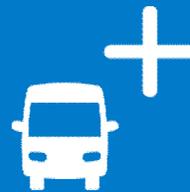


HSL
HRT

Kutsuplus 2012-2015



May 20th, 2016,

Kari Rissanen, Program Director

Helsinki Regional Transport Authority

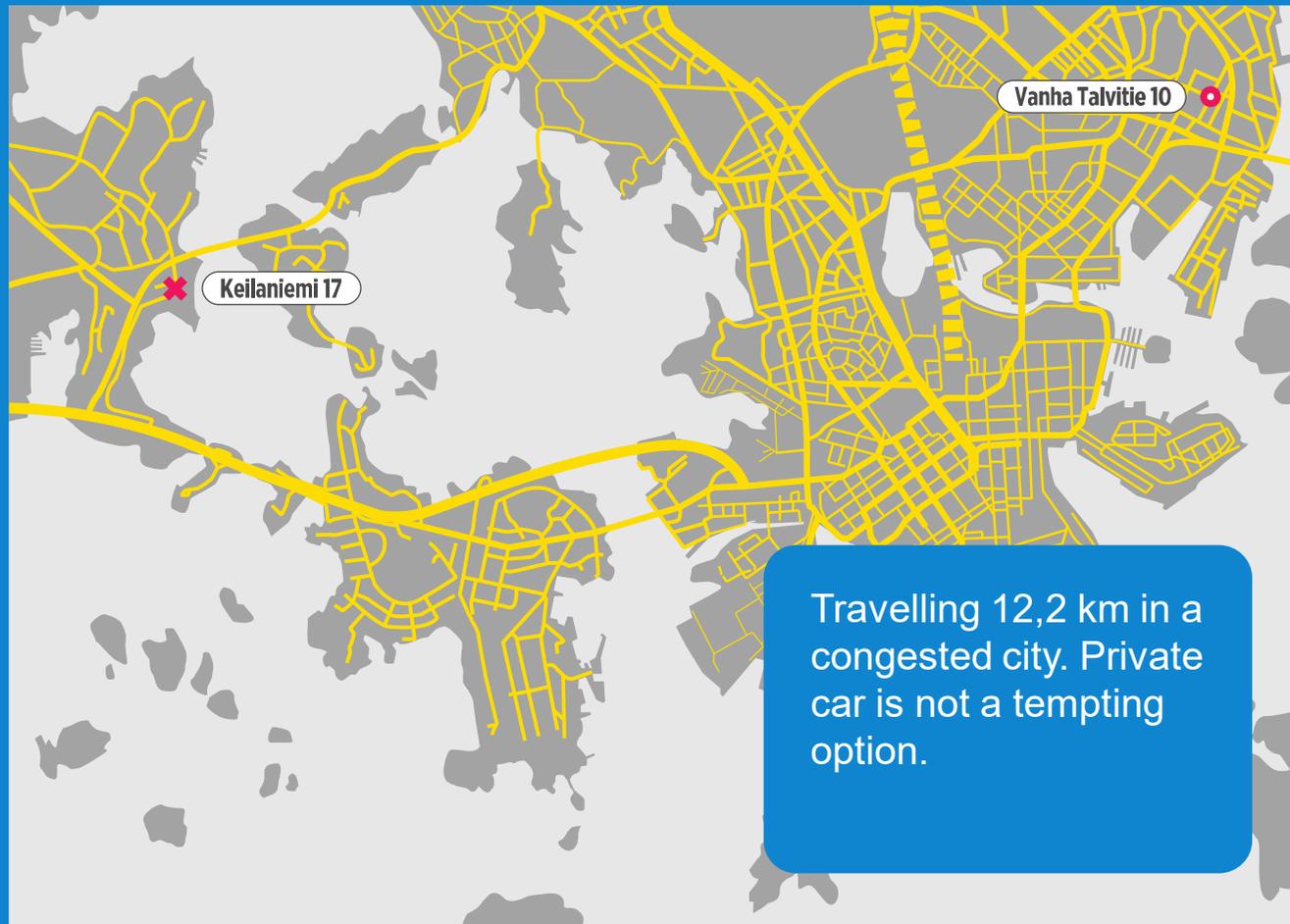


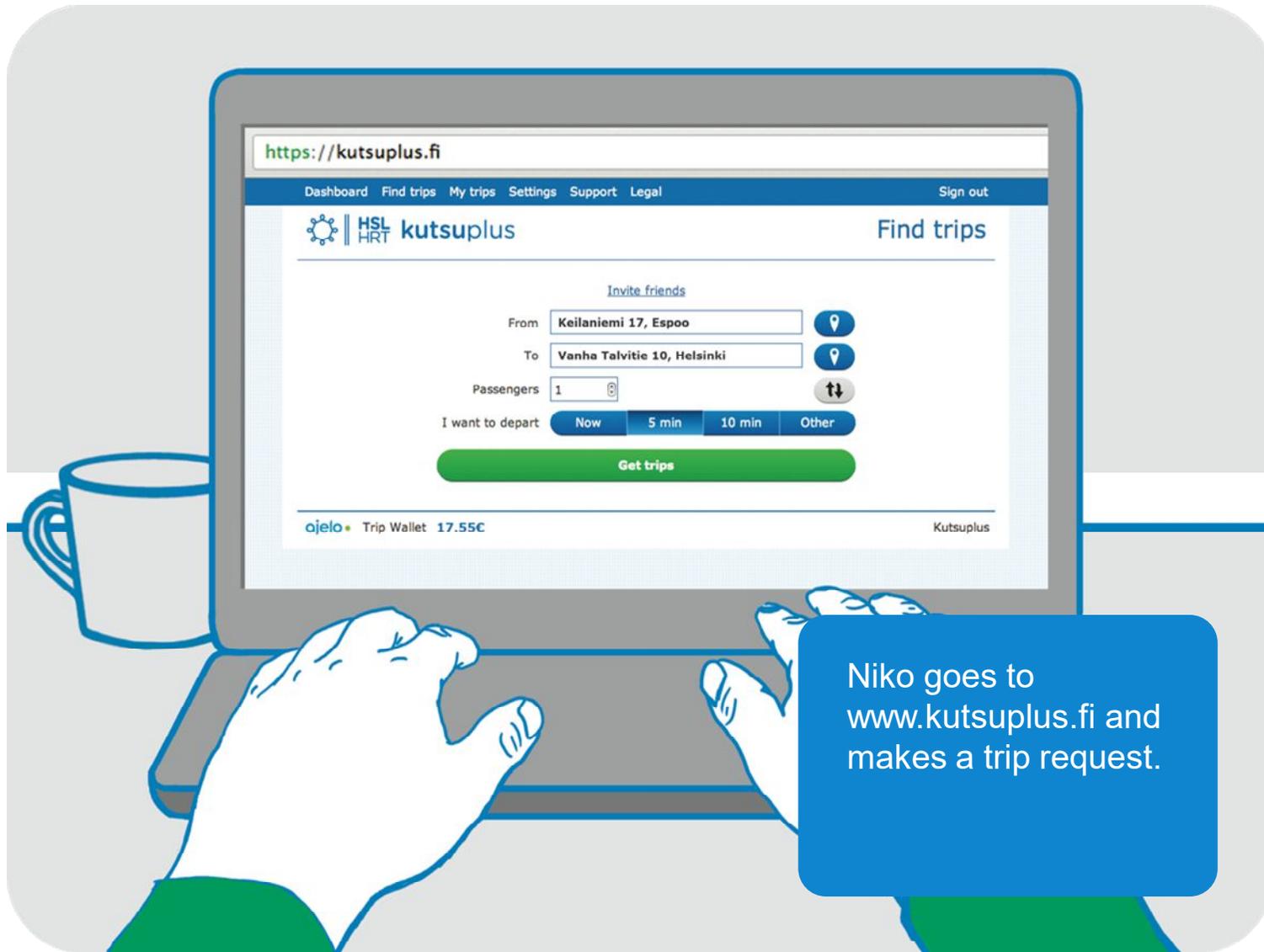
It is 13:05 at Monday afternoon. Niko is working at the office.

Keilaniemi 17 A, Espoo



He is preparing to meet a client, who is located in Helsinki. The meeting starts at 14:00.

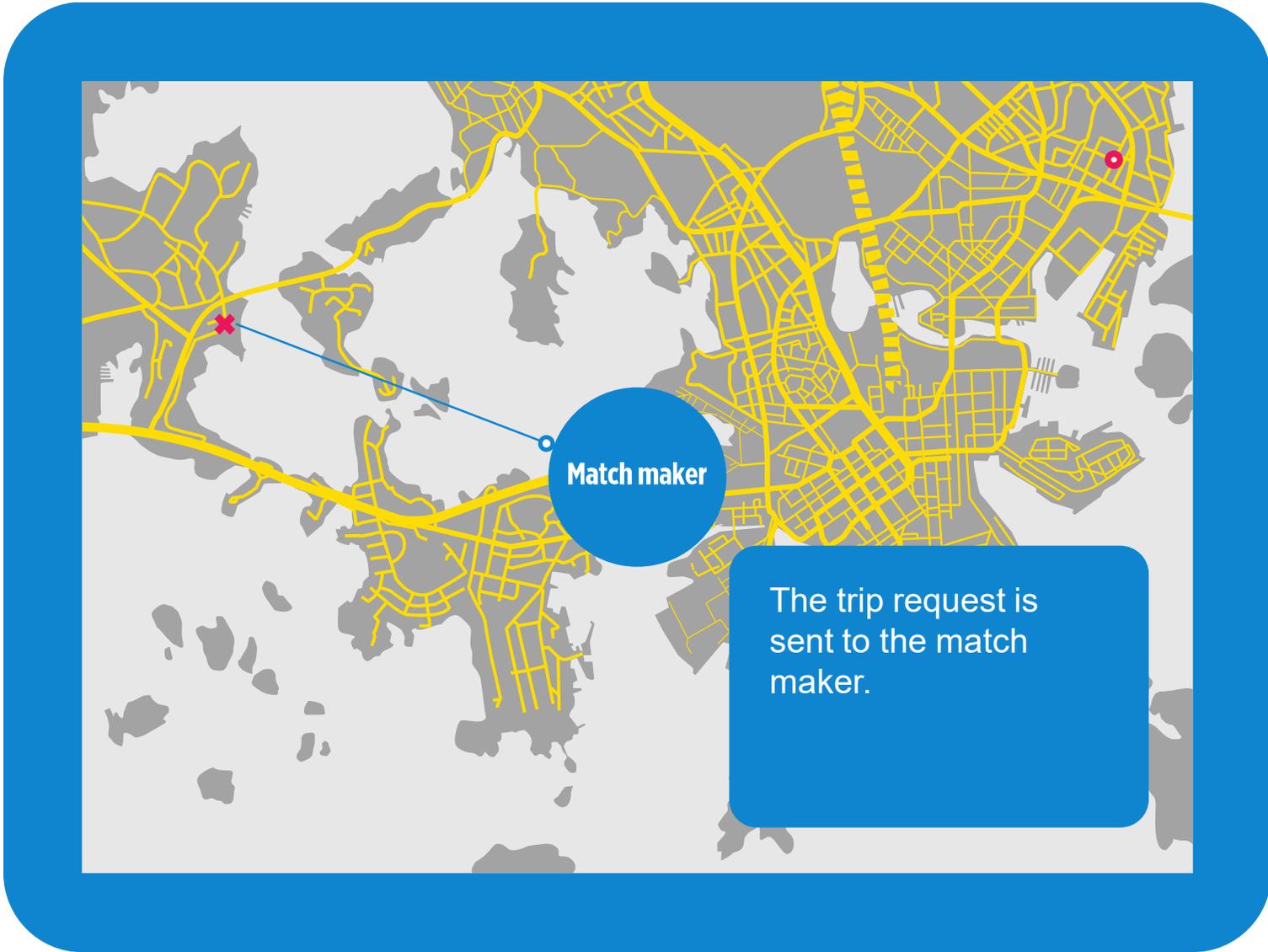


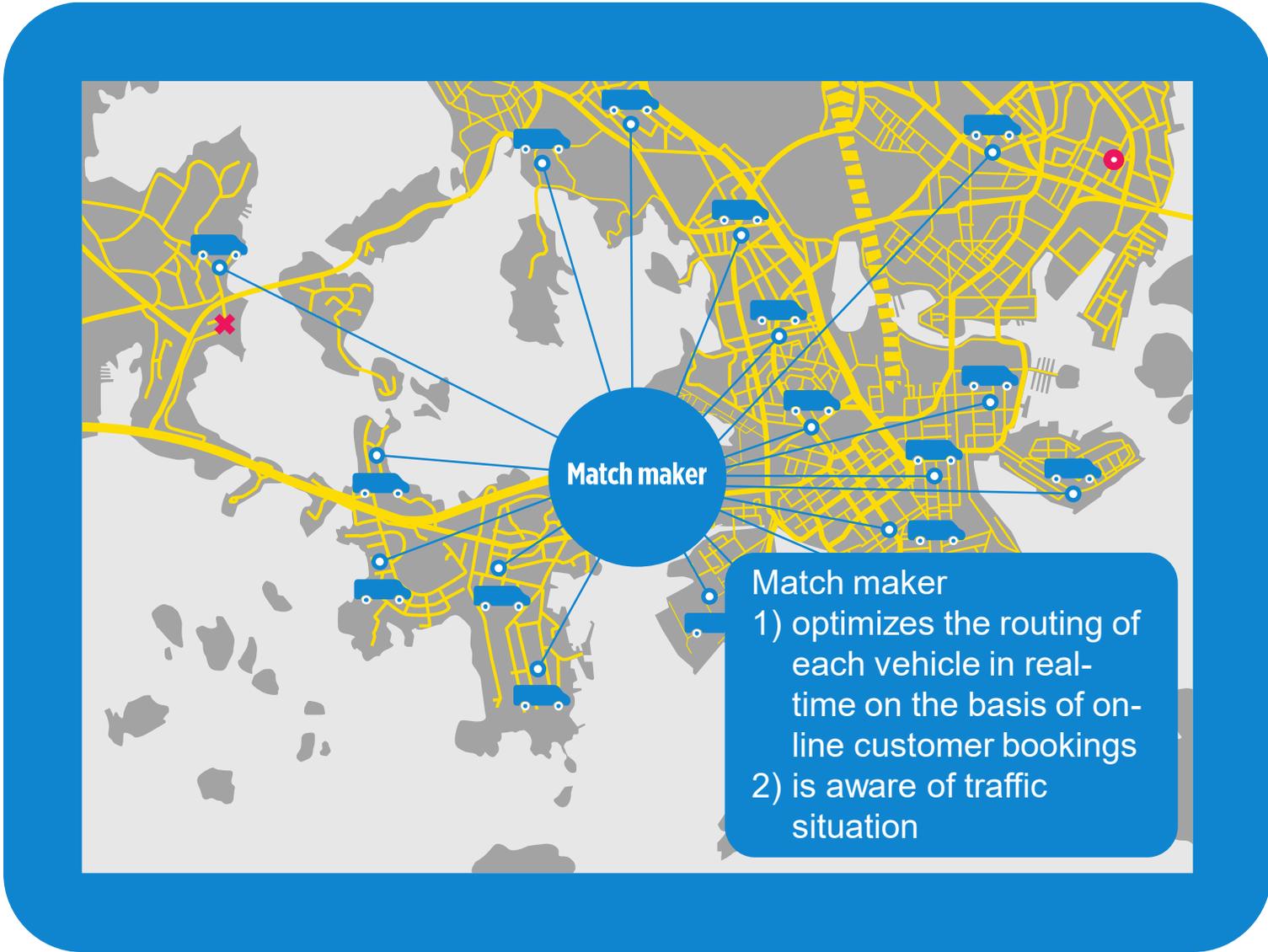


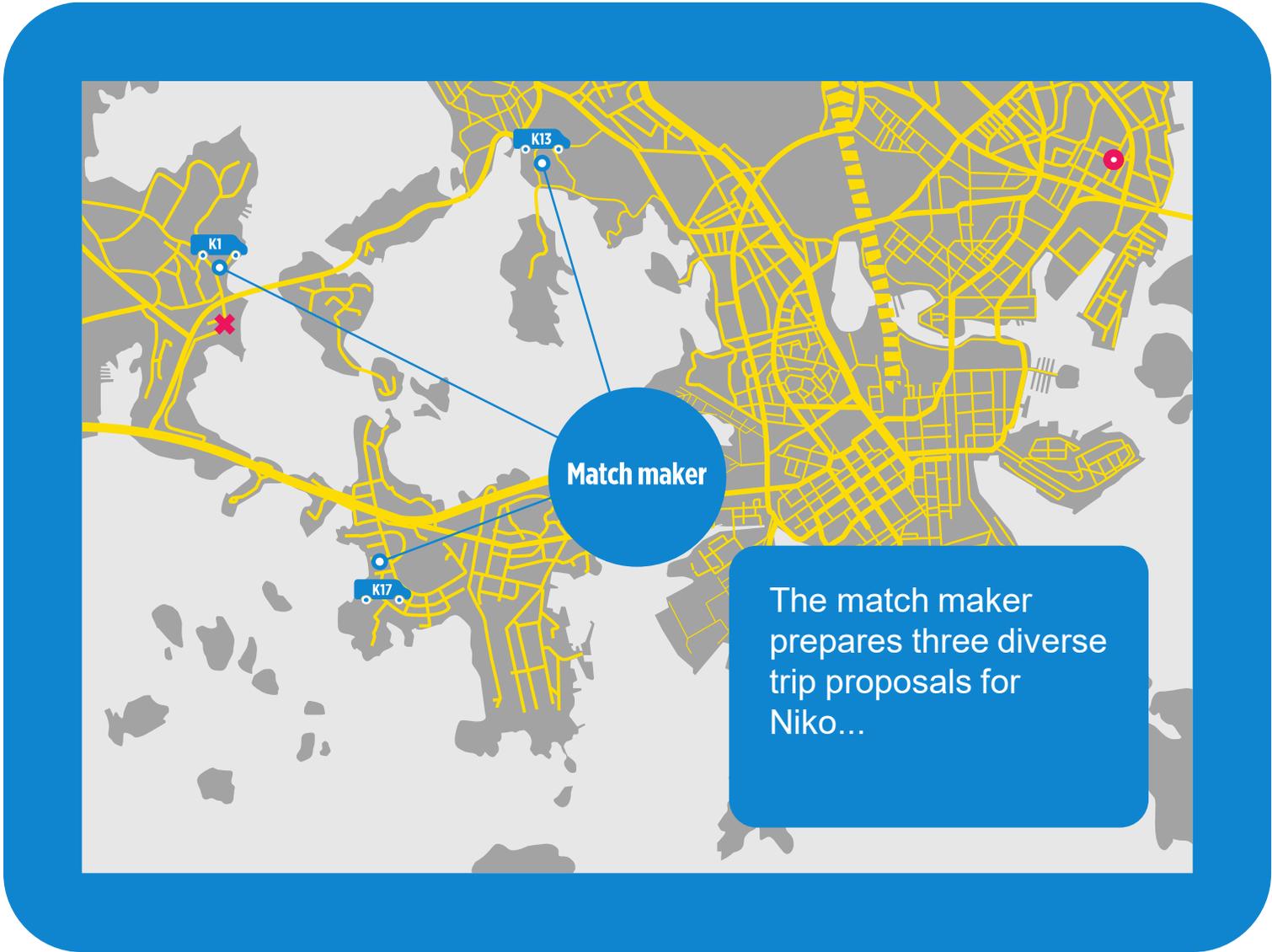


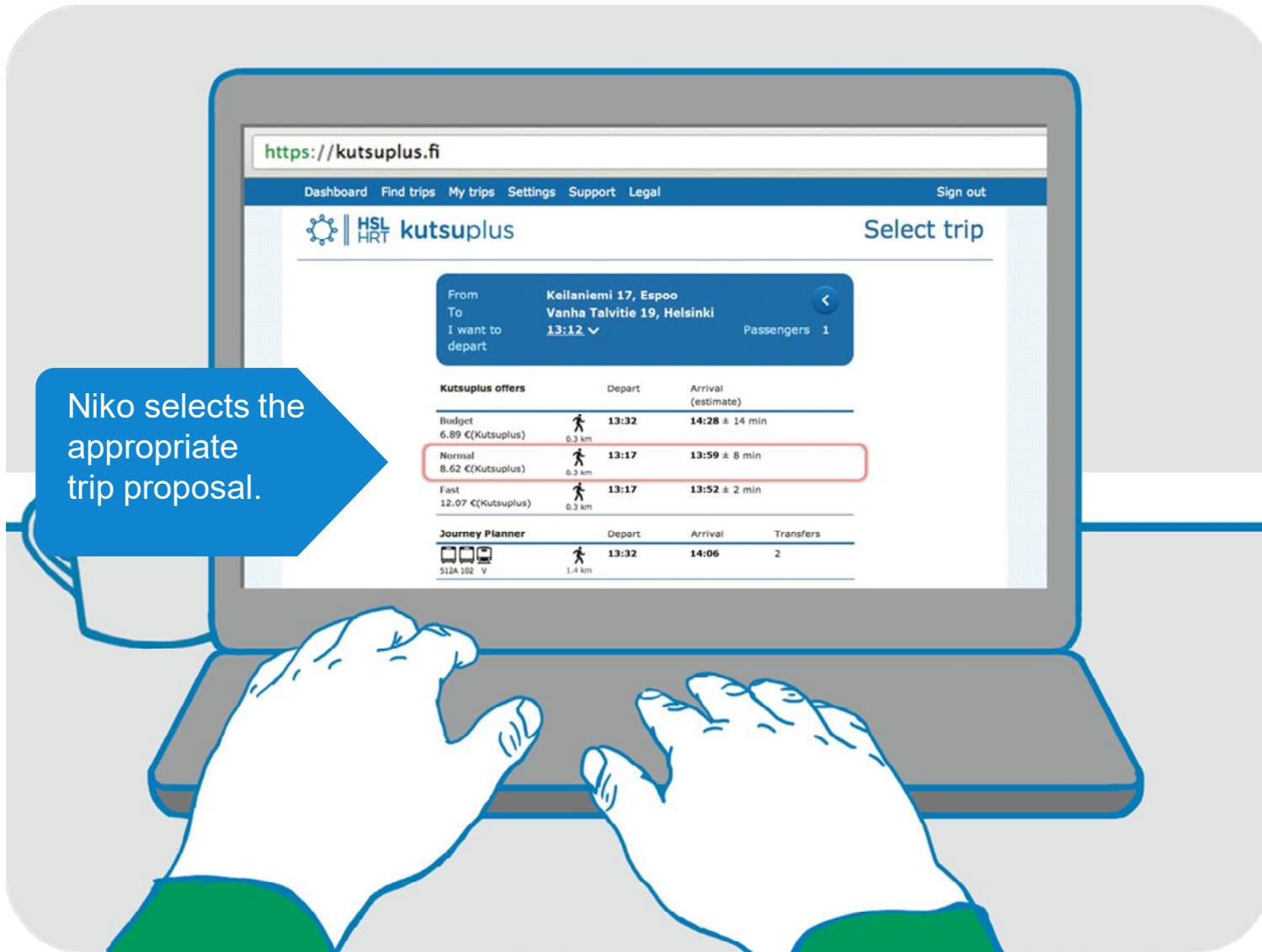
He defines his trip request...

