



**PMS**  
CONSULT  
*a Deighton Company*



# Optimalan i lako primjenjiv sustav gospodarenja kolnicima županijskih i lokalnih cesta

## Optimal and easy to implement pavement management system for county and local roads

**Dr. Alfred WENINGER-VYCUDIL**

*Technical Director Deighton Europe*

**Međunarodni seminar ASFALTNI KOLNICI 2017**  
**International seminar ASPHALT PAVEMENTS 2017**  
**Opatija, 05.–06. 04. 2017.**



[www.deighton.com](http://www.deighton.com)



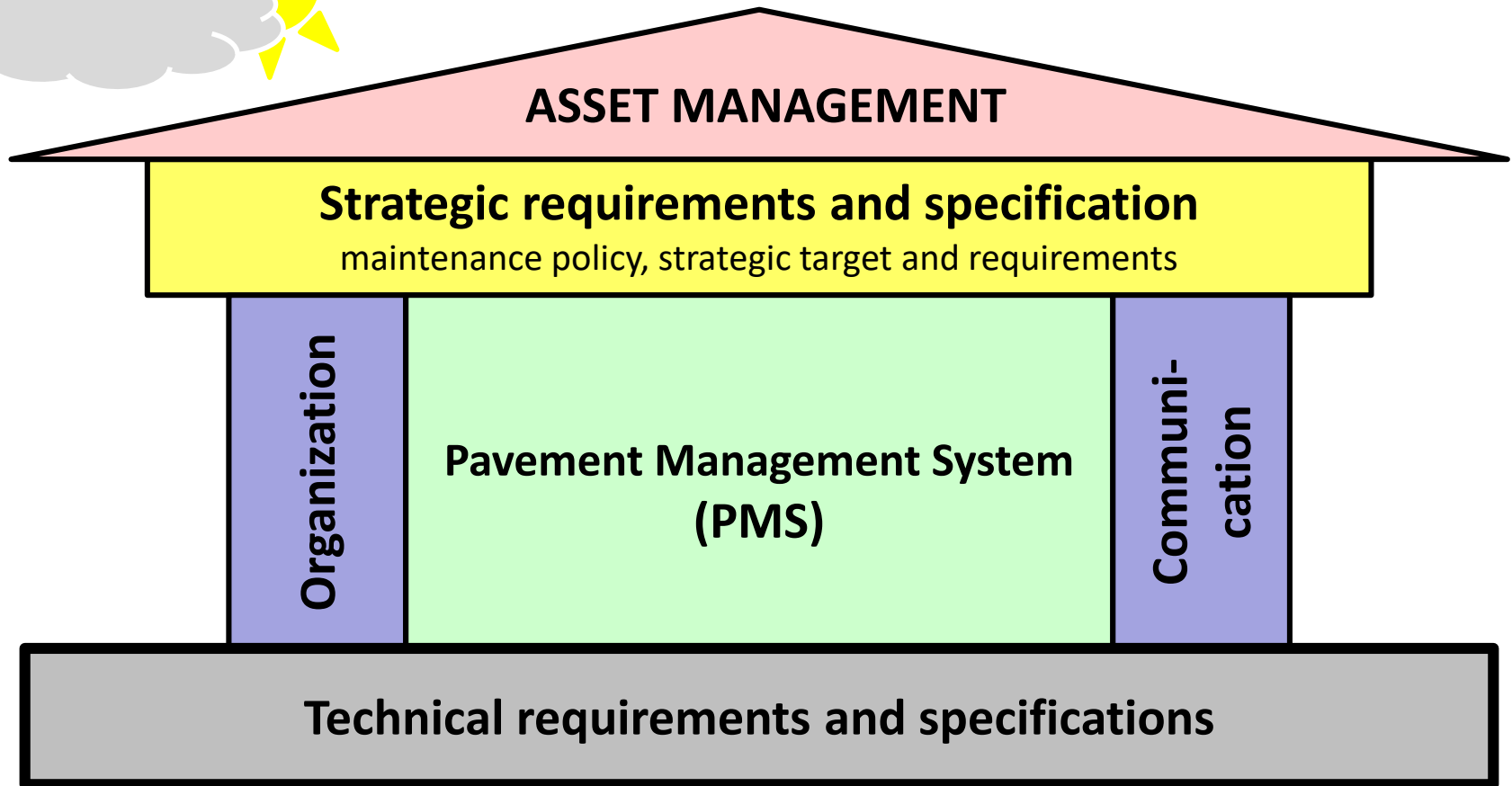


- **Introduction**
- **Objectives**
- **Requirements**
  - Data and information
  - Analysis requirements
  - System requirements
- **Results and examples**
- **Outlook**

# Asset and Pavement Management



Stakeholder: users, neighbors, environment,...



# The PMS-process



# Objectives of a PMS

- **Increase of efficiency based on a systematic and objective planning of maintenance treatments**
- **Basis = knowledge about the pavement construction**
  - Inventory (length, areas, construction types, etc.)
  - Condition from condition inspections
- **Integration of strategic targets into the maintenance process**
- **Output**
  - Which maintenance treatments?
  - When is the best point of time for the treatments?
  - Where should it be done?
- **Basis for realization**



# Data and information

- **Inventory data**
  - Roads
  - Cross section information
- **Traffic data**
- **Pavement construction data**
  - Materials and type of layers
  - Thicknesses
  - Year of placements
- **Condition data**
  - Condition measurements
  - Visual inspections
  - Investigations on project level
- **Information actual construction program**



# Condition data

- **Overview of pavement characteristics**
  - Rutting
  - Longitudinal evenness (roughness)
  - Cracking
  - Surface defects
  - Bearing capacity
  - (Skid resistance)
- **Definition of homogeneous condition sections**
- **Main input information for analysis**



