



Performance Based Maintenance: Improved Control on Operational Performance

Introduction



Paul Carstens is the Program Director of the Performance-Based Maintenance Program within the Asset Management division of ProRail, a government task organization maintaining the national railway network infrastructure. Before becoming a Program Director, he was an Operations Manager responsible for the day-to-day operations in several regions in the Netherlands.



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Agenda

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1. The Dutch Railmarket
2. Why Performance Based Maintenance (PBM)?
3. Intended Results
4. What is PBM?
5. Program Results & Lessons Learned

History and characteristics of one of the densest rail markets in the world, the Dutch rail market

7033

kilometers of
railroad in the
Netherlands



1,1 Million

Unique passengers
every day of the
year



404

railway
stations all
across the
Netherlands



1,65
billion

invested in
rail construction
and maintenance
each year



314

million
invested in
small scale
maintenance



90,2%

of the
passengers
arrive on
their
destination
on time

Compliance pressure, increasing costs and lagging maintenance performance requires a new approach with regard to small-scale maintenance

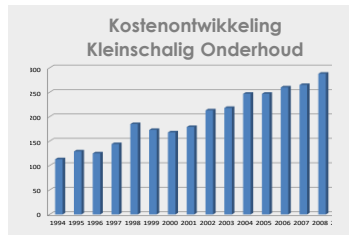
NON-COMPLIANT CONTRACTS



No competition 3 fixed contractors who were privately awarded several contracts by ProRail

ProRail is legally obliged to market every contract larger than €418k through **an European public tender** and the pressure from the European Procurement Legislation to be compliant increased

INCREASING COSTS



The set-up of having fixed contractors gave way to small-scale maintenance costs, ultimately **reaching an unsustainable level**,

ProRail's grip on this development **faltered**

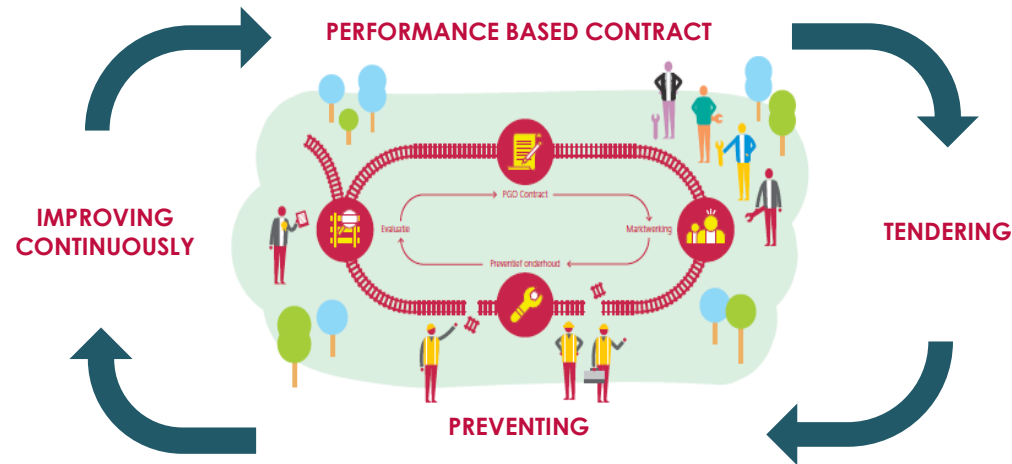
LAGGING PERFORMANCE



The nature of the contracts contained **insufficient incentives** for optimization and innovation, and therefore did not afford ProRail the desired performance control over contractors

Maintenance in the contracts was controlled through the basis of **prescribed activities** and was focused on the **reparation of failures**, rather than their prevention, which led to additional discomfort for the traveler

PBM strives for safety, better performance of the railway, compliant contracts, optimal price-performance ratio and professional commissioning.



The railway is verifiably **safe**, **available** and **reliable** – in the short and long term.



Small-scale maintenance of the railway is in **compliance** with European rules and regulations



Costs of the small-scale maintenance are transparant, verifiably correct and in line with scope considerations and European cost levels.



