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Promoting safe and sustainable cities with public transport

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INTERNATIONAL ASSOCIATION OF : **UITP** ADVANCING PUBLIC TRANSPORT **TRANS**PORT



ADVANCING
PUBLIC
TRANSPORT



A WORLDWIDE ASSOCIATION

16 regional offices, 2 centres for transport excellence



EUROPE

- Brussels, Belgium | UITP Main Office, Europe Regional Office, Central & Eastern Europe Liaison Office
- Rome, Italy | Liaison Office
- Istanbul, Turkey | Liaison Office

EURASIA

- Moscow, Russian Federation | Regional Office
- Astana, Kazakhstan | Liaison Office **NEW**

ASIA-PACIFIC

- Hong Kong, China | Regional Office
- Bangalore, India | Regional Office
- Singapore | Centre for Transport Excellence

AFRICA

- Abidjan, Ivory Coast | Regional Office
- Johannesburg, South Africa | Liaison Office

AUSTRALIA & NEW ZEALAND

- Melbourne, Australia | Regional Office

LATIN AMERICA

- São Paulo, Brazil | Regional Office

NORTH AMERICA

- New York, United States | Regional Office **NEW**

MIDDLE EAST & NORTH AFRICA

- Dubai, United Arab Emirates | Regional Office & Centre for Transport Excellence
- Casablanca, Morocco | Liaison Office **NEW**
- Tehran, Iran | Liaison Office



➤ A DIVERSE MEMBERSHIP

1600 member companies from **100** countries

- Operators
- Authorities
- Policy decision-makers
- Research institutes
- The public transport supply ar



OUR MISSIONS



We engage with decision-makers, international organisations and other key stakeholders to **promote** and **mainstream** public transport and sustainable mobility solutions.



We **inspire excellence** and **innovation** by generating and sharing cutting-edge knowledge and expertise.



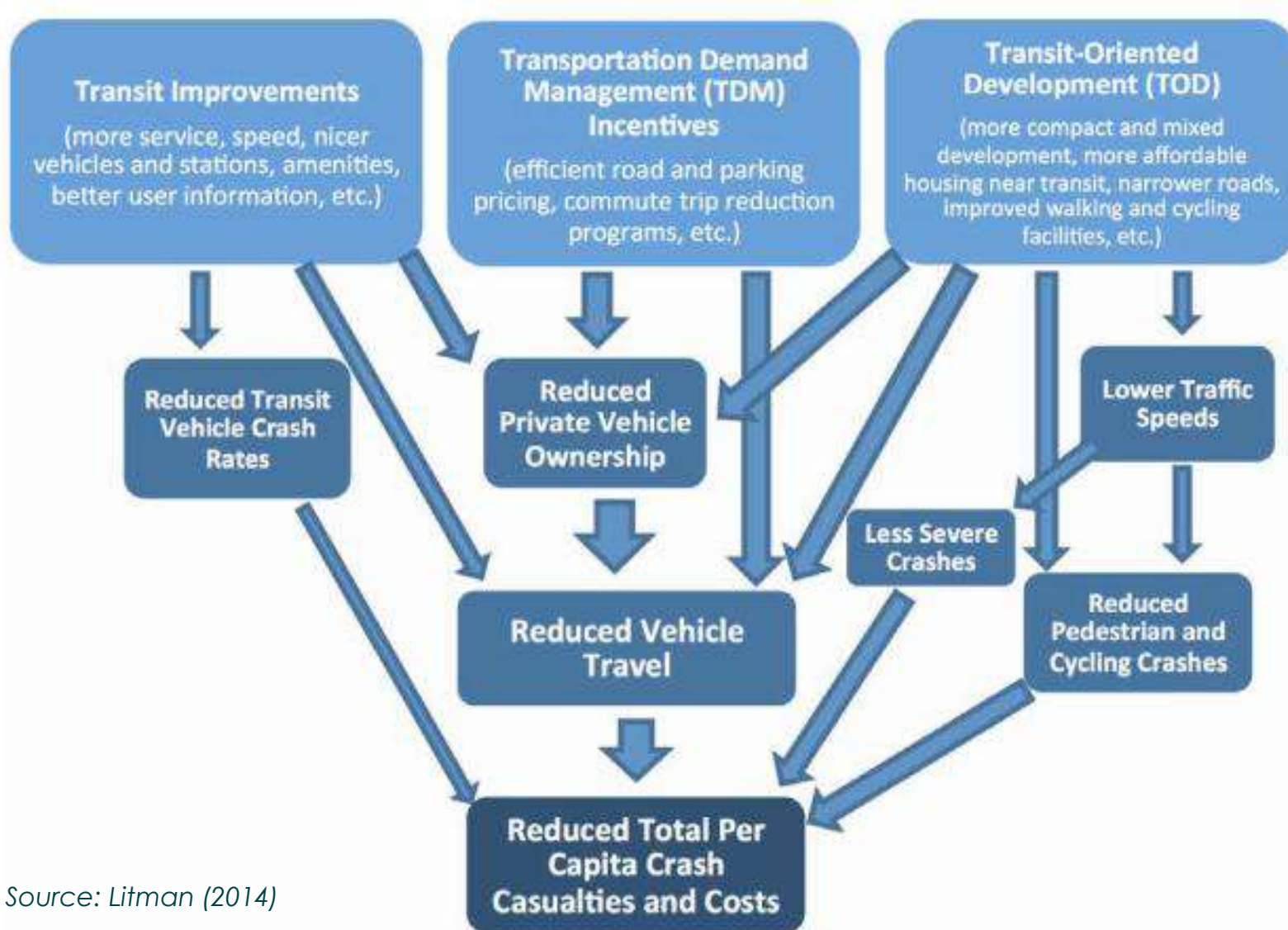
We bring people together to **exchange** ideas, find solutions and forge mutual beneficial business **partnerships**.



