

# Eurailspeed

Parallel Session D.5

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Under the patronage of



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Partners



Media partner



## Optimisation of Maintenance and Renewal for track and switches

Gerard van der Werf, 8<sup>th</sup> of November 2005, Milan Eurailspeed



# Company profile

## ARCADIS NV Worldwide

The Americas	Europe	Eastern-Europe, Asia, Africa
<b>Brazil</b> ARCADIS Logos	<b>Belgium</b> ARCADIS Gedas	ARCADIS Euroconsult
<b>Chile</b> ARCADIS Geotécnica	<b>Czech Republic</b> Geotechnika	<b>China</b> Shanghai
<b>United States</b> ARCADIS	<b>France</b> ARCADIS FCI	
	<b>Germany</b> ARCADIS	
	<b>The Netherlands</b> ARCADIS PRC	
	<b>Poland</b> ARCADIS	
	<b>United Kingdom</b> ARCADIS Geraghty & Miller Int. AYH.	

Active in Rail in since 1947

Europe top 3, World top 7

Gross revenue € 1 billion

Active in 40 countries

10.000 employees

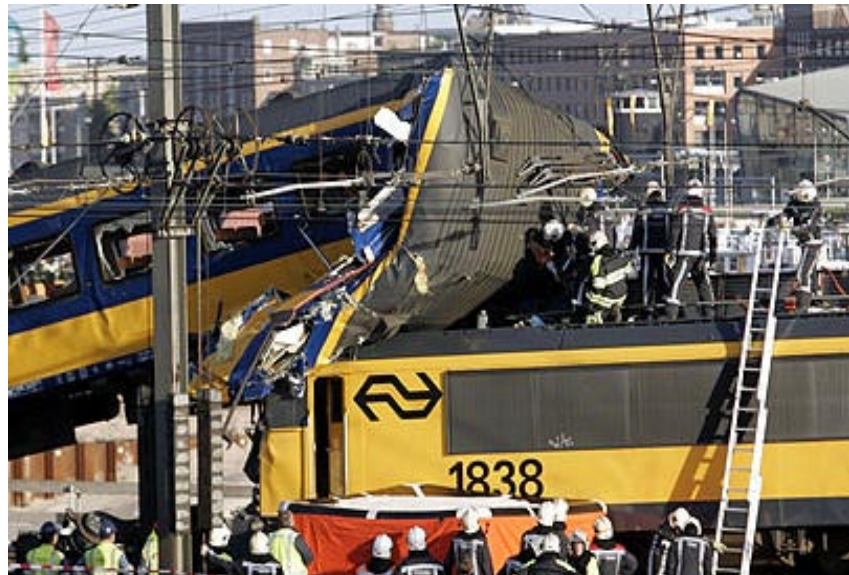
# Sleeping conditions of an infra manager

