

A photograph showing the back of a person with short brown hair, wearing a dark jacket and a bright orange high-visibility safety vest. They are seated in the driver's cab of a train, looking out over a snowy landscape with railway tracks receding into the distance. The control panel in front of them features several red and green buttons and a small digital display showing the number 736. A rearview mirror is visible above the window.

APPLYING JUST CULTURE IN RAIL: DRAWING PARALLELS FROM AVIATION

The concept of Just Culture is gaining traction in the railway industry, influenced by a European directive and the European Union Agency for Rail's promotion of safety culture. **Michaela Schwarz** and **Nora Balfe** report on conversations with safety management professionals from European railways to discuss the current application, challenges, and advantages of a Just Culture approach.

KEY POINTS

- **The concept of Just Culture is gaining momentum in the railway industry, influenced by the inclusion of Just Culture ideas in the (EU) 2016/798 Railway Safety Directive and subsequent promotion by the European Union Agency for Rail, with EUROCONTROL collaboration.**
- **Implementing a Just Culture approach shifts the focus from individual blame to systemic improvements, fostering a safer environment, enhancing risk perception, and promoting a stronger organisational culture.**
- **Railways face challenges in applying Just Culture, including historical reliance on disciplinary actions, the division between railway undertakings (i.e., train operators) and railways infrastructure managers (i.e., track, station, building and asset management) and the complicated 'Rule Book'.**
- **Developing competency in human factors, systems thinking, and multidisciplinary approaches is crucial for the successful implementation of Just Culture.**
- **Benefits of a Just Culture such as increased risk perception, safer work, improved psychological safety and wellbeing, enhanced trust, and a stronger safety management system are now being perceived in the rail industry.**

The term 'Just Culture' is relatively recent in railways, but awareness and application has increased over the last decade. Along with transfer of best practice from aviation, one reason for this is the inclusion of Just Culture ideas in the 2016/798 Railway Safety Directive (EC, 2016). This provides mandatory safety requirements for all European railways. Since its publication, the European Union Agency for Rail (ERA) (approximately equivalent to EASA in aviation) has been promoting the concept of Just Culture, including through collaboration with EUROCONTROL to apply the learning and good practice from the aviation sector. The cooperation started with joint training of prosecutors and legal experts from aviation and rail on Just Culture principles and system thinking. In 2018, ERA launched the European Railway Safety Culture Declaration promoting safety culture generally, but also specifically Just Culture principles amongst management, employees, and relevant stakeholders, including authorities and contractors. More than 250 railway leaders and organisations have signed the declaration (ERA, 2023) and a fair and Just Culture is considered one important element in the ERA Safety Culture model (<https://www.era.europa.eu/safety-culture-model>).

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For this article, we spoke with 12 individuals engaged in safety management of European railways at different maturity levels to capture the current application, challenges, and perceived benefits of a Just Culture in the rail sector.

"The focus of the ERA Just Culture training lies on organisational Just Culture, not judiciary Just Culture. It is about the systematic understanding of the human being as one part of the value chain."

(Kim Drews, ERA, 2023)

Organisational Just Culture

Similar to aviation, Just Culture within railways is understood to be one key element of proactive safety culture and a broader element of organisational culture. The rail industry is older than aviation (the first railway line dates back to 1825 in the UK) and responses to 'human error' have evolved over time along with the sector.

Technologies to reduce the likelihood of catastrophic consequences as a result of simple errors exist in rail signalling (which has a similar function to air traffic control), train driving and shunting (which can be compared to flight deck operations), and train maintenance (like aircraft maintenance). However, these technologies (e.g., interlockings, automated train control system, digital automatic coupling, automated train inspection) can be expensive to install and maintain, and they are not always implemented effectively. Examples include the train collision in February 2023 in Tempi, Greece, where a signaller authorised a train to proceed towards an oncoming train. Early indications are that the signaller had little training and the equipment to support safe decision-making had never been implemented on the line.

The accident in Santiago de Compostela in northern Spain in July 2013 involved a train travelling too fast for the section of line it was travelling on. Again, the technology existed to supervise train speed, but was not implemented in that area. Like in aviation, the immediate response in the media has been to blame human error followed by a criminal investigation by the judiciary. Thanks to recent Just Culture promotion activities in rail, the organisational perspective is slowly moving away from this reaction, considering the human within the overall system.

Introduction of the Just Culture Concept to Rail

All the interviewees were familiar with the term 'Just Culture', but understanding and depth of application varied. Some people came across the term Just Culture in the context of aviation and cross-industrial training and discussions, and others in the context of psychology studies and academia. Some railway organisations started to work on the idea almost

10 years ago, but others only started to apply Just Culture thinking within the last few years.

We did not find any alignment between when the concept was introduced and how deeply it is applied. Some organisations who have started only in the last few years have firmly embedded Just Culture principles, while others who started earlier have not yet reached the same level of maturity.

"In a Just Culture you don't act directly on behaviour, but you work on underlying factors influencing the behaviour."

(Grégory Rolina, ERA)

Managing Behaviour in the Rail Industry

"We accept errors as inevitable. We accept people are human beings and are going to make mistakes or errors. What we focus on if somebody makes an error is whether the system is resilient against that error or if there is something we need to change."

(Steve Lewis & Benjamin Stephens, Southeastern Railway)

Some railway organisations fully embrace the idea of accepting human errors as inevitable and focus their efforts on learning and improving across the system after each event. Others seem to focus primarily on the individual and still rely on mitigations such as retraining after an event, with systemic influences being a secondary consideration.