# Analysis requirements

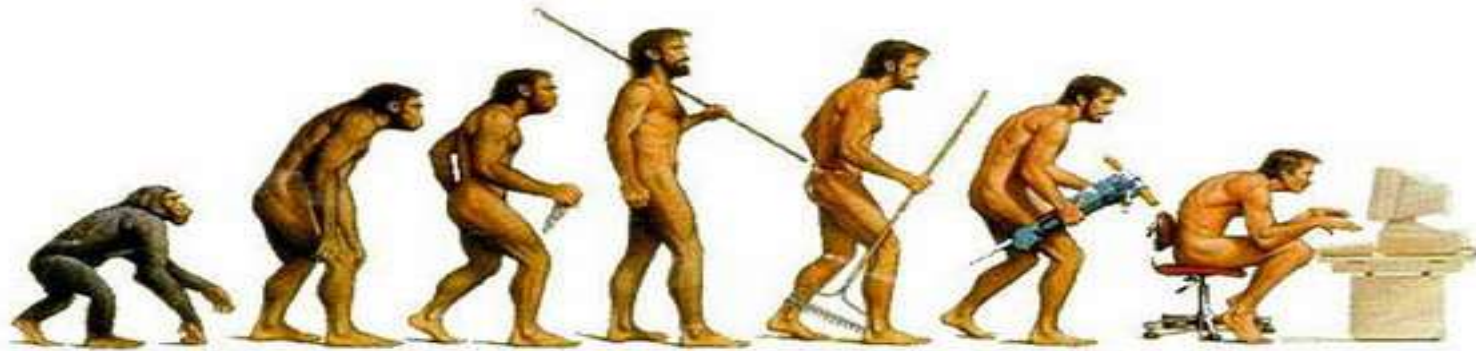


- Define asset performance
- Define treatment strategies
- Define multiple budget scenarios
- Optimize recommendations
- Supports existing decision process
- Ability to forecast future pavement condition & performance
- Define custom deterioration curves
- Supports existing asset management methodology

