# Title: Improving Real-time Mobility Information for Commuters

Subject: Urban Planning

* Mobility

Abstract:

As autonomous vehicles develop and shared models continue to grow in significance, transport planners are challenged to keep up that momentum. They face greater integration of service, information and payment methods, while citizens look for the fastest and cheapest way from A to B. How can public transit agencies seize opportunities provided by new models? How can they improve mobility experiences by fostering innovation and entrepreneurship?

Speakers:

#### Enric Cañas Alonso

#### Pieter Litjens

#### Miguel Cabeza

#### Gene Myers

#### Miklos David Vago

Conference:

good morning everybody we will start

this discussion about real-time imbrue

improving real-time mobility information

for commuters we got I have the the

owner i'm enrique diaz from team b the

main operator of public transport in in

the city of barcelona i will take the

opportunity to say thank you for coming

on barcelona on behalf of the city

council that is mine of mine owner i

will I hope you have a nice state's in

the city and take all the all the other

opportunities and the hospitality of the

operator from the part of mobility that

is my responsibility so I will make a

brief introduction because I think the

most interesting thing is a listen the

different session and cases that will be

presented later but as an remainder of

our of our experience I remember 20

years ago we do a survey about public

transport information and and we

realized that in that case 30 30 percent

of people don't do the the trip in

public transport for the lack of

knowledge that it can be done in public

transport 20 20 years later i we are

entered in a new and a new absolutely

area about this because we can have the

the technology and then the possibility

to give citizens real-time information

in pre trip in trip and post trip and

that's it for for us is and for the

point of view forum of an operator like

this in my case is a really really large

challenge very challenging place because

everything changed when you have a good

information we can balance we can

promote we can control mobility we can

do all things that are we are going to

present in four and four

from moderator so first taste of them it

would be from from the city of I'm just

I'm certain pitted legends I want to

thank you

your contribution Pete Peter is a Dutch

politician in People's Party from

freedom democracy Peter is at the petty

measure so from the city of Amsterdam I

will introduce very good initiative and

innovation in plan in planning in

transport and please come and speak

Thank You mr. moderator it's a pleasure

it's a pleasure to be in Barcelona it's

a pleasure to be well especially coming

from Amsterdam pleasure to be in a city

with eleven months of sunshine a year as

I was told yesterday and that's

completely different than well where we

come from

ladies animal you know I will be telling

some things about Amsterdam but what

when it comes to Amsterdam the problems

and challenges are quite similar in a

lot of European cities and all cities

all over the world Amsterdam is is a

vastly growing city this is the future

still the future but it's near future

and what we see in Amsterdam is that

every year we welcome 120 new foreign

companies a year we will be building

100,000 new apartments in Amsterdam in

the city of Amsterdam from now until

2025 which will mean 200,000 New

Amsterdam ours our city will be growing

from eight hundred and forty thousand

inhabitants to more than a million

inhabitants in only 10-15 years

and 17 million visitors tourists come to

Amsterdam each year and I know that

Barcelona is a city with a lot of

tourists but also Amsterdam is a city

with a lot of tourists and in addition

to that growth we see some other

developments we see that the average

household becomes smaller in Amsterdam

it's not only in Amsterdam it's in a lot

of cities more people hurt our high

educated in the city and between 2006

2010 and 16 the number of self-employed

people increased by 60% to 61 thousand

and what we see is that our city is

being used more intensively than it has

been used ever before in addition to

this an increasing number of people are

living outside of Amsterdam working in

Amsterdam right today we have about

280,000 cars driving into Amsterdam each

day within 15 years that will become

450,000 cars each day those numbers are

massive you know one of our biggest

challenges the main challenge is how to

keep Amsterdam attractive accessible and

livable and like many other old cities

while old cities Amsterdam isn't dead

old Amsterdam has a medieval core you

see if their Amsterdam is famous world

famous for its canals and unlike Paris

or London or some other major cities

answer them did not implement in the

last decades large-scale urban renewal

in the nineteenth century only a modest

ring a car ring with relatively

relatively narrow streets was added to

the city and that means that the

challenges we face is not how to make

more infrastructure but how to use the

public well the square meters of public

space we have we cannot add extra

infrastructure so we have to find other

solutions and what we see is that

Amsterdam is a city that is famous for

its bikes

car lanes are increasingly congested but

also bicycle lanes get more and more

crowded every day and furthermore the

city's is growing within its boundaries

we do not build new houses in green

areas or in blue areas we build it in

the current city boundaries and

therefore public space becomes

increasingly scarce in a recent years

the city has taken some measures

measures to reduce the number of cars in

Amsterdam in certain spots in the

Center we have taken measures to make

the city even safer safer for cyclists

for pedestrians we invested in a new

metro line which took us much much

