



IRSC 2022

INTERNATIONAL RAILWAY
SAFETY COUNCIL

SEVILLA, OCTOBER 16-21, 2022



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RAIL HOF - A DIGITAL PLATFORM TO IMPROVE SAFETY



IRSC 2022
INTERNATIONAL RAILWAY SAFETY COUNCIL
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CHAPTER 1

WORKING BETTER TOGETHER FOR RAILWAY SAFETY



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HIGH LEVEL OBJECTIVES

- Aviation and nuclear have global networks to build and share knowledge aiming to improve safety and performance in their respective domains;
- The railway sector does not yet have free access to a similar global network or platform;
- Concrete cooperation between **UIC and ERA and members** to promote HOF in the railway sector.



A HOF DIGITAL PLATFORM AT THE SERVICE OF THE RAIL SECTOR

- A **user-centred approach** has been applied to better capture **user needs** and then use these to determine **design requirements, content and functionality and usability**.
- This approach was used **all along the development process of RAIL HOF** from the needs analysis to the development of the platform.
- What will RAIL HOF be for members?
 - a knowledge network on HOF and safety
 - a virtual platform which will evolve according to their needs

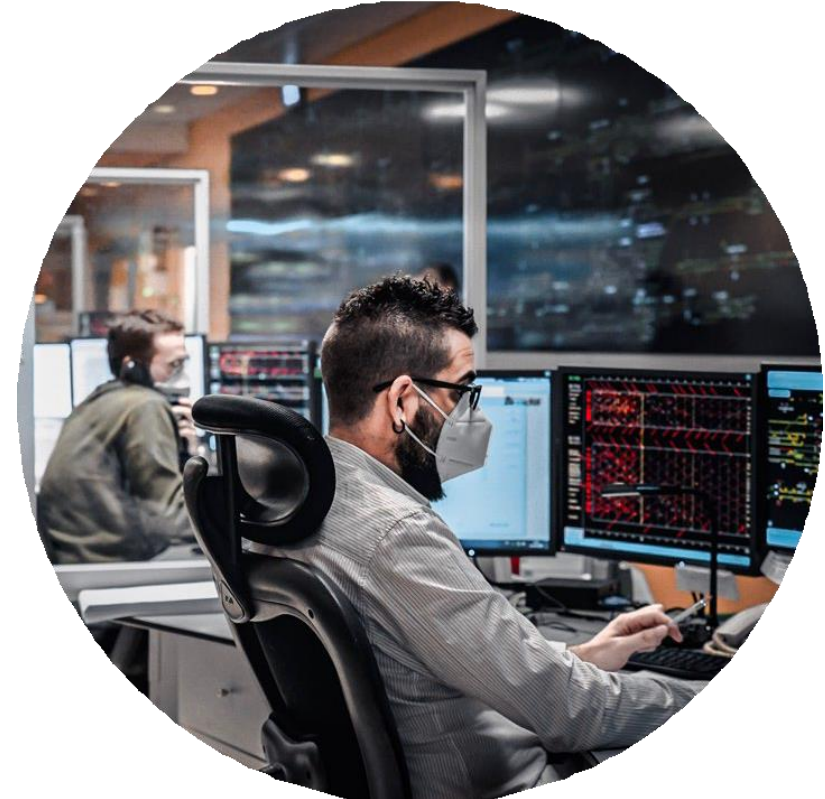


CHAPTER 2

A CORNERSTONE FOR BUILDING & SHARING KNOWLEDGE ON HOF