The small-scale maintenance market is **accessible** and **attractive** for (new) contractors



Sustainability and **innovation** are stimulated



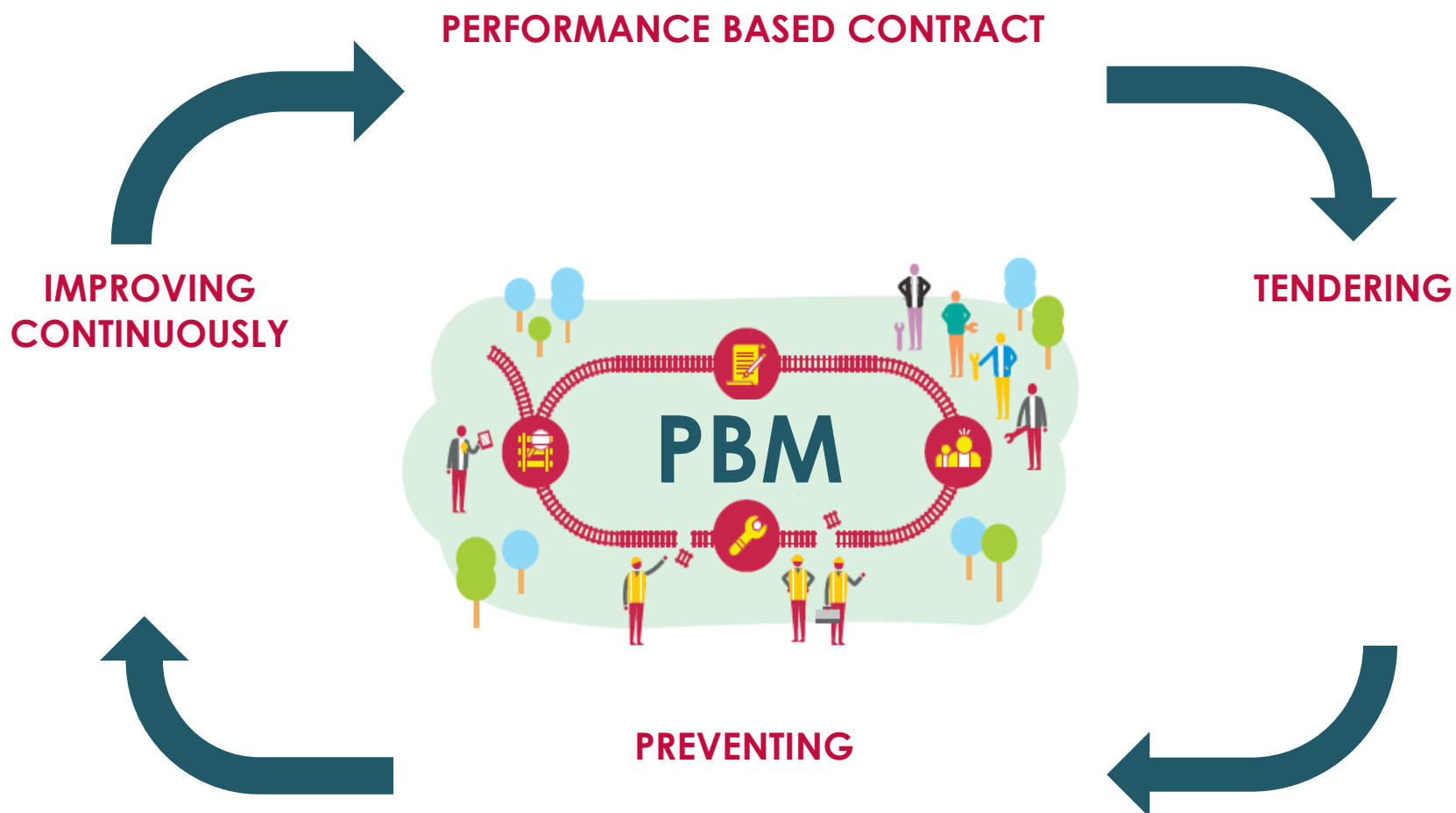
ProRail is seen as a **professional commissioning party** and **predictable**.

