

**NAVYO**  
be fluid



Providing  
fluid mobility  
with autonomous shuttles

A futuristic white car is shown from a front-three-quarter perspective, illuminated with a strong blue light. The car's design is sleek and modern, with a large, curved windshield. A prominent blue rectangular sign with the word "NAVYA" in white, lowercase, sans-serif font is mounted on the upper part of the windshield. Below the windshield, the front grille area features the word "NAVYA" in a smaller, metallic, embossed font. The car's headlights are illuminated, casting a bright blue glow. The overall aesthetic is clean and high-tech, suggesting a modern, possibly autonomous, vehicle.

navya

navya



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# navya

SPECIALIST AND  
LEADING NAME IN  
SMART MOBILITY

NAVYA is a company specializing  
in the development and conception of

100% autonomous,  
driverless and electric transport solutions  
for the first and last mile.

NAVYA is a world leader in smart mobility and  
has been providing its self-driving **AUTONOM SHUTTLE**  
since September 2015.

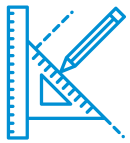
## Our shareholders



# The Company



Worldwide presence



One of the most experienced R&D teams in the world:  
more than **+240,000 engineering man-hours** *(November 2017)*



**170+ people** in the NAVYA team *(November 2017)*



**30 million euro capital increase** *(October 2016)*

Purpose of the capital increase: to keep on investing in R&D,  
to stay ahead in the field of autonomous vehicles and to  
accelerate business development.



**Strategic agreements** signed with key partners *(October 2016)*

**VALEO:** Technology partnership

**KEOLIS:** Deployment partnership

# Our Solution



One of **the latest driverless technologies** already on the market



**60 vehicles deployed worldwide** *(November 2017)*



Operations in Australia, Austria, China, Denmark, France, Germany, Japan, New Zealand, Singapore, Switzerland, USA



More than **250,000 passengers** transported *(November 2017)*

# Vision



Large cities and agglomerations are developing massively.

**A United Nations study claims that by 2030, 60% of the world's population will be living in urban areas. This will rise to 70% by 2050.**