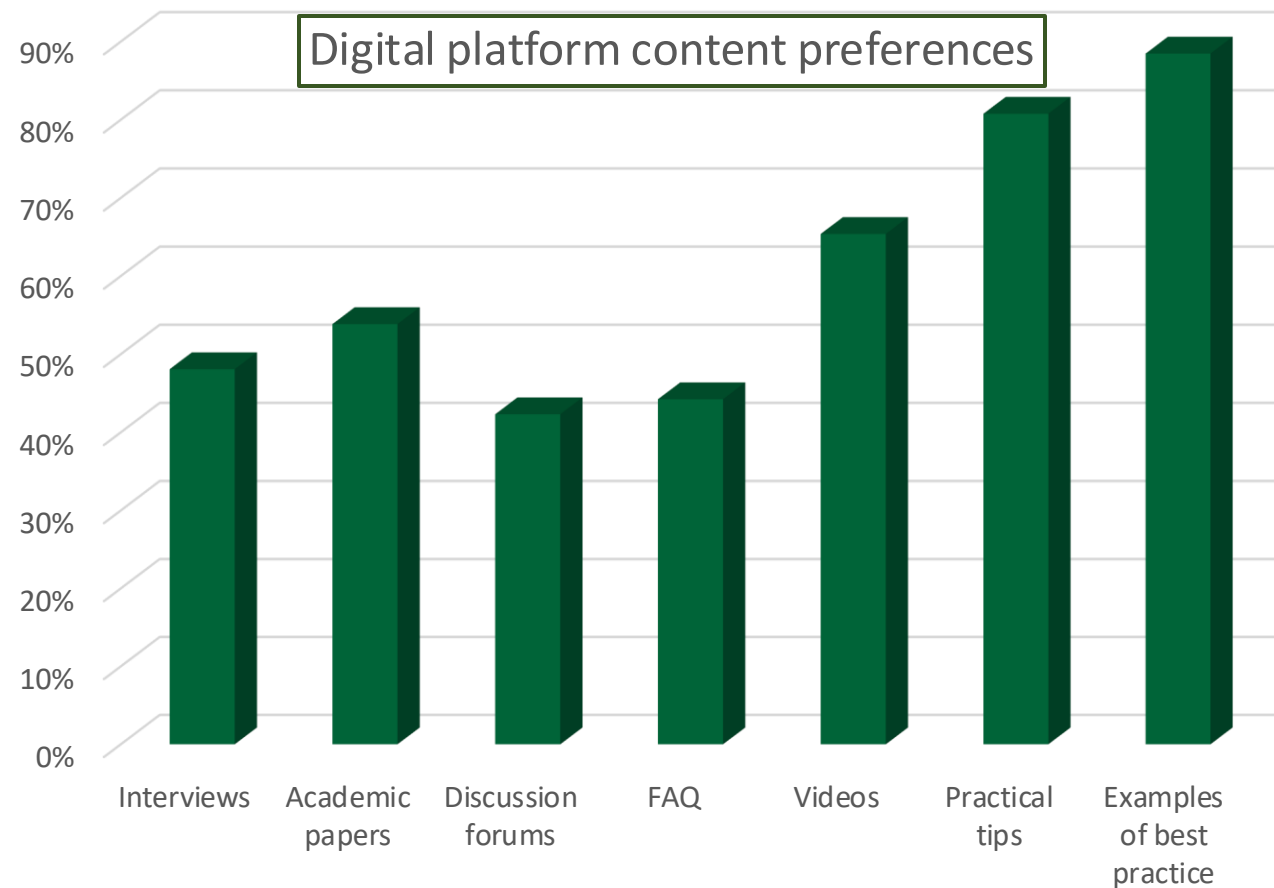
NEEDS ANALYSIS

- **Needs analysis** - at the beginning of 2019 a short questionnaire was sent to all contacts in ERA's database who had expressed an interest in HOF issues;
- It was composed of 5 questions:
 - What websites did they consult at the moment;
 - What did they like or dislike about those websites;
 - What type of content they would find useful.
- Analysis of the results produced recommendations on:
 - Content
 - Platform Functionality
 - Editorial policy



RESULTS SUMMARY OF THE NEEDS ANALYSIS

- Platform Functionality
 - Free access
 - Easy to navigate
 - Good search engine
- Editorial policy
 - Trustworthy
 - Independent (unbiased)
 - No commercial interest



CHAPTER 3

RAIL HOF DIGITAL PLATFORM DEVELOPMENT

INVOLVEMENT OF THE RAILWAY SECTOR

- UIC's Human and Organisational Factors Working Group (**HOFWG**) - a global group of HOF experts decided on:
 - a **visual** and **digital identity**;
- A **structure** composed of 3 sections:
 - a **LinkedIn group** to develop the HOF community of experts and increase visibility;
 - a **Website** to act as an entry point to access the appropriate information depending on needs and the level of HOF expertise and experience and;
 - a **Private area for members** to manage events and create a forum for sharing working documents.

