

Fixing the missing link in the mobility chain

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Which sustainable mode of transport is going to replace the petrol-powered motor car? Will it be the biofuel vehicle? Bicycles perhaps? Maybe a hydrogen car, or an eco-electric scooter? How about trains and trams? If you talk to experts at Delft University of Technology in the Netherlands, the answer is all of the above – and more.

Researcher Satish Beella has spent the last five years working on a PhD titled *The roles of service and product design for sustainable transportation*. His work has focused on chain mobility alternatives to urban car transport. Basically, he is looking at how different forms of transport are combined to reach your destination.

Satish is with the Industrial Design Engineering Faculty of Delft University of Technology in the Netherlands.

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One way *and* another

Satish: “Examples of chain mobility are when people use the tram to get most of the way there, then car share or get a taxi for the last part of their journey, or when they take a foldable electric scooter on a train, using the scooter for the last part of their journey.”

In these cases, the car, taxi or scooter fulfil the 'last kilometre transport' role – the last link in the chain, where a person uses another form of transport to reach their destination. This last kilometre transport could also be walking if a train or tram stopped close to the destination.

The idea behind chain mobility is that there isn't one sustainable transport solution and that we need to intelligently combine many solutions, optimising the transport options available. If a link in the chain is missing, people are more likely to get in their cars and drive the whole journey.

Personal

“I'm working on the product design and development of a foldable electric scooter to fulfil certain chain mobility requirements. If it is small enough to fit in a car boot or carry onto a train, it will be able to fulfil a number of last kilometre transport roles,” adds Satish. The foldable bicycle is already popular amongst Dutch train commuters.

Other product design areas of Satish's research include: the functional aspects of electric two and four-wheeled vehicles compared to their combustion engine counterparts; using sustainable materials to design and build personal transport; and using new forms of sustainable energy sources to power different personal transport.

Satish says: "Part of this research is the additional infrastructure these energy sources will need, such as charging stations for electric vehicles. We need to understand what role these products will play within chain mobility, to make sure there are no missing links."

Islands

Satish has also lent his expertise to a number of alternative mobility development projects, such as the Dutch Innovation Centre for the Electrification of Road Transport (D-incert) and Cradle to Cradle Islands (C2CI).

D-incert is a platform, supported by government subsidiaries, from which to explore and develop transport electrification projects across a network of companies. Satish's role was to develop new proposals with other experts, using not only his sustainable mobility knowledge, but also his experience in setting up projects and working with designers.

C2CI aims to contribute to the environmental sustainability and economic profit of the North Sea region. The project involves 22 different partners across six countries from the North Sea area, with the province of Friesland, in the Netherlands, as lead partner.

Six countries; 22 partners. Now there's some serious chain mobility opportunities.