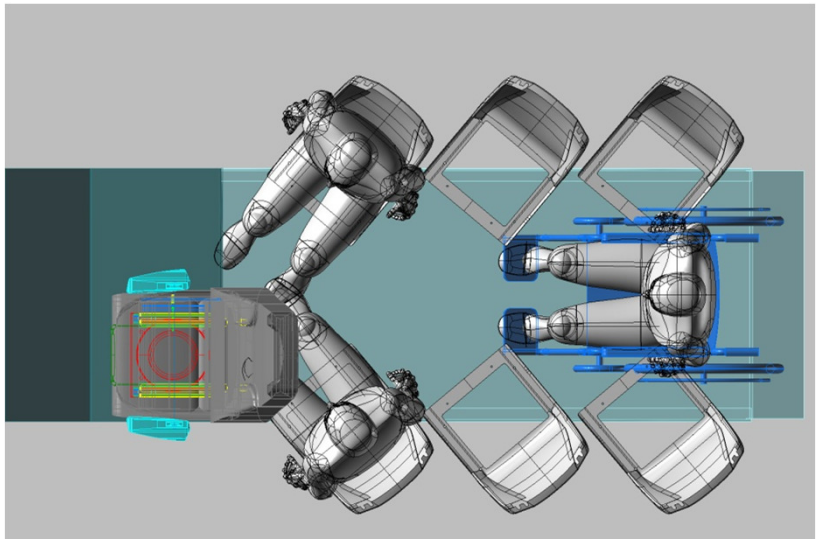

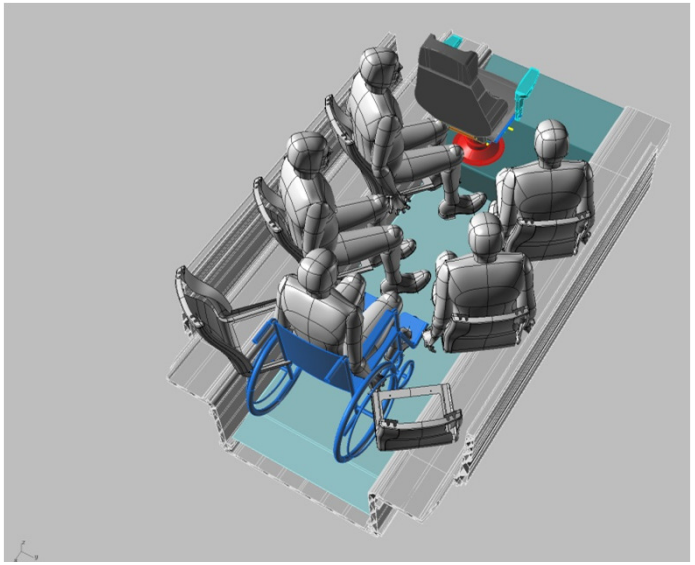

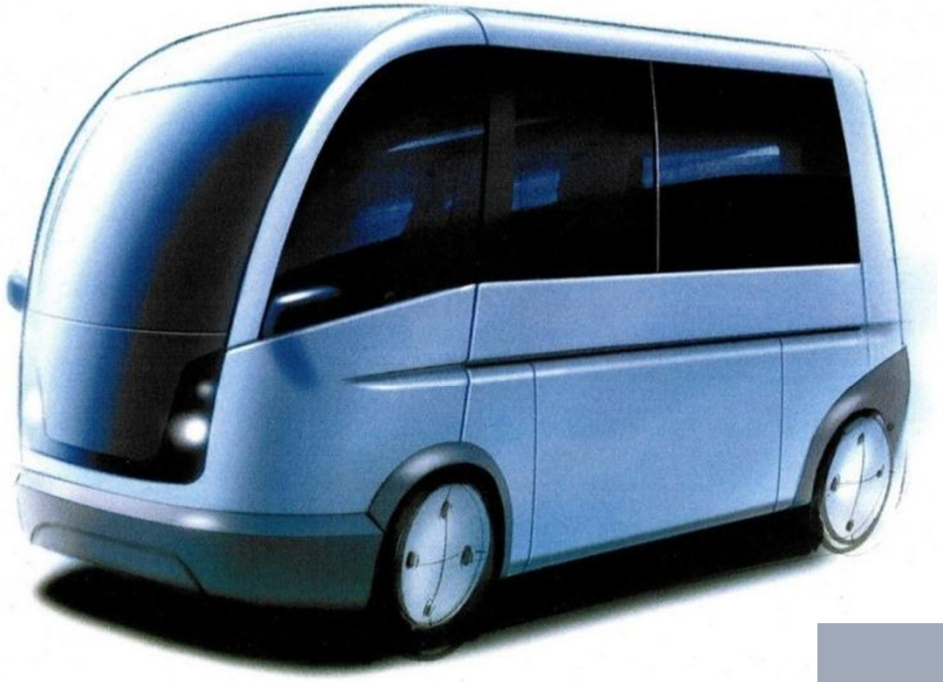

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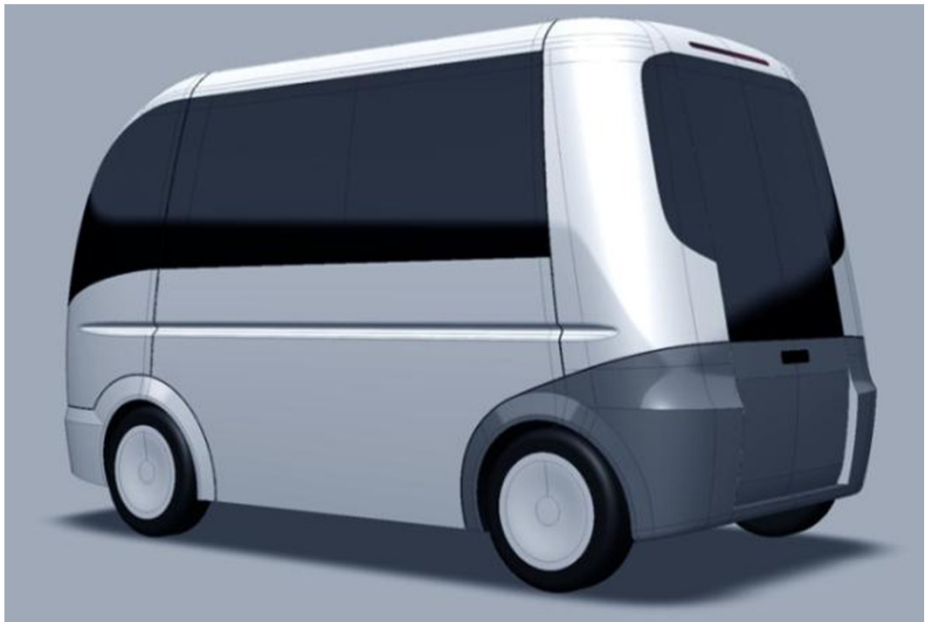
Final design selected for
prototype construction