longer than we expected we started with

a budget from 1.3 billion euros and

right now we're on 3.1 billion euros but

it will be open next year at the 22nd of

July at five o'clock in the morning but

despite those measures in the long run

another approach a more fundamental

change in our approach to mobility is

needed and I think that goes for a lot

of other cities and I think the approach

will be mobility as a service we believe

that mobility as a service is that new

approach and it makes three

fundamentally different shifts in the

approach to mobility mobility as a

service first the shift from ownership

to usage in the mobility as a service

approach few people need to own their

own cars for even or even bicycles and

especially in cities a new generation of

drivers the new generation it's not very

keen on owning their own cars second

there has to be a shift from supply to

demand driven right now we offer public

transport we offer public transport and

it's not a demand driven is it's supply

driven so what we do is offer bus lines

even when there are no well not a lot of

passengers and we will dramatically have

to make a change to a supply driven a

mode of transport personal preferences

of people real-time information on

traffic situation budget choices will

all be haven't taken to into account

when it comes to mobility as a service

citizens well only am i shutting it down

right now

yeah citizen citizen will only accept

that new approach when different modes

of transportation connect seamlessly and

that's one of the major challenges we

face and that's why we need a third

shift issue a third shift from a

separated domains between states and

markets to one integrated system one

integrated mobility system in which

public and private organizations work

together closely together to facilitate

the citizens and traditionally I already

said it a government fund public

transport companies for those who don't

have a car and we fund infrastructure

for those who have a car bicycle lanes

are for people to commute within a

limited distance and what we need and

what we need is that policy makes new

choices new choices where we where we

don't have differences between the

different modes of transport and the

mobility as a service approach all

domains should be made available to

everybody and investment decisions as

well from the government public or

private will benefit the mobility system

as a whole the fourth shift is this now

digital technology mobile Internet's

data are mostly cool or or extra to the

existing infrastructure and to my

opinion in the future mobility as a

system service mobility as a service the

real-time data are the foundation of the

mobility architecture with mobility as a

service we hope you achieve improved

quality of life when it comes to the

usage of square meters of public space

but also when it comes to pollution

livability of our cities breathing less

congestion less pollution monitor and

analyze the outcomes what is to be done

how can we arrive at the mobility utopia

well first of all it is already

happening there are currently in

Amsterdam more than 4,000 sharing car

sharing cars in Amsterdam which is an

increase of 600 percent from 2008

still four thousand car sharing cars is

only two percent of the total amount of

cars secondly we're not afraid to learn

from our mistakes and that's why we

experiment and we initiate pilot

projects we are currently preparing a

pilot project in Amsterdam in the

central business district Saito's which

is our financial district this central

district is rapidly growing and it's on

the south side of Amsterdam and

currently more than 40,000 people go to

work in that area that particular area

major international national banks law

offices business consultants European

headquarters are located there and

currently 40% of those people working

there used a private car to come to work

and larger firms a desire to us have

already pledged they want to work with

the city together with the city to

promote mobility as a service to bring

that number down and in the pilot

projects people are given an incentive

to use math services instead of a car

and we already started with 50 persons

who handed in their private car key to

us and in return we gave them a budget

of thousand euros mobility budget and

they could use it in each way well every

way they like on mobility or mobility

they can use a shared car a share bike

system they could get they can rent cars

they can use public transport and right

now we are evaluating that approach and

what we are going to do is expand it to

500 users and we are planning to scale

up in a in a matter of a few years up to

10,000 people in 2020 we embrace

public-private partnerships and that's

why I am here and to I'm here to invite

cutting-edge technology firms to help us

and that's what I would like to do it's

a cry for help

we as governments are not the front

runners the front runners are you

private companies innovative companies

who invest who you know who who

innovates and what we are doing right

now is trying to cooperate to build

networks with you

and I would like to invite you to come

to the Holland pavilion to the Holland

Pavilion at 1600 hours 1700 hours

and get into contact there and help us

to find a solution for the mobility

system ability challenge we faced in

Amsterdam and a lot of international

cities face all around the world thank

you just in time delivery thank you very

much so I I will ask to Miguel to

introduce in the to the IT solutions and

please tell us I will remember to the

audience that we have an app to make the

asks for the presentations and I need

the title to 200 acts there is two ways

for the ask questions one is just in the

in the microphone zone doing or using

the app to instant send the answers to

to us thank you it's your turn

Mikkel thank you thank you thank you mr.