...and asks trip proposals.

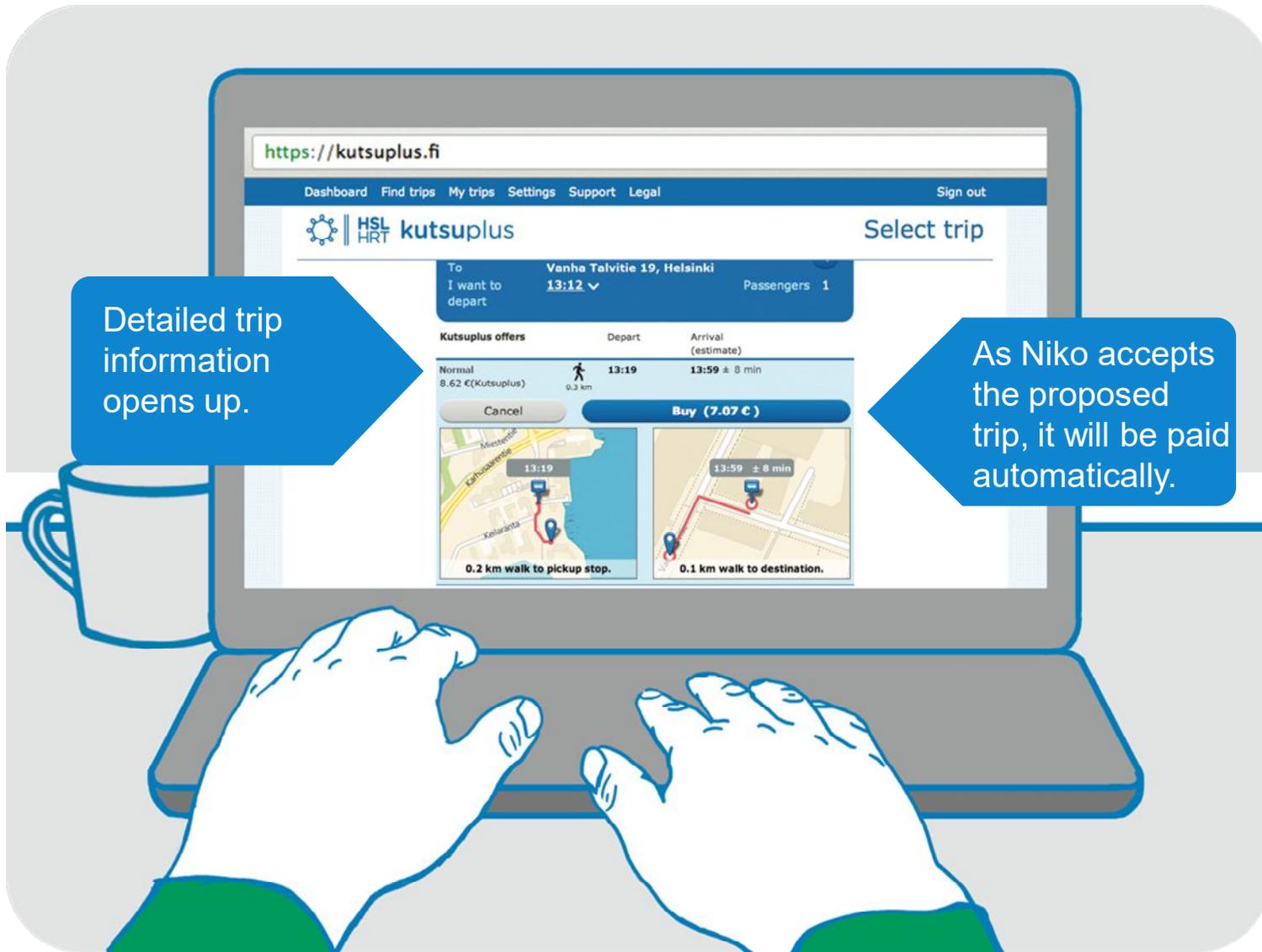


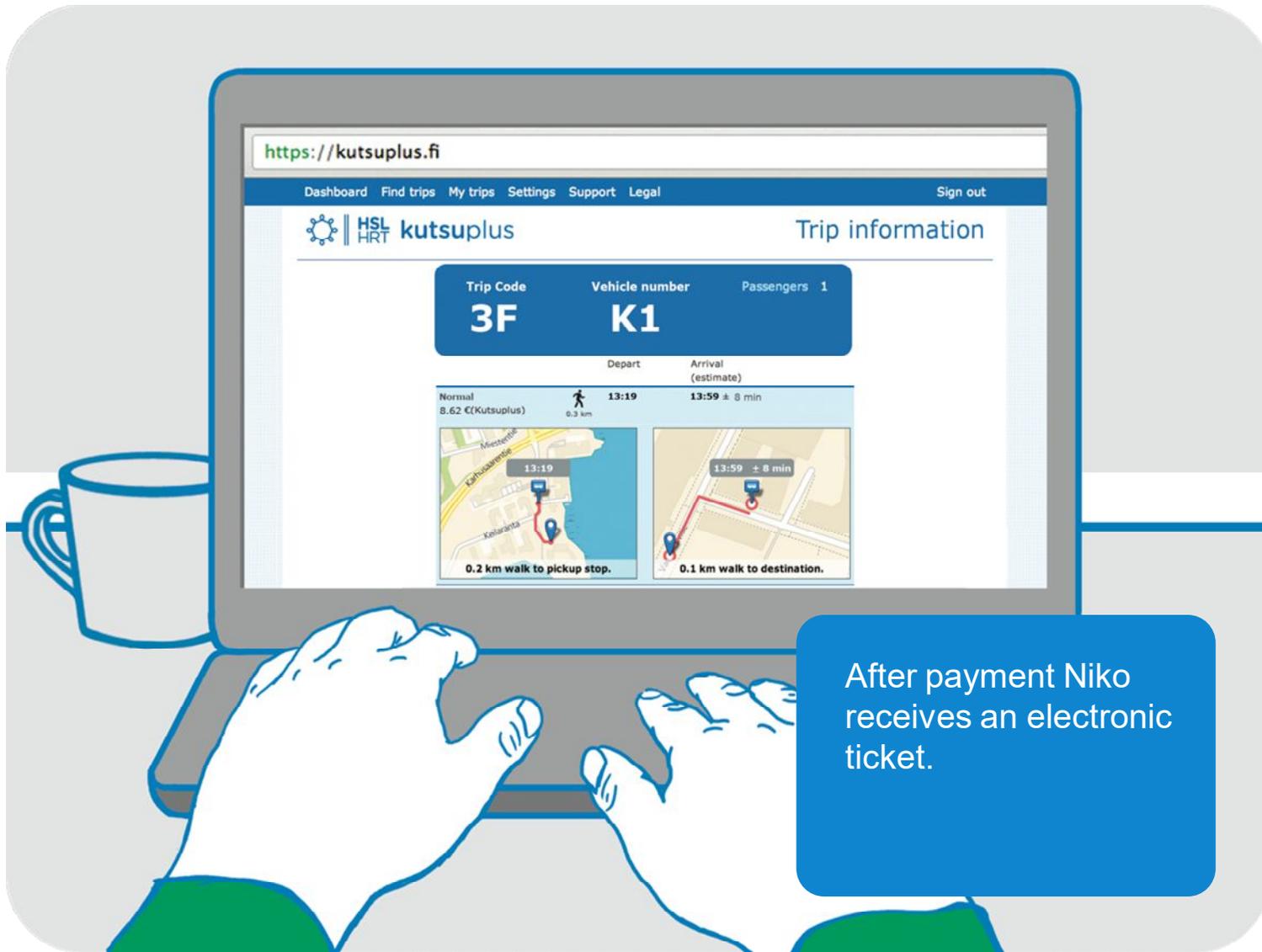




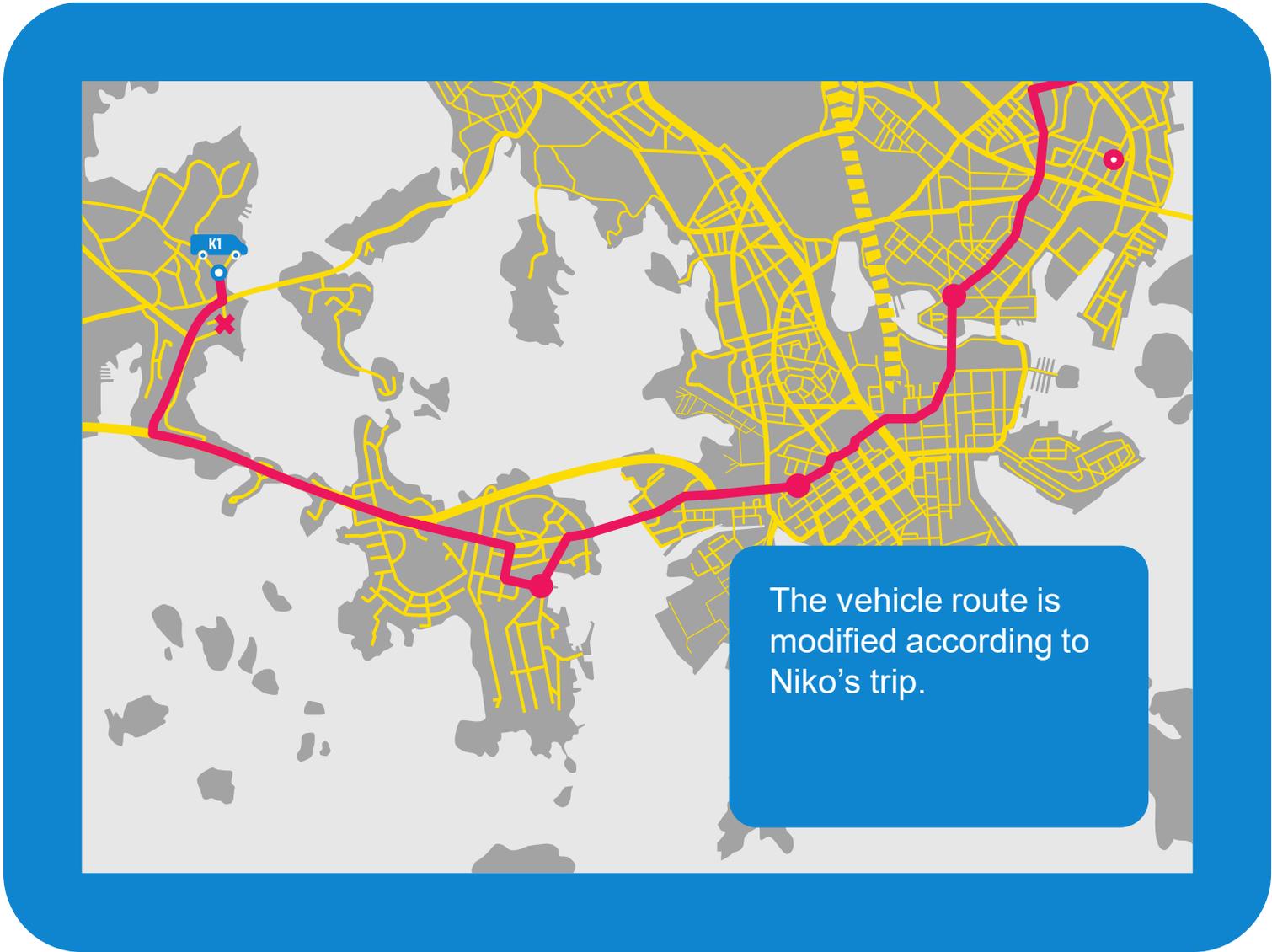


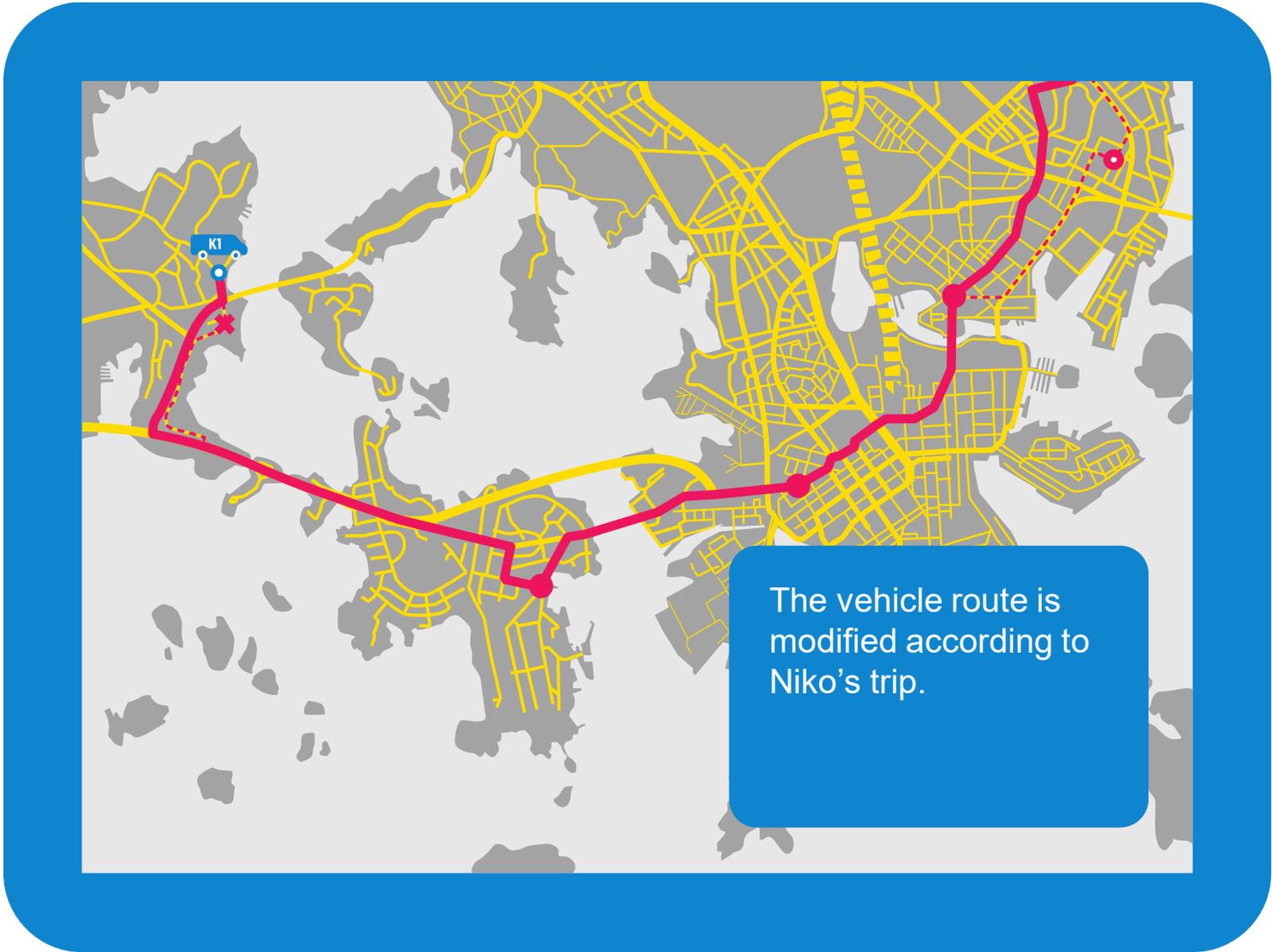
Niko selects the appropriate trip proposal.