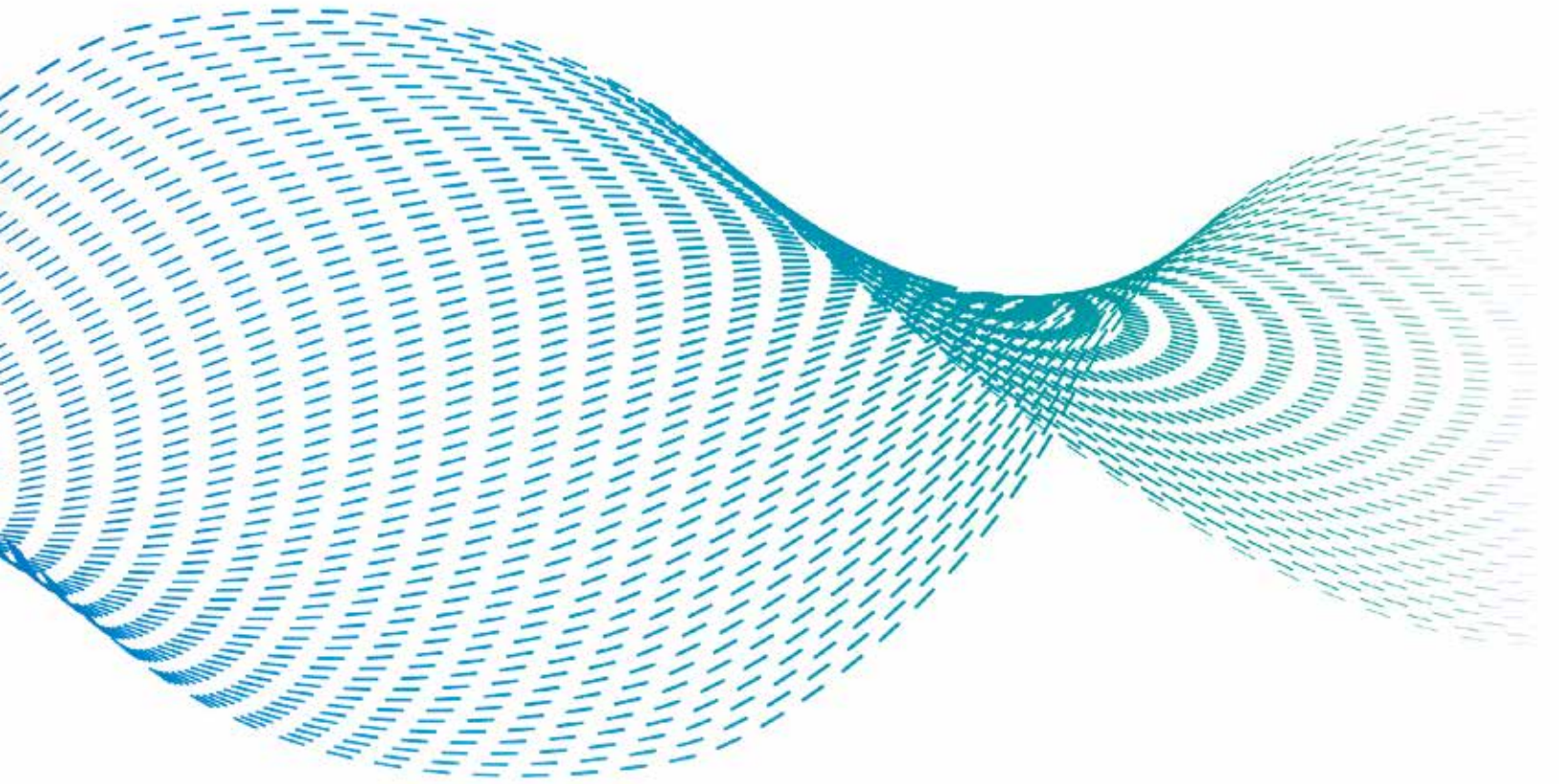
This galloping urbanization implies the birth of political and lifestyle changes including the development of green transport solutions and car sharing services.

However, current solutions cannot meet the challenges and opportunities posed by increasing urban flows.

**Autonomous vehicles are the most relevant solution for meeting the new challenges facing the world's cities.**



# Missions



Improve service on  
the **first and last mile**



Increase the **density**  
**of the transport system**



**Serve new areas** thanks  
to a new economic model

# Cities & Private Sites



## Cities

↗ Increase in:

Mobility  
Quality of life

↘ Decrease in:

Congestion  
Parking issues  
Pollution



## Private Sites

↗ Increase in:

Productivity  
Air quality  
Security

MCITY  
MICHIGAN // USA



PRIVATE SITES

POSTBUS  
SION // SWITZERLAND



CITIES

TRANSPORTS PUBLICS  
FRIBOURGEOIS  
FREIBURG // SWITZERLAND

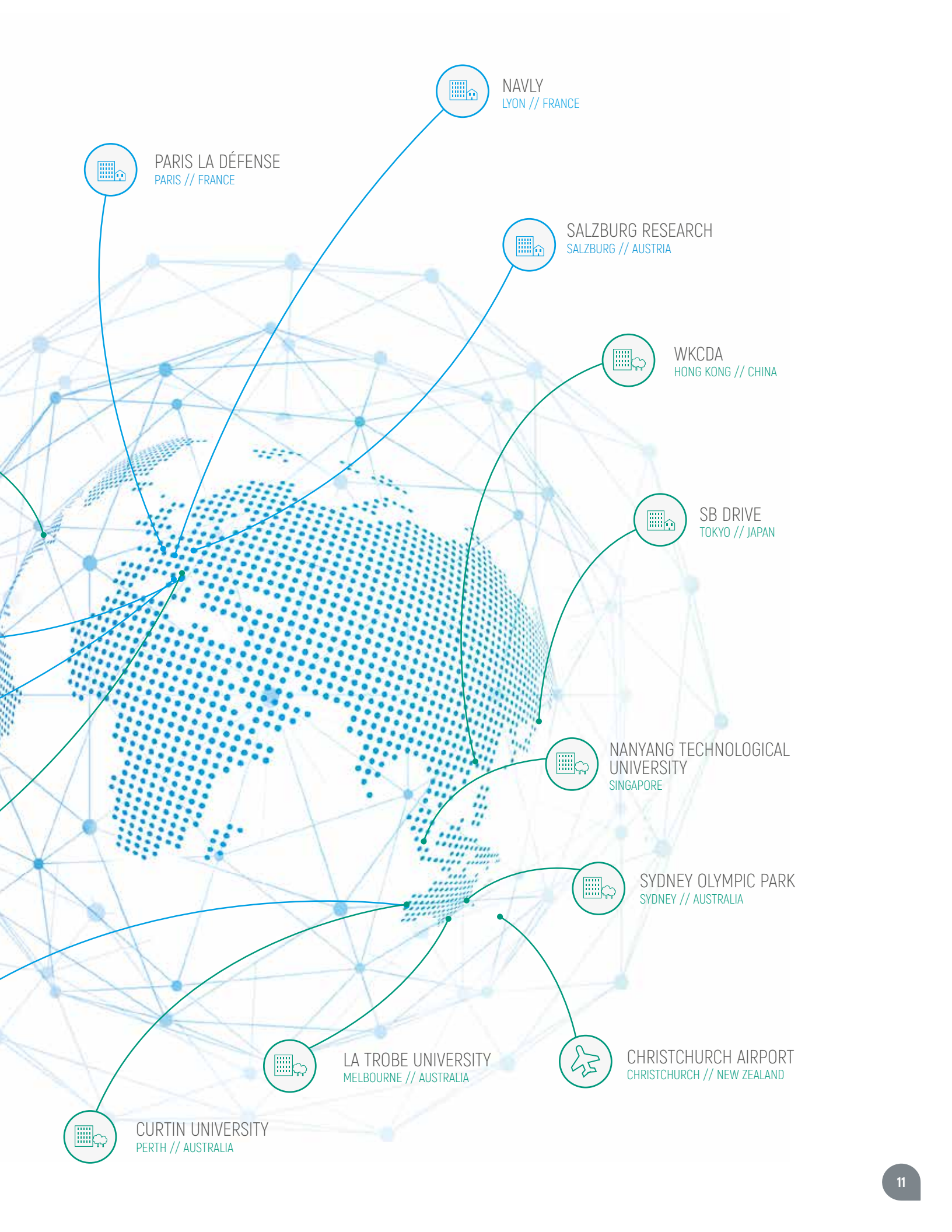


TRAPEZE  
NEUHAUSEN // SWITZERLAND



RAC INTELLIBUS  
PERTH // AUSTRALIA





NAVLY  
LYON // FRANCE



PARIS LA DÉFENSE  
PARIS // FRANCE



SALZBURG RESEARCH  
SALZBURG // AUSTRIA



WKCDA  
HONG KONG // CHINA



SB DRIVE  
TOKYO // JAPAN



NANYANG TECHNOLOGICAL  
UNIVERSITY  
SINGAPORE



SYDNEY OLYMPIC PARK  
SYDNEY // AUSTRALIA



CURTIN UNIVERSITY  
PERTH // AUSTRALIA



LA TROBE UNIVERSITY  
MELBOURNE // AUSTRALIA



CHRISTCHURCH AIRPORT  
CHRISTCHURCH // NEW ZEALAND

# In Cities



## Navly

#LYON-FRANCE

Two **AUTONOM SHUTTLES** are operating on the open road in the city of Lyon, carrying people next to the river.

The NAVLY trial is led by NAVYA and KEOLIS and is supported by **The Métropole de Lyon** and **Sytral** (responsible for all transport solutions in the Lyon Metropolitan area).