Logo	Name: Rail Human and Organisational Factors
	Domain name: railhof.org
	Social media tags: @railhof; #RailHOF
	Visual identity: <ul style="list-style-type: none">• → Creation of a logo• → Creation of a small database of visuals/photos

“RAIL HOF Digital Platform is a Website, a LinkedIn group & a Private area for members”

INVOLVEMENT OF THE RAILWAY SECTOR

- The HOFWG also determined the **end users** of this platform from HOF specialists, through frontline and safety managers, to CEOs as well as their more specific needs in terms of **content**.
- An **editorial team** was established to:
 - **Structure** the website's headings and subheadings and to initially populate the site with content.
 - **Moderate** the LinkedIn group
 - **Validate** the information and new content that will be proposed

The Editorial Team is composed of 7 volunteers:

- Nora Balfe - IRISH RAIL
- Fiona Kenvyn - METRO TRAINS MELBOURNE
- Paul Leach - RSSB
- Huw Gibson - TRIMETIS
- Bernard Penners - INFRABEL
- Jayne Yeo – ERA
- Virginie Papillault – UIC

“An editorial team will ensure the evolution of the RAIL HOF”

CHAPTER 4

RAIL HOF PLATFORM IN ACTION



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RAIL HOF LINK

<https://railhof.org/>



BENEFITS OF RAIL HOF FOR MEMBERS

Develop and **share knowledge, practical experience, case studies and expertise on HOF,**

Help to **build and connect a network of rail professionals active in the area of HOF,**

Address **their legislative requirements** in the area of HOF,



Encourage the **further development of HOF knowledge** and expertise in the sector,

Support the global implementation of a **high level of railway safety and performance,**

Provide **an easily accessible and reliable source of HOF information**

Help all organisations achieve safety and performance **benefits from the application of HOF best practice and knowledge.**

“RAIL HOF is made for you, by you and needs to be kept alive by you-the railway sector”

RAIL HOF IN CONCRETE TERMS

INTRODUCTION AND HOMEPAGE

Contact us Extranet Suggest a reference Share your experience

JOIN US

WHAT IS HOF

RESOURCES



Welcome to the Human and Organisational Factors (HOF) Digital Platform, the new interactive forum for sharing and exchanging knowledge and information on HOF. Are you a HOF Novice, Trainee, Specialist, Manager, CEO in European or international railways?

Are you coming from another mode of transport or from another industrial sector? Come and enter our HOF community-based Digital Platform! It is easy to find, share, exchange information, best practices, articles and more on this secure and user-friendly platform.

This platform brings together materials and resources to support understanding and application of HOF in the railway sector. The platform links to information on recognised HOF topics and methods relevant to the railway community, as well as providing links to other industry sectors such as aviation, nuclear, and healthcare.

You may also be interested in HOF safety documents that are or will be produced based on the experience of railway members. On this platform, railway know-how will be highlighted thanks to case studies, good practices, return on operating experience and, more generally, the experiences of railway members when integrating HOF into the SMS, for example, but also when they have to implement a safety culture or work on safety leadership. Many HOF topics are covered in the "resources" tab and are divided into 4 main themes: Enhancing safety management, HOF regulations, standards and tools, Human performance, HOF in practice.



RAIL HOF IN CONCRETE TERMS

JOIN US

Contact us Extranet Suggest a reference Share your experience

RAIL HOF

JOIN US WHAT IS HOF RESOURCES

JOIN US

Are you interested in HOF?

Do you want to learn about Human & Organisational Factors? Safety culture, non-technical skills, health and safety, more?

Join us on this international and diverse network which captures in one place the valuable and enriching information and material, either academic or practical railways-oriented, on the organizational and human factors that you need.

[I want to know more](#)

Are you involved in HOF activities?

You want to learn about Human & Organisational Factors? Safety culture, non-technical skills, health and safety, more? Join us on this international and transversal network which capitalizes the valuable and enriching information and material, either academic nor Railways oriented, on the organizational and human factors that you need.

[Join us on LinkedIn](#)

