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

Goal
Crack data, from the road network, with information equal that from manual surveys but repeatable

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
Information from data

**Network 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

**Object or project level**
- IRI H (right)
- Rut depth max
- Crossfall
- Longitudinal profile H

Technical parameters that are mandatory during period 2005-2008

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**Object or project level**
- IRI H (right)
- Rut depth max
- Crossfall
- Longitudinal profile H

**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)

**Functional level**
Less detailed crack measure is built up around two parameters:
- Cracks or no cracks
- Location
VTI video image collector

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

This system is the original system named PAVUE

Principle to create crack index

Crack map

"raw data"

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?

Suggested crack measure

Crack width

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

Two parts;
- technical test, if ok go to => functional testing

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.

Functional test

- Repeatability by comparing repeated runs in different speeds on network
- Comparison of black and white squares

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