M-ADAS

SAFETY

COMES FIRST.

M-adas, an Israeli's startup that has developed accurate, reliable, and affordable speed calculators to adjust the travel speed to the specific maneuvering capabilities of the vehicle, and to the geometry of the road.

Speeding has been involved in

1/3

of all motor vehicle **FATAL ACCIDENTS**

Table of Contents

The Most Advanced Driving Assistance Systems Existing

Existing Technologies

Vehicles today, know how to travel faster than a driver can operate safely, this is the need to produce technologies that will make better decisions.

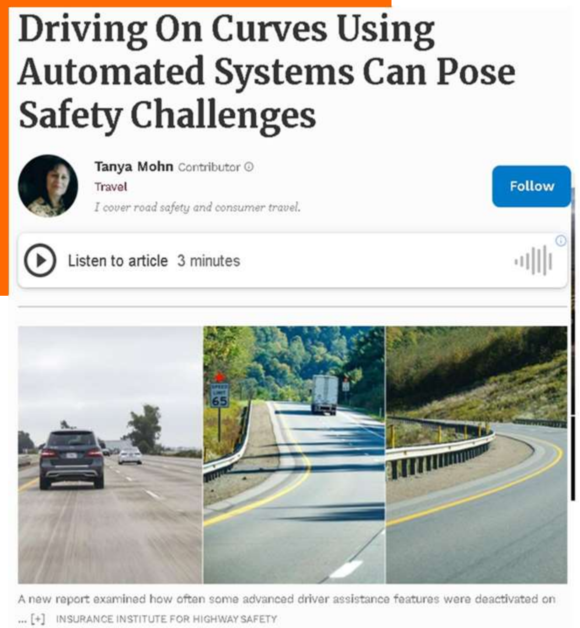
Computer vision-based systems are very limited in adjusting speeds when travel speed is high.

For example, a system that sees at a 120-degree angle to a distance of 100 meters, at 100 km / h has less than 4 seconds of preparation, at 200 km / h, the system is completely blind.

Home > News > Safety 5 Jul 2021, 12:58 UTC · by Sergiu Tudose

According to a recent study by the Institute for Highway Safety (IIHS), the number one issue with advanced driver assistance systems such as adaptive cruise control (ACC) is their ability to navigate curved roads.

6 photos



Driving On Curves Using Automated Systems Can Pose Safety Challenges

Tanya Mohn Contributor
Travel
I cover road safety and consumer travel.

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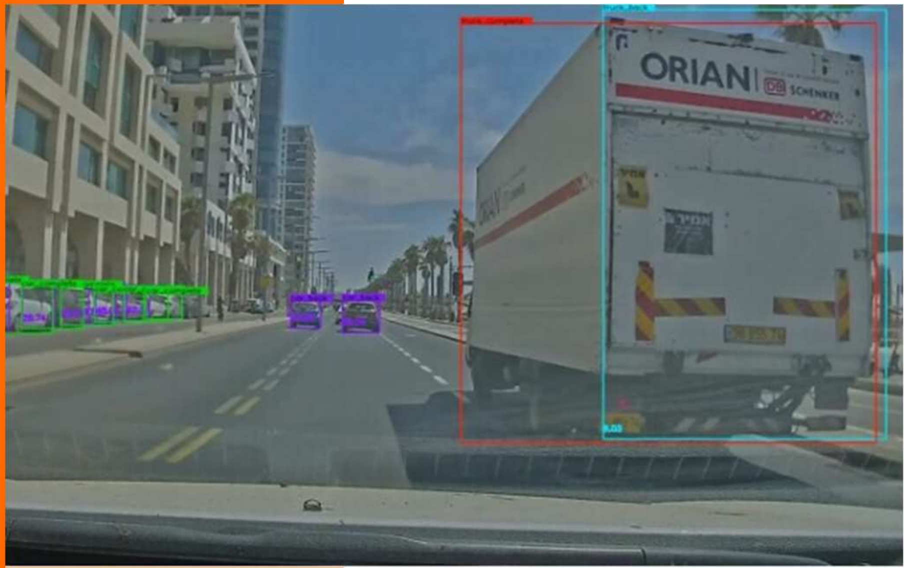
A new report examined how often some advanced driver assistance features were deactivated on ... [+] INSURANCE INSTITUTE FOR HIGHWAY SAFETY



Human Factor
Problems

- Large objects are a technological barrier that cannot be overcome by optical means.

- Existing technologies for speed adjustment, especially before turns and bends, are very expensive, and are not suitable for after-market installation.

- Cruise control systems are not useful on urban roads and curves, even though about a third of those killed in accidents are of unsuitable speed in curves.

- Many systems are depended in constantly connected to the network, and pose a danger from Hacking, and limited network connectivity.

- Motorcycles have an issues like: Height and angles, riders' performance also affects the vehicle's capabilities more than any other motorized vehicle.

- According to the IIHS, the problems occur WITH ACC Systems when drivers misuse the ACC system. The IIHS found that people often set target speeds that are higher than posted limits because they think that using ACC will safeguard them from crashes.

Every bend and turn on the road, has the maximum speed at which it can be driven*, beyond that, the physical forces, will simply fly off the vehicle from the road, and may cause an accident.

*Subject to the physical parameters of the vehicle and cargo, and the geometry of the road.

		Total score	Congestion scene	Special scene	Auxiliary lane change	Curve scene	Human-computer interaction	Automatic parking	Night scene	Rainy scene
1	Tesla Model 3 v10.2 2020.24.6.4	283	44	59	50	15	twenty one	18	38	38
2	BMW X5 unknown	208	41	42	34	7	6.5	twenty four	28	25.5
3	Weilai ES6 v2.6.5	203	39	46	36	14	15	18	35	0
4	Ideal ONE v1.2.4	196	45	39.5	27	5	17	13	26	23.5
5	Xiaopeng G3 v2.2.1	171.5	41	33.5	35	3	12.5	25	21.5	0

Current Market Scenario

1.24 Million People

About 1.24 million people die each year as a result of road traffic crashes. That is more than 2 deaths every minute.

