



# **PRIME**

Platform of Rail Infrastructure  
Managers in **Europe**

**General Presentation  
KPIs and benchmarking**

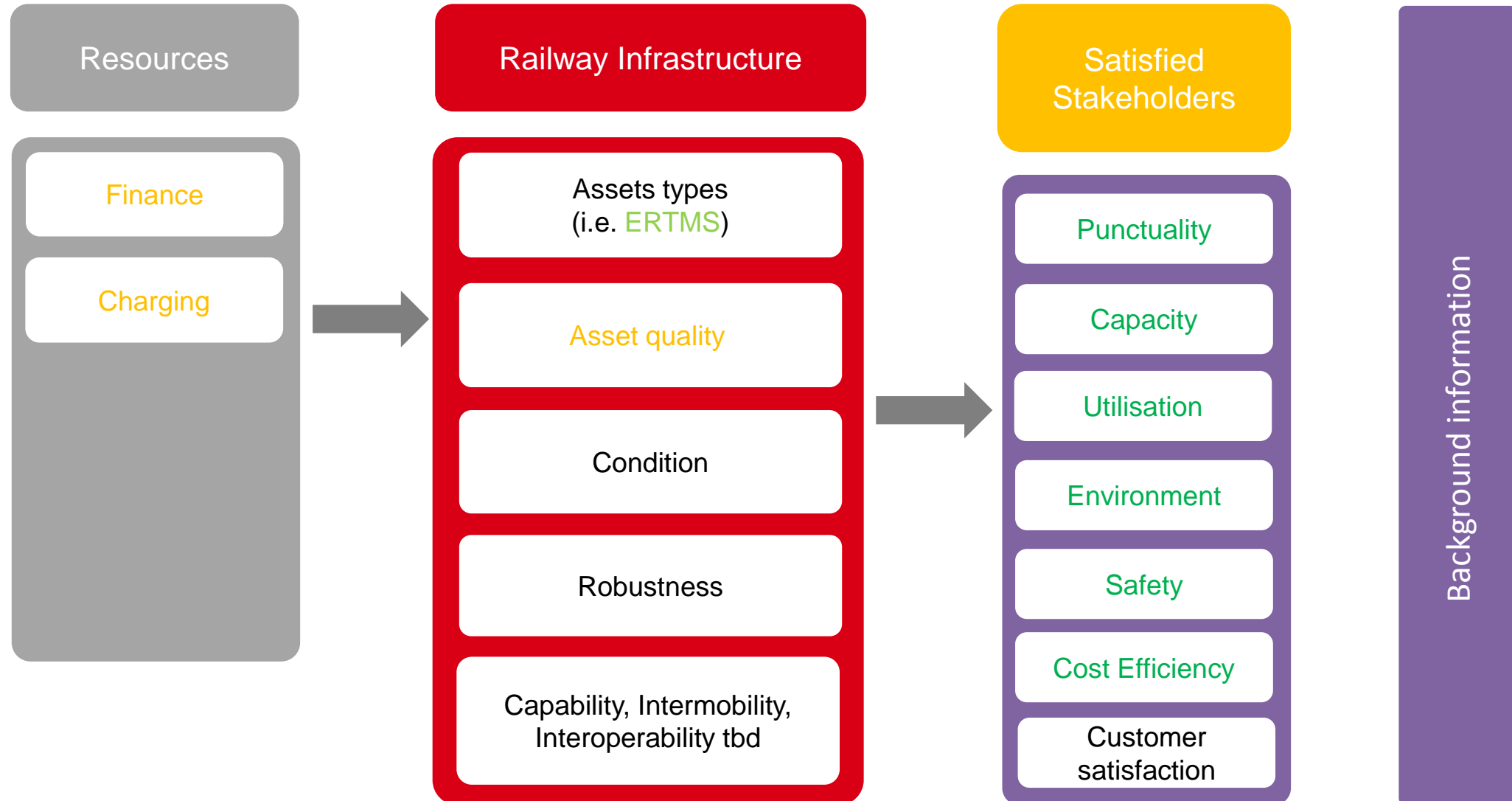
**3<sup>rd</sup> of June 2015  
Mr Jan Pettersson**

# Agenda

- KPIs for Capacity
- KPIs for Environment
- KPIs for Cost efficiency
- Pilot 1
- Time plan
- Proposal for decision



# Our subjects



# KPIs for Capacity

- KPI 1    Decreased number of bottlenecks (or overused line sections) in peak hours at the network. The identification of the bottlenecks are suggested to be based on the yearly timetable.
  
- KPI 2    Share of tracks – possession for all planned activities by IM, i.e maintenance, renewal and enhancements, related to total available track -time.
  
- KPI 3    Share of real use of capacity allocated to work possession time related to planned ones..
  