Road Safety

Promoting safe and sustainable cities with public transport

> MORE PUBLIC TRANSPORT...



Source: Litman (2014)

Fatalities per Billion passengers

Travel Mode	Deaths per Billion Passenger-Miles
Car or light truck driver or passenger	7.28
Commuter rail and Amtrak	0.43
Urban mass transit rail (subway or light rail)	0.24
Bus (transit, intercity, school, charter)	0.11
Commercial aviation	0.07

Source: Savage 2013



➤ EVERYTHING UITP DOES IMPACTS ROAD SAFETY



	Fesible	Desirable
177 Cars	Green	Red
200 people without cars	Orange	Green
200 people on bike	Orange	Green
3 buses	Orange	Green
3 buses + bike	Green	Green

UN ROAD SAFETY COLLABORATION



27th Meeting of the UN Road Safety Collaboration
(10-11 April 2019)

UITP has just joined the UN Road Safety Collaboration. The group aims to share best practice on road safety

Vision Zero Vs. Public Transport

- Public transport is often an overlooked solution to road safety. UITP is working on a reference document for members
- The paper simply highlights that public transport is good for road safety. It includes recommendations for cities and countries as well as some case studies from members



Promoting safe and sustainable cities with public transport

Shifting trips to public transport creates safer, healthier and more vibrant communities. It is fundamental to Vision Zero's success and the Sustainable Development Goals (SDG). This paper outlines recommendations both locally and globally to scale up efforts for the next Decade of Action.

Introduction – road safety and the SDGs

Road traffic injuries are the tenth leading cause of death globally, responsible for around 1.3 million deaths each year with 92% of these casualties happening in developing countries. Around 50 million are also injured on the world's roads annually, overall costing governments up to 3% of their GDP¹. Cities will be at the forefront of the next Decade of Action on road safety because by 2030, it is expected that nearly 5 billion (61%) of the world's 8.1 billion people will live in cities, notably in developing regions.

Recognising the obstacle that road traffic injuries present to development efforts, Member States included a specific SDG target on road safety (SDG 3.6) in the 2030 Agenda for Sustainable Development – which calls for a 50% reduction in road traffic deaths by 2020. The number of road traffic deaths continues to rise steadily and the rate of death relative to the size of the world's population has remained constant, meaning that we are way off when it comes to delivering SDG 3.6. If action is not taken now, by 2030 it will be the fifth-largest cause of death worldwide.