The route is 1.3 kilometres long with five stops that serve different areas of the district.

KEOLIS

GRANDLYON  
LA MÉTROPOLE



## PostBus

#SION-SWITZERLAND

Two **AUTONOM SHUTTLES** are operating in Sion's town centre in real traffic conditions.

**PostBus (CarPostal)**, the leading bus company in Switzerland's public transport network, offers residents and visitors the possibility to be carried by driverless shuttles every day except on Monday.





## Rac intellibus

#PERTH-AUSTRALIA

Two **AUTONOM SHUTTLES** are operating on the open road in Perth.

Thanks to its shuttles, the **Royal Automobile Club of Australia** is helping members of the community, government and the industry itself to consider the potential impact and opportunities of automated vehicle technology.



## Autonomous Shuttles La Défense

#PARIS LA DÉFENSE-FRANCE

Three **AUTONOM SHUTTLES** are circulating all week long, in **the most visited business district** in Europe!

The three autonomous shuttles are operating on three different tracks in order to cover the district of La Défense which hosts more than 500 000 visitors daily!

This service, offered by the **IDF Mobilités**, **KEOLIS**, **NAVYA** and **DEFACTO**, is free during all the experimentation.



# On Private Sites



## Mcity

#MICHIGAN - USA

In Ann Arbor (USA), NAVYA has joined forces with the **University of Michigan's Mobility Transformation Center (MTC)** to bring the first **AUTONOM SHUTTLE**, 100% driverless, completely electric autonomous shuttle vehicle to the United States at Mcity, the University of Michigan's world renowned research center and proving ground for autonomous vehicles, making it the only European shuttle bus on the site.



## SB Drive

#TOKYO - JAPAN

SB Drive, a subsidiary of SoftBank Corp., acquired two **AUTONOM SHUTTLES** in order to conduct social trials of self-driving technologies in Japan. SB Drive currently has smart mobility partnership agreements with four Japanese municipalities.



# Nanyang Technological University

#NANYANG - SINGAPORE

In Singapore, one **AUTONOM SHUTTLE** vehicle, acquired by the Nanyang Technological University, is operating on its campus.

The vehicle could soon be deployed on a wider scale to include tourist destinations and industrial parks. **NAVYA** and **NTU** signed a partnership agreement highlighting the collective goals of both parties to promote projects and programmes linked to autonomous vehicles.



# Christchurch Airport

#CHRISTCHURCH - NEW ZEALAND

An **AUTONOM SHUTTLE** is operating on the airport's private roads to experiment how driverless vehicles will transform passengers' experience. The purpose then is to shift to public roads to link key areas around the airport.

**HMI Technologies**, a world leader in Smart Transport Systems and the International Airport of New Zealand's second biggest city, Christchurch, are leading this two year trial.



# WKCD

#HONG-KONG - CHINA

In Hong Kong, residents and visitors of **West Kowloon Cultural District Authority (WKCD)** have the opportunity to ride aboard one **AUTONOM SHUTTLE** which circulates in the Nursery Park. The aim of the **WKCD** is to provide barrier-free access and facilities for all and the **AUTONOM SHUTTLE** provides street-level pedestrian connectivity within the District.



# Autonom Shuttle

The self-driving shuttle at the cutting edge of driverless technologies dedicated to first and last mile transportation

100% Autonomous ● Driverless  
Electric ● Available



**15 passengers**  
Seated 11  
Standing 4



**Dimensions**  
Length 4.75 m  
Width 2.11 m  
Height 2.65 m  
Empty / Gross weight  
2,400 kg / 3,450 kg



**Operating speed**  
25 km/h



**Average autonomy**  
9 hours





# Cutting edge multisensor technology

## GNSS Antenna

Communicates between the GPS sensor and a base station to determine the precise position of the vehicle at any moment.