moderator and thanks to all the

attendance to this session my name is

Miguel cabeza I'm senior officials and

technical manager of da hua Iberia and

we're going to talk in this session

about technology peter was crying for

help from technology firms but well not

only about technology but also about the

benefits and real success cases helping

smart cities today so let's review their

requirements and the tendency the amount

the amount of vehicles in the world is

more than 1 billion this according to

the transporter forum website and the

World Bank and every year about 1.2

million people lost their lives in

crisis on road the road traffic injuries

are estimated to cost development

developing countries were 5 percent of

the GDP

or more than one trillion dollars per

year there are high hopes for IT s

solutions in America there was a program

a transportation program in development

and the plan is to save lives ten

thousand people per year the plan is to

reduce traffic accidents we're talking

about 1 million to two hundred thousand

traffic accidents per year and reduce

the loss caused by these traffic jams

and these accidents the material loss

twenty six billion dollars in Japan

there's a similar program for IDs

running until 2025 the plan is to reduce

traffic accidents by 50 percent the

average speed to be increased by 10

kilometers per hour to reduce the oil

consumption in 25 percent and there is

co2 emissions they want to read up to to

get a reduction in around 15 percent in

the case of Europe we are talking about

similar figures traffic death accident

down by 50 percent and reduce the losses

caused by the traffic traffic accidents

and congestion and environmental

pollution to five hundred fifty five

billion euros so what we have in the in

the technology landscape today is it's

not only hype it's not only hope but

these are reality some complex strategy

games like chess and go which is very

popular in throughout Asia half have now

found

that the best players are not human

beings the best players are machines and

we are talking about this is not just

come combinatoric this isn't just not

mathematics this is we're talking about

the strategies last year the best player

of go was defeated by google deepmind

machine and the tendency is to struct to

go further not only take the data not

only from this data being able to gather

information but also to extract

knowledge from this information so we

are talking about having higher rates of

recognition and having more more

information about the identity of the

vehicles or the passengers of the

situation there were nnessee

of of the road so at the front end we

can see we with this deep learning

algorithms we are able to provide

identification and detection of in the

passengers area the seatbelt the phone

we are able to identify the brand the

model of the track car vehicle the

motorbike and even the year

manufacturing the plate of course which

is something not new but we thanks to

the deep learning we are able to reach

higher rates of recognition with deep

learning algorithms and we can analyze

the face and we can provide information

about the traffic flow the queueing

situation and average speed this is a

real snapshot of a system in place in

China it's a dharwad system and you can

see we the system is not only detecting

ok it's not only providing the data in

the form of mmm image ok a cropped image

we we have information about what the

driver is wearing the plate if the color

of the car we could get the brand if

possible and even we can link the

database database is linked with

insurance databases so that we can we

can we are able to know if there is any

vehicle on road with no insurance at all

so in these last 10 years we have moved

from being a camera manufacturer we are

the first private company in the world

in terms of revenue manufacturing

cameras and recording systems and global

and comprehensive security solutions but

we have moved from this approach of

all-in-one cameras to as you can see at

the end deep learning and data is

structured information in our traffic

solution we we have electronic police

speed measurement illegal parking and

traffic guidance we are able to detect

illegal movements by cop made for

example in an intersection violation we

can detect multiple violations like

running the red light crossing a solid

line going to driving the wrong way and

changing in a legal lane sorry hydrant

so this is our solution for the

electronic police and the speed

measurement with a fixed solution and a

mobile solution and we support multi

target tracking now up to four lanes we

were able to detect to capture and

intelligent intelligent smartly

positioning the the our cameras towards

a vehicle in a in an area PAH

in an area park with no permission and

this is done automatically without human

intervention so this is our solution 200

metres around we are able to to manage

this until you we are able to smartly

control the traffic lights to control

the traffic flow in just one single box

thanks to this deep learning algorithms

traffic flow

queue lengths headway average speed and

the level of occupancy with our platform

we were able to not only see in

real-time and but to follow us on a