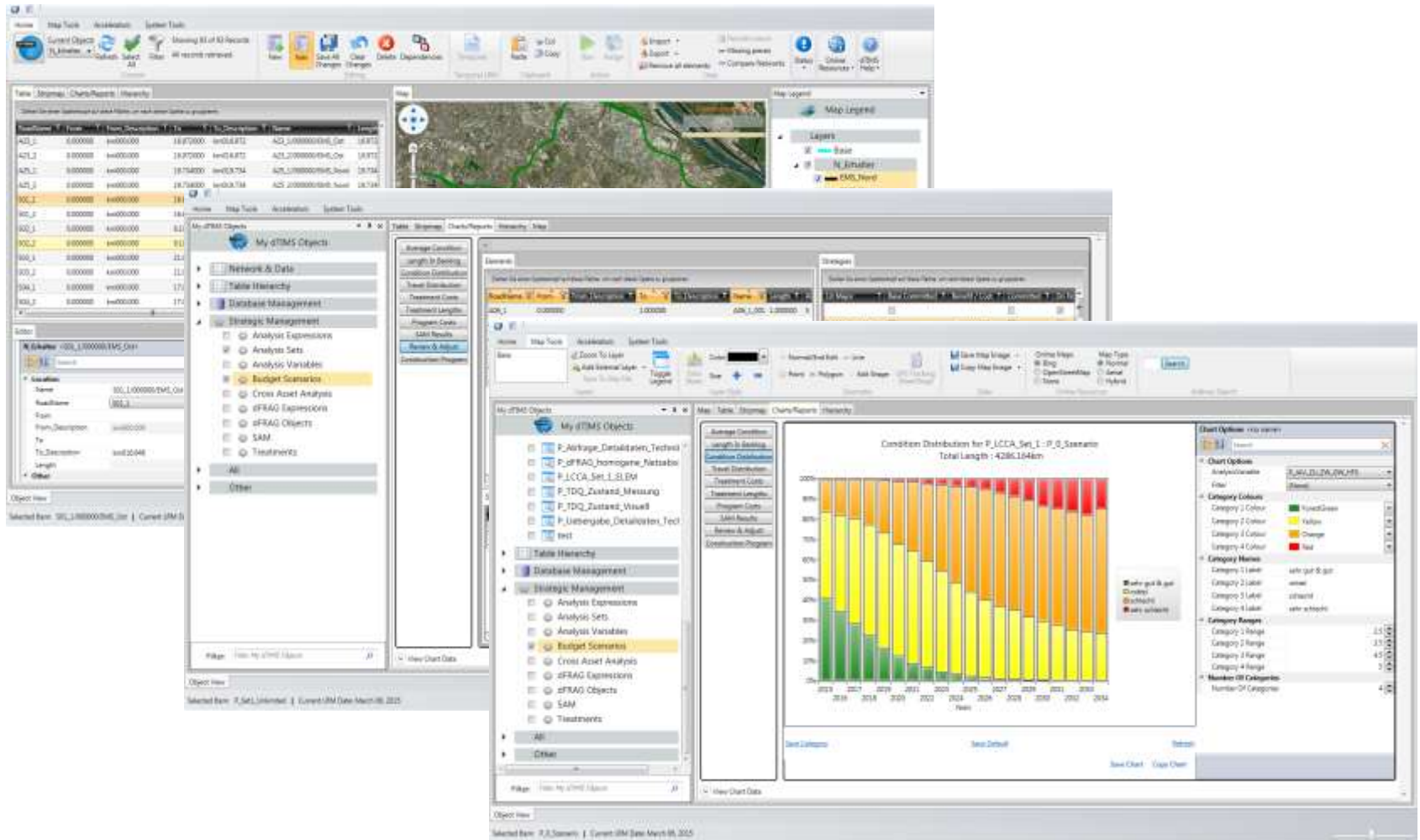


# System requirements

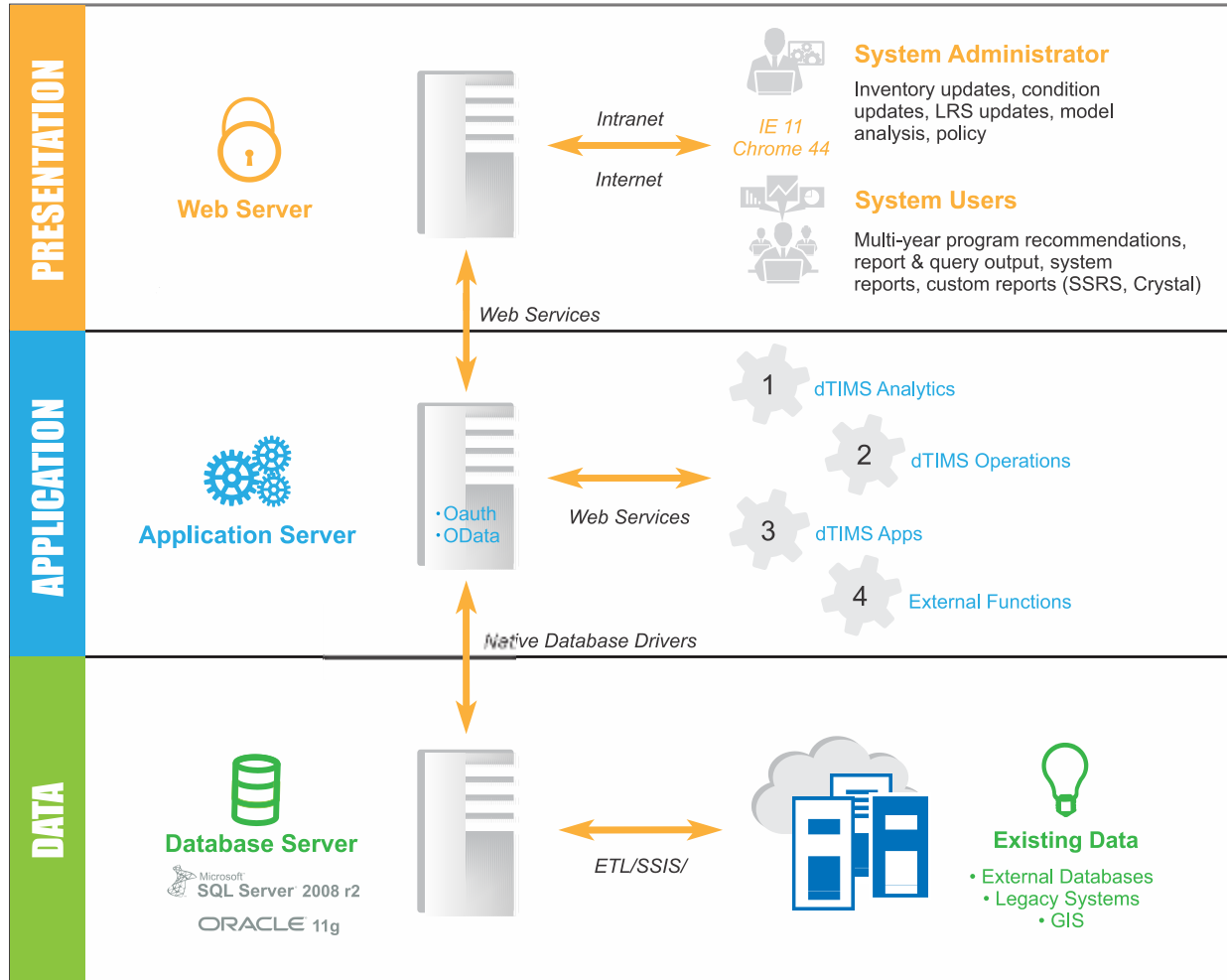
**IN THEORY, WE SEE THE EVOLUTION