

Frequently Asked Questions autonomous shuttle Scheemda

How do I reach the main entrance of the hospital by public transportation?

After arriving by train at the Scheemda railway station, take the bus (lines No. 119 or 17) to the bus stop at the Molenstraat (at the N362). These buses run every hour. More up-to-date public transportation information and timetables is available at 9292.nl. You can also dial 0900-9292 (€ 0.90 per minute, with a maximum of € 18.00).

From this bus stop there are two public transportation options to the hospital's main entrance:

- By foot (about a 10-minute walk to the main entrance).
- From 6 August 2018 onwards by autonomous shuttle. Its timetabling is coordinated with that of the bus services (lines No. 119 or 17). You can also take the same shuttle to get from the hospital back to the bus stop again.

What is an autonomous shuttle?

An autonomous shuttle is a self-driving (driverless) vehicle. In this case it is an autonomous shuttle bus produced by the French company NAVYA. It shuttles completely autonomously between the bus stop and the hospital's main entrance. This means that a driver isn't needed to operate this vehicle. However, there is always a host(ess) on board, who can assist passengers (de)boarding the shuttle and who also at all times can intervene or take control of the vehicle in case an emergency occurs.

Why isn't there a regular bus service to the Ommelander Ziekenhuis?

The regular bus shuttles between Winschoten and Delfzijl. In order to offer these bus services, the buses have to arrive at their departure and end stops at a certain time. When they arrive too late, an extra bus with a driver has to be scheduled for the return trip. Even during the construction of the hospital, research was done regarding the time it takes to get to and from the hospital by a regular bus and how many passengers were expected to use it. The results show that regular busses are unable to make it back to the end bus stop in time. In addition, the expected number of passengers is limited. Therefore, a small eight-seater bus befits the expected demand more.

Why exactly was this vehicle chosen?

Compared to the other available autonomous vehicles, this one is currently best suited for this particular route in Scheemda. It is equipped with different new technologies and sensors, which allows it to scan the environment. Apart from that, this shuttle is also able to implement right-of-way rules. And finally, another main reason to opt for this particular vehicle, is that it's completely electric and thus much quieter than diesel or petrol powered buses.

For whom is the autonomous shuttle intended?

The shuttle is intended for bus travellers between the hospital's main entrance and the Molenstraat bus stop (all visitors, patients and employees of the hospital).

Which route does the autonomous shuttle take?

Starting at the hospital's entrance, the shuttle follows the cycling path to the Pastorieweg. Via the Pastorieweg it continues to the Zwaagsterweg. After crossing the Zwaagsterweg, it arrives at the shuttle bus stop (in front of the fire station). The same route is taken back to the hospital (as illustrated below):

The in red indicated route is followed when the shuttle is transporting the passengers; the in green indicated route is followed to and from the garage.

What is the timetable of the autonomous shuttle?

The autonomous shuttle is operative from Monday to Friday between 9AM and 5 PM. The service is coordinated with the existing bus connections at the Molenstraat bus stop. The shuttle service may well be extended or adjusted during the pilot period. For more information, please check this website or the information panels at the bus stops.

For what period of time will the shuttle be operative?

The autonomous shuttle service is scheduled to start on 6 August 2018 and last at least 6 months. If it is a success, it may well be prolonged.

How much does a ride in the autonomous shuttle cost?

During the 6 month pilot period passengers shall not be charged fare, thus allowing free travelling during this period of time.

What happens when the pilot period comes to an end?

That depends on the pilot results. If the pilot is a success, there are two options. The first one is to prolong the shuttle service between the bus stop and the main entrance. Another option however is extending the shuttle's route to the centre of Scheemda or maybe even to the Scheemda railway station. To this end, the pilot project shall be evaluated after 6 months as well as halfway the pilot period (after 3 months).

How does the autonomous shuttle work?

The shuttle is operated by a GPS system which communicates with a base station in order to determine its exact position. The environment and the route are previously programmed, allowing the bus to take a set route. Six sensors are used to detect obstacles and other road users as well as to determine their exact position. When the shuttle gets too close to them, it starts slowing down, ultimately coming to a halt. The shuttle follows a programmed route, without any diversions – similar to a tram, yet guided by virtual rails. Thus, it shall never suddenly swerve.

Is the shuttle completely autonomous (self-driving as well as driverless)? If so, how precisely? If not, to what extent? Is any on-board human assistance offered?

An on-board shuttle host(ess) accompanies the passengers, offering them assistance (de)boarding as well as determining when the shuttle actually departs. Moreover, though the shuttle is fully automated, the host(ess) can at all times intervene or take control of the vehicle in case an emergency occurs.