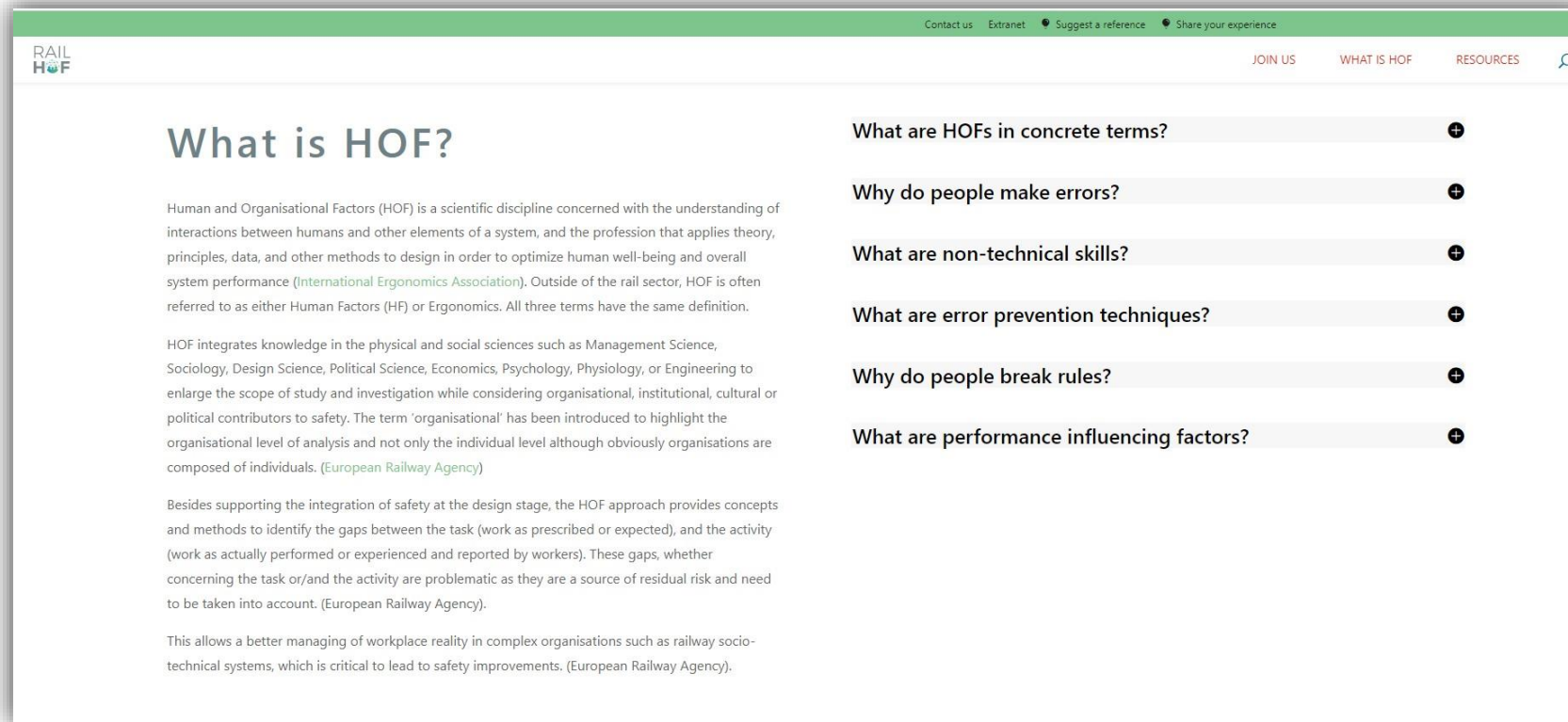
Are you an HOF expert?

Are you a Rail Human and Organisational factors expert, a Rail Safety expert, a Railway Head of safety, or other? This space is made for you. Here, you have access to confidential information and can even create or participate in a discussion forum to initiate conversations and exchanges with your peers.

[Join our members area](#)

RAIL HOF IN CONCRETE TERMS

WHAT IS HOF & FAQ



The screenshot shows the RAIL HOF website interface. At the top, there is a navigation bar with links for 'Contact us', 'Extranet', 'Suggest a reference', and 'Share your experience'. Below this, the main header includes 'JOIN US', 'WHAT IS HOF', and 'RESOURCES'. The main content area is titled 'What is HOF?' and contains three paragraphs of text explaining the discipline. To the right of the text is a list of six frequently asked questions, each with a plus sign icon indicating it can be expanded.

What is HOF?

Human and Organisational Factors (HOF) is a scientific discipline concerned with the understanding of interactions between humans and other elements of a system, and the profession that applies theory, principles, data, and other methods to design in order to optimize human well-being and overall system performance (International Ergonomics Association). Outside of the rail sector, HOF is often referred to as either Human Factors (HF) or Ergonomics. All three terms have the same definition.

HOF integrates knowledge in the physical and social sciences such as Management Science, Sociology, Design Science, Political Science, Economics, Psychology, Physiology, or Engineering to enlarge the scope of study and investigation while considering organisational, institutional, cultural or political contributors to safety. The term 'organisational' has been introduced to highlight the organisational level of analysis and not only the individual level although obviously organisations are composed of individuals. (European Railway Agency)

Besides supporting the integration of safety at the design stage, the HOF approach provides concepts and methods to identify the gaps between the task (work as prescribed or expected), and the activity (work as actually performed or experienced and reported by workers). These gaps, whether concerning the task or/and the activity are problematic as they are a source of residual risk and need to be taken into account. (European Railway Agency).