50%

50% of all road traffic deaths are amongst vulnerable road users, pedestrians, cyclists and motorcyclists.

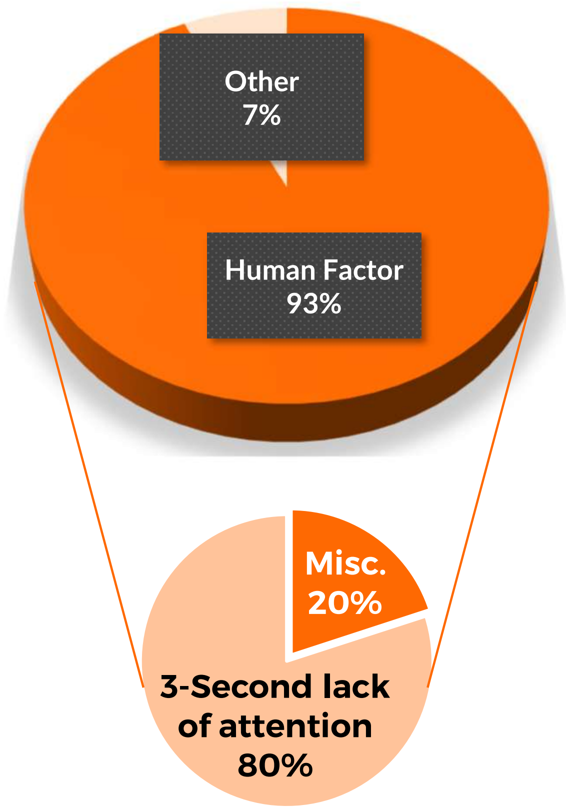
20 To 50 Million

Between 20 to 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury.

1-3%

National estimates have illustrated that road traffic crashes cost countries between 1-3% of their gross national product.

The Cause Of Collisions



Virginia Tech Transportation Institute released findings of breakthrough research on real-world driver behavior, distraction and crash factors.

Nearly 80% of crashes, and 65% of near crashes involved some form of driver inattention within 3 seconds before the event.

M-Adas **Solution:**

The evolution of cruise control systems

1958 Chrysler

Cruise control

Determined speed
on straight roads

1995: Mitsubishi

Adaptive cruise control

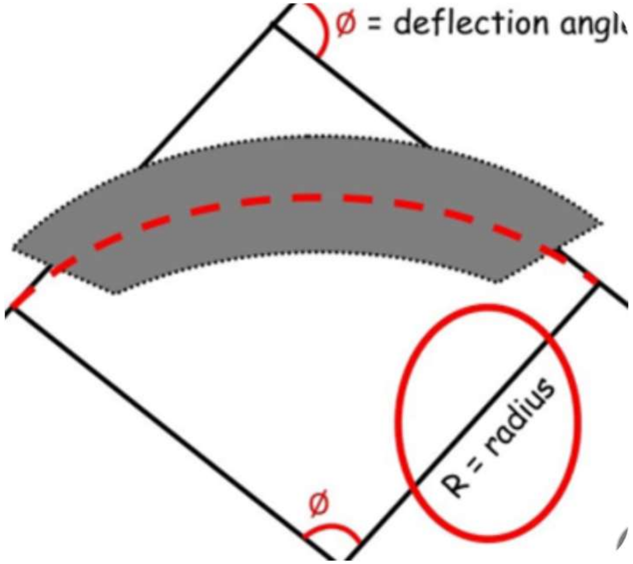
Adjustable speed on
straight roads

2022: M-adas

M-adas adaptive cruise control

Adjustable speed on all
straight and curved roads

Why with M-Adas, ACC is better?



Calculates the Radius more accurately
and without distances limit

M-adas Know every road and
everyway all the time

All the roads of the world
in the palm of our hands

The Need

Vehicles providers need a solution that can be easily integrated into their existing infrastructure and that they can afford to install in unlimited variety of vehicles as an After-market or as integral part of the vehicles.

M-adas understands that the complexity of traffic speed planning will only get worse over the years, the number of vehicles has increased, driving speeds are rising, and drivers are preoccupied while driving with various distractions, impairing their ability to deal with "surprises" and the need to schedule traffic accurately to get everybody to their destination safer and faster.

