

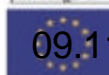
# Eurailspeed

## Parallel Session D.4

- **Peter Lankes**
- **Director High Speed Trains Technology, DB**



Under the patronage of



09.11.2005

Organisers



Partners



Media partner



# ICE High Speed Trains of DB AG

Experiences

Improved Maintenance Concepts

Further Developments



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Deutsche Bahn AG – Technology / Procurement

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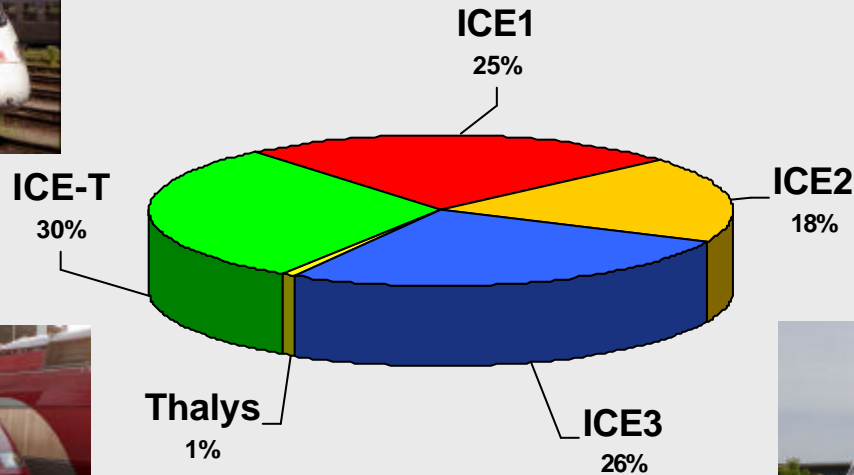
Peter Lankes

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Head of High Speed Trains Technology Dpt.