All PBM contracts will have been publicly tendered by the end of 2019 and therewith ProRail is in compliance with European rules and regulations

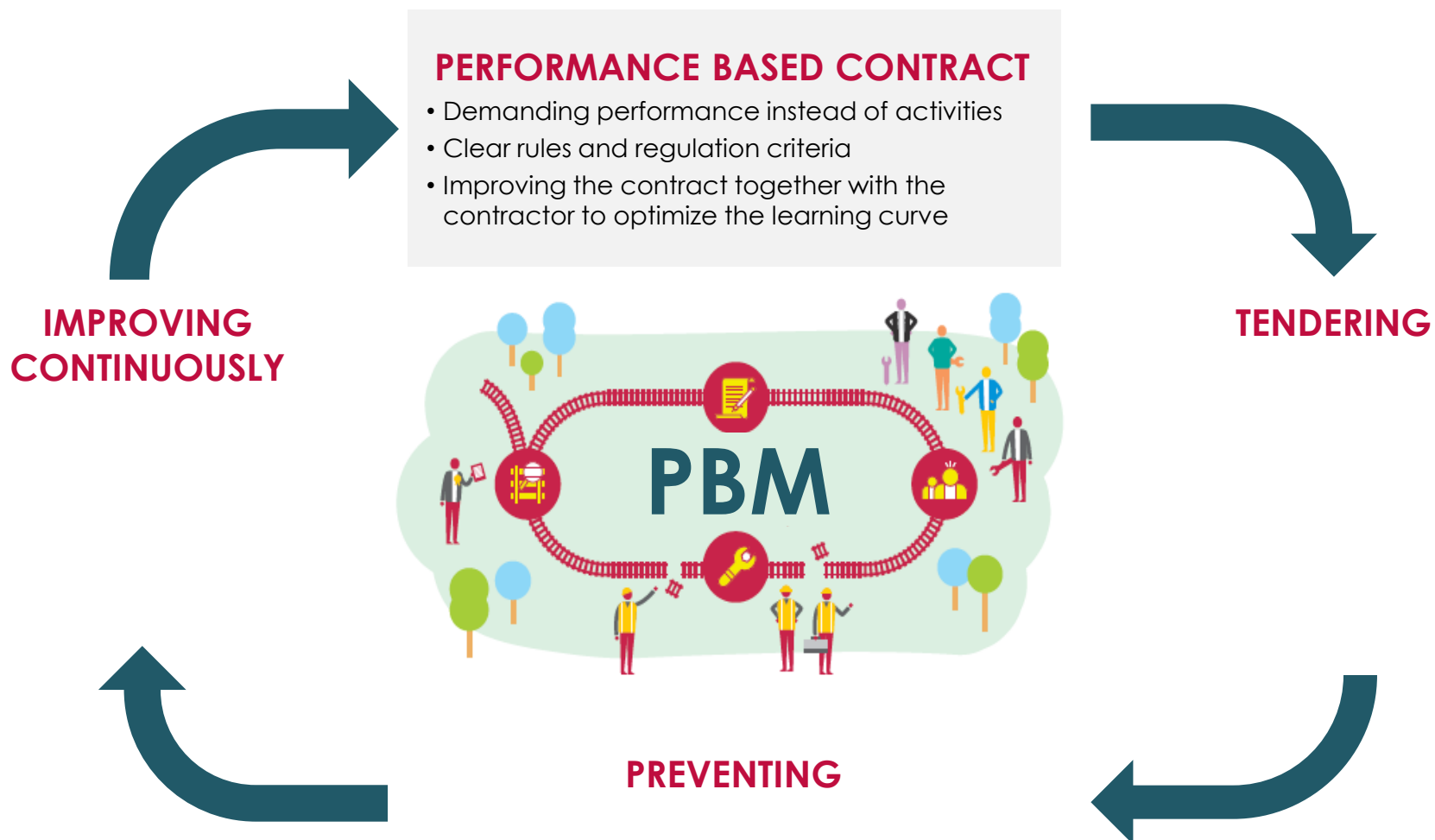


Compliant Tranche	Region	Contract	Contractor	Current status
2016	1 De peel	PGO 1.0 / 2.0	Strukton	Publicly Tendered
	1 Hollands Noorderkwartier	OPC+	Volker Rail	Publicly Tendered
	1 Rotterdam	OPC+	BAM Rail	Publicly Tendered
2017	2 Rijn & Gouwe	PGO 1.0 / 2.0	Strukton	Publicly Tendered
	2 Drenthe	PGO 1.0 / 2.0	Strukton	Publicly Tendered
	2 Zeeland	PGO 1.0 / 2.0	Volker Rail	Publicly Tendered
	3 Betuwe	PGO 1.0 / 2.0	BAM Rail	Currently Tendering
	3 Amsterdam	OPC+	Strukton	Currently Tendering
	3 Veluwe	PGO 1.0 / 2.0	Volker Rail	Currently Tendering
2018	4 Kennemerland	OPC+	Volker Rail	Preparation
	4 Amstelsepoort	OPC+	Strukton	Preparation
	5 Dordrecht	OPC+	Strukton	Preparation
	5 Zee-Zevenaar	OPC+	Volker Rail	Preparation
	6 Limburg	OPC+	Strukton	Did not start
