Feedback from PRIME
KPI’s and Benchmarking Subgroup
AGENDA

• Annual PRIME KPIs Report
• Punctuality – Deep Dive and Thematic Report
• KPI & Benchmarking Business Process for 2019/20
The season 2018/19 is almost closed and all activities were grouped in 5 main tasks

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Analysis</th>
<th>KPIs</th>
<th>IT tool</th>
<th>Benchmarking</th>
<th>Report</th>
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<tbody>
<tr>
<td>1</td>
<td>Manage data collection2018</td>
<td>Continue to improve definitions of the catalogue</td>
<td>Collect user feedback</td>
<td>Select topic</td>
<td>Prepare Technical Report on</td>
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<td>Assist in closing data gaps</td>
<td>Develop new indicators</td>
<td>Develop specifications for version 3.0</td>
<td>Prepare and present thematic report</td>
<td>– Database</td>
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<td>Assist new members</td>
<td>Modify the scorecard system</td>
<td>Test of version 3.0</td>
<td>Conduct thematic workshop</td>
<td>– KPI framework</td>
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<td>Prepare annual benchmarking report</td>
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<td>Provide data definitions</td>
<td>Propose further studies</td>
<td>– IT Tool</td>
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<td>Update user manual</td>
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- Benchmarking report
- Updated KPI catalogue
- Technical specifications
- Updated user manual
- Thematic report
- Final technical status report
15 participants contributed to this report - 7 new members have joined PRIME’s KPI benchmarking subgroup
The KPIs presented in this report include 12 high level industry and 32 benchmarking KPIs across six dimensions.
Compared to previous years there is a remarkable increase in data provision for high level and benchmarking KPIs.
Average Punctuality for Passengers has been stable between 2012 and 2017

Passenger trains punctuality
% of trains

- Bane NOR
- Finnish Transport Infrastructure Agency
- Infrabel
- Infraestruturas de Portugal S.A.
- Latvijas dzelzceļš
- PKP PLK
- ProRail
- RFI
- SNCF Réseau
- Trafikverket
Average Punctuality for Freight has been decreasing since 2012

Freight trains punctuality
% of trains

- Bane NOR
- Finnish Transport Infrastructure Agency
- Infrabel
- Infraestruturas de Portugal S.A.
- Latvijas dzelzceļš
- PKP PLK
- ProRail
- SNCF Réseau
- Trafikverket
After four years of decrease, the number of serious injuries and fatalities increased in 2017

Persons seriously injured and killed
Number per million train-km

- Adif
- Bane NOR
- Finnish Transport Infrastructure Agency
- Infrabel
- Infraestruturas de Portugal S.A.
- Latvijas dzelzceļš
- Network Rail
- PKP PLK
- ProRail
- RFI
- SBB
- SNCF Réseau
- Trafikverket
Average assets failures have been decreasing since 2014

Assets failures in relation to network size
number per thousand main track-km

- Bane NOR
- Infraestruturas de Portugal S.A.
- PKP PLK
- ProRail
- SNCF Réseau
- Trafikverket
After 2 years of increasing OPEX, costs have been decreasing since 2015

OPEX – operational expenditures in relation to network size
Euro per main track-km

- Adif
- Bane NOR
- Infrabel
- Infraestruturas de Portugal S.A.
- Latvijas dzelzceļš
- Network Rail
- PKP PLK
- ProRail
- RFI
- SNCF Réseau
- Trafikverket
Overall, investment level have been decreasing over last 6 years

CAPEX – capital expenditures in relation to network size
Euro per main track-km

- Adif
- Bane NOR
- Infrabel
- Infraestruturas de Portugal S.A.
- Latvijas dzelzceļš
- Network Rail
- ProRail
- RFI
- SNCF Réseau
- Trafikverket
TAC revenues have a tendency to increase over the last 6 years

TAC revenue in relation to network size
Euro per main track-km

- Adif
- Bane NOR
- Finnish Transport Infrastructure Agency
- Infrabel
- Infraestruturas de Portugal S.A.
- Network Rail
- PKP PLK
- ProRail
- RFI
- Trafikverket
Further analysis should account for underlying root causes and identify opportunities for improvement

• In order to improve safety performance it would be valuable to investigate the root causes and the programmes that IMs initiated to mitigate them.
• Further work is required by the IMs to collect data according to the PRIME definition in order to make punctuality and delays more comparable across the peer group, anyway results are already satisfactory.
• Improving Asset Condition KPIs is one of major technical challenges in current benchmarking.
• Still further work is required by IMs to collect data on possessions, speed restrictions and its impact on train operations.
• Different operational conditions need to be taken into account when identifying financial good practices.
• The utilisation of European railway infrastructure varies significantly, even at national level, and a drill-down into utilisation density in different segments would be valuable for benchmarking purposes.
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The analysis on punctuality is divided into five sections

Overview

1. Targets and punctuality achieved

   This section provides developments of targets and actual levels of punctuality achieved over time and explores the practices of target setting.

2. Influencing factors and measurement complexity

   Selected factors forming the concept of measurement are explained. The level of punctuality achieved is seen as a result of a complex environment.

3. Infrastructure related root causes

   Various time series demonstrate the infrastructure managers' trends in technical failures, the delay minutes associated and the time to repair.