OF HUMAN BEING TO BE A PAVEMENT MANAGER**



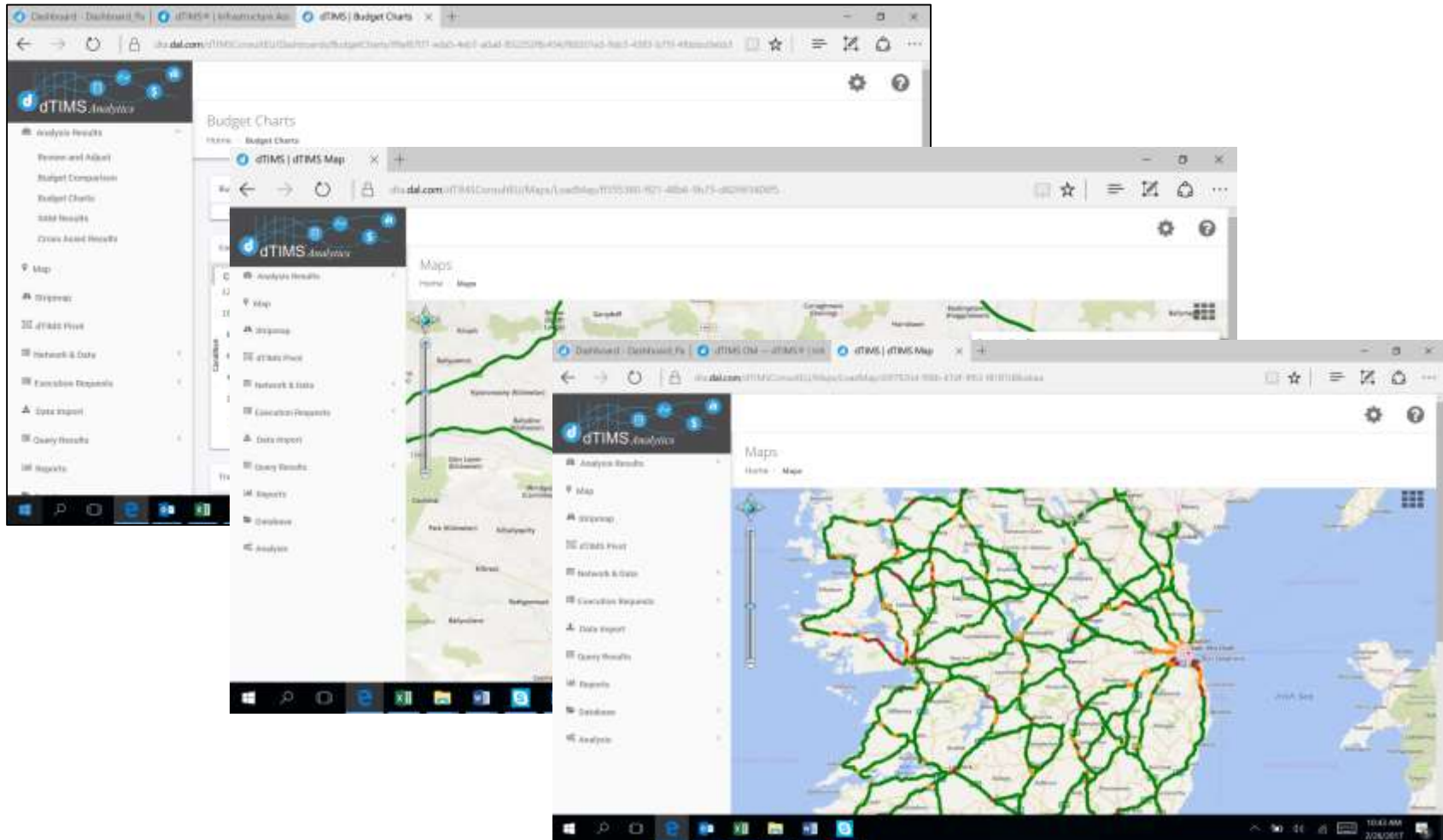
# System requirements – support of holistic process



