

# Let us help you get **highly reliable measurement data** for **cost-effective maintenance planning**

## TRAFFIC SPEED DEFLECTOMETER (TSD)

The TSD is a Rolling Wheel Deflectometer measuring pavement response to an applied load. The unique TSD technology is developed by Greenwood Engineering and has initiated a shift of paradigm in global pavement engineering.

With no lane closures, the TSD provides continuous bearing capacity results at project and network level while following the flow of traffic. This makes it possible to measure hundreds of kilometers per day and makes the TSD highly cost effective.

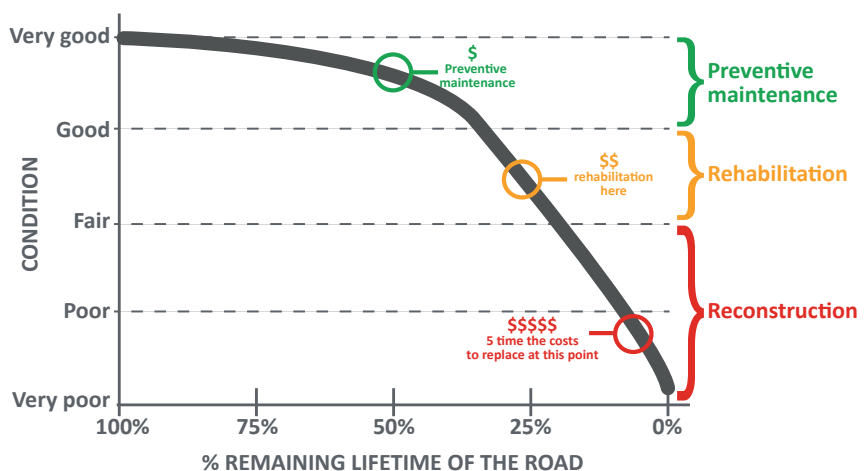
The TSD is well-proven technology combined with a flexibility to suit local requirements and customers specifications. This may include optional equipment as Ground Penetrating Radar (GPR), Surface Imaging System (SIS), Right Of Way Camera (ROW) etc. for collection of a full set of synchronised road data in one drive.

This approach translates into significant cost savings across various maintenance strategies:

- ✓ **Early detection and intervention:** By pinpointing structural issues before they evolve into severe pavement distress, TSD data enables predictive maintenance. This proactive strategy can extend pavement life, and thereby reduce the frequency and cost of major repairs.
- ✓ **Precise maintenance decisions:** With high-resolution data, the TSD informs exact locations and road condition. That enables road authorities to make informed decisions about necessary maintenance, and ensures that funds are allocated to the areas most needed.
- ✓ **Reduction in environmental impact:** TSD-driven maintenance leads to fewer large-scale repairs and less machinery on the road, resulting in lower CO<sub>2</sub> emissions.

## Predictive Pavement Maintenance

TSD Data enables early detection and intervention, extending lifespan and cutting maintenance costs



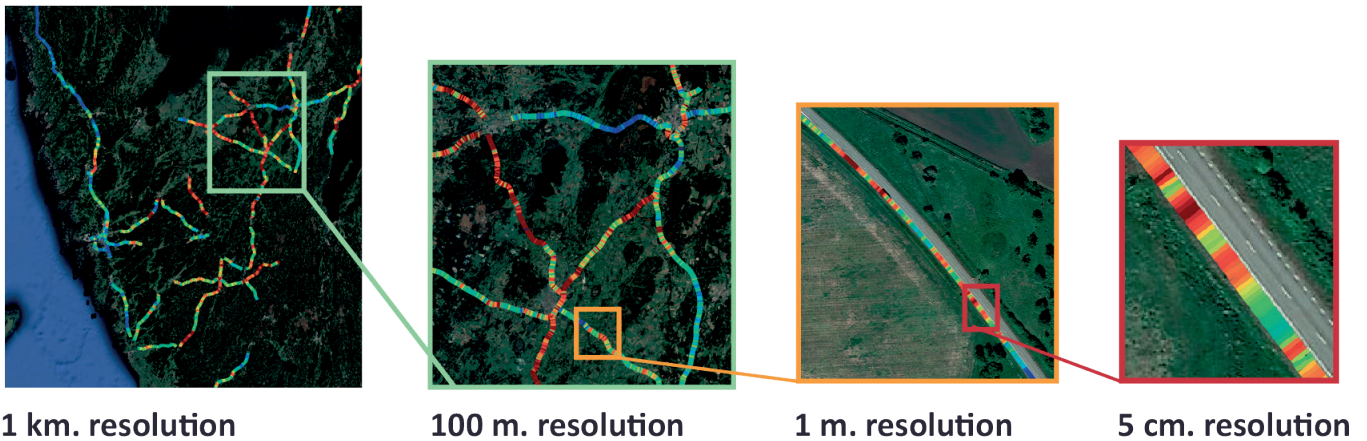
# Savings in relations to TSD measurements and better maintenance