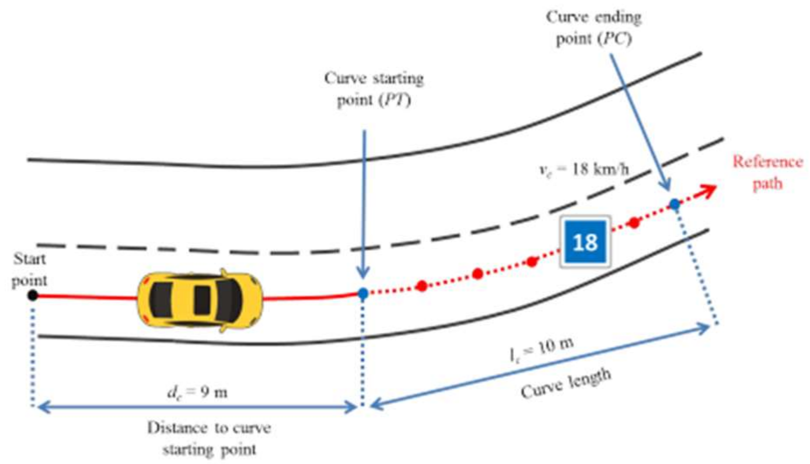
The M-Adas solution

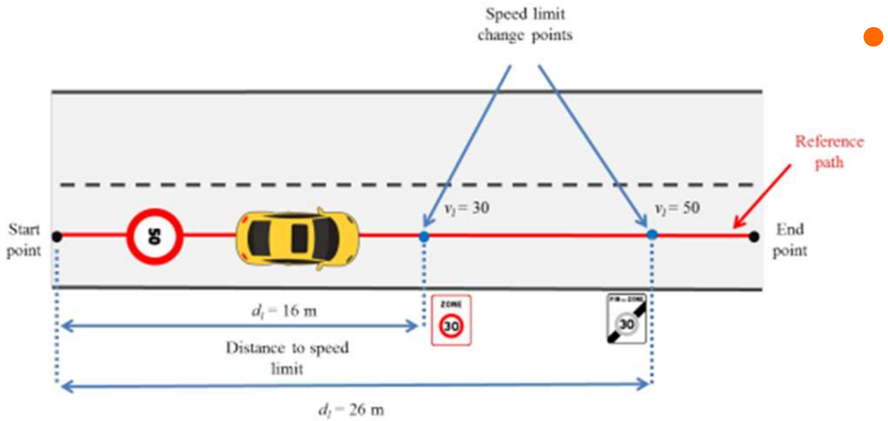
M-adas, is the only add-on to calculate the exact physically speed at curved road, considering physical characteristics of the vehicle, cargo, and type.

By learning different driving styles, a customization mechanism was developed in the system to adjust the reactions to the specific driver according to his driving style and skills by collecting and analyzing his data.

M-adas has created a unique and comprehensive platform which gives "off the shelf" components superpowers.

M-adas solution has been specially designed to meet the unique needs of transportation in present and in the future, near and far.





By adjusting to the physics limitations of the vehicle and pre-calculating the dangerous level of road structure

We invented the first of its kind
Location-based alert system

Aftermarket

M-adas's modularity and the ability to interface with all existing platforms, increases deployment options, and steady growth, over the years in popularity.

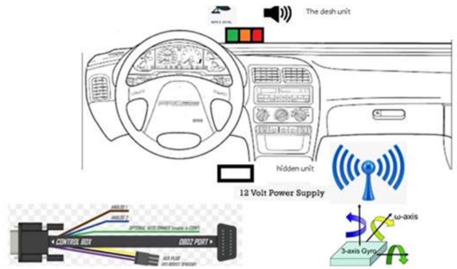
For Aftermarket: **ADAS Safety & Analytics**

Mobile
operating systems

Multimedia
systems

Optional installation systems

Software as a service (SaaS)



Dedicated Hardware

Targeted Markets

Heavy Vehicles Aftermarket Size

2025=$175.5B

Two wheelers aftermarket size

2025=$180B

Cars aftermarket size

2025=$120B

B2B solution

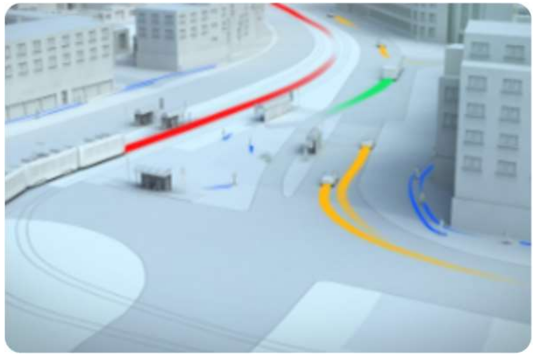
For OEM Market:

Autonomous safe navigation at high speeds.

Advanced cruise control systems

Smart motorcycles.

Urban mobility.



Future Trucks.

Telematics

Our clients:

Large, private and institutional vehicle fleets,trucks, courier companies in scooters, rental vehicles, insurers, law enforcement agencies, private road holders, Road 6, Ayalon lanes, etc. ADAS systems manufactures, and developers.

Value **Proposition**

01. M-adas, can identify driver modes that place him at high risk to make the next accident.

02. M-adas makes it possible to characterize drivers in a way that will identify the drivers Disadvantages and give them the appropriate training to increase safety.

03. M-adas Constitution is based on the interplay between the physical limitations of each vehicle, its physical type and data, driver behavior and the drivers' wisdom, which translates into artificial intelligence.

04. M-adas measures the driver's "struggle" with the topographic variability, and the ability to adjust speed in relation to road constraints.

05. M-adas can be installed in an after-market vehicle at an affordable price, that will make M-adas relevant in all land vehicles both B2B and the b2c.

06. Cheap and easy installation, easy updates, and adjusting the system to the actual driver performance, using a unique analysis technology.

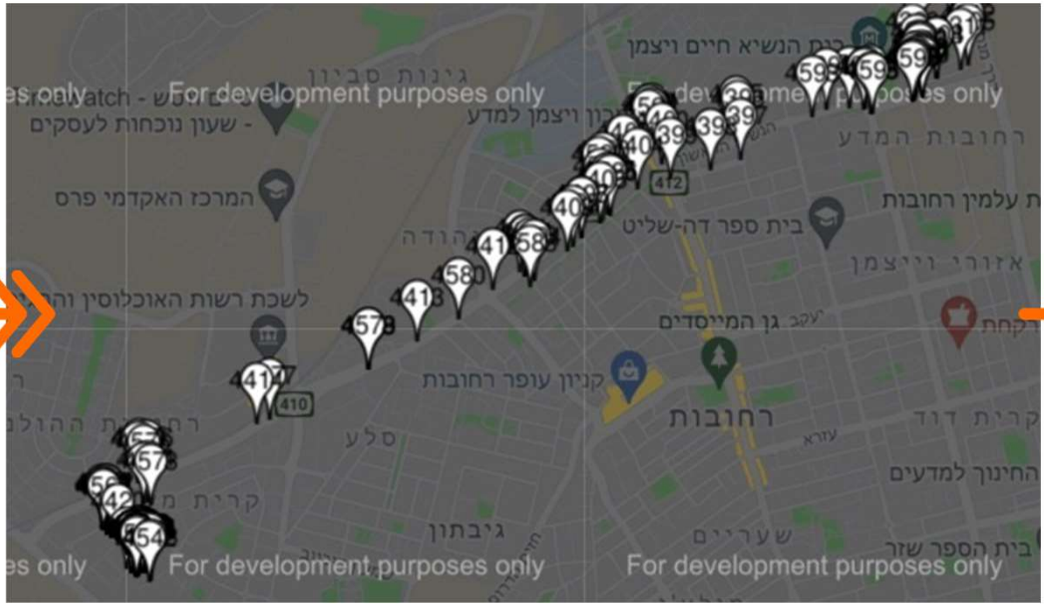
07. M-adas is a software base on topographical data, that is why as bigger the local market is, the price will reduce accordingly

08. M-adas is adding superpowers, to existing ADAS systems, and help them to maneuver the vehicles, faster and safer in curved roads, highways, urban areas, Height differences etc.