# System requirements – PMS architecture



# System requirements – presentation level



# Results of a PMS

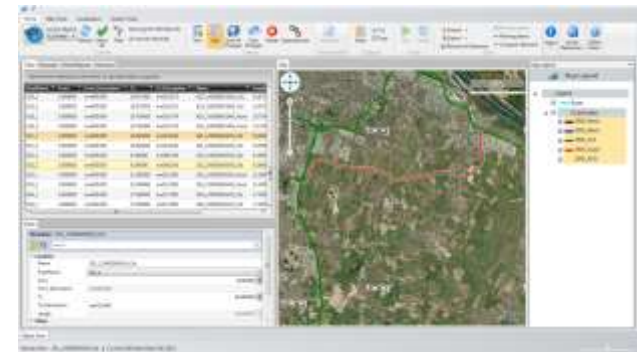
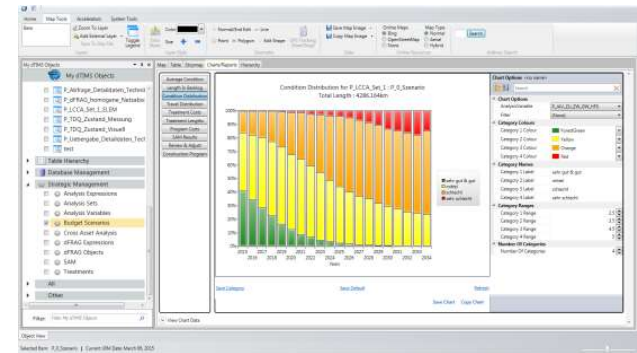
## ■ Section based results

- Type, year and location of treatment
- Treatment prioritization
- Basis for further investigation on project level

## ■ Network level results

Total network or sub-networks

- Condition distribution
- Cost distribution
- Comparison of scenarios
- Treatment distribution
- Maintenance backlog
- Development asset value





Gemeinde • Erhaltungsmanagement • Infrastruktur

Mein Konto bei GEMIT

Alfred Weninger-Vycudil  
PMS-Consult GmbH

Logout

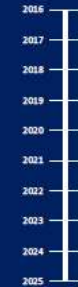
### Ergebnisse Lebenszyklusanalyse kommunale Straßen

powered by dTIMS™

#### Daten und Ergebnisse

- Vorlagen für Daten und Analyse
- Upload von Daten
- Upload von Analysevorgaben
- Download Detail-ergebnisse
- Download GIS-Daten
- [Link zur GEMIT-Website](#)
- [Hilfe zur Ergebnisdarstellung](#)
- [Beschreibung Grundlagen Analyse](#)

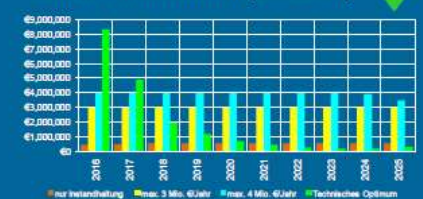
Auswahl Merkmal **Gesamtwert**



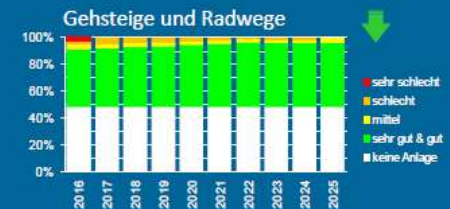
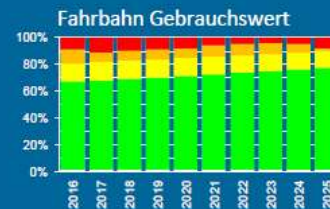
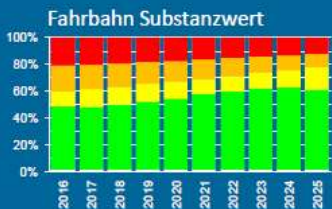
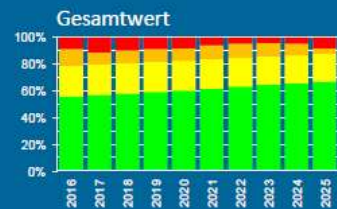
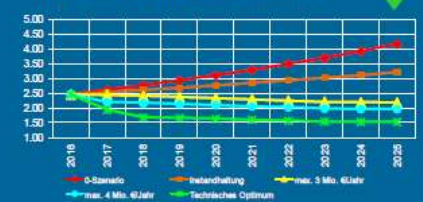
Auswahl Szenario

Szenario max. 3 Mio. €/Jahr

#### Jährliche Investitionen (Szenarien)



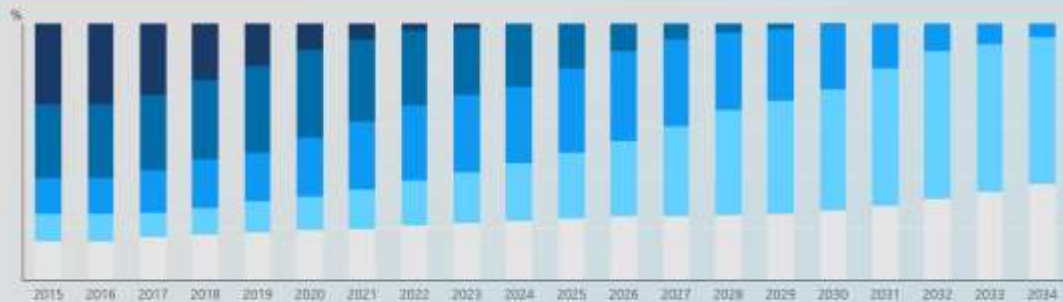
#### Mittlerer Zustand Gesamtwert



Dashboard - Dashboard x

69.58.106.81:8000/Dashboard/a2da3381-f3c0-4e2b-b53f-493f6c37bf6f?e=false&vo=viewonly

Condition Distribution



Subnet: 4

Legend:

- Very Good
- Good
- Fair
- Poor
- Very Poor

Parameters

Analysis Variable: IRI

Budget Scenario: Long Do Nothing

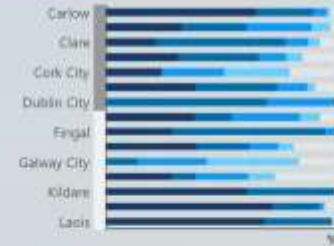
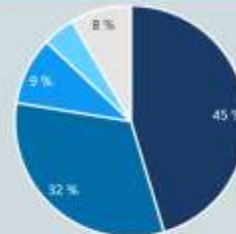
Condition Distribution Details