## *Some recent nightmares.....*

India

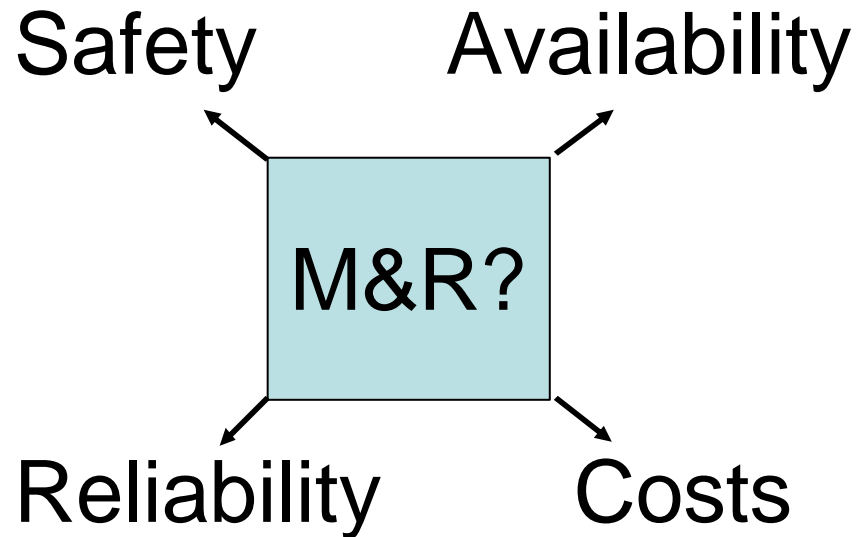


Amsterdam

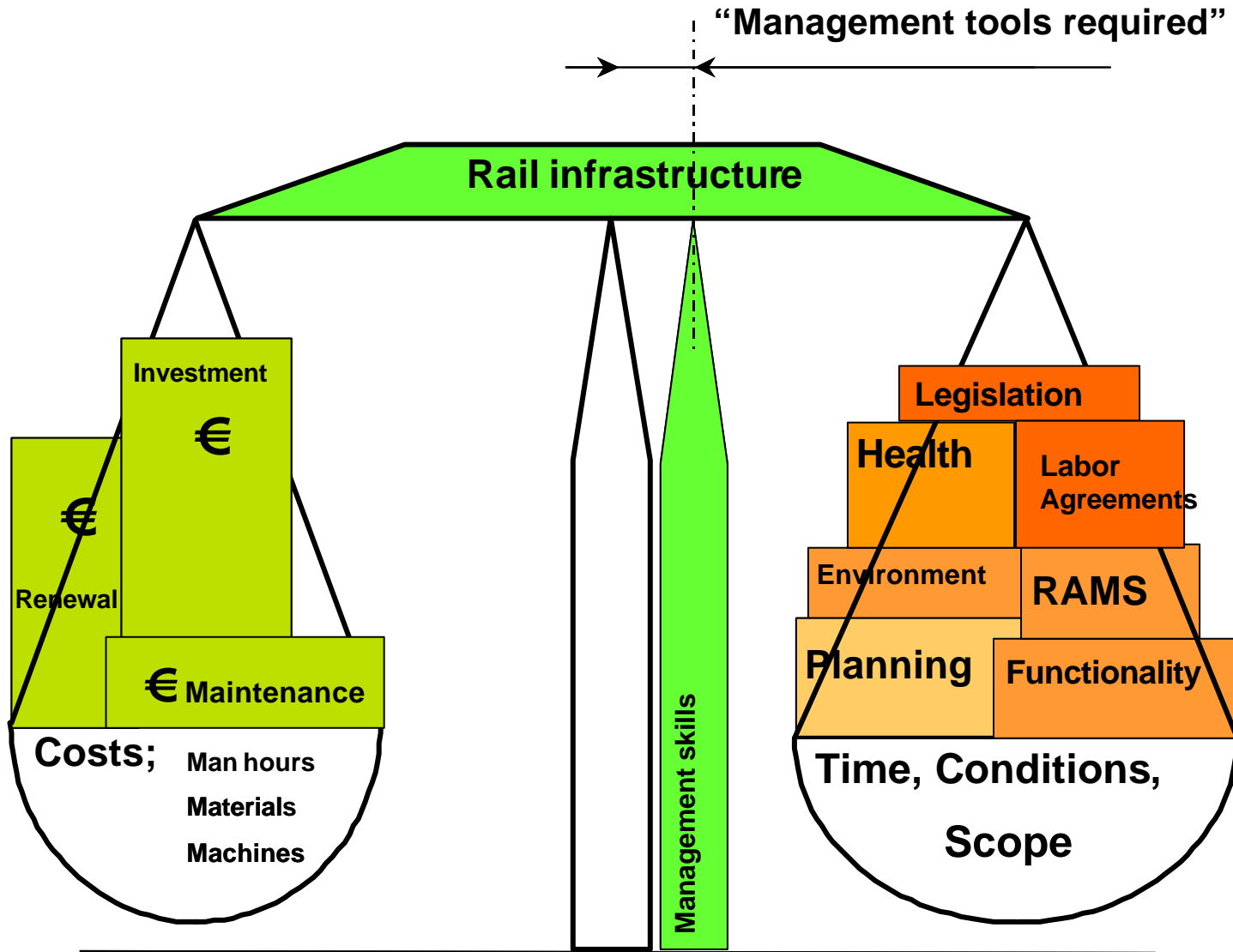


# High speed line Asset management dilemma

- When is **maintenance** required?  
Cheap to do now, later RAMS problems
- When is **renewal** required?  
Now high investment, later profit by life-cycle approach



# Managing the balance of optimisation



# Recent developments

- More frequent measuring (especially for high-speed lines)
- More automatized data collection
- More inspection methods
- More types of data



## And now?

- **Interrelationships are highly complex**
- **Combined influence of many factors**
- **Large amount of data**
- **Transparent & objective data**
- **Need for long term investment planning**