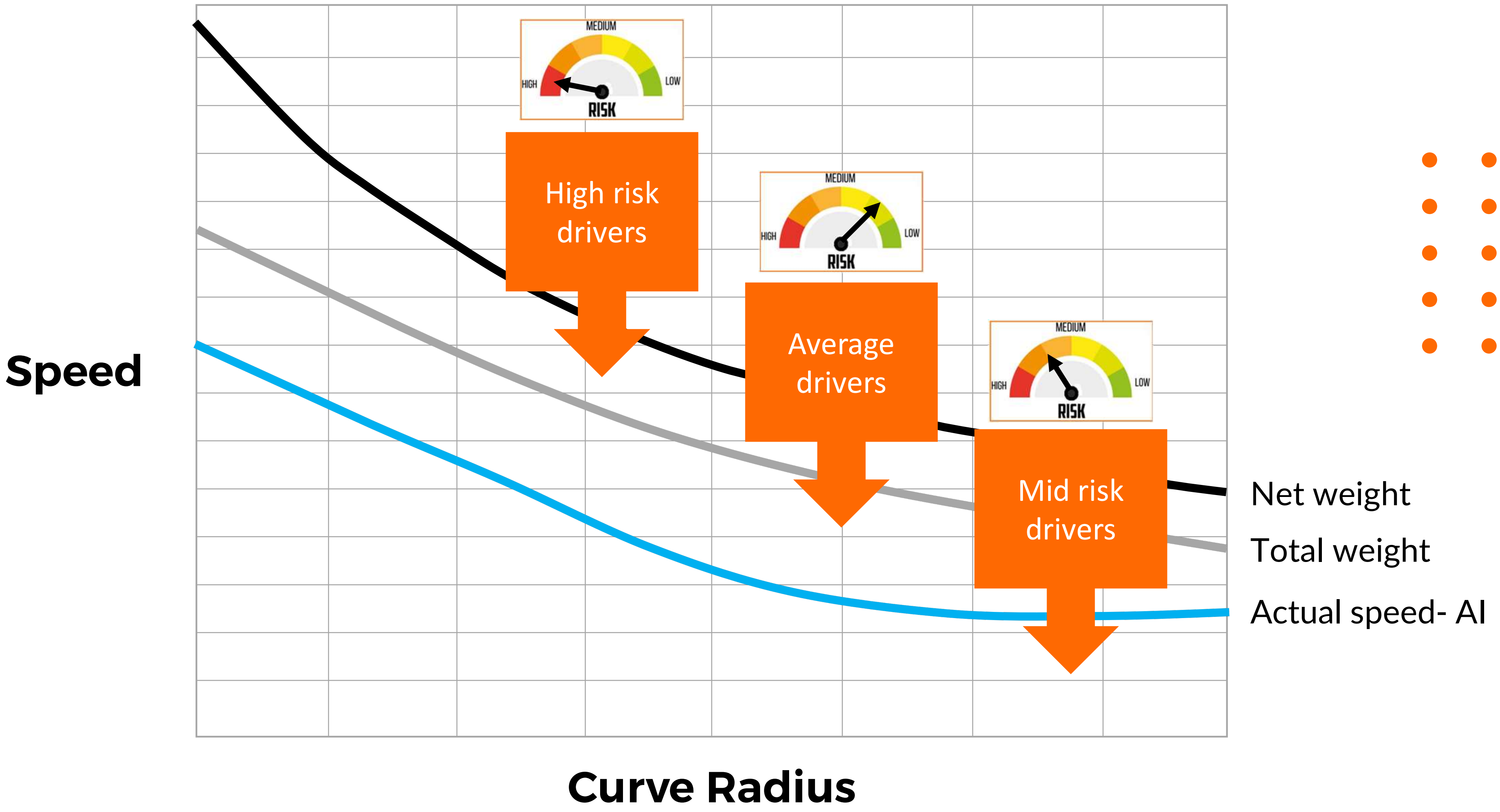
2 Million Samples of User Behavior

We at M-ADAS understood that driver behavior can impact the speed taken on a curve. For this reason, with the help of Ituran we gathered 2 million data points on cement mixer truck drivers and their trajectory across Israel, to evaluate real life driver speed behavior on curves vs our M-ADAS optimal speed algorithm

ituran
TECHNOLOGY DRIVEN BY PEOPLE



M-ADAS


MEDIUM
HIGH
LOW
RISK
High risk drivers
Average drivers
Mid risk drivers
Speed
Curve Radius
Net weight
Total weight
Actual speed- AI

Driver Characteristics

Mid Risk Drivers

Driving at speeds too low from physical limitations.

Reason:

Very low self-confidence.

The problem:

Extension of travel times, Poor self-confidence, Disruption to other users along the way.

Solution:

Medical tests, vision, blood pressure.

Average Drivers

Driving at average speeds.

Reason:

A careful and experienced driver, feel the road and avoid riskes.
a slim chance of an accident through his own fault.

High Risk Drivers

Driving at speeds too close to physical limitations.

Reason:

Excessive self-confidence.

The problem:

there is no time to correct mistakes, danger to the environment and passengers. Wasteful driving in resources, unnecessary use of energy. Increasing vehicle depreciation, brake wear, tires and engine.

Solution:

Careful driving instruction

Achievements

M-adas reports the following progress:

POCs completed and in progress:

A variety of technological platforms are "running with M-adas", in vehicles, and in the cloud without the presence of the vehicle itself, hardware off the shelf, and hardware originally developed to run other software, or in parallel.