Subnet	Length	%
4	167.4340	100.00 %

Category: Fair

Year: 2015

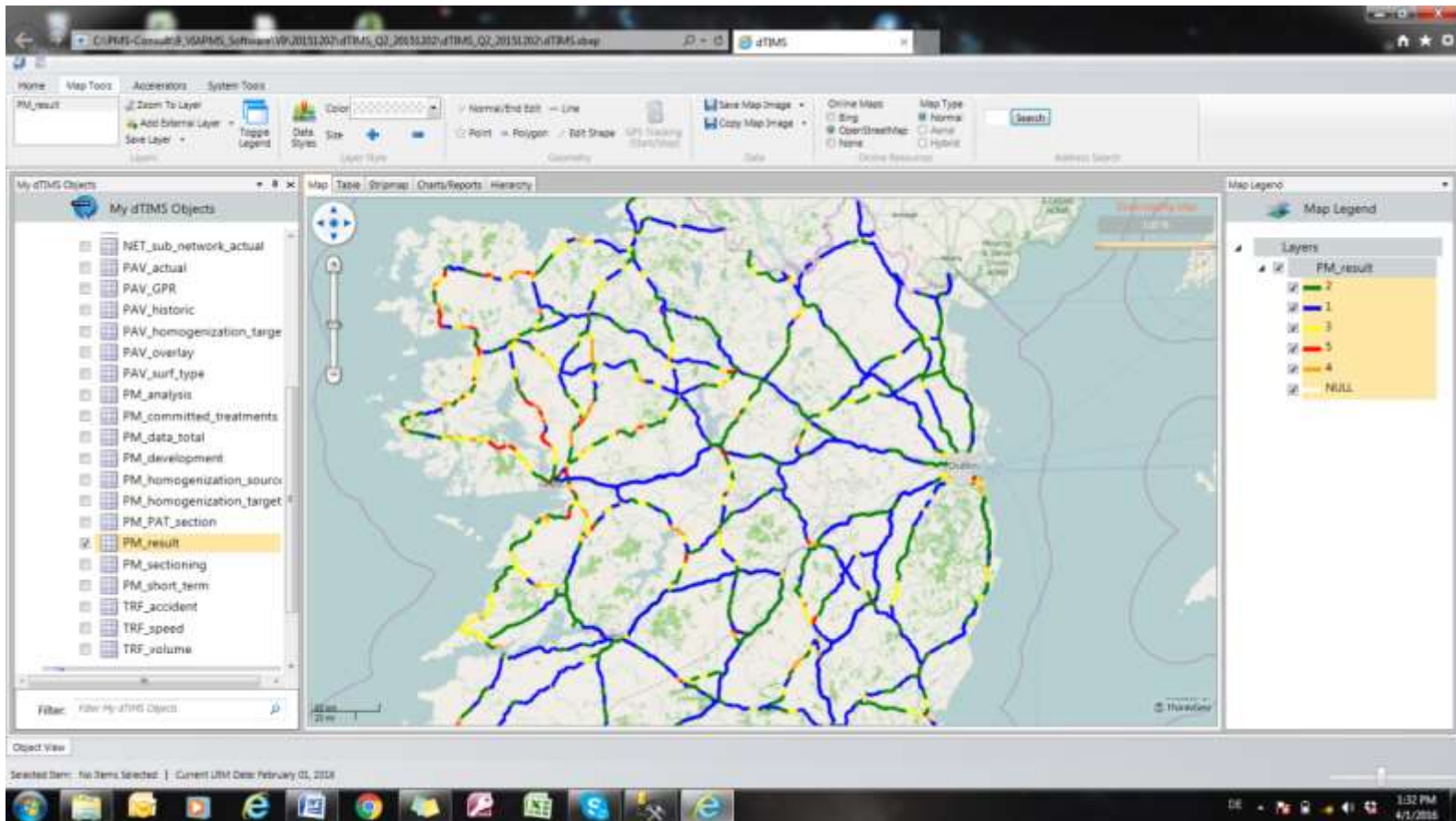
Condition Distribution By Year



HELP?

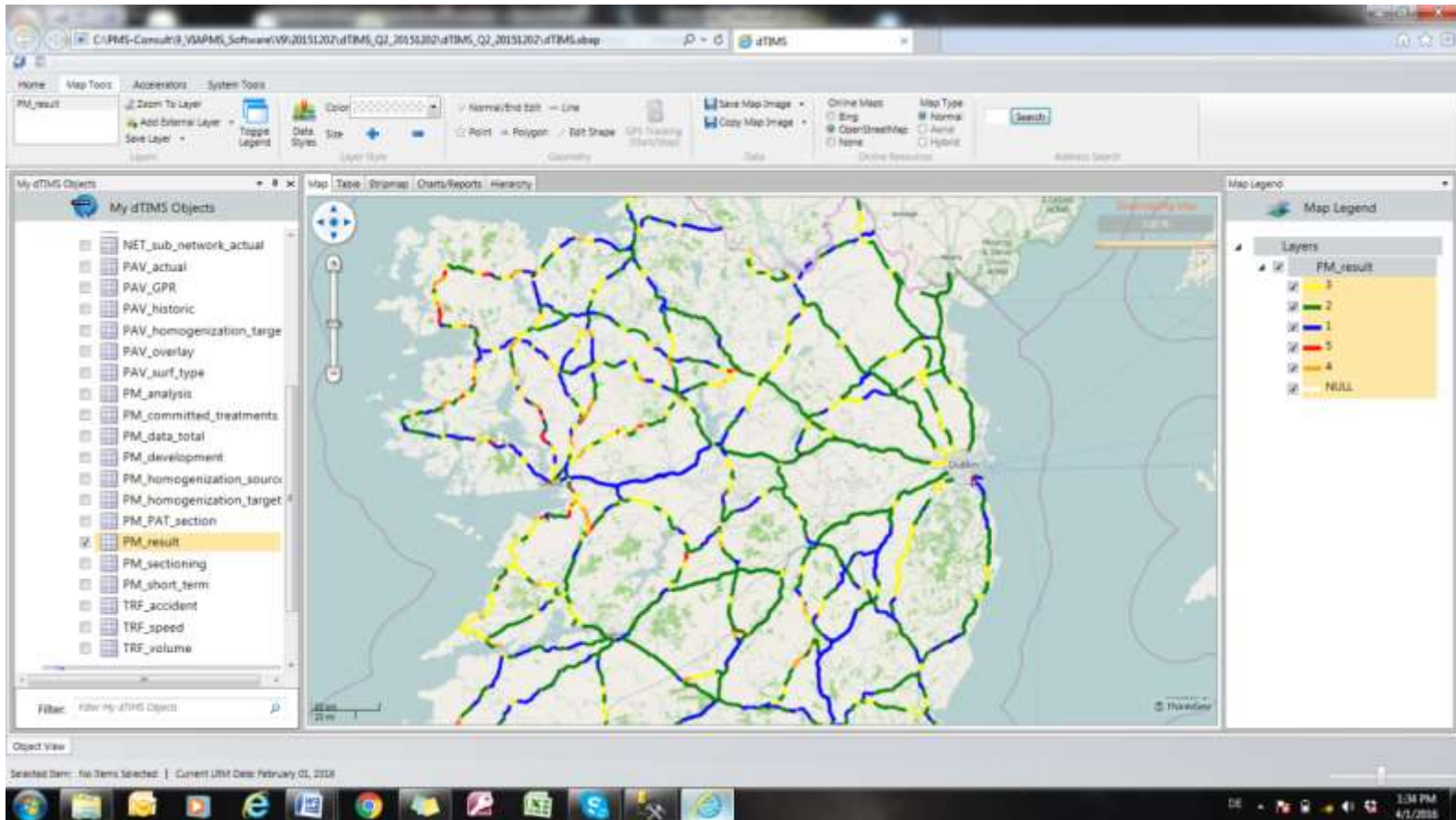
Windows taskbar showing icons for Start, Search, File Explorer, Edge, Outlook, Word, Chrome, and PowerPoint. System tray shows network, volume, and power icons. Date and time: 9:21 PM, 3/30/2017.