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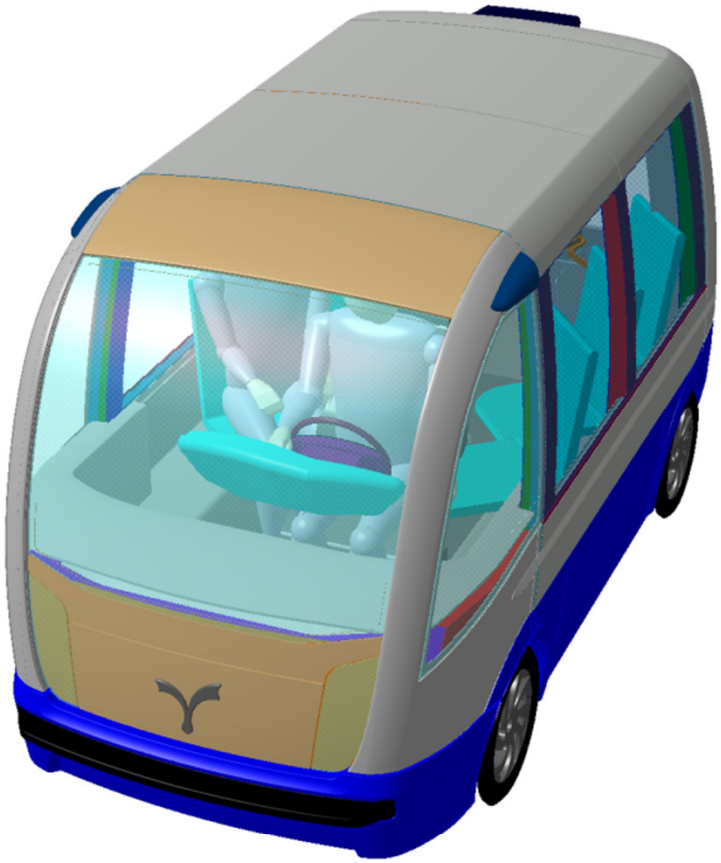
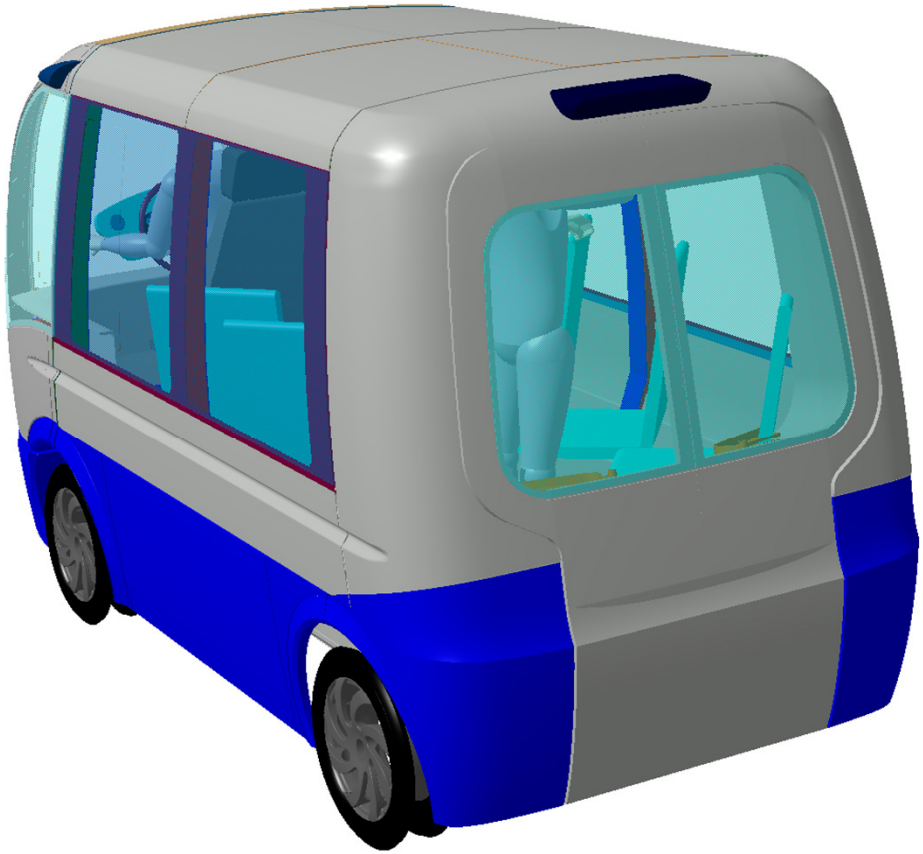
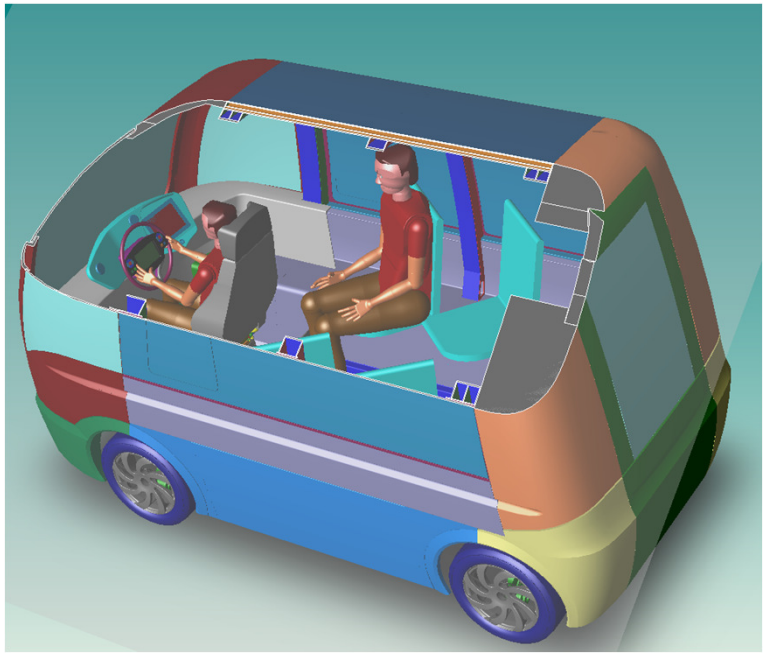
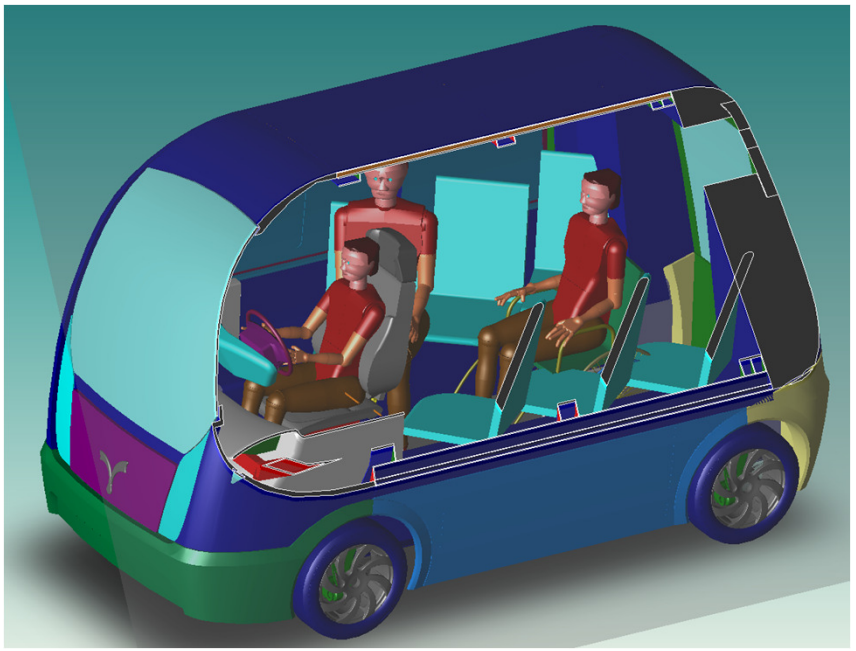
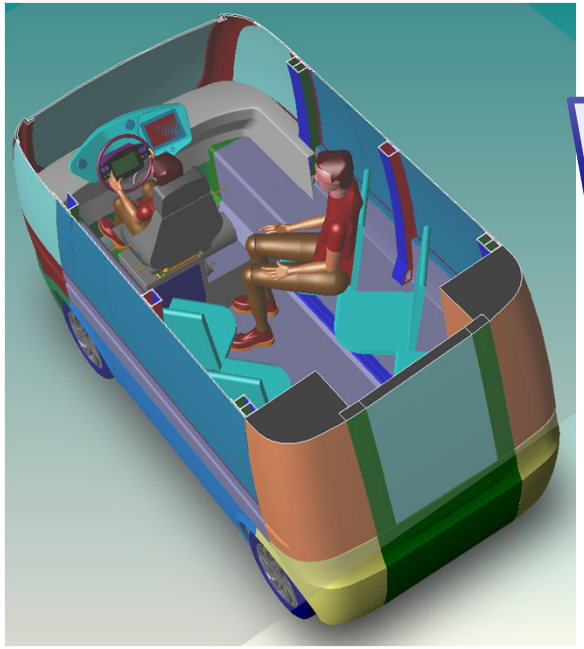