Is the autonomous shuttle safe?

Yes, the shuttle is safe. In preparation of the pilot phase, the in this project involved risks were carefully assessed. Subsequently all necessary risk control measures were taken. Based on this research and these security measures, an exemption was granted by the RDW (the Dutch Government Road Traffic Agency), allowing the shuttle operate on this route. In addition, the on board host(ess) can at all times intervene or take control of the vehicle in case an emergency occurs. In terms of safety, the shuttle can be considered to be just as safe as any other vehicle.

How does the autonomous shuttle interact with other road users – for instance cyclists?

With cameras and sensors obstacles and other road users are detected, after which their position is determined. When they appear to be at too close a range, the shuttle immediately comes to a halt.

Does the autonomous shuttle work in all weather conditions?

Generally, the shuttle works in all weather conditions. When weather conditions are very bad (slick roads or heavy snowfall), it is possible the shuttle could be temporarily taken off the road. The same consideration is made as for any other vehicle. Currently, the shuttle isn't allowed by law to operate in all weather conditions. This has to be first approved by the RDW (the Dutch Government Road Traffic Agency), which however wasn't able to grant their approval yet, due to the simple fact that no research has been done regarding the shuttle's behaviour during these weather conditions.

What is the autonomous shuttle's maximum speed?

The shuttles reaches a maximum speed of about 15 km/h on this route.

Is there – in case an emergency occurs – anyone on board the autonomous shuttle who can intervene?

Yes, passengers are at all times accompanied by a host(ess), who is trained to intervene or take control of the vehicle in case an emergency occurs.

What kind of noise does the autonomous shuttle make?

The noise is comparable to that of an electric car. In addition, a tram bell rings shortly when the shuttle departs from the bus stop. The shuttle is also equipped with a horn, which – if needed – is used by the host(ess).

Does the autonomous shuttle always have the right-of-way?

The shuttle follows a cycling path. When a cyclist gets too close to the shuttle, it will immediately come to a halt. Apart from that, the shuttle abides to all normal traffic regulations and is therefore also able to implement right-of-way rules. The specific traffic situations of the route have all been programmed into the shuttle's driving system.

Does the autonomous shuttle pull over, if someone wants to overtake it?

No, however the shuttle does come to a halt, when other road users come to near. If the shuttle is overtaken with sufficient distance, both the shuttle as well as the other involved road user shall be able to continue their journey normally. The shuttle is in fact guided by – virtual – tram rails. It will therefore also never suddenly swerve or change its course. Overtaking it is not a problem. If needed, cyclists as well as pedestrians can use the grass concrete stroke, with which the cycling path has been widened.

Does the autonomous shuttle use its direction indicators?

Yes it does.

What happens when somebody suddenly crosses the road?

When somebody suddenly crosses the road and gets too close to the shuttle, it will immediately come to a halt. The shuttle will then make an emergency stop. One of the main reasons why a speed of 15 km/h was chosen, is because the shuttle's emergency stop capabilities were extensively tested at this speed. Due to the thus gathered know-know, it can be guaranteed that the shuttle will at all times and under all circumstances come to a halt safely (including in terms of passenger safety).

Does the autonomous shuttle detect animals crossing the road?

Yes it does.

Who is financing the autonomous shuttle?

The Province of Groningen is supplying the funds for the shuttle. The hosts and hostesses are employed by Arriva.

Is it true that – at a certain stage – the shuttle service shall be tested without on-board hosts or hostesses?

During the pilot period of 6 months, passengers will always be accompanied by a host(ess). In the long term, the autonomous technology is expected to develop, eventually allowing a host(ess) to become redundant. This shall take years however to be implemented and even then hosts may well be opted for, for instance to assist (de)boarding. However, during the coming years remote control systems shall continue be tested in collaboration with the 5G lab at the Zernike Campus. Still, during the next 6 months passengers can rest assured that they at all times will be accompanied by a shuttle host(ess) .

Is it possible to board the autonomous shuttle by wheel chair?

Unfortunately, this is not an option. The shuttle offers seats for 11 passengers, of which only 8 shall be used during this pilot.

What to do if one prefers not to travel by autonomous shuttle? Is there another public transportation option? Can for instance the hospital's golf kart be used?

We advise you to use another – regular - form of transportation such as the on-call bus or a taxi.

How long does the trip from the bus stop to the hospital's main entrance take?

A trip from or to the hospital takes about 5 minutes.

What to do when on arrival at the bus stop, there isn't a shuttle waiting/arriving?

Probably the autonomous shuttle is en route. More information can be found on the passenger information sign at the bus stop.