specific vehicle and search for those

violations as an example in in honto in

the g20 summit the contestants were

reduced 17 percent violations were we

using 50 percent and the traffic

accidents were reduced in 30 percent

some references Serbia inter policy team

Mongolia in in Ulaanbaatar in the

capital with any NPR police speed

measurement and high spot PD said

surveillance here you can see the system

searching for plate in Poland with light

enforcement speed enforcement and

integrated management in Bangkok in

Thailand with 14 to sections of iamp our

systems and police in 40 conjunctions

this is the system in Thailand not to

mention the systems in place in China so

thank you very much Justin thank you now

it's turned for for Jean Myers from

white research pleasure to be here in

Barcelona thank you very much in great

panel as well so I'm here to talk to you

a little bit about wild mesh it's it's

our emergency and disruption

notification system for public transport

and it was developed as as a as a

project for innovate UK and London

Underground in 2015 and more recently we

were entering into a pilot with Virgin

Trains East Coast to deliver the

solution oops sorry I went the wrong way

okay sorry

okay so in a UK survey we found that

only 26% of passengers are feeling that

they get the the correct information or

enough information during disruptions

and that solution or that situation is

even is even greater for staff the staff

feel that they don't have enough

information to give the passengers the

correct information and as many of you

know that are involved in rail that

passenger information district during

disruptions is paramount to being able

to make that experience better for the

passengers in the event of disruptions

and combined with this

there's arrives obviously in natural

disasters in the last 10 years and

terrorist incidents and cyber warfare

now combined to complicate that even

more you may have heard from there by

2020 that'll be between twenty and

thirty four billion devices and that

that means there would be about four

devices per person so we're coming into

a situation where the networks are the

networks are gonna be stretched the

transportation networks seem to be

stretched and there's more and more

people and then in the urban areas and

the situation with with the device

networks is such that even the 5g

specification calls for device to device

networks as a way to densify the

networks in order to accommodate this

large number of devices and so our

solution the emergency and disruption

alert network is is our solution to

solve this and it's it's based on a

real-time feed real-time streaming feed

combined with a mesh network to deliver

contextually relevant information which

is quite important that and that is

actionable in other words if if the

passenger is unable to complete their

journey due to a cancel is a cancel is

cancellation or delay they need to have

other travel options so our feed

our real-time stream notifications

actually update on offline journey

planner on our solution so I'm gonna in

case you're not really familiar with

what mesh networks are I'm gonna take

you through a little bit of that so

traditional network star networks on the

left hand side you may recognize those

for instance how a router sits at the

center or PC and those are great they

have a central authority that's really

great for security but it's also a

single point of failure and a mesh

network where devices smartphones can

connect directly to each other

certainly eliminates that problem but

then again has the the issue of

authority and authentication and a

hybrid network combines the best of both

worlds so it's it's online it's on the

mesh continuously and then when there is

internet connectivity that connects and

that's effectively what our are

streaming the wild mesh solution is with

our real-time stream now what we've done

with London Underground during the

during the trial we found that actually

we actually helped move the data through

the system so for instance as a user or

passenger enters the station he's got

cellular data and he has the most recent

information on his phone and as he

enters the London Underground or any of

the network that he may or may not have

connectivity in the in the four-quarter

in the platform Wi-Fi and as he gets

down into the system and the net the

mesh connects anyone with information

just one person on a platform can update

and then spread that information very

quickly throughout the rest of the

network our latency is effectively the

longest time it takes for a train to get

between two platforms so we ran these

tests on the London Underground

we ran five technical test between May

and April 2016 and we had two massive

learnings for that now when people talk

about mesh solutions they often tell you

that one of the one of the benefits is

self-healing well that's not only a

benefit but that's a metric that you can

measure how good a mesh network is and

we actually ran into quite a bit of

interference as you would expect on the

underground the electric

cars and in fact the carriages

themselves are faraday cages they they

keep signals out so what we found is

that on the underground we were having a