Executive design







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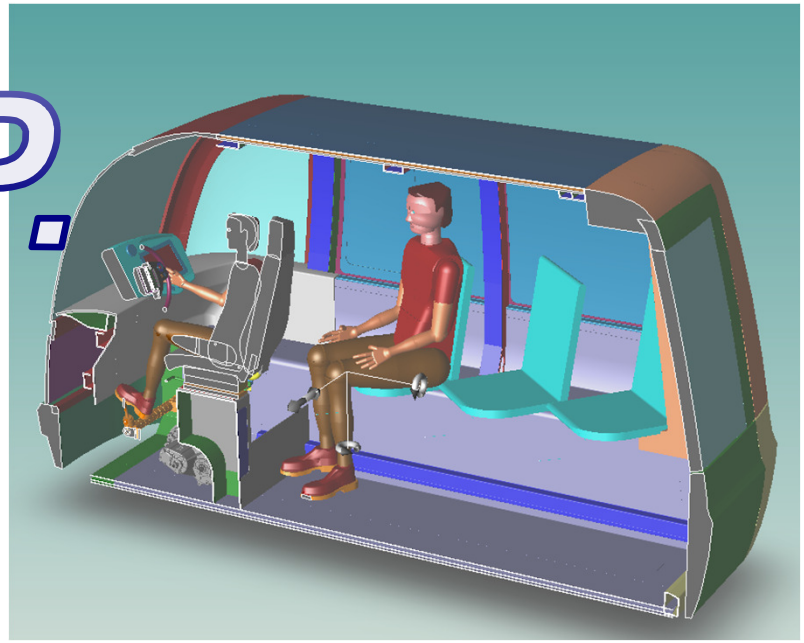

