System Safety and Risk Management
The View of a National Safety Authority

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Theme 3: Keep Railway Developments on the Right Track
I. Short introduction to Eisenbahn-Bundesamt (EBA)
II. Safety Responsibility in the Railway Sector
III. System Safety and Risk Management
Eisenbahn-Bundesamt = German National Safety Authority since 1994

Responsibilities

Art. 16 (2) Safety Directive, e.g.:
- Safety certification / Authorisation
- Authorisation for placing in service
- Supervision
- Market surveillance

Other tasks, e.g.:
- Licensing of Railways
- Financing infrastructure investment
- Planning approval
- Maglev
EBA Key figures

Staff 1.255 (incl. apprenticeship etc)
Expenditures 65 m € (thereof approx. 80 % for staff)
Revenues 42 m €

Budget managed approx. 3.9 bn € (for infrastructure investment)

Authorisations for placing in service
Locos/trainsets 508
Passenger coaches 182
Freight wagons 4106
Content

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II. Safety Responsibility in the Railway Sector
III. System Safety and Risk Management
Safety Responsibility in the Railway Sector

- National Safety Authorities
- Accident Investigation

Certification, **Supervision**

- Keeper, Entities in Charge of Maintenance*
  - Keeping in safe condition
- Railway Undertakings Infrastructure Manager
  - Safe building, safe operation, keeping in safe condition
- Maintenance Workshops
  - Keeping in safe condition

Staff, Rolling Stock, Infrastructure

Authorisation, **Supervision including market surveillance**

* = for Rolling Stock
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Safety of technical systems

Fulfilment of the relevant safety requirements:
- When put into service,
- During operation (dynamic view)

Integration of the technical system = safety management

Authorization

Operation

Continuous improvement

Maintenance
Organisation of Safety by Implementation of a Safety Management System including:

- Safety Policy,
- Procedures to meet existing, new and altered technical and operational standards or other prescriptive conditions,
- procedures and methods for carrying out risk evaluation and implementing risk control measures whenever a change of the operating conditions or new material imposes new risks on the infrastructure or on operations
- provision of programmes for training of staff and systems to ensure that the staff’s competence is maintained and tasks carried out accordingly
- information transfer and documentation
- implementation of corrective processes in case of malfunctions
- internal audits
Risk Management as a part of the SMS, Process

To ensure system safety precedence, risk management has to follow a strictly safety related approach, main steps:

- System definition
- Hazard Identification and Classification
- Selection of Risk Acceptance Procedures,
- Risk Evaluation and
- Demonstration of Compliance with Safety Requirements

- only that part of the system need to be considered that is part of the specific project, but including interfaces!
- simplified process in case code of practise
- code of practise, reference system (actual level), explicit risk analysis -> CoP preferred!
Risk Management as a part of the SMS, „additional functions“

- Information transfer
- Independent Assessment
- Continuous Hazard Management
- Documentation

- transparency of the risk management procedure,
- trust, cross acceptance
- Life cycle process
- Reliability of Results, necessary for continuous hazard management

Example: Organisation of Safety
Information transfer as a relevant part of hazard management

Example: Organisation of Safety within the sector

Operation and maintenance of Rolling Stock, example of a structured information transfer

Entity in charge of maintenance*

Maintenance Workshop

* Responsible for the management of the maintenance
Interface between National Safety Authority and Operator

Lessons learned processes

- Requirements,
- Results of:
  - Authorizations,
  - Supervision,
  - Accident Investigation

- Manufacturer,
- Operator,
- Entity in charge of maintenance

- National Safety Authority
- Accident Investigation Body

Experiences
- Operation
- Maintenance
Thank you for your kind attendance!

New website:
www.eisenbahn-bundesamt.de