	6 Brabant	OPC+	BAM Rail	Did not start
2019	7 Utrechtse heuvelrug	OPC+	Volker Rail	Did not start
	7 Eemland	PGO 1.0 / 2.0	Asset Rail	Did not start
	8 Den Haag	PGO 3.0	BAM Rail	Did not start
	8 Wadden	PGO 3.0	Strukton	Did not start
	8 Twente	PGO 3.0	Volker Rail	Did not start
8 Gelre	PGO 3.0	Asset Rail	Did not start	

In order to improve maintenance effectiveness (price i.r.t. costs) and become compliant with European legislation, ProRail is implementing Performance-Based Maintenance (PBM)






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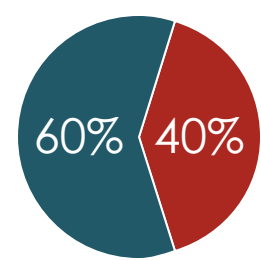




60% of the contract consists of performance drivers in order to incentivize the contractors to strive for better performance

The contractor provides his intended performance based on **performance drivers**

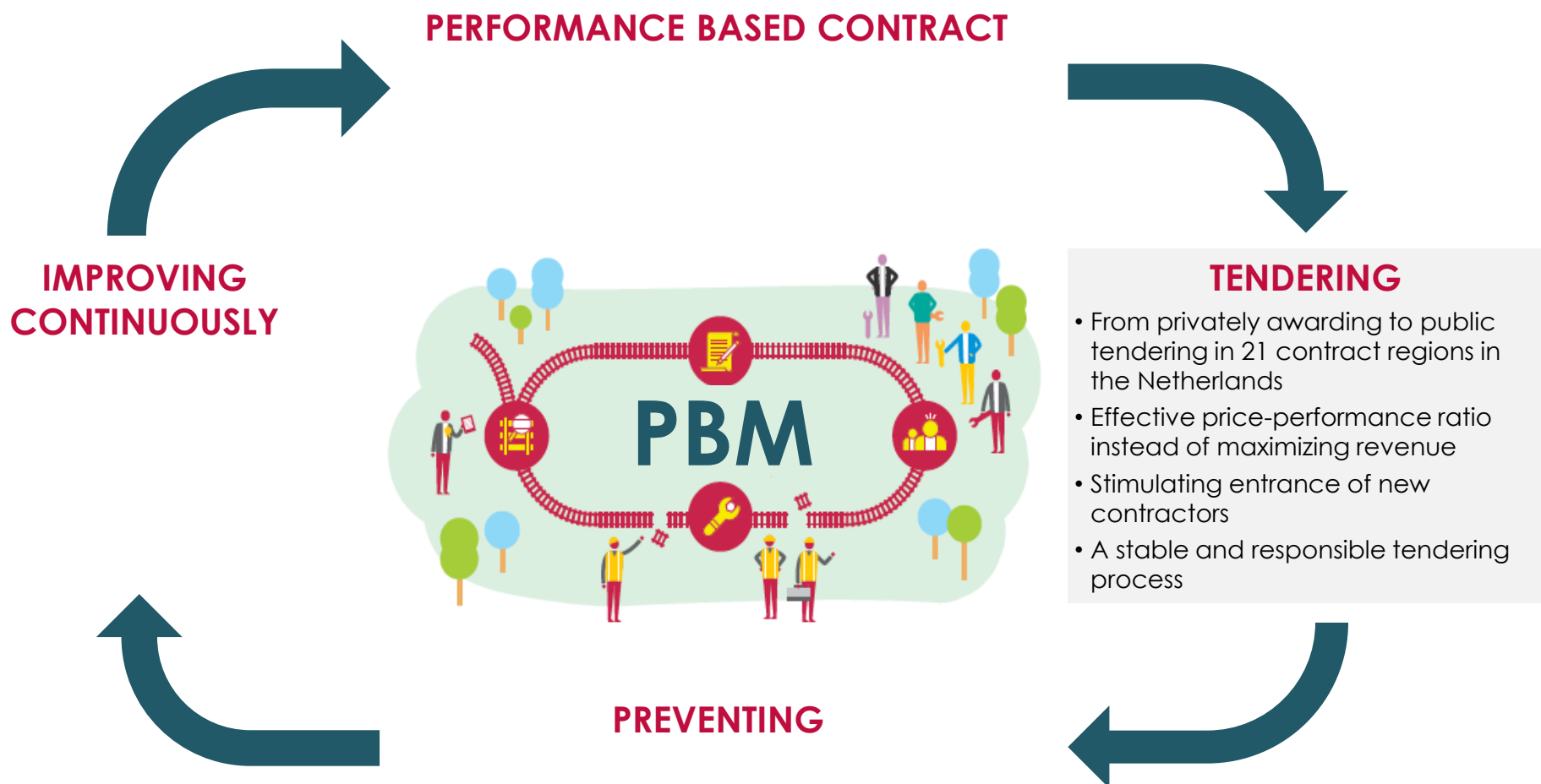
- Reducing Disruptions 
- Reducing Train Hindrance 
- Recovery Maintenance Time 
- Reducing CO₂ emission 
- Flexibility in maintenance time 