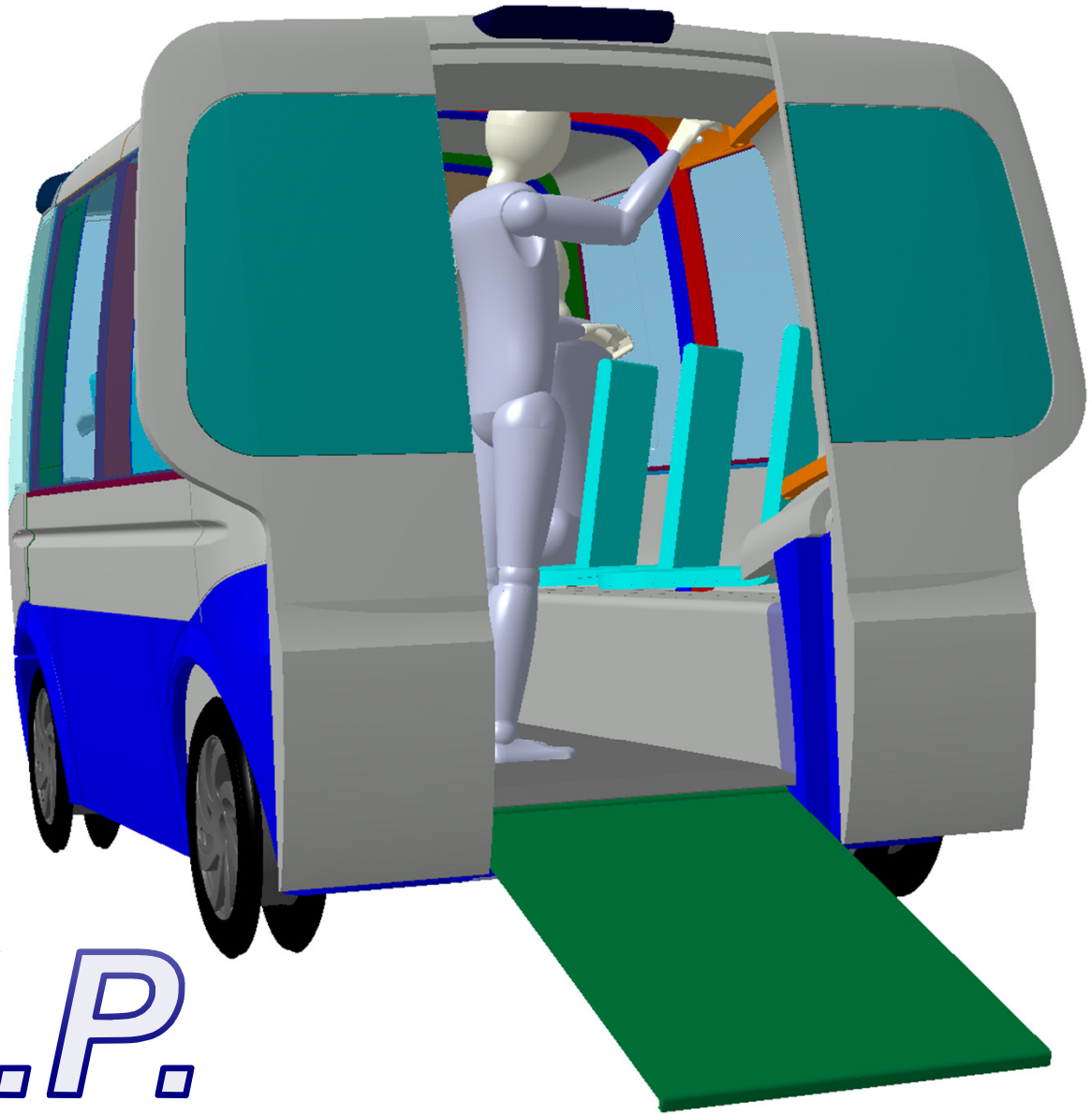

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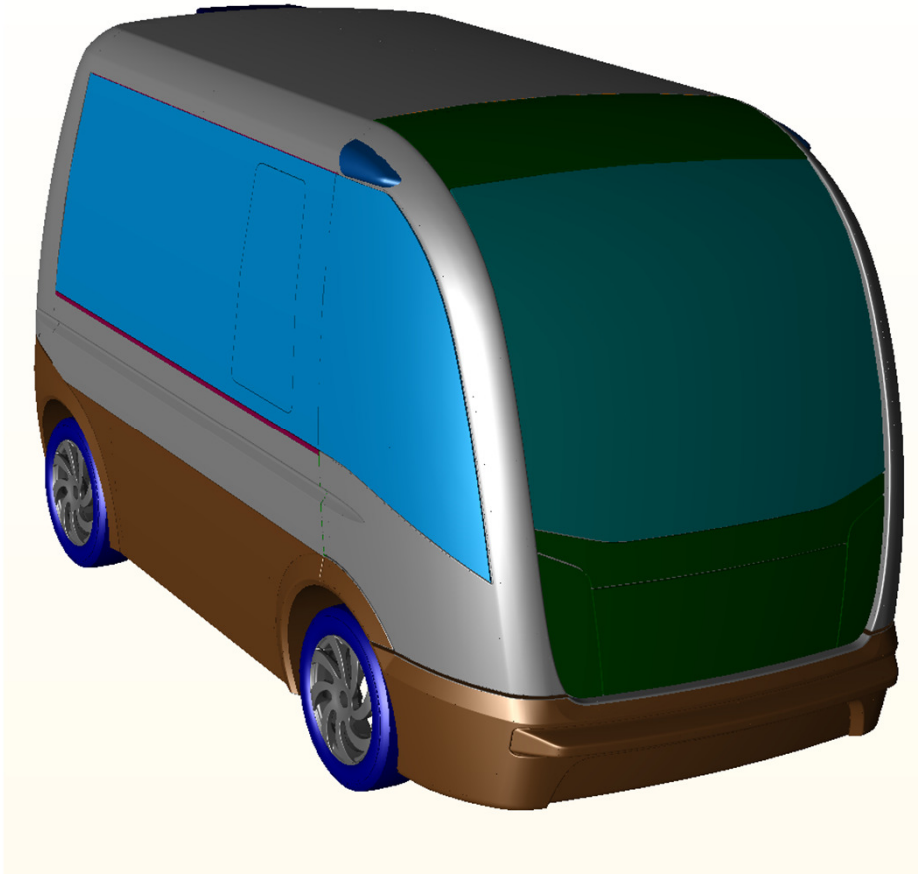
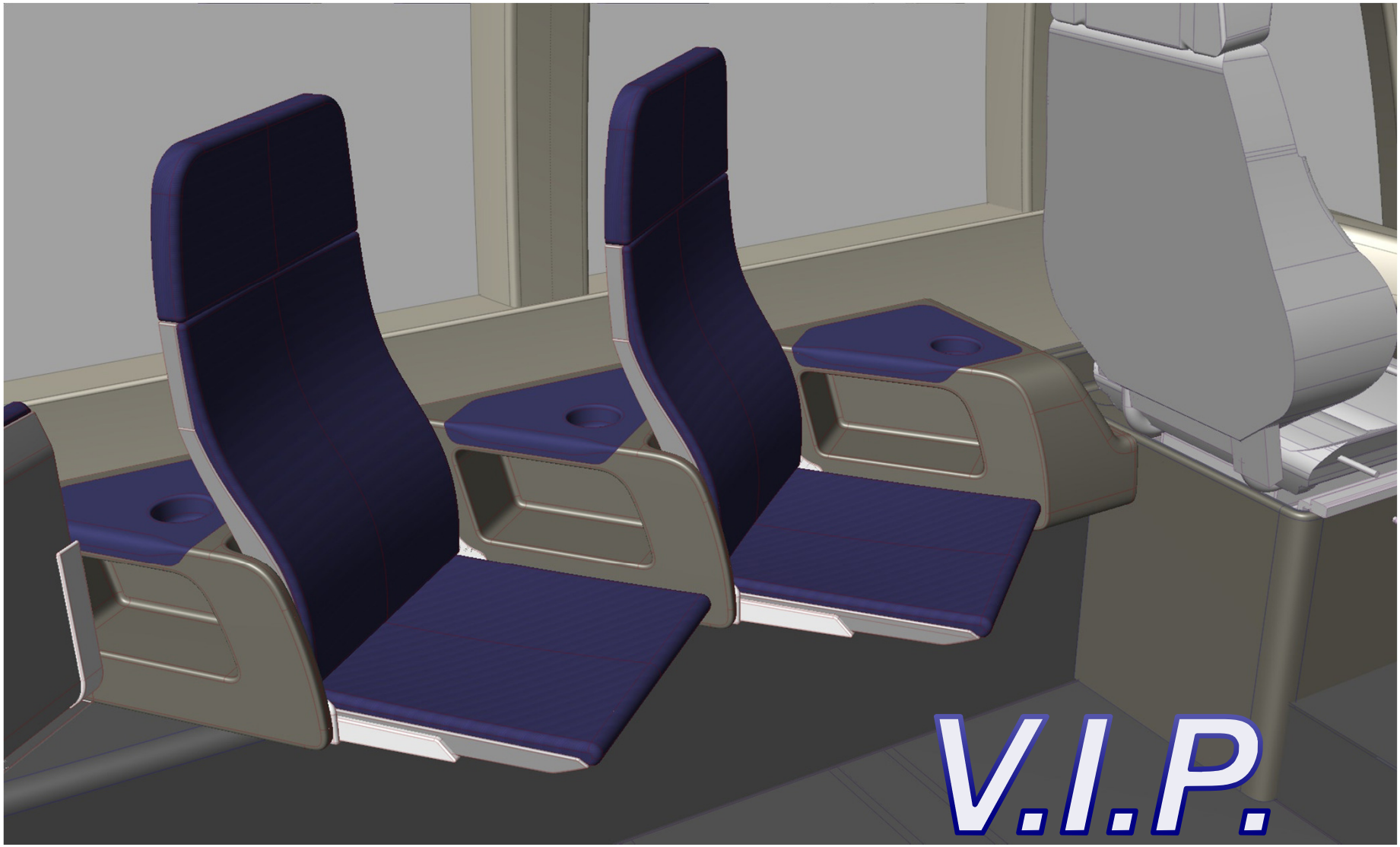


Vehicle interior configuration with 6 seats + 1 driver
can present replace two sites with one seat for handicap

Particular folding seats



VEHICLE SYSTEM POWER

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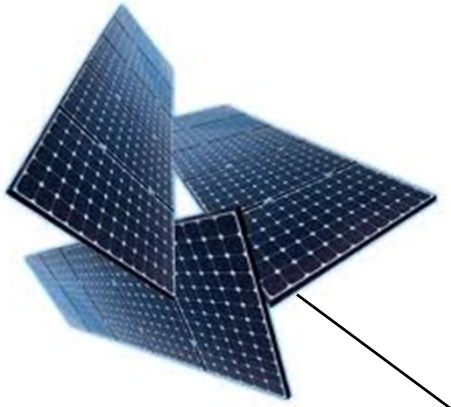
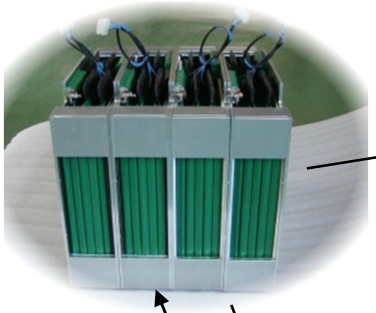