This allows a better managing of workplace reality in complex organisations such as railway socio-technical systems, which is critical to lead to safety improvements. (European Railway Agency).

- What are HOFs in concrete terms? +
- Why do people make errors? +
- What are non-technical skills? +
- What are error prevention techniques? +
- Why do people break rules? +
- What are performance influencing factors? +

RAIL HOF IN CONCRETE TERMS

RESOURCES: ENHANCING SAFETY MANAGEMENT

The screenshot shows the RAIL HOF website's 'RESOURCES' page. At the top, there is a navigation bar with links for 'Contact us', 'Extranet', 'Suggest a reference', and 'Share your experience'. Below this, the 'RAIL HOF' logo is on the left, and 'JOIN US', 'WHAT IS HOF', and 'RESOURCES' are on the right. The main heading is 'RESOURCES'. A horizontal menu below the heading includes 'Enhancing safety management', 'HOF regulations, standards and tools', 'Human Performance', and 'HOF in practice'. The 'Enhancing safety management' tab is active. Below the menu, there is a paragraph of text: 'The safety management system (SMS) is part of the business processes of the organisation and is not just a paper-based system specifically developed for demonstrating compliance with the regulatory framework. The ERA identifies that "the purpose of the SMS is to ensure that the organisation achieves its business objectives in a safe manner and complies with all of the safety obligations that apply to it" and that "Adopting a structured approach enables the identification of hazards and the continuous management of risks related to an organisation's own activities, with the aim of preventing accidents."... [Read more](#)'. Below the text is a grid of nine white boxes, each containing a resource title: 'Safety culture', 'Safety leadership', 'Return on operating experience', 'HOF in change management', 'HOF in event investigation', 'HOF in Design', 'HOF in risk management', 'Just and Fair Culture', and 'Competence management system'.

RAIL HOF IN CONCRETE TERMS

RESOURCES: HOF REGULATIONS, STANDARDS & TOOLS

Contact us Extranet Suggest a reference Share your experience

RAIL HOF JOIN US WHAT IS HOF RESOURCES

RESOURCES

Enhancing safety management	HOF regulations, standards and tools	Human Performance	HOF in practice
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The systematic integration of HOF cannot be done without having a consistent reference base in the form of regulations, standards and tools. This basis makes it possible to develop the integration of HOF in the Safety Management System (SMS). This common reference allows for standardisation of HOF both within and between companies. Indeed, the systematic integration of HOF into the European railway sector at the end of the twentieth century and the beginning of the twenty-first century was not a priority for all. It was necessary to develop a common vision, common definition and tools which allowed the sector to build a common understanding of HOF... [Read more](#)

Safety regulations	Standards	5x5 model
Human centred design	HOF models	

RAIL HOF IN CONCRETE TERMS

RESOURCES: HUMAN PERFORMANCE

The screenshot shows the RAIL HOF website's 'RESOURCES' page. At the top, there is a navigation bar with links for 'Contact us', 'Extranet', 'Suggest a reference', and 'Share your experience'. Below this, the 'RAIL HOF' logo is on the left, and 'JOIN US', 'WHAT IS HOF', and 'RESOURCES' are on the right. The main heading is 'RESOURCES'. A horizontal menu below the heading includes 'Enhancing safety management', 'HOF regulations, standards and tools', 'Human Performance' (which is selected), and 'HOF in practice'. The main content area starts with a definition: 'The term Human Performance refers to the contribution that humans make to the performance of a system. It describes how people carry out their work, whether as an individual or as a team, in order to meet a required objective. From a HOF perspective, human performance is a key focus when considering how a system can be optimized, as well as where it can be vulnerable to failure. When systems are designed to accommodate the capabilities, limitations and skills of the people who utilize them, human performance can ensure those systems are optimized and functioning well. When they are not, human performance can be impacted, and the system becomes vulnerable. Effective systems are tolerant of human error or human failure because they have been designed to anticipate and quickly recover from it – and rail systems are no different.... [Read more](#)'. Below this is a grid of nine topics: Non-technical skills, Workload, Physical ergonomics, Attention, Fatigue management, Vigilance and distraction, Stress, Human error (and violations), Fitness for duty, and Situation awareness.

