

News

# Electric dreams

Shuttling around in a robotised electric vehicle on roads here may become a reality as Infographics Journalist **SIMON ANG** finds out

**M**et Navia, the safe, reliable and environmentally-friendly alternative mode of transportation that will soon be plying a pre-programmed 2km route between JTC Corporation's (JTC) CleanTech One building and the Nanyang Technological University (NTU) Yunnan Garden campus.

It's built by Induct Technologies, a French company that specialises in robotics and automotive embedded systems through innovative research projects.

Navia is the subject of a two-year collaboration project between NTU, JTC and Induct Technologies, and supported by the Singapore Economic Development Board.

Energy Research Institute @ NTU will test and optimise Navia, enabling it to integrate with traffic in Singapore.

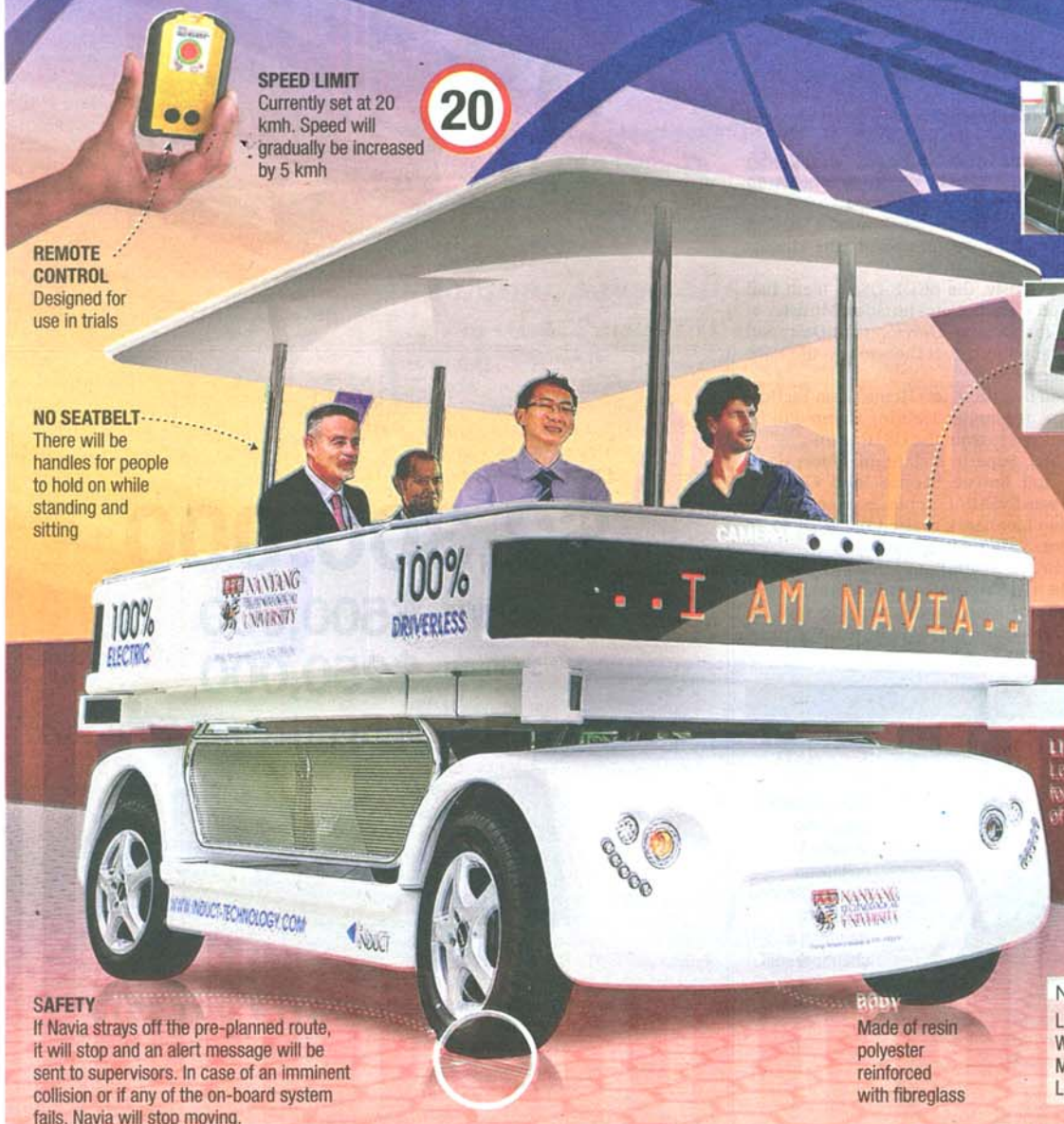
To maximise the efficiency of Navia, the team will improve and enhance battery reliability and charging speeds. The team will also develop and test various new charging technologies such as wireless induction and new super capacitors for electric vehicles.

Currently, Navia needs about six hours to be fully charged. The team is hoping to halve the charging time. Software and intelligence systems will need to be programmed for planned operation within pre-defined route.

The first of its kind in the region, the Navia project could pave the way for the integration of autonomous vehicles in Singapore's transport system to alleviate the "first mile, last mile" transport problem (the first and final legs of a journey, the typical potential bottlenecks in a transportation system) faced by urban commuters.

**Being a small country, Singapore is an ideal test bed for such state-of-the-art concepts as autonomous and electric transportation.**

— Mr Ho Kei-Leong, Senior Scientist from Energy Research Institute @ NTU (ERI@N)



**SPEED LIMIT**  
Currently set at 20 kmh. Speed will gradually be increased by 5 kmh



**REMOTE CONTROL**  
Designed for use in trials

**NO SEATBELT**  
There will be handles for people to hold on while standing and sitting



**LITHIUM ION (48V)**  
Navia needs six hrs to be fully charged. That's enough power for it to operate for 12-15 hours



**COLLISION PREVENTION**  
With a reach of 200m on four layers and covering 360 degrees around Navia, 4 lidars (equipment for light detection and ranging) make a full scan 100 times per second. An on-board computer makes a decision 10 times per second, comparing the image captured by the lidars with the pre-programmed map. Moving obstacles are also tracked.



**EMERGENCY STOP DEVICE**  
Passengers can hit the e-stop button in case of emergency



**HYDRAULIC PISTON GATE**  
Will be closed when Navia moves off

**LIDAR**  
Located at four corners of vehicle

**SAFETY**  
If Navia strays off the pre-planned route, it will stop and an alert message will be sent to supervisors. In case of an imminent collision or if any of the on-board system fails, Navia will stop moving.

**Body**  
Made of resin polyester reinforced with fibreglass

**NAVIA**  
Load capacity: 8 people  
Weight (empty): 1,100kg  
Max load capacity: 800kg  
Length: 3.6m  
Width: 2.1m  
Height: 2.5m  
Max speed: 20kmh  
Turning radius: 5.5m