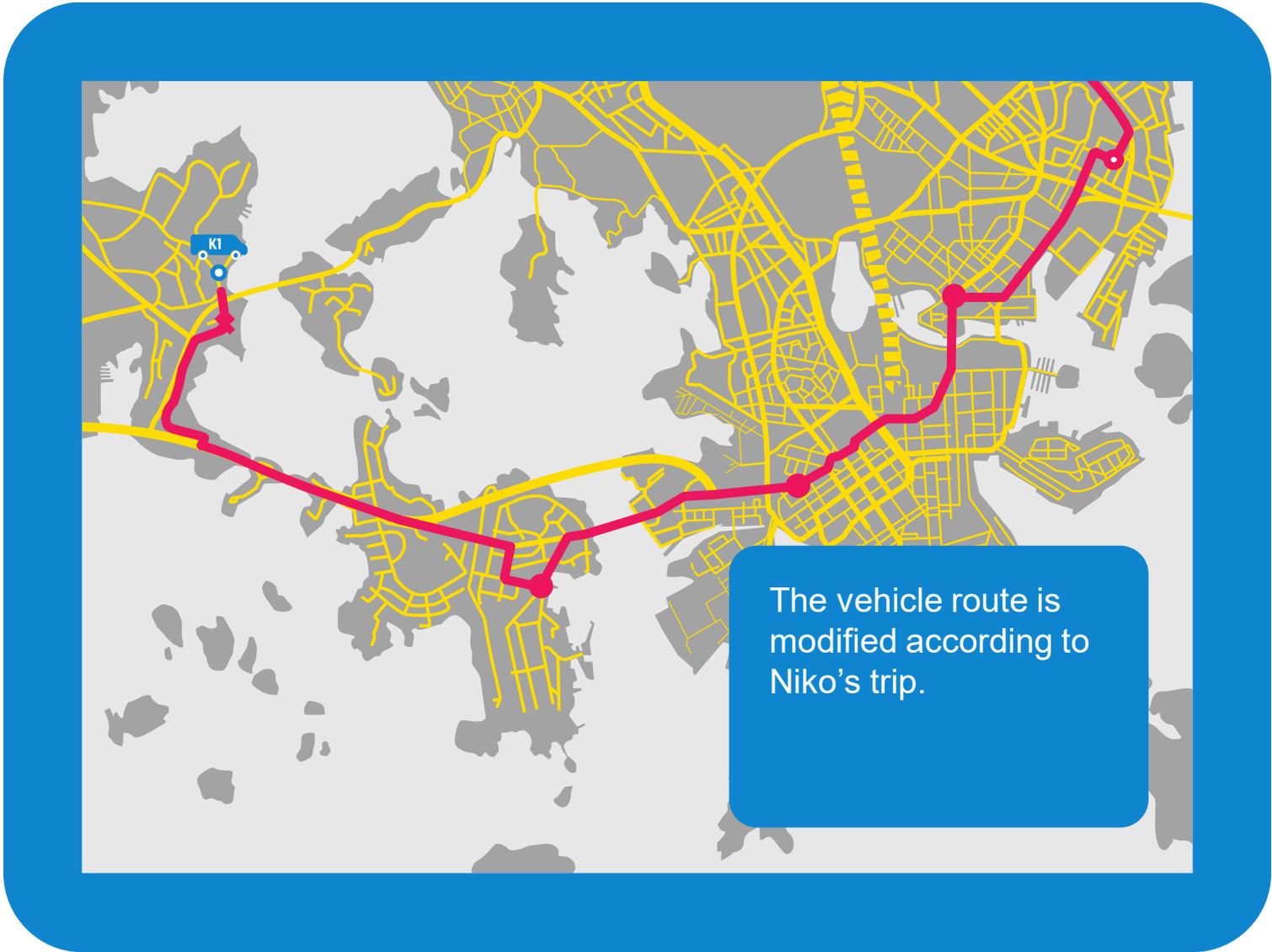


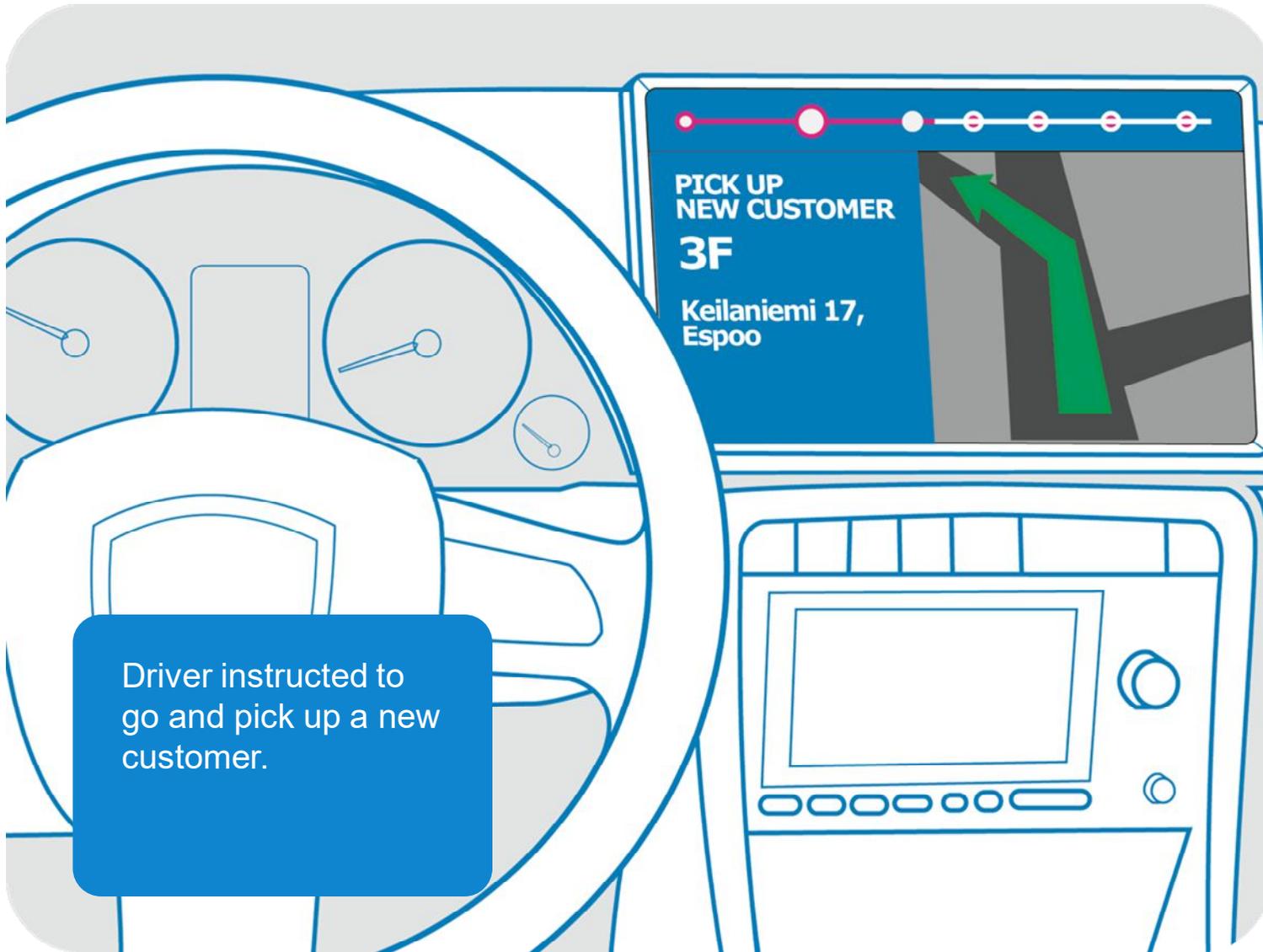




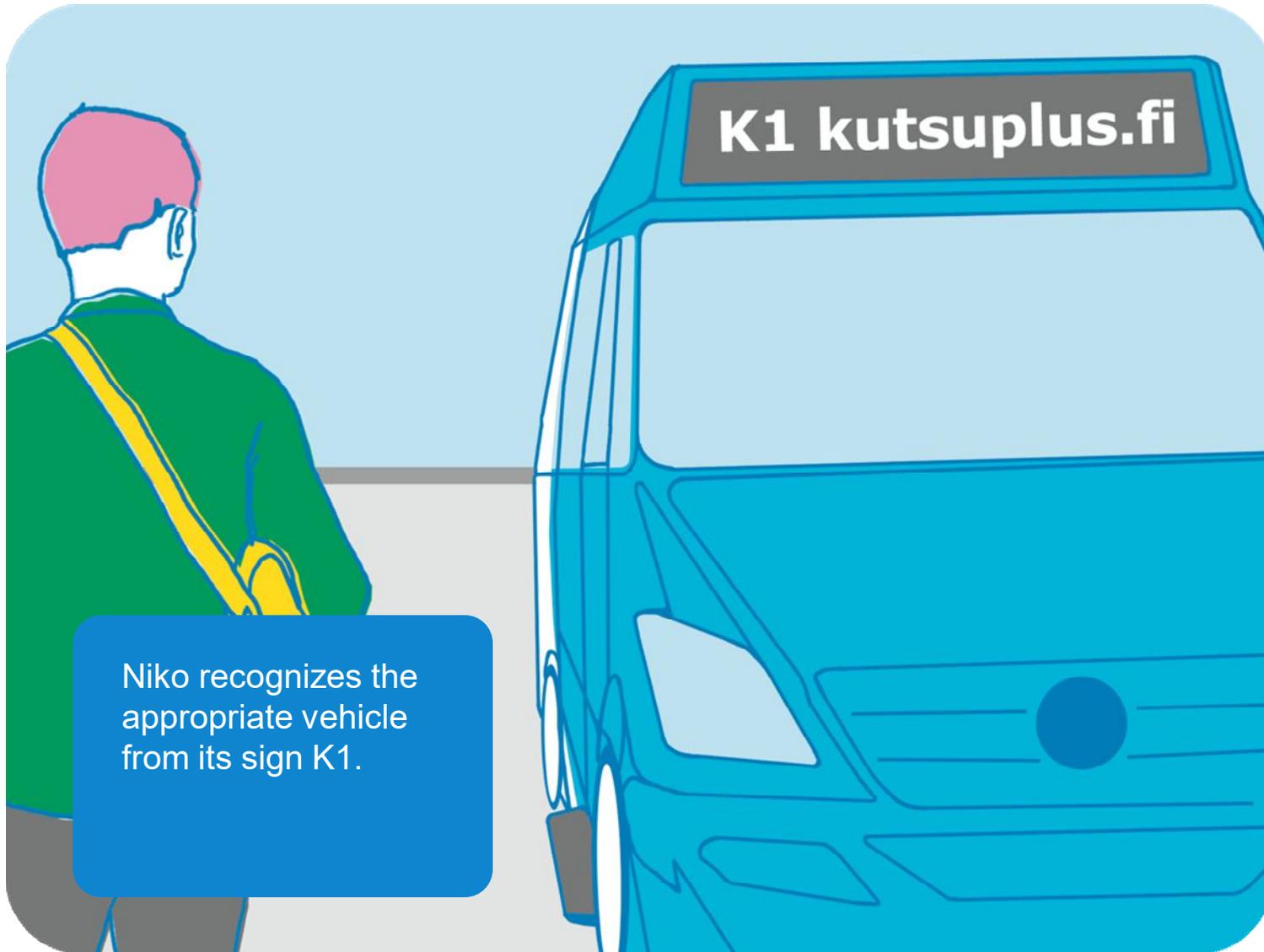


The vehicle route is modified according to Niko's trip.

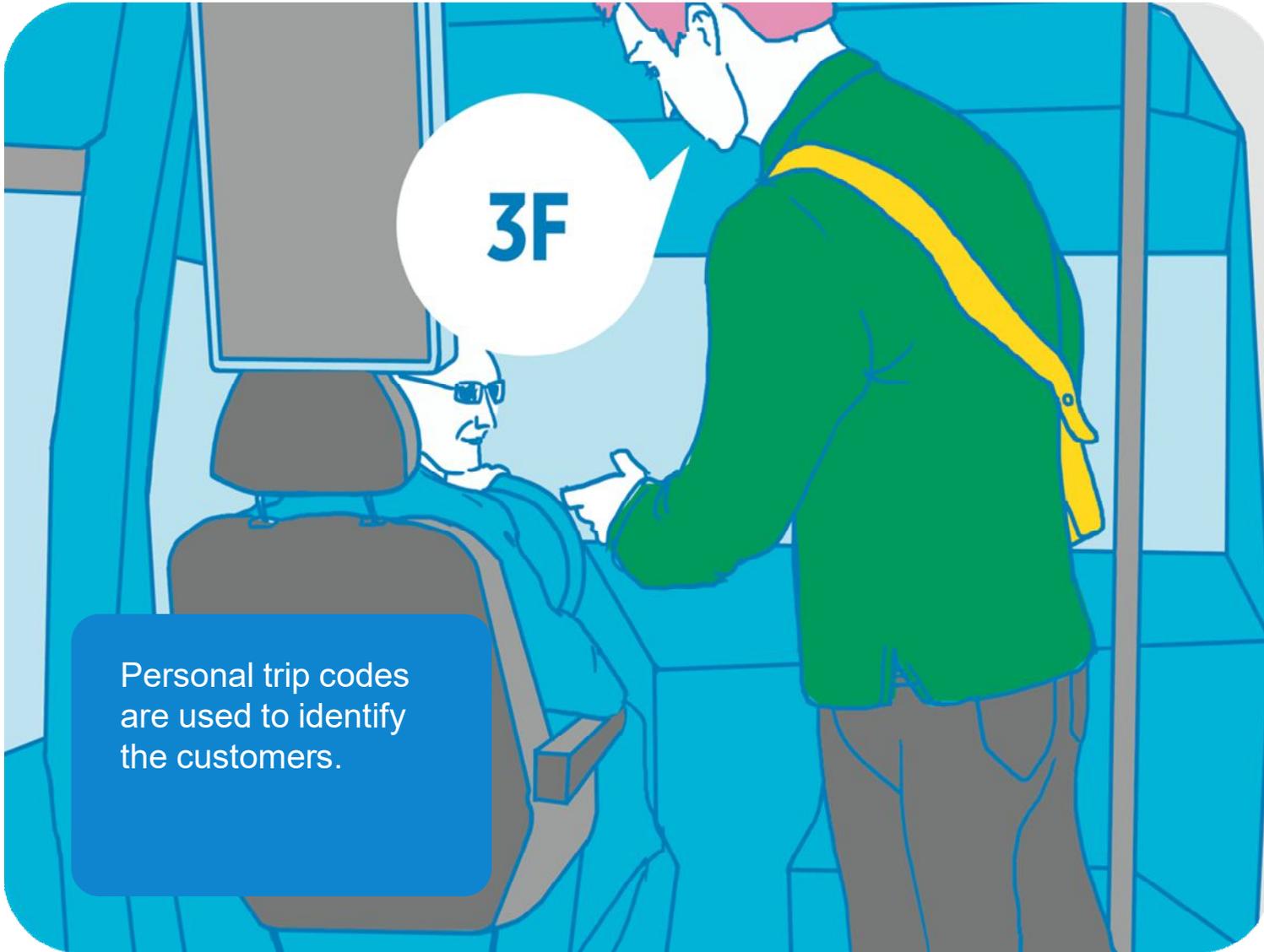


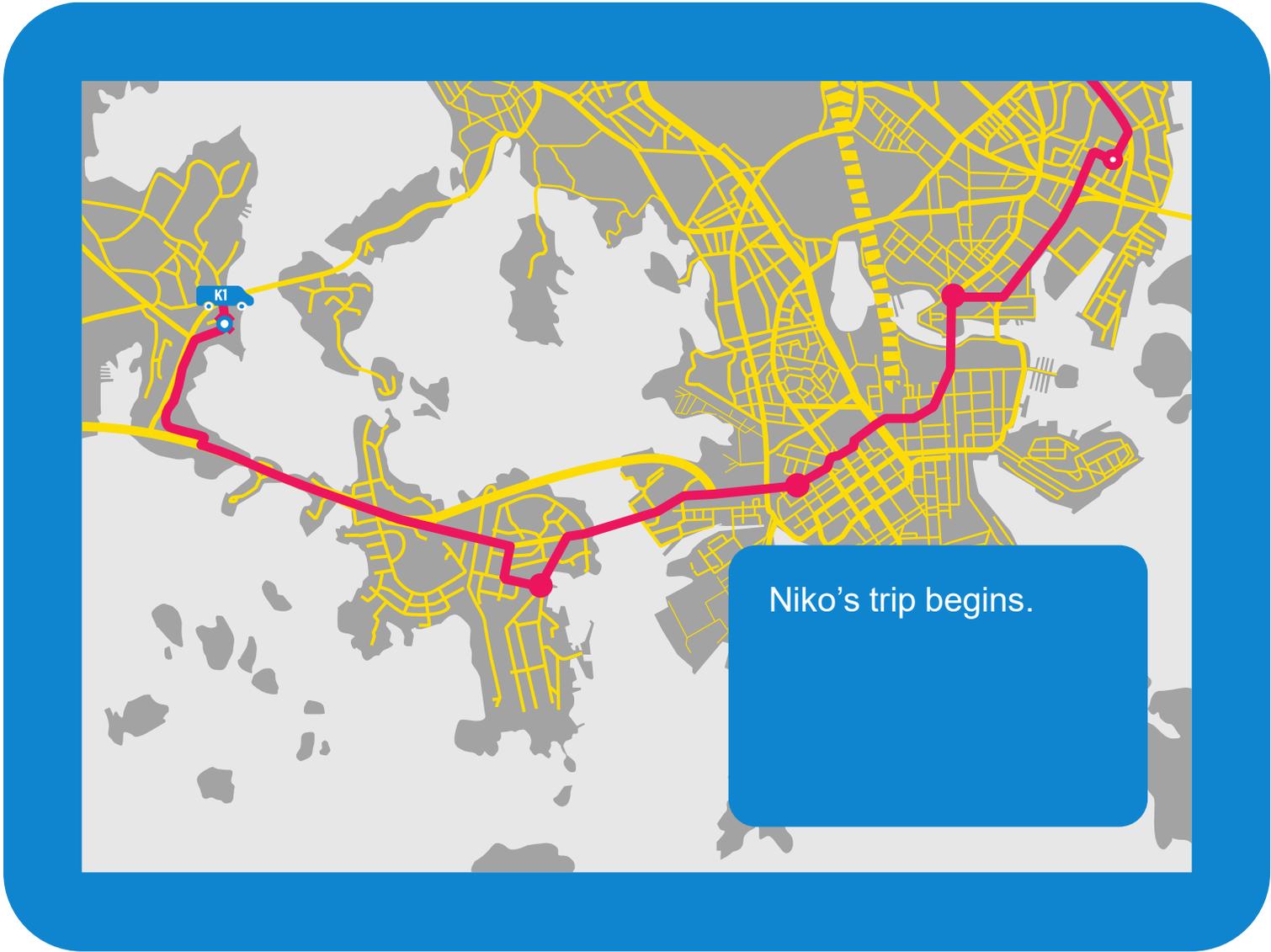


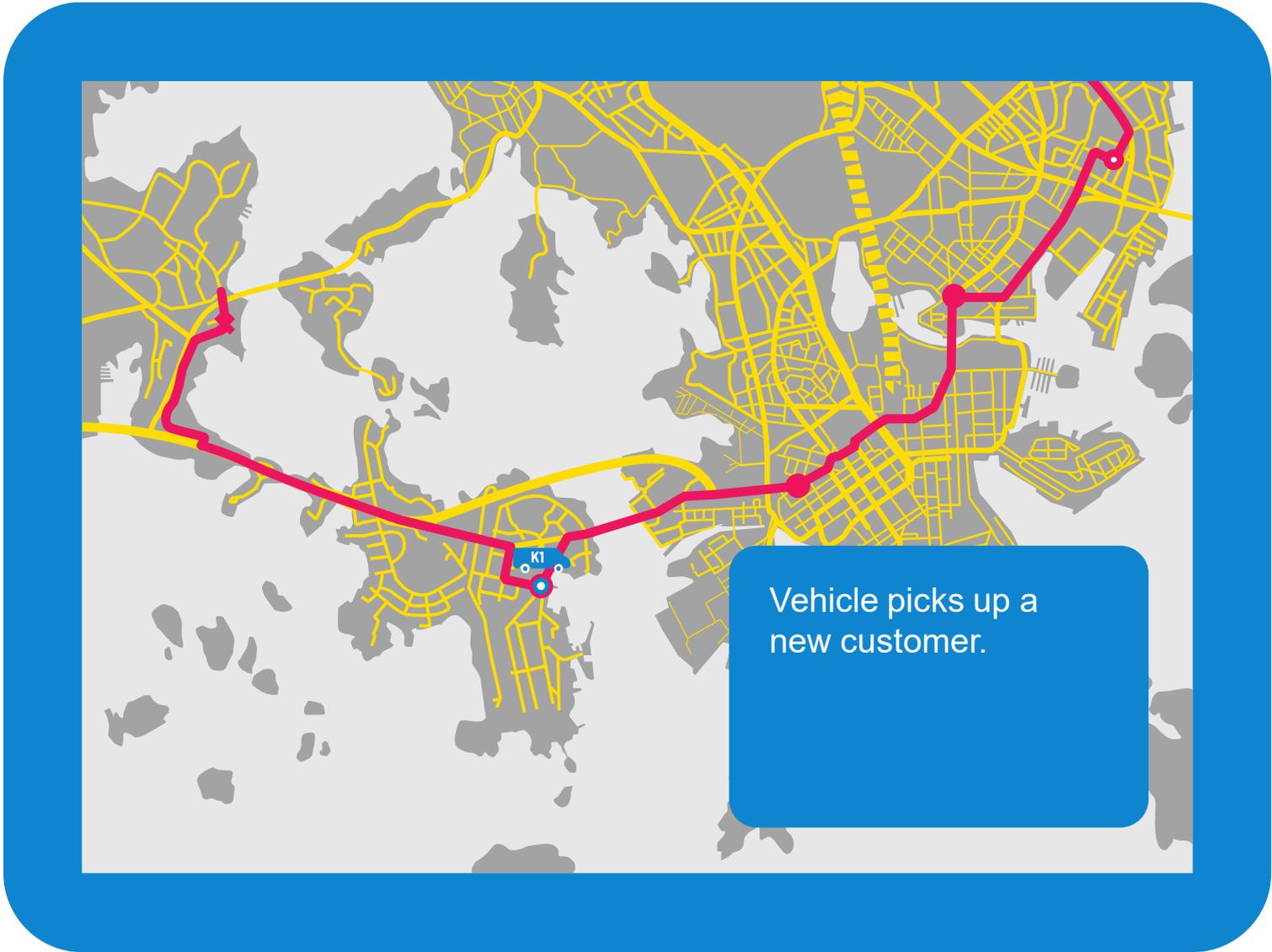
Driver instructed to go and pick up a new customer.



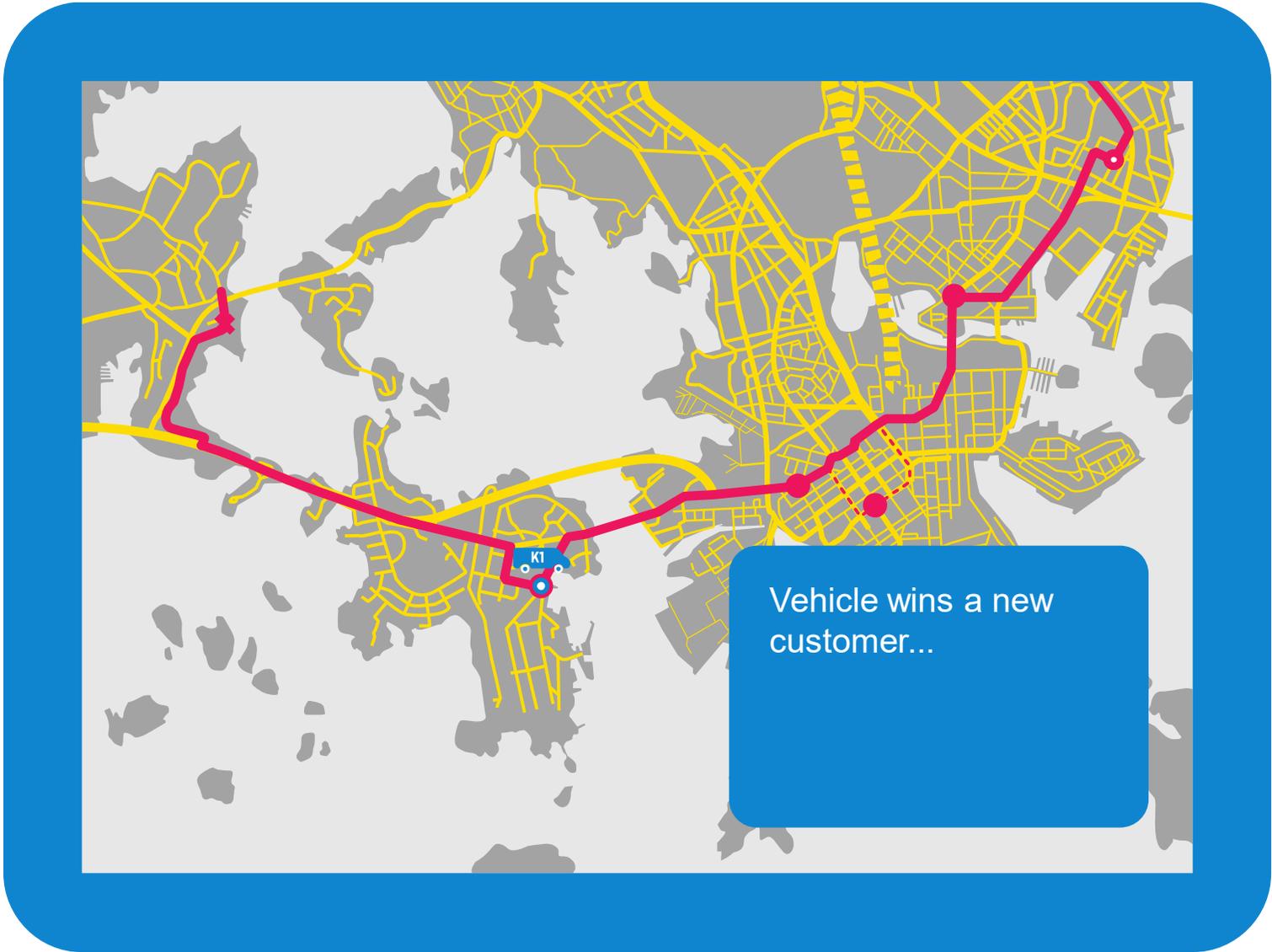
Niko recognizes the appropriate vehicle from its sign K1.