The contractor has to give a monthly maintenance price based on **cost drivers**.

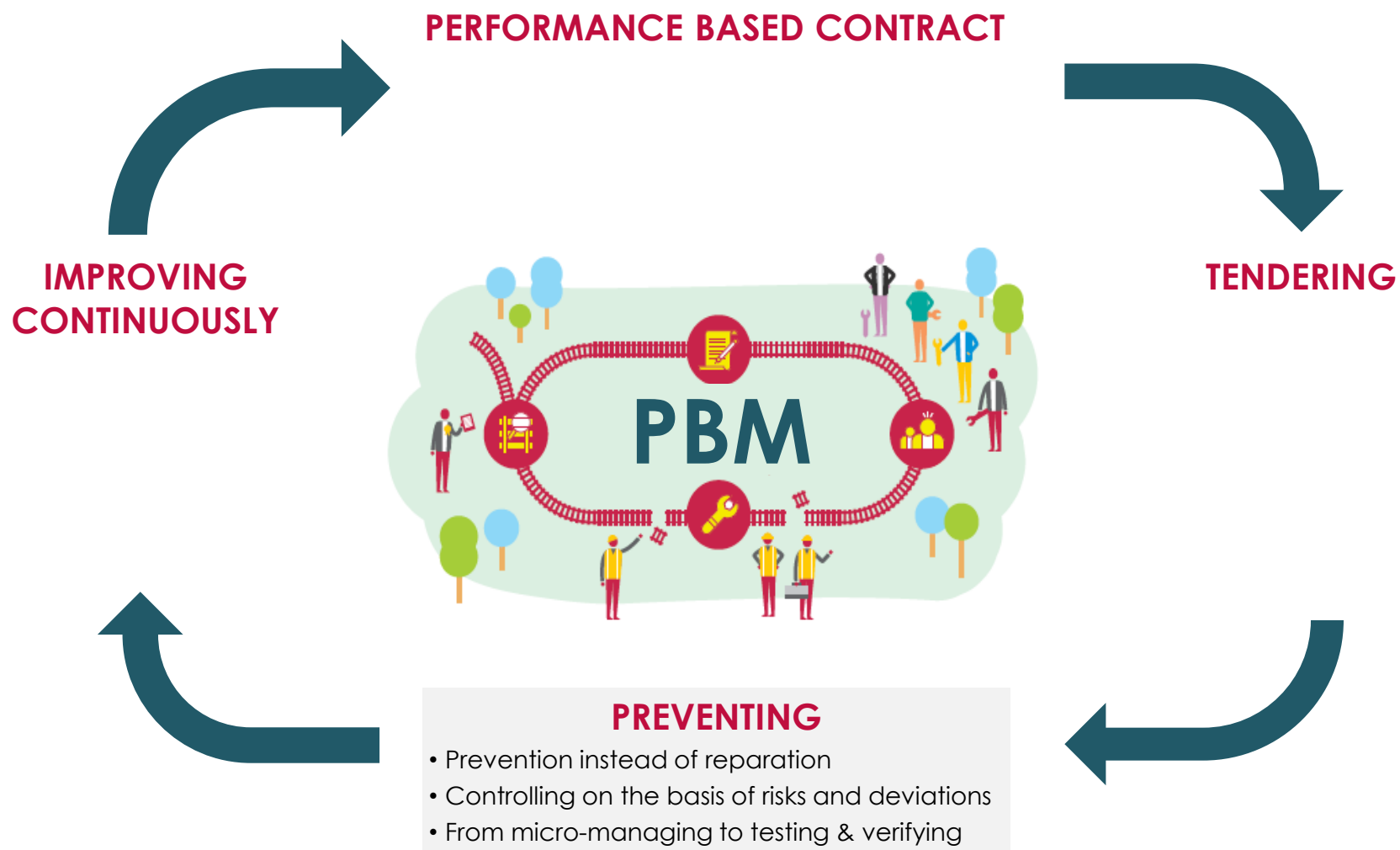


-  Monthly maintenance payment
-  Costs for increased train impact

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PERFORMANCE BASED CONTRACT



TENDERING

PREVENTING

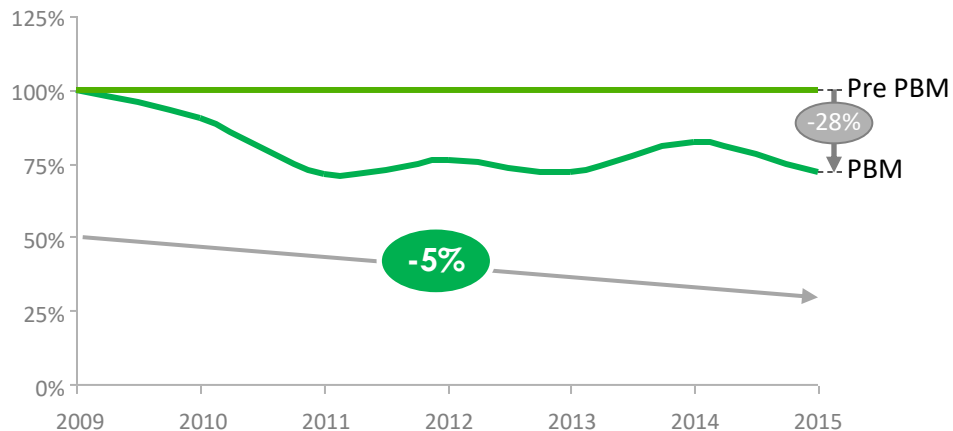
IMPROVING CONTINUOUSLY

- The right solution in one go; plan, do, check, act
