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Building a safe interoperable railway: a first Methodological Guide for integrating human factors

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Building a safe interoperable railway:

a first Methodological Guide for integrating human factors



Presentation

- ***New goal for rail traffic in Europe: interoperability. How can it be achieved? Problems?***
- ***A study to find a “human factors” approach***
- ***Two main tools of the first Methodological Guide***
- ***The main points to emerge***
- ***Outlook***

New goal for rail traffic in Europe: interoperability. How can it be achieved? Problems?

The research, the preparation of the “Guide” (1/2)

- **A new goal for rail traffic in Europe:**
throughworking without border stops
- **The way adopted by the European Commission:**
Directives and Regulations (TSIs) aimed at harmonising operation
- **Problem:**
 - *very different historical systems, organisations, rules and tools;*
 - *until systems are harmonised, successful implementation of interoperability requires proper ownership by all players concerned;*
 - *employers are require to take into account the safety of their staff in the new organisations being set up.*
- **How is this to be done?**

New goal for rail traffic in Europe: interoperability.

How to reach it? Problem?

The research, the preparation of the “Guide” (2/2)

- **The Safety Platform anticipated this problem:**
It proposed a research in the area of HF to help players to master these regulations in the new situations they will encounter
- **The Research was launched by UIC; Partners were:**
 - Technische Universität Berlin
 - Paris 5 University (ergonomics lab) and EPHE
 - HF specialists of railways: CFF, DB, RENFE, RFI, RSSB, SNCF, TRENITALIA and UIC
- **Study in two stages**
 - Woippy-Mannheim, draft method
 - Validation of the method on two different routes
And observations of members of the Working Group
- **Results:**
 - A methodological guide (project, analyses, training)
 - Specific points highlighted.

The first Methodological Guide:

It consists of 4 parts:

1. Aid to Project Management
2. Diagnostic support tool for the organisation of interoperability
3. Competency and Training
4. “German” Questionnaire

The first Methodological Guide:

Tool 1, Aid to Project Management

Aim: to build the new working situations of the players.

Recommendations for integrating HF in an interoperability project:

- **The project must take a participative approach:**
 - specialists of the different socio technical systems;
 - human factors specialists;
 - and also the players involved in the area covered by the project;
- **It is vital to compare and confront the strategic and operational view points;**
- **It is necessary to agree on common references;**
- **To prepare co-operation on the ground, senior management teams will prepare the way together to avoid latent errors, latent risks and organisational errors;**
- **Some critical points to be analysed and anticipated.**

The first Methodological Guide:

Tool 2, Diagnostic support for the organisation of interoperability

- **Aim:**
To prepare a diagnosis of existing situations as the basis for organising interoperable traffic.
- **How to use this tool:**
 - The tool is made up of 3 check lists to be used in the proposed order;
 - The implementation of these checklists is an exercise involving all specialists and the players too;
 - The HF specialist carries out the work out coming of this tool.
- **Area covered by each check list:**
 - The first checklist helps management to compare different socio-technical systems;
 - The second checklist analyses the current and future working situations of marshalling yards or stations involved in the interoperable operation;
 - The third checklist analyses the tasks and knowledge needed for driving in another system.

Each checklist includes a description of the specific objectives together with instructions for use.

The task will be easier if the HF specialist is familiar with ergonomic analysis of working situations.

The first Methodological Guide:

Tool 3, Competency and Training

➤ **Aim:**

- To set out guidelines concerning competences training to prepare for safer and more efficient interoperable traffic.
- This tool allows working situations to be prepared as of now before TSIs cover this area. The tool will always allow the adaptation of TSIs to the requirements of each specific situation.

➤ **How to use this tool:**

- Before implementing training, the analysis carried out with tool 2 is supposed to have taken place.
- The additional competencies required can then be defined and the training specifications drawn up.

➤ **Different points reviewed:**

- Staff concerned and competencies required;
- Language competency and training;
- Competency and Training in signalling and regulations in the language of the other system;
- Training methods.

The first Methodological Guide:

Tool 4, Questionnaire with restricted use

➤ **Aim assigned to this tool by its designers:**

Analyse and check the safety-specific criteria for interoperable lines. The safety-specific differences can be identified. This questionnaire points a list of relevant aspects which must be taken into account.

➤ **How to use the tool:**

This questionnaire must be filled out by drivers very familiar with the activities (real work). The questionnaire is filled out simultaneously by the different systems representatives. No Human Factors specialist is involved either in the answering or in the evaluation phase.

➤ **Structure of questionnaire:**

The questionnaire is divided into the areas: departure, arrival and journey.

➤ **Evaluation of questionnaire:**

The number of differences identified is the key to the evaluation. If there is an agreement on many points, there is a low risk, if there are difference on many points, the systems can be considered as very different and the risk is increased.

➤ **Limits:**

This questionnaire is an analytical tool which confirms all the points reviewed in Tool 2. It presents a certain number of limits so that we cannot integrate it into the second tool.

*As it stands it can be used **as a first approach** of an existing service between Germany and a neighbouring country.*

The first Methodological Guide:

The main points to emerge

Apart from the Guide, this study highlights a number of points:

- **Need to « build » the new working situations**
- **Documentation**
- **Languages**
- **Operational support**
- **Monitoring of implementation and feedback**

Outlook

These two parts will be written as the reference document about Human Factors for the European Railways.

- ⌘ This process should help the various players involved in rail transport get together and co-operate more efficiently;*
- ⌘ The Methodological Guide should help to ensure that no important aspect of human factors is neglected;*
- ⌘ It is now up to each company to take ownership of the document and to begin to use it on a voluntary basis;*
- ⌘ This document could be used in dialogue with the European Commission and National Authorities when discussing issues such as certification and licensing.*

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***Thank you
for your attention***