lot of drop signals so we had to make

our solution even more robust but the

interesting thing that we found is that

compared to Wi-Fi we were getting

connection speeds two to six times

faster than than Wi-Fi depending on the

contention so in really busy and really

busy stations is sometimes would take

between thirty six thirty seconds in a

minute to connect on Wi-Fi where mesh is

pretty consistently ten seconds so even

where you have connectivity mesh will

deliver that information faster and in

some situations we found that even

before the train stopped the signal was

coming through the information was

coming through on mesh so to adjust the

challenge we built a solution that has

three main components we have a mobile

sdk and four virgin as a matter of fact

we're building a staff app on top of

that - no - as I said to inform the

staff about disruption so that they can

properly relate that to relay that to

the passengers so this SDK can be

integrated into existing systems or it

can be used to build new greenfield

projects and then we have a cloud

gateway now that's effectively how we

get the data from the cloud or from the

open data services or in Virgin's case

from there on trail operating center

into the mesh so we digitally sign

everything as it gets on to the mesh so

that we know that it's from an

authenticated source and push it push it

down over a live stream and and that

cloud gateway acts as that signing

service and it also contains a content

management system for collecting

curating and distributing managing the

passengers of passenger information or

the disruption information from rail

operating control and we're looking at

putting a solution in into New York to

prototype this for Virgin

so again to reiterate the the real

advantage of our solution while there is

a lot of intelligence and some really

innovative things we're doing with the

content management system it's really

the the mesh is our USP and it provides

sustainable data distribution in the

event of internet outages power failures

terrorist incidents natural disasters

and cyber warfare and in conclusion we

know that you know emergency scenarios

are on the rise by about 40 50 percent

over the last decade there's going to be

anywhere from twenty to thirty four

billion devices by 2020 depending on who

you get that information from and that

device to device and mesh networking is

important not only for emergency

scenarios but again also for also for

densifying the network's the even the 5g

networks are going to strain to cope

under this load so you can go to our

site we actually next week we'll have

the case of the full case study from

London Underground available so please

go to you can go download it now and

we'll we'll send it to you when it's

when it is available happy to you know

answer any questions if you want to

email us and ask us more about that and

then of course if you sign up then as

soon as we finish the Virgin project

that that available that case study will

be available as well and really that

that's all we have I finished early so

we same time thank you very much thank

you thank you for you very amazing blast

from digital community I'm a smart

solution please Miklos introduce us in

deep about mobility as a service

provider so that you're hello everyone

I'm so happy to be here and it's really

easy to continue this this line of

presentations because all my colleagues

before me they all introduce you into

this ecosystem and actually mobility as

a service being referred

earlier so what I would like to do is

just keep continue going to be details

and probably trigger some questions from

your side and from other sides as well

so let's jump in so what we are going to

talk about is again showing you what

mobility as a service is then facing

with the challenge which we have at

least in Budapest

then just get to know about the

ecosystem of mobility as a service see

and least the prerequisites of such a

thing then get to know the stakeholders

and see what are the action points maybe

you have some more okay so why we have

Netflix here Spotify you have Spotify

yeah yeah you're listening music on

Spotify probably you're watching on HBO

go movies right Game of Thrones stuff

like that have you ever bought in the

last two years Pro DVD or CD from your

favorite band probably because you would

like to keep it on your shelf but

usually you are doing it on the go and

you are using these services from the

cloud you are not owning things anymore

you are streaming it so let's just

interpret this into mobility do you

really need your car don't you afraid

that it's gonna be scratched somebody's

gonna steal it or even you just don't

want to invest such a huge money into

owning something which is gonna be

outdated soon maybe if it's a Tesla and

yeah but then let's go I would say that

mobility is a service is the same

business model which we all know from

the streaming services because mobility

as a service is user centric so it's

focusing on you as a traveler and then

we will see that all the other

stakeholders are also interested in this

because the intelligent mobility

distribution mobile model it's it's a

girl

integrating all the service modes which

are available so how I got here