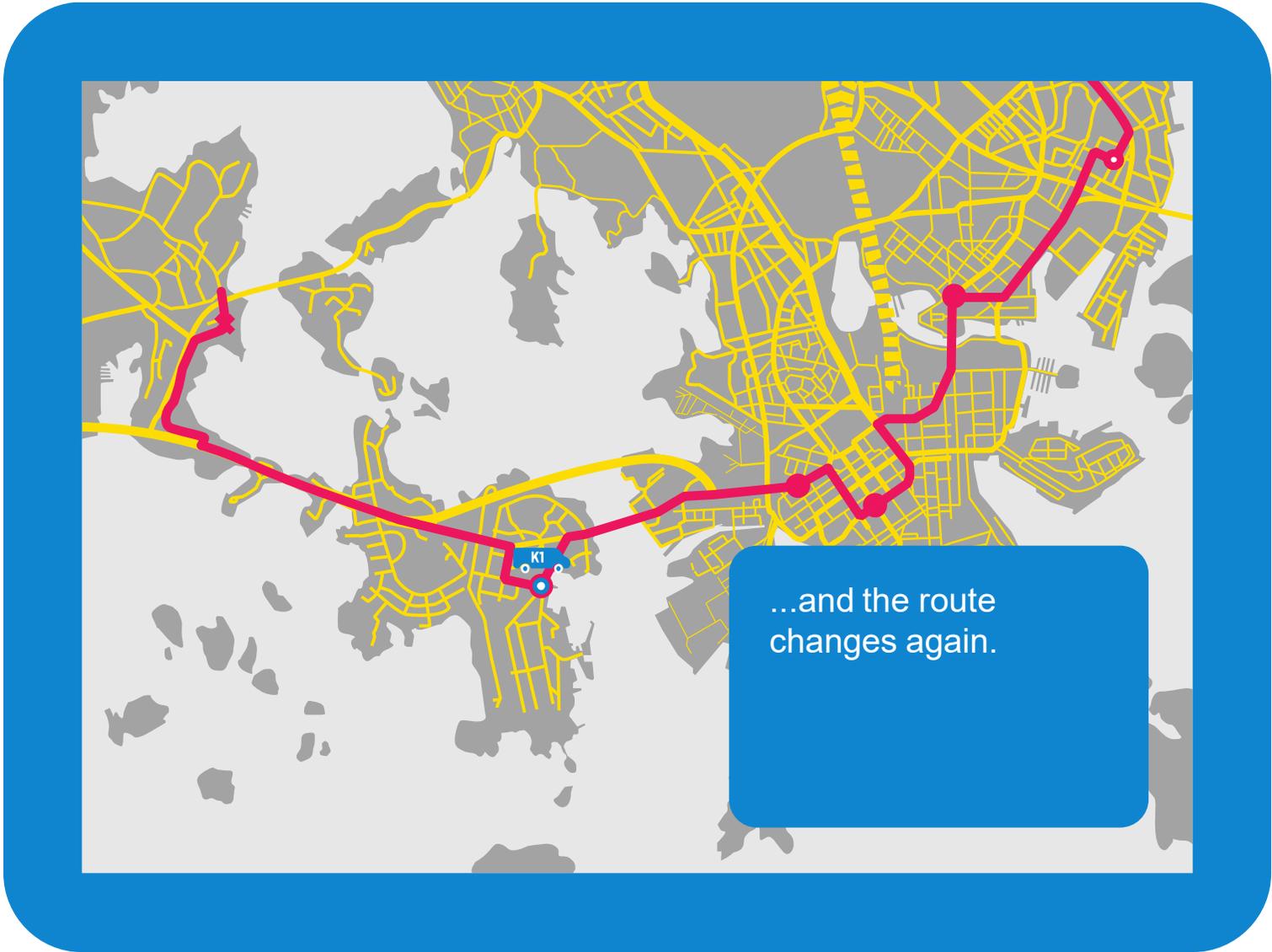




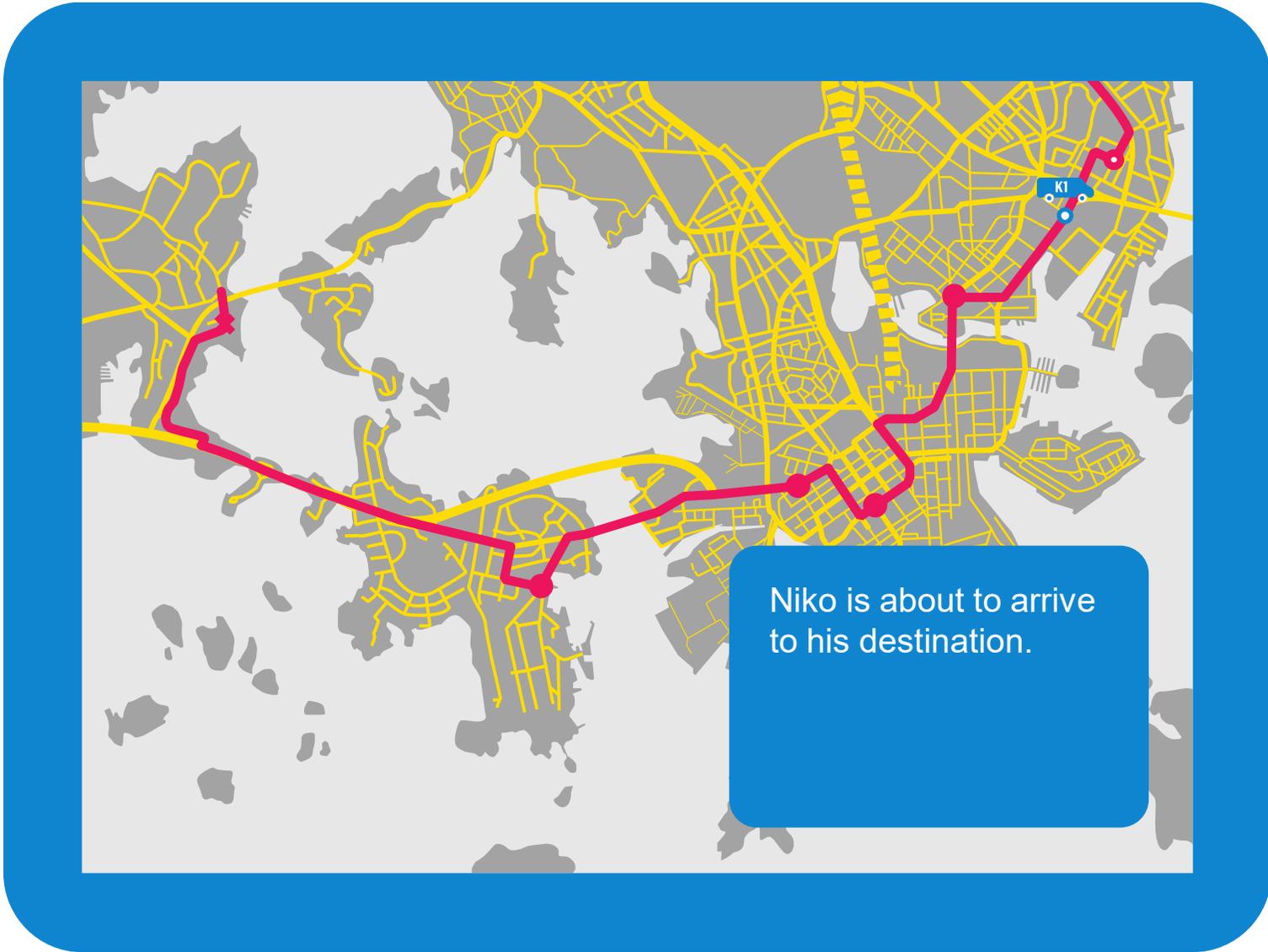
Vehicle picks up a new customer.

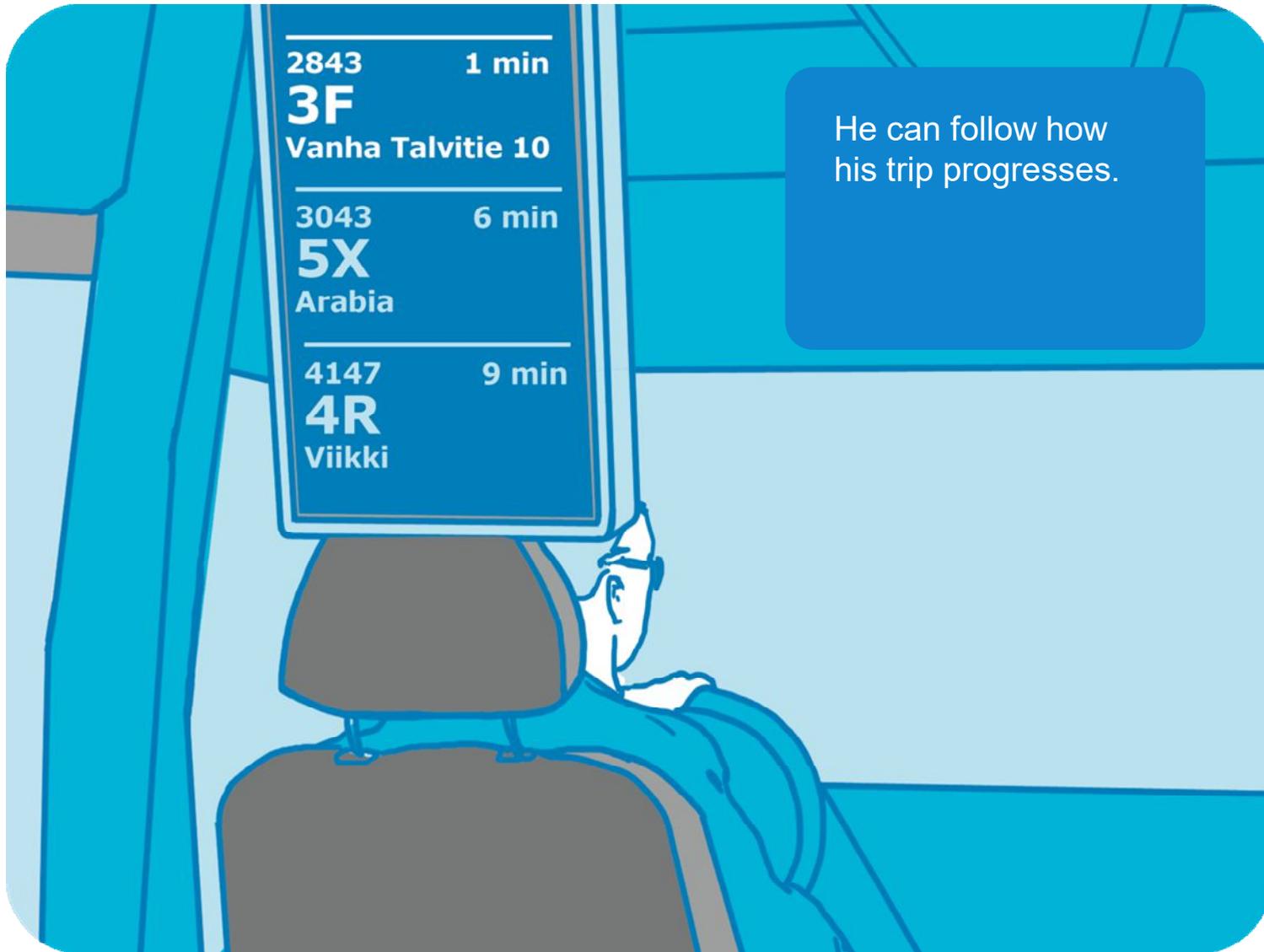


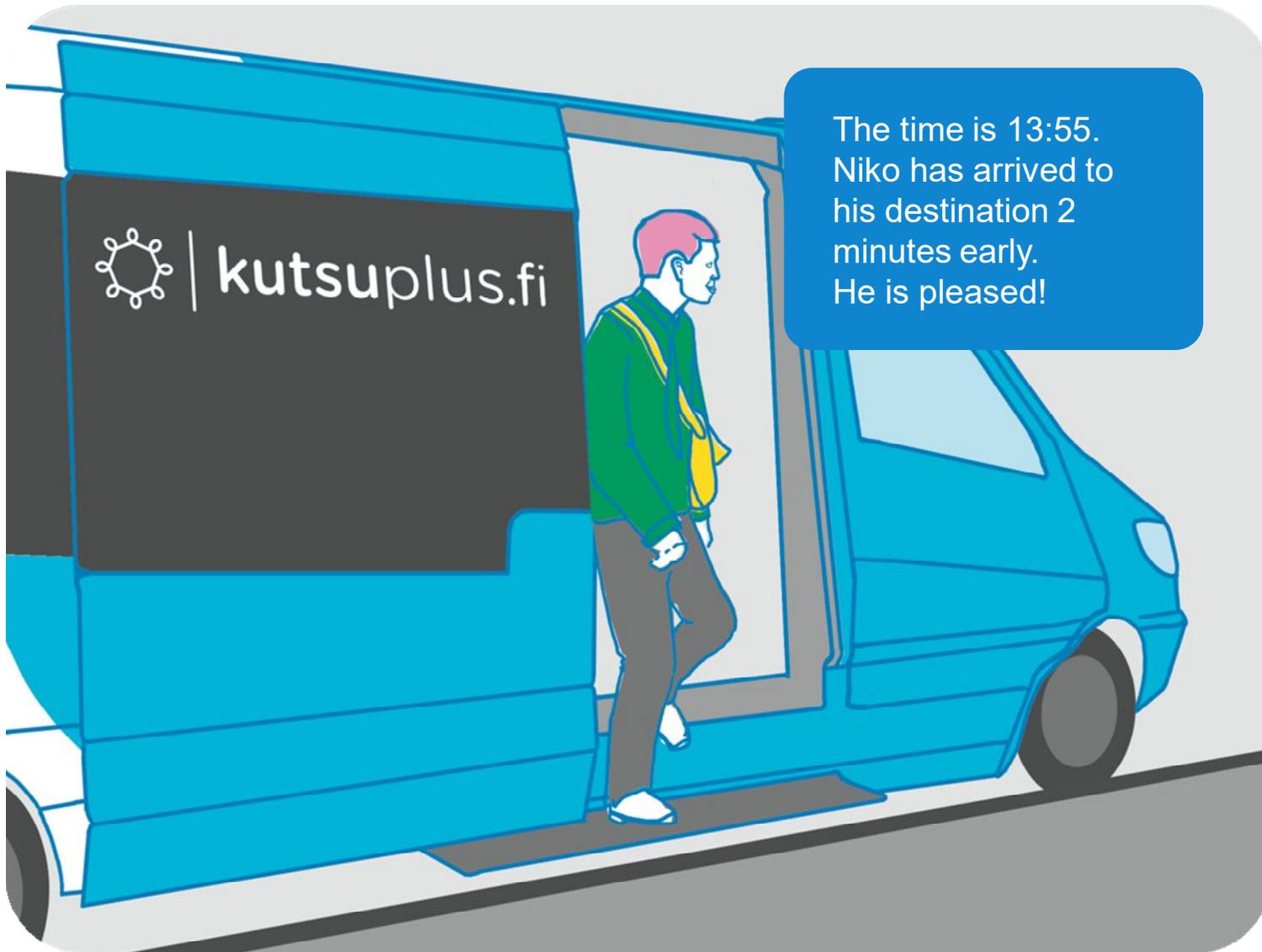
Vehicle wins a new customer...



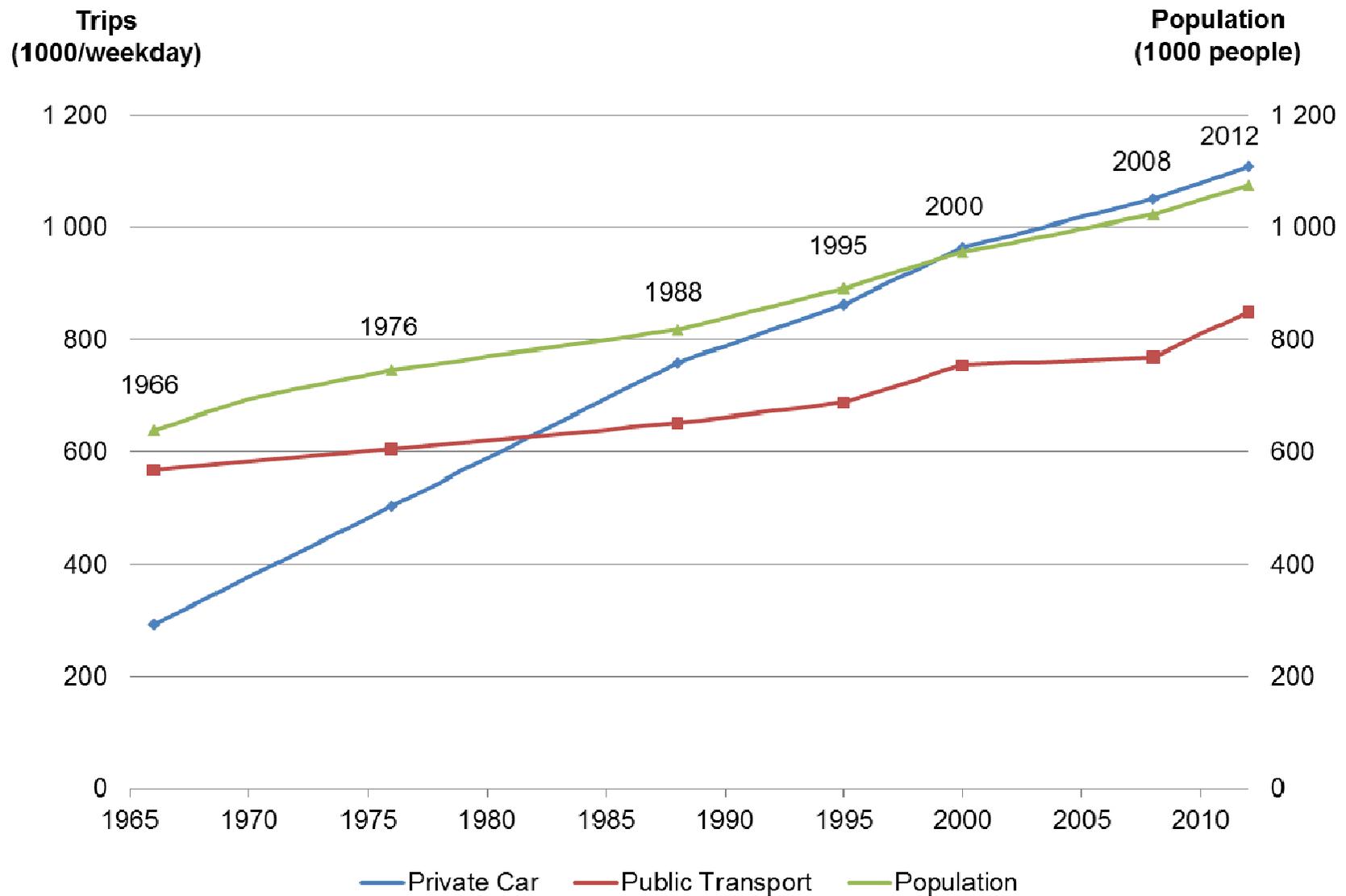
...and the route changes again.