- Operational teamwork and mutual learning across the supply chain
- Good dialogue with the contractors
- To stimulate innovation developments

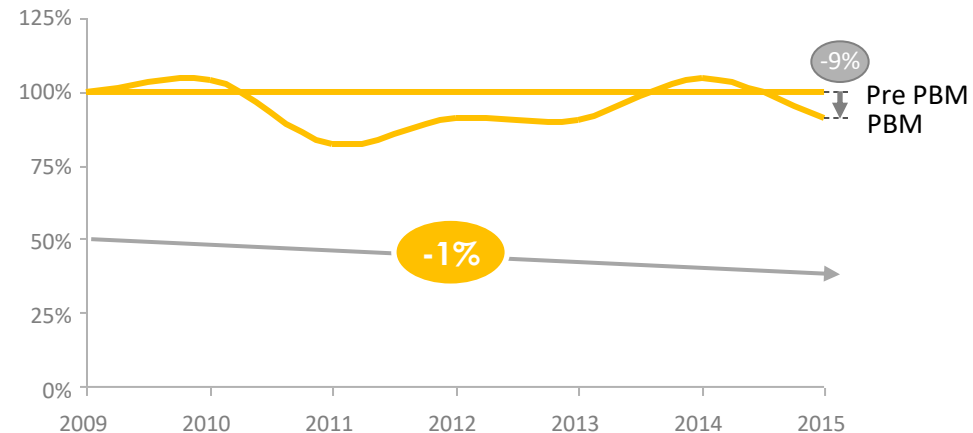
PBM regions have a lower yearly average in train hindrance and train service affecting deviation than pre-PBM regions

PBM contract regions perform better in comparison to pre-PBM regions in terms of...

