

Comparison of security and safety in aviation and rail

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Safety and security

- Discussions of safety often include mention of related terms.
- Security is such a term.
- These two often are interchanged or spoken or written in the same meaning.
- It is left to the listener or reader to understand and decipher what is meant with these two words in the given context.



Safety

- Safety is the state of being "safe", the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.
- Safety is the condition of a steady state for an organization (or a place) of doing what it is supposed to do.
- Usually, things do not go as planned. Sometimes this state is challenged and that is where security comes into the picture.



Security

- Security is the process or means, physical or human, of delaying, preventing, and otherwise protecting against external or internal, defects, dangers, loss, criminals, and other individuals or actions that threaten, hinder or destroy an organization's steady state, and deprive it of its intended purpose for being.
- In short, security is freedom from, or resilience against, potential harm caused by others.
- Persons, social groups, objects, institutions, ecosystems or any other entities or phenomena vulnerable to unwanted change can benefit from security.



Safety in aviation

- Safety means a state where risks associated with aviation activities are reduced and controlled to an acceptable level.
- It encompasses the theory, practice, investigation, and categorization of flight failures, and the prevention of such failures through regulation, education, and training.
- Failures can be categorized, in recent years runway safety represents 36% of accidents, ground safety 18% and loss of control in-flight 16% of accidents.



Safety in aviation

- To prevent these failures, the aviation system has implemented many prescriptive rules in addition to a safety management system -thinking
- The sector is now moving towards a more performance and risk based regulation where the goal is to maintain good safety record by requiring a vigorous control of operational risks and well established management of change through safety management.
- Safety in aviation can be defined by its many compliance based rules but also by performance and risk based safety management.

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Safety in rail

- Where aviation safety is practically only seen as safety of the plane, passengers or work force, the rail system must also count in yet another factor – third parties.
- Biggest harm inflicted by the railways system often arises at its external interfaces like level crossings and stations.
- Yet, just like in aviation. The rail system has been kept operating in a safe way through rules and regulations.
- The system is now also moving to a performance based environment when functional safety management systems and good safety culture take care of risk management and continuous improvement.