Research and development:

Cooperation with and assistance from the Institute for Smart Transportation at the Technion with M-adas, after about 4 years of R&D, is working amazingly!

Nearing commercialization:

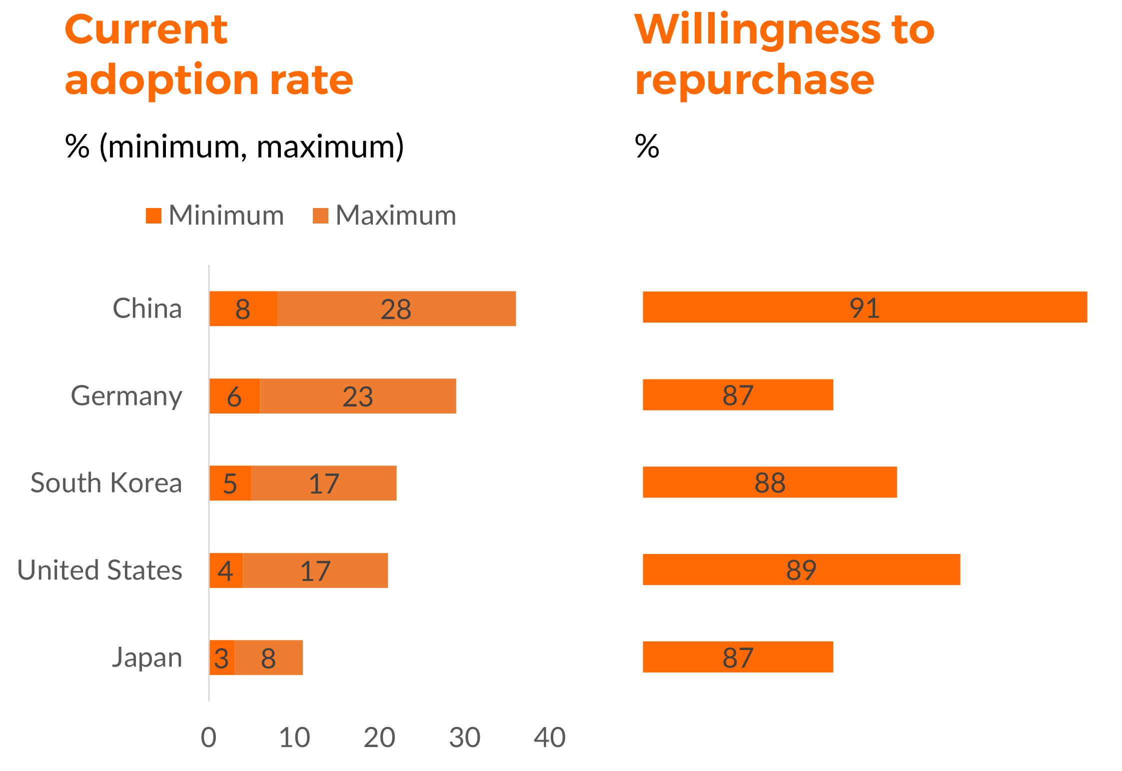
Completed LOI & POCs with CEMEX, will give M-adas, a strong and profitable foundation in tens of countries and hundreds of thousands of users in those countries, already in a precise time and a reduction in uncertainty about market demands.

Challenges And Opportunities

The adoption rate of advanced driver-assistance systems is low, but owners' willingness to repurchase is high.

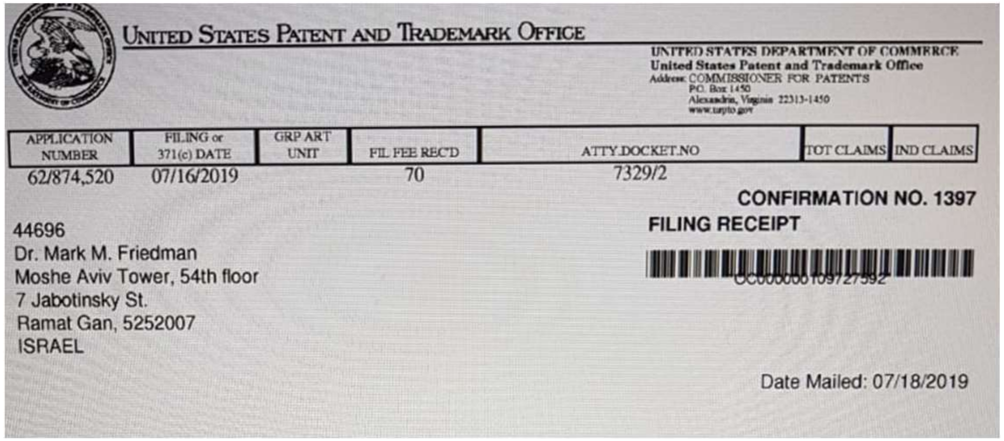
Advanced driver assistance systems

- Average of 20 features for vision assistance, warnings and alerts, adjustments, and interventions
- Most adopted features include blind-spot monitoring advanced emergency braking, and precollision warning.



IP

Protected Application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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
62/874,520	07/16/2019		70	7329/2		

CONFIRMATION NO. 1397

FILING RECEIPT

44696
Dr. Mark M. Friedman
Moshe Aviv Tower, 54th floor
7 Jabotinsky St.
Ramat Gan, 5252007
ISRAEL

Date Mailed: 07/18/2019

The patentability was checked

TOP PATENTS

10th June, 2019

Re: System and Methods for Vehicle Control System

Dear Sirs

The search is focused on a command and control system for vehicles, an electronic system with a combination of command and control for all type of vehicles on-road and off-road, there are several functions in this system like monitoring the driving characteristics and having general information's about the vehicles.

The search was carried out using various databases such as USPTO, WIPO and Espacenet.

During our search we could not find any document relates to command function and controlling system for vehicles.