# The ICE Fleet

## DB AGs Fleet of High Speed Trains

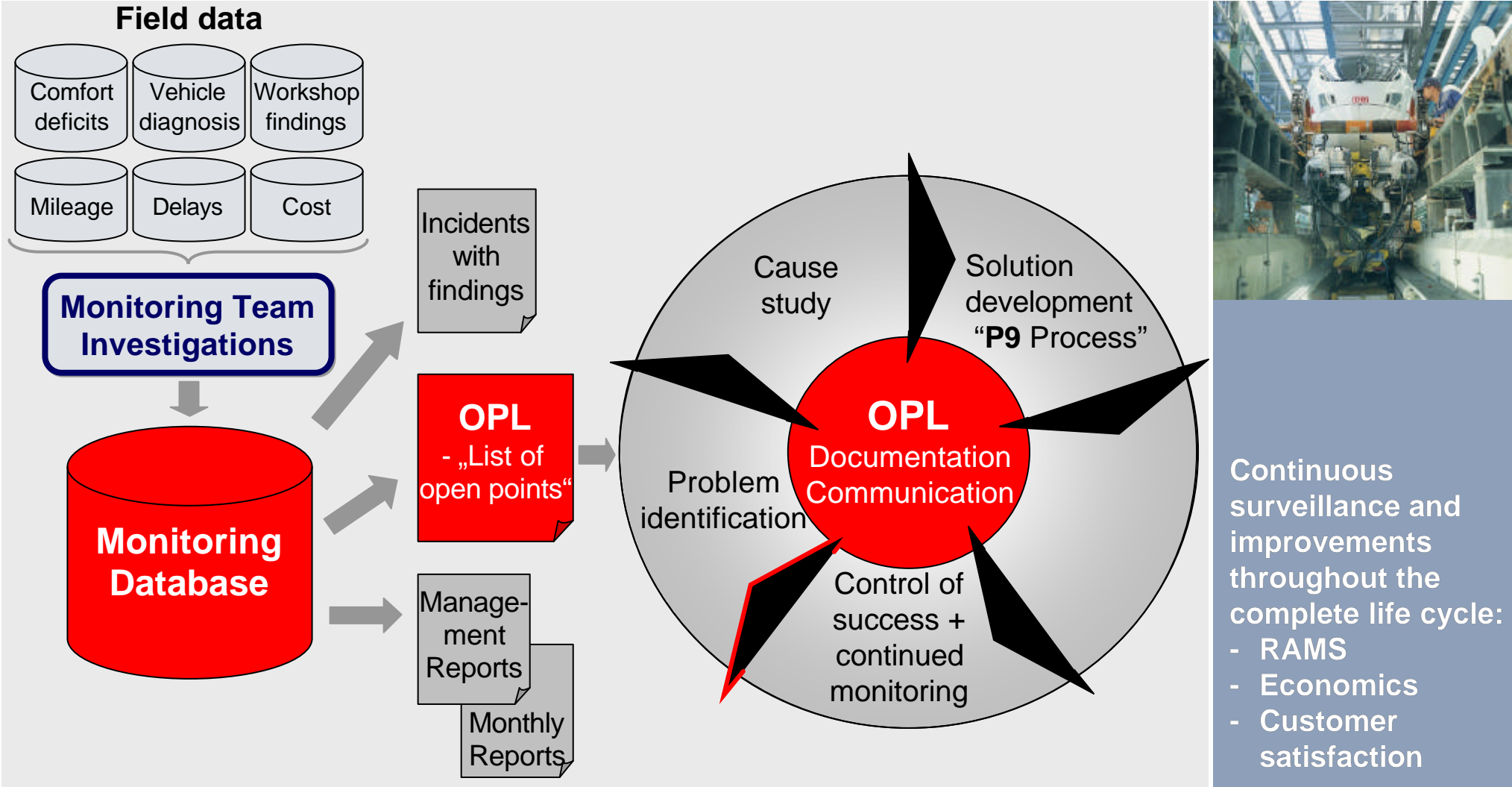


- 198 existing trainsets, 41 in delivery
- 500.000 km per train and year

- 17 Multisystem ICE3s pooled and operated with NS
- Midlife upgrade programme for ICE1

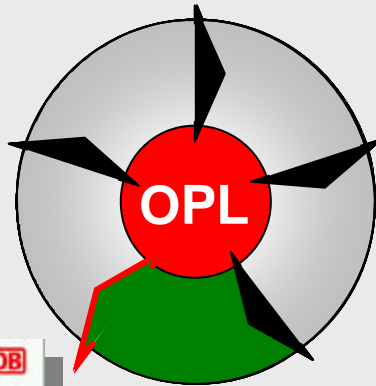
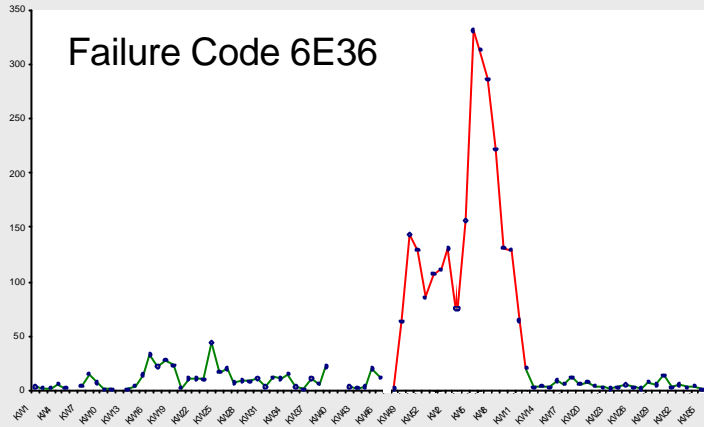
# Monitoring and System Optimisation of the ICE-Fleet

