

Welkom

Managing the chain of Way Side Monitoring Systems

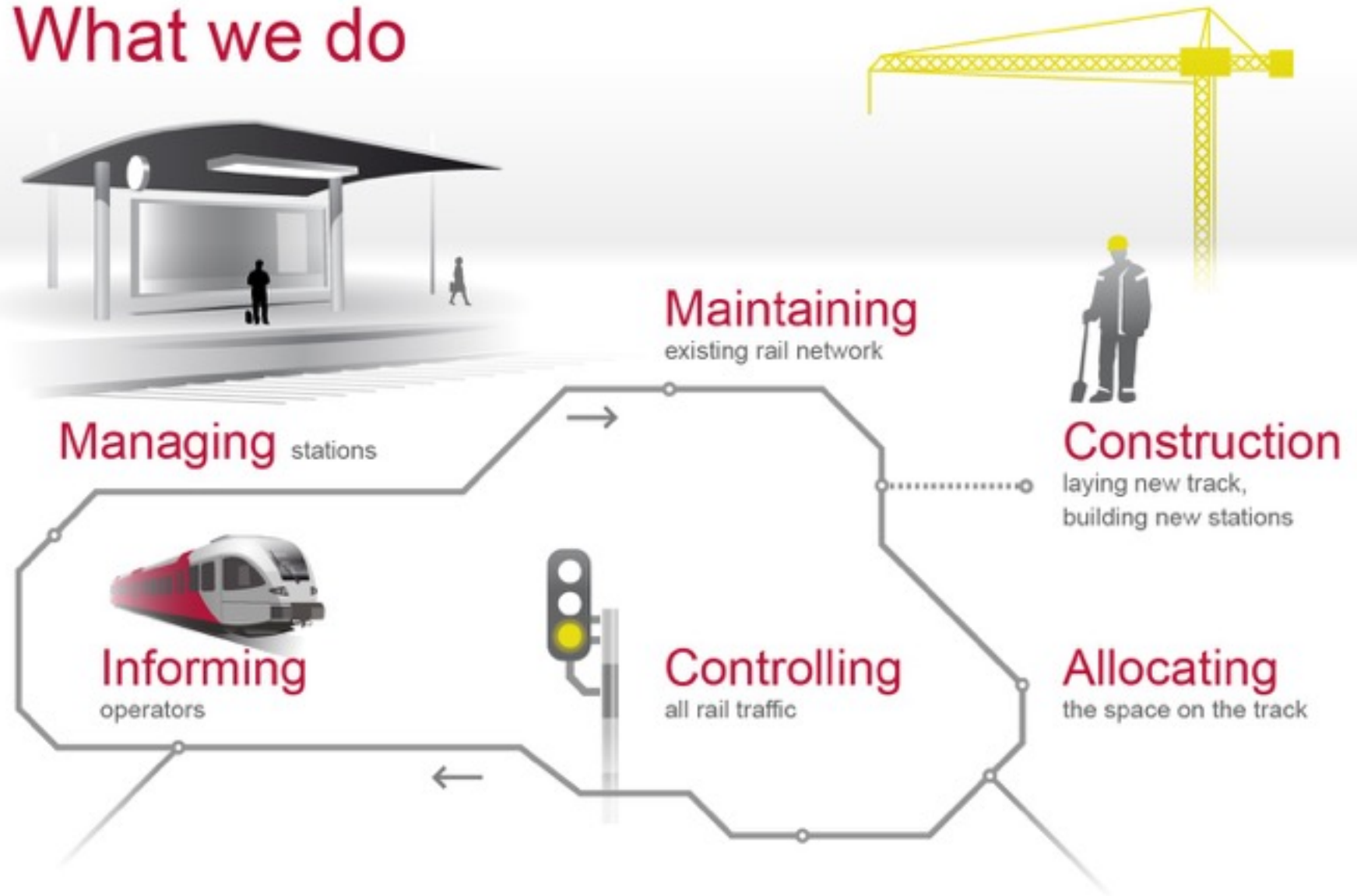
Why does an Infrastructure care about rolling stock?

Juliette van Driel, Chain director wayside monitoring systems at ProRail
RailTech 26 January 2016

Agenda

- About ProRail
- The Chain of wayside monitoring systems
- Why wayside monitoring systems at ProRail?
- Future developments
- Concluding remarks