# Development of condition - 2016

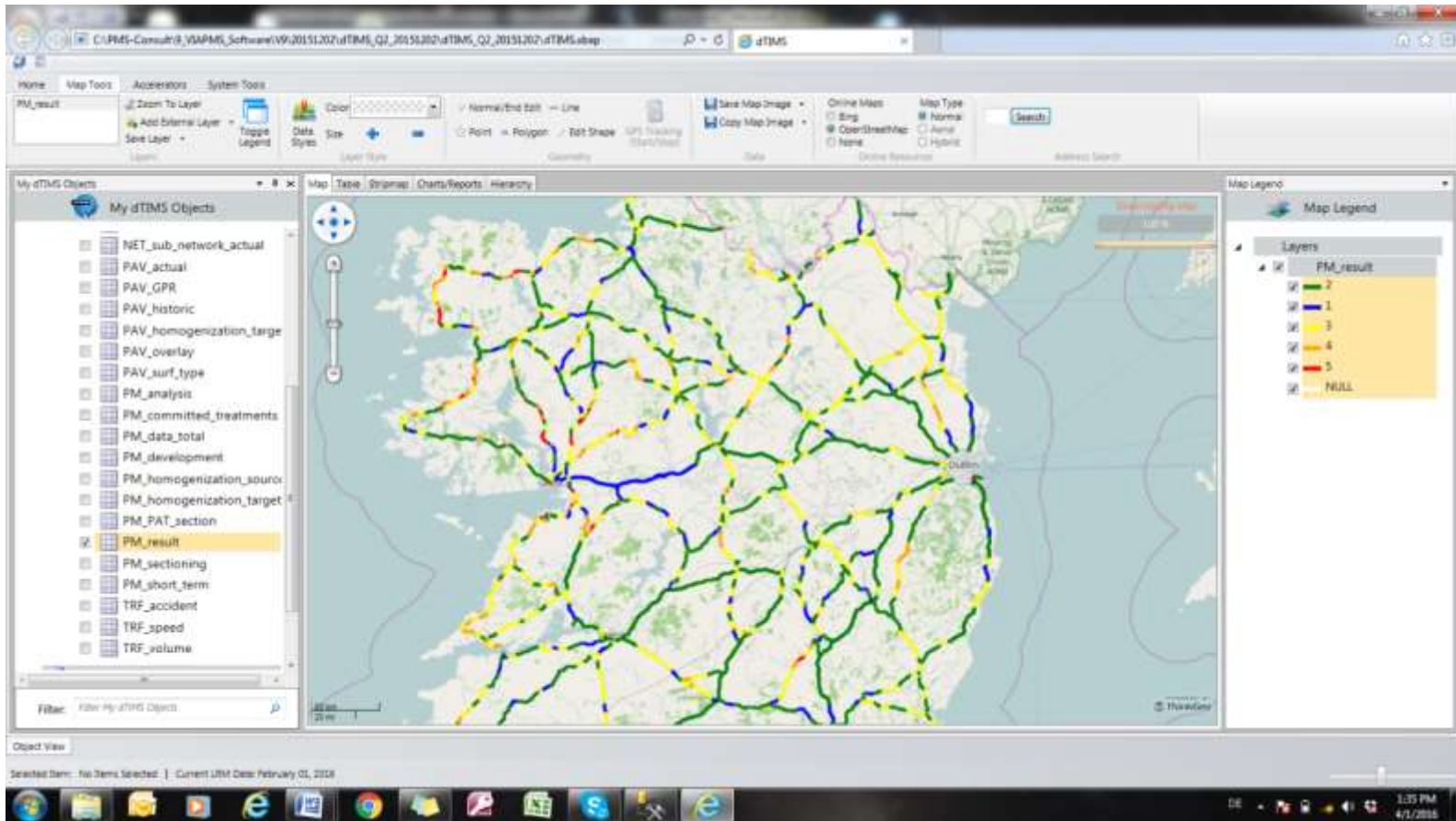




# Development of condition - 2021



# Development of condition - 2026

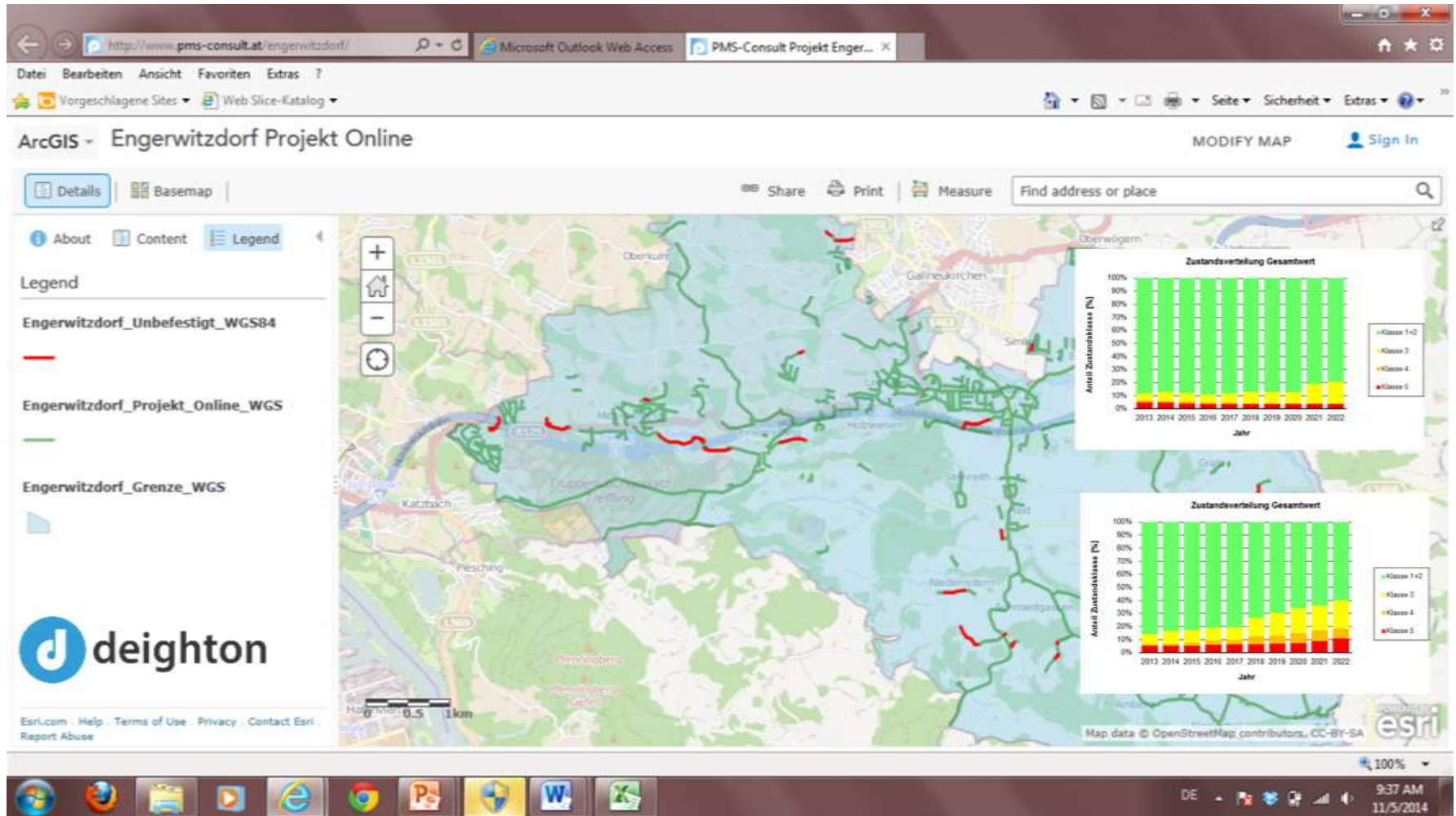


# Data collections

The image is a composite of four elements related to data collection in infrastructure inspection:

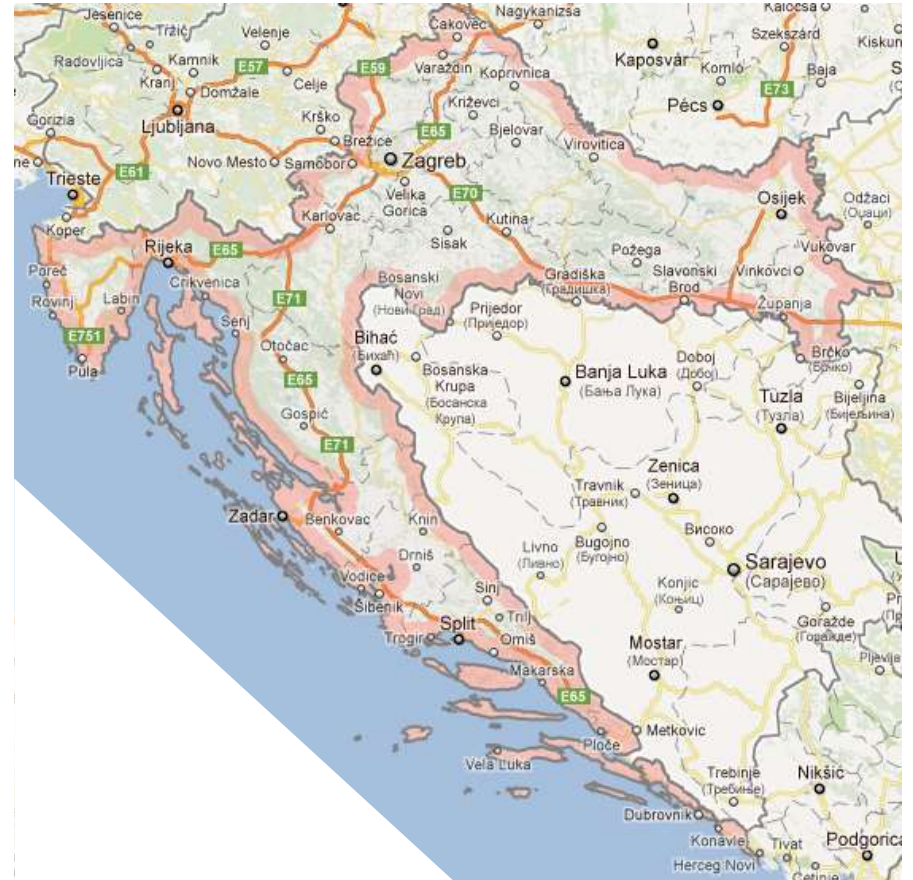
- Technical Report (Left):** A report from VCE (Vienna Consulting Engineers ZT GmbH) titled "Generelle Zustandserfassung Kunstbauten Engerwitzdorf". It includes project details for "OBJEKT: B09", a table of building parts (BAUTEIL) with their status (vorhanden, Mangel), and a summary of the overall condition (ZUSTAND: gut) and inspection requirements (PRÜFUNG NACH RVS: nicht erforderlich).
- Map (Center):** A map of the Engerwitzdorf area showing a network of roads and structures. A specific route is highlighted in orange and pink, indicating the path of the inspection.
- Person and Van (Right):** A photograph of a person in a high-visibility yellow jacket standing next to a silver van with "Vermessung" (Surveying) written on the side. The van has orange warning lights on the roof.
- Software Interface (Bottom Right):** A screenshot of a data management software interface. It shows a list of inspection points with columns for "Kategorie", "ID", "Beschreibung", and "Menge". The list includes various entries like "R 10 10 m", "R 10 15 m", etc., with their respective classifications.

