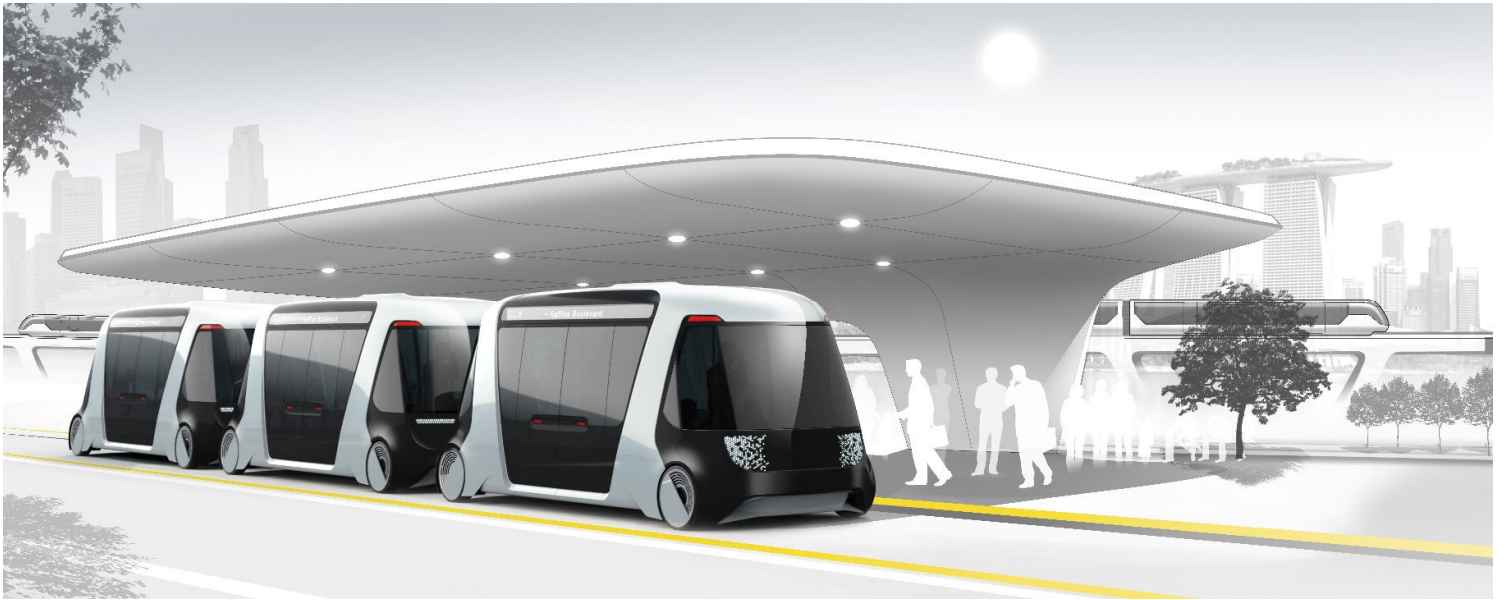


# TUMCREATE

Towards the Ultimate Public Transport System



## Chief Executive Officer



**Prof. Maria-Elisabeth Michel-Beyerle**

Prof. Maria-Elisabeth Michel-Beyerle is Emerita from TUM (Physical Chemistry). Since 2008, she is Professor in the School of Physical Mathematical Sciences of NTU. She has received prestigious awards like the 2000 Bavarian Order of Merit (Bayerischer Verdienstorden), the highest service order bestowed by the Free State of Bavaria, in recognition of her work on photosynthesis. Prof. Michel-Beyerle has headed TUMCREATE since 2014.

TUMCREATE is a research platform for the improvement of Singapore's public transportation, including the deployment of electric and autonomous mobility. Researchers from the Technical University of Munich (TUM) and Nanyang Technological University (NTU) collaborate and are supported by the National Research Foundation (NRF) as part of the Campus for Research Excellence and Technological Enterprise (CREATE).

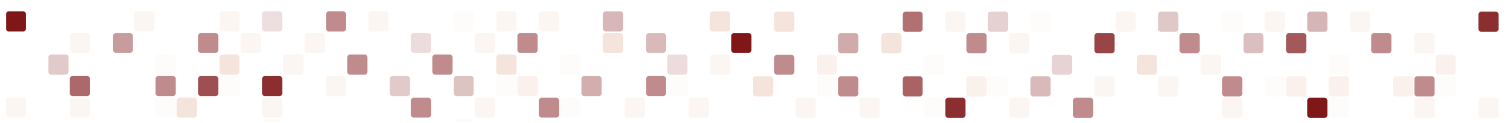
## Research

A large passenger demand gap exists between the current public transport – the Mass Rapid

Transit (MRT) and the Bus system. An MRT train carries many passengers but has fewer stops; the bus carries less passengers, but services run all over Singapore.

TUMCREATE's Phase 2 will enable seamless connectivity and serve the demand gap between the MRT and bus. Our research will generate solutions for this new transport domain. To achieve this, we are developing strategies to optimise public mobility with an emphasis on electrification and autonomy.

The Dynamic Autonomous Road Transit (DART) is a new transport concept that will increase comfort and efficiency for commuters.



DART is a Semi Rapid Transit System that aims to supplement Singapore's public transport system by providing constant service quality over the day. This is done by platooning to adapt vehicle size according to passenger demand, while keeping the frequency constant. This helps to achieve both efficiency and quality.

## Researchers

There are over 100 researchers active in TUMCREATE, including Principal Investigators (PIs), post-doctoral fellows, research associates and research assistants. Organised into six research teams, each team is headed by a PI and supervised by Programme Principal Investigators from TUM and NTU.

## Highlights

### Dynamic Autonomous Road Transit (DART)

Key features of the DART system include:

- **Flexible capacity** using modular autonomous vehicles
- **Cleaner urban environment** from using electric vehicles with zero local emissions
- **Versatile operation** during peak hours using dynamic platoons of up to ten 30-passenger vehicles
- **Faster travel** through prioritisation of public transport
- **Shorter waiting times** through demand-responsive 24/7 dispatching
- **Faster boarding and alighting** at intelligent DART stops

### Further Accomplishments

- TUMCREATE researchers developed **speedcargo**, the world's first AI-powered robotic solution for the automatic build-up and break down of aviation cargo pallets.
- Together with Singpost, TUMCREATE completed successful road trials for **LEO**, a prototype electric three-wheeler that is environmentally friendly and features innovations to boost mail delivery efficiency.
- TUMCREATE's **Battery Lab** was purchased by VDE Renewables GmbH, who are commercialising and scaling up to support the field of renewable energy.
- Together with JTC Corporation, TUMCREATE researchers created the **Precast Ultra-Thin White topping Pavement (PUTW)**, a new modular road surface. PUTW is undergoing field trials in Jurong Island.

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Website: <http://www.tum-create.edu.sg/>, Facebook: <https://www.facebook.com/TUMCREATE>

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**CREATE**  
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