What we do



24/7

24 hours per day / 7 days a week / 365 days a year



1,083,000
passengers per day

population **16,7 M**
4 M local residents



safety
reliability
punctuality
sustainability



3,300,000
trains per year



115,000
tonnes of freight per day

9 passenger operators

19 freight carriers

passenger transport per year: **139 M km.**

freight transport per year: **10 M km.**

Wayside monitoring systems at ProRail

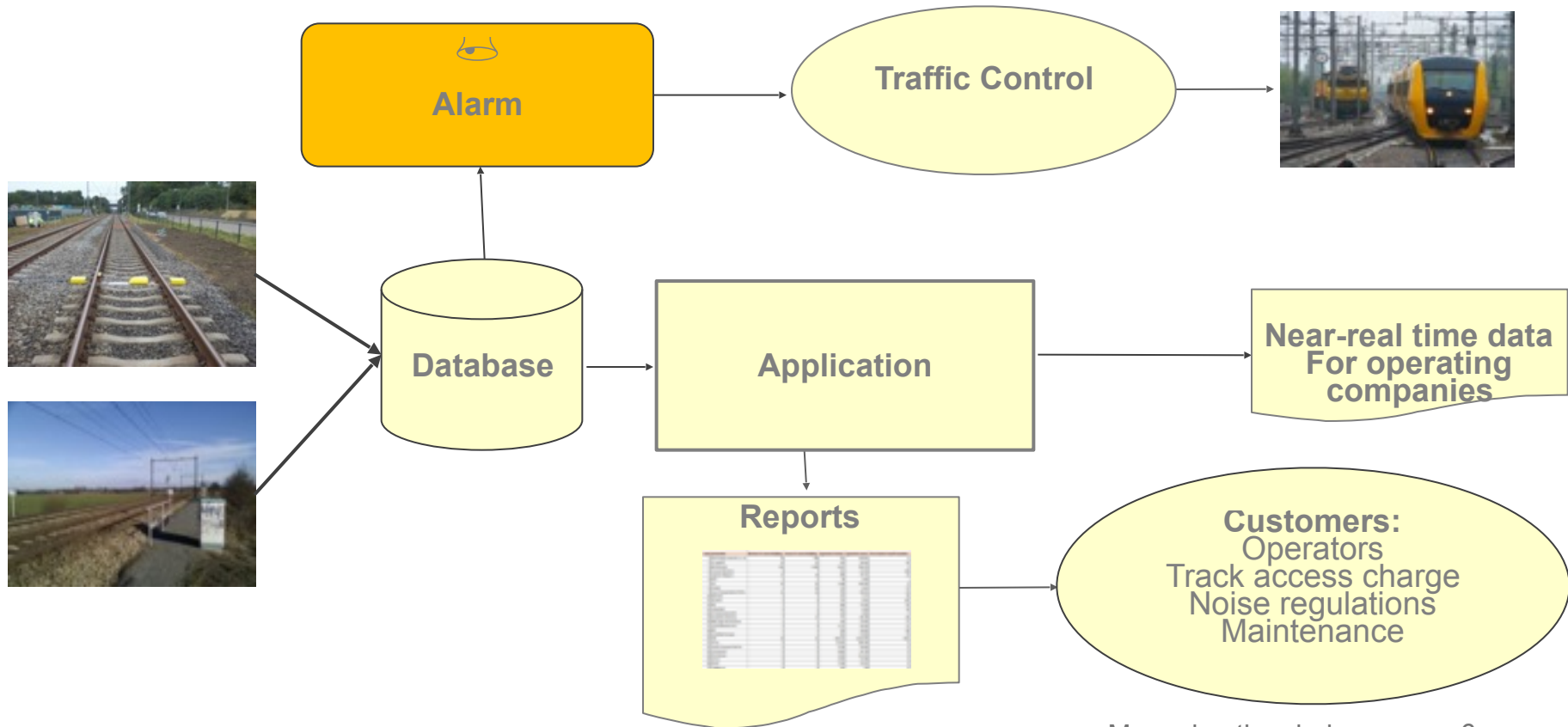
Wheel Impact Load detection (WILD) & HotBox

HotBox 21 locations



HotBox 45 locations

Systems in track are only the first part of a whole chain



Why does an Infrastructure manager care about rolling stock?

There are several reasons

I Safety

HotBox en WILD

HotBox: 115° C
HotWheel: 375° C

 **Alarm**



Dynamic force > 700 kN

 **Alarm**



Why ProRail? Operating company is responsible for rolling stock ...

Derailments in 2005, 2008 and 2009

*Could have prevented
with HotBox Detection*



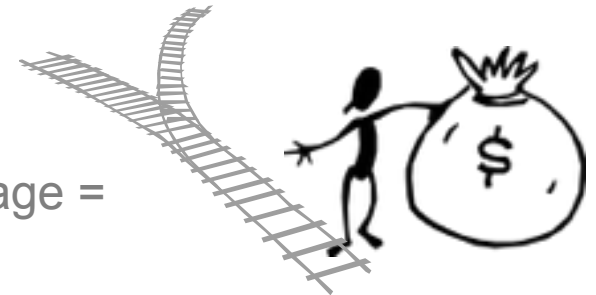
*ProRail has an
obligation to take care*

...