SOLAR PANELS

BATTERIES



MOTOR TRACTION

CHARGING IN BRAKING

ELECTRIC OUTLET
RECHARGE

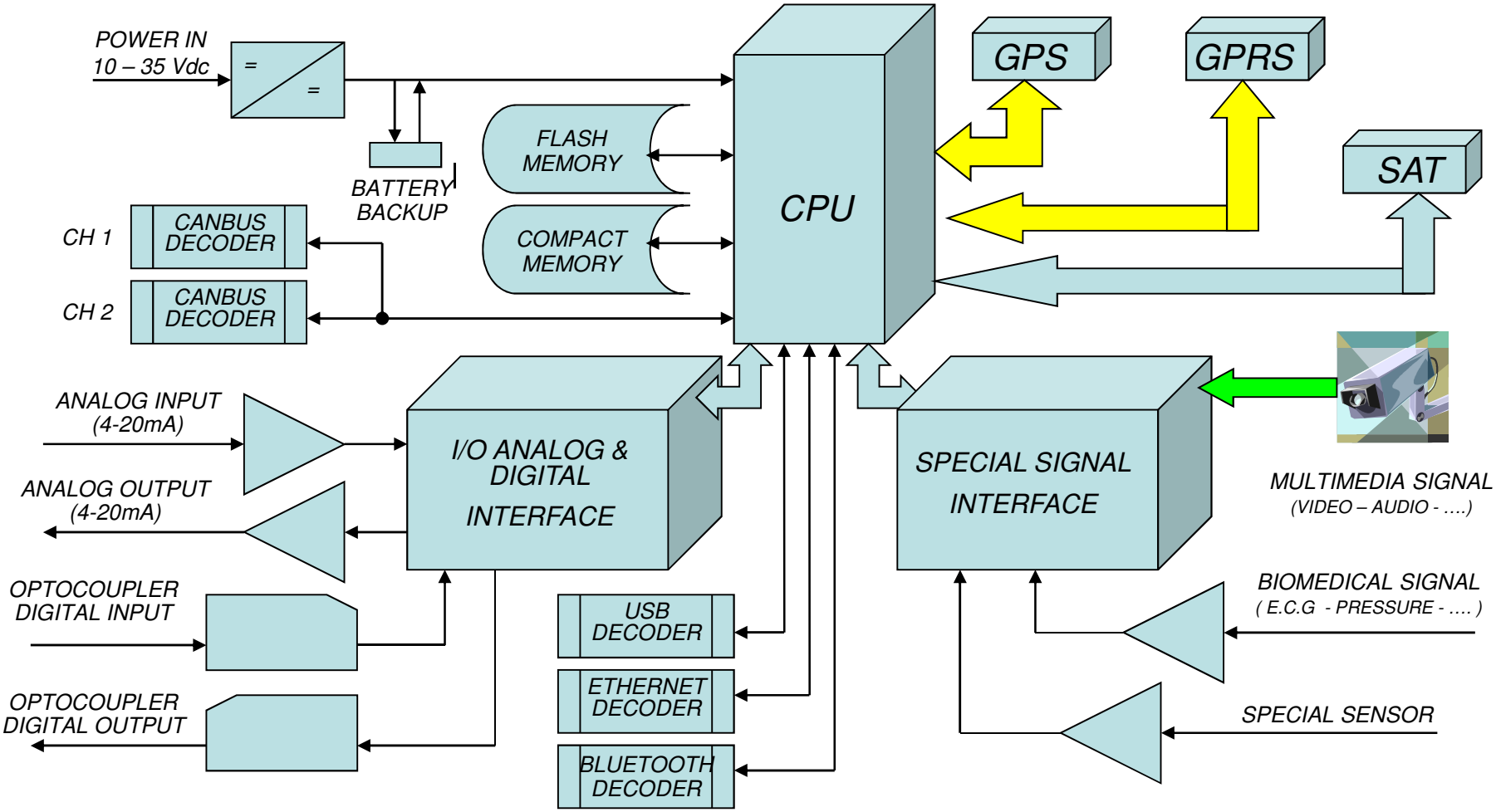
BATTERY MANAGEMENT
SYSTEM

ELECTRONICS BOARD

CONTROL SYSTEM FEATURES

V.I.P.

The system is based on Web technology with its own compact teminal, which integrates i[illegible]e a sat[illegible]ting p[illegible]tion system, an Internt – GPRS module for data communication, an internet-SAT module and an I/O control..



Interconnection Vehicle – Room control

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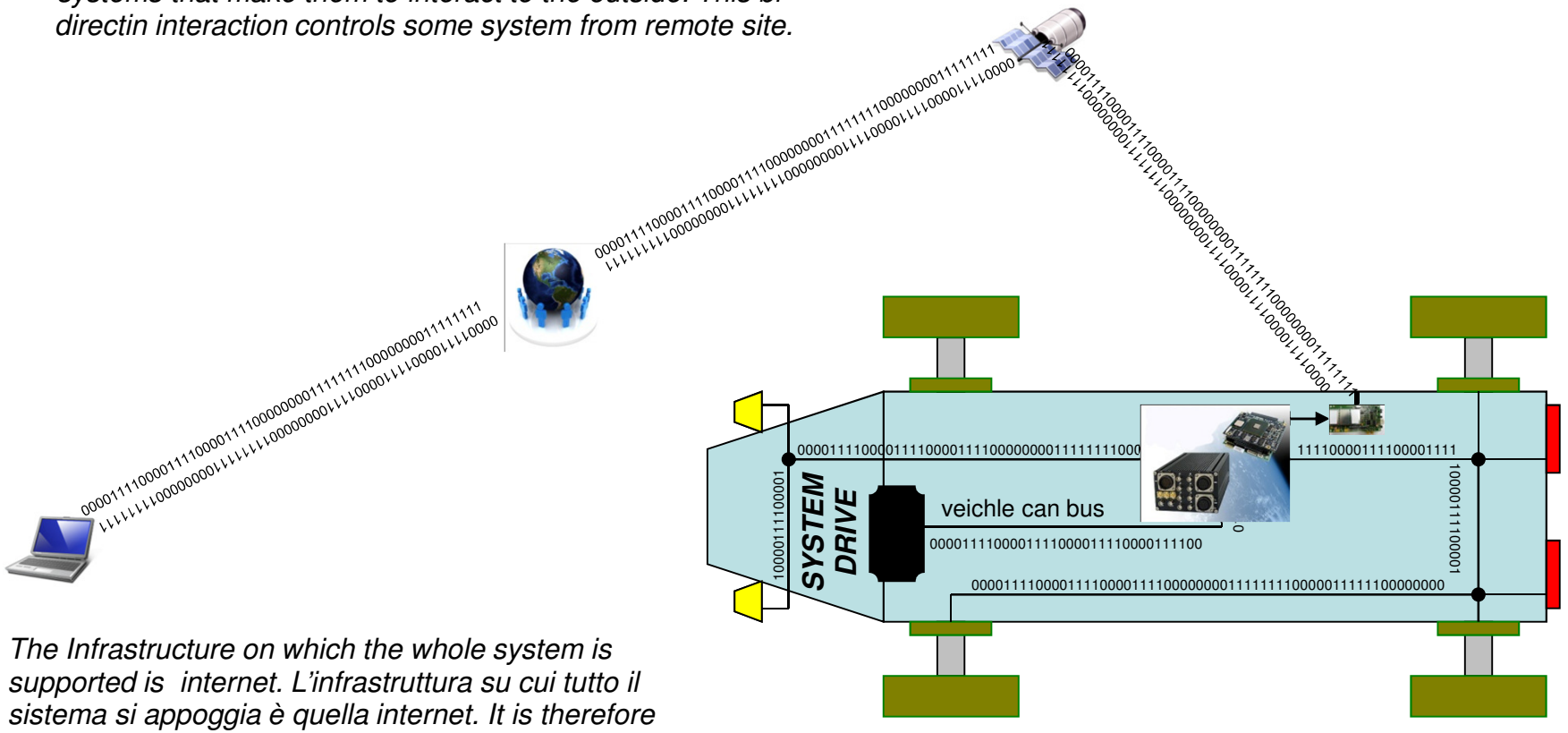
Innovative Control SystemSistema : All systems inside the vehicle interface to each other by the insede web. It means that it has been created an intranet among the various systems that make them to interact to the outside. This bi-directin interaction controls some system from remote site.