The SDGs also identifies solutions to the road safety challenge. SDG 11.2 recognises the importance of having access to a safe and sustainable urban transport system for all, making specific reference to "improving road safety, notably by expanding public transport".

Achieving the SDG target through Vision Zero
The Safe System approach is today at the centre stage of road safety policy making at the global, regional and national levels but increasingly so at the local level. More and more cities are adopting Vision Zero strategies and it's "Safe Systems Approach"². It can be viewed as a paradigm shift, where the ultimate responsibility for road safety is shifted from the individual road user to those who are responsible for various functions of the transport system. Much effort is being put into designing the transport system so that crashes will not lead to serious consequences. The focus is on the behaviour of the individual road user. Given the public transport system, rather than on the behaviour of the transport system, they can play an essential role in the next Decade of Action, more so than they have done in the past.

In the context of the SDGs, the UN Decade of Action (2019-2020) and the UN Urban Agenda, Member States embraced Safe System principles. The three agendas encourage the promotion and use of public transport to help tackle the road safety problem. The role of public transport is currently overlooked in most road safety planning and sometimes forgotten

¹ WHO, "Global Status Report on Road Safety", 2018
² COMMISSION STAFF WORKING DOCUMENT EU Road Safety Policy Framework 2021-2030 - Next steps towards Vision Zero (June 2019)
³ # 113 <https://doi.org/10.1016/j.trpro.2019.07.014>, English.pdf