Optimisation & Management tools required

# Optimisation tools support:

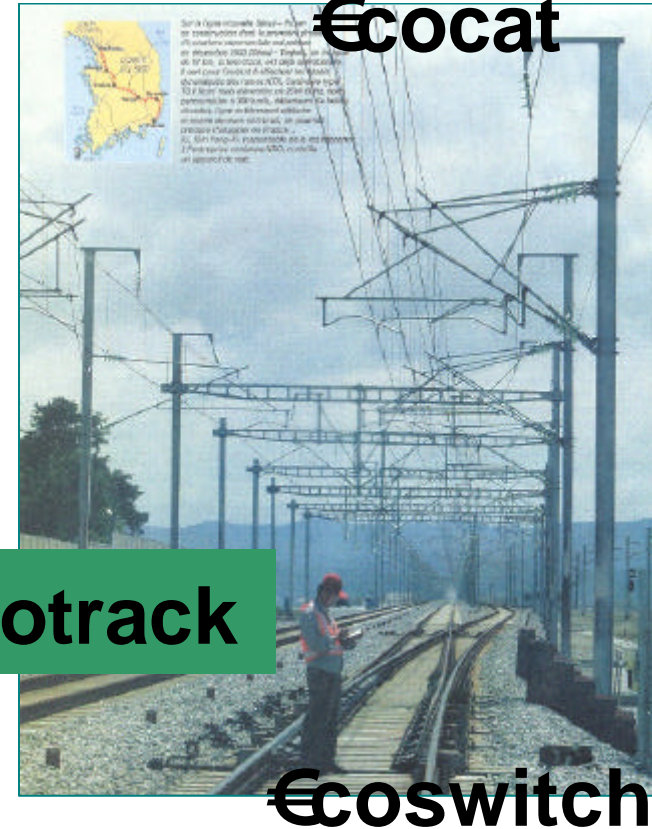
- Handling and analysing data:
  - trend lines
  - interrelationships
  - deterioration models
  - predict behaviour of track structure
- Scenario building
  - use of business philosophy
  - calculate different strategies



## Optimised Maintenance & Renewal strategy

# Experience of UIC/ARCADIS

- UIC developed tool €cotrack
- ARCADIS is recent owner
  - €cotrack for track
  - €coswitch for switches
  - €cocat for catenary