The Infrastructure on which the whole system is supported is internet. L'infrastruttura su cui tutto il sistema si appoggia è quella internet. It is therefore essential to build an infrastructure for this purpose. Communication technologies used are: Cellular (GPRS), Satellite (SAT) WiFi (public network)

Visual recognition of traffic conditions
Real-time alerts of possible dangerous conditions

Innovative driver assistance with technical HEAD UP DISPLAY

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Innovative analysis system on the state of the driver

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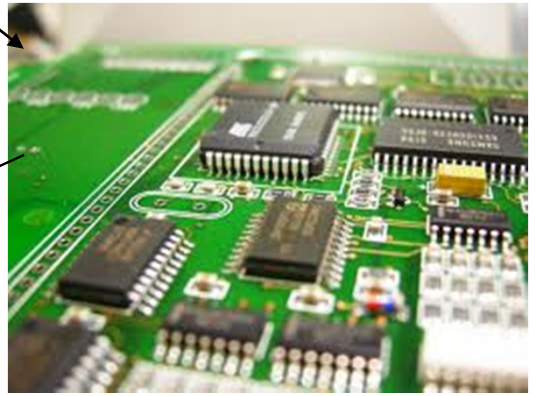
The system of acknowledgment of he state of the driver throgh analysis of eye's state. Experimental phase to determinate the driver's attention by the size of the pupil. With this sistem it can be possible inhibit the departure or slow the vehicle in case of diversions (shunting that it is inconsistent with the state of the driver).

The system is, combined with others, being tested by many car manufacturers to determinate the influence of alcohol or if the driver is under the influence of drugs .



The porpuse of this system is to increase safety level bringing the vehicle to understand the dribver action stopping those that could be dangerous.

Sanitation System Developed in collaboration with

The air control system of the vehicle with its innovative system delivers, in a set of time, a quantity of aereosol composed of a new important molecule, patent by USLabs of Terni, that in 30 second reduces bacterial load of viruses and bacterial up to the level of spores, making the inside of vehicle igenized. The molecule has a specific effect on viral strain that are transmitted throgh the airways such as those that cause epidemics influenced (H1N1-H5N1) etc…

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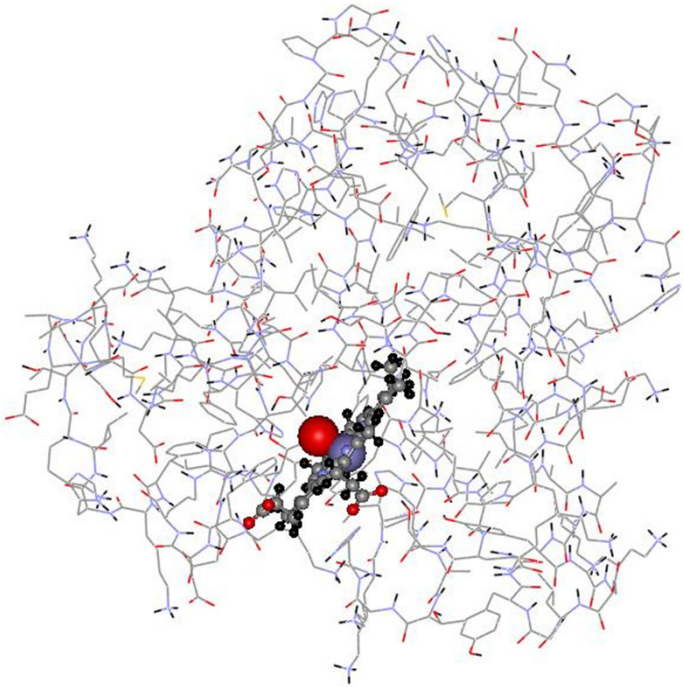
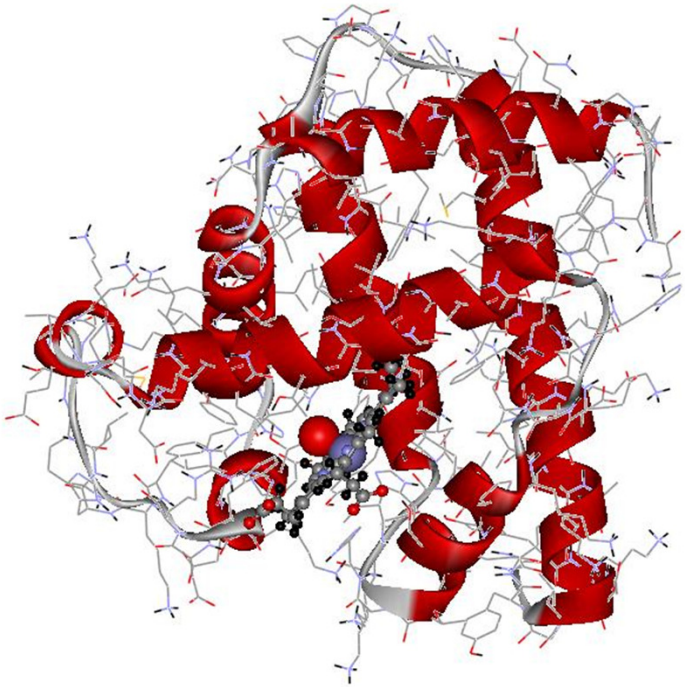
Ribbon Models



