

MaaS of the Month: 2getthere

2getthere - an automated first
mile last mile connector



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The Rivium ParkShuttle, operating in the city of Capelle aan den IJssel in the Netherlands, is the world’s first autonomous transport system. Operational since 1999, the third generation features an extended route providing both a connection from the metro and the waterbus network to business park Rivium. The autonomous vehicles are the unique link between the networks.

The existing route of the autonomous vehicles features a dedicated lane intersecting several major highways, with the extension introducing mixed traffic in the business park. The vehicles will remain steward-less and be the first to be certified according to the Dutch ‘Experimenteerwet’.

The service is completely integrated into the public transit network, with the national fee system in the Netherlands applying. Passengers are able to check in and out at the various stations. With a vehicle departing every 2.5 minutes from the metro station, the frequency of service ensures short waiting times and alignment with the metro schedule.

The initiative to renew and extend the service, alongside new development guidelines for the park, is leading to a complete redevelopment of the area with up to 5,000 new residences being created.



MaaS stakeholders involved

Stakeholders	Role
2getthere – a company of ZF	System supplier
Transdev	System operator
City of Capelle aan den IJssel	Local government
MRDH	Local transit authority
De Verkeersonderneming	Public-private partnership to improve accessibility and mobility Rotterdam region
Ricardo Rail	Independent safety assessor
RDW	Dutch road vehicles authority
Business Club Rivium	Rivium based companies
Local residents	Involved through meetings organized by the city

Implementation

The Rivium ParkShuttle, the world’s first autonomous transport system, has been in public service since 1999. The second generation system was operational from 2006 until 2019 as a last mile service from the metro station Kralingse Zoom to business park Rivium, featuring 5 stations that serve two business parks and a growing residential area along a dedicated lane with an overall length of 1.8 kilometers. To date it has carried over 8 million passengers, safely and efficiently over the last 20 years and is the only system in operation that features intersections at grade, with other traffic.

That last mile service to the business park is in transformation to a first mile system. The ParkShuttle has been instrumental in supporting the development of the business park. Now, it is the driving force of its redevelopment with occupancy levels jumping from less than 70% to fully

occupied. Since the announcement of the next generation of vehicles and extension to the route, existing office buildings are being redeveloped and more retail and housing introduced. Rivium is transforming itself from a destination, to a self-contained mixed use development, connected to the local transit hub by the waterbus and metro networks.

The current ParkShuttle system will be extended and replaced with 6 2getthere's Group Rapid Transit (GRT) units, which will operate in mixed traffic on public roads without a warden or safety driver when completed, the first of its kind in the world. The new system will continue to be operated by Connexxion, part of Transdev, and the first to meet the certification criteria for the draft legislation governing the use of self-driving vehicles in the Netherlands (Experimenteerwet zelfrijdende auto).

This extension to the existing system will be delivered in two additional stages: firstly, the current system will be replaced by the new generation of GRTs, which will continue to provide public transport for Rivium and Brainpark III employees as well as Fascinatio residents, from the metro station Kralingse Zoom. The new generation of GRTs have been designed for an even better comfort, reliability and availability. In stage two, the system will run through the Rivium Business Park and terminate at Van Brienoord Bridge Waterbus station, where passengers can connect with services to the 'Drecht cities'. While the shuttle will provide a direct connection to the Rotterdam metro, for passengers arriving on the waterbus. To enable this link, the system will be extended on existing public roads, commencing service in 2020.

"With the extension to the system and the unique link between the Waterbus and the subway network of Rotterdam, daily passengers are expected to increase by over 20% as a result."

Alderman Dick van Sluis

Results to Date

The autonomous vehicles that the Dutch municipality of Capelle aan den IJssel deploys to connect the Rivium business park and metro station Kralingse Zoom received high marks for safety, security and reliability by passengers. This is the outcome of a quantitative study into the ease of use of the ParkShuttle connection. Furthermore, the study shows that reliability is ultimately the decisive factor in passengers' readiness to use any kind of autonomous public transport.

The study focused on seven operational factors of the ParkShuttle: (1) safety and security, (2) reliability, (3) travel time, (4) information services, (5) price and payment system, (6) comfort and (7) integration in the public transport network. Overall, 90% of the respondents were positive about the ease of use of ParkShuttle, giving it an average mark of 7.2 (scale 1-10). Reliability proved to be the most decisive factor: four out of five respondents said they felt the system was reliable, mainly because of its frequency and punctuality. This is expected to improve further with the introduction of the new system.

It became clear that ParkShuttle passengers' appreciation of security was relatively high: they felt that criminal activity on the shuttle was very unlikely, despite the absence of on-board stewards. A possible reason for this lies in ParkShuttle's passenger capacity and the resulting social control as the autonomous shuttles in Capelle aan den IJssel carry up to 24.

Although information services play a relatively minor role in ease of use, this factor received the lowest scores. This applied to the information provided at stops and on the shuttles, as well as the ready availability of information in case of delays or cancellations. Part of the renewal and extension of the system is the introduction of additional passenger information.

Benefits

The goals of the project are to:

- Attract an additional 50 passengers for the Waterbus per day
- Reduce the empty buildings at Rivium by half (from 40% to 20%)
- 10% reduction in delays during rush hour
- 500 passengers to Feynoord city during events
- 800 people avoiding rush hour traffic on the ring around Rotterdam
- Become the #1 knowledge center in the Netherlands and the primary example in Europe of a successful implementation of autonomous shuttles

With the project in execution, the above scope and benefits changed as a result of the introduction of apartments and houses accommodating 5,000 or more residents ultimately. To avoid negative impacts on the local accessibility, the parking norm for the area is purposely being set low, further increasing the importance of good local public transit and bike paths. The result is that the empty space left at Rivium is expected to plummet to near zero, while the number of people avoiding rush hour will be even greater.



References

<https://www.2getthere.eu/category/timeline/rivium/>

<https://www.connexion.nl/nl/onze-routes/vervoersgebieden/parkshuttle-rivium>

"MaaS of the Month" is an initiative of the MaaS Alliance; it is a collaborative effort of the members of the Alliance's Working Group on Users & Rules and Working Group on Governance & Business Models.