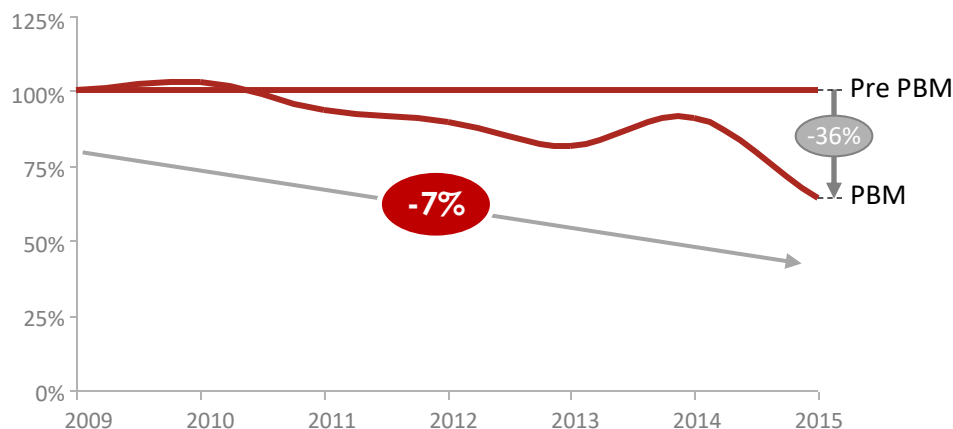
... 5% less Disruptions



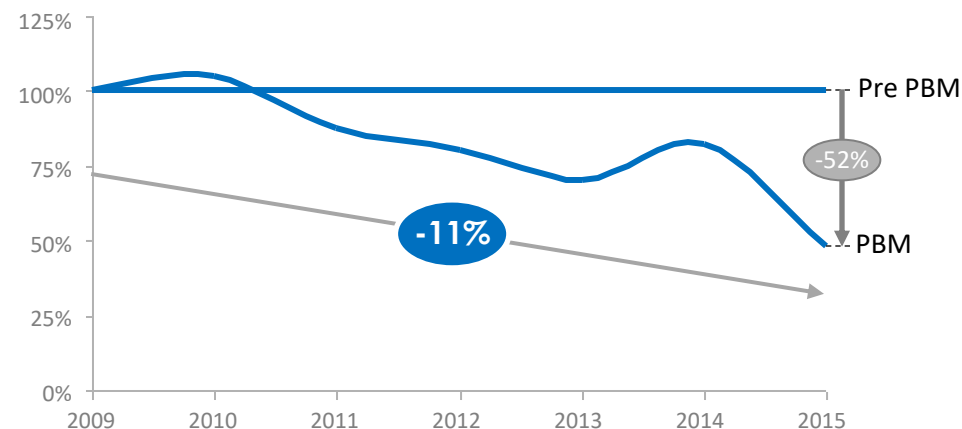
... 1% less Train Service Affecting Deviation



... 7% less Declarable Train Deviation



... 11% less Train Hindrance



Support, mutual trust, looking forward, professional program governance and collaboration are critical success factors for the PBM program



2016 Results Performance-Based Maintenance program

PBM Contract regions that are publicly tendered, mobilized and compliant

3

First designs for the new regional organizational maintenance structure are developed

Intended decree regarding the maintenance of a contract region by ProRail

5%

Less train disruption in PBM regions in comparison to non-PBM regions

Study to the use of PBM as a communication strategy to create a new mindset finished

Improved dialogue & collaboration with the contractor

Backbone to exchange data is live for..

21 / 31
..systems

Total realised small-maintenance cost savings in 2016 are

€62 mln.

New norms developed for

5 / 6 ..systems

PBM educational plan finished.

356 / 1232

.. have followed different PBM training ¹

ProRail has control over the PBM program and governance which leads to confidence at external stakeholders

All law suits in 2016 against ProRail were declared inadmissible by several judges