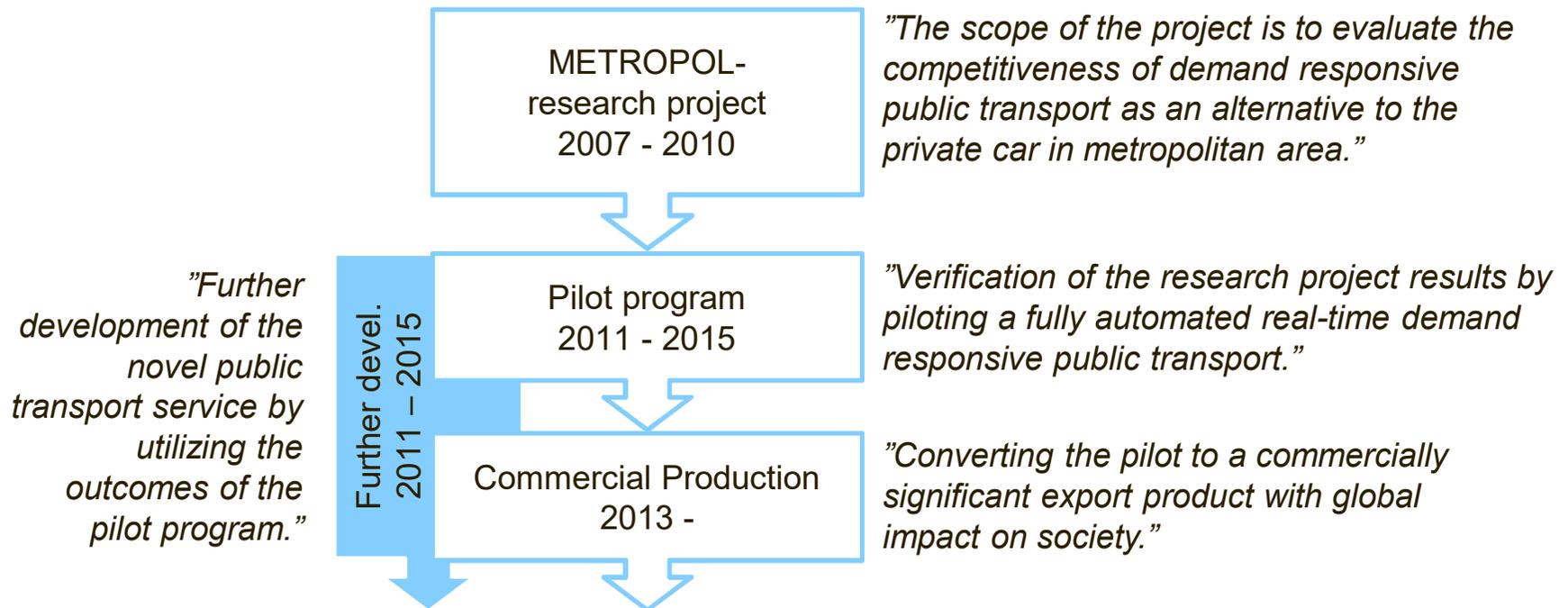




The time is 13:55.
Niko has arrived to
his destination 2
minutes early.
He is pleased!



Program History



MoU: increasing competitiveness of Helsinki region

(Finnish government and Helsinki region cities and municipalities, March 17th, 2010)

List of actions

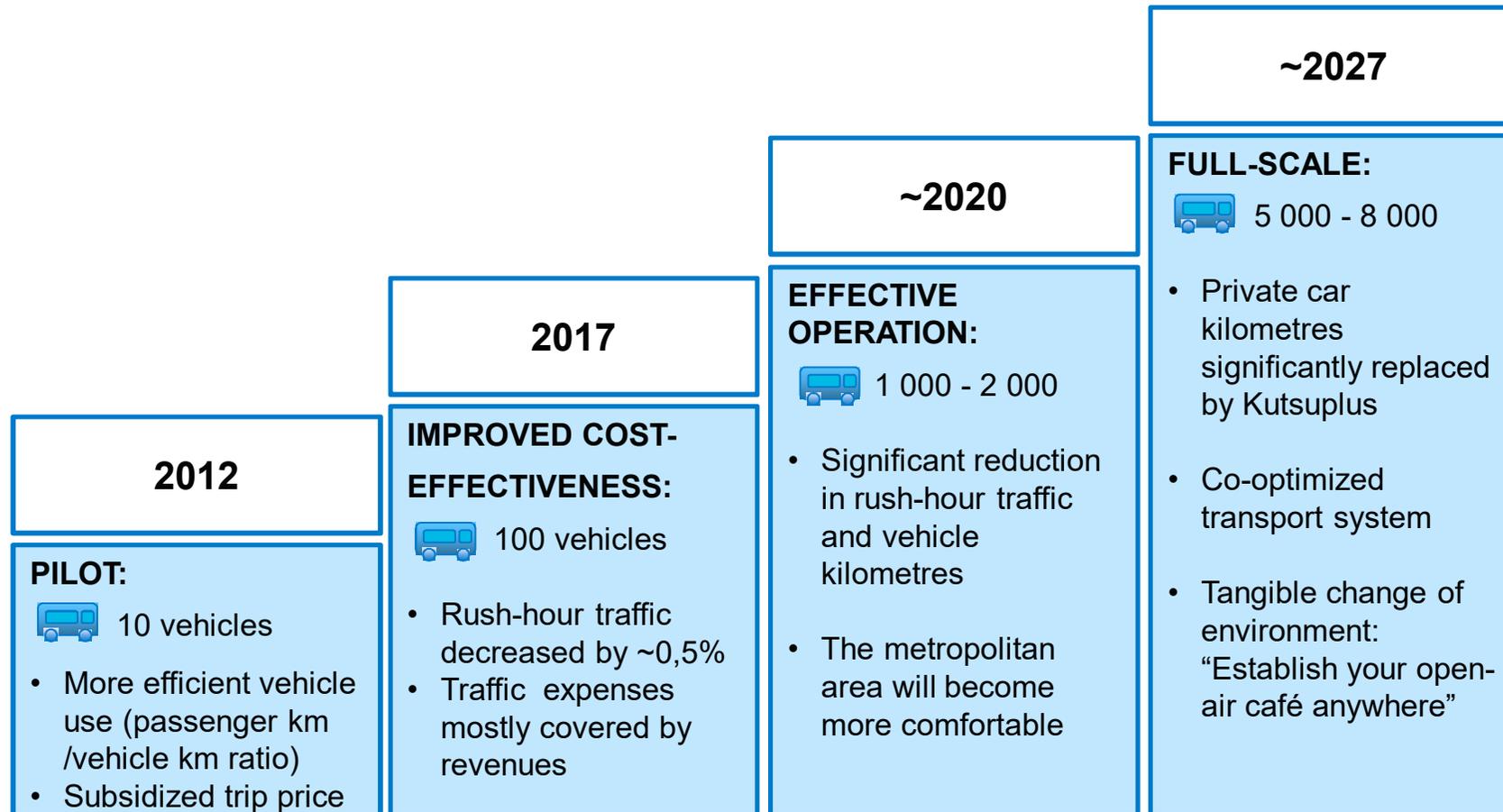
1. Strengthening the highest level education and know-how

- 1) The cities will improve Helsinki region public transport between campuses by piloting together with the government a demand responsive public transport service for inter and intra campus transport.

Responsible authorities: Helsinki region cities, Ministry of Transport and Communications and Ministry of Employment and the Economy



Target objectives in Helsinki region

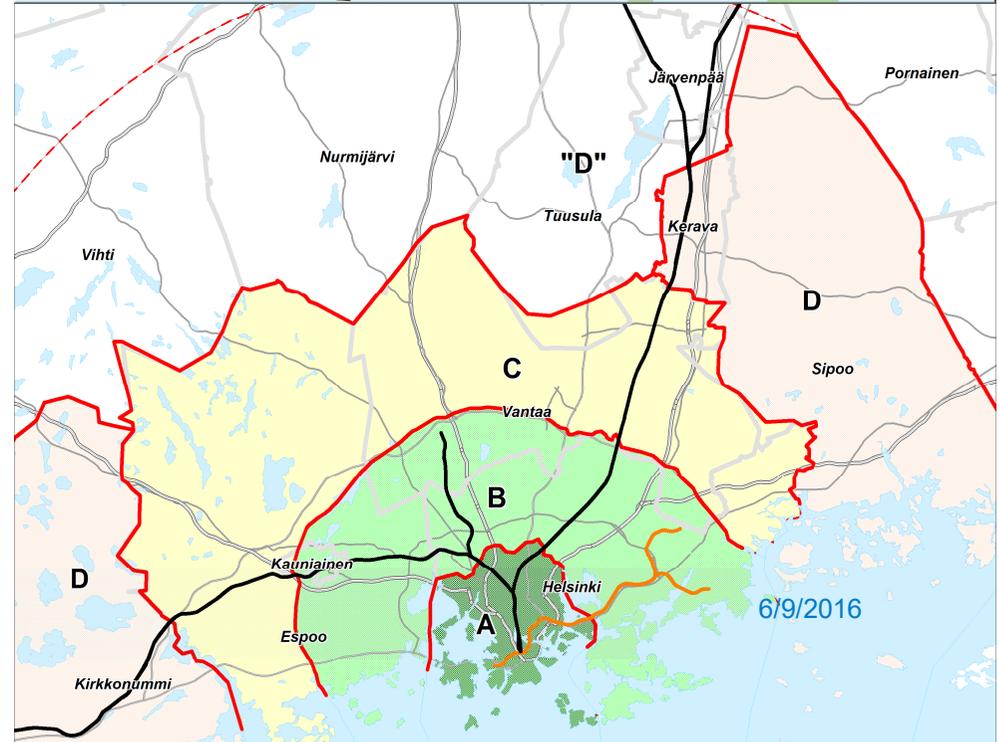
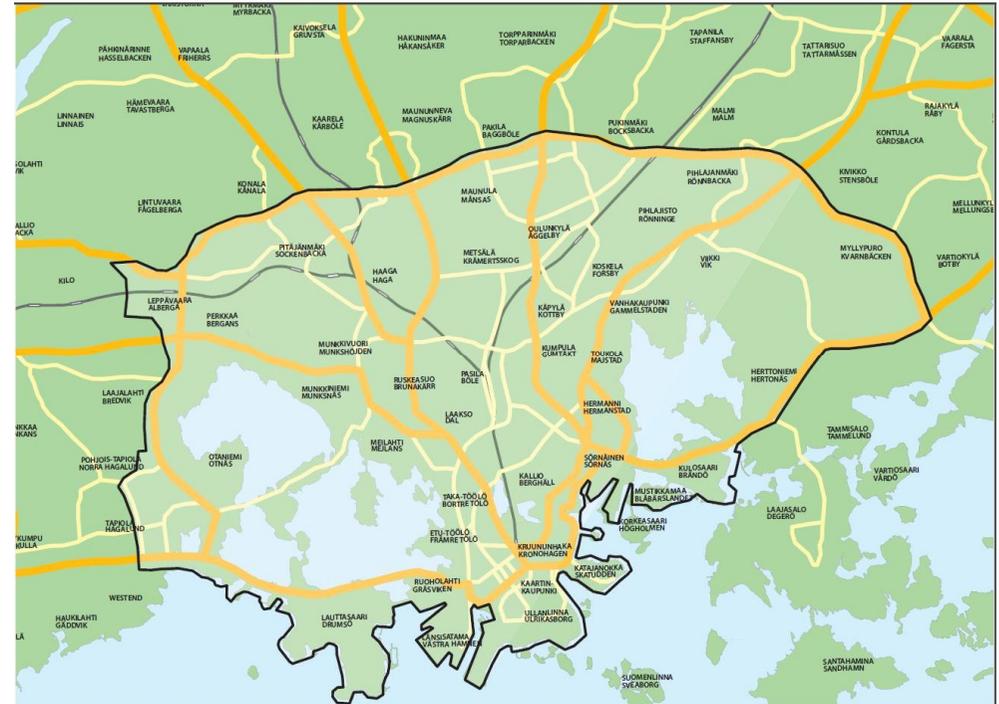




Kutsuplus expansion plan

in size

Areas "A", "B", and "C" covering Helsinki, Espoo, and Vantaa to be introduced when the fleet is sufficient in size



Key Roles

HSL

- service ecosystem and service design
- requirement specifications for the partners and subcontractors
- quotations for gradually increasing the vehicular capacity
- equipping the vehicle information system
- customer care
- program coordination and leadership

Split Finland Ltd. (earlier Ajelo Ltd.)

- development and maintenance of the core control and service system
- trip orders, providing and allocating shared rides for vehicles in real-time
- driver and passenger information system
- event-log, customer database and trip wallet
- passenger statistics reports
- vector-based map database, map database modifications
- Passenger statistics

Rapiditaxi, Taksikuljetus and Andersson provided and assembled the vehicles and infrastructure for the information system and hired the drivers and provided the physical transport.



Kutsuplus in a Nutshell

A novel form of public transport complementing the public transport offering

- Real-time, automated, demand-responsive public transport
- Trip order, payment, optimized trip combining, and driver's instructions in real-time, within seconds
- Advance payment enables fast pick-up and delivery
 - People going to the same direction, can be efficiently collected in the same vehicle

An alternative to multiple-change trips and private car drives

- Surpasses private car in efficiency: more passenger kilometres per vehicle kilometre
- Time-saving: no hunting for parking space, passenger WLAN, ...



Individual search and selection of trips

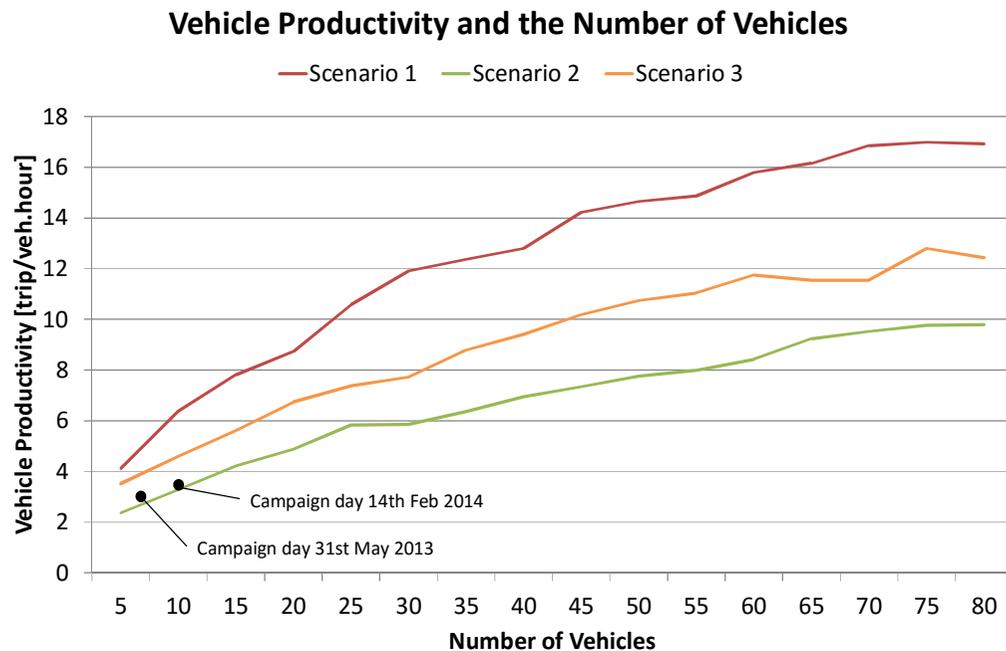
- Real-time address to address navigation
- Ride from (virtual) bus stop to (virtual) bus stop
- 1-3 Service classes, group discount, happy hour

Scales from a few vehicles to thousands

- Vehicle efficiency increases when vehicle and passenger numbers increase
- Overhead costs will be negligible on large scale service



Increase of Vehicular Efficiency



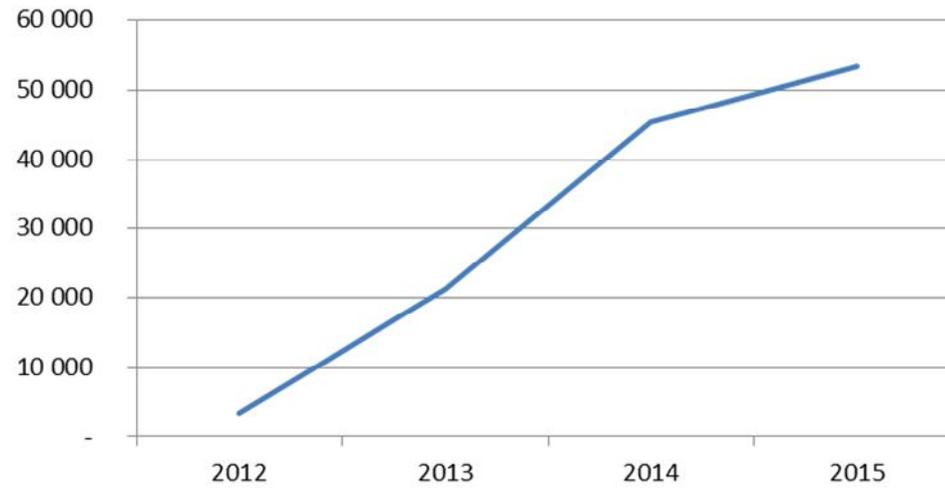
The earlier research outcome from Aalto University (*) was demonstrated in public traffic in 31.5.2013 and 14.2.2014 : Vehicle productivity increased, as vehicle number and passenger numbers increase.

It is possible to ramp up an economically feasible and eventually profitable large-scale automated demand responsive transport service competitive with the current private car trips.

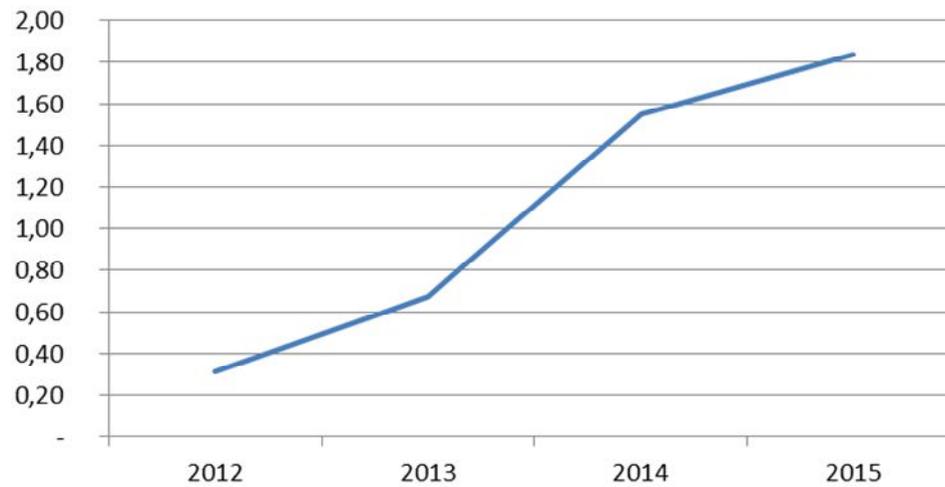
*

1. Jokinen, J. Sihvola, T. Hyytiä, E. Sulonen, R. (2011). Why urban mass demand responsive transport? In Integrated and Sustainable Transportation System (FISTS), 2011 IEEE Forum on, pp. 317-322.
2. Sihvola, T. Häme, L. Sulonen, R. (2010) Passenger-Pooling and Trip-Combining Potential of High-Density Demand Responsive Transport. In Transportation Research Board 89th Annual Meeting, no. 10-0150.