- KPI 4    Time loss due to speed restrictions at the network – Summation of loss of time over the line sections with speed restrictions times the number of trains over the year.

# KPIs for Environment

- KPI 1a Used diesel trains on the network (train-kilometres) compared to total train-kilometres
- KPI 1b Used electric trains on the network (train-kilometres) compared to total train-kilometre
- KPI 2 CO2 emission produced from rail bound working/ maintenance machines compared to main track-km
- KPI 3 Amount of reused, recycled and recovered waste (ton) compared total produced waste (ton) linked to track –trackside
- KPI 4 Number of environmental incidents with major and significant impact or effect normalised by main track-km

Noise – instructions upcoming autumn

# KPIs for Cost Efficiency

- KPI 1 OPEX – operational costs per main track km
  - KPI 2 CAPEX – capital expenditures (reinvestments and enhancements) per main track km
  - KPI 3 Renewals related to the sum of renewals and maintenance
  - KPI 4 Enhancements related to total IMs expenditures
- Backlog?

# Pilot 1 – Example

Nr	Title	Remarque	Source	Interval	Unit	Description	Breakdown of KPI			IM sample data 2012			IM sample data 2013			IM sample data 2014			Comments from IM
							Numerator	Denominator	KPI	Numerator	Denomin.	KPI	Numerator	Denomin.	KPI	Numerator	Denomin.	KPI	
<b>PUNCTUALITY</b>																			
A1	Trains punctuality	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Number of trains which arrived at their final station with less than 5 minutes delay compared to all trains. (The comparison are to be done between all trains that ran according to the original time plan.)	Trains which arrived at final station with less than 5 minutes delay	Number of trains that ran according to the original time plan	4 785 199	5 527 948	87%	4 638 794	5 419 106	85%	4 628 867	5 355 922	86%	We don't necessarily measure the number of trains that arrive at their final station with less than 5 minutes since we measure punctuality at the last observation point. This point can sometimes be far (some kilometers) from the last stop of the train. <b>Note also, that we do not use the rounding rules #2 of the UIC Leaflet. Our system only allows us to use the following rule: 4'59 means 4 and not 5, 14'59 means 14 and not 15.</b>	
A2	Passenger trains punctuality.	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Passenger trains arrived at final station with less than 5 minutes delay compared to all passenger trains. (The comparison are to be done between passengers trains that ran according to the original time plan.)	Passenger trains which arrived at final station with less than 5 minutes delay	Number of passenger trains that ran according to the original time plan	3 569 890	3 969 110	90%	3 598 832	4 054 633	89%	3 597 018	4 014 055	90%	Same comment as above	
A3	Freight trains punctuality	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Freight trains arrived at final station with less than 15 minutes delay compared to all freight trains. (The comparison are to be done between freight trains that ran according to the original time plan.)	Freight trains arrived at final station with less than 15 minutes delay	Number of freight trains that ran according to the original time plan	365 440	454 594	80%	349 205	441 253	79%	340 607	429 108	79%	Same comment as above	
<b>MINUTES OF DELAY</b>																			
A4.1	Minutes of delays caused by the infrastructure manager	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Cumulative delay minutes caused by incidents that are regarded as IMs responsibility according to UIC leaflet 450-R.	Cumulative delay minutes caused by incidents that are regarded as IMs responsibility	Number of trains that ran according to the original time plan	2 997 165	5 527 948	54%	3 332 304	5 419 106	61%	3 319 817	5 355 922	62%	The delay minutes (what SNCF calls "lost minutes") are not justified regarding the UIC 450-2 table but regarding the French division which is more fine-grained.	
								Number of train-km that ran according to the original time plan	2 997 165	511 800 000	0,59%	3 332 304	497 920 000	0,67%	3 319 817	489 900 000	0,68%	We have built a transposition table of these French codes to the UIC table which allows us to identify the IM's responsibility delays.	
A4.2	Minutes of delays caused by weather incidents	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Cumulative delay minutes caused by all weather incidents which has led to disruptions in the railway infrastructure.	Cumulative delay minutes caused by all weather incidents which has led to disruptions in the railway infrastructure	Number of trains that ran according to the original time plan	688 186	5 527 948	12%	1 227 553	5 419 106	23%	628 078	5 355 922	12%	We want to emphasize also the fact that we affect to the responsible entity of the primary cause, also the delay minutes coming from the secondary cause (spacing, rolling stock wait, staff wait).	
								Number of train-km that ran according to the original time plan	688 186	511 800 000	0,13%	1 227 553	497 920 000	0,25%	628 078	489 900 000	0,13%	<b>We do not use the rounding rule #2 of the UIC leaflet (see above)</b>	
<b>CANCELLED TRAIN</b>																			
A5	Percentage of passengers train cancelled caused by the infrastructure manager.	Definitions of each component in the KPI are in the KPI catalogue	IM	Annually	%	Cancellations of passenger trains that are included in the Time Table issued the day before service and that are caused by incidents for which the infrastructure manager has the responsibility.	Number of cancelled passenger trains that are included in the Time Table that are issued the day before service and that are caused by incident for which the IM has the responsibility	Number of passenger trains that ran according to the original time plan	9 797	3 969 110	0,25%	8 286	4 054 633	0,20%	12 525	4 014 055	0,31%	We have here the cancelled trains due to an IM cause regarding the timetable from the day before at 5 pm.	