The continuous operation and high precision of the Traffic Speed Deflectometer makes it possible to report the pavement strains and elastic moduli with an unprecedented high spatial resolution down to centimeters.

This allows for an exceptionally detailed overview of the pavement condition and makes it possible to identify small weak spots in the pavement.

Having access to detailed back-calculated results at the network level, makes it possible to make reliable life-time analyses for the entire road network and to identify appropriate preventative measures in every instance.

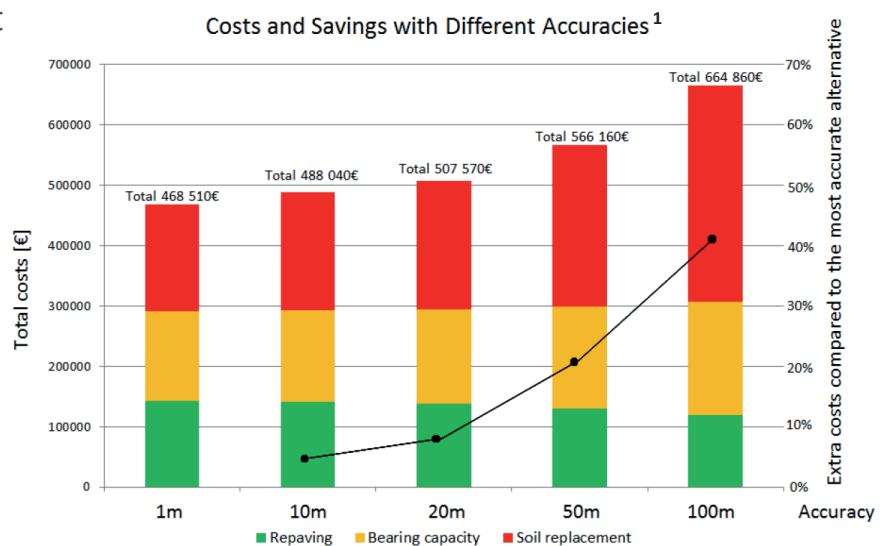
When ‘the full picture’ is known for every part of the road or airport network, it is possible to plan pavement maintenance without any unknowns and to use maintenance funds in a truly smart way



Comparing cost of different strengthening projects depending on accuracy.

The black line and percentages presents the additional cost in relation to 1 m accuracy.

100 m accuracy → **+40% cost increase** compared to 1 m accuracy.



REF. 1. [www.roadex.org/wp-content/uploads/2014/01/ROADEX-IV-Benefits-and-Savings-2012.pdf](http://www.roadex.org/wp-content/uploads/2014/01/ROADEX-IV-Benefits-and-Savings-2012.pdf)

### Available data

- Deflections / slopes
- $SCI_{300}$  /  $SCI_{TSD}$
- Layer thickness
- Surface conditions
- Strains and e-moduli

### Quality of data

- Continuous data from a moving truck
- Visco-elastic back-calculation
- Measures asphalt and rigid roads
- Synchronized set of road data.  
All collected at the same time and condition
- For network level and project level

### Less environmental impact

- Less CO<sub>2</sub> emission

### Effectiveness

- All data collection in one drive by 2 persons at 80 km/h, drastically reducing road closures and traffic disruptions