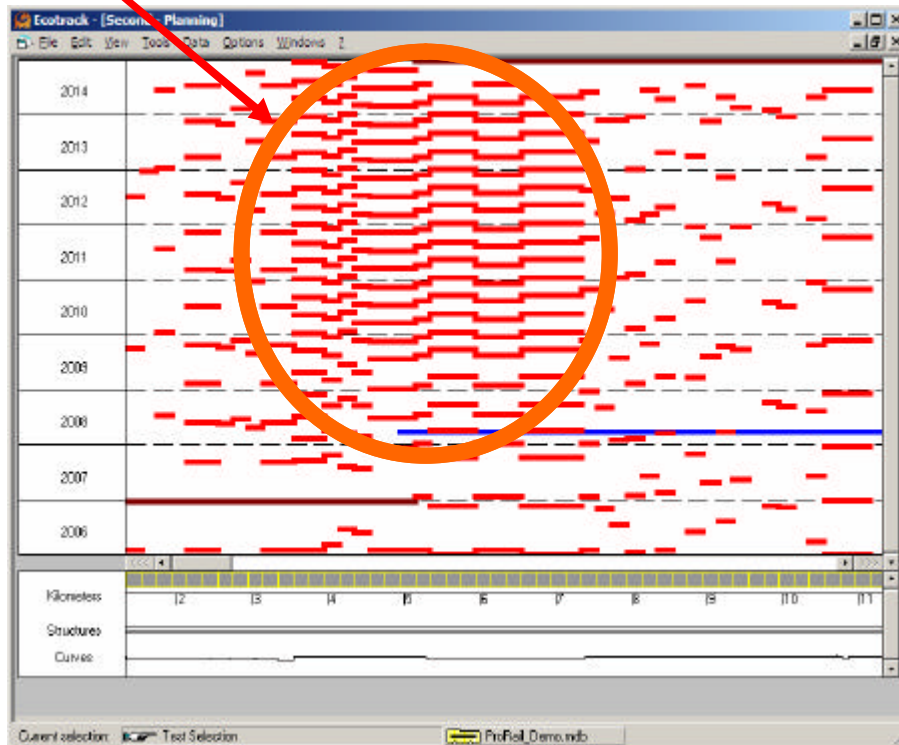


All very suitable for M&R Optimisation & Management of high-speed lines

# Example of Optimisation of M&R for track

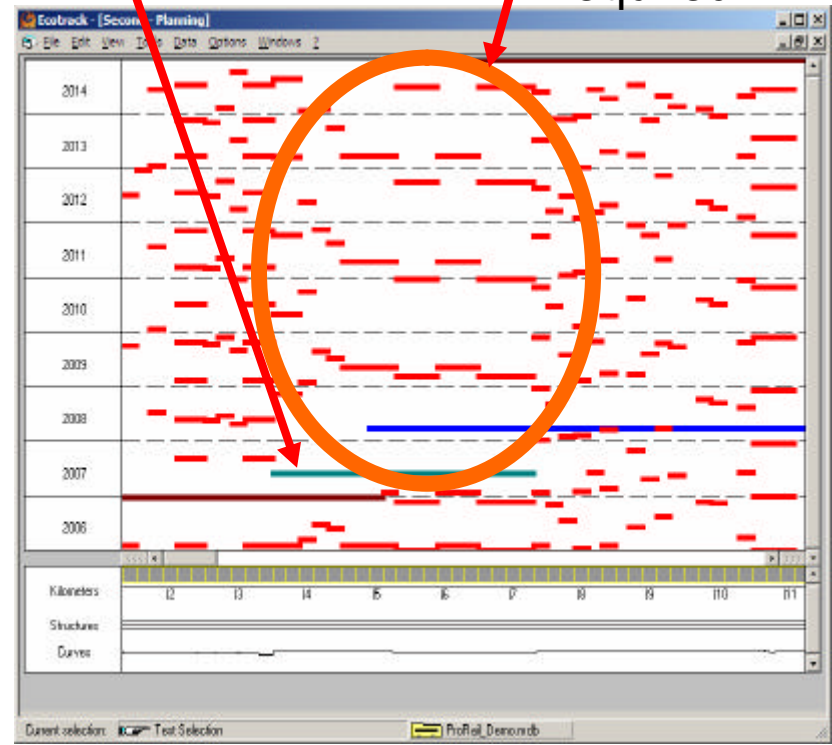
Old ballast  
requires  
intensive  
maintenance