4. Infrastructure managers' initiatives

   An overview is provided on infrastructure managers' initiatives to improve performance. They are described in detail and complemented by three presentations.

5. Punctuality in rail freight

   The section includes actual and target values for rail freight. Additional information has been provided by Rail Net Europe.
Two out of six infrastructure managers usually reach their overall target level or perform better

**Passenger trains punctuality – actuals compared to targets for all services**

% of trains

- The graph illustrates the difference between the actual and the targeted levels of punctuality
- A negative value indicates that the infrastructure manager has not reached the target value
- The range by which infrastructure managers miss target values is approximately +/- 5% - with one outlier and some fluctuation over the years

Source: PRIME punctuality questionnaires from IMs to civty & PRIME KPI data as per 19/02/2019

1) Aggregated as weighted average of Passenger trains punctuality compared to targets for long-distance, regional and commuter
Over the years average punctuality in rail freight has declined

Freight trains punctuality – actual values
% of trains

- Punctuality in rail freight has been calculated on the basis of trains operated and the number of trains on time in this category
- Values are based on the thresholds defined by each infrastructure manager
- Hence, the analysis is useful to show individual trends but not to compare data between IMs
- Several infrastructure managers faced a decrease of punctuality

Source: PRIME punctuality questionnaires from IMs to civity & PRIME KPI data as per 19/02/2019
A significant share of freight trains already leaves its origin with a delay

Punctuality on rail freight corridors
% of trains on time

- Rail Net Europe is collecting and publishing performance KPIs for European rail freight corridors
- Values represent averages of up to three years (2016 – 2018)
- The operational KPIs describing the performance on each corridor include the punctuality measured at origin as well as the punctuality measured at destination (both applying a threshold of <= 30 minutes)

Source: RNE, Commonly applicable RFC KPIs, Figures 2016-2018
A wide array of factors influences punctuality – only a selected number can be considered in this analysis.

Overview on factors

Factors considered in this report

- Complexity of the network
- Utilisation of the network
- Performance
- Measuring concepts
- Cancellation policy
- Time Tabling concept

Other relevant factors

- Asset condition
- Response to failures
- Track access/closure
- Third parties
- Rolling stock
- Traffic management
- Weather
- Weather
- ...
An infrastructure manager with a high density of measuring points will probably count more delays

Impact of different measuring point densities

<table>
<thead>
<tr>
<th>Density of measuring</th>
<th>Delay minutes at measuring points</th>
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<tbody>
<tr>
<td>High</td>
<td>Punctuality is measured at every departure / arrival and at additional measurement points</td>
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<td>![Graph showing delay minutes per train at high density of measuring points]</td>
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<tr>
<td>Medium</td>
<td>Punctuality is measured at every departure / arrival</td>
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<td></td>
<td>![Graph showing delay minutes per train at medium density of measuring points]</td>
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<tr>
<td>Low</td>
<td>Punctuality is measured at arrival</td>
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<td>![Graph showing delay minutes per train at low density of measuring points]</td>
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</table>

Consequences

- Delay minutes per train are captured at every point as illustrated in the graph, depending on the density of measuring points
- In principal, the highest delay is considered in the infrastructure managers’ statistics
- Trains can build up delays on the way but make good for it at their destination
- The likelihood that a delay is counted decreases with a reduction of measuring points
Thresholds set by infrastructure managers mostly range between 2:59 and 5:59

Delay measurement thresholds
Minutes:seconds

| Passenger train categories | 2:29 | 2:59 | … | 4:59 | 5:29 | 5:59 | ……>
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<td>Long distance¹</td>
<td><img src="logo.png" alt="Network Rail" /></td>
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¹) Long distance thresholds: Network Rail: 9:59, RFI 15:29
Punctuality is influenced by a large number of factors – some of them are in control of the infrastructure manager

• Punctuality is complex and driven by a large number of factors, such as:
  • utilisation and complexity of the network,
  • weather and rolling stock in use,
  • investment levels,
  • Infrastructure Condition,
  • Management of assets,
  • and many more – inside and outside IM’s scope.

• Furthermore, infrastructure managers achieve punctuality in very different environments: the utilisation and complexity of networks range from smaller networks with lower degrees of utilisation to networks with very high densities of assets and train frequencies
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• Annual PRIME KPIs Report
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• KPI & Benchmarking Business Process for 2019/20
The PRIME KPI subgroup will start season 2019/20 in a couple of months with an ambitious agenda

What’s next in PRIME KPI’s Subgroup agenda?

✓ Proceed improving the annual PRIME KPIs Report
✓ Upgrade and Review existing KPIs
✓ Improve IT Tool usability and utility to members
✓ Deliver a Thematic Report on “IM’s Financing Mechanisms” in cooperation with PRIME Finance and PRIME Charges Subgroups
The PRIME KPI subgroup will start season 2019/20 in a couple of months with an ambitious agenda

**Activity**

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<tr>
<th>Activity</th>
<th>Jul</th>
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<td>Evaluations and reporting</td>
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<td>Collection of feedback (definitions, IT)</td>
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**Milestones**

- **Deadline extract data**
- **Annual Report Delivery**
- **IT new version and definitions**

**Colors**

- **Yellow**: IMs / EC
- **Light Blue**: EC IT team
- **Red**: Consultant