### Safety

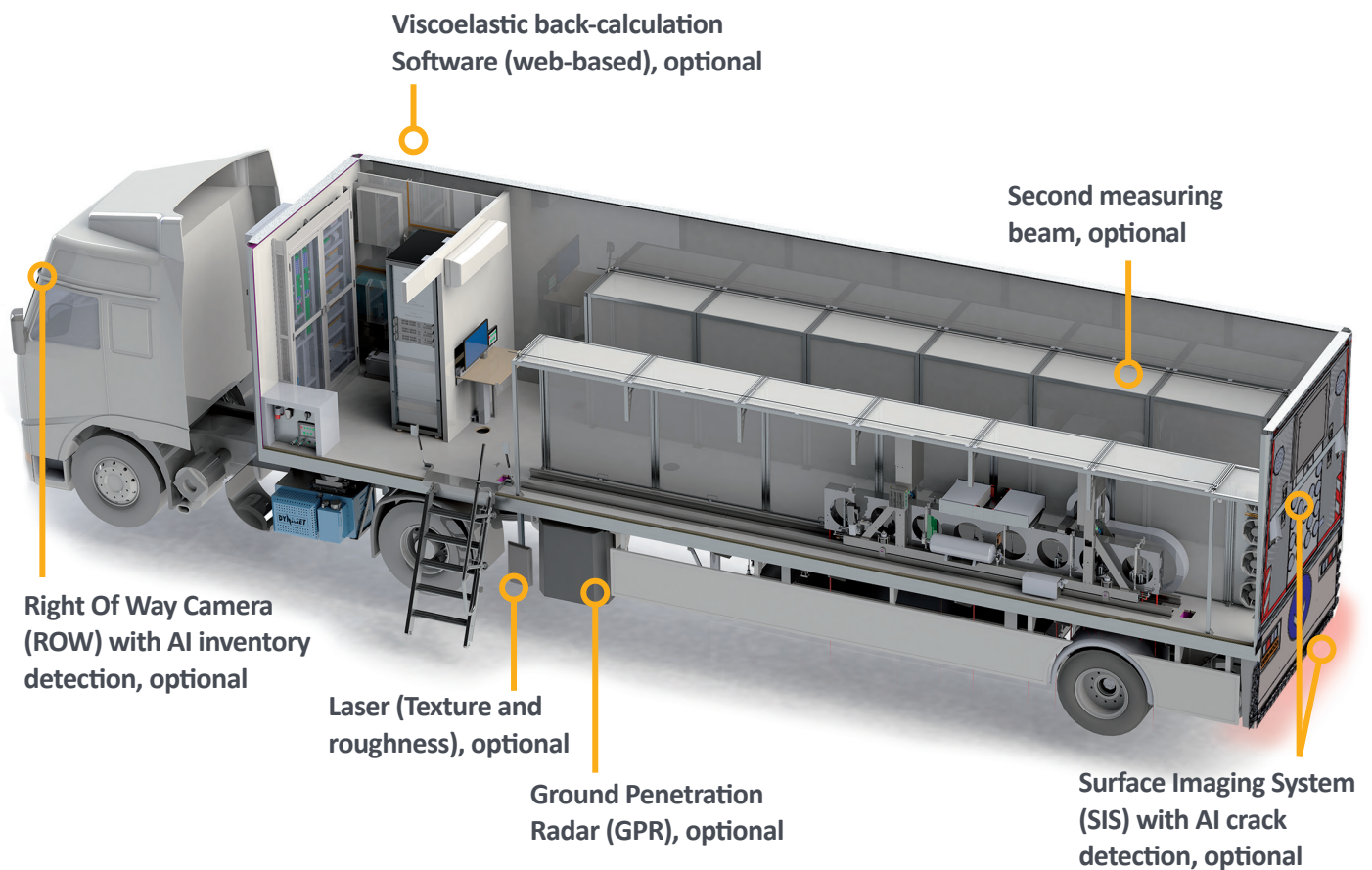
- Continuous data collection eliminates the need for on-ground personnel, reducing the risk of accidents during data gathering

### Better roads

- Better and safer mobility, less queuing
- Less wear and repair on vehicles

### Cost-effective maintenance planning

- Choose the right maintenance / repair method
- Choose the right spot to maintain / repair
- Choose the right timing to maintain / repair
- On Network level and Projekt level



# UNDERSTAND THE UNDERLYING REASONS

instead of just dealing with the symptoms

## LIFETIME AND MAINTENANCE IS DEFINED BY THE WEAKEST LINK

Roads do not deteriorate evenly



## CORRECT TIMING

The remaining lifetime of a road network, and of the individual road sections in it, can vary substantially

## PREDICTIVE MAINTENANCE

The greatest mistake is planning maintenance measures based on the average lifetime

Some of our customers:

### Join our satisfied customers

Our clients include road and highway agencies, airport operators, and research institutions worldwide, who trust TSD technology to deliver accurate and reliable data for road assessment and maintenance planning.

For more information

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