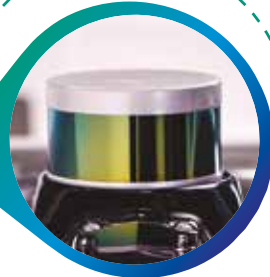
## Odometry

Measures the displacement and speed of each wheel to estimate the velocity of vehicle and change in vehicle position.



## Cameras

Detect obstacles and estimate their position relative to the vehicle. Supplement perception maps with environmental analysis (road signs, traffic lights) and classification.



## LIDAR Sensors

Provide 2D & 3D perception maps of the environment to allow for precise vehicle positioning and obstacle detection.



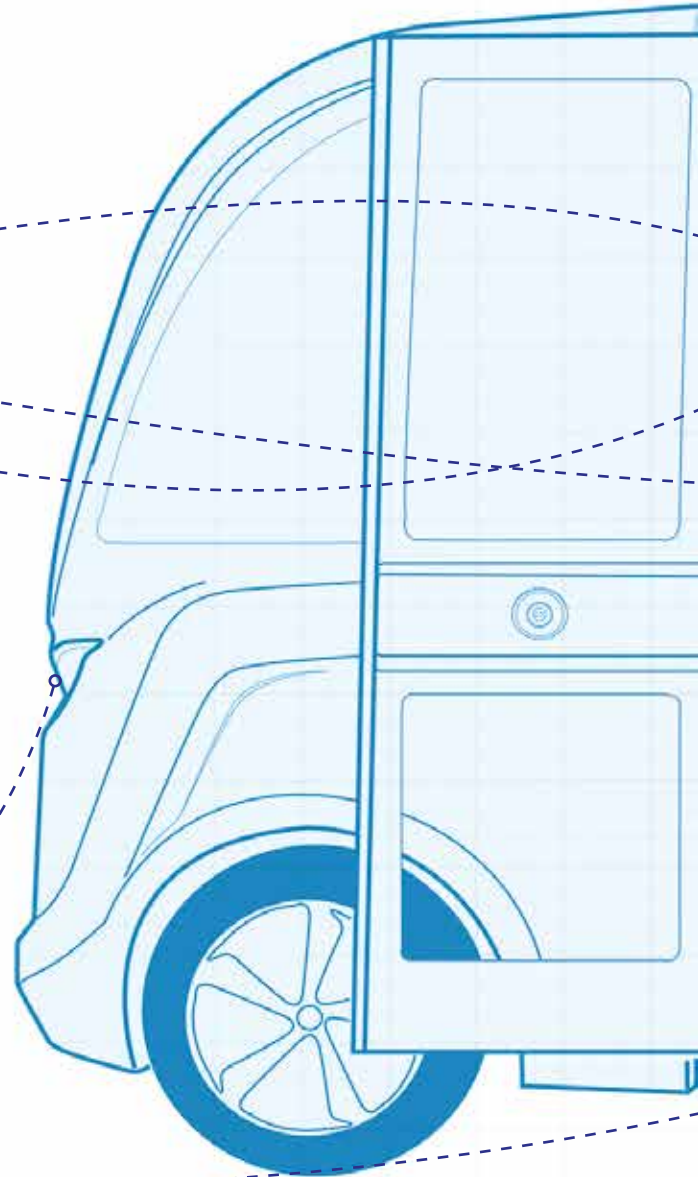
# Usage & Design

## Communication with passengers

- Onboard digital screen