Meet the Founders

Ofer Mandelberg, MBA

Partner-CEO

Ofer Mandelberg, Co-Founder and Partner-CEO, with over 15 years in the hi-tech industry, with proven experience in launching successful complex tech projects, in managing R&D teams, and in running global profitable go-to-market plans for B2B startups.

Served at 8200 IDF, graduated B.A in economics and music composition, and Marketing Master of Business Administration (M.B.A) at Tel-Aviv university.

Claude Verstraeten

CTO

Professional programmer & software engineer, over 20 years of industry experience having worked with Nintendo, Sony, Microsoft, Apple, Android, Electronic Arts, Ubisoft, Activision and many more, with over 85 published projects, including Million and Multi-Million sellers. Bachelor of Science (BSc) in Software engineer.

Ilan Levy

CEO & Chairman

Ilan Levy, Founder and leader of M-adas vision, businessman, with successful and proven experience in the domains of construction, real estate, renewable energy and communications, believes in the saying by David Ogilvy:
"If each of us hires people who are smaller than we are, we shall become a company of dwarfs. But if each of us hires people who are bigger than we are, we shall become a company of giants".
That is how M-adas achieved these accomplishments, And fulfill its destiny.

M-ADAS Advisory Board

Professor Avishai Ceder

Advisory Board

Transportation Engineer

Technion

Eran Sadan

Advisory Board

Transportation Engineer

Technion

generated by modelling these alternatives of future public transport demonstrates that the exclusive use of public transport vehicles (where half of the people use the first scenario, and half use the second scenario) can reduce the total number of vehicles on the roads by about two thirds. This makes his proposed approach a plausible concept for the future.

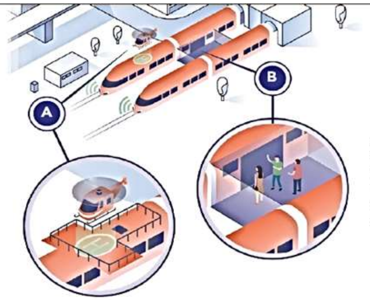


Figure 3. (A) shows a seamlessly connected flying public transit vehicle and a rail. (B) depicts a seamlessly connected city and intercity rail.

A VISION FOR PUBLIC TRANSPORT

Ceder imparts his vision for public transport for future urban mobility using seamlessly connected vehicles, where vehicles physically connect to others to facilitate the smooth transfer of passengers. Following the COVID-19 pandemic, public transport users want to avoid risks of infection. Users also prefer personalised services. With these criteria in mind, smartphone apps can help provide flexible, interactive public transit services with readily available, real-time journey planning information for users. He has also designed an innovative process where travellers can seek routes that cater to their preferences, such as cost, convenience, risk minimisation, and their desired time of travel.

FUTURE SUSTAINABLE URBAN MOBILITY

Ceder advocates the use of automated public transit vehicles in our cities. Through his modelling, he demonstrates how these concepts have the potential to better meet the transportation needs of urban travellers when compared to the current mode of widespread privately used and owned vehicles. He emphasises that for an individual to switch from using their private car to any type of public vehicle, the individual must decide that they prefer public transport vehicles. Such changes will only arise if proactive, transcontinental governments encourage the development of autonomous vehicles exclusively for public transport use and if they put standards in place to enable the automatic connection of different vehicles.

According to Ceder, four components must be considered to achieve urban mobility that is both seamless and appealing to its users: 1) globalisation [illegible]ms of reciprocal action between [illegible], national, and international smart mobility economies; 2) personalisation that ensures the system is compatible with [illegible]'s needs and preferences [illegible]gh smartphone apps; 3) prioritisation for emergency vehicles, and other preferential needs such as the elderly and VIPs; and 4) the standardisation of compatible connections between vehicles for simple, fast, and convenient transfers. He termed these four components GPPS (globalisation, personalisation, prioritisation, and standardisation).

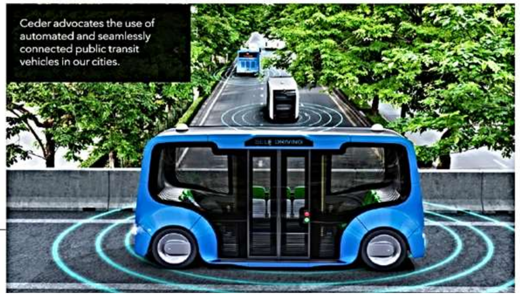
Ceder likens driving to an addiction, a habit that is difficult to break. One approach to reduce the use of private cars is by offering incentives complemented by evidence clearly showing that public transport is better for individuals and society. Individuals and groups should understand that this is a choice, however, and not a stipulated measure.

Ceder is an internationally renowned expert in transportation and has published widely on the subject. Among these publications is his book for practitioners, researchers and academics, *Transit Planning and Operation: Modeling, Practice and Behavior*, which has also been translated into Chinese and Korean. In this work, he expands these methods to include the synchronisation of sustainable urban mobility and policy supported by global data analysis.

KEY FINDINGS

This study contributes four main findings to inform sustainable urban mobility and public transit policy. It provides a measure demonstrating the benefit of deploying global urban public transit vehicles over private cars. It exposes the global magnitude of road traffic damages and offers an approach for the reduction of the number of vehicles in urban areas by two-thirds. The three research components channel both discussion and conclusions as his fourth main finding, including the decision-making required for it to become reality. Ceder concludes that his work justifies the development of sustainable urban mobility that exclusively employs public transit vehicles and provides a personalised, seamlessly connected public transit service for its passengers.

The exclusive use of public transport vehicles can reduce the total number of vehicles on the roads by two-thirds.



Ceder advocates the use of automated and seamlessly connected public transit vehicles in our cities.

Behind the Research

Professor Emeritus Avishai Ceder

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Research Objectives

Dr Ceder strives for creating public transit systems that are superior to private cars.