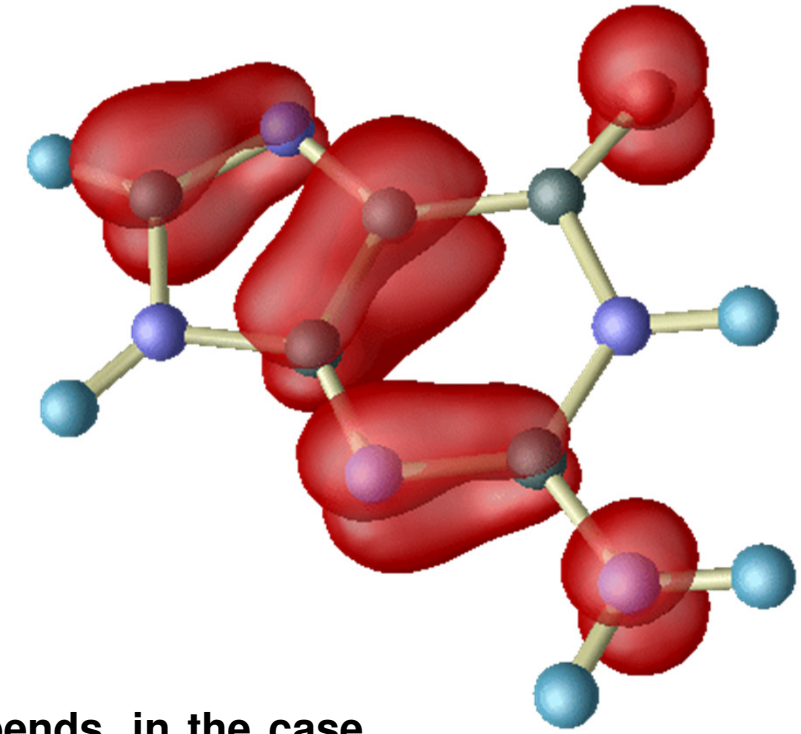


Molecolar properties

Electron density

Orbital (HOMO, LUMO)

Electrostatic potenzial



HOMO for guanine

The reactivity of a molecule depends, in the case of electrophilic reactions, on the location of highest probability of finding the electron into HOMO orbital (Highest Occupied Molecular Orbital) and in the case of nucleophilic reactions on the location of the lower value of the probability into LUMO orbital (lowest unoccupied molecular orbital). The frontier orbitals derived from quantum mechanical calculations and representations consist in orbital density maps.

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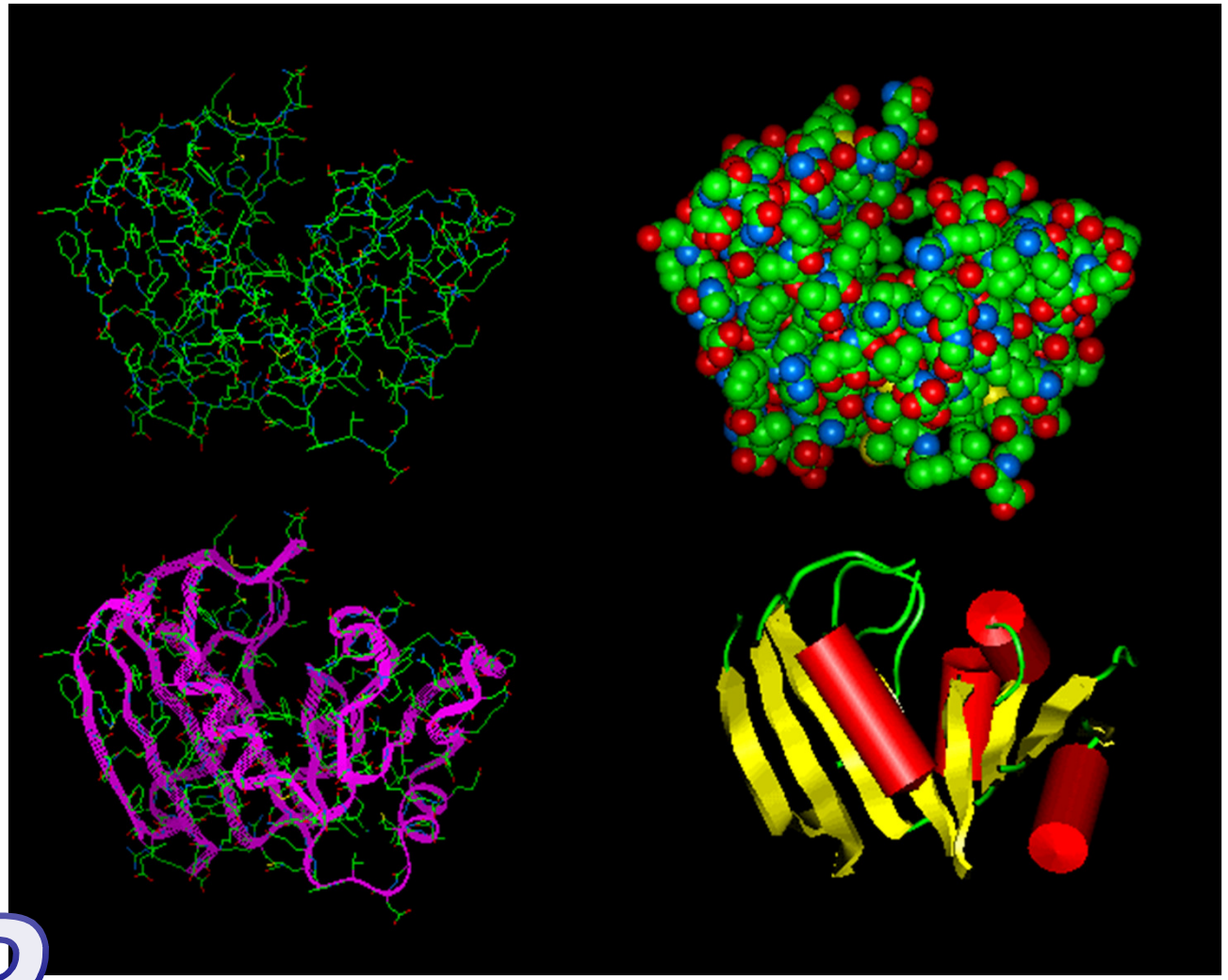
Graphical representation of the structure of the enzyme dihydrofolate reductase



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Prototype under construction

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Prototype under construction