actually I look out from my window and

then I realized that there's gonna be a

huge traffic jam so I open Google Maps

and then I figured that okay so probably

the best way to come here taking the

subway or buy a cab and I could make

this decision because this city somehow

achieved that the cab and the public

transportation is all included into

Google Maps it's not the case in

Budapest we hope is gonna reach this

status so and I think one really

important point that at least in

Budapest many and most of the taxpayers

money is being invested into new subway

lines you know how much money is is it's

a lot and then it's just one mode of

transportation so what I say that we

already have capacities which should be

better used and this business model

makes it happen

so what's the challenge maximizing the

utility of the existing capacities and

changing the mind to a holistic view so

we are taking into into a can all modes

of transportation and the very basic is

to the fundament of this distributing

real-time information to the to the

passengers so see let's see that

what's the ecosystem on the top you can

see mobility as a service and it's let's

say existence on your phone like the

Spotify application so you are having

this you can do all the functionalities

through this application then there are

the providers you all know bike-sharing

here you have bike sharing as well if

you local you have peer-to-peer

car-sharing you have ride-sharing right

hailing all this stuff of course you

have the public transportation companies

but these are all providers which are

providing the service through one

mobility operator to you as the

passenger

or as the person who would like to go

from A to B and since we've been asked

or we been let's say as that

where are the technology enablers here

we are so like you just mentioned you

have many stuff which can be implemented

as Deutsche Telekom also have focusing

on this we also have all the all this

let's say knowledge and also the the

delivery capacity to do this because

urban development is one of the

fundament than the truth traffic

developments building roads the public

transportation railways and all the

infrastructure and of course it the

connectivity which can help you using

your smartphone anywhere yeah so the

smartphone's all of you almost have I

guess the seamless payment because it's

okay that I can choose which I would

like to use but then I would like to pay

as fast ads and and as seamless as

possible and let's see the stakeholders

the technology neighbors we are already

here and let's focus on the IT

integrators which have the knowledge and

they are ready to serve this ecosystem

one really good example I think the the

women it's from Helsinki it's already an

existing application which aggregates

all these modes of transportation so

being being in Helsinki you can decide

whether I would like to go by cab use

the public transportation by bike or the

combination of this that's really

important

the mobility service providers they are

competing to each other so you're gonna

get better service hopefully and as the

local authorities and political actors

they have let's say the responsibility

to trigger this and do not block the

innovation the customers this is I think

the easiest thing what we can imagine so

yeah I'm someone who is coming from the

suburbs would like to go into the city

and I would like to make the best

decision I'm so tired

paying so much money for something which

is not convenient it just I rather go

wait car so that's the way which is

about to change and I think this is what

happened in Amsterdam with these 50

people and I really hope that in a few

years there won't be company cars

because company owned cars will be

neglected and probably this kind of

fleet it's gonna be served all these all

the employees and the city will be able

to breath again yeah so again using a

really simple payment method and let's

see that who are these so the relation I

think put a political and so the policy

has to enable all the others to be able

to act otherwise it's gonna be blocked

from the very first point the business

so there has to be business in this

model otherwise no one is gonna invest

in this new model of transportation the

technology I would say it's already here

you just have to choose the best

provider and hopefully Deutsche Telekom

will stand in the game so customers yeah

here we are I'm happy and you are happy

to pay for the last money for the best

service available let's see what's the

action points because the city

government should buy in what does it

mean they have to make some steps

towards to make this happen and they

have to enable the actors to make this

happen and let private companies into

the game and this is where we are

public-private partnership there are

good models how they could implement it

in countries in Budapest we see good and

bad examples but these private companies

are eager to make money so they will

offer the best service for the city and

for the customers so I believe that

there is a good match and so the

technology architecture it should be

something where I can easily connect so

it shouldn't be something close okay if

I have a good service I believe I can