II Track access charge

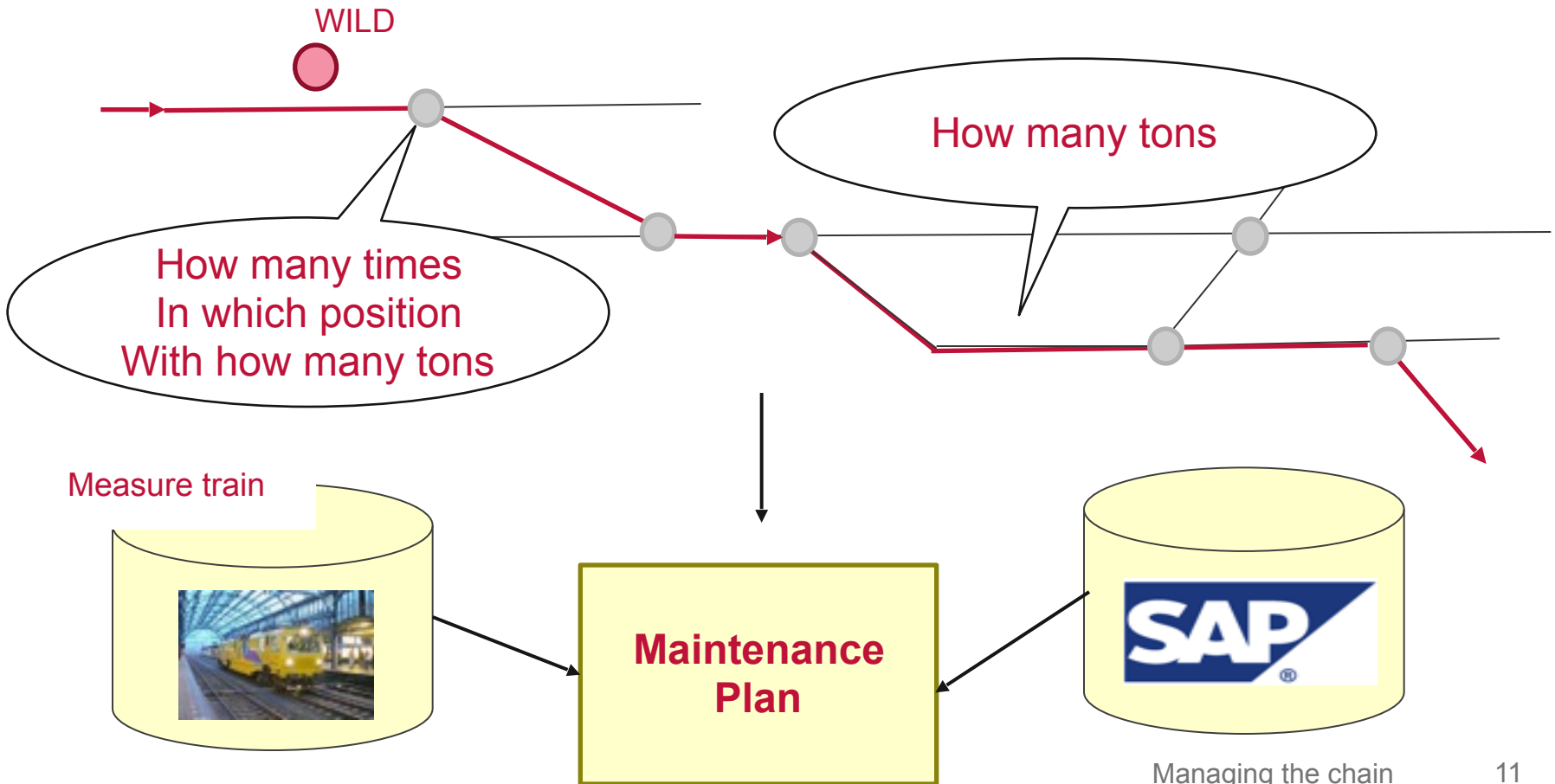


Kilometres + tonnage =

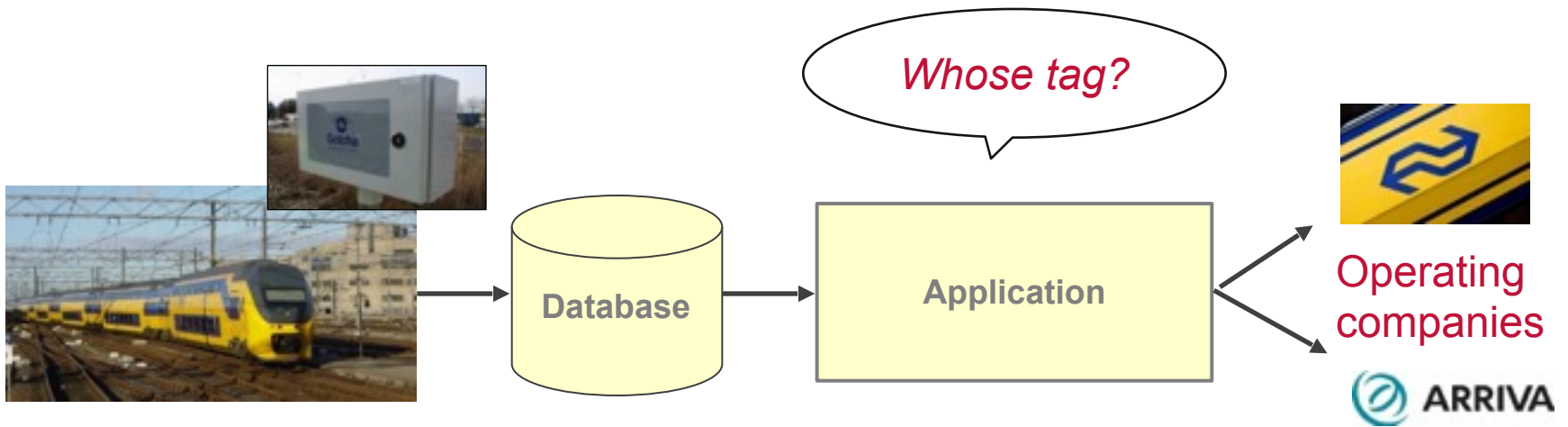