## Scenario 1



Ballast renewal  
added

Scenario 2 Less  
maintenance  
required



# Comparison scenario's

Scenario 1: intensive maintenance

Scenario 2: renewal and less maintenance

## Advantages of scenario 2

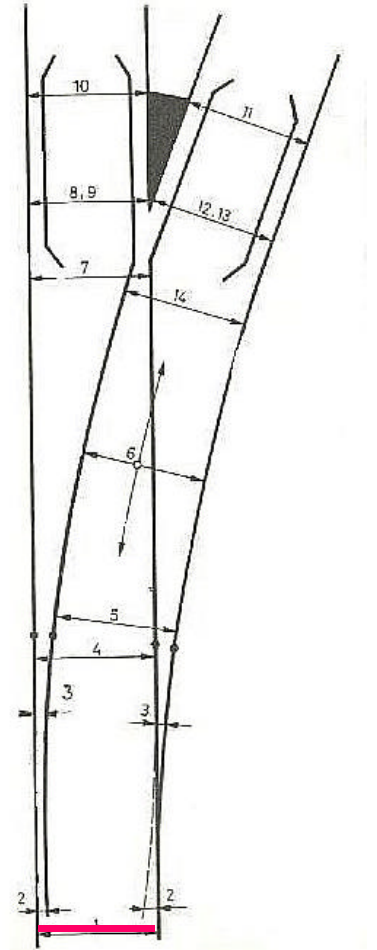
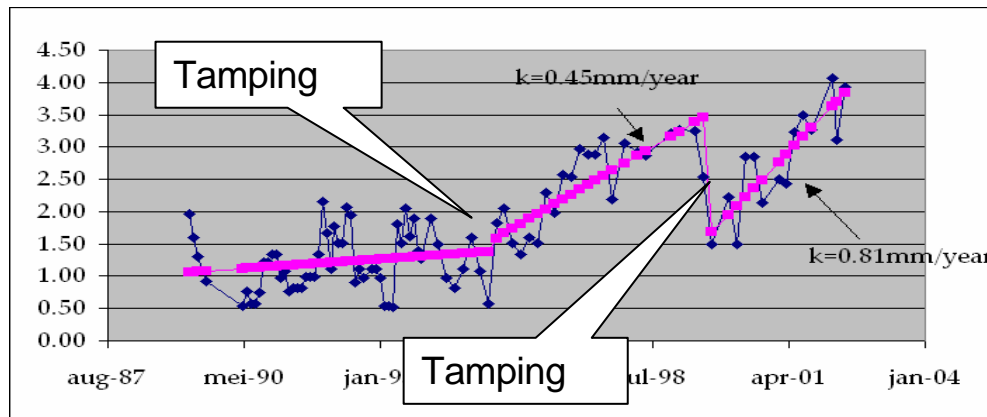
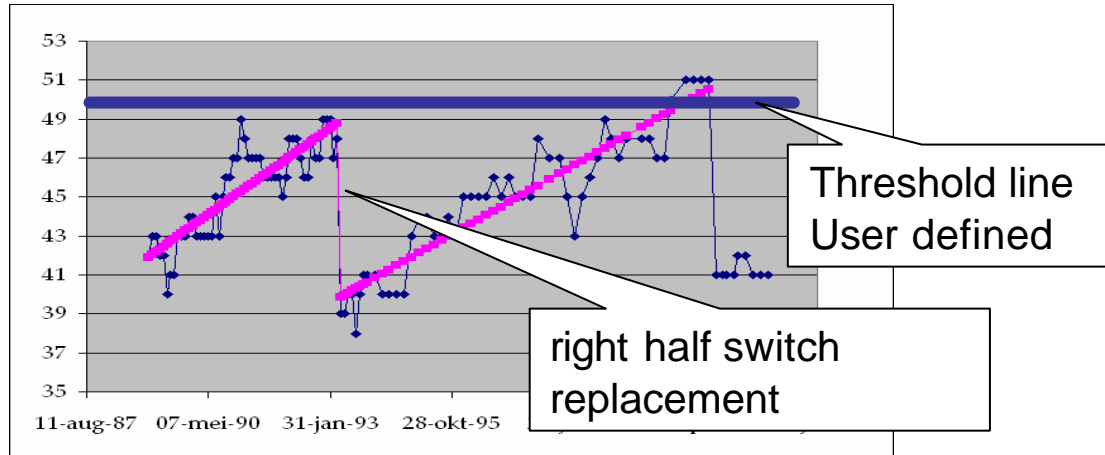
- 30% saving of maintenance costs
- More time available for other works

## System used in (a.o.):

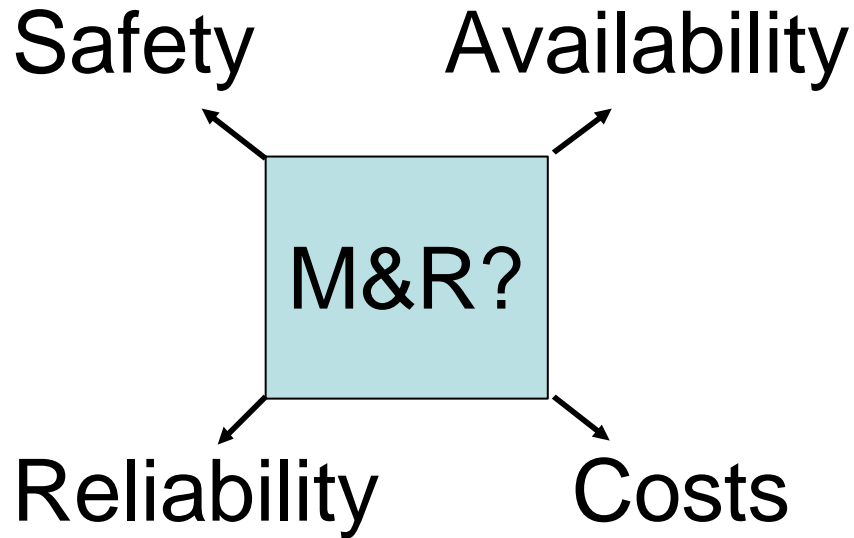
- Belgium
- England,
- Scotland
- Switzerland
- Slovakia
- The Netherlands
- Australia

# Case €coswitch-study for UIC:

## Managing effectiveness of maintenance



# Conclusions



- Maintenance & Renewal decisions are complex
- High-speed lines: M&R decisions essential for RAMS
- Decision supported by Optimisation & management tools
- ARCADIS invites you!

ARCADIS is your partner in Asset Management

# Imagine the result



[www.ecotrack.nl](http://www.ecotrack.nl)

# Thank you and sleep well!