Paper to be released in Feb'2020



3RD GLOBAL MINISTERIAL CONFERENCE ON ROAD SAFETY

ACHIEVING GLOBAL GOALS 2030 STOCKHOLM 19-20 FEB 2020





PUBLIC TRANSPORT ACCIDENTS

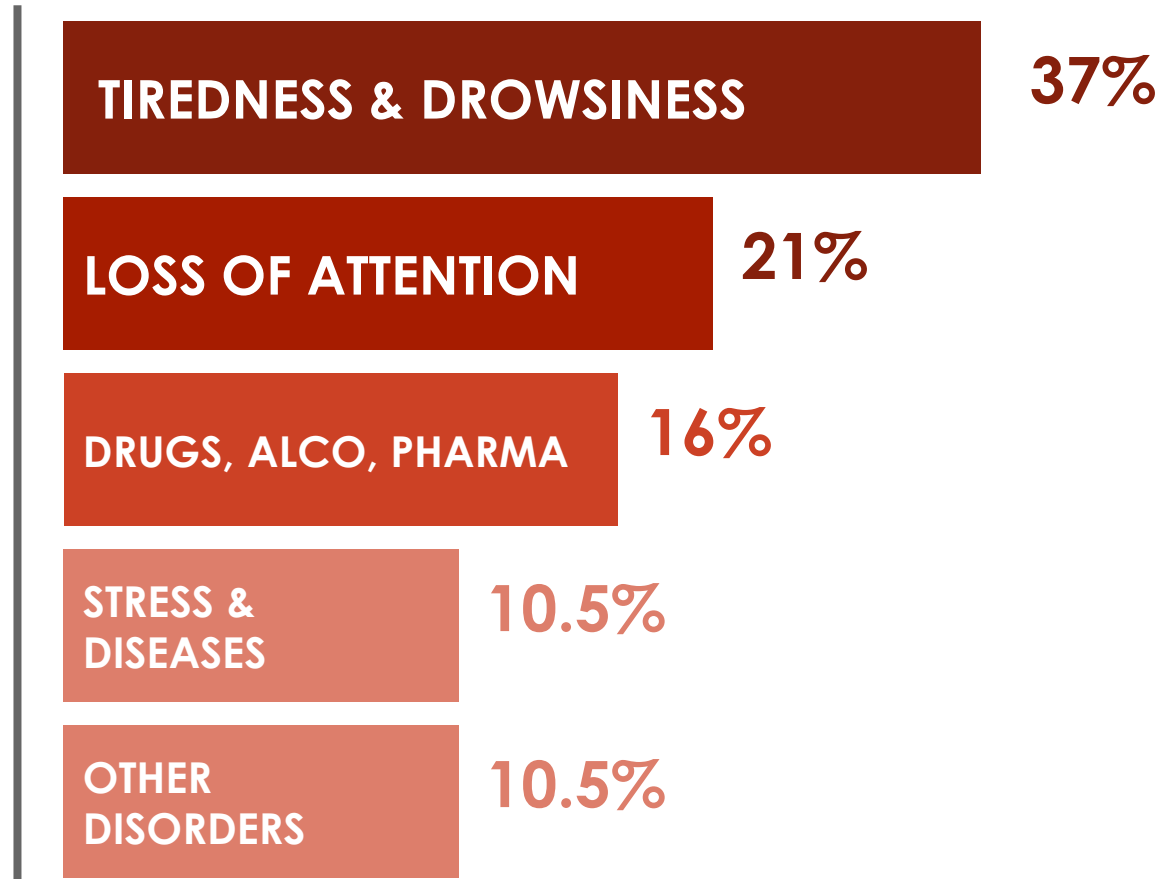


➤ THE NATURE OF PT ACCIDENTS



95%

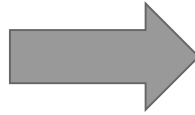
OF ACCIDENTS
ARE CAUSED BY
HUMAN ERROR



➤ THE NATURE OF PT ACCIDENTS

What is 'human factor'?

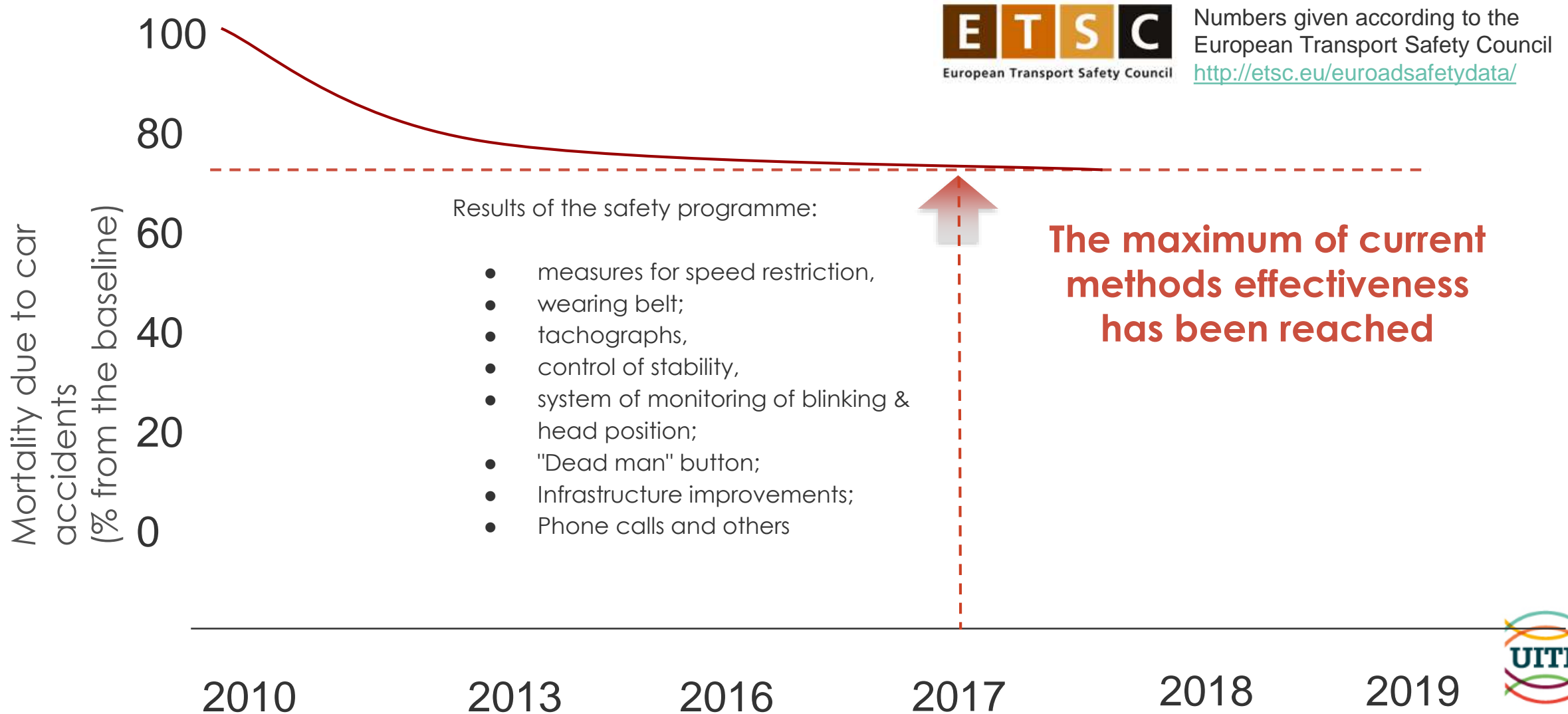
Recognition errors	38,6 %
Decision errors	32,4 %
Action errors	9,8 %
Sleepiness, conscious loss	6,7 %
Other human mistakes	7,5 %