- SOS Intercom System
- 360° indoor camera

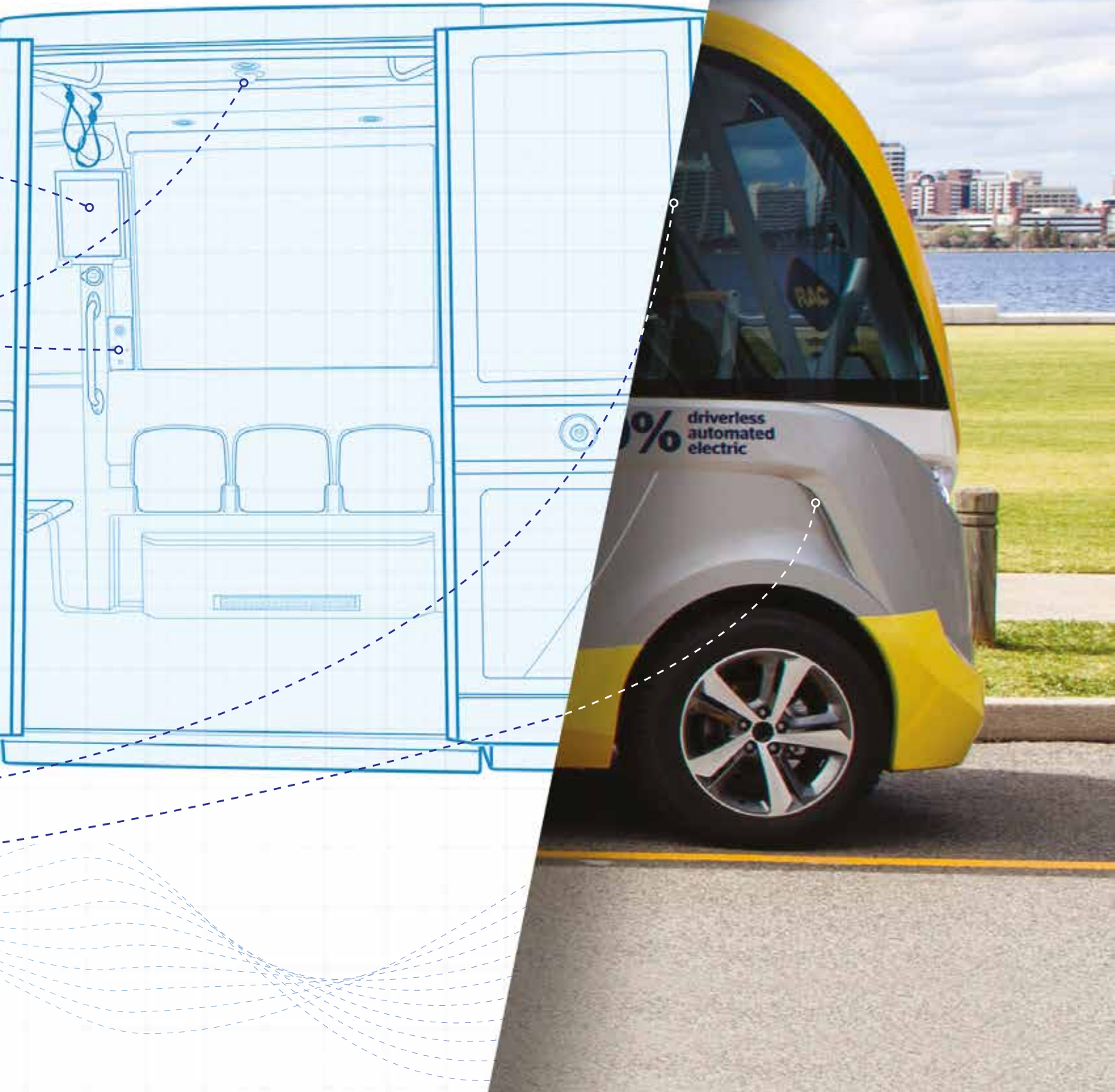
## Communication with pedestrians and other vehicles

- Light signals
- Front and rear information screens
- Buzzer and horn



# Design

- 100% symmetrical vehicle
- 360° visual comfort
- Compact with plenty of interior space
- Outward signs of intelligence



# Technical Specifications



## Capacity

Passengers	15
Seated	11
Standing	4



## Dimensions

Length <i>m</i>	4.75
Width <i>m</i>	2.11
Height <i>m</i>	2.65
Clearance <i>m</i>	0.20
Tyres	215/60 R17
Wheels	Steel wheel rims
Empty weight <i>kg</i>	2,400
Gross weight <i>kg</i>	3,450



