



Eisenbahn-Bundesamt

Learning from accidents and rule based safety

Michael Schmitz

Eisenbahn Bundesamt

Head of Recognition Body / international affairs

Content

1. What is „rule-based“?
2. Learning from accidents
3. Conclusion

„Rule based“ vs. „risk-based“?

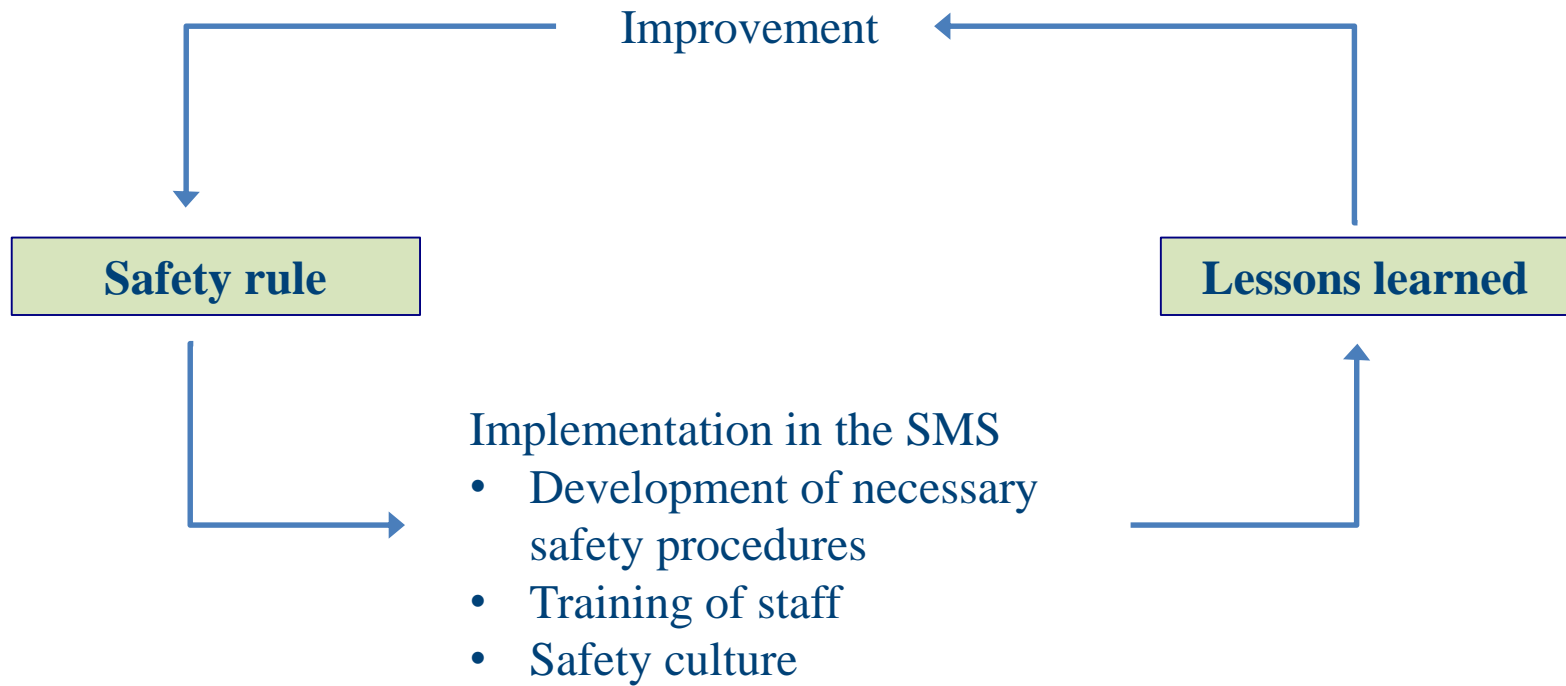
Complementary, not either-or!

- **Rules** are developed to cover known **risks**
- **Rules** are based on experience (sources like accidents, incidents, monitoring, supervision, ...)
- **Rules** should be known and followed by everyone – link to **human factor**, training of staff, practicability of rules
- Deviations possible, if **risks** are managed



Rules are an important part of an effective management of safety / risks!

Development of rules



Conclusion:

Efficient safety management is a combination of rules and a risk based approach!

Advantages / disadvantages of rules (example: operational rules)

- Limit freedom for the operators (those who have to apply)
- Less flexibility

- + Transparency
- + Help SME, newcomers, cross-border operators
- + Clear requirements for railways and their staff
- + Manage interfaces between RU and infrastructure manager
- + Ensure a sufficient level of safety
 - Define and manage national safety level by determining relevant national safety rules
 - Secure existing (national) level of harmonisation with > 400 Rus in Germany
 - Basis for NSA to supervise the railways
- + Control of NSA / MS in case of amendments of safety rules