Critical (actual) reasons of accidents

Inattentiveness & fatigue	37 %
Sleepiness & loss of awareness	21 %
Influence of alcohol/drugs/other substances	16 %
Stress & illnesses	10.5 %
Other psychophysiological problems	10.5 %

➤ RESULTS OF ROAD SAFETY PROGRAMMES IN EU



➤ THE NEXT BIG STEP IS TO ACT IN ADVANCE

Implementation of level-up technologies allows **to identify the high-risk human states much earlier**, giving the substantial time lag for the person to normalize.

The technologies act preventively so **that they considerably lower the risks of accidents**

To change the situation, you need to **directly impact the cause.**

1

Assess, differentiate and digitalize persons' psychophysiological conditions leading to critical mistakes

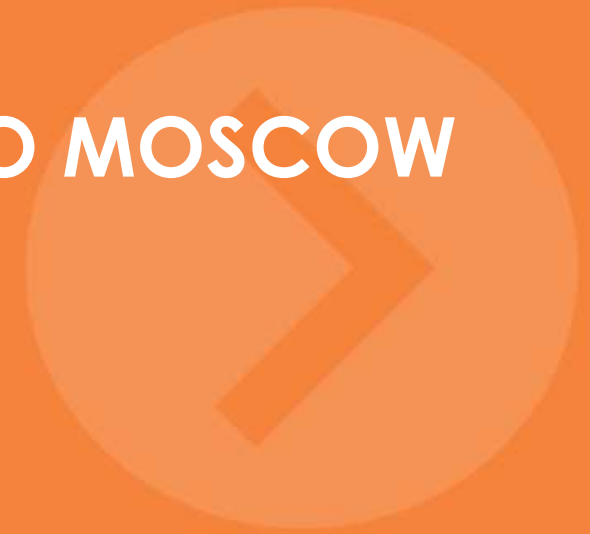
2

Correctly identify the individual optimal working condition, transients and alarm zones

3



CASE STUDY – ST. PETERBERG METRO MOSCOW



➤ MEASURING QUALITY OF LIFE (EC 8+1 LIFE QUALITY INDICATORS)



Driver's Physical and Mental State (PMS) and **Driver's Feeling of Safety** and **Life Quality** are mutually influenced and mirrors each other

Thus Driver's PMS monitoring, prevention of its worsening in advance and positive influence promotes High Safety and Life Quality for the Driver and the Society



SYSTEMS THAT DIRECTLY TACKLE 95% OF THE CRITICAL CAUSES OF ACCIDENTS

HUMAN FACTOR RELIABILITY MANAGEMENT SYSTEMS FOR ANY TRANSPORTATION



ASPE (Automatic System for Pre-Trip Examinations)

Accurate determination of conditions leading to critical errors, transients and risk zones according to more than 40 parameters of the pulse wave shape, blood pressure and heart rhythm

- Recognition of a wide spectrum of diseases in the early stages of development
- Including - cardiovascular
- Preventing Sudden Death Risk



CoPilot (System for Online Functional State Monitoring)

Monitoring of the functional state in real time and early warning of dangerous states: monotony, falling asleep, fatigue, sudden deterioration of health, stress, illness, etc.