take you from A to B but I don't have

access to to supply my services that's

bad you have to open the market for all

the providers and as the and then the

city won't invest so much money on into

something which is already in the market

and yeah since we are supposed to talk

about the commuters or someone who is

living in the suburb so yeah take into

consideration not just the city travel

and so not just we're in the capitals

and the big cities but also all the

people who are coming to Amsterdam

100,000 people buy cars they should

leave their car at home because these

applications these platforms should be

open for them as well and let's see

where we are in Budapest Budapest as I

said we already implemented many of the

solutions which are supporting mobility

as a service we are at the stage where

we are providing real-time mobility

information passenger information but

there are no private companies and we as

Deutsche Telekom providing all these

solutions to the city I think we have

the role to educate the city and also

because you are paying for your mobile

in bills probably the service can be

included also into your mobile payment

thank you very much I use sometimes it's

been saved thank you

i summarized more or less could you

bring us the questions that now it's

time to send us a questions and that's

see see see okay okay thank you

that's a common question if you it's

real time essential for intelligent

transport systems how you are protecting

this data they take their data that's

question yeah can you hear me okay so so

yeah that's our job so if I'm an IT

integrator then I have the knowledge

inside the company or I have the best

partners so don't worry about that

because these technologies been already

used in the private sector of course

it's a big issue which which is good to

take into consideration and I'm telling

you we had something in the past in the

last few months in Budapest so what you

have to know that the taxpayers are your

biggest Porter's and even if you are a

company which is serving the citizens if

you do something wrong then they will

punish you so bad so that's our interest

to to keep all the data safe okay

another question is how are you looking

now for those people that don't have a

smartphone and need to to have the

mobility to

well I think I think I think city

government will have to take care for

mobility for all of its citizens

people who have a car can provide in

their own mobility what we have to do is

is is not exclude people from a mobility

system so when you are defining or

working on mass systems you will have to

find a way to include all so that while

they have nuts people who don't have

their own modes of transport don't want

to use a smart phone there are also

people who don't want to use a smart

phone there are people who don't have a

smart phone and I'm sure that there will

be enough possibilities for those people

to to be mobile and and and it's not the

end it's not the end of public transport

it's not the end of private owned bikes

in Amsterdam so there will still be in

elementary but more than enough

possibilities for those people that's

the I agree with this this all always

another way to do that thing then is not

opposite of other ways without we do

okay that's great yeah another question

and good you for displaying how

real-time data directly improved

mobility for citizens or are they

additional as Thresh's strategies needed

so this is more for you for thing

okay so other strategies yeah but I

believe in the in the power of the

people so you can really make the

difference so you if you choose either

instead of the traditional cabs then you

push the market towards this ecosystem

which just happened in Budapest

uber was there they were operating for

one year then they've been kicked out

from the country because yeah they

didn't pay taxes oh it's a living debate

we can talk about this but what what it

made in the city that now all the cab

service providers they have their

application before that they had these

really bad call centers and you never

had an answer on that now all day all

these taxi companies are providing

application and the payment is seamless

you won't be cheated which is so

annoying when you arrive to an airport

and then you pay double or triple the

price so I think ask yourself what you

can do for this because based on your

decision this whole ecosystem is going

to be pushed to a more competitive way

okay so just let me add some point

regarding an aspect of mobility which is

security I think we we have talked about

more we've been focusing more on and

economics it's a robot for example in

this lovely peaceful cities some some

months ago we had a terrible event a

terrorist attack so it's not only

detecting a car is thinking ly going the

wrong way it's more than that so in the

real time adds some more values it's not

only just ok the mobility per se but

some aspects going down into the details

of mobility

okay like security we are all out of

time but I want to thank you all the

panelists for for the presentations and

the answers for their questions and and

thank you for all the audience to to be

here and do we have to close that

session thank you very much everybody so

[Applause]