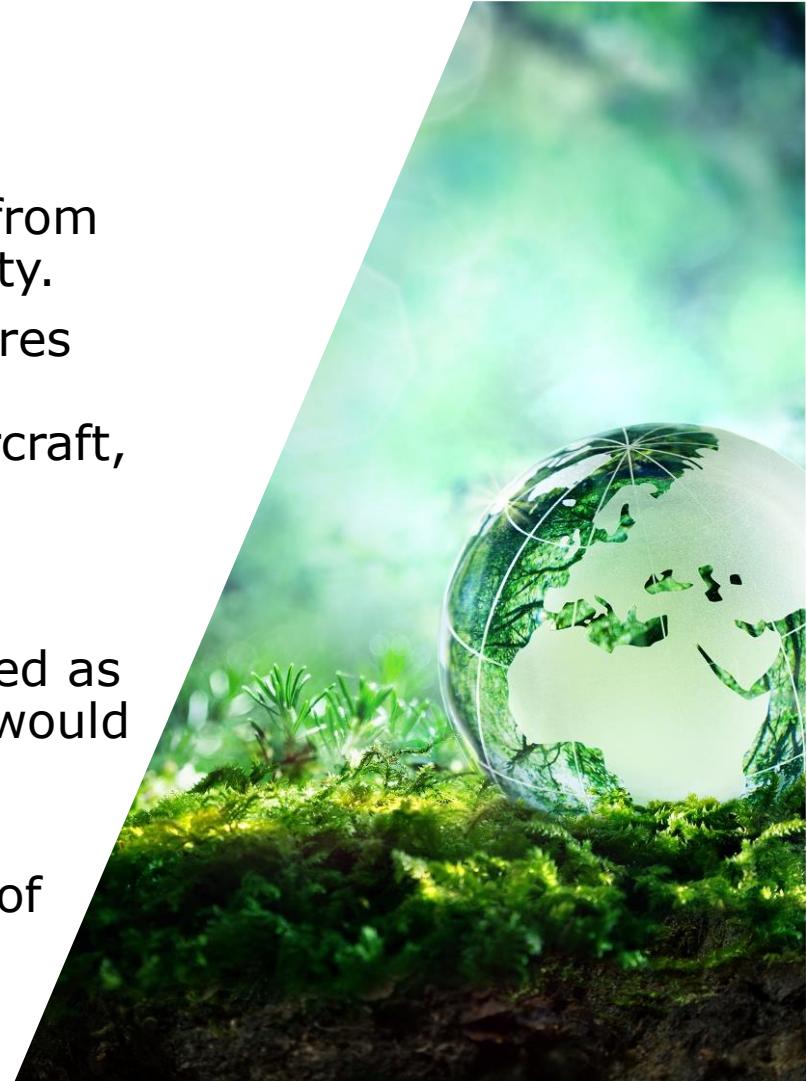
Safety in aviation and in rail

- System safety is very similar in aviation and rail
- Both rely – to some extent – on rules
- Both require safety management systems from operators
- Requirements for the safety management systems are very similar
 - both emphasize risk and change management
 - both emphasize training
 - both emphasize learning from accidents
 - both emphasize management of sub contracting



Security in aviation

- Another aspect of safety is protection from intentional harm, also known as security.
- **Aviation security** is the set of measures and resources implemented to prevent malicious acts (terrorism) targeting aircraft, their passengers and crew members.
- Air transport is the safest means of transportation in the world, e.g if the terrorist attacks of 2001 are not counted as accidents and even if they were, they would have added about 2 deaths per 2,000,000,000 person-miles.
- Security has always been at the heart of the aviation industry's concerns.



Security in aviation

- Different areas of security:
- In flight and passenger security
- Security of aerodromes and airports
 - “Clean and dirty” sides
 - Passengers
 - Luggage
 - Ground workers
- Cyber security
 - IT-systems for air navigation and airworthiness

Security in aviation

- Every MS has to draw up, apply and maintain a national civil aviation security programme, which defines responsibilities for the implementation of the common basic security standards and also describe the measures required by operators and entities for this purpose.
- MSs shall also draw up, apply and maintain a national quality control programme, which enables the MS to check the quality of civil aviation security in order to monitor compliance both with the regulation and with its national civil aviation security programme.
- In addition every airport operator shall draw up, apply and maintain an airport security programme, which describes methods and procedures to comply both with the regulation and with the national civil aviation security programme of the MS.

Security in aviation

➤ General measures in the national programme concern for example

- methods of screening
- articles that may be prohibited
- access control and grounds for granting access to airside and security restricted areas
- methods for the examination of vehicles, aircraft security checks and aircraft security searches
 - Up to the details of screening all goods sold in the airport area and for example, airplane catering and beverages
- conditions under which cargo and mail shall be screened or subjected to other security controls, as well as the process for the approval or designation of regulated agents, known consignors and account consignors
 - Up to the details of removing prohibited items from passengers personal cargo bags which airport security personnel is authorized to do
- criteria for defining critical parts of security restricted areas, staff recruitment and methods of training
 - Due to comprehensive amount of security measures towards passengers the focus has now been shifted to staff (i.e. special attention is also paid to airport, ground services and cabin and cockpit personnel)

Security in aviation

- Passenger safety and security are also taken care of cabin crew in the aircraft
- The crew has the mandate to give orders to passengers and it is also their task to make sure safety procedures are followed in case of an emergency
- Cyber security is an emerging factor in all transport modes. Many airlines and airports have robust systems in place to address common hacking threats, but a holistic approach to the broader aviation IT infrastructure is still needed.
 - Worst case scenario: person with malicious intentions does not need to be in the vicinity of airport or airplane anymore, the system could be hacked from any point on the map → airport and airplane security measures are irrelevant in cyber risk context
- Work is done to create a common framework to cyber security and Cyber Security Management System are being implemented already.

Security in rail

- In the rail sector security is not nearly as regulated as in the aviation sector.
- Each MS has its own requirements, measurements and methods
- Similar security measurements as in the aviation are practically only in palavat large main stations like Moskow and London and around tunnels and tunnel stations like the Channel Tunnel.
- Train staff usually do not have same security and safety function as in the aviation – nor do they have similar training
- Perhaps the closest is cyber security in ERTMS



Thank you

- For questions contact Heidi Niemimuukko at Traficom Finland

