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Automatic crack measurement The Swedish Experience

Some prerequisite

» The Swedish Road Administration (SRA) outsource the collection of road condition data (procure)

» Today the focus are on the main roads (due to budget restrictions)

» The condition are divided into two views;

Technical condition and Functional condition

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Automatic crack measurement The Swedish Experience

» The use of the data (requirement)

» Data =>technical parameter =>index

» The necessary quality of data/ index

» How to control data quality

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Goal

Crack data, from the road network,

with information equal that from manual surveys but repeatable

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The use of data

» Technical condition:

The condition that mainly affects the road keeper

Functional condition;

The condition that mainly affects the user of the road

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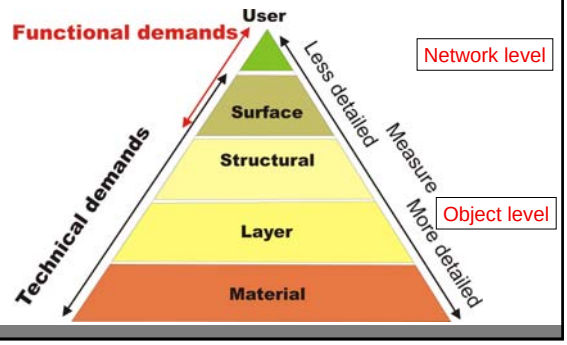
Information from data



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Technical parameters that are mandatory during period 2005-2008

Network level	Object or project level
» Longitudinal profile H, HT and V » IRI H (right) » Rut depth max, left and right » Crossfall » Mean transverse profile » Curvature, Slope » Macrotextur, three tracks MPD	» IRI H (right) » Rut depth max » Crossfall » Longitudinal profile H

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Technical level

A detailed crack measure is built up by three components ,

» Type of crack, (longitudinal, transverse, alligator)

» Severity and finally

» Location both transverse (in the ruts or not) and longitudinally (along the road)

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Functional level

Less detailed crack measure is built up around two parameters:

» Cracks or no cracks

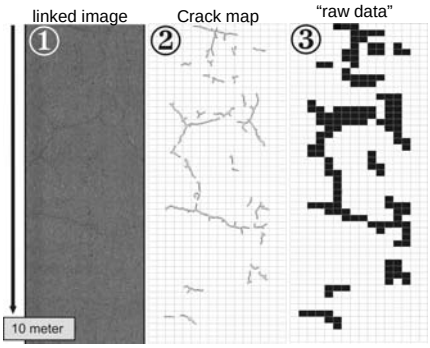
» Location

VTI video image collector

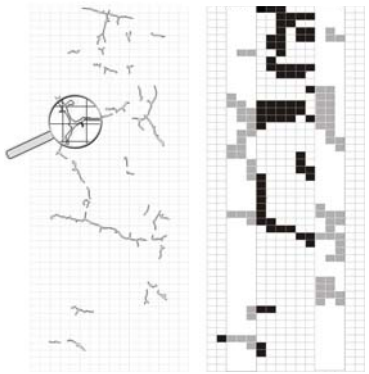
This system is the original system named PAVUE

- Four synchronized video cameras, covering 3.2 meter width
- Synchronized strobe light

Principle to create crack index



Suggested crack measure



20 meters

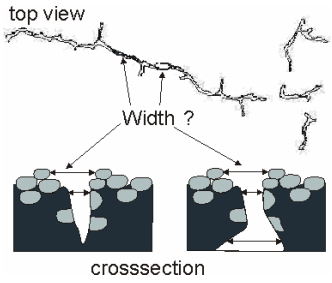
Load related cracks= number of black (grey) squares in the wheel tracks / 20 meters of road length

Non load related cracks= number of black squares outside the wheel tracks / 20 meters of road length

Square size 100x100 mm?

Crack width

» We believe that crack width is not a good parameter to use. Especially not on Swedish type of pavements.



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Ideas of testing

Two parts;

technical test, if ok go to => functional testing

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Technical test

» Control sections, 100 meter long

» Digital still images each covering 1 meter longitudinal and 1-2 meter transversally => around 200 images per 100 meter

» Applying a mesh with 100X100 mm squares and count squares with cracks inside.

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Functional test

» Repeatability by comparing repeated runs in different speeds on network

» Comparison of black and white squares

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Suggestions

» Lower the ambition connected to crack resolution (as good as manual surveys enough)

» Start collect crack data (with lower resolution) to create experience

» Harmonize control method between international stakeholders