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Detail

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Haifa, Israel 32000

Bio

Dr Avishai (Avi) Ceder is Professor emeritus at the Technion – Israel Institute of Technology. He is also founder and previous director of the Transportation Research Centre (TRC) at the University of Auckland and was Chief Scientist of the Israel Ministry of Transport (1994–1997). Ceder is member of various international symposia (eg, ISTTT, CASPT).

Personal Response

What do you think is the greatest challenge faced by transport policymakers promoting sustainable urban mobility?

" Using the work and the conclusions described, the following three challenges are attainable, for instance, through an inter-governmental political forum: (1) to appreciate the potential and importance to revolutionise transportation at present like understanding the necessity of global climate change; (2) to rethink limiting automated-vehicle development to non-private vehicles, with international standardisation; (3) to let autonomous car manufacturers understand and be convinced not to develop their cars for private use. "

Gorodenkoff/Shutterstock.com

Illustrative future automated transit (non-private) vehicle.

Sustainable urban mobility

Data-based insights for a future with only seamless public transport

Research being carried out by Professor Avishai (Avi) Ceder from the Technion – Israel Institute of Technology offers a fresh global perspective of the current situation of urban transport. He examines opportunities for us to move towards sustainable urban mobility that could substantially reduce road traffic damages and its global impact. Using data from 19 countries and 17 major cities, Ceder measures road traffic damages and proposes alternatives with the exclusive, and preferred, use of public transit vehicles. His model provides a personalised, seamlessly connected urban public transport service for its passengers.

Damage caused by road traffic is a global problem, both in terms of the death toll from road traffic accidents and the pollution it generates. Research into public transit systems of the future, carried out by Professor Emeritus Avishai (Avi) Ceder from the Faculty of Civil and Environmental Engineering at the Technion – Israel Institute of Technology, examines opportunities for us to move towards sustainable urban mobility, substantially reducing road traffic damages. Ceder believes that following the many lifestyle changes that accompanied COVID-19, it is likely that people are more open to altering their attitudes and behaviours. This may provide a window of opportunity for the adoption of sustainable solutions to the current problems surrounding global transportation.

AN OPPORTUNITY FOR CHANGE

Ceder's unique analysis offers a fresh global perspective of the current situation on our roads in preparation for the transition from traditional privately used and owned vehicles, referred to herein as private cars, and autonomous vehicles. He addresses two main issues. Firstly, he tackles the confusion that hinders the development of automated urban mobility with a new global vision that prompts a reassessment of the development path for autonomous vehicles together with its sustainability. Secondly, he investigates the importance of directing public transport policy trends to avoid making mistakes during the transition to automated-electrical vehicles. Moreover, he encourages decision-makers to embrace proactive behaviour when considering new global decisions.

Ceder explains that 'with road traffic rated the largest net contributor to global warming, responsible for even greater damages to which the world has been largely oblivious, the prospects now appear greater for proactive governments to develop autonomous vehicles for transit only and vehicle standardisation'. To investigate the opportunities for changing urban mobility to reduce the damage caused by road traffic and the implications for global warming, he analyses data from 19 developed and developing countries across the world to establish measures to quantify and describe the detrimental effects of traffic and transportation damages. In addition, he compares the travel times of private cars with those of all types of public transport vehicles in 17 major cities before sharing his proposal for a system of autonomous transportation to provide public transport services for these 17 cities.

Professor Avishai (Avi) Ceder studies public transit systems of the future that are preferable to private cars.

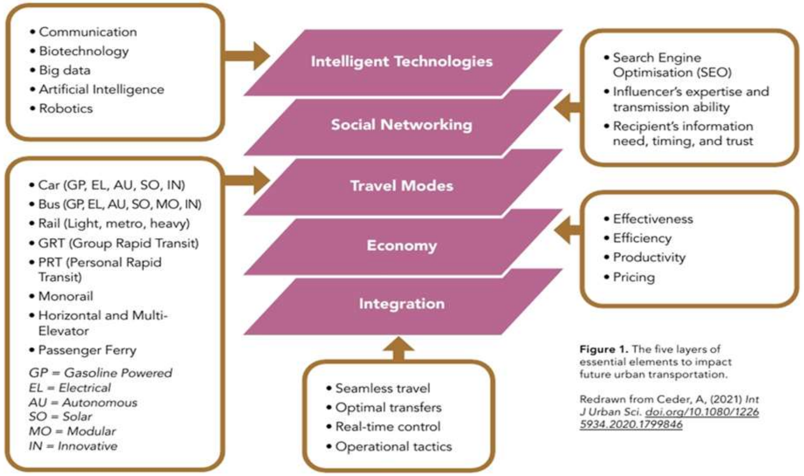


Figure 1. The five layers of essential elements to impact future urban transportation.

Redrawn from Ceder, A, (2021) *Int J Urban Sci.* doi.org/10.1080/12265934.2020.1799846

MEASURING ROAD TRAFFIC DAMAGES

Using data collected from 2014 to 2018, Ceder created a comparison base to deal with the variation across the 19 different countries by developing four proportionality-based measures to describe the global impact of traffic. These are calculated in terms of a new independent measure, the active level of private car motorisation (ALoM). This equates to the number of private cars that run 24 hours a day per 1,000 inhabitants.

Global data analyses reveal the extent of global transportation damages in average terms. These include traffic accidents, accounting for 35.6% of all deaths resulting from any kind of accident. Transportation is confirmed as the greatest net contributor to global warming, emitting 24.4% of carcinogenic fine particulate matter. Traffic congestion means that 22.5% of time spent travelling during peak times is lost in traffic jams. On average, a private car is in motion for only 5.3% of each day, spending 94.7% of the time parked and taking up space.

COMPARING TRAVEL TIMES

Ceder also compared the travel times of private cars with those of all types of public transport vehicles, including trains, buses, taxicabs, ferries, and cable cars, in 17 major cities (figure 2). His comparison of trips from each city centre to destinations within 30, 45, 60, and 90 minutes of travel uncovered that, contrary to expectations, 94% of the journeys took less time by public transport than by private car.