RAIL HOF IN CONCRETE TERMS

RESOURCES: HOF IN PRACTICE

The screenshot shows the RAIL HOF website's 'RESOURCES' page. At the top, there is a navigation bar with links for 'Contact us', 'Extranet', 'Suggest a reference', and 'Share your experience'. Below this, the 'RAIL HOF' logo is on the left, and 'JOIN US', 'WHAT IS HOF', and 'RESOURCES' are on the right. The main heading is 'RESOURCES'. A horizontal menu contains several categories, with 'HOF in practice' selected. Below the menu, a paragraph of text describes the human factors discipline and its application, followed by a 'Read more' link. A grid of resource links is displayed below, including 'HOF in SPADs', 'HOF in Cab Design', 'HOF in Maintenance work', 'HOF in Traffic Management', 'HOF in alarm design', 'Maintaining and improving operational practices', and 'HOF in automation'.

Contact us Extranet Suggest a reference Share your experience

RAIL HOF JOIN US WHAT IS HOF RESOURCES

RESOURCES

Enhancing safety management HOF regulations, standards and tools Human Performance **HOF in practice**

The human factors discipline provides a theoretical knowledge base which can be applied to optimise systems for safety, human performance and wellbeing. These theory, principles, and methods can be applied in at different stages of the lifecycle, from conceptual design of new systems through to their operation and decommissioning. The practical application of HOF also applies to different parts of an organisation from frontline operational staff through to senior management... [Read more](#)

HOF in SPADs HOF in Cab Design HOF in Maintenance work

HOF in Traffic Management HOF in alarm design Maintaining and improving operational practices

HOF in automation

RAIL HOF IN CONCRETE TERMS

HOW TO SHARE A REFERENCE IN RAIL HOF?

RAIL HOF

Contact us Extranet Suggest a reference Share your experience

JOIN US WHAT IS HOF RESOURCES

Reference

Your name

Your email address *

Title *

Company/Organisation *

Position *

Short description

URL (web address)

Legal aspects

Author *

Co-authors

Categories

RAIL HOF IN CONCRETE TERMS

HOW TO SHARE A REFERENCE IN RAIL HOF?

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- Enhancing safety management:**
 - Competence management system
 - HOF in change management
 - HOF in Design
 - HOF in event investigation
 - HOF in risk management
 - Just and Fair Culture
 - Return on operating experience
 - Safety culture
 - Safety leadership
- HOF regulations, standards and tools:**
 - 5x5 model
 - HOF models
 - Human centred design
 - Safety regulations
 - Standards
- HOFs in practice:**
 - HOF in alarm design
 - HOF in automation
 - HOF in Cab Design
 - HOF in Maintenance work
 - HOF in SPADs
 - HOF in Traffic Management
 - Maintaining and improving operational practices
- Human Performance:**
 - Attention
 - Fatigue management
 - Fitness for duty
 - Human error (and violations)
 - Non-technical skills
 - Physical ergonomics
 - Situation awareness
 - Stress
 - Vigilance and distraction
 - Workload

Below the categories, there is a 'Tags' section with two checkboxes:

- Member experiences
- Typical incident

At the bottom of the form, there are two buttons: 'Previous' (green) and 'Submit' (blue).

RAIL HOF IN CONCRETE TERMS

HOW TO SHARE YOUR EXPERIENCE IN RAIL HOF?

Contact us Extranet Suggest a reference Share your experience

RAIL HOF JOIN US WHAT IS HOF RESOURCES

Your name
Nora Balfe

Your email address *
nora.balfe@irishrail.ie

Title *
Safety Leadership training in Irish Rail

Author *
Nora Balfe

URL (web address)

What are key HOF issues?
Irish Rail identified a need to refresh their senior managers on safety leadership, to highlight the importance of leading by example and to create awareness of the pivotal role of leaders in shaping the safety culture of the organisation.

What did you do?
Irish Rail trained six of their safety team in delivering ERAs 1 day Safety Leadership training programme, and rolled this training out to senior managers across the business. The training covers several areas of Safety Leadership and Safety Culture, including an overview of Human and Organisational Factors, developing a safety vision, the importance of anticipated consequences in shaping behaviour, just culture, and organisational decision making. Sessions were held every two weeks at our training centre and approximately 130 managers were trained in the first nine months of 2022. The training is interactive, and participants are encouraged to reflect on how the topics covered apply to their own behaviours and areas of the business, as well as on what their key take-aways from the training are.

What were the results?
The feedback from the training has been very positive, and there is now an initiative to develop similar training for key frontline managers and supervisors as well as further developing our Just Culture policies and processes.



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