## Gathering and Processing Train related Information



# System Optimisation

## Example: Energy Supply for Ventilation of Air Conditioning System



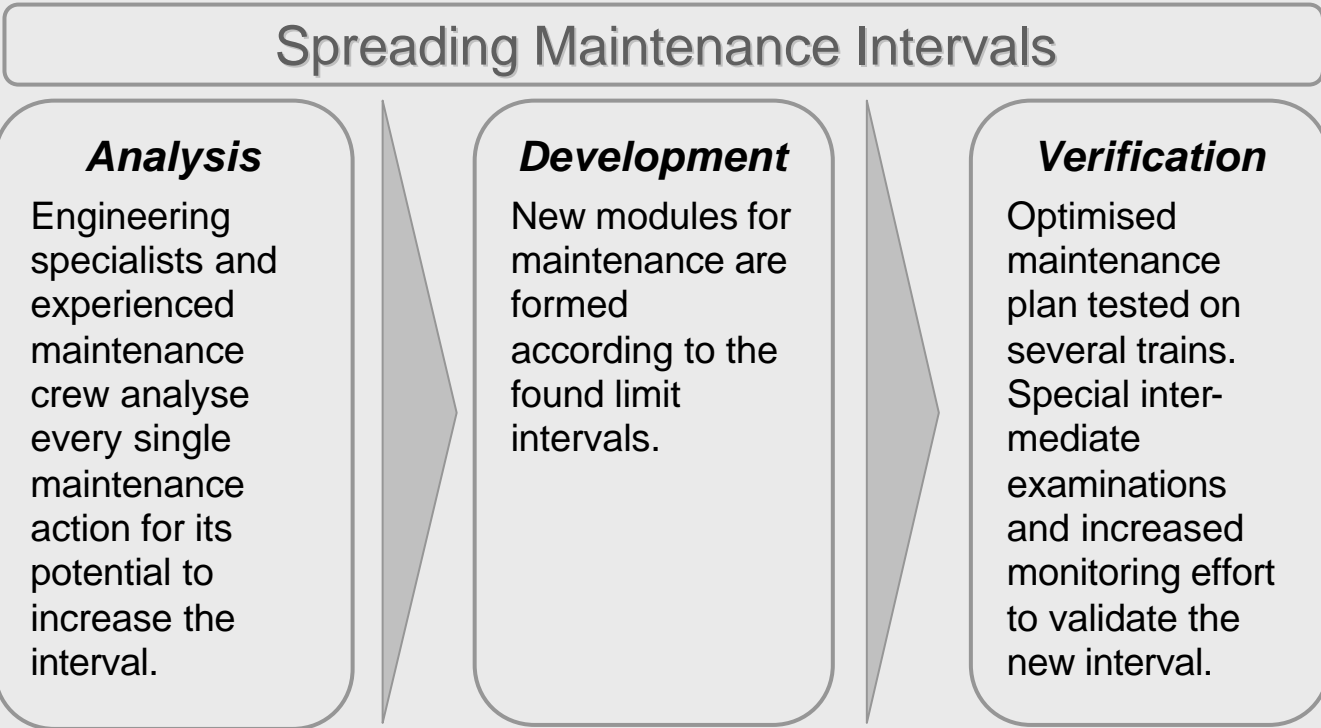
### Cause Study

# Saving Cost through Maintenance Optimisation

## Increased Operating Time - Reduced Maintenance Time

### How ?

- Realise maintenance work during times of standstill (nights).
- Increase maintenance intervals without changing RAMS indicators.