...the prospects now appear greater for proactive governments to develop autonomous vehicles for transit only and vehicle standardisation.

POTENTIAL SUSTAINABLE URBAN MOBILITY

Global data that justifies a range of public transit vehicles can replace private cars underpins Ceder's proposal for a system of autonomous transportation to exclusively provide autonomous public transport services, and is preferred to private cars, within these 17 cities. He presents two options. The first scenario involves the transfer of individuals using a reserved autonomous vehicle to take them from their point of departure to their destination. The second scenario involves people moving from their individual points of departure to the departure point of an autonomous bus that takes them to their destination. Analysis of the data

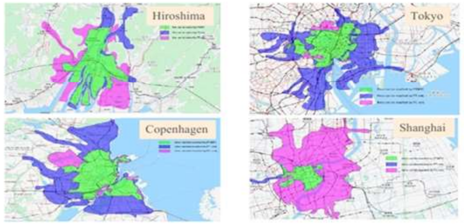
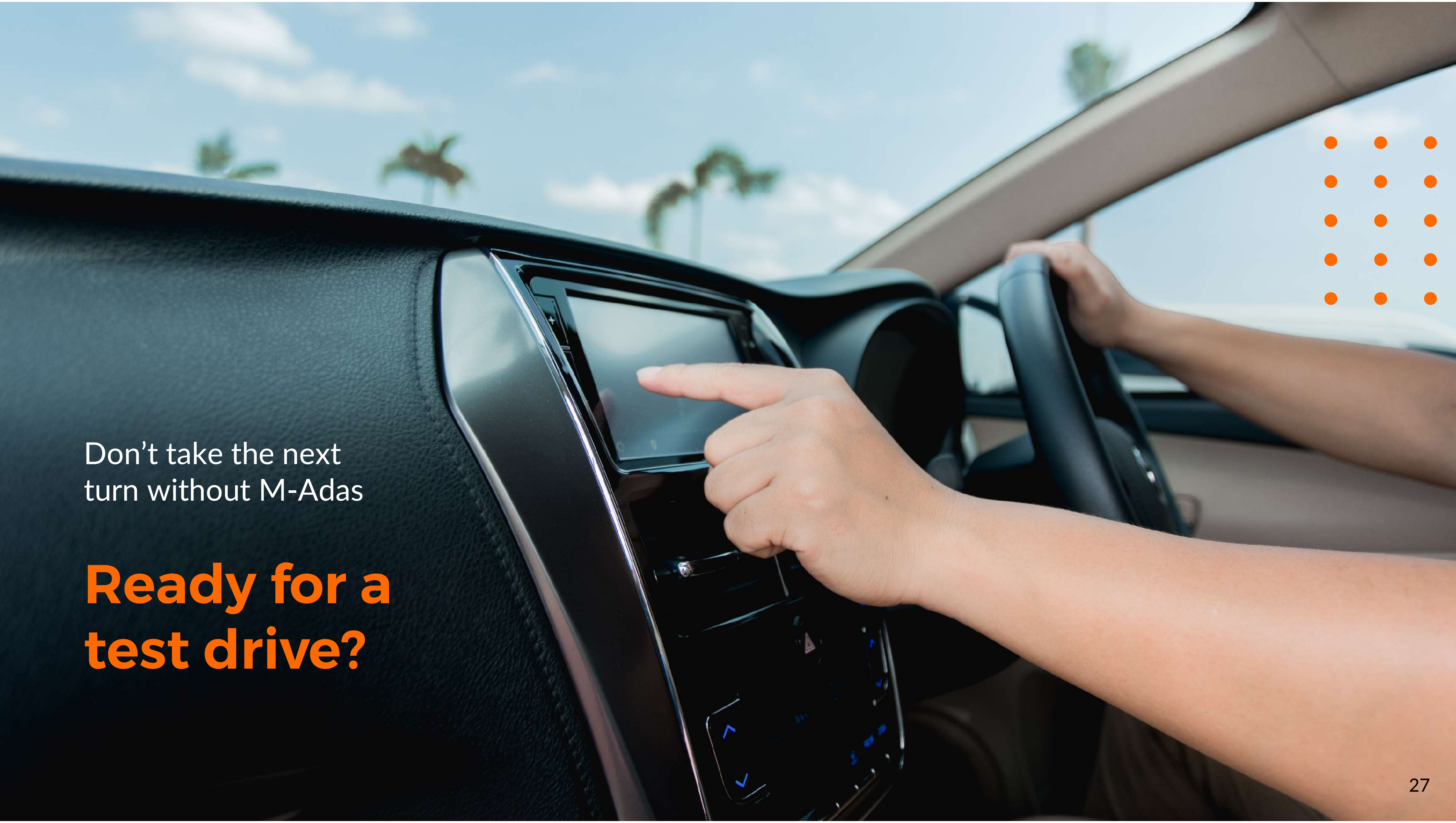


Figure 2. Comparison for transit beats cars (TBC) and cars beats transits (CBT). Pink zone represents CBT (less travel time); blue represents TBC (less travel time); green represents same for private cars and public tranport (same travel time). The figure of Tokyo is from: Ceder, (2021) *Sci Rep*, www.nature.com/articles/s41598-021-93741-4



Don’t take the next turn without M-Adas

Ready for a test drive?

Mostly in complicated road structures like Curves, Turns & Roundabouts

The Future of Transportation by M-adas

- The regulation would require areas where intuitive, human-controlled movement is prohibited.
- Existing technologies for speed adjustment, especially before turns and bends, are very expensive, and are not suitable for after-market installation.
- Convert all traffic regulations to mathematical and physical regulations.
- Private car ownership will be rare, temporary transport accessible by the local authority will be preferred, human driving will only be allowed in emergencies.
- All 2D movements, will be precisely timed by speed calculators, the route will be known, as well as all vehicle locations in real time, and any need for Adas systems in general will be eliminated, only speed calculators will schedule traffic accurately.
- Speed will be limited only to physical limitations, and regulatory preferences