Vehicle Hours



Trips per Vehicle Hour



Environmental Impact



A shared ride offers more passenger kilometers per vehicle kilometer than a non-shared trip

→ reduction in:

- Emissions
- Traffic accidents
- Congestion
- Wasted time
- Investments in and maintenance of the road network
- Use of land for parking space and multilane boulevards
- Subsidizing level of public transport on the long run

The impact depends decisively on the number of vehicles due to the increase of:

- **Travel kilometers per vehicle kilometer**
- **Trips per vehicle hour**

... and an increasing share of operating costs can be tackled by ticket revenues



Efficient, economical, ecological, sustainable, user-friendly and sufficient public transport offering

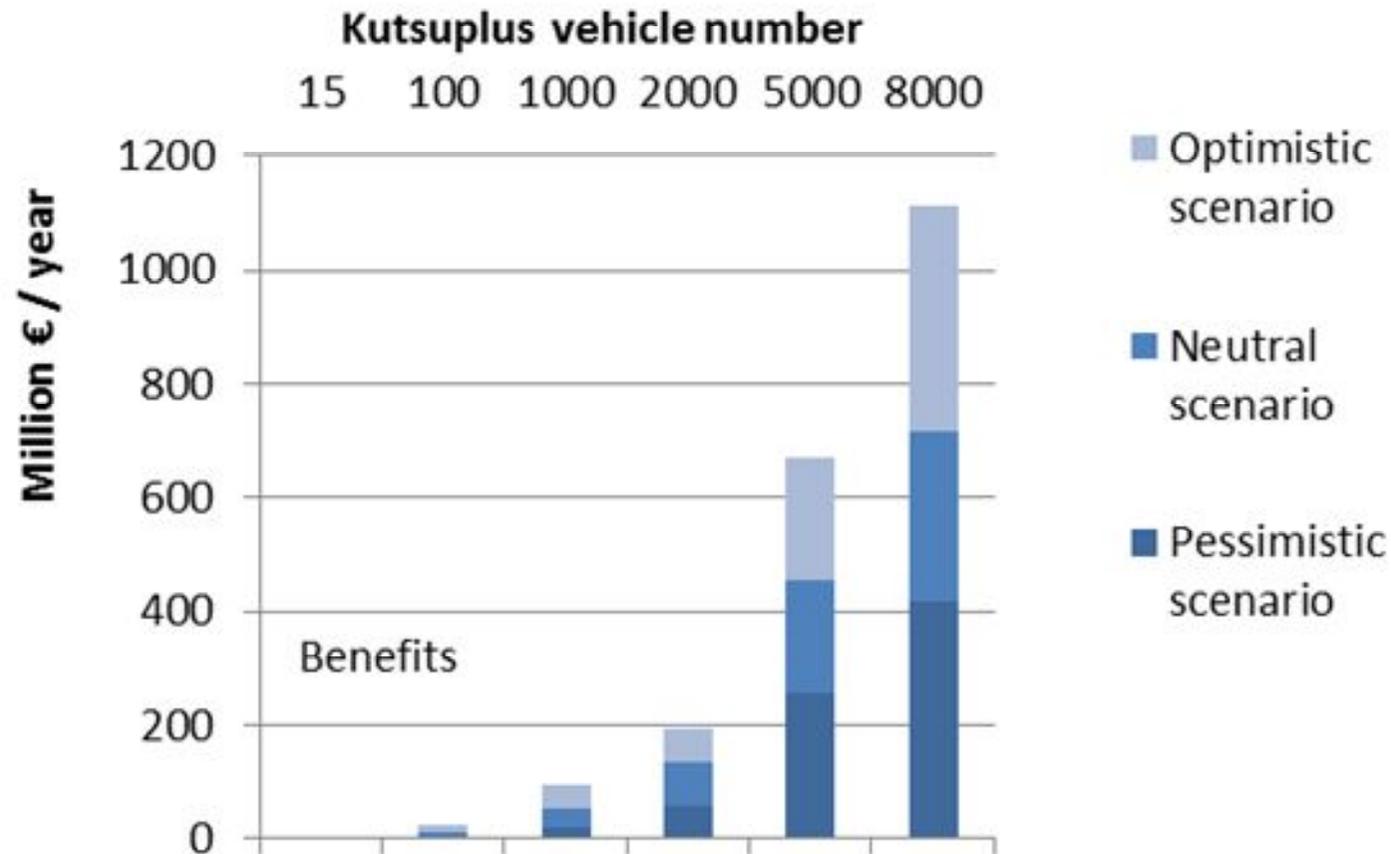


A powerful tool in tackling congestion

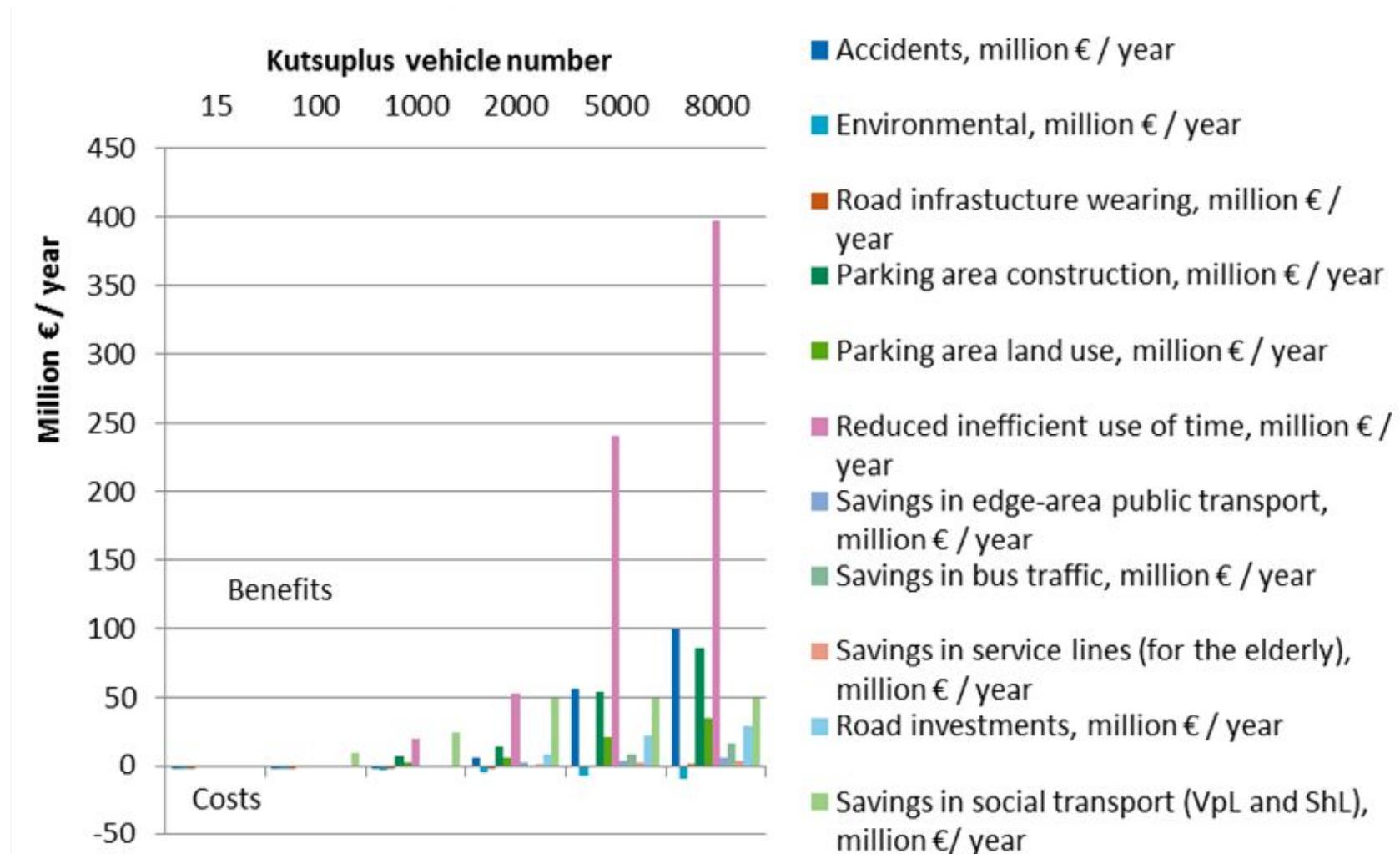


Major impact in decreasing the negative side-effects of traffic

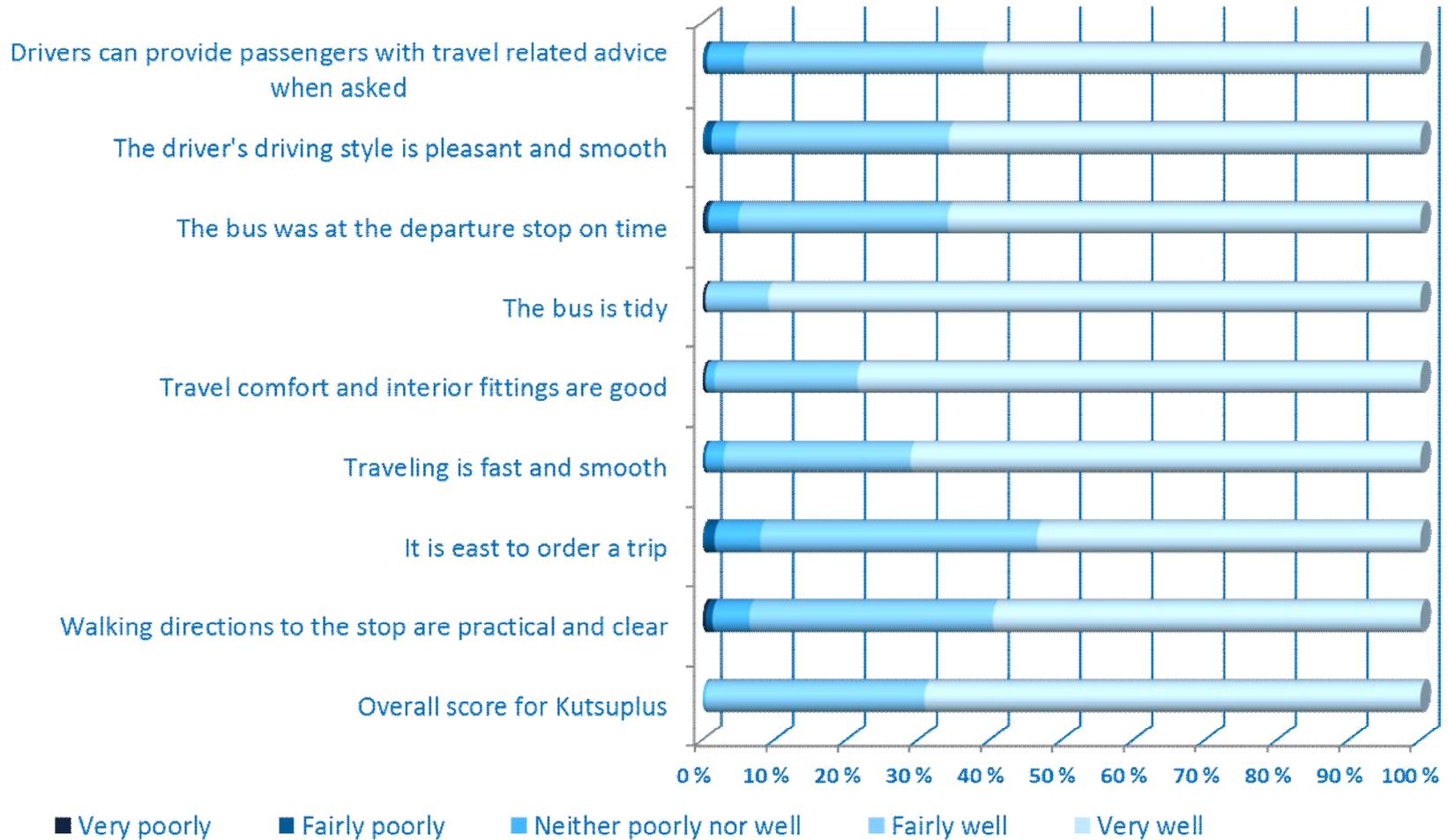
The range of long-term savings potential, social transport (ShL ja Vpl) included



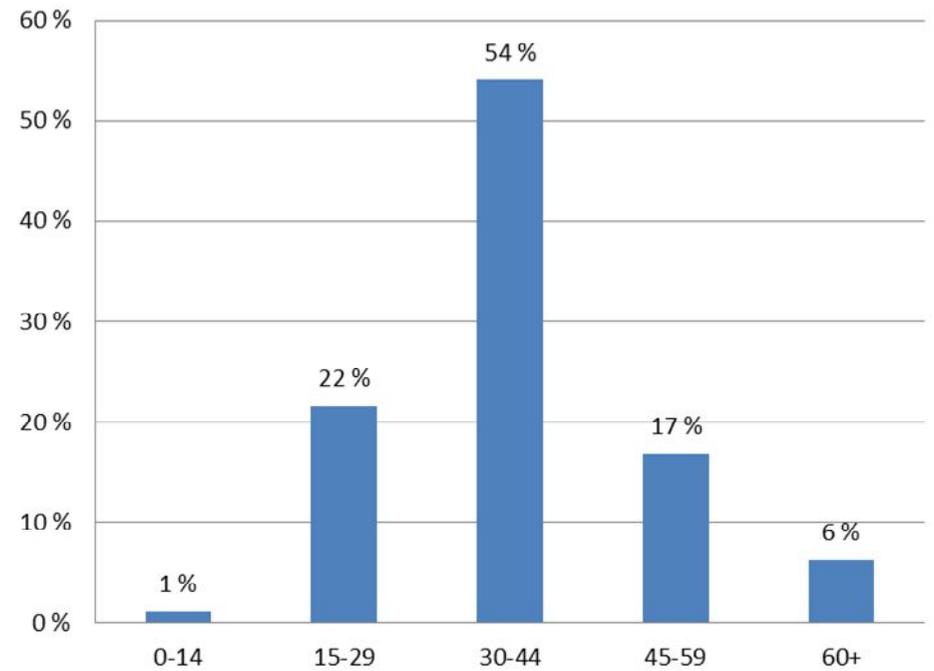
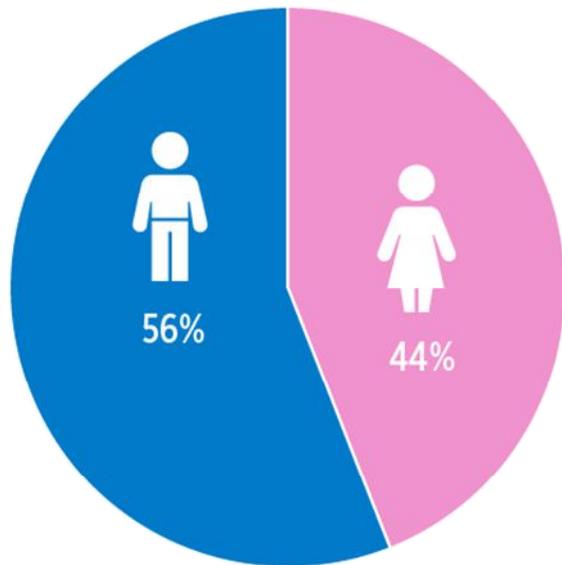
Long-term savings potential (neutral scenario)



Customer Survey 5/2015 (n=242)



Gender and Age-Distribution



Passengers were mostly grateful...

- This is great. Hopefully it will expand in the future.
- Thank you for a good service 😊
- Keep up rockin'!
- An interesting service! Hope it's for the long-term.
- Great service!! Very handy.
- YAY! Valentines' Day offer <3 THANK YOU <3
- It was good that I was able to follow the pick-up time estimate online.
- Thanks, a really good service.
- Brilliant system!
- Seems like a good idea this service! 😊
- There's potential in this service.



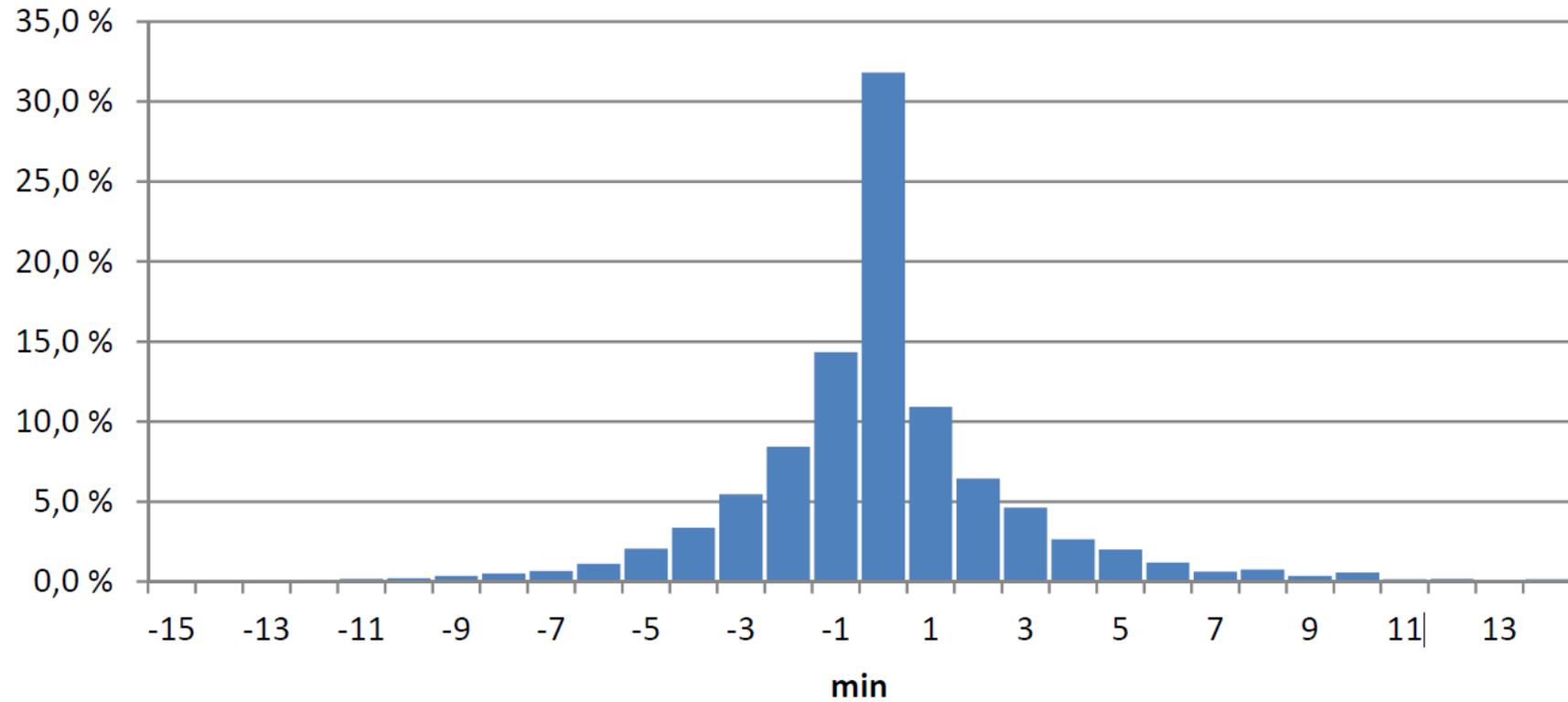
...Passengers were mostly grateful



- A good feeling based on the first trip. Quite a taxi-like service.
- Everything went well!
- The trip information works well with a cell phone too.
- The bus came at the exact right time, it was very clean and left an impression that this should be used again.
- Otherwise - great & convenient, thx!
- A surprisingly fluent service, an especially welcome addition to cross traffic.
- A special thanks to an extra friendly driver, who took me to the right place even though I made a mistake in my order!

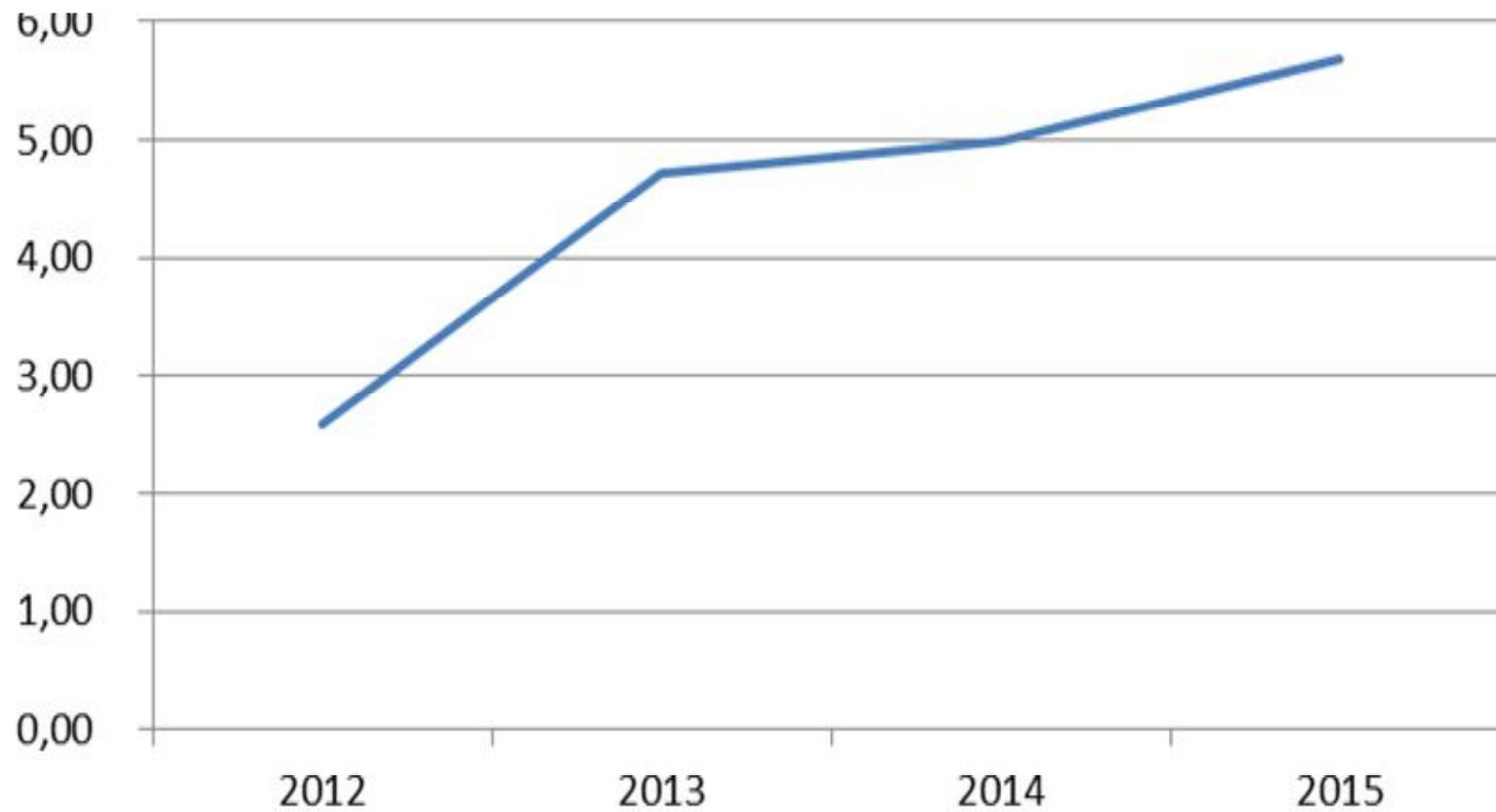


Punctuality of Pick-up

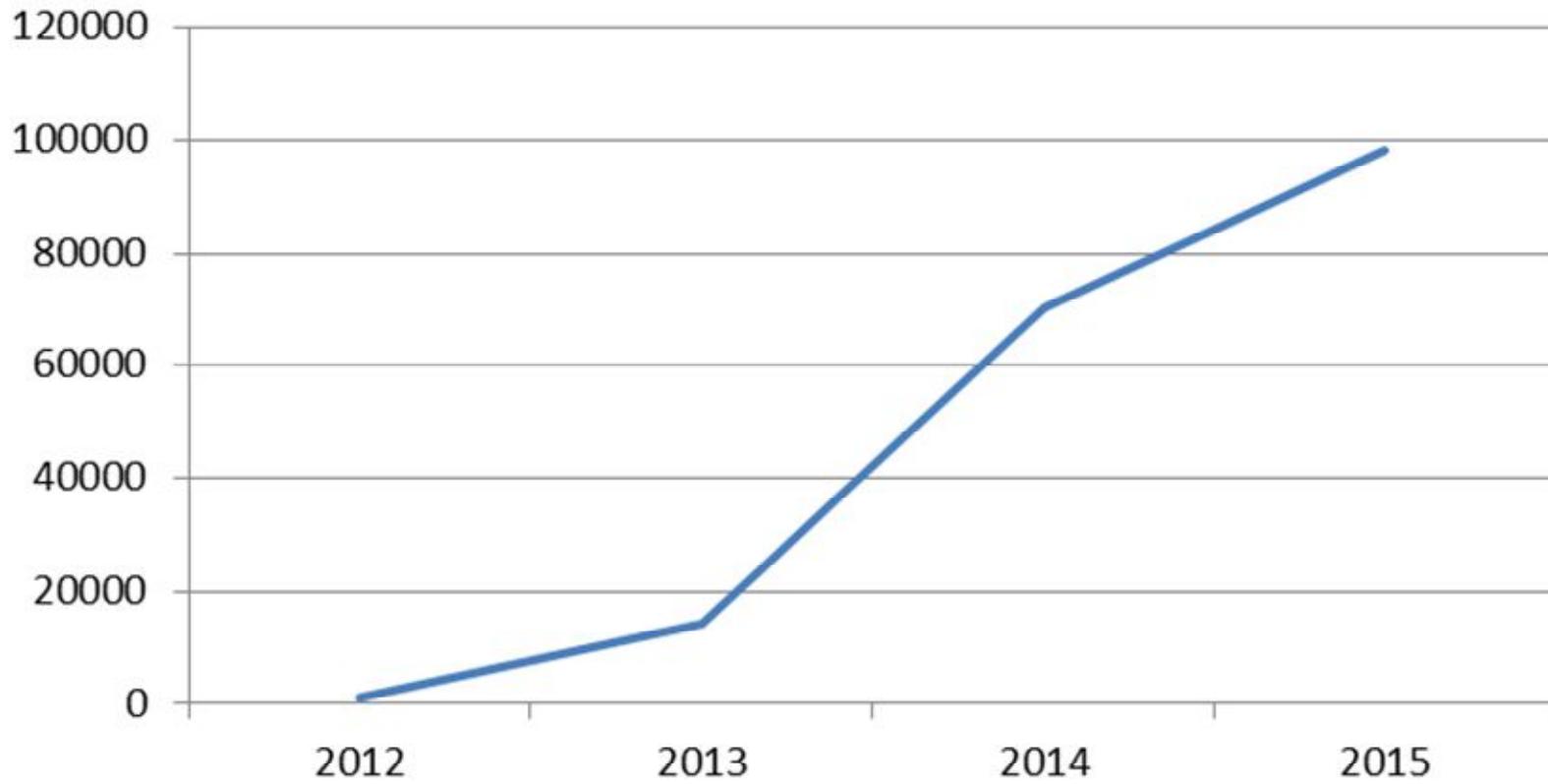


The distrubution of actual vs. informed pick-up time (5/2014)