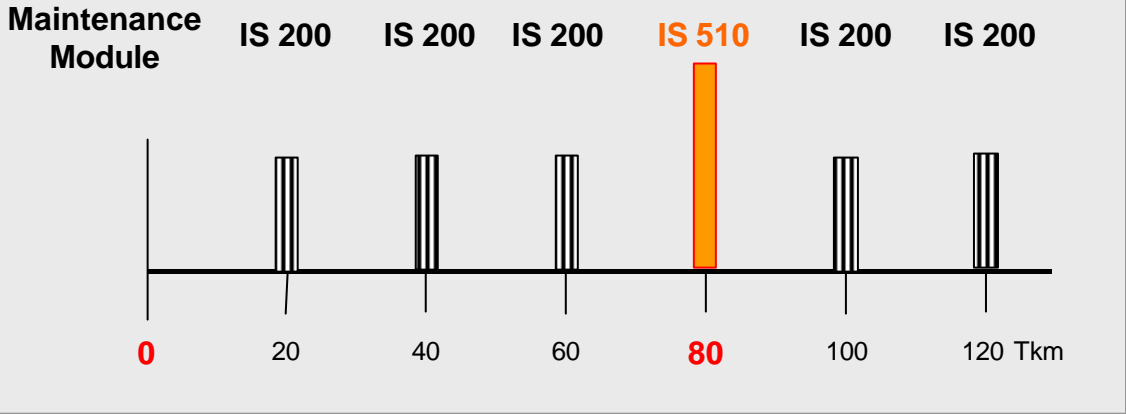
Spread  
maintenance  
intervals +  
guaranteed safety

DB AG process  
according to draft  
DIN 27201

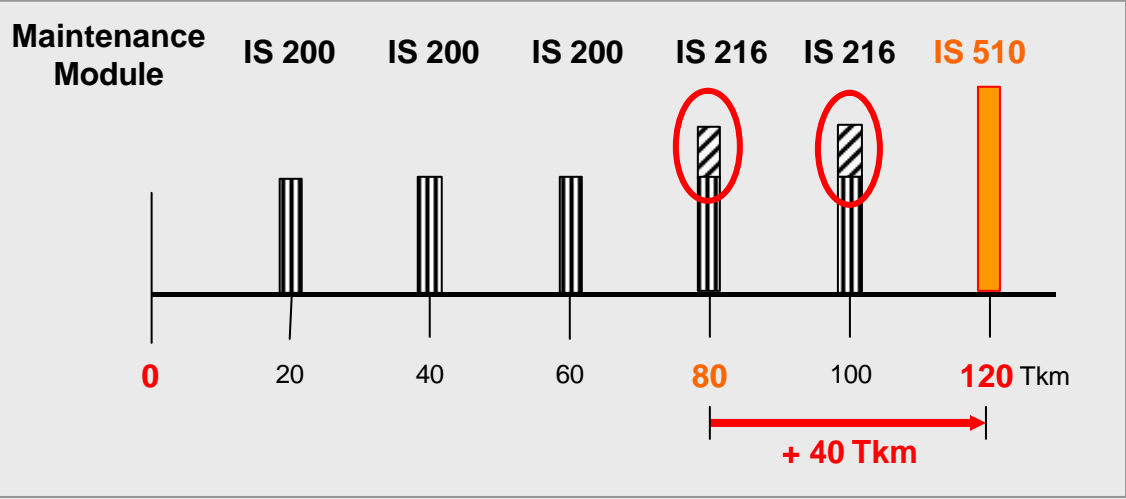
- **Components** unqualified for longer intervals are analysed and **improved** within the OPL-process. In the meantime they remain in the existing intervals.

# Maintenance Optimisation Example

Old Maintenance Schedule



Examination Maintenance Schedule



Improving rosters under close observation and monitoring

The unique DB AG approach

# Future Developments

## Continued Optimisation

**On - Condition Maintenance**

+

**New Technologies**

- On-condition maintenance - if controlled and monitored - reduces cost and improves maintenance quality
- support to advance from periodic maintenance to “on-condition maintenance”
- can be monitored and further improved by using existing processes of DB AG



### Example: New Vibration Sensor for Bogie Diagnosis

Vibration Sensor

- Axle Bearings
- Dampers
- Wheels
- Axle Guidance
- etc.

#### Monitoring deterioration of components

- judge condition of parts
- plan and take actions when required (on-condition-maintenance)
- “early warning” capabilities, increase in safety.

Permanent Improvement in quality and cost - Step by Step



Thank you for your  
attention !

**Technology / Procurement  
High Speed Trains**

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