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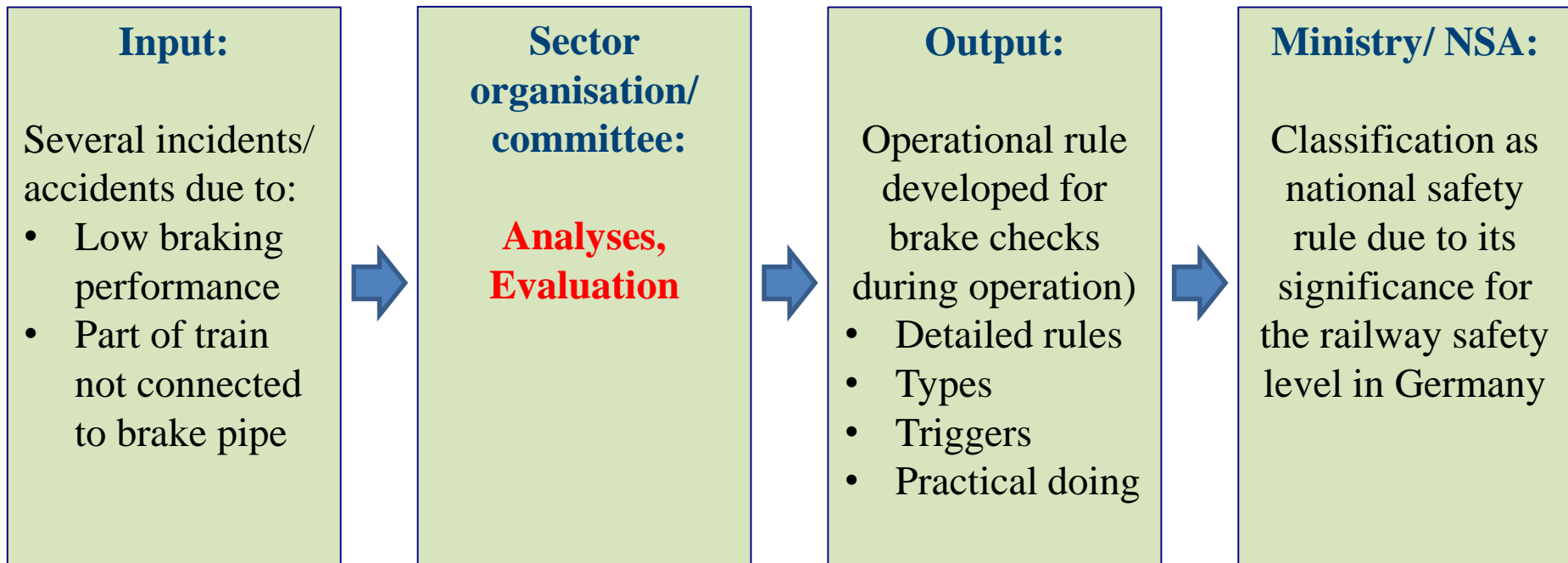
Rules based on experience / lessons learned

New rule or amendment of existing rule usually if

- Accident investigation body recommends it
 - Incidents show necessity
 - Due to operators' experience
-
- Very often „sector rules“, developed by sector organisations / in cross-sector committees
 - Regularly updated on the basis of experience from operation, learning from accidents and incidents, technical progress, expert discussion and judgement.
 - Cases where NSA (by written order) or Ministry (by law) issue new rule are the exception

Example

[Brake checks]



Example

[Brake checks]

Triggers - full brake checks necessary when:

- Train is composed or recomposed,
- Train was stabled for longer than 24 hours,
- Train composition does not change: at least once a day,
- Lack of braking power occurs,
- Overloaded brakes had to be resolved,
- Train starts directly ahead of a steep hill section.



⇒ Necessary for all RUs to follow

⇒ Noncompliance may lead to dangerous occurrences that already occurred in the past and are targeted by the rule

⇒ Not appropriate to leave to individual risk assessment of each RU

Example

[Brake checks]

But:

- **Rule is code of practice: Deviation possible!**
- **Up to each RU to evaluate the rule and decide how it is to be applied inside the company**



SMS Implementation:

company-specific risks

operational conditions

use cases

safety manager's judgement

Procedures for brake checks in RU's SMS

(RU might do more – or decide that parts of rule are not applicable given the RU's individual background – e.g. RU with fixed train compositions only)

National operational safety rules in Germany

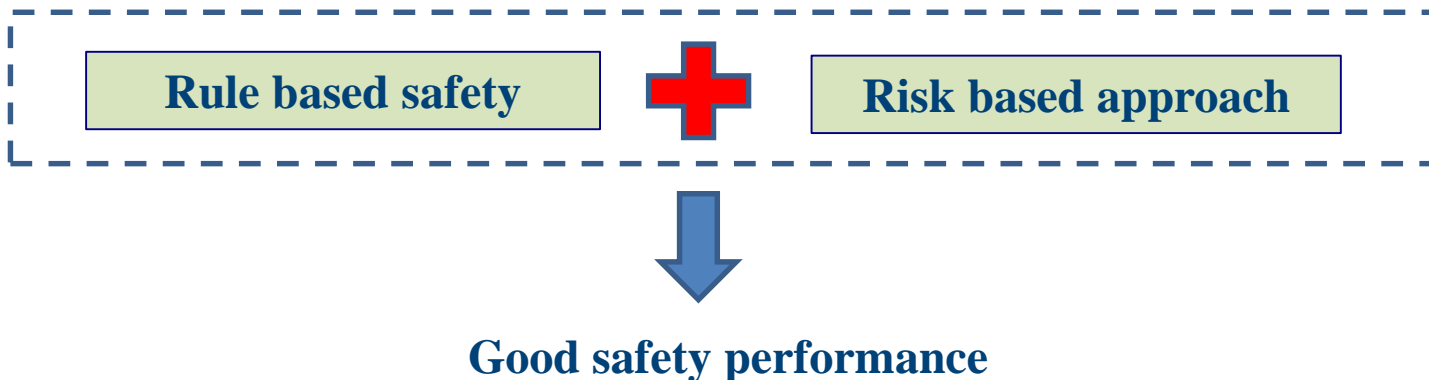
- Signals
- Tunnel safety
- Route knowledge
- Competence requirements for operational staff
- Safety of loading
- Checking of vehicles before and during operation
- Basic operational principles
 - Train braking
 - Train composition, length, equipment, maximum speed
 - Driving a train, shunting

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Conclusion

- ✓ **Operational rules are an important part of an effective management of safety / risks!**
- ✓ **Mandating rules on national level does not conflict with a risk based approach!**



Thank you!