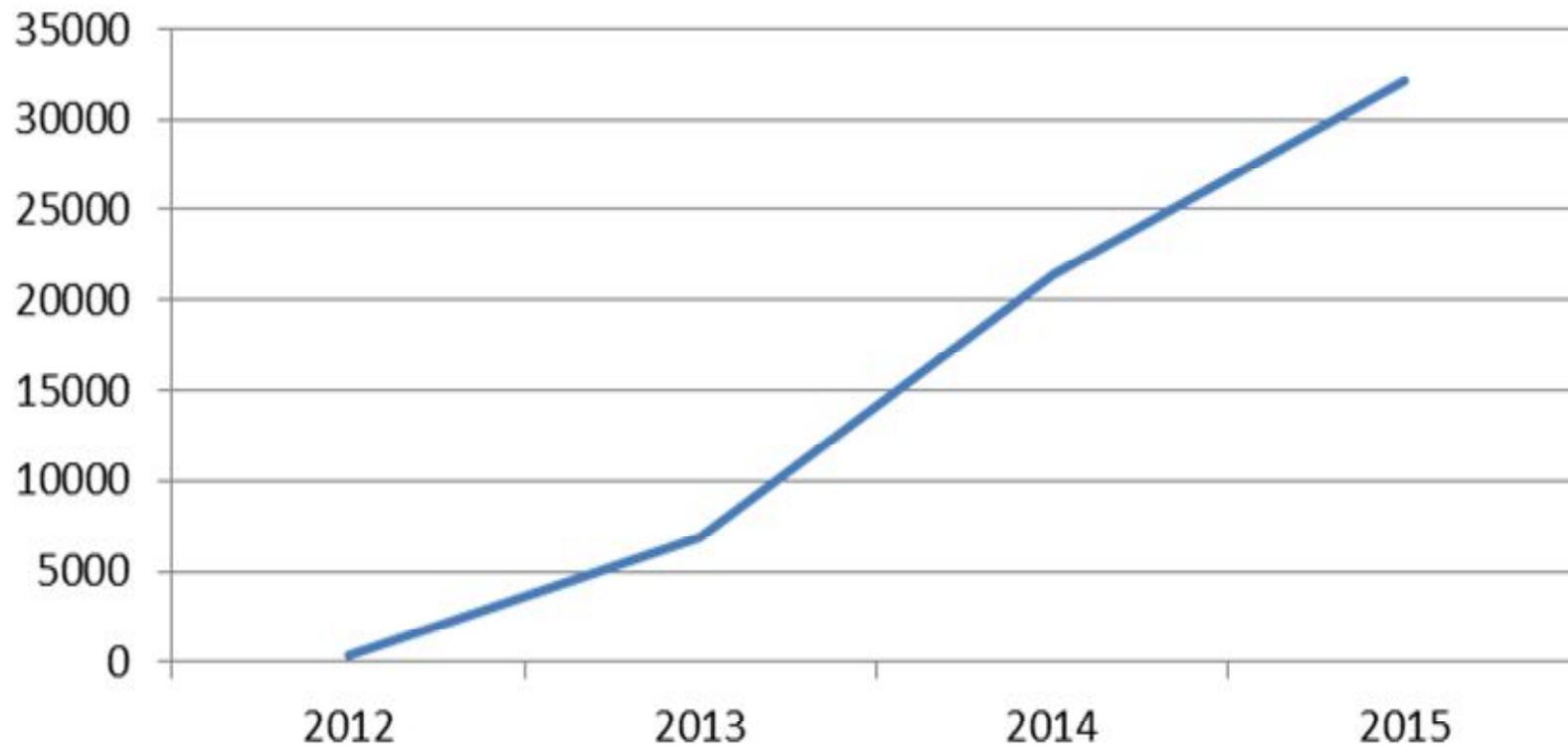
Average Ticket Price, VAT10 [€]



Trips



Number of registrations is **kutsuplus.fi**



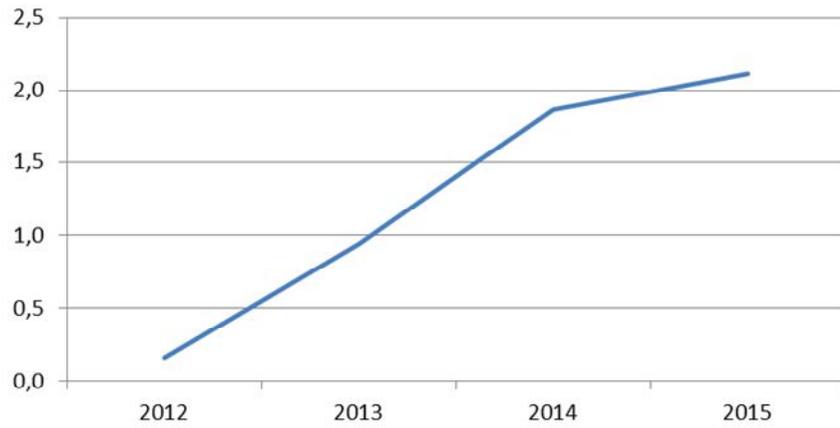
Finances



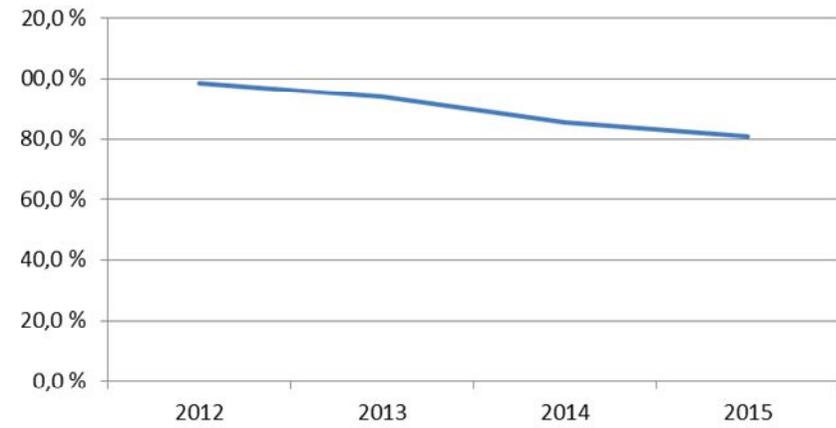
| Kutsuplus | 2012 | 2013 | 2014 | 2015 | 2012 - 2015 |
|------------------------------|-----------------|-------------------|-------------------|-------------------|--------------------|
| Operating revenues | 3 000 | 62 700 | 321 800 | 507 900 | 895 400 |
| Ticket revenues | 2 600 | 61 700 | 319 200 | 507 700 | 891 200 |
| Other operating revenues | 400 | 1 000 | 2 700 | 200 | 4 300 |
| Purchases of services | -316 800 | -1 521 400 | -2 750 200 | -3 233 000 | -7 821 400 |
| Operating costs | -164 200 | -1 004 000 | -2 186 400 | -2 626 600 | -5 981 200 |
| Other purchases of services | -152 600 | -517 400 | -563 800 | -606 400 | -1 840 200 |
| Personnel expenses | -119 600 | -276 100 | -256 100 | -256 000 | -907 800 |
| Other expenses | -15 500 | -12 700 | -10 600 | -1 500 | -40 300 |
| Depreciations | -1 600 | -11 100 | -13 200 | -13 200 | -39 100 |
| Net income | -450 500 | -1 758 600 | -2 708 300 | -2 995 800 | -7 913 200 |

In addition, an advance booking of €800,000 was made for 2016 due to the expected costs for ramping down the service, including the cost of terminating those operating contracts that were still in force in 2016. It is likely that the terminating costs will be much less than the €800,000 anticipated.

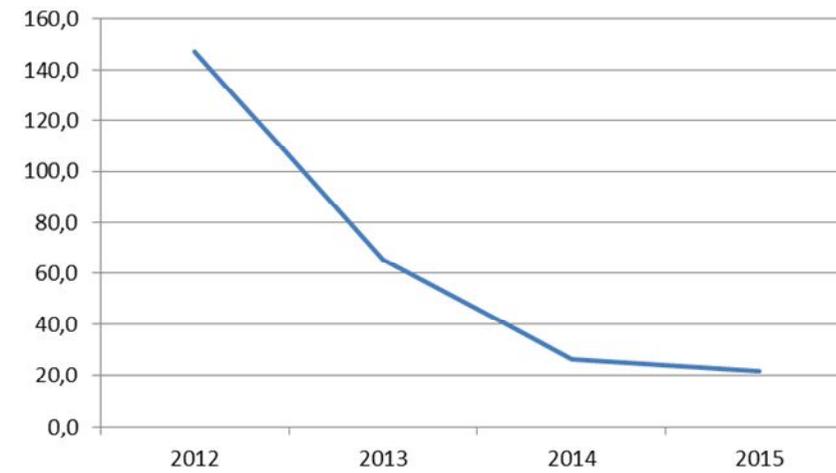
Transport Subsidies [M€]

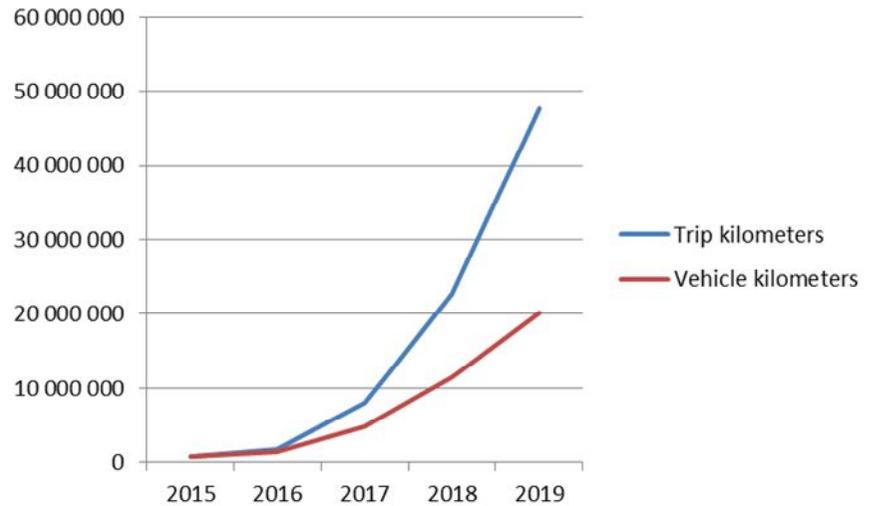
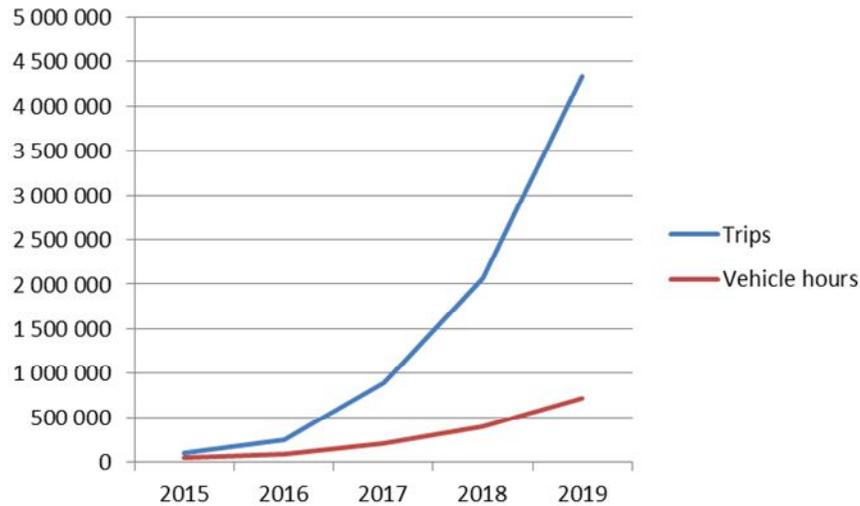
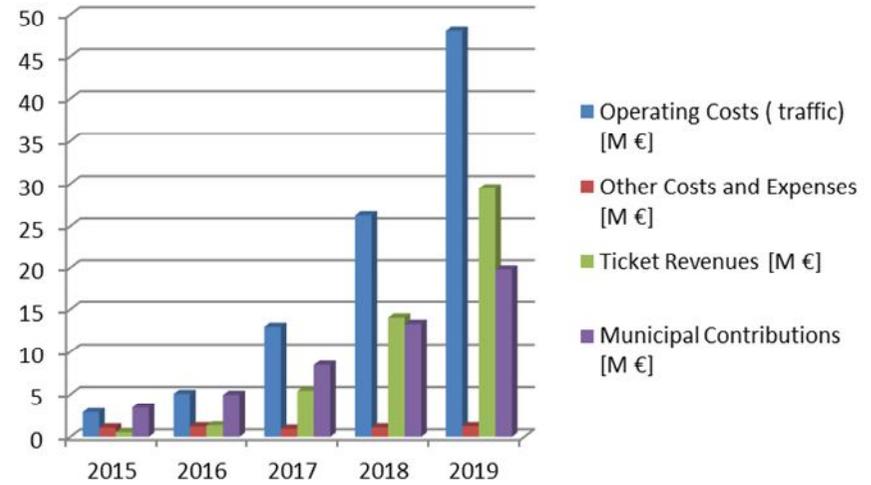
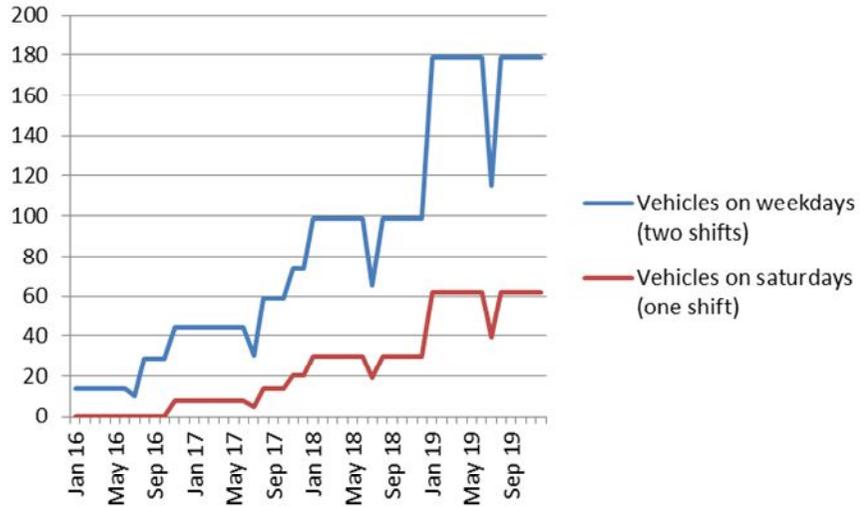


Transport Subsidy Level [%]



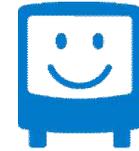
Transport Subsidy per Trip [€]





By increasing vehicular capacity, service quality, vehicular efficiency, and service economy will improve. With autonomous vehicles, the total cost would fall to less than half on a large scale operation.

Quality and Flexibility Improvements



Customers, drivers and other interest groups were listened carefully. Quality improvements were made and new functions were added in the service:

- Improvement and focusing the map data
- Enhanced bus stop database with new directional information
- Service classes
- Group discounts
- Friend invitation
- Solution for business and family use
- Adding money to the Trip Wallet with credit card, in addition to bank account transaction
- Possibility for Happy Hour and/or rush hour pricing
- Lightened web order: kutsuplus.fi/m for the customers using older phone models (with lesser internet browsing capability)
- Registration-free SMS-order with payment on the phone bill (works also with older phone models lacking any browsing capability)
- Wireless Internet connection for Passengers (WLAN)
- Virtual bus stops (to complement the existing bus stop network)



Kutsuplus service drew wide attention. The service was found very good and the pilot interesting also at the political level until August 2015...

In August – September 2015, HSL received the statements by the member municipalities regarding HSL's budget proposal for 2016-2018. The statements made in the tight economic conditions were discouraging.

-> HSL Board of Directors decided that Kutsuplus in its current form will cease in the end of 2015.

The Board also decided that during the year 2016 the study for a trial based on taxi-transport like transport concept for years 2017-2018 will continue. The aim is to implement fully market driven the transport service based on Kutsuplus type of trips combining.

Kutsuplus service was closed in December 31st, 2015.

HSL started the service infrastructure ramp-down including e.g. negotiations on terminating those operating contracts that were still in force after the closing.