III Maintenance of network

Maintenance of network



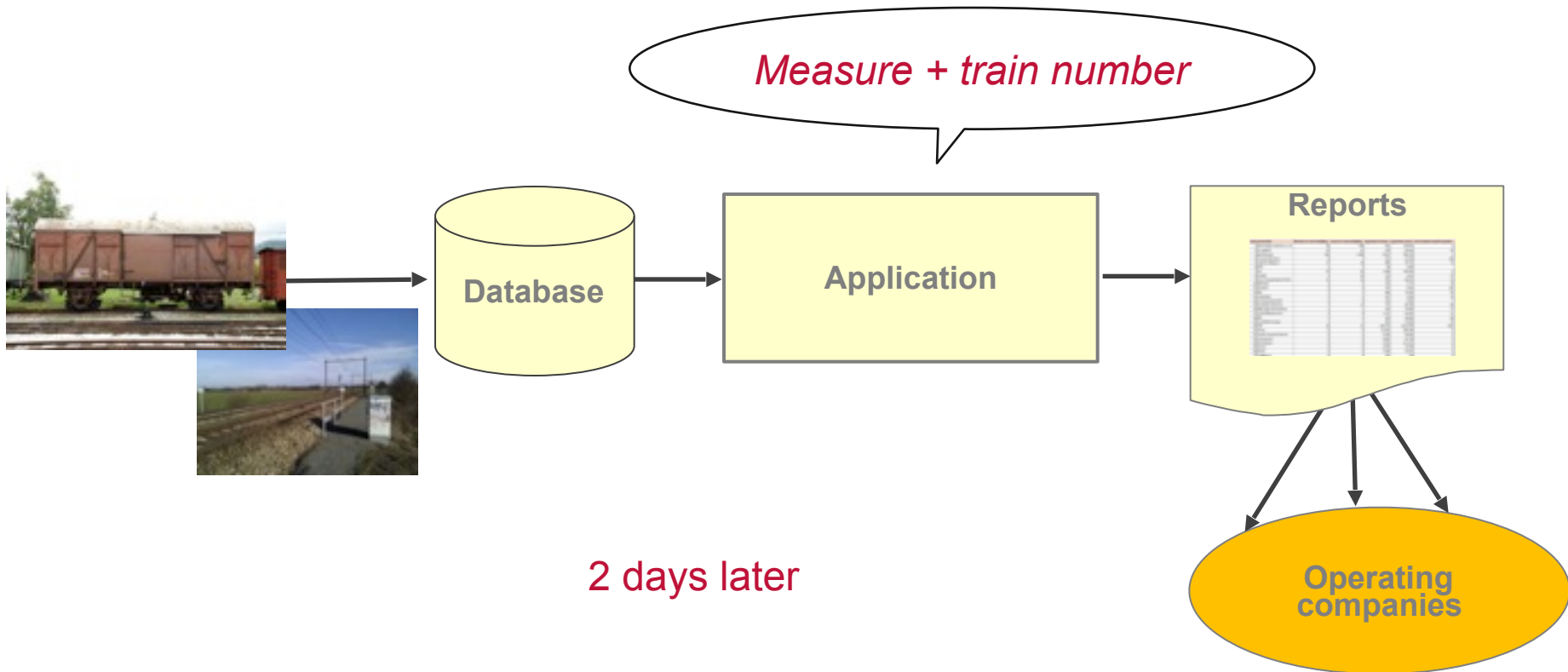
IV Maintenance of rolling stock with RFID tags