Some organisations use standard taxonomies, algorithms, or so-called 'fairness guides' to classify human behaviour or understand whether a human error should be an acceptable one or not. But there was feedback that, although consistency is critical in a Just Culture, these tools can be too complicated and there is a risk that the Just Culture programme becomes caught up in applying the decision tree correctly, taking the focus away from learning and improvements.

Other organisations separate misconduct that is reportable or not reportable, applying consequences according to the severity of the error (minor versus serious). A few organisations place little focus on the classification of errors, but instead regard the essence of their Just Culture to be the learning that is available from events.

A Systems Approach

A well-established Just Culture should focus on the management of inevitable errors. This led us to explore how sociotechnical systems thinking is applied in rail. There is an

awareness of systems thinking across all participants, but the degree to which it is currently understood and applied seems to vary. There are some structural issues in rail which make a

systems approach more difficult. For example, European railways have historically been one national company but are now broken down into 'railway undertakings' (similar to airlines) and 'infrastructure managers' (similar to airports and air traffic control). As with aviation, operators may engage subcontractors for specific services (e.g., traction, maintenance) adding to the already complex railway management system. This has created a divide between frontline operational staff, and may hinder one company moving towards a Just Culture approach when other companies have not. There is still a sector-level expectation of blame and punishment.

Another difficulty in the application of Just Culture is the heavy reliance of the rail sector on the 'Rule Book'. Similar to airlines, each railway maintains a book of procedures that govern operations on their network. Compliance with these rules is mandatory. Whereas standard operating procedures (SOPs) in aviation are designed and improved based on operator input, in rail it is sometimes said that the Rule Book has been 'written in blood', reflecting the evolution of the rules in the aftermath of tragedies. Traditionally, rail workers were expected simply to comply with these rules and non-compliance was usually punished by disciplinary action or temporary allocation to (lesser) duties, such as cleaning trains or work confined to the depot. Rail is a relatively constrained environment, and in most circumstances there is an applicable rule which can be safely followed (at least in retrospect).

A Just Culture approach means understanding that there are many reasons why an individual may not follow a rule and a move towards even challenging the rule book if necessary, but this is a major cultural shift for the sector.

Developing Human Factors Competency

A challenge to Just Culture in rail involves developing competency in human factors, systems thinking, and multidisciplinary approaches. Not everybody may need to be 'trained' on Just Culture, but key individuals need to adopt and champion the approach until it is embedded and becomes part of the way of doing business. The ability to apply a Just Culture approach needs to be systematically developed. This includes identifying behaviours, analysing the influence on those behaviours, and making recommendations regarding those influences.

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"Managers need to become aware that a silent organisation is an unsafe organisation. If you want to improve safety, you need information. If you want to get information, you must protect employees for giving you the information."

(Miguel Figueres-Esteban, Renfe, 2023)

Key Success Factors

The interview participants indicated several key messages in developing a Just Culture. It must be led from the top and have the right people who buy into the idea driving it forward. Without the support of management, it will not succeed. It also needs to be fully integrated into the safety management system and not a separate stand-alone process. It must be consistent and fairly applied at all levels of the organisation. The competence in tackling hindsight bias and analysing the whole system must be developed. It may also help to use case studies of previous events to increase awareness and promote the approach, and to focus on what usually goes right and why as an example of well-designed systems.

"Beyond safety, the application of Just Culture has been found to create more trust and has a social impact resulting in a common understanding within the organisation and sector."

"Just Culture sharpens one's own awareness of the risks one weighs up on a daily basis. New operators make more mistakes because they have less experience in risk perception and risk management on the job."

(Manfred Kunz, ÖBB INFRA)

"I think Just Culture raises awareness of those affected to critically question their actions and develop 'what if' scenarios."

(Stuart Pfister, DB Regio)

Benefits of a Just Culture

The primary immediate benefits perceived are an increase in individual risk perception and safer behaviours. Wider benefits for safety and the wider organisational culture are emerging. In terms of safety, Just Culture creates more openness and encourages people to speak up, providing more information on events and hazards. Having more information puts the railway organisation in a better position to solve problems. Some of the organisations have already found that applying Just Culture to the investigation of safety events generates more learning points with less of a focus on the individual. This

results in a stronger safety management system and a safer operation, and ultimately healthier staff due to a reduction in safety incidents and better psychological safety and wellbeing. But beyond safety, the application of Just Culture has been found to create more trust and has a social impact resulting in a common understanding within the organisation and sector.

The Future of Just Culture in Rail

In addition to the collaboration between ERA and EUROCONTROL, a range of support tools is emerging to develop and grow human factors and safety culture in the rail industry. One of these is the RailHOF platform (www.railhof.org) which combines an active LinkedIn group with a discussion forum hosted by the International Union of Railways (UIC) and a public website providing introductory materials to a range of topics, including Just Culture. A second is a forthcoming training course developed by ERA alongside a working group from the rail sector. We hope that these communities of practice will help drive the rail sector to excel in the application of Just Culture.

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Dr. Michaela Schwarz currently works as safety culture and human factors expert at ÖBB Production. Her main responsibility is the assessment and development of human and organizational factors (HOF) for train drivers and train inspectors. Michaela holds a doctoral degree in organizational psychology with a specialisation in safety and just culture. She brings more than 15 years of experience from the aviation industry.



Dr. Nora Balfe is Head of Human Factors at Iarnród Éireann Irish Rail, where she leads a team of six in the application of human factors and development of a positive safety culture. She holds an MSc and PhD in human factors. She is a Registered Member of the UK Chartered Institute of Ergonomics and Human Factors (CIEHF).