Won't self-driving vehicles lead to the loss of (bus) driving jobs?

The coming years this isn't the case, because passengers shall be accompanied by hosts or hostesses. However, in the long term less bus drivers may well be needed. The technology has to be further developed however, as well as the laws and regulations regarding autonomous transportation.

Why this route?

This route was selected because it's the fastest connection between the bus stop and the hospital's main entrance. Also, the technology of the vehicle does not at present allow it to travel safely along with other road users on 50 or 80 km/h roads along with other road users. This route, which mainly follows a cycling path, allows the shuttle to travel at a safe speed of 15 km/h, while limiting interaction with other motorised road users as well. After the technology has developed further over the next years and higher speeds have become optional, the route shall possibly be adjusted. From the bus stop there were two optional routes: via the provincial road or via the cycling path. The latter proved in several respects to be the best option. Particularly safety was a main factor here.

Will there be more autonomous shuttles at other locations?

A pilot regarding school transport is scheduled to start on 1 January 2020 in the small town of Dokkum. Additionally, the Province of Groningen is planning pilots in the Municipality of Hogeland (Eemshaven or elsewhere), in the small town of Loppersum (in collaboration with the 5G lab) as well as in the small town of Hoogezand-Sappemeer (an alternative route between the Hoogezand-Sappemeer railway station and East Sappemeer shall be assessed, after the East Sappemeer railway station is closed). The Province of Drenthe is also looking into ways to adopt autonomous transportation.

Was it a good idea to integrate a cycling path in this pilot seen in the light of the recent Appelscha pilot?

The Appelscha pilot resulted in a lot of useful information regarding the use of cycling paths in this context. Ultimately, pilot was only put on hold for a short period of time, after which it was successfully continued. The main difference with the Appelscha pilot, is that – due to the problems caused by the width of the cycling paths (2.5 meter) – in Scheemda the cycling path was widened to 4 metres, thus creating more space for cyclists. For the same reason, the shuttle has been programmed as far as possible to the side of the road. Another factor in this context, is the fact that cyclists and pedestrians in this area are already used to a small vehicle on this route: a small 'golf kart' which shuttles to and from the hospital. Thus cyclists respond well to the new situation, allowing them to pass the shuttle without any difficulty what so ever. This is also possible via the grass concrete stroke next to the cycling path. Traffic signs along the route shall also remind other road users of the altered traffic situation. Obviously – as is in the very nature of a pilot – unexpected things can always happen. That's why this pilot is conducted in the first place, allowing to further develop this technology. Together with the RDW (the Dutch Government Road Traffic Agency) and the SWOV a thorough risk analysis was made, allowing the safety aspect to be assessed in the best possible way.

What makes this pilot so unique?

This pilot is the first of its kind in the Netherlands: it's the first time that a pilot is conducted with an autonomous vehicle with passengers on the public road, while integrating it into the existing public transportation system and thus allowing it to interact with other road users. In the Province of Zuid-Holland autonomous public transportation services are being offered for quite a while now. However, these shuttles use separate bus lanes and do not interact with other road users.

What happens if the pilot is unsuccessful and the autonomous shuttle disappears from the streets? How do I then reach the hospital?

In case the autonomous shuttle services are terminated, the hospital shall provide other means of transportation between the bus stop and its main entrance.

Why is the Province of Groningen testing autonomous transportation?

The Northern Netherlands region offers – in all aspects – everything it takes to allow autonomous transportation to become a sustainable feature of its whole future transportation system. Particularly within its public transportation there seem to be ample opportunities for various applications. Offering transportation to all in every part of the region, shall contribute towards developing a vibrant and connected rural area. The primary focus in this context lies on liveability and accessibility. In order to achieve this, it is desirable to conduct various pilot projects over the coming years at different locations in our Northern region. Autonomous transportation can be deployed as:

- the 'missing link' (within the existing public transportation system) between small villages as well as sparsely populated areas and the existing public transportation hubs for buses and trains;
- a means of transportation to and from recreational and tourist attractions as well as temporary event sites;
- a means of transportation to and from care services (improving as well as possibly partially replacing target group and Social Support Act related transportation in the future);
- a means of improving the mobility of the elderly, the blind and partially sighted as well as disabled.

Why is the Ommelander Ziekenhuis participating in this pilot?

The Ommelander Ziekenhuis greatly values being readily accessible to its patients, employees and visitors – both those who rely on their own means of transportation as well on public transportation. The hospital's collaboration in this pilot, reflects its concern towards accessibility. In addition, it supports the sustainability and innovative aspects of this pilot.