Near real time = within 5 minutes

V Maintenance of rolling stock without RFID tags

Daily reports for not-tagged rolling stock

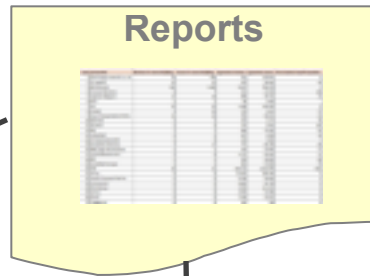


What do we report

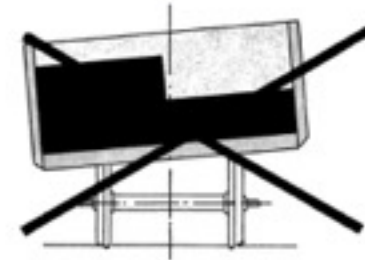
Axel load ton > 24,75



= 22,5 Allowed + 10%



Lateral imbalance of the vehicle > 1,42



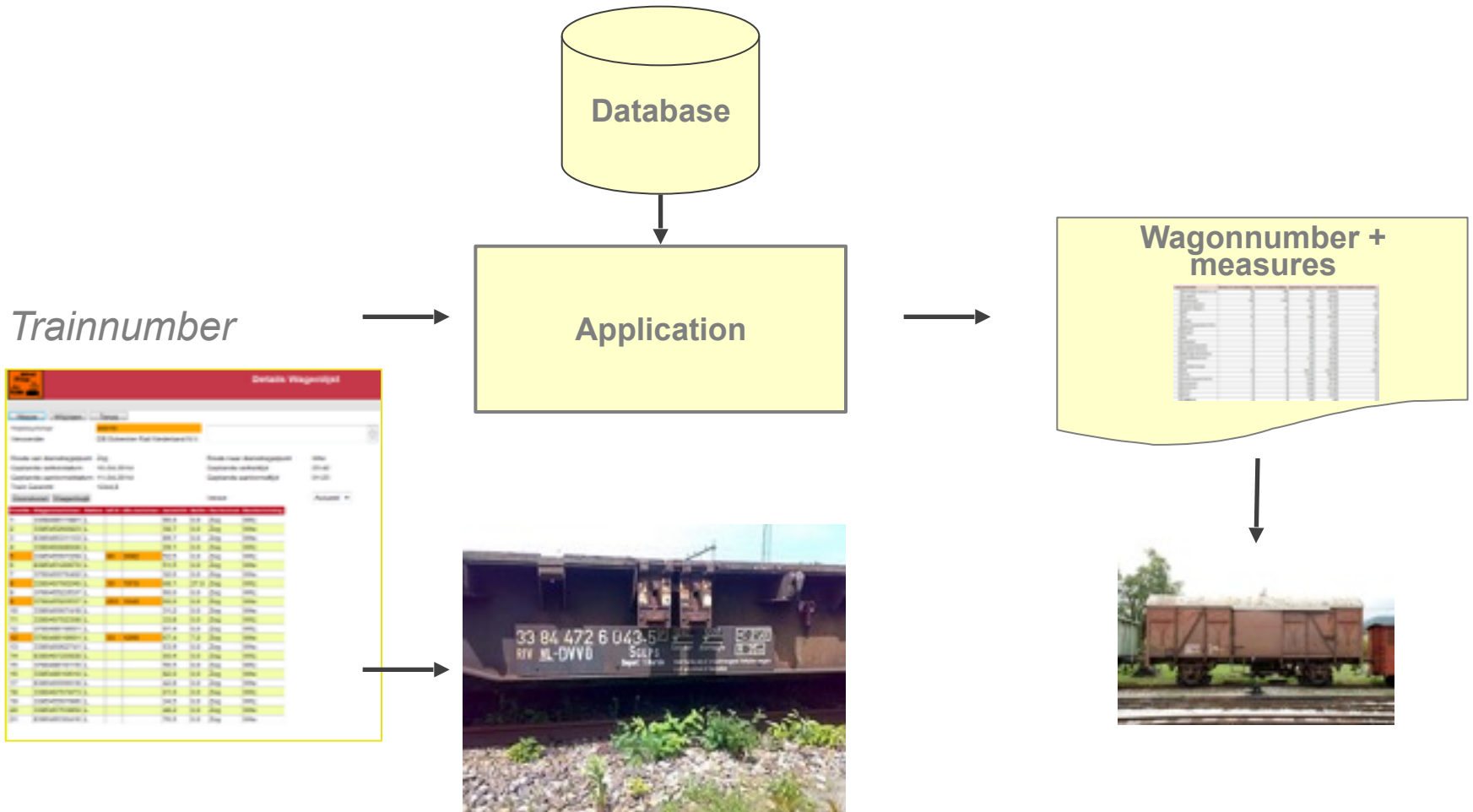
UIC loading guidelines

Dynamic force > 350 kN