# Maintenance program

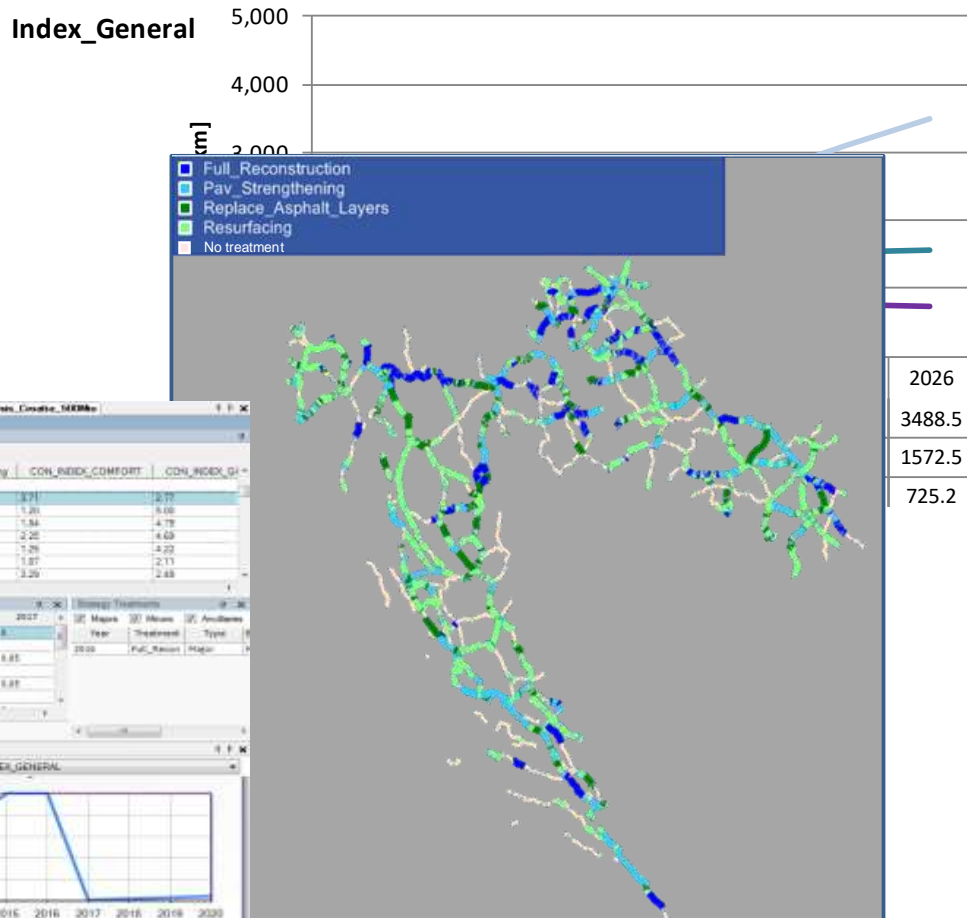
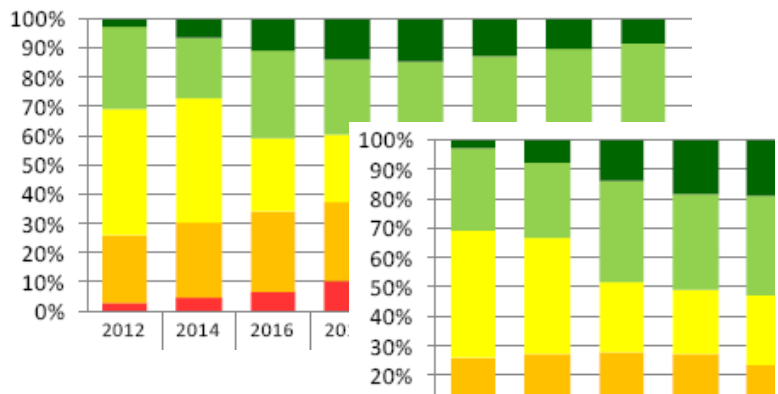


# dTIMS-Implementation in Croatia

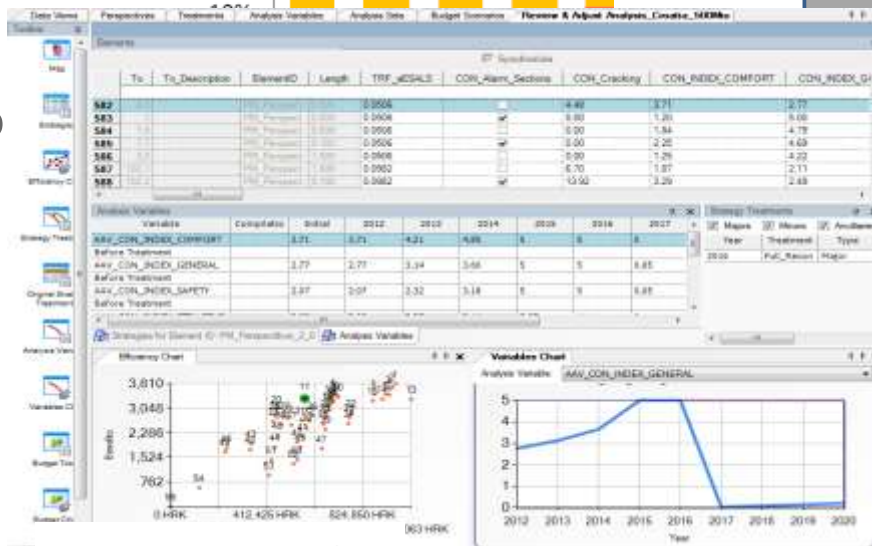
- **7000 km National Road Network**
- **National Road Data Base since 2002**
- **2011 setup of a pavement management system**
  - analyze data
  - optimize treatment
  - create added value out of road data base



# dTIMS-Implementation in Croatia



Netwo



Section Results

Network – Treatment Distribution



Thank you for your attention!