## Engine

Drive wheels	2
Engine	Electric
Power <i>kW</i>	15 nominal [25 peak]
Maximum speed <i>km/h</i>	45
Operating speed <i>km/h</i>	25
Maximum slope %	12



## Energy

Battery	Battery pack LiFePO4
Capacity <i>kWh</i>	33
Average autonomy <i>hours</i>	9
Charge duration for 90% <i>hours</i>	8 (induction or plug 3.6 kW)/4 (plug 7.2 kW)
Charging technology	Induction / Plug
Charging temperature °C	from 0 to +40
Operating temperature °C	from -10 to +40



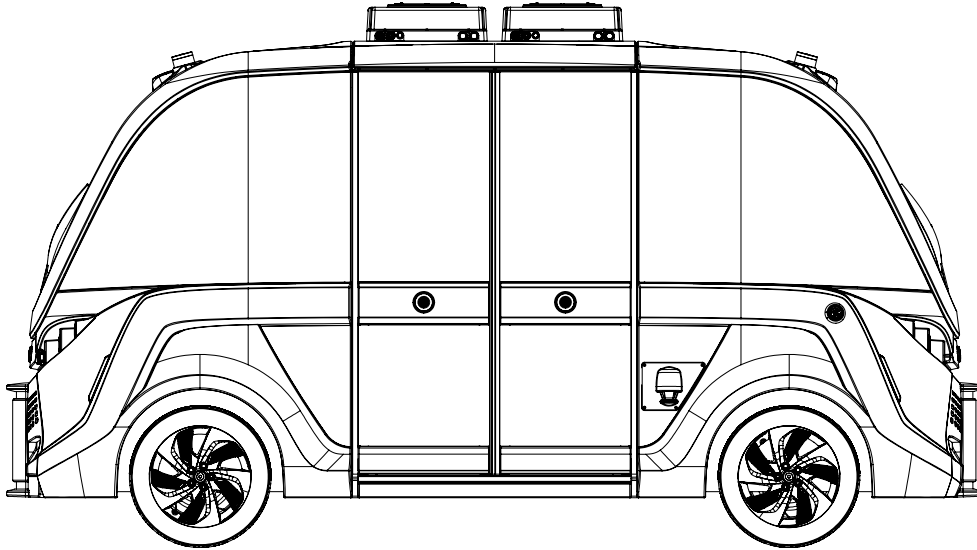
## Steering

Steering wheels	2x2
Turning radius <i>m</i>	< 4.5



## Equipment

Air conditioning for warm countries	Automatic regulation Cooling 2 x 4.6 kW
Heating	Central regulation [34 kW]
Doors	Double door wings
Body	Polyester
Windows	Glass
Visual information	Inside 15" touchscreen Outside facing screen [38"x2]



Sound information	Speakers
Lighting	Unidirectional pack
Sound warning	Buzzer // Klaxon
Safety	Handholds (x4), supporting bars (x2) Emergency hammer (x1) Safety Pack (triangle, safety vest and first aid kit) Fire extinguisher Interior camera
Access ramp for wheeled access	Manual ramp



### Localization and obstacle detection

Lidars 1	Two 360° multi-layers lidars
Lidars 2	Six 180° mono-layer lidars
Cameras	Front/rear cameras
Odometry	Wheel encoder + Inertial unit
GNSS	RTK



### Safety

Emergency stop button	2 buttons
SOS intercom	1 button / via supervision
Emergency break	Automatic
Parking break	Automatic

## OPTIONS FOR AUTONOM SHUTTLE Want more of it ?

GNSS base

Inside facing screen (38")

Seat belt pack for regular seats  
(lap belts)

Lap belt for folding seats

Heat filter (thermal protection on the windows)

Metallic paint



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be fluid

Experience  
fluid mobility  
with AUTONOM SHUTTLE



15 passengers  
Seated 11  
Standing 4



Average autonomy  
9 hours



Operating speed  
25 Km/h

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