EN15313:2010
Wheel flat of 6 cm

Connecting to *wagonlist*



European guidelines

RFID for all rolling stock

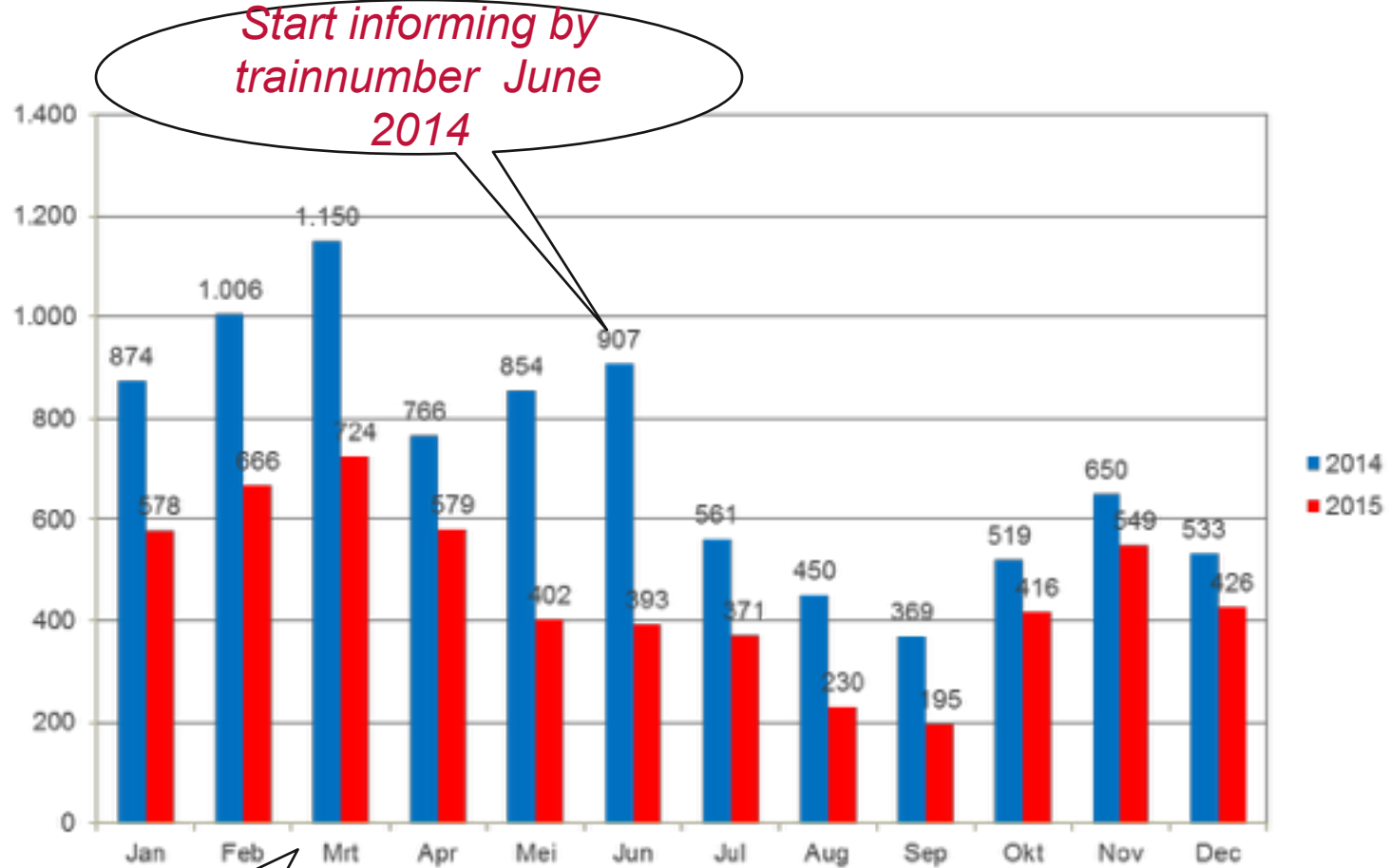
Near real-time informing possible



100% sure it's the right one

Easy to follow deterioration of rolling stock

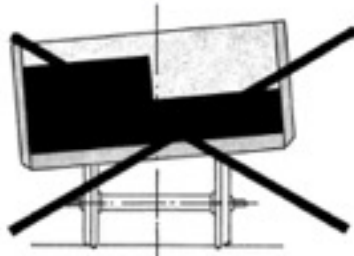
Trains with vehicles > 350 kN



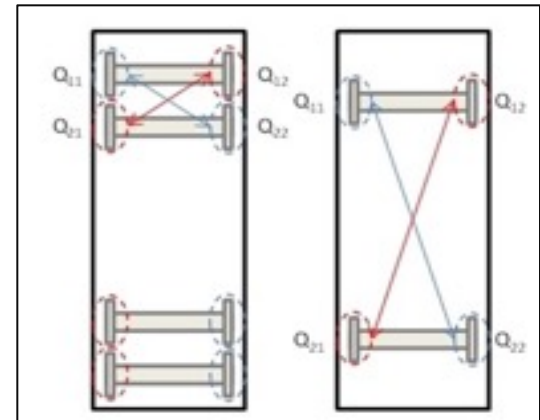
Start informing by wagonnumber March 2015