# Pilot 1 Utilisation



KPI		1	2	3	4	5	6	7	8	9	10
Degree of utilisation – all trains	Train km per main track km	11 486	7 492	12 806	17 106	27 035	10 015	7 656	31 978	12 952	16 464
Degree of utilisation – passenger trains	Passenger train km per main track km	9 071	5 382	9 596	15 866	25 235	8 413	5 018	26 179	11 093	13 571
Degree of utilisation – freight trains	Freight train km per main track km	1 976	2 110	3 214	1 240	1 800	1 603	2 638	4 809	1 640	2 829
Utilisation – Gross tonnage	Gross tonnage per track km	1 969 697	*	5 578	1 550 061	8 840 953	*	5 055 040	9 383 132	*	15 001



# Pilot 1 Punctuality



KPI		1	2	3	4	5	6	7	8	9	10
Train punctuality	Percentage	91,51	91	88,5	90,6	92,8	85	80,9	89	94,42	80,4
Passenger trains punctuality.	Percentage	92,40	95	90,3	91,2	94	89	91,0	92	96,07	82,2
Freight trains punctuality	Percentage	84,76	88	85,4	83,3	68	79	50,5	63	54,85	56,6
Minutes of delays caused by the infrastructure manager	IM causes per train	1,089	0,57	1,35	0,932	*	0,61	0,0754	0,130	*	*
	IM causes per train km	*	0,0057	*	0,013	0,002	0,0067	*	0,0022	*	*
	Weather causes per train	0,145	0,08	0,28	0,181	*	0,2265	0,0085	0,064	*	*
	Weather causes per train km	*	0,0008	*	0,002	0,004	0,0025	*	0,0022	*	*
Passengers train cancelled caused by IM.	Percentage	1,037	*	0,296	1,4	0,07	0,2	*	0	*	0,203

# Pilot 1 Safety



KPI		1	2	3	4	5	6	7	8	9	10
Number of significant accidents	Total per train km	0,701	0,238	0,285	0,152	0,226	0,293	1,527	1,018	0,262	0,340
Number of persons seriously injured and killed	Total per train km	0,206	0,127	0,225	0,086	0,194	0,315	1,546	0,678	0,943	0,166
Suicides and attempted suicides	Total per train km	0,268	1,068	0,596	0,498	1,377	0,584	0,377	1,638	0,6	1,67
IM related precursors to accidents	Total per train km	3,669	1,068	5,543	2,102	0,401	1,982	5,386	3,418	3,278	1,114
Overall workforce safety	Total, per million hours worked	0,00	*	*	0,0011	*	*	*	*	0,579	*
Workforce safety (IMs track and trackside)	Total, per million hours worked	0,00	*	*	0,0006	*	*	*	*	0,05	*

# Pilot 1 ERTMS



KPI		1	2	3	4	5	6	7	8	9	10
Accepted plans for deployment of ERTMS	Yes/no	Yes	Yes	Yes	Yes	Yes	Under discussion	Yes	No	Yes	Yes
Main tracks with ERTMS in operation	Percentage of total track km	0	0	4,9	0,69	15	1,21	0,81	*	12	12,6
Train-km with ERTMS in operation	Percentage of total train km	0	0	4,0	0,14	4	0	N/A	*	20	*
In 2020, main tracks with planned deployment of ERTMS.	Percentage of total track km	30	0	4,9	5,78	18	6,04	5	*	*	*

# Timeline - updated

No 6 Environment	June 2015
No 6 Capacity	
No 6 Costs efficiency	
Pilot 1 Reporting	
No 7 Charging	Nov 2015
No 7 Asset quality	
No 7 Finance	
No 8 Condition	Feb 2016
No 8 Robustness	
No 8 Background information	
No 8 Pilot 2 reporting	
No 9 Customer satisfaction	June 2016
No 9 Capability, Intermobility, Interoperability	
No 10 Pilot 3 reporting	Nov 2016
No 10 Complete KPI Catalogue	
Benchmarking starts	2017



# Proposal for decision

PRIME members are asked to discuss and agree upon:

- a) the presented KPIs on Capacity
- b) the presented KPIs on Environment (+noise)
- c) the presented KPIs on Cost Efficiency
- d) the presented need of starting Pilot 2
- e) the presented timeline