**Kutsuplus
service became
popular**

**The large audience
hoped the service to
expand on daily basis**

**Increasing share
of first-time users
became regular
users**

Future

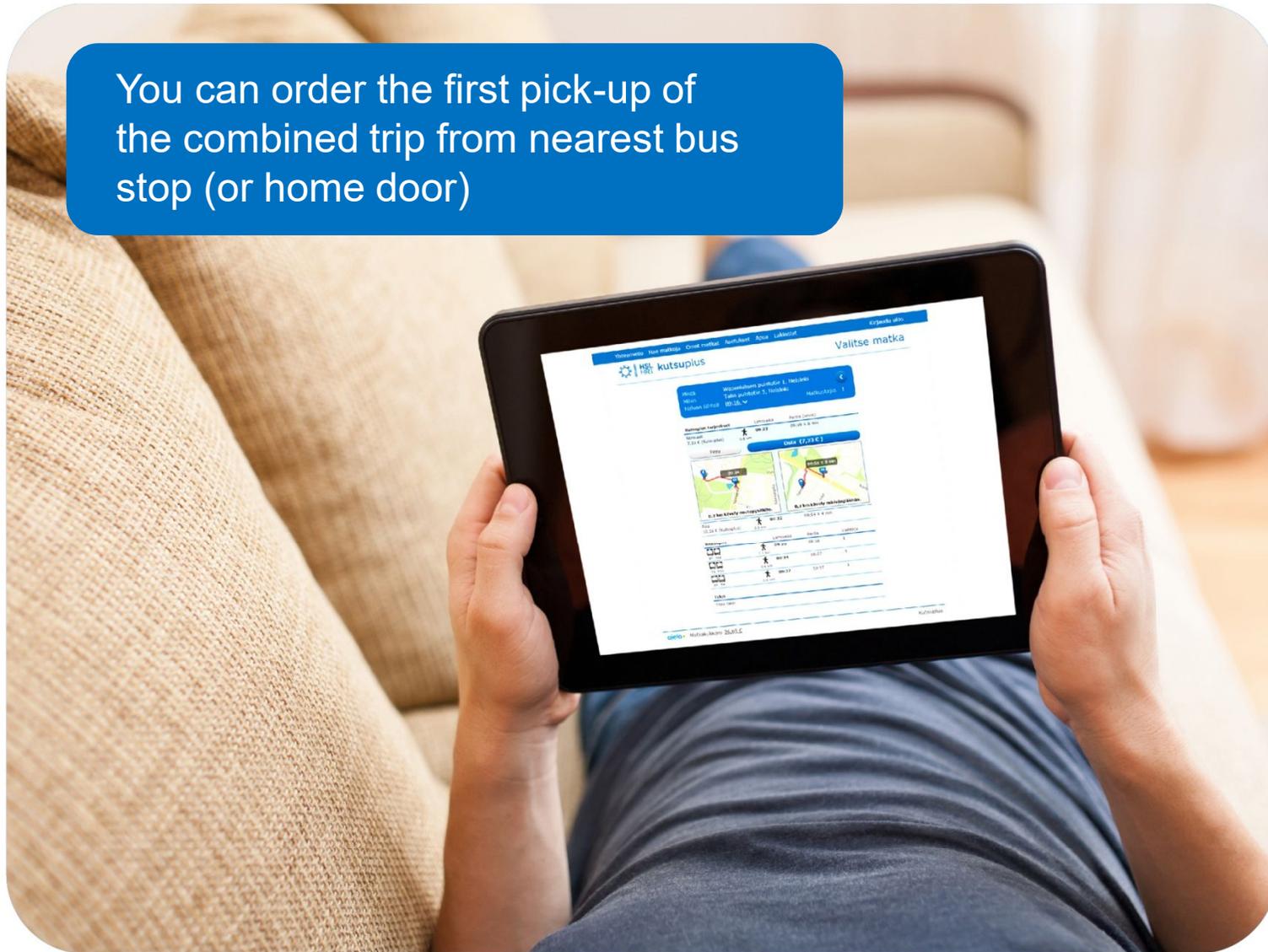
New demand will be created when the "Just for You" demand responsive travel service will be able to guide the traveller smoothly and comfortably ANYWHERE.

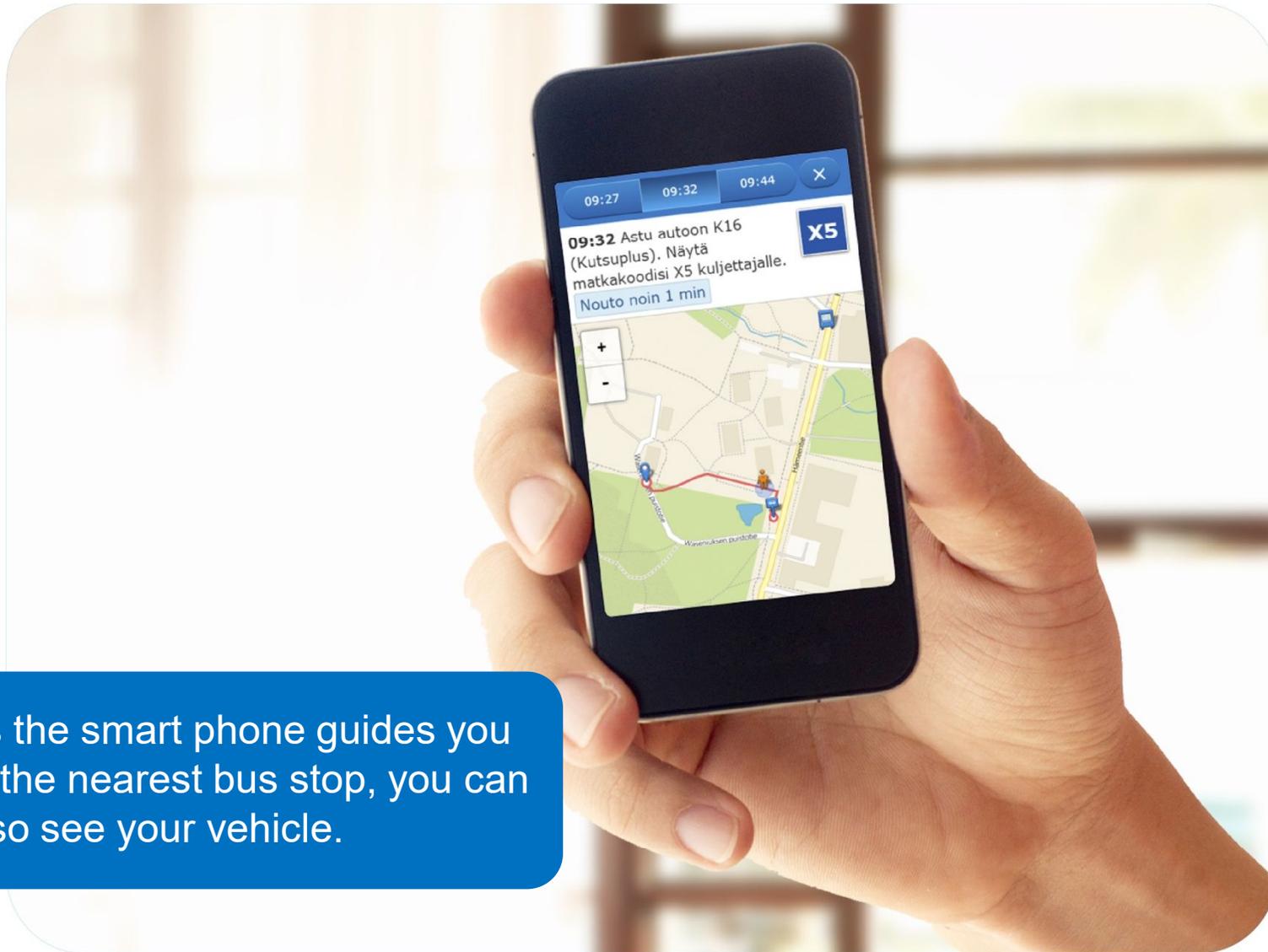




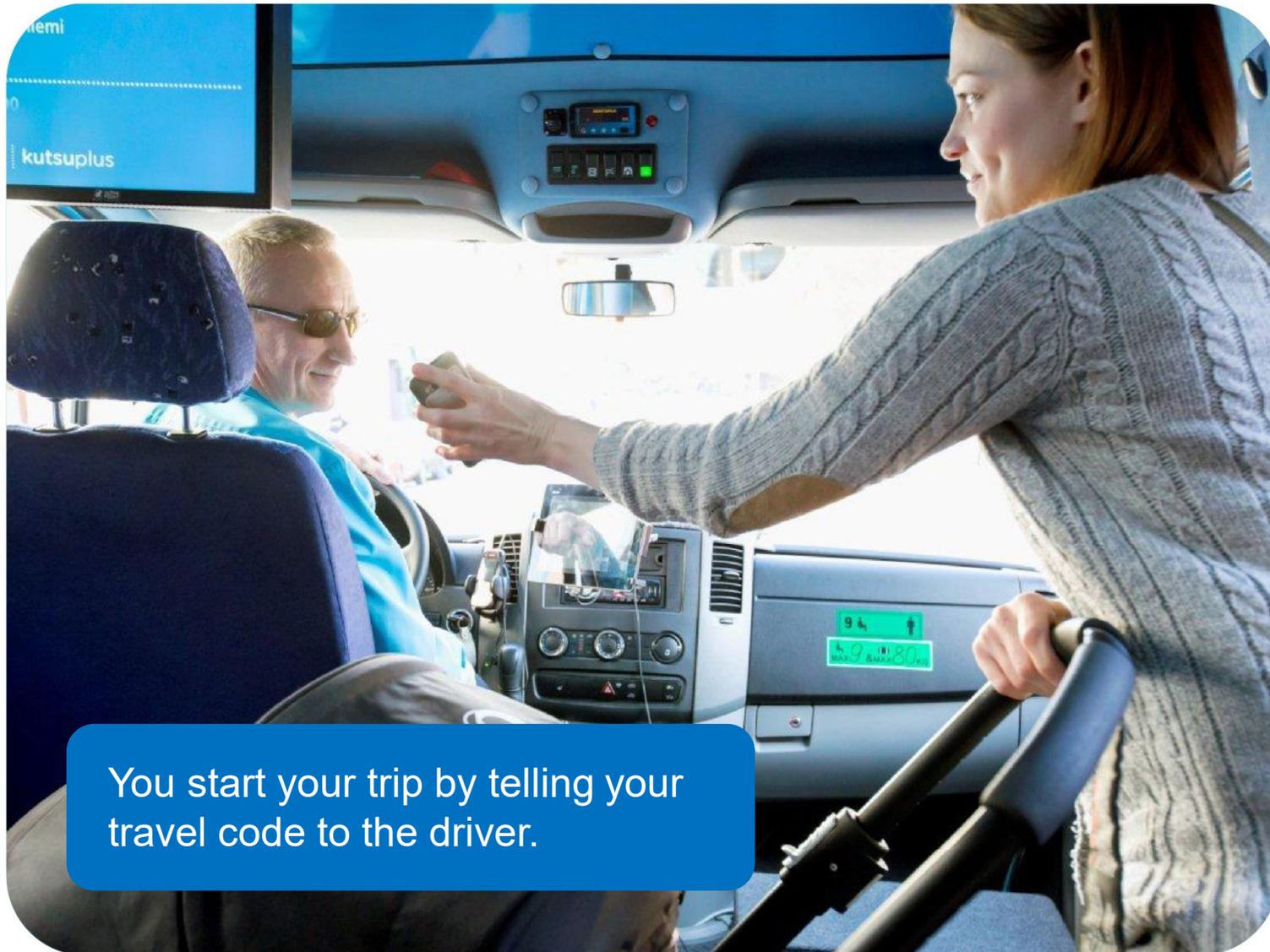
Case: Individual smartphone guided combined trip to another city

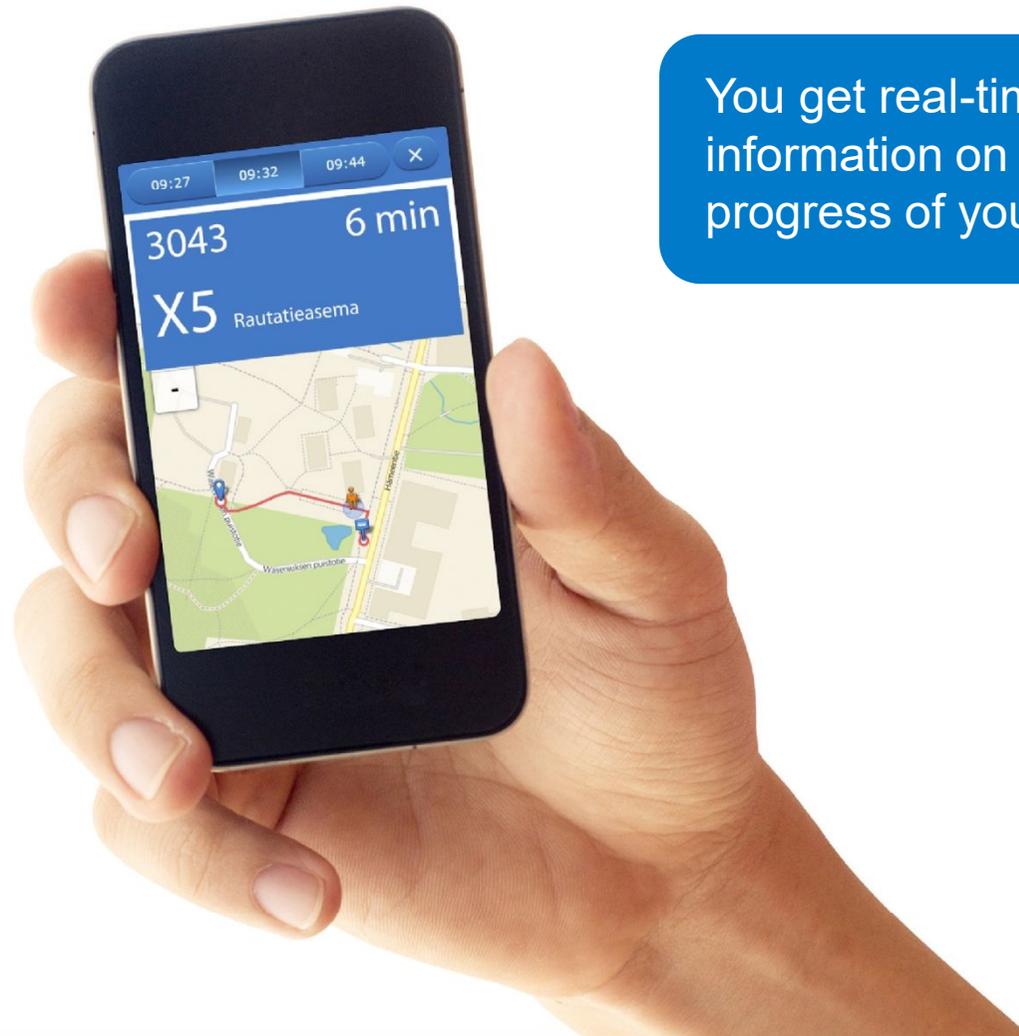
You can order the first pick-up of the combined trip from nearest bus stop (or home door)

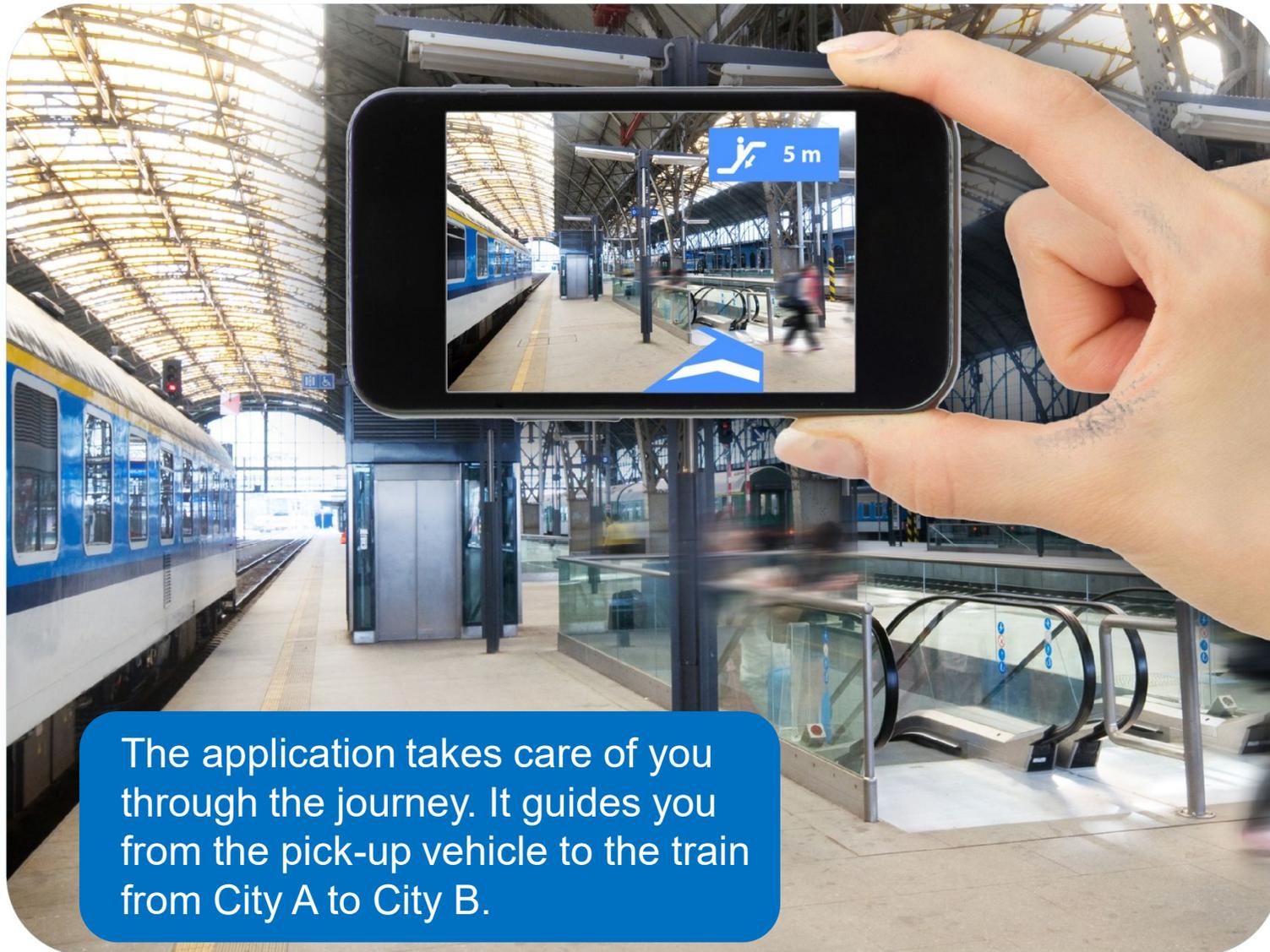




As the smart phone guides you to the nearest bus stop, you can also see your vehicle.







The application takes care of you through the journey. It guides you from the pick-up vehicle to the train from City A to City B.

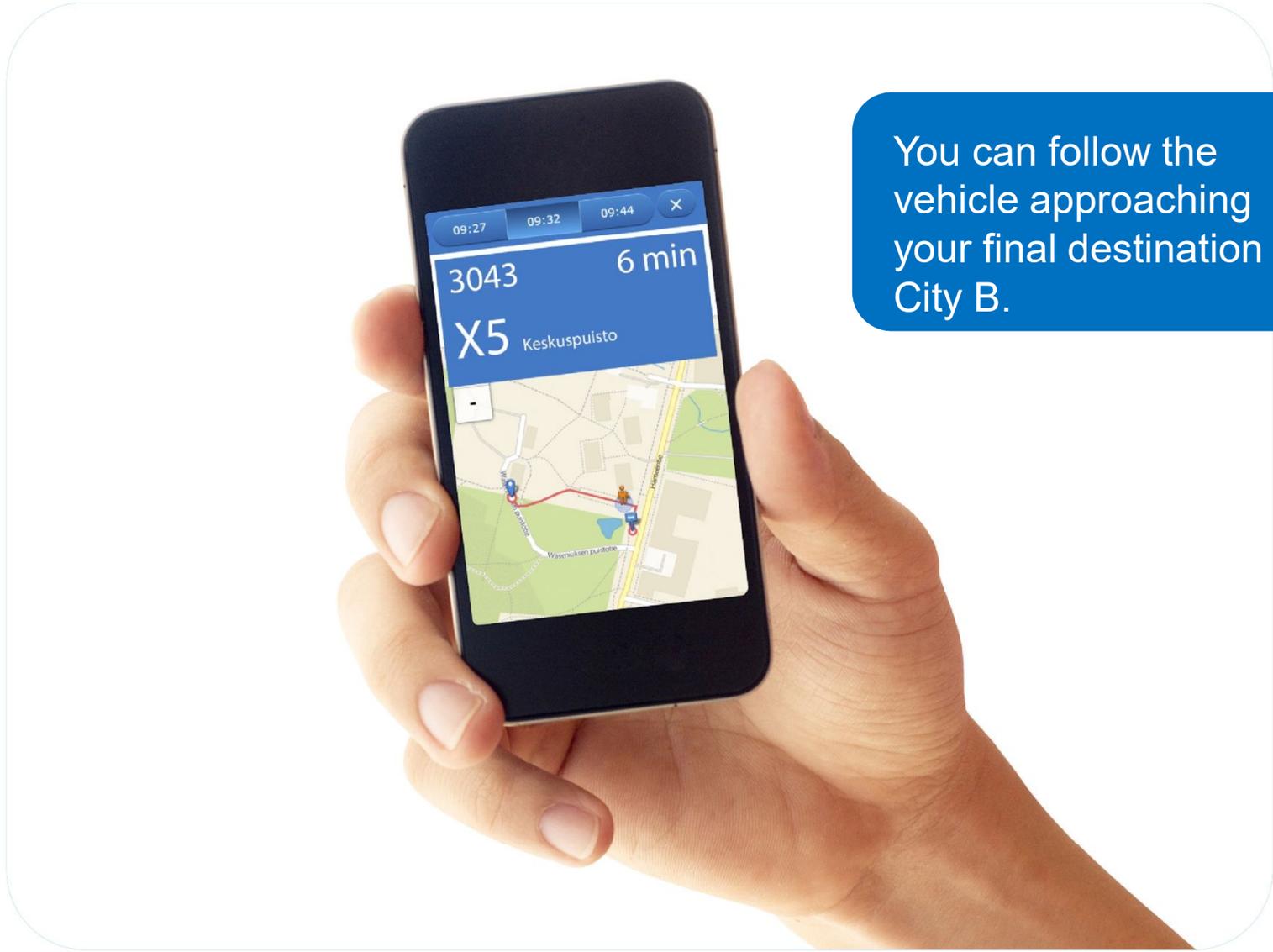
The train arrives to City B early. The pick-up service in City B is aware of the overall traffic situation and arranges the pick-up also earlier.





The smartphone application gives guidance from City B railway station to the next vehicle.





In the future real-time "transport roaming" *
will work across borders.

"The Trivago plus" could offer guided mobility
to the hotel and during holiday. The fee for
the package would be automatically shared
between the various operators.



impact

In the future

When the Kutsuplus type of services providing shared rides will become integral part of the co-optimized transport system, new demand will be created.

A global service with roaming capability, will streamline mobility.