Future developments I

Safety parameters research and alarming



Lateral imbalance of the vehicle



Diagonal imbalance



Left/Right ratio of the axel

Future developments II

Use of HotBox data

*A parameter for
maintenance*



Future developments III

Axel load ton > 20%

*Axel load ton > 20% at
bridges, fly overs etc.*



Future developments IV

Research relation between wheel flat and deterioration of track

Wheel flat



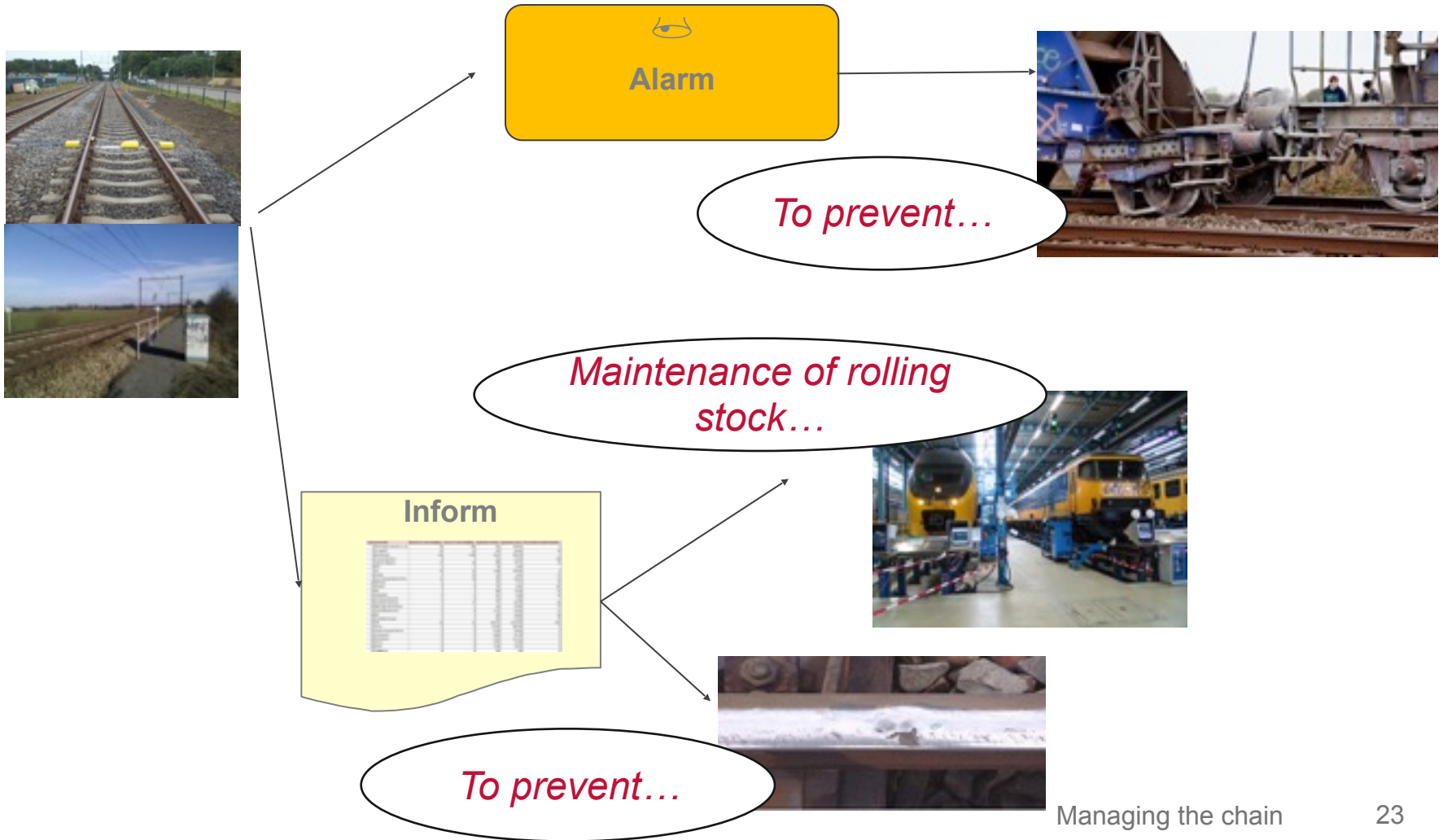
RCF



Squats



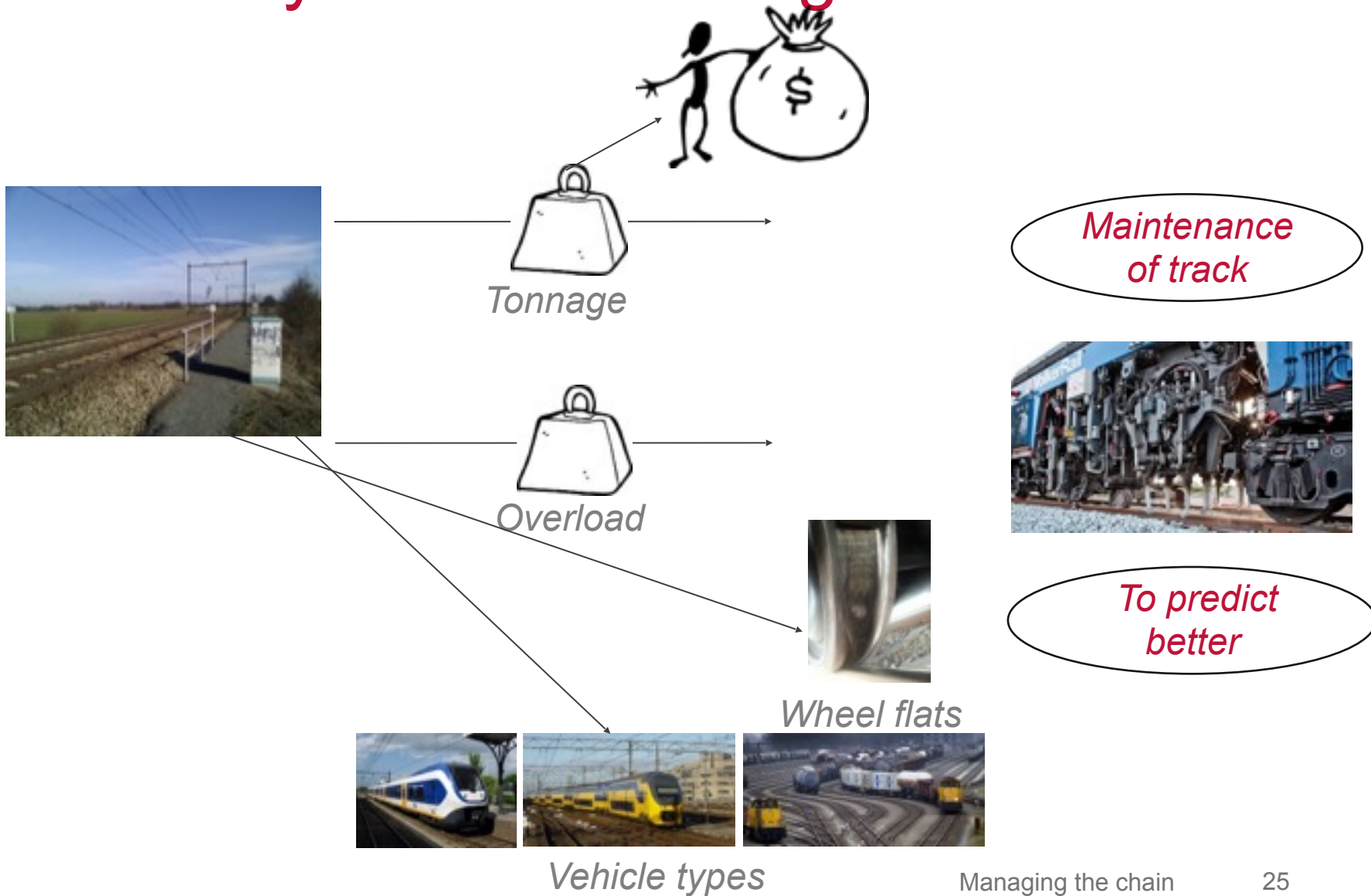
Summary and concluding remarks



There fore

- RFID tags can contribute to more effective an efficient maintenance of rolling stock and in the end to preventing accidents and deterioration of track
- European standards for alarm value's can make railway network en traffic safer

Summary and concluding remarks



Why does an Infrastructure manager care about rolling stock?

- Safety on the railway network
- Prevent deterioration of track caused by bad rolling stock
- To predict maintenance of track and to do maintenance right in time
- To calculate track access charge

Thank you, questions?



Juliette van Driel, juliette.vandriel@prorail.nl