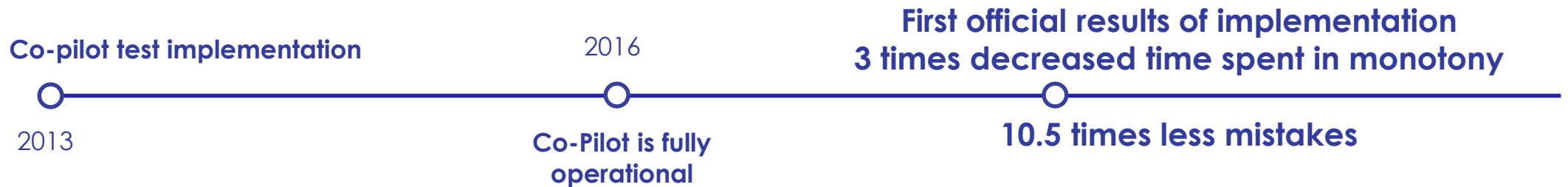
- Issue of warning signals to the driver
- Dispatcher Warning
- Location tracking
- AI Self-learning. Maintaining the optimal working condition of a person





PERFORMANCE OF COPILOT AT SAINT-PETERSBURG METRO

5 lines, 63 stations, 2,05 mln passengers daily.
11th rank in passenger load worldwide.
2 lines equipped with CoPilot online monitoring system



10.5 times – decrease of probability of making an error by a train driver

One of the core advantages is that the system ensures substantial increase of drivers' time in optimal working conditions resulting in improvement of driver job performance

The system decreased time spent in monotony by 3 times, eliminated cases of falling asleep and ensured optimal working conditions





OTHER EXAMPLES – TAXI COMPANIES



➤ DRIVER FATIGUE AND ATTENTION CONTROL



- Real-time processing with audible alerts
- AI-based fatigue detection algorithms
- Privacy: AI-powered devices with no personal data transferred to the cloud

Source: Yandex. Taxi (Moscow) / DTC (Dubai)



➤ ACCIDENT PREVENTION SYSTEM

Fatigue & distraction monitoring and alerting

Fatigue - other eye-closure (drowsiness)

837

PTA Dubai - Fatigue Trial

P04025-S00002731



Time:
Wed 23/09/2015
9:45:51 AM+04:00 (6 days ago)
Location (GPS):
[25.2343 N, 55.3571 E](#)
5th St - Dubai - United Arab Emirates
Verified:
23/09/2015 9:46:47 AM+04:00
By:
John Marino
Alarms:
None

Duration:
2.4 seconds
Bearing:
1°
Trip time (h:m:s):
04:51:45
Travel:
10 metres
Age:
6 days
Speed:
15 km/h

Trip travel time:
04:51:45
GPS coverage:
100 %
Tracking:
87 %
Travel distance:
100.72 km
Stationary time:
02:24:54



88% reduction in fatigue events

Map



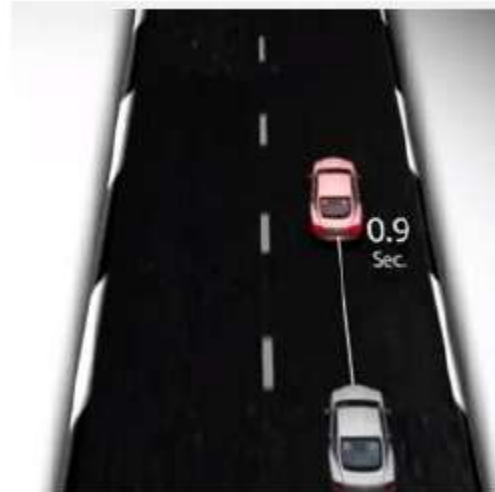
➤ COLLISION WARNING SYSTEM



Forward Collision Warning



Lane Departure Warning



Headway Monitoring & Warning



Pedestrian Collision Warning

Collision warning and alert system facilitates in **avoiding accidents**. Event captured also facilitate in profiling drivers